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June 14, 2023

Via CEC Docket 22-BSTD-03

Mr. Drew Bohan Executive Director California Energy Commission 1516 Ninth Street, MS-39 Sacramento, CA 95814 Drew.bohan@energy.ca.gov

RE: CalCERTS Quality Assurance Program

In the spirit of transparency CalCERTS QA Team submits an overview of the CalCERTS QA Program. The California Energy Commission has copies of this document, but we are submitting it to the Title 24 Docket No. 22-BSTD-03 for the rulemaking record and for the advancement of energy code enforcement and compliance.

Sincerely,

David Choo CalCERTS, Inc. Director of Quality Assurance

Quality Assurance Program

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1 INTRODUCTION

The following is an overview of the CalCERTS QA Program. CalCERTS has collaboratively worked with the California Energy Commission since the inception of the HERS program towards the same goals. While the primary rules of Title 20, Section 1673 are strictly adhered to, portions of the QA program are dynamic in order to preserve the goal of achieving truthful and accurate in HERS Ratings. CalCERTS QA program consists of 4 primary areas of oversight, including but not limited to:

- Quality Assurance Reviews
 - First 5 Ratings by a New CalCERTS Rater
 - Desktop reviews of a random sampling of Rater work
 - o Field reviews of a random sampling of Rater work
- Dispositions Notices
- Discipline
- Complaints

The overarching goal of the program is to increase the quality of Title 24 HERS code enforcement in order to serve building officials, protect consumers, while continually training Raters and by extension, installers. Since the inception of the QA program, CalCERTS has conducted over 6000 Quality Assurance Field Reviews of Rater projects.

The program is supported by highly experienced staff across the state of California that often work in conjunction with local enforcement agencies. This staff consists of a seasoned technical team that regularly consults with the California Energy Commission. Also included are highly trained, experienced Field QA Reviewers. The program is also supported by the CalCERTS IT team for data analysis.

CalCERTS maintains strict conflict of interest rules that force objective examination of ratings and HERS Raters.

The result of the program is a community of special inspectors that adhere to a philosophy of quality HERS ratings that are truthful and accurate. This in turn protects the integrity of the entire HERS Program.

2 TITLE 20, SECTION 1673 – QA SPECIFIC REQUIREMENTS

(b) Rater Agreements. As a condition of Rater registry under Section 1673(d), each Provider shall ensure that a Rater applicant who has met the applicable requirements of Section 1673(a) has entered into an agreement with the Provider to provide home energy rating and field verification and diagnostic services in compliance with these regulations. The agreement shall require Raters to:

- 1) Provide home energy rating and field verification services in compliance with these regulations.
- 2) Provide true, accurate, and complete data collection, analysis, ratings, and field verification and diagnostic testing.
- 3) Not accept payment or consideration in exchange for reporting data gathered for a rating, analytical results used for a rating, or a rating result that was not in fact conducted and reported in compliance with these regulations.



4) Comply with the conflict of interest requirements as specified in Section 1673(j).

(i) Quality Assurance. Each Provider shall have a quality assurance program that provides for at least the following:

- Quality Assurance Staff. The Provider shall have a designated Quality Assurance Manager to oversee the quality assurance process. The Quality Assurance Manager shall appoint as many Quality Assurance Reviewers as necessary to assist with the completion of the tasks outlined in this Subsection 1673(i). The qualifications of the Quality Assurance Manager and the Quality Assurance Reviewers shall be submitted to the Energy Commission.
- 2) Initial Review. The Provider shall review and approve for accuracy and completeness the rating documentation for at least the first five homes which a Rater performs after completion of the requirements specified in Section 1673(a)(1) through Section 1673(a)(6), not including those homes rated under the Provider's direct supervision as specified in Section1673(a)(6).
- 3) Quality Assurance for California Whole-House Home Energy Raters and California Field Verification and Diagnostic Testing Raters.
 - A. For each Rater, the Provider shall annually evaluate the greater of one rating, randomly selected or one percent of the Rater's past 12 month's total number of ratings (rounded up to the nearest whole number) for each measure tested by the Rater. For Raters that have had at least one quality assurance evaluation for any measure in the past 12 months, this evaluation shall only be required to be done for those measures that have been tested by the Rater at least 10 times in the past 18 months. The Provider shall independently repeat the rating to check whether the rating was accurately completed by the Rater, and determine whether information was completely collected and reported. The Provider also shall conduct the same check on one percent of all ratings conducted through the Provider, selected randomly from the Provider's entire pool of ratings on an ongoing basis. For Energy-Rated Homes using the Building Performance Contractor exception to Section1673(j)(3), at least five percent of the Energy-Rated Homes shall be evaluated by a Quality Assurance Reviewer.
 - B. Raters shall not be informed that a building or installation will be field checked until after they have completed the original rating. The field check shall occur after the submission of the Certificate of Field Verification and Diagnostic Testing for a field verification rating and after the distribution of the HERS Report for a home energy rating.
 - C. These evaluations by the Provider's Quality Assurance personnel shall be documented in the Provider's database and include the results of all testing performed by the Provider's Quality Assurance personnel. If the Provider's Quality Assurance personnel determine that the Rater's results did not meet the criteria for truth, accuracy, or completeness of these regulations, then the Provider shall report the quality assurance failure on the Provider's Rater registry and Building Performance Contractor registry websites for a period of six months. In addition, the Provider's Quality Assurance personnel shall evaluate two additional ratings of the failed measure by the same Rater performed in the past 12 months. If a second deficiency is found, then the Rater shall have two percent (rounded up to the nearest whole number) of his ratings of the failed measure evaluated for the next 12 months by all Providers. The Provider's Quality Assurance Manager shall notify other Providers in writing or by electronic mail of Raters that are required to have additional quality assurance verification as required by this provision.
- 4) Additional Quality Assurance for Unrated or Untested Buildings or Installations.



- A. For houses or installations passed as part of a sampling group but not specifically field verified or rated by a Rater, the greater of one house or installation or one percent of all unrated or untested buildings or installations in groups sampled by the Rater shall be independently rated or field verified by the Provider's Quality Assurance personnel.
- B. These quality assurance verifications shall be blind tests in that the Provider shall not inform the installer, builder, or the Rater that the specific building or installation will be verified.
- C. The results of these quality assurance verifications shall be entered into the Provider's database. The Provider shall summarize the results of these quality assurance verifications and submit them to the Energy Commission on an annual basis and provide the Energy Commission with ongoing access to the database and associated summaries of the results of these verifications.
- 5) Complaint Response System. Each Provider shall have a system for receiving complaints. The Provider shall respond to and resolve complaints related to ratings and field verification and diagnostic testing services and reports. Providers shall ensure that Raters inform purchasers and recipients of ratings and field verifications and diagnostic testing services about the complaint system. Each Provider shall retain all records of complaints received and responses to complaints for five years after the date the complaint is presented to the Provider and annually report a summary of all complaints and action taken to the Executive Director.

(j) Conflict of Interest.

- 1) Providers shall be independent entities from Raters.
- 2) Providers and Raters shall be independent entities from the builder and from the subcontractor installer of energy efficiency improvements field verified or diagnostically tested.
- 3) Providers and Raters shall be independent entities from any firm or person that performs work on the home for a California Home Energy Audit or a California Whole-House Home Energy Rating. EXCEPTION to Section1673(j)(3): California Whole-House Home Energy Raters, who are working as or for a Building Performance Contractor certified under an Energy Commissionapproved Building Performance Contractor program as part of a Provider's Rating System as specified in Section 1674(e) of the regulations and in the HERS Technical Manual, shall not be required to be an independent entity from the person(s) or firm(s) performing the work on a home. This exception shall not apply to California Field Verification and Diagnostic Testing Raters performing field verification and diagnostic testing of newly constructed homes or alterations to existing homes to verify compliance with the requirements of Title 24, Part 6.



3 RATER CERTIFICATION

Once field and written technical examinations are passed, Rater must read, review and sign the following documents in order to be certified as a CalCERTS HERS Rater. Rater training and mentoring are continuous throughout the certification life of a CalCERTS HERS Rater. The Rater documents listed below are updated at each code cycle or as needed to adjust and improve the CalCERTS program.

- 3.1 SUBSCRIBER AGREEMENT APPENDIX I
- 3.2 RATER AGREEMENT APPENDIX II
- 3.3 RATER CODE OF ETHICS APPENDIX III
- 3.4 QUALITY ASSURANCE POLICY AGREEMENT APPENDIX IV

3.5 RATER LETTER TO HOMEOWNER

As part of CalCERTS Quality Assurance Policy, Raters shall provide standardized written notice to Homeowner on Alterations, and the Superintendent, Builder (or builder's representative) or Homeowner on New Construction. A copy of the Homeowner Letter follows:



31 Natoma Street, Suite 120 Folsom, CA 95630 916.985.3400 info@calcerts.com www.calcerts.com



Dear Homeowner:

The California Energy Commission has established a network of licensed special inspectors to independently verify that your Contractor installed your new or replacement furnace, air conditioner or duct work according to California's Title 24 Energy Efficiency Standards.

These special inspectors, called HERS Raters, are trained and licensed by a Provider who must be approved by the California Energy Commission. CalCERTS, Inc. is one of the approved Providers. These Providers are required to periodically check up on each Rater to see if they are accurately testing and assessing the Contractor's work. The state requires that we independently repeat the same tests the Rater conducted on a small sampling of the homes inspected. These are Quality Assurance visits, and we contract with special QA inspectors to conduct these visits. In order to accomplish this, we may ask for your help. We ask that you consider making your house available to us for this additional testing. There is no charge or cost to you for this QA visit. You are not obligated to let us conduct this visit, and your participation is entirely voluntary.

The QA inspector will run tests to verify the accuracy of the work done by the Rater who initially tested your system. The routine information we gather is intended for our internal use, and is not an indication that there is any problem with your furnace or air conditioner, nor does it indicate there is a problem with the Rater or the Contractor.

If you have any complaints or concerns about the initial Rater's work, or our QA inspectors, please e-mail <u>ga@calcerts.com</u>, or contact our Director of Quality Assurance, David Choo by phone at 916-805-5238. We will be happy to answer any questions or concerns.

Sincerely,

Much IC. Bach

Michael C. Bachand Chief Executive Officer CalCERTS, Inc.



4 QUALITY ASSURANCE STAFF

The below is an overview of the Quality Assurance Department staff.

4.1 QUALITY ASSURANCE STAFF

- Director/Manager of Quality Assurance: *David Choo*
- Quality Assurance Supervisor/Coordinator: Casandra Dentley
- QA Reviewers:

4.2 QUALITY ASSURANCE STAFF DESCRIPTIONS

4.2.1 QA Director/Manager

Develops Quality Assurance department objectives and oversees implementation of strategies to achieve program goals. Coordinates with department heads to ensure compliance with Title 24 HERS regulations and overall company objectives.

4.2.2 QA Supervisor/Coordinator

Supports QA Director/Manager with supervising overall implementation of strategies and oversees QA review and scheduling staff. Aids in preparation of external communication, Rater and QA team training.

4.2.3 QA Reviewers

In-house staff members that implement QA strategy and conduct Quality Assurance reviews.

4.2.4 Conflict of Interest Provision

CalCERTS HERS Provider does not maintain any financial interest through ownership of Builders, Subcontractors, Installers of energy efficiency improvements field verified or diagnostically tested. CalCERTS in an independent entity from Builders, Subcontractors, Installers of energy efficiency improvements field verified or diagnostically tested.

5 QUALITY ASSURANCE REVIEWS

5.1 OVERVIEW

CalCERTS has a robust Quality Assurance Program that is reported annually to the California Energy Commission.

Once a rating is completed by a Rater in the CalCERTS Registry, the information and results are recorded. The Registry then automatically generates a report of completed ratings for the CalCERTS Quality Assurance Coordinator to review. The QA Coordinator works with a team of schedulers to schedule randomly selected quality assurance reviews on Raters that need to be reviewed.



These reviews are conducted by the Quality Assurance team on a continuous basis throughout the year. CalCERTS has a strong record of documenting its efforts to perform quality assurance reviews on 100% of its Raters.

Raters are not informed that a building or installation will be field checked prior to the Rater entering their rating. After the completion of the QA review, Raters are typically provided a written summary of the review results, otherwise referred to as the QA Disposition. If discrepancies are found, an effort is made to further train the HERS Rater.

If a Rating is found to have significant discrepancies, the Rater is placed on disciplinary review as per Title 20 requirements. The Rater is notified of the discrepancies and become subject to increased scrutiny/discipline and additional quality assurance reviews are conducted on that Rater's projects. The quality assurance review failure is noted by the Rater's name on the CalCERTS website.

CalCERTS produced two (2) Quality Assurance videos for distribution to all stakeholders. The <u>first</u> <u>video</u> details a basic introduction of the Quality Assurance process homeowners. The <u>second video</u> provides Raters and installers a basic overview of what to expect during a QA review.

Raters are provided field compliance support through CalCERTS. If a Rater encounters a problem or unusual circumstance while performing field verification and diagnostic testing, or home energy rating, Raters can contact code experts in the CalCERTS support team.

CalCERTS QA team also uses a combination of <u>New Rater Initial Review</u>, <u>Field QA</u> and <u>Desktop QA</u> <u>Reviews</u>, CalCERTS QA Team follow systematic protocols to analyze Rater integrity and code comprehension. The QA Team also utilizes <u>data audits</u> and performance tracking tools, to support review findings. Once any form of review has been completed, it is documented and a *disposition notice* is sent to the Rater; often followed by discussion with the goal of further training and mentoring. If warranted, discipline is administered and Rater is notified.

5.2 NEW RATER INITIAL 5 RATINGS – DESKTOP REVIEW PROTOCOLS Title 20 Section 1673(i)(2)

Purpose: Once a candidate is certified as a CalCERTS HERS Rater, the <u>first 5 HERS Ratings</u> on "Tested Lots/Addresses" will be reviewed for potential errors. Evaluate if Rater is correctly recording all required data points for an accurate and complete HERS Rating.

CalCERTS uses hands-on labs where every student gets the opportunity to properly set up and test all the required HERS tests. Then, in addition, Raters are required to complete a field house review where an actual house, or a structure that contains all necessary components and conditions needed to perform the HERS tests, is used to verify the Rater's accuracy and completeness.

The CalCERTS Registry provides the first review of a new Rater's documentation for his or her first five (5) ratings, and beyond. The Registry is programmed to ensure that ratings are complete and verified. The Registry itself prevents a Rater from proceeding with incorrect information. The CalCERTS Quality Assurance Team then performs a desk audit of the values entered into the Rater's documentation to review the ratings for accuracy.



The primary objective of reviewing a new Rater's first ratings is to evaluate that the Rater is correctly recording all required data points for an accurate and complete rating. When a new Rater completes his fifth rating a message is sent to the QA Team to review the projects.

The QA Team reviews the registered CF1R, CF2R-MCH-01 and other information with regards to the subject property, to confirm the likelihood of chosen HERS verifiable features. Each CF2R and CF3R form is then reviewed to confirm they have been filled out correctly.

An example of what is confirmed is whether Nominal Cooling and Heating Capacities on all forms match, and whether they correspond with what is listed on the CF2R-MCH-01. Also reviewed are whether the Rater chose testing methods that are acceptable on a CF3R certification. The QA Team pays particular attention to fields where common mistakes can be made or where a Rater can potentially miscalculate a target.

5.2.1 Desktop Review of Initial 5 Rating

The following is a short excerpt of the CalCERTS Desktop Review protocols that were submitted to the CEC as part of our 2019 HERS Provider approval.

Step 1: QA Team reviews the registered CF1R, CF2R-MCH-01 and any information they can find with regards to the subject property, to confirm the likelihood of chosen HERS verifiable features.

Step 2: QA Team reviews each individual CF2R and CF3R forms to confirm they have been filled out correctly.

Example:

- CF2R-MCH-01-E
 - Confirm that installed equipment type model #s design outputs match manufacturer specs and/or AHRI performance data.
 - Confirm equipment efficiency values match manufacturer specs and/or AHRI performance data.
 - Confirm that recorded equipment model #s are designed to operate in concert with other listed model #s. (i.e. Gas Furnace with Condenser, Fan Coil with Heat Pump)
- CF3R
 - Confirm correct verifiable HERS measures are being called.
 - CF3R-MCH-20 Duct Leakage Diagnostic Test
 - Did Rater choose correct response for Section A06 Duct System Compliance Category?
 - Does Section B01 Condenser Nominal Cooling Capacity match recorded capacity on CF2R-MCH-01?
 - Does Section B02 Heating Capacity match recorded capacity on CF2R-MCH-01?
 - Did Rater select correct *Testing Method* in Section B05?
 - Did Rater section correct Airflow Method for leakage calculation in Section B07?



- The majority of the other aspects of this form are static and can't be manipulated by the HERS Rater.
- CF3R-MCH-23 Airflow Rate
 - Did Rater choose correct response for Section A03 System Installation Type? Does this correctly correspond with CF2R-MCH-01 data?
 - Does Section A04 Nominal Cooling Capacity of Condenser correspond with CF2R-MCH-01 data?
 - The registry is programmed as such that pull downs on Section A05-A06 must be correctly chosen in order to or not to call for Zonal testing.
 - If system is Zonally controlled with Single Speed condenser, did Rater record test results for individual zones?
 - Did Rater selection of C01 Airflow Rate Measurement Type correspond with sections C02-03?
 - Is the measurement apparatus recorded on sections C02-03 capable of measuring the Rater recorded Airflow? (i.e. Powered Flowhood 6200F maximum rated measurement per manufacturer spec is 500 cfm)

Additionally, all 5 HERS Ratings are reviewed together to look for potential commonalities that point to fabrication of results or unlikely patterns. An example would be:

- CF3R-MCH-20 Duct Leakage Diagnostic Test
 - Did every system the Rater test pass within 0-1 CFM of the target requirement?
 - Are the recorded results reasonably possible? Could the Rater potentially be using incorrect settings on his/her manometer or incorrect rings on the Duct Tester?
 - Did Rater record a passing result on all five (5) ratings using Option 3: Seal All Accessible Leaks?

Step 3: QA Team determines whether deficiencies are present. If a discrepancy is found, the QA Team contacts the Rater directly to discuss the discrepancies and to further the Rater's training. In the event that the Rater is not reachable through the phone, an email depicting how to correct the potential discrepancies is sent with a request for a phone conversation. The Rater will continue to be monitored to ensure deficiencies in understanding are corrected. In the event that a Rater fails to improve, discipline, such as mandatory retraining, suspension, or decertification, may be issued.

CalCERTS conducts these reviews without first informing the Rater. Particular emphasis is spent on ratings or measures with questionable recorded results.

QA results are recorded and each lot/address is flagged as *No Significant Discrepancies* or *Significant Discrepancies*.



5.3 FIELD QA REVIEW

Title 20 Section 1673(i)(3)

5.3.1 Scheduling

Per Title 20, CalCERTS daily operations have a strong focus on Field Quality Assurance Reviews. These reviews are scheduled and conducted <u>without</u> Rater knowledge or involvement as required by Title 20 Section 1673(i)(3)(B). The reviews are conducted after Rater has submitted Certificated of Field Verification and Diagnostic Testing for a field verification rating and after the distribution of the HERS Report for a home energy rating.

Note to Field Reviewer: When coordinating with the scheduling staff please be mindful of the time and resources required to successfully schedule a QA.

- Establish geographical target for QA and determine what QA Reviewers are available in that area.
- Search Options Мар Satellite Time One Pinerater 1 Day. Span One Pinerater 1 Week. One Pinerater 2 Weeks. One Pinerater 3 Weeks. One Pinerater 4 Weeks. One Day. One Week Two Weeks. asadona Three Weeks. Glendale Four Weeks. 100 210 all the San F Rater 7 Show All Alhambra Covina Baldwin Park Rosemead El Monte 10 West Covina Tests Show All ~ 00 Monterey Park Los Angeles 0 Company Show All ~ (2132Sq ft.) Viev -Wir Hills Performance TID TT Test Owed TA QTT QTA Huntington Park Level DUCTS 79 Status 0: Exemplary wood South Gate RCV 107 0 0 52 Status 1: Standard Fan Efficienc 0 5 0 Lynwood 105 Air Flov 49 0 Status 2: Mentor/Watch-list thorne Willo age Compton 🚾 ✓ Status 3: +2 Disciplinary Status A Needed Gardena Report OA 405 (91) Status 4: 2% Disciplinary Status Hide Lakewo bc 110 Scoring Simple Count Score. Anaheim orrance Carson (57) Method 405 60 O First Time Rater Cvpr (Never QA'ed). al Hill O Overall Weighted. 103 Orange O Highest Volume Weighted. Garden Grou T Long Beach
- Determine available pool of recent ratings in the geographical location.



• Determine how many or if QAs are required using individual Rater volume.

A Needed info view					
RATER Tester QA Tested	Lots				
TID	TT	Test Owed	ТА	QTT	QTA
DUCTS	476	5	558	7	1
RCV	397	4	362	5	3
DUCTS CONDITIONED	22	1	51	0	0
Fan Efficiency	466	5	550	7	3
Air Flow	464	5	542	7	3
BLDG LEAKAGE DIAGNOSTIC	179	2	82	1	1
QII AIS1	266	з	262	4	2
QII AIS2	264	3	265	4	2
QII INSTALLATION	264	3	265	4	2
RATED EQUIPMENT	289	3	339	7	2
IAQANDMV	448	5	473	6	1
HERS SD HWS DIST	23	1	21	0	0

- \circ TT = Total Tests conducted by Rater per measure.
- \circ Test Owed = Total QA owed at 1% per Title 20
- \circ TA = Total Associated lots recorded.
- QTT = Total Field QA Reviews conducted to date on *Tested Lots*
- QTA = Total Field QA Reviews conducted to date on Associated Lots.
- Use contact script appropriate for the type of contact (Alterations, New Construction, etc.). It is important that scheduler give no indication of any problems. Maintain that all QA reviews are routine and random.

5.3.2 Scheduling Priorities

At the beginning of every calendar year, tracking of the QA Program is reset and program goals are adjusted. At the forefront of goals, is to QA Raters that have not been reviewed in the prior calendar year and to influence positive change on HERS Raters. The following is a basic priority list that may change. Homes for review are selected on a random basis either per category or as a whole:

- 1) Raters that have never been Field QA'd (new Raters). Raters on disciplinary watch.
- 2) Raters that have not been Field QA'd in the previous calendar year. (This can occur for various reasons, ex. Rater only had a few projects and none were available for QA).
- 3) Raters that have not been Field QA'd in the current calendar year.
- 4) Additional QA to satisfy the evaluation of one percent of the Rater's past 12 month's total number of ratings on *tested* lots.
- 5) Additional QA to satisfy the evaluation of one percent of the Rater's past 12 month's total number of ratings on *associated (Sample Untested)* lots.

Note to Scheduler: If an investigation related to a legitimate complaint is ongoing, scheduling QA on that Rater will take precedence. As the HERS Program has become better recognized by consumers, complaint volume leading to prioritized QAs has increased but remains the priority.

5.3.3 Field Review Procedures

The following is an excerpt of our QA Field procedures. It is a partial snapshot of how a QA Field review is conducted. Protocols are regularly discussed and enhanced as our technical team notifies us of changes vetted with the CEC. Some portions of these protocols are what we've found assists us in



investigation of potential discrepancies. The procedures are constantly evolving and derived from field experience, trade knowledge and research.

5.3.3.1 PRE-SITE VISIT – Review project in the Registry.

1) Review Notes from Scheduler

- a) Review scheduler notes regarding homeowner or superintendent requests such as not taping to paint for duct testing, possible accessibility issues, and/or time constraints.
- b) Location: Many New Construction addresses cannot be located with GPS and will require cross street, sales office address and *likely a web search* for the project location. *Try to locate the project without contacting the superintendent*. It is also possible that project will be located in an area with no cellular reception so it important that you have a good idea of where the project is, prior to heading there.

2) Review Rater Results

- a) The goal is to duplicate the Rater's verifications and notate any variances.
- b) What type of project is it and what measures are required?
- c) Take note of methods the Rater used to conduct measures. (Duct Leakage: Total Leakage, Leakage to Outside, etc.)
- d) Take note of Rater results and targets.
- e) Look for any potential data entry errors.

3) Inform Point of Contact

- a) Prior to arrival, call Point of Contact (POC), and let them know approximately what time you will be arriving.
- b) If the POC is a superintendent of a large project with multiple lots, there is no need to contact them prior to arrival. Upon arrival, give them a call to introduce yourself.
- c) Please be courteous. You are there to conduct a routine QA inspection on a randomly selected home. You are NOT to give any indication that there might be a problem with the Rater, Builder, Installer or any party involved.

5.3.3.2 ON SITE VISIT – Relevant interviews, visual verification, testing and photos.

- 1) If relevant, introduce yourself and present CalCERTS QA Reviewer badge. Briefly explain the reason for your visit. Practice cleanliness and courtesy. If testing could potentially cause damage, cease and contact your supervisor or QA Director. If you encounter unsafe conditions, immediately contact your supervisor or QA Director.
- 2) Site Assessment and Scope of Work
 - a. Investigate if project falls under scope of New Construction, a Performance Addition or a Prescriptive Alteration? If the Rater recorded the project correctly, begin testing measures using same methods as Rater. If there are additional measures that should have been completed, and you believe are pertinent to this QA inspection, please conduct them as well. *Note: Always photograph the Title 24 Documentation when it is available, particularly with custom homes. If you can't locate them, general contractors likely have them on site (Docs are generally not available in production homes).*
 - b. If you suspect that the project is new construction or a performance addition, and it was incorrectly recorded as a prescriptive alterations project by the Rater, attempt the following:
 - Ask to see if the plans are available. Photograph the Title 24 section of the plans with a specific focus on the required *HERS measures* and the *Registration number*.



CERTIFICATE OF COMPLIANCE - RESIDENTI	AL PERFORMANCE COMPLIANCE METH	OD	CF1R-PRF-0			
Project Name: Single Family Residence	Calcu	ation Date/Time: 11:04, Wed, Oct 03, 2018	Page 2 of			
Calculation Description: Title 24 Analysis	Input	Input File Name: HIGHLAND 03 OCT.ribd16x				
	ENERGY DESIG	IN RATING				
Energy Design Rating (EDR) is an alternate way to Energy Services (RESNET) reference home charac						
Linety of these (nchart) if derived holds that combine components not regulated by Title 24, Part 6 (such jurisdictions pursuing local ordinances under Title As a Standard Design building under the 2016 Buil is provided for Information. Similarly, the EDR score energy can both be seen	s high levels of energy efficiency with renewal as domestic appliances and consumer electro 24, Part 11 (CALGreen). ding Energy Efficiency Standards is significar	ble generation to"zero out" its TDV energy. Becaus nics), it is not used to show compliance with Part tty more efficient than the baseline EDR building, t	se EDR includes consideration of 6 but may instead be used by local the EDR of the Standard Design buildin			
EDR of Standard Efficiency	EDR of Proposed Efficiency	EDR Value of Proposed PV + Battery	Final Proposed EDR			
49.0	48.7	0.0	48.7			
Design meets Tier 1 requirement of 15	% or greater code compliance margin (CALGr	een A4.203.1.2.1) and QII verification prerequisite.				
Design meets Tier 2 requirement of 30	% or greater code compliance margin (CALGr	een A4.203.1.2.2) and QII verification prerequisite.				
		nily in climate zone CZ3 (Oakland) (CALGreen A4.2) (EDR) of zero or less. The PV System must be ver				
Notes: Excess PV Generation EDR Credit: Bypassing P	V size limit may violate Net Energy Metering (N	IEM) rules				
REQUIRED SPECIAL FEATURES						
The following are features that must be installed as co	ndition for meeting the modeled energy performar	ce for this computer analysis.				
Ducts with high level of insulation Cool roof Ceiling has high level of insulation Non-standard duct location (any location other ti Central parallel piping	han attic) HERS P	ROVIDER				
HERS FEATURE SUMMARY						
The following is a summary of the features that must b	a field worified by a partition HEDS Datar as a par	dition for mosting the modeled energy performance fo	this computer analysis. Additional datai			
provided in the building components tables below.	e lieid-verilied by a certilied HERS Rater as a cor	unor for meeting the modeled energy performance to	This computer analysis. Additional detail			
Building-level Verifications:			-			
 High quality insulation installation (QII) IAQ mechanical ventilation 						
High R-value Spray Foam Insulation						
Cooling System Verifications: Minimum Airflow						
Verified EER						
Verified Refrigerant Charge Fan Efficacy Watts/CFM						
HVAC Distribution System Verifications:						
 Duct Sealing Verified low-leakage ducts in conditioned space 	must meet maximum 25 cfm leakage to outsid	e (RA3.1.4.3.8)				
Domestic Hot Water System Verifications:		-				
• None			-			
Projectation Number	Registration Date/Time:	UI	RS Provider: CalCERTS			
Registration Number: 218-P010272008A-000-000-000000 CA Building Energy Efficiency Standards - 2016 Reside		2010-10-00 11:10:10	eport Generated at: 2018-10-03 11:05:07			
A Dunuing Energy Eniciency Standards - 2010 Resid	enual compliance Report version - CFTR-0	202010-1140 Re	port Generated at. 2010-10-03 11.05.07			

- Consider whether the HERS Feature Summary could apply to this home and conduct the additional testing if possible. If there is any doubt, please contact your supervisor or QA Director.
- 3) If there is a significant discrepancy between QA and Rater results, the QA reviewer should attempt to figure out *why*.
 - a. Note any potential changes that might have occurred between time of rating and QA.
 - b. Actively investigate potential mistakes. Remember, once a discrepancy has been found, we are no longer bound by HERS protocol. Our goal is to use all means available to discover the potential cause of the discrepancy.
- 4) Abundant photography. Your photographs should tell a story. They are our visual description of your QA Inspection. Clear, descriptive photos are extremely helpful and necessary in explaining a possible reason for a failing QA.
- 5) When the situation permits it (altered home, or a custom home) where someone is available to answer questions, if possible, it is great to attempt to garner answers to questions regarding Rater testing or previous system condition in a way that does not alarm or give the homeowner/contractor any indication that there is anything wrong.
- 6) The QA Collection forms are designed to facilitate recording of important observations during your QA inspection.
- 7) Relevant Interviews (Some examples of questions to ask when relevant)
 - a. Superintendent/ construction manager (New Construction):
 - i. Location of continuous ventilation if not marked.



- ii. Location of insulation certificate if not in the attic or garage.
- iii. Verification of Rater testing for QII Framing Stage (usually not entered in the registry).
- iv. Copy of building plans to verify duct meet approved design for VLLDCS, Surface area reduction, Buried ducts, and Return duct design.
- b. Customer/ homeowner interview (Alterations):
 - i. Who was the person present when the HERS tests were performed?
 - ii. Is that person available to help answer some questions on the testing that was done?
 - iii. What kind of work did the installer do to HVAC system?
 - iv. Has anyone done any work on or near the ducts since the testing was completed?
 - v. Has anything been stored or removed from the duct area?
 - vi. Has anyone worked on the furnace or A/C since the testing was completed?
 - vii. When was the last time the air filter was replaced?
 - viii. How long did the HERS testing take?
 - ix. Do you recall seeing the types of equipment I'm (QA Reviewer) is using?
 - x. Do you recall seeing any other test equipment being used by the Rater?
 - xi. Were you given any indication of their test results?
 - xii. When Rater passed DLT with smoke: Do you recall the Rater using theatrical fog/smoke to verify the duct system's integrity and identify leaks?
 - xiii. Where did they connect the duct tester which grille?
 - xiv. Did they connect any gauges/equipment to the outside AC unit and run tests?
 - xv. Note anything unique that the homeowner remembered about the rater's visit protective gear, professionalism, and cleanliness?

Testing – QA Reviewer will repeat the rating for each measure *following the protocols recorded by the Rater whenever possible* – if not possible, the Reviewer will perform testing using another method for reference and note the difference.

5.3.3.3 QA Testing Procedures

5.3.3.3.1 Duct Leakage (DL):

- 1) When relevant, check for possible asbestos.
- 2) Conduct DL testing using established methodology.

NOTE: If system is Zoned, it is possible that a zone is closed. It is important to make certain all zones are open prior to duct testing.

- 3) If QA Results are different than Rater results, investigate to determine if there are any apparent mitigating circumstances.
 - a. Are all supply and return registers sealed? Is it possible you missed one? (i.e. closet, pantry, bathroom, behind furniture, etc.) Perform smoke test to confirm.
 - If registers are located on carpet floor, make attempt to seal underneath carpet. If results differ, seal to carpet and note the difference.
 - b. Is blower access closed? Are there any obvious areas of leakage such as a disconnected duct, gaps between equipment connections, etc.
 - c. Zoned Systems:

i.

a. If your results are significantly lower, is it possible you are testing with a zone closed?



- b. If your results are significant higher, is it likely Rater tested with a zone closed? Note type of zoning equipment. If possible, determine default zone damper positions when off.
- d. Set manometer to one smaller ring setting and record measurement. (*Ex: You initially tested with Duct Tester wide open with manometer set to wide open. Set manometer to Ring A while leaving the Duct Tester wide open, bring your pressure back to 25 Pa and record results.*)
- e. <u>Smoke Test</u>: Upon failed duct leakage test, conduct smoke test and note leakage locations. *NOTE: Smoke testing is extremely important with regards to achieving a conclusive QA. It is one of the most important tools in investigation.*
 - a. Bathroom exhaust fan that has been converted to a supply register
 - b. Closets. Hidden closets.
 - c. Garage
 - d. Hidden storage areas. These can be found on older homes where access is only available through the garage or other unordinary means.
 - e. Cabinets
 - f. Behind large furniture
 - g. Other
- f. Take note of obvious sources of leakage such as unsealed register boots, gaps between equipment connections, copper to coil intrusions, unsealed up-flow plenums, blower access loose or not sealing correct, etc.
 - a. When you witness loose tape at equipment connections, attempt to temporarily seal these locations and conduct testing again. Note difference.
- g. Note any use of unapproved tape to seal any portion of the equipment.

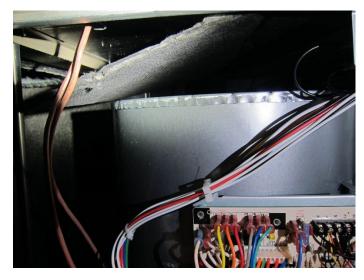
5.3.3.3.2 Duct Leakage with Pancake Style Fan Coil:

- 1) On occasion, you will come across a pancake style fan coil in an apartment unit
 - a. Test as you would normally.
 - b. If the system fails, please tape shut the fan coil access panel and measure the DL again. Note the difference in results in your QA summary.

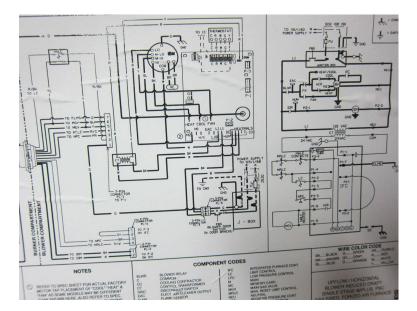
5.3.3.3.3 <u>Airflow (AF)</u>:

- 1) Note size of return ducts and size of filter grilles.
- 2) Record furnace and coil model numbers.
- 3) Open all supply grilles.
- 4) Measure "start-up" airflow.
- 5) Measure airflow at high speed.
- 6) Locate HSPP/PSPP and note if labelled. (It can often be a hole without a label)
- 7) If airflow is significantly lower than Rater airflow, remove air filter, note its condition, and measure airflow without filters installed.
- 8) If airflow is significantly lower than Rater airflow, note possible mitigating circumstances.
 - a. Is filter heavily caked with dirt or other?
 - b. Does the return duct appear to be damaged?
 - c. Do any supply ducts appear to be crushed?
 - d. It is possible that something is blocking airflow pathway to the blower? (i.e. blower cabinet insulation coming loose, dirty air filter being sucked into return area, etc.)

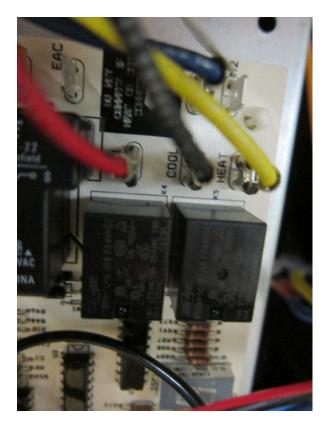




- e. Is it possible the blower motor is drawing air from somewhere other than is being measured? (i.e. recent leak in return duct or return area?)
- f. Photograph blower speed chart as well as circuit board and where blower wires are connected to the board. In some rare cases where there are speed DIP switches, photograph schematic and switch positions.







g. It is also very helpful (when possible) if return/supply duct sizes and design are noted and photographed. Using the following chart, determine if adequate duct has been installed to meet recorded airflow target. Note, that on some more uncommon situations, a high static blower will be installed and system may be able to produce higher airflow than listed on this chart. In that event, photograph of air handler nameplate and in rare cases, the model # of any retrofit blower will help with this determination.

Flexible Duct							
Duct Size	Design Airflow CFM						
5"	50						
6"	75						
7"	110						
8"	160						
9"	225						
10"	300						
12"	480						
14"	700						
16"	1000						
18"	1300						
20"	1700						

Round Metal Pipe							
Duct Size	Design Airflow CFM						
5"	60						
6"	85						
7"	125						
8"	180						
9"	250						
10"	325						
12"	525						
14"	770						
16"	1200						
18"	1500						
20"	2000						

- 9) Is it possible or likely that Rater used a different method to measure AF than was listed on CF3R? Here are *some* examples where you may want to use an alternative method of measuring AF.
 - a. Did Rater list the use of a Flowgrid when there are multiple returns throughout the home? It is possible in this scenario that it is being used incorrectly as all return grilles must be fitted with a Flowgrid at time of testing, or a single grid should be installed at filter rack at air handler. Few Raters maintain multiple grids.



- b. Did Rater record an unusually high AF result using a Flowhood when the return uses wall cavity and could not be pressurized for Duct Leakage?
- c. Does the flowhood not fit in front of the grille in a hallway? (Please attempt to get the best AF you can accomplish using your hood collapsed without poles installed). Use
- d. Rater recorded use of a Flowgrid when there is no HSPP installed.
- e. Did Rater possibly use an unapproved device such as a handheld anemometer? (Show homeowner/contractor laminated photo of airflow devices and have them point at what was used.)

10) If Zonally Controlled

- a. Note whether condenser has single or multi-speed compressor.
- b. Set all thermostats to cooling (all zones calling), measure all returns and record fan watt draw.
- c. Turn off one thermostat and note what zone remains on. Measure all returns and record fan watt draw.
- d. Turn on the zone that was off, turn off the zone that was on. Measure all returns and record fan watt draw.
- e. Note any obvious issues with zone controls.
- f. Note any zonal testing failures.
- 11) If Airflow Remediation was used
 - a. Visually inspect along with remediation checklist if applicable.
 - b. Note if system would likely have passed using another method of measurement.

5.3.3.3.4 <u>Airflow w/ Grid Inside Blower Housing:</u>

- 1) Pull disconnect at the condenser or turn off the breaker to the condenser. Having the condenser cycle multiple times in a short period time can cause it to shut itself down until pressurizes equalize and that can take an hour or more. *Note: If a communicating condenser is installed such as a Carrier Infinity, Lennox XC25, etc., this may not be possible as the system will often not allow itself to engage high speed without condenser signal. In this event, take extra precautions and allow condenser additional time between cycles.*
- 2) When conducting a Flowgrid airflow test where there is no filter rack at the air handler, place the grid plate into the air handler (if possible) and wait for system to come back to high speed before taking measurement.
- 3) Prior to leaving, confirm condenser has power.

5.3.3.3.5 <u>Airflow w/ Grid at Non Filter Grille:</u>

 In the event Rater records use of Flowgrid on an up-flow California closet unit with non-filter grille, note the size of the grille. TEC manual states grid plate should be placed in such a way that airflow evenly flows across the plate. If the size of plate to return is mismatched, note results. When possible, follow proper Flowgrid protocol and note results.

5.3.3.3.6 Fan Efficacy (FE):

- 1) Note your watt draw result.
- 2) If QA Results are significantly different than Rater results, investigate to determine if there are any apparent mitigating circumstances.



- a. Is there anything else drawing wattage from the dedicated furnace/fan coil circuit? (i.e. attic light, condensate pump, UV light, electro static filter, etc)
- b. Note if air handler size and outdoor unit size are mismatched. Consider possibility that oversized air handler was installed instead of correctly sized ducts in order to meet airflow.
- c. Attempt to attain watt draw with only the blower motor in operation. Keep in mind that once the condensate pump is disconnected, depending on conditions, you have a limited time to collect watt numbers before the accumulated moisture must be removed.
- d. Is the filter brand new? Is it possible the filter was very dirty during HERS Testing?
- e. When Rater records use of digital or analog utility meter, do you see any obvious areas where the math might be incorrect?

The formula for determining watt draw is:

$P = \frac{Kh \, x \, N, Rev \, x \, 3600}{T, Rev}$

Where P = Power in Watts.

Kh = Is the calibration factor found on the front of the meter.

N,Rev = Number of revolutions in greater than 90 second period. This must

be a whole number.

3600 =is a standard number to use for the equation.

T,Rev = Time to complete the next whole revolution.

5.3.3.3.7 <u>Refrigerant Charge Verification (RCV)</u>:

Important Note: Condensers and Heat pumps are designed to restart with a 5 minute rest period. Generally, the thermostat and circuit board work in unison to make certain that when you remove the blower access door or turn the system on and off, that a 5 minute time delay will go into effect. There are situations where this has been circumvented or it isn't designed into the system. Please make certain you are not continuously turning condenser on and off as you can damage the compressor.

- 1) Use standard RCV protocol when conducting QA, and if possible, measure with highest airflow possible (with filter installed) and/or All Zones Calling.
- 2) Locate MAH and note if labelled. (It can often be a hole without a label)
- 3) Note if liquid line filter drier is installed. (Possible locations: At evaporator coil, near service valves of condenser/heat pump, inside condenser)
- 4) If return DB temp is below required, attempt to heat home at least 7-10 degrees over requirement and note in your summary.

Note: Do not test if both indoor and outdoor dry-bulb temps are below requirement.

- 5) If QA Results are significantly different than Rater results, investigate to determine if there are any apparent mitigating circumstances.
 - a) Did you wait 15 minutes? Many condensers and their respective TXVs cause a sudden change in SC result after 12-15 minutes.
 - b) Are you using correct SC target? Did rater use correct SC target?
 - c) Is there evidence of refrigerant leaks? (oil near service valves or braising areas)
 - d) Service port cap missing, or under pressure when you removed the cap?
 - e) When using quick release hoses, make certain they are screwed all the way in, as they can give abnormal readings if only partially screwed in.
 - f) Did you shade the copper area being measured with thermocouple clamps?
 - g) Did you protect the thermocouple clamps from any other influence? Ex. Slimline unit moving exhaust air over clamps.



- h) Is the TXV bulb properly installed and insulated?
- 6) Troubleshooting and Other Situations:
 - a. If suction and liquid line pressures are similar and compressor is making loud noises, turn off system and let it rest for 5-10 minutes and then restart.
 - b. If upon hooking up gauges, you find liquid line pressures above 400psi **AND** compressor is uncommonly loud, quickly see if subcool is excessively high. If it is, turn off immediately and do not test further. Damage to compressor may occur.
- 5.3.3.3.8 Building Envelope:
 - 1) Go over QA Collection checklist and prepare home for blower door per standard protocols.
 - 2) Take baseline readings as required for the code year standard.
 - 3) Note exterior and interior DB temps.
 - 4) For the purposes of QA, IAQ Fan may be taped shut **IF** it is a continuous operating fan. It may not be covered if intermittent or CFI.
 - 5) If QA Results are significantly different than Rater results, investigate to determine if there are any apparent mitigating circumstances.
 - a) Are there any obvious areas where a significant amount of leakage could be occurring?
 - b) Do you have the correct ring and manometer setting?
 - c) Set manometer to one smaller ring setting and record measurement. (*Ex: You initially tested with Blower Door fan with B ring setting and manometer set to B. Set manometer to Ring to C while leaving the B ring in the Blower door fan and record result*)



5.3.3.4 PHOTO CHECKLIST

General

- □ Front of house w/ address
- □ Condenser + Specifications tag
- □ Furnace + Specifications tag
- □ Indoor coil + Specifications tag

Duct Leakage Test

- □ Duct tester setup with ring configuration
- □ Manometer reading
- □ Ducts
- □ Air Handler and Plenums
- □ Examples of duct taping / joints
- □ Supply boot (typical)
- □ Supply grill (typical)
- □ Return Grill
- □ Inside Return
- □ Filter
- □ Accessible Leaks

Fan Efficacy

- □ Watt Draw reading
- □ Hardwired connection
- □ Utility Meter

Refrigerant Charge

- □ Supply Plenum
- □ Return Plenum
- □ MAHs
- □ Gauge & Digital Thermometer setup
- □ Gauge Readings
- □ Tsuction / Tliquid
- □ Tcond DB
- Treturn DB
- □ Tsupply
- □ Subcooling Target from Cond. Label
- □ Subcooling Target from inside panel
- □ Superheat Target

Rated Equipment - SEER, EER

- □ Condenser + Specifications tag
- □ Furnace + Specifications tag
- □ Indoor coil + Specifications tag
- □ Thermostat

QII

- □ ENV-21 All Framing Stage Failures
- □ ENV-22 All Insulation Stage Failures



		Insulation Certificate
	Airflow	Attic Ruler Depth
	"Startup" Airflow reading	Tape Measure Depth
	Tested Airflow reading	Cookie Cutter
	HSPPs	Scale Insulation Weight
	Supply Plenum	
	Return Plenum	Blower Door Test
	Return Grill	Blower Door setup
	Inside Return	Manometer Reading
_		

Filter

Note: As a reminder, photograph documentation of QA Review is extremely important. There can never be "too much" documentation.

5.4 DESKTOP QA REVIEW

Desktop QA Reviews are conducted on a random sample of a Rater's recorded work. It was first implemented in 2020 as a response to the COVID-19 pandemic. It is currently only (with some minor exceptions) conducted on Exemplary Raters that have undergone scrutiny through *Field QA Reviews*. Its use aids the QA Team in targeting our field efforts on New Raters and Raters under heightened scrutiny by reducing resource use on Raters with established Field QA histories, while still meeting the mandates of Title 20.

Much of the protocol in a Desktop QA Review mimic CalCERTS protocols for "New Rater Initial 5 Ratings".

This form of review is instrumental in locating potential issues with data entry and also aids in increasing the quality of Rater recorded data. It provides continuing opportunities for instruction and training on new technologies, or to strengthen areas where a Rater has less experience. Locating such areas can be invaluable in supporting Raters as they progress into more complex types of HERS verifications.

Because of the nature of the review, it necessitates a larger sampling of data to be effective. Generally, 5 ratings are selected at random and used as a sample for a *Desktop QA Review*.



6 QA REGISTRY

CalCERTS has built a QA Registry for management of its QA Program. It is a parallel data storage and processing database, separate from the HERS Registry. It is for internal use and not available to the public. It is one of CalCERTS primary tools for recording QA results and tracking Rater performance.

Within this management database, the results of the 3 types of aforementioned QA Reviews are documented and much of the supporting information and data is stored, including but not limited to photographs, QA Reviewer comments, and analysis. The registry also hosts a series of QA specific tools that assist in data audit and in preparation of Rater disposition email notices.

6.1 QA REVIEW DOCUMENTATION

All Quality Assurance Review attempts and results are documented in the QA Registry database and linked to individual Rated lots within a project. All Quality Assurance Review records and documentation are stored for a minimum of 5 years.

6.1.1 Internal Document Headers

The following is a partial snapshot of internal documentation requirements. All results are stored in the QA Registry and can be produced into a spreadsheet as the QA Log.

- Result of scheduling attempt
- Rater
- Rating Firm
- Rated Address
- Installers
- Lot ID
- Description if lot is Tested or Sampled(Untested).
- Measures QA Reviewed
- Date of Rating
- Date of Quality Assurance Review
- QA Reviewer
- Final Disposition

6.1.2 Additional QA Documentation

Further, the following are additional review requirements that may be recorded when needed or possible:

- Homeowner interview
- Mechanical equipment location
- Investigation notes
- Analysis notes
- Photographs

6.2 QA USER PAGE

A QA User Page is maintained for each certified CalCERTS Rater. The fields/categories on this page are described in more detail below. Some of the important QA functions it serves are:



- Maintains Photo of Rater that is occasionally used to confirm Rater was present at HERS rating.
- Controls ability for Rater to record HERS documentation.
- Controls public display of Rater in disciplinary status.
- Controls internal Rater Performance Level.
- Shows most recent company associations.
- Allows access to Field QA Disposition History.

CalCERTS - QA Users

Name:	David Choo					
Address:	31 Natoma St Suite 12	20				
Address	Folsom, CA 95630	16				
	Home: Office:	2				
Phone:	Mobile:					
	Fax:					
E-Mail: C20 License:						
JSER Status:	Active	~				
RATER Status:	Active	~				
CalCERTS Certification:						
Date Licensed:						
	[HISTORY]					
History:	[HOME ENERGY DETA [12 Month Performan				044	ISTORY
					QAH	<u>ISTORY</u>
Public Display QA Level:	Level 1 (1%)	~	add to watchlist			
Rater Performance Level:	Status 0: Exemplary	~				
Rater Performance Level: Rater Performance Level	Performance Level ch	anged by David				
	Performance Level ch Performance Level ch	anged by David anged by David	Choo 9/19/2019 t	o 1		
Rater Performance Level	Performance Level ch Performance Level ch Performance Level ch Performance Level ch	anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0	ven TEST	
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Rater Performance Level	Performance Level ch Performance Level ch Performance Level ch Performance Level ch	anged by David anged by David anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0 o 1 Reason Gi	ven Because	
Rater Performance Level	Performance Level ch Performance Level ch Performance Level ch Performance Level ch Performance Level ch	anged by David anged by David anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0 o 1 Reason Gi	ven Because	David is so re Changes
Rater Performance Level	Performance Level ch Performance Level ch Performance Level ch Performance Level ch Performance Level ch awesome!!!	anged by David anged by David anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0 o 1 Reason Gi o 0 Reason Gi	ven Because	
Rater Performance Level Log:	Performance Level ch Performance Level ch Performance Level ch Performance Level ch Performance Level ch awesome!!!	anged by David anged by David anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0 o 1 Reason Gi o 0 Reason Gi	ven Because	ve Changes
Rater Performance Level Log:	Performance Level ch Performance Level ch Performance Level ch Performance Level ch Performance Level ch awesome!!! <u>2008 Standa</u>	anged by David anged by David anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0 o 1 Reason Gi o 0 Reason Gi	ven Because	
Rater Performance Level Log: Company Association	Performance Level ch Performance Level ch Performance Level ch Performance Level ch Performance Level ch awesome!!! <u>2008 Standa</u>	anged by David anged by David anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0 o 1 Reason Gi o 0 Reason Gi	ven Because	re Changes Main
Rater Performance Level Log: Company Association	Performance Level ch Performance Level ch Performance Level ch Performance Level ch Performance Level ch awesome!!! <u>2008 Standa</u>	anged by David anged by David anged by David anged by David anged by David	Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t Choo 9/19/2019 t	o 1 o 0 o 1 Reason Gi o 0 Reason Gi	ven Because	ve Changes



6.2.1 Public Display QA Level Field

This field in the Rater profile controls the Rater's disciplinary display on public website. Title 20 requires Providers to make a notification if a Rater has failed a QA Review. When required, the QA Registry triggers the notification to the CalCERTS public website of the Rater's status. A failed QA would result in a notification similar to: *"This Rater failed a random Quality Assurance Field Review in the last six months"* as required per **Title 20 Section 1673(i)(3)(C).**

6.2.2 Rater Performance Level

Each HERS Rater is placed on a specific *Performance Level* which is determined by the QA Director with the support and advice of QA Staff. The *Rater Performance Level* determines quantity and types of QA Reviews for each Rater. The following are possible qualifications and resulting actions.

6.2.2.1 Status 0: Exemplary

- Rater has passed multiple *Field* QAs without significant discrepancies. (Note: Desktop QAs are not a means for qualifying for Exemplary status)
- Rater is likely ethical and has strong desire to enforce HERS code. This is established through QA scrutiny of Field and Desktop QA, along with any communications between QA staff and Rater. Homeowner interviews and other potential factors are considered for qualification.
- Reduced Field QA scrutiny. Increased Desk QA scrutiny.

6.2.2.2 Status 1: Standard

- Rater is new or we have limited/insufficient QA/contact history to make further determination.
- Standard Field QA scrutiny.

6.2.2.3 Status 2: Mentor/Watch-list

- Rater requires mentoring or is placed on watch-list because of concerning QA Field discrepancies.
- Notice is sent of significant discrepancies found in Field QA.
- Rater has large number of projects with incorrect contact info.
 - Notice should be sent regarding this violation of QA agreement.
- Valid complaint filed on Rater.
- Addition Field and Desktop QA scrutiny.

6.2.2.4 Status 3: +2 Disciplinary Status (Status displayed on public website)

- Field QA and/or internal audits show repeated significant discrepancies. Significantly increased scrutiny of Rater. Possible investigation.
- Details found in section: <u>Discipline\+2 Disciplinary Status</u>

6.2.2.5 Status 4: 2% Disciplinary Status (Status displayed on public website)

- Field QA and/or internal audits show continued significant discrepancies. Investigation and further discipline pending.
- Details found in section: <u>2% Disciplinary Status (Status displayed on public website)</u>



6.2.2.6 Suspension/Decertification:

- Investigation has found Rater performance to be inconsistent with *Title 24 HERS* requirements and/or *CalCERTS Code of Ethics* and/or *CalCERTS QA Policy*.
- Details found in section: <u>Suspension/Decertification:</u>

6.3 QA HISTORY FIELD

Displays Rater Field QA History with dispositions and links to QA Notes.

Company	Date	Disposition	Address	QA Date	Ву
tatus					
	09-09- 2020	09-24-20 Notice: No Significant Discrepancy - AF, RC		09-24- 2020	
				NOTICE - NSD	
	01-28- 2019	02-21-19 Notice: No Significant Discrepancy - DL, AF, FE, RE, IAQ Indeterminate - RC, Surface Area Reduction		02-06- 2019	
				NOTICE - NSD	
	12-20- 2018	01-16-19 Notice: No Significant Discrepancy - DL, AF, FE, IAQ No Notice Sent - Associated		12-28- 2018	
				NOTICE - NSD	
	12-20- 2018	01-16-19 Notice: No Significant Discrepancy - DL, AF, FE, IAQ		12-28- 2018	
				NOTICE - NSD	
	10-01- 2018	10-12-18 Notice: No Significant Discrepancy - DL, AF, FE, RCV, IAQ		10-17- 2018	
				NOTICE - NSD	
	03-13- 2018	3/23/2018 Notice: No Significant Discrepancy - DL, AFR, FE, IAQ		03-21- 2018	
				NOTICE - NSD	
	01-30- 2018	02-02-18 Notice: No Significant Discrepancy - DL, AF, FE, RE, IAQ		02-02- 2018	
				NOTICE - NSD	
	01-16- 2018	1/26/2018 Notice: No Significant Discrepancy - DL		01-21- 2018	
				NOTICE - NSD	

6.4 DATA AUDIT TOOLS

Data Audit tools within the QA Registry assist the QA team in analysis of potential problems or patterns with a Rater or Installation company. Some of the following tools can be used for additional scrutiny of any CalCERTS Rater. (*Note: Audits and Reports are extremely processor intensive. Some reports have the ability to severely impact functionality of the registry. Use is very limited during peak hours. QA*



Reports can require careful manual scrutiny as they are incomplete (out of context) without crossreferencing with other data sources in the Registry.)

6.4.1 HERS Measures Audit

Data audits of recent Rater work facilitate finding potentially concerning patterns. The following are some examples.

Duct Leakage (Passing Audit): Note the example below of a clean data audit. It displays the last few dozen projects containing Duct Leakage testing by a Rater. It can be sorted by different columns to help with analysis. Column 3021(*Actual Duct Leakage Rates*) signifies Rater recorded results for different HVAC systems. Compared to column 3020(*Calculated Target Allowable Duct Leakage*), the leakage results are random. Further, column 3006(*Duct System Compliance Category*) shows likely randomness.

											3021
						3014				5	Actual
						Conditio					duct
				3012		ned Floor				3020	leakage
				Condens		Area					rate from
				er		served by				d Target	
				Nominal	3013	this					test
				Cooling	Heating	HVAC	3016 Duct	3017	3018 Air Handling Unit	e Duct	measure
	Recorded	Tested	3006 Duct System	-	Capacity				Airflow (AHUAirflow)	Leakage	ment
Address		Date	Compliance Category	(ton)	(kBtu/h)	100 To	Method	Factor	Determination Method	(cfm)	(cfm)
Address		2020-09-29		10000	N/A	N/A	TotalLeakage		CoolingSystemMethod	180	103
			Replacement	-	N/A	N/A	TotalLeakage		CoolingSystemMethod	50	46
		2020-03-10		-	N/A	N/A	TotalLeakage		CoolingSystemMethod	240	239
			AlterationUsingSmokeTest	-	N/A	N/A	TotalLeakage		CoolingSystemMethod	180	242
		2020-10-22		N/A		N/A	TotalLeakage		HeatingSystemMethod	56	56
		2020-10-14			N/A	N/A	TotalLeakage		CoolingSystemMethod	300	209
2			AlterationUsingSmokeTest		N/A	N/A	TotalLeakage		CoolingSystemMethod	120	206
<u>-</u>		2020-10-13		N/A	N/A	N/A	TotalLeakage		MeasuredAirFlowMethod	51	46
CA,92028		2020-10-09			N/A	N/A	TotalLeakage	0.000	CoolingSystemMethod	60	56
		2020-09-18		-	N/A	N/A	TotalLeakage		CoolingSystemMethod	240	205
		2020-09-17		-	N/A	N/A	TotalLeakage		CoolingSystemMethod	300	176
	2020-10-23	2020-09-15	New	N/A		N/A	TotalLeakage		HeatingSystemMethod	52	42
	2020-09-14	2020-09-14	Alteration	4	N/A	N/A	TotalLeakage		CoolingSystemMethod	240	234
			AlterationUsingSmokeTest	-	N/A	N/A	TotalLeakage		CoolingSystemMethod	300	502
	2020-08-21	2020-08-21	AlterationUsingSmokeTest	4	N/A	N/A	TotalLeakage		CoolingSystemMethod	240	561
	2020-08-14	2020-08-14	AlterationUsingSmokeTest	N/A	32	N/A	TotalLeakage	0.15	HeatingSystemMethod	104	529
	2020-07-29	2020-07-29	New	N/A	57	N/A	TotalLeakage	0.05	HeatingSystemMethod	62	58
	2020-07-22	2020-07-22	Alteration	4	N/A	N/A	TotalLeakage	0.15	CoolingSystemMethod	240	175
	2020-07-17	2020-07-17	Alteration	4	N/A	N/A	TotalLeakage	0.15	CoolingSystemMethod	240	192
	2020-07-08	2020-07-08	Alteration	5	N/A	N/A	TotalLeakage	0.15	CoolingSystemMethod	300	139
	2020-10-02	2020-10-02	New	2	N/A	N/A	TotalLeakage	0.05	CoolingSystemMethod	40	38
L5	2020-10-23	2020-10-23	ReplacementUsingSmokeTest	2.5	N/A	N/A	TotalLeakage	0.06	CoolingSystemMethod	60	62
15	2020-10-23	2020-10-23	New	3	N/A	N/A	TotalLeakage	0.05	CoolingSystemMethod	60	54
	2020-10-21	2020-10-21	New	2	0	1270	TotalLeakage	0.06	CoolingSystemMethod	48	38
	2020-10-21	2020-10-21	New	2	0	1203	TotalLeakage	0.06	CoolingSystemMethod	48	46
	2020-10-15	2020-10-15	Alteration	5		2420	TotalLeakage	0.15	CoolingSystemMethod	300	126
	2020-10-15	2020-10-15	Alteration	5	0	2420	TotalLeakage	0.15	CoolingSystemMethod	300	131
	2020-10-13	2020-10-13	New	3	0	1200	TotalLeakage	0.05	CoolingSystemMethod	60	53
	2020-10-05	2020-10-05	New	2	0	748	TotalLeakage	0.05	CoolingSystemMethod	40	39
	2020-10-02	2020-10-02	Alteration	3	0	3199	TotalLeakage	0.15	CoolingSystemMethod	180	165
	2020-10-01	2020-09-21	New	5	0	3644	TotalLeakage	0.05	CoolingSystemMethod	100	94
115	2020-09-15	2020-09-15	New	4	0	1198	TotalLeakage	0.05	CoolingSystemMethod	80	73
	2020-09-01	2020-09-01	New	0	38.4	1372	TotalLeakage	0.05	HeatingSystemMethod	42	38



Duct Leakage (Failing Audit): Note the example below of a concerning data audit. Column 3021(*Actual Duct Leakage Rates*) signifies Rater recorded results for different HVAC systems. Compared to column 3020(*Calculated Target Allowable Duct Leakage*), the *Actual Duct Leakage Rates* are commonly 2-3 cfm below the targets. This is extremely unlikely. Further, column 3006(*Duct System Compliance Category*) shows an unlikely scenario given this Rater <u>only</u> conducts *Alterations Projects HERS testing*. There can be legitimate reasons for this data audit, but it is an immediate internal red flag to increase scrutiny of a Rater.

											3021
						3014					Actual
						Conditio					duct
				3012		ned Floor				3020	leakage
				Condens		Area					rate from
			3006 Duct			served by				d Target	leakage
			System	Nominal	3013	this			3018 Air Handling Unit		test
			Complian		Heating	HVAC	3016 Duct	3017	Airflow (AHUAirflow)	e Duct	measure
	Recorded	Tested	ce		Capacity				Determination	Leakage	ment
	Date	Date	Category	(ton)	(kBtu/h)		Method	Factor	Method	(cfm)	(cfm)
		2018-10-13		5		-	TotalLeakage		CoolingSystemMethod	100	96
		2018-10-21		5	57		TotalLeakage		CoolingSystemMethod	100	97
		2018-10-10		5	65		TotalLeakage		CoolingSystemMethod	100	97
		2018-10-13		5	63		TotalLeakage		CoolingSystemMethod	100	96
		2018-10-13		5	65		TotalLeakage		CoolingSystemMethod	100	98
		2019-01-01		5	67		TotalLeakage		CoolingSystemMethod	100	97
		2018-12-12		5	89		TotalLeakage		CoolingSystemMethod	100	97
		2018-11-10		5	64		TotalLeakage		CoolingSystemMethod	100	97
		2018-10-28		5	67		TotalLeakage		CoolingSystemMethod	100	97
		2018-08-29		5	65		TotalLeakage		CoolingSystemMethod	100	97
		2018-12-07		5	89		TotalLeakage		CoolingSystemMethod	100	97
		2018-11-01		5	65		TotalLeakage		CoolingSystemMethod	100	96
275		2018-10-21		5	68		TotalLeakage		CoolingSystemMethod	100	97
		2018-10-13		5	65		TotalLeakage		CoolingSystemMethod	100	96
		2019-01-17		4	65		TotalLeakage		CoolingSystemMethod	80	78
		2018-10-30		4	65		TotalLeakage		CoolingSystemMethod	80	78
	2018-10-24	2018-10-24	New	4	68		TotalLeakage		CoolingSystemMethod	80	77
	2018-09-21	2018-09-21	New	4	65		TotalLeakage		CoolingSystemMethod	80	77
	2018-12-11	2018-12-11	New	4	65	1300	TotalLeakage	0.05	CoolingSystemMethod	80	77
	2018-10-28	2018-10-28	New	4	65	1800	TotalLeakage		CoolingSystemMethod	80	76
	2019-01-08	2019-01-08	New	4	87	1700	TotalLeakage		CoolingSystemMethod	80	78
	2018-12-11	2018-12-11	New	4	56	2000	TotalLeakage	0.05	CoolingSystemMethod	80	77
	2018-12-20	2018-11-27	New	4	49	1800	TotalLeakage	0.05	CoolingSystemMethod	80	78
	2018-11-20	2018-11-02	New	4	65	1500	TotalLeakage	0.05	CoolingSystemMethod	80	78
	2018-09-25	2018-09-25	New	4	71	1600	TotalLeakage	0.05	CoolingSystemMethod	80	77
	2019-01-06	2019-01-06	New	4	65	1200	TotalLeakage	0.05	CoolingSystemMethod	80	78
	2018-12-28	2018-12-28	New	0	85	600	TotalLeakage	0.05	HeatingSystemMethod	92	87
	2018-12-17	2018-12-17	New	4	58	1900	TotalLeakage	0.05	CoolingSystemMethod	80	78
	2018-09-16	2018-09-16	New	4	63	1400	TotalLeakage	0.05	CoolingSystemMethod	80	77
	2019-01-24	2019-01-24	New	3.5	65	1500	TotalLeakage	0.05	CoolingSystemMethod	70	67
	2018-12-18	2018-12-18	New	3.5	56	1600	TotalLeakage	0.05	CoolingSystemMethod	70	68
	2018-09-26	2018-09-26	New	3.5	65		TotalLeakage	0.05	CoolingSystemMethod	70	67



Airflow (Passing Audit): Note the example below of a clean data audit for Airflow testing. Column 7024(*Actual System Airflow Rate*) is random and within common tolerances when compared to column 7023(*Required Minimum System Airflow Target*).

7003 System Installation Type	7004 Nomin al Coolin g Capaci ty (tons) of Conde nser	7005 Condenser Speed Type	7006 Cooling System Zonal Control Type	7009 Date of System Airflow Rate Measurem ent	7010 Airflow Rate Protocol utilized	7013 Airflow Rate Measurement Type used for this airflow rate verification.		number of Airflow Measure ment	Airflow Rate	7023 Require d Minim um System Airflow Target (cfm)	Actual System Airflow
Alteration		N/A	N/A			TraditionalFlowCap	ALNOR	731	300	1500	1712
Alteration		N/A	N/A			TraditionalFlowCap		731	300	1500	1629
Alteration		N/A	N/A	06/25/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	1542
Alteration		N/A	N/A	07/08/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	1334
Alteration	5	N/A	N/A	05/21/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	1328
Alteration	5	N/A	N/A	09/08/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	1223
Alteration	5	N/A	N/A	06/04/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	1126
Alteration	5	N/A	N/A	10/14/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	1115
Alteration	5	N/A	N/A	05/12/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	1022
Alteration	5	N/A	N/A	05/19/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1500	697
Alteration	5	N/A	N/A	05/07/2020	AirflowRate	TraditionalFlowCap	Anor	731	300	1500	585
Alteration	4	N/A	N/A	09/14/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1200	1264
Alteration	4	N/A	N/A	08/21/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1200	1250
Alteration	4	N/A	N/A	08/21/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1200	956
Alteration	4	N/A	N/A	05/12/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1200	954
Alteration	4	N/A	N/A	05/12/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1200	509
Alteration	4	N/A	N/A	05/07/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1200	362
Alteration	3.5	N/A	N/A	05/21/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1050	1104
Alteration	3.5	N/A	N/A	05/14/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	1050	1081
Alteration	3	SingleSpeed	NotZoneCon	10/02/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	900	938
Alteration	3	N/A	N/A	09/30/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	900	726
Alteration	3	SingleSpeed	NotZoneCon	08/31/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	900	608
Alteration			NotZoneCon	08/31/2020	AirflowRate	TraditionalFlowCap	ALNOR	731	300	900	570
Alteration	2	N/A	N/A	10/14/2020	AirflowRate	TraditionalFlowCap	Alnor	731	300	600	723
New	5	SingleSpeed	NotZoneCon	06/30/2020	AirflowRate	TraditionalFlowCap	ALNOR	731	350	1750	2004
New						TraditionalFlowCap		731	350	1750	1796
New		0 1				TraditionalFlowCap		731	350	1750	1789
New						TraditionalFlowCap		731	350	1400	1642
New						TraditionalFlowCap		731	350	1400	1536
New						TraditionalFlowCap		731	350	1400	1439
New						TraditionalFlowCap		731	350	1225	1354
New						TraditionalFlowCap		731	350	1050	1237
New						TraditionalFlowCap		731	350	1050	1230
New						TraditionalFlowCap		731	350	1050	1173
New						TraditionalFlowCap		731	350	1050	1142
New						TraditionalFlowCap		731	350	1050	1125
New						TraditionalFlowCap		731	350	1050	1091
New						TraditionalFlowCap		731	350	1050	1078
New	3	SingleSpeed				TraditionalFlowCap		731	350	1050	1067



Airflow (Failing Audit): Note the example below of a concerning data audit for Airflow testing. Column 7024(*Actual System Airflow Rate*) nearly always exceeds column 7023(*Required Minimum System Airflow Target*) by 10-30 cfm. This was also the case when one HVAC system was mislabeled as having a 5.5 ton condenser (No manufacturer currently produces a 5.5 residential split condenser or heat pump).

	7003	7004 Nomin al Coolin g Capaci ty (tons)		7006 Cooling System	7009 Date of System Airflow	7010 Airflow	Measurement	7014 Manufact urer of Airflow Measure	7015 Model number of	Airflow	7023 Requir ed Minim um System	
	System	of	7005	Zonal	Rate	Rate	Type used for this		Airflow	Rate		Measur
	Installati		Condenser	Control	Measurem	Protocol	airflow rate	Apparatu	Measuremen		Target	ement
420	on Type New	nser	Speed Type SingleSpeed	Type	ent	utilized	verification. TraditionalFlowCap	S	t Apparatus	on) 350	(cfm) 1925	(cfm) 1970
420	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1925	1970
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1750	1760
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1750	1750
3446	New	1	SingleSpeed				TraditionalFlowCap		airflow 6710	350	1400	1530
5440	New		SingleSpeed				TraditionalFlowCap			350	1400	1453
,	New		SingleSpeed				TraditionalFlowCap		Airflow	350	1400	1455
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1400	1430
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1400	1420
1	New		MultiSpeed				TraditionalFlowCap		Airflow 6710	350	1400	1410
1	New		MultiSpeed				TraditionalFlowCap		Airflow 6710	350	1400	1410
	New		SingleSpeed		04/30/2019		TraditionalFlowCap		Airflow 6710	350	1400	1400
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1225	1304
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1225	1230
	New		MultiSpeed				TraditionalFlowCap		Airflow 6710	350	1050	1080
	New		MultiSpeed				TraditionalFlowCap		Airflow 6710	350	1050	1080
	New	1	MultiSpeed		01/22/2019		TraditionalFlowCap		Airflow 6710	350	1050	1073
	New	1	SingleSpeed				TraditionalFlowCap		airflow 6710	350	1050	1070
		1								350		
	New	-	MultiSpeed		04/30/2019		TraditionalFlowCap		Airflow 6710 Airflow 6710	350	1050 1050	1060 1060
	New		MultiSpeed SingleSpeed				TraditionalFlowCap TraditionalFlowCap		Airflow 6710	350	1050	1060
	New	1	MultiSpeed				TraditionalFlowCap		Airflow 6710	350	1050	1060
A,93401	New	1	SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1050	1060
A,93401	New		SingleSpeed		03/05/2019		TraditionalFlowCap		Airflow 6710	350	1050	1000
A,93401	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	1050	1057
	New		SingleSpeed				TraditionalFlowCap			350	875	1100
	New		SingleSpeed		02/26/2019		TraditionalFlowCap		Airflow 6710	350	875	1100
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	875	1100
	New		MultiSpeed				TraditionalFlowCap		Airflow 6710	350	700	766
	New		MultiSpeed				TraditionalFlowCap		Airflow 6710	350	700	760
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	700	750
	New	1	SingleSpeed				TraditionalFlowCap		Airflow 6710	350	700	740
	New		SingleSpeed				TraditionalFlowCap		Airflow 6710	350	700	730
	THE W	2	SinBicopeeu		00/02/2019	, and whate	risardonan lowedp	nunoniux.	1.11010 0710	550	,00	, 30



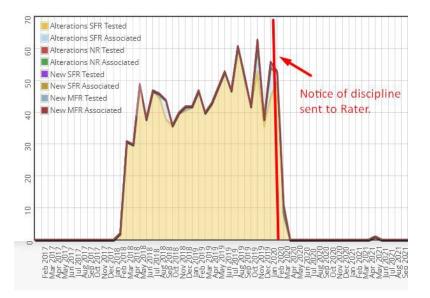
6.4.2 Tracking Installer

Occasionally we receive notice that a Rater was replaced for requiring corrections prior to HERS certification. If there is concern that the installer is commonly performing poorly, and may be using a Rater willing to fabricate test results, this report is used to track the installers projects and the Rater associated with the project for targeted QA.

Contractor License	Rating Company	ID	Address	s	City	Stat	Zip	Recorded	Tested	Rater	Rater	Project Typ
ntractors Inc		90	11456	Т	Cypress	CA	90630	10/28/2020	7/10/2020			Alterations
itractors Inc		84	10162		Cypress	CA	90630	11/19/2019	11/19/2019			Alterations
ntractors Inc		75	3210 L		Long Beach	CA	90808	11/18/2019	11/18/2019			Alterations
itractors Inc		52	30 E. N	I LN.	Long Beach	CA	90803	11/17/2019	11/15/2019			Alterations
itractors Inc		09	19417	I AVE.	Cerritos	CA	90703	11/13/2019	11/13/2019			Alterations
itractors Inc		52	11500		Cerritos	CA	90703	11/10/2019	11/8/2019			Alterations
itractors Inc		11	1808 N	Ε.	Long Beach	CA	90815	11/6/2019	11/5/2019			Alterations
ntractors Inc		03	7301 B		Buena Park	CA	90623	11/2/2019	11/1/2019			Alterations
itractors Inc		33	20711	CLE	Huntington	CA	92646	10/27/2019	10/24/2019			Alterations
itractors Inc		81	5502 E	St	Long Beach	CA	90808	10/27/2019	10/24/2019			Alterations
itractors Inc		10	8012 S	. CIRCLE	Buena Park	CA	90620	10/24/2019	10/22/2019			Alterations
ntractors Inc		36	20203		Cerritos	CA	90703	10/21/2019	10/18/2019			Alterations
itractors Inc		74	1319 E	K ST.	Long Beach	CA	90807	10/15/2019	10/10/2019			Alterations
ntractors Inc		97	6270 L		Long Beach	CA	90805	10/14/2019	10/14/2019			Alterations
itractors Inc		11	6114 C	бТ.	Lakewood	CA	90713	10/8/2019	10/8/2019			Alterations
ntractors Inc		48	17309		Carson	CA	90746	10/7/2019	10/3/2019			Alterations
itractors Inc		95	3001 S		Los	CA	90720	10/4/2019	10/3/2019			Alterations
ntractors Inc		89	28 But		Irvine	CA	92604	10/4/2019	10/2/2019			Alterations
ntractors Inc		71	7952 0	CIRCLE	La Palma	CA	90623	10/3/2019	10/2/2019			Alterations
ntractors Inc		20	10072	RCLE	Buena Park	CA	90620	10/3/2019	10/2/2019			Alterations

6.4.3 Rater Volume Tool

This tool allows the QA Team to assess changes in overall volume. CalCERTS has been able to track a direct correlation between Rater volume and discipline. Increased CalCERTS discipline for Raters unwilling to improve their truthfulness, accuracy and completeness of ratings often results in losing business. CalCERTS periodically monitors volume drop off immediately after a disciplinary notice is sent to a Rater.



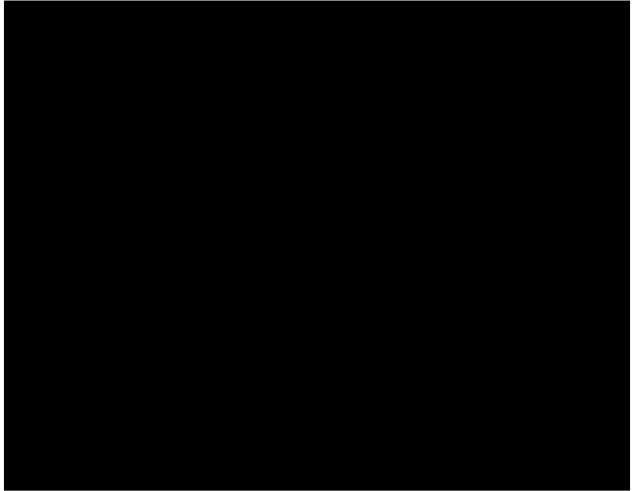


6.4.4 Project Untest QA Warning

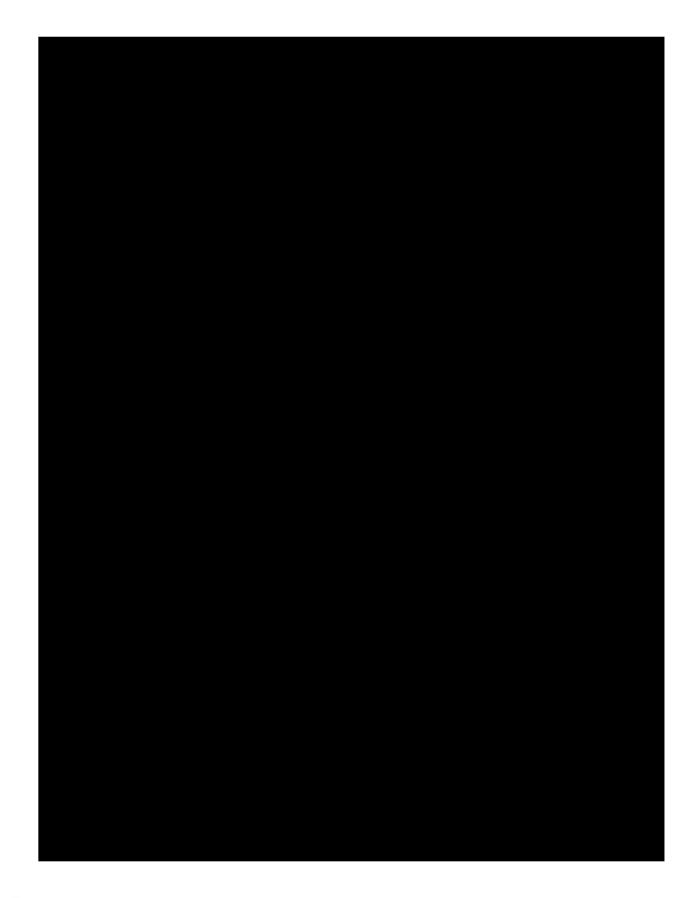
The CalCERTS registry notifies support agents and the QA Team when a Rater requests an *Untest* of a project that has been scheduled for a Field QA review or the review has already been completed. In this event, the project receives closer scrutiny and all originally certified documentation is stored and may be compared to newly certified documentation. Note: Although all QA Reviews are conducted without notification to the Rater, so that it is true review of the Rater's work in accordance with the HERS Regulations, it is not uncommon for a homeowner or superintendent to notify a Rater of a pending scheduled QA Review.

CalCERTS, Inc.	Project Lookup	Res	ults							
Search Results										
Project ID Project Name	Address	City	State Z	lip	Builder/Contractor	Company Controlling Project	Code Year	Туре	Status	Action
							2016	New Construction SFR	Active	
*** ALERT - QA Scheduled o If this is an untest request,										

6.5 RECORDING FIELD QA









Certificate Info /

General Information	☆ CalCERTS - QA Comments - Google Chrome — □ ×
Rater Info (18366)	Rob Calcerts.com/qa_comments_2013.cfm?lot_id=1153822
Status	NOT.4 ton split system. All equipment changed out with majority of ducts changed out. Some ducts not
<u>CLEAR STATUS)</u>	accessible. System uses wall cavity for return. (¹) Homeowner states rater came separate of installer and was present for less than an hour. There are 3 systems in this house. Impossible to HERS Inspect 3 systems in a house this size in 1 hour. ([Duct Leakage: SD Rater recorded 683cfm, with a target of 240cfm
Effective Year	QA recorded 267cfm, with a target of 240cfm 20-Homeowner states: after rater left, installer called and was told they would have to return to make 20-corrections. A multi man team arrived and spent the day making corrections. Homeowner is not certain
Customer Name:	what kind of corrections as she was not paying attention. I speculate that registers were not sealed to Surrounding material. Homeowner is certain rater did not return to re-test. CH-Boots appear to be decently sealed. Did not see much smoke from accessible boots. A little further sealing and this system probably could have passed DL.
Customer Phone:	31 _{AFR} (Air Flow Rate): SD
Super/GC Phone:	HSPP/PSPP: SD HSPP/PSPP present Rater recorded airflow of 1208 cfm using flowhood with a target of 1200 cfm QA recorded final airflow of 953 cfm using flowhood with a target of 1200 cfm
Address:	23-From furnace is a 16" return duct that connects to an approx 22x8" sheemetal duct that connects to wall cavity that connects to a 24x24 filter grille. The issue is that where the sheemetal duct meets the ceiling above the wall cavity, only a very small portion is open. (Photos) Rater result is unlikely even with the
City / State / Zip:	Ne ^{installed} ECM blower.
≠ of Floors	Refrigerant Charge: SD ³ MAH: SD ³ No MAH present - Return plenum accessible
Attic Investigation	Filter Drier: NSD
Summary Notes:	Rater recorded Actual Subcooling of 10°, with a target of 10°; a difference of 0° QA recorded Actual Subcooling of 15°, with a target of 5° (Nameplate); a difference of +10° -Rater likely using generic/default target.
QA Internal Notes:	-Indoor DB temp dropped under 70 degrees briefly but would not cause such a significant difference in Rater vs QA results for SC and SH. TXV: SD Rater recorded Actual Superheat of 15°, with a target between 3-26° QA recorded Actual Superheat of 29.9°, with a target between 3-26° -Suction line is warmer than liquid line.
<u>QA Summary:</u>	Notes: -4 ton split system. All equipment changed out with majority of ducts changed out. Some ducts not accessible. System uses wall cavity -Homeowner states rater came separate of installer and was present for less than an hour. There are 3 systems in this house. Impossil in a house this size in 1 hour.
	Duct Leakage: SD Rater recorded 683cfm, with a target of 240cfm QA recorded 267cfm, with a target of 240cfm
Disposition:	11-06-17, Notice: Repeated Significant Discrepancy - RCV 1st Significant Discrepancy - DL, AF



6.6 RECORDING DESKTOP QA

New Rater Initial 5 Ratings and random *Desktop QA reviews* are recorded into the QA registry by a QA Reviewer. Data from each measure is reviewed and notes are written with any concerning recorded result. Once complete, QA Supervisor and/or QA Director will further review as the QA review enters final analysis.

Status		~			
Customer Name:			Customer Phone:		
Super/GC:			Super/GC Phone:		
Address:			City / State / Zip:	Corona del Mar	
				/ CA / 92625	
QA Reviewer Notes:		s concerning. The majority o nend additional Field QA. It p		e been recorded with test rest oject.	ults being identical to
QA Internal Notes:		ted to schedule Field QA. Ur ot appear we will gain acces		der construction. lucted. Attempting to schedule	e Field QA for other
Disposition:					
					SAVE
F3R Please select		omplete below.			
System ID	System 1	Tested Feature	Form Name CF3R-MCH-20	QA Reviewer Data	QA Results
	System 1	Duct Leakage	CLOV-INICH-20	[LINK TO Rater Data]	SD
)A Reviewer Notes:	Rater recorded Duct Le	eakage of 100 cfm with a tar _i	get of 100 cfm.		,



6.7 ANALYSIS

Analysis of a Field QA are conducted by Supervisor and/or Director using the following sources of information:

- QA Reviewer notes
- Rater to QA test result comparisons
- QA Reviewer photographs
- Discreet interviews
- Departmental discussions regarding discrepancies and possible extenuating circumstances
- Energy Code

Note: Some portions of the energy code require interpretation. Technical and Compliance teams are often consulted.

- Rater Permanent Record (Rater History): A manual record of Raters under scrutiny is maintained separately from the QA Registry. It *may* contain:
 - Reviewer impressions and thoughts.
 - Further information derived from interviews or complaints.
 - Official disciplinary notices.
 - Data audits.
 - Important correspondence
- QA and correspondence history.
- Support and Compliance communications history.

6.8 QA RESULTS DETERMINATION

Once the analysis is completed, a determination is made on whether measures and the HERS Rating as a whole:

- Has no significant discrepancies
- Has discrepancies due to misunderstanding of code
- Has discrepancies due to potentially willful fabrication and/or manipulation of test results

6.9 ADHERENCE TO 1673(I)(3)(B)

CalCERTS has a robust Quality Assurance Program that adhered to Title 20 Section 1673(i)(3)(B). QA results are reported annually to the California Energy Commission.

Once a rating is completed by a Rater in the CalCERTS Registry, the information and results are recorded. The Registry then automatically generates a report of completed ratings for the CalCERTS Quality Assurance Coordinator to review. The QA Coordinator works with a team of schedulers to schedule randomly selected quality assurance reviews on Raters that need to be reviewed.

These reviews are conducted by the Quality Assurance team on a continuous basis throughout the year. CalCERTS has a strong record of documenting its efforts to perform quality assurance reviews on 100% of its Raters.

Raters are not informed that a building or installation will be field checked prior to the Rater entering their rating. After the completion of the QA review, Raters are typically provided a written summary of



the review results, otherwise referred to as the QA Disposition. If discrepancies are found, an effort is made to further train the HERS Rater.

If a Rating is found to have significant discrepancies, the Rater is placed on disciplinary review as per Title 20 requirements. The Rater is notified of the discrepancies and become subject to increased scrutiny/discipline and additional quality assurance reviews are conducted on that Rater's projects. The quality assurance review failure is noted by the Rater's name on the CalCERTS website.

7 **DISPOSITIONS NOTICES**

7.1 **DISPOSITION PURPOSE**

Once any of the 3 types of QA Review (New Rater, Field QA, Desktop QA) have been completed, it is documented on the <u>QA Registry</u> and a *disposition notice* may be sent to the Rater.

These written dispositions were implemented as part of the CalCERTS QA Program in response to the CEC's request for more transparency to the Rating community of the QA process.

The disposition process clearly identifies areas of potential discrepancies and gives the Rater a 2-week time period in which to contact the QA Team to begin correspondence. Often the QA Team will attempt to contact the Rater by phone to discuss the QA review. The 2-week notice provision has been included in all dispositions in response to the CEC's request for due process.

- If analysis shows that the Rater might misunderstand code requirements, the correspondence begins with the goal of mentoring and correcting future discrepancies.
- If analysis shows potential fabrication of test results that may have harmed the consumer, the Rater is asked to provide an explanation and/or evidence of extenuating circumstance. If Rater does not provide sufficient evidence, appropriate discipline follows.

This communication allows the QA Team to further analyze what might have occurred during and after the HERS rating, and whether the HERS Rater is acting in the best interest of the consumer. When the Rater refuses repeated attempts at communication, scrutiny is increased and progression through disciplinary process may be accelerated.

This process has been used effectively to correct Rater actions through mentoring and discipline, but also serves as a periodic reminder that their work and actions are being reviewed by CalCERTS for truth, accuracy and completeness.

Many Raters welcome the process as it justly creates a level field that adheres to Title 24 rules. These dispositions are commonly used by Raters as a "badge of honor" as they navigate as special inspectors.

Finally, the process creates a clear historical view of Rater performance with regards to integrity and code proficiency; while providing systematic evidence should the need for disciplinary action emerge.



7.2 SAMPLE DISPOSITIONS

7.2.1 NSD (No Significant Discrepancy):

When QA Team review and analysis of HERS Rating finds *No Significant Discrepancy* on any HERS measure, a congratulatory notice is sent to Rater. (There are some uncommon situations where one will not be sent.)

Hello

CONGRATULATIONS! A routine CalCERTS Quality Assurance field review at the following address has found no significant discrepancies in the test results.

Rated Address:

Rated: 09-23-2020 Date Of QA: 10-06-2020

Measures With No Significant Discrepancy:

Your reported results are within the QA Review requirements of Title 20.

Duct Leakage: CF3R-MCH-20 Airflow: CF3R-MCH-23 Fan Efficacy: CF3R-MCH-22 Refrigerant Charge: CF3R-MCH-25 Rated Equipment: CF3R-MCH-26 IAQ and MV: CF3R-MCH-27

As your provider, CalCERTS is responsible for performing Quality Assurance Field Reviews on your ratings as specified by Title 20. This review was performed on a Rating with a tested date in the 2020 calendar year.

If you have any questions about this Quality Assurance Field Review or if you have any concerns as a CalCERTS HERS Rater please email us at <u>ga@calcerts.com</u>.

Sincerely,

David Choo Director of Quality Assurance



CalCERTS, Inc. 31 Natoma Street, Suite 120 Folsom, CA 95630

www.calcerts.com

Please consider the environment before printing this email.

Confidentiality Note: This document is intended only for the person or identity to which it is addressed and may contain information that is privileged, confidential or otherwise protected from disclosure. If you are the intended recipient, be aware that your use of any confidential or personal information may be restricted by state and federal privacy laws. Dissemination, distribution or copying of this document or the information herein by anyone other than the intended recipient, or an employee or agent responsible for delivering the message to the intended recipient is prohibited. If you have received this document in error, please contact me.



7.2.2 SD (Significant Discrepancy):

When QA Team review and analysis of HERS Rating finds a *Significant Discrepancy* on any HERS measure, a notice is sent which includes:

- Date of HERS Rating, Date of Field QA.
- Explanation of discrepancies.
- CalCERTS QA Team contact info.
- Notice that Rater may submit evidence of extenuating circumstances.

Hello ,

A Quality Assurance Field Review (QA) was performed on a Rating registered by you in the 2019 calendar year.

As your provider, CalCERTS is responsible for performing Quality Assurance Field Reviews on your ratings as specified by Title 20. A routine review at the following address has found certain discrepancies.

We understand that there can sometimes be extenuating circumstances that account for such discrepancies. We encourage you to **give us a call** at 916-805-5238 to review the results, discuss the QA process, and take this opportunity to let us answer any questions you may have as a HERS Rater.

Be aware that you may be responsible for the cost of additional QA Field Reviews.

Rated Address:

Project ID: ______ Lot ID: _____ Rated: 05-15-2019 Date Of QA: 07-25-2019

Measures with Significant Discrepancy(s):

Indicates that your reported results were significantly different from ours.

QII-AIS-Batt, Loose Fill, and SPF: CF3R-ENV-21

QII-Air Infiltration Sealing: CF3R-ENV-22

QII-Installation: CF3R-ENV-23

- Electrical penetrations through the top plate are not sealed.
- Attic access does not have gasket and does not form a tight seal from conditioned to unconditioned space.
- Batt insulation installed in attic on ceiling.
 - o Insulation installation certificate not on site.
 - o Installed insulation does not meet required R rating listed on CF1R.
 - o Gaps and voids witnessed.
 - o Insulation not cut around obstructions like electrical boxes.
 - o Insulation not delaminated around plumbing and electrical lines.
 - o Insulation has excessive compression.
 - o Attic access not insulated.

CalCERTS provides mentoring, tutoring (one-on-one) and webinar services should you wish to refresh your knowledge and skills. For information regarding these services and the costs, please contact <u>Training@calcerts.com</u>

Sincerely,

David Choo Director of Quality Assurance





7.2.3 Repeated SD (+2 Disciplinary Status):

In the event the QA Team review and analysis of HERS Rating finds a *Repeated Significant Discrepancy* in any HERS measure, the Rater is placed on +2 *Disciplinary Status* and an email notice is sent giving Rater 2 weeks to respond with evidence of extenuating circumstances.

Hello

A routine CalCERTS Quality Assurance (QA) field review at the following address has found certain discrepancies in the tested results. Some of these discrepancies have previously been found on measures for which you have already received a QA notification. This QA was performed on a Rating registered in the **2019** calendar year.

We understand that there can sometimes be extenuating circumstances that account for such discrepancies. We encourage you to give us a call at 916-805-5238 to review the results and discuss the QA process. If you can document extenuating circumstances that explain the QA discrepancy, it must be submitted within 2 weeks of today's date. *If you do not contact us regarding any extenuating circumstances, then this matter will be concluded as noted here.*

If CalCERTS Quality Assurance personnel determine there is not sufficient evidence that there are extenuating circumstances, additional action may be taken. Be aware that you will be responsible for the cost of additional QA Field Reviews.

• For measures with previous significant discrepancies, you will be subject to two additional QA's on ratings performed on the failed measures over the past 12 months. In addition, a mark denoting QA failures will appear by your name in the CalCERTS Registry for a period of six months.

Rated Address:

(Correct address is ______)
Project ID: ______
Lot ID: ______
Rated: 09-09-2019
Date Of QA: 09-12-2019

Upstairs 3 Ton System

Measures with Repeated Significant Discrepancy(s):

Indicates that your reported results were significantly different from ours on a Measure for which you have already received a notice of discrepancy. This review occurred on an address you reported AFTER you received your first notice.

Duct Leakage: CF3R-MCH-20

Rater recorded 59 cfm, with a target of 60 cfm QA recorded 162 cfm, with a target of 60 cfm

- Registers not sealed to surrounding material.
- Multiple accessible points of visible leakage.
- Return platform not sealed with approved materials.



7.2.4 Continued SD (2% Disciplinary Status):

In the event the QA Team review and analysis of HERS Rating has *Continued Significant Discrepancy* in any HERS measure, the Rater is placed on 2% *Disciplinary Status* and an email notice is sent giving Rater 2 weeks to respond with evidence of extenuating circumstances.

Hello

CalCERTS Quality Assurance field reviews at the following addresses have found certain discrepancies in the tested results. Some of these discrepancies have previously been found on measures for which you have already received a QA notification, and for which you have already been placed on '+2' or '2%' status. These Quality Assurance Field Reviews were performed on a Rating registered in the **2019** calendar year.

We understand that there can sometimes be extenuating circumstances that account for such discrepancies. If you can document extenuating circumstances that explain the QA discrepancy, please submit it within 2 weeks of this notice. We encourage you to give us a call at 916-805-5238 to review the results and discuss the QA process.

CalCERTS Quality Assurance is taking the following action:

- For measures with no previous significant discrepancies, you will be subject to two additional QA's on ratings performed on the failed measures over the past 12 months. In addition, a mark denoting QA failures will appear by your name in the CalCERTS Registry for a period of six months.
- For measures that are already subject to two additional QA's, you will be subject to QA on two percent of ratings of the failed measure evaluated for the next 12 months by all Providers, as mandated in Title 20. Neither status will affect your ability to perform and register HERS verifications.
- For measures that are already subject to additional QA at the rate of 2%, the initial 12 month time frame will be extended accordingly, and additional disciplinary action may be taken.

Be aware that you will be responsible for the cost of additional QA Field Reviews.

Rated Address:

Project ID: ______ Lot ID: _____ Rated: 07-03-2019 Date Of QA: 07-25-2019

Measures with Continued Significant Discrepancy(s):

Indicates that your reported results were significantly different from ours on a Measure for which you have already received a notice of discrepancy, and for which you have already been placed on '+2' status. This review occurred on an address you reported AFTER you received your first notice.

Airflow: CF3R-MCH-23

- Rater recorded 1189 cfm, using flowhood with a target of 900 cfm
- QA recorded 824 cfm, using flowhood with a target of 900 cfm
- Blower appears to be set to high speed
- QA Field Review recorded no HSPP in the supply plenum.



7.2.5 Missing Contact Info

When QA scheduler notices a pattern of missing contact info, the Rater is notified to correct the missing information. If the pattern continues, the Rater may be placed under higher QA scrutiny and Disciplinary Status increased.

Missing information is a pervasive problem that requires CEC support for enforcement.



Raters are required to provide CalCERTS with contact information that includes the name and valid phone number of the person authorized to facilitate scheduling and provide access for a Quality Assurance Reviews. This contact is usually the **Homeowner** on Alterations, and the **Superintendent**, Builder (or builder's representative) or Homeowner on New Construction. The Rater and Installer are not considered valid contacts. A majority of the projects you have completed in the Registry list "N/A" for contact info.

All data submitted by the Rater to the Registry are subject to the requirements for truth, accuracy, and completeness required by Title 20. Although it may occasionally be difficult to provide correct contact information, a pattern of such failures may require further action by the Quality Assurance Department.

The following addresses are from the last 30 days. Please resubmit the correct homeowner name and phone numbers to the registry as soon as possible, and enter this information on all projects going forward.



Please contact me if you have any questions on this matter.

Sincerely,

David Choo Director of Quality Assurance CalCERTS, Inc.



7.2.6 Evidence of Conflict of Interest

When QA Review finds evidence of potential conflict of interest, a notice is included in the emailed disposition, or an email may be sent independently of a Field QA Review. Raters are accorded with 2 weeks in which to contact CalCERTS QA Team to discuss and/or provide evidence that conflict of interest rules are being adhered to as per **Title 20 Section 1673(j)**.

Hello

During a routine QA Review, we noticed a potential conflict of interest violation.

Our records show that your only installer is **EATING** & AIR CONDITIONING. Research has provided possible evidence that you and **EATING** & AIR CONDITIONING.

Per Title 24 HERS conflict of interest rules, Raters are expected to be objective, independent third parties as field verifiers and diagnostic testers. They are special inspectors for local enforcement agencies. **By law**, **Raters must be independent entities from the** builder or subcontractor **installer** of the energy efficiency features being tested and verified. They can have no financial interest in the installation of the improvements. **Raters cannot be employees of the builder or subcontractor installer whose work they are verifying.** Also, they 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.

Please contact us at to discuss. This is our second notice regarding this important matter. If we do not hear from you by your access to the CalCERTS registry will be restricted.

Sincerely,



8 INVESTIGATION

When warranted, a Rater's conduct may be investigated by CalCERTS QA team. The purpose of the investigation is to gather enough evidence to confirm whether a Rater is conducting testing in an ethical manner that follows Title 24 and CalCERTS Rater agreement rules. Investigations continues until the QA Team collects sufficient evidence to begin disciplinary proceedings. Raters may be notified of complaints issued against them.

CalCERTS may temporarily suspend a Rater's Certification during an investigation when further activity by the Rater could interfere with CalCERTS' investigation or continued ratings might jeopardize a consumer's rights to true, accurate and complete ratings. Raters will be given a written Notice of Suspension. CalCERTS will work diligently to minimize the duration of any suspension.

CalCERTS may, at its sole discretion, conduct an investigation of a Rater's conduct and/or performance whether due to complaints received from third parties, Quality Assurance Reviews, or otherwise.

An investigation is conducted using multiple QA personnel (when possible):

- Additional Field QA reviews
 - If QA Field reviews find egregious discrepancies, additional reviews are conducted for objective view of multiple ratings.
- Additional Desktop QA reviews



- Interviews
- Data audits
- Matters pertaining to an investigation, primarily with regards to complainant are kept confidential

Raters are provided an opportunity to ask questions about the investigation, and shall have an opportunity to submit information and documents related to the substance of the investigation before CalCERTS concludes the investigation. Raters will be encouraged to submit all questions in writing to avoid confusion and ensure accuracy.

Raters are required to cooperate with the investigation to help ascertain facts and to gain access to important parties. If a Rater fails to cooperate with an investigation, CalCERTS may terminate the investigation and take appropriate action which may include suspension or decertification of the Rater.

CalCERTS will review all information gathered in an investigation including information submitted by the Rater to determine if disciplinary action is warranted. If CalCERTS determines disciplinary action is warranted, the Rater shall receive a written notice of CalCERTS' findings and recommended disciplinary actions.

Rater shall have an opportunity to appeal a recommendation of discipline prior to final imposition of discipline. Appeals must be submitted in writing and be substantive with evidence to support the appeal.

All investigations are considered confidential to protect all parties involved. Release of any details is at the sole discretion of CalCERTS.

9 DISCIPLINE

Disciplinary action is carefully administered to protect the consumer. When CalCERTS Quality Assurance personnel determine that a Rater fails a Quality Assurance Review, the Rater is provided a written notice containing the review results and determination. CalCERTS maintains a historical record of communication and QA Review data to objectively advance Rater through discipline. *CalCERTS adheres* to **Title 20 Section 1673(i)(3)(C)** that states a Provider must report the quality assurance failure on their registry and increase scrutiny of Rater work. It also clearly states the Provider's Quality Assurance Manager shall notify other Providers in writing or by electronic mail of Raters that are required to have additional quality assurance scrutiny.

CalCERTS may at its sole discretion impose one or more types of disciplinary action including, but not limited to:

- Formal written warning detailing area(s) of concern and suggestion self-directed corrective actions.
- Imposition of additional field reviews at the Rater's expense.
- Imposition of additional education, mentoring or training at the Rater's expense.
- Suspension of the Rater's Certification for a determined period of time.
- Decertification.

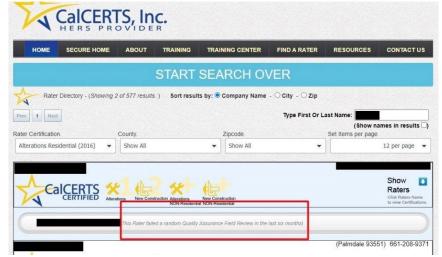


The following is the typical disciplinary path when Rater's are found not conducting truthful and accurate ratings. Disciplinary procedures can be accelerated when there is a clear determination that significant discrepancies are occurring because of willing malfeasance.

9.1 RATER AT +2 DISCIPLINARY STATUS (STATUS DISPLAYED ON PUBLIC WEBSITE)

The following are potential causes for Rater being placed into +2 Disciplinary Status:

- Review and analysis of a Field QA Review determines that a *Repeated Significant Discrepancy* has occurred, and the Rater has not provided sufficient evidence of extenuating circumstances.
- Evidence that signifies potential fabrication of test results.
- Rater continues to violate requirement for listing homeowner or project supervisor contact info.
- Valid complaint investigation finds Rater at fault.
- Evidence that Rater is violating conflict of interest rules.
- Evidence that Rater is not present at ratings.
- 9.1.1 Disciplinary Actions:
 - 2 weeks accorded to Rater prior to elevation of disciplinary status for evidence and/or explanation of extenuating circumstance.
 - CalCERTS QA Team increases scrutiny of Rater. Attempt is made to communicate with Rater regarding the repeated discrepancy with the goal of correction.
 - 2 Additional QAs are attempted, when possible, on the measure with repeated discrepancy
 - Rater may be responsible for cost of additional QA Field reviews.
 - Field QA Reviews will have higher level of scrutiny. If possible, additional consumer interview conducted.
 - Random data audits may be conducted on Rater recorded data.
 - CalCERTS displays on public website, "This Rater failed a random Quality Assurance Field Review in the last six months"
 - The public display of QA failure begins at the end of the 2-week response period and remains for the duration of 6 months.





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• If strong evidence suggesting likely fraudulent actions by Rater, disciplinary actions may progress more rapidly to protect consumers.

9.2 RATER AT 2% DISCIPLINARY STATUS (STATUS DISPLAYED ON PUBLIC WEBSITE)

The following are potential causes for Rater being placed into 2% Disciplinary Status:

- 2 weeks accorded to Rater prior to elevation of disciplinary status for evidence and/or explanation of extenuating circumstance.
- Review and analysis of additional Field QA Review determines that a *Continued Significant Discrepancy* has occurred and the Rater has not provided sufficient evidence of extenuating circumstances.
- Sufficient evidence that shows a Rater may be acting fraudulently without concern for truth and accuracy in HERS Inspections.
- Rater continues to circumvent HERS regulations or CalCERTS Rater/QA Agreements.
- Rater refuses communication with CalCERTS QA Team and disregard QA notices.
- Strong evidence that Rater is violating conflict of interest rules.
- Strong evidence that Rater is not present at ratings.

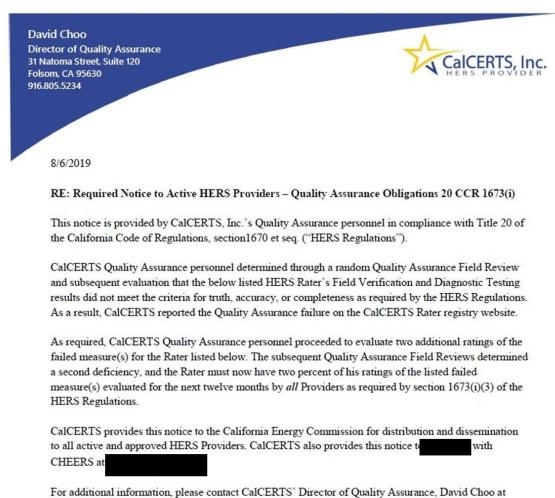
9.2.1 Disciplinary/Mentoring:

- Notice sent to Rater, HERS Providers, and CEC, of additional scrutiny for a period no less than 12 months.
- Rater to remain at 2% Disciplinary Status until additional Field QA conducted. Rater not to be removed from additional scrutiny until evidence signifies Rater is conducting honest and accurate HERS ratings.
- Rater may be responsible for cost of additional Field QA reviews.
- Field QA Reviews will have higher level of scrutiny. If possible, additional consumer interview conducted.
- Random data audits conducted on Rater recorded data.
- CalCERTS displays on public website, "This Rater failed a random Quality Assurance Field Review in the last six months"
 - The public display of QA failure begins at the end of the 2-week response period and may not be removed until evidence signifies Rater is conducting honest and accurate HERS ratings.
- If strong evidence suggesting likely fraudulent actions by Rater, disciplinary actions may progress more rapidly to protect consumers.



9.2.2 Sample of CalCERTS official 2% Notices:

9.2.2.1 2% Notice to CEC & Other HERS Providers



david.choo@calcerts.com or at (916) 805-5238.

Company Affiliation: Verifications Requiring 2% QA: Airflow, Refrigerant Charge

Sincerely,

David Choo Director of Quality Assurance CalCERTS, Inc.



9.3 SUSPENSION/DECERTIFICATION:

Suspension/Decertification is deemed necessary to protect the interests of consumers and the HERS industry. The following or potential causes for Rater Suspension/Decertification:

- Previous attempts to correct Rater performance are unsuccessful.
- Continued significant discrepancies found after previous notices.
- Rater refuses to progress towards truthful and accurate ratings.
- Rater not present at HERS ratings.
- Rater actively defrauding consumers.

9.3.1 Disciplinary Action:

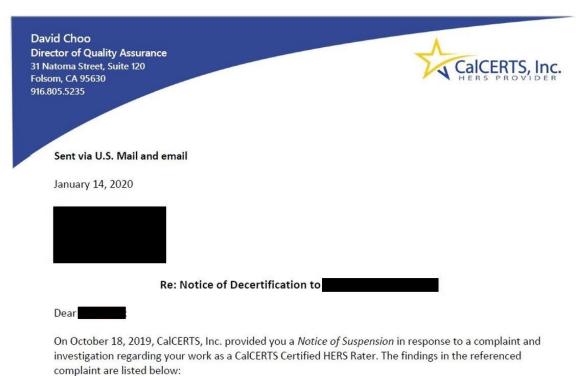
The following are potential disciplinary actions:

- Notice sent to Rater, HERS Providers, and CEC, of Suspension/Decertification.
- 2 weeks accorded to Rater prior to elevation of disciplinary status for evidence and/or explanation of extenuating circumstance.
- Rater must complete prescribed remedial training prior to re-instatement from *suspension*.
- Rater Recertification at option of CalCERTS. If accepted, re-training of all Rater certificates must be completed at the cost of candidate. Immediately placement on 2% Disciplinary Status to accompany reinstatement.
- Rater permanently barred from performing duties of a CalCERTS HERS Rater.



9.3.2 Sample of CalCERTS official Decertification Notice:

9.3.2.1 Decertification Notice to CEC & Other HERS Providers



FINDINGS:

We investigated the complaint, and reviewed the information provided. In addition to Quality Assurance Field Reviews, our investigation included a Registry audit of projects certified by you. On 06/19/19 you were notified of significant discrepancies found through our Registry audit, and given the opportunity to submit documentation of extenuating circumstances that explain the discrepancies. No documentation has been submitted.

Through our investigation, it was determined that you are in violation of California Title 20 Code of Regulations 1672(m) & 1673(b)(1-3).

California Title 20 Code of Regulations §1672(m): Raters shall not knowingly provide untrue, inaccurate, or incomplete rating information or report rating results that were not conducted in compliance with these regulations. Raters shall not knowingly accept payment or other consideration in exchange for reporting a rating result that was not in fact conducted and reported in compliance with these regulations.

California Title 20 Code of Regulations §1673(b)(1-3): (1) Provide home energy rating and field verification services in compliance with these regulations. (2) Provide true, accurate, and complete data collection, analysis, ratings, and field verification and diagnostic testing. (3) Not accept payment or consideration in exchange for reporting data gathered for a rating, analytical results used for a rating, or a rating result that was not in fact conducted and reported in compliance with these regulations.



CORRECTIVE ACTION:

In the suspension letter, CalCERTS issued the following discipline:

- A Suspension of your HERS Certification for a minimum of three months beginning November 1st, 2019, and ending February 1st, 2020, pending completion of the following remedial training.
- Remedial Training You must repeat the CalCERTS online HERS Residential Alterations
 Fundamentals Course, and HERS Residential New Construction Course (at your expense). Upon
 successful completion of the online courses, your suspension will be lifted on February 1st,
 2020. If the remedial training is not completed by this date, the suspension will remain in place
 until the training has been completed.
- After completion of your suspension, if additional Quality Assurance Reviews find continued deficiencies in HERS verifications certified by you, you may be subject to further discipline, which can include decertification.

DECERTIFICATION:

To date, we have <u>no record</u> of your efforts to complete the Remedial Training required. As a result, CalCERTS will escalate your suspension to formal decertification on <u>February 1, 2020</u>. Notice of your decertification will be submitted to the California Energy Commission.

CalCERTS is open to feedback on the proposed disciplinary action, and an appeal process is available. If you have any question or concerns, or if you want to request an appeal, please contact us at 916-985-5238, or at <u>ga@calcerts.com</u>.

Sincerely,

David Choo Director of Quality Assurance CalCERTS, Inc.

Cc:

Shelby Gatlin – Chief Operations Officer, CalCERTS, Inc. Jeremy Wikstrom – Director of Training, CalCERTS, Inc. Lorraine White – California Energy Commission Suzie Chan – California Energy Commission



2



10 COMPLAINTS

Title 20 Section 1673(i)(5)

CalCERTS tracks and responds to all complaints. Official complaints can be submitted through our public portal. CalCERTS also receives anonymous complaints in the form of emails or phone calls. Complaints are tracked as formal and informal. As consumers become more educated on the HERS Program, homeowner complaint volume has increased. Historically most complaints were generated by Raters. The QA Team's goal is to remain objective in our investigation of any type of complaint. Confidentiality and privacy concerns may be different depending on the complainant.

10.1 PUBLIC PORTAL

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10.2 COMPLAINT LOG

When a complaint does not fall under the purview of CalCERTS and HERS related issues, complainant is notified. Complaint is logged and the log is maintained for a minimum of 5 years.



When a complaint relates directly to ratings, field verification, diagnostic testing services, reports and/or specifically about a HERS Rater, an official internal complaint record is maintained and investigation is conducted. All complaints are tracked on a complaint log and submitted annually to the CEC. The CEC is notified of any complaint that requires their immediate involvement.

The complaint log contains the following information (when available):

- Complaint Date
- Description of whether complaint if Formal or Informal
- Complainant (With the option for confidentiality)
- Complainant Position
- Address related to Complaint
- HERS Rating Date
- Rater & Rating Company
- Complaint summary
- Status / Action Taken
- Complaint Closed Date

10.3 INVESTIGATION

The purpose of the investigation is to gather enough evidence to confirm whether a Rater is conducting testing in an ethical manner that follows Title 24 and CalCERTS Rater agreement rules. If the investigation shows the complaint to be valid, the investigation continues until QA Team collects sufficient evidence to begin disciplinary proceedings. Raters may be notified of complaints issued against them.

CalCERTS may temporarily suspend a Rater's Certification during an investigation when further activity by the Rater could interfere with CalCERTS' investigation or continued ratings might jeopardize a consumer's rights to true, accurate and complete ratings. Raters will be given a written Notice of Suspension. CalCERTS will work diligently to minimize the duration of any suspension.

CalCERTS may, at its sole discretion, conduct an investigation of a Rater's conduct and/or performance whether due to complaints received from third parties, Quality Assurance Reviews, or otherwise.

An investigation is conducted using multiple QA personnel (when possible):

- Additional Field QA reviews
 - If QA Field reviews find egregious discrepancies, additional reviews are conducted for objective view of multiple ratings.
- Additional Desktop QA reviews
- Interviews
- Data audits
- Matters pertaining to an investigation, primarily with regards to complainant are kept confidential

Raters are provided an opportunity to ask questions about the investigation, and shall have an opportunity to submit information and documents related to the substance of the investigation before CalCERTS



concludes the investigation. Raters will be encouraged to submit all questions in writing to avoid confusion and ensure accuracy.

Raters are required to cooperate with the investigation to help ascertain facts and to gain access to important parties. If a Rater fails to cooperate with an investigation, CalCERTS may terminate the investigation and take appropriate action which may include suspension or decertification of the Rater.

10.4 RESOLUTION

Once investigation is concluded and results are reviewed for evidence of discrepancies. *If Rater acted from a lack of understanding of code:*

- Rater notified of complaint and QA dispositions resulting as part of the complaint investigation.
- Appropriate training is offered to Rater.
- Additional QA scrutiny of Raters future work continues.
- If necessary, additional disciplinary actions administered.
- Complainant notified of resolution.

If sufficient evidence of willful wrong-doing by Rater is confirmed through investigation:

- Rater notified of complaint and QA dispositions resulting as part of the complaint investigation.
- Additional disciplinary action in direct proportion administered. This ranges from being placed on 2% Disciplinary Status, suspension with appropriate remedial training requirement (at Rater cost), decertification.
- Complainant notified of resolution.

11 CEC ANNUAL REPORT & QA PORTAL

11.1 ANNUAL REPORT

An annual QA report is submitted to the CEC that provides a summary of the year's QA efforts. The report currently includes:

- Background.
- Synopsis of overall QA attempt on Active Raters.
- Disposition volume and overall HERS measure QA volume.
- Overview of Rater discipline.
- Complaint summary.
- Quality Assurance Log including information listed in <u>Section 6.1.1</u> of this document.

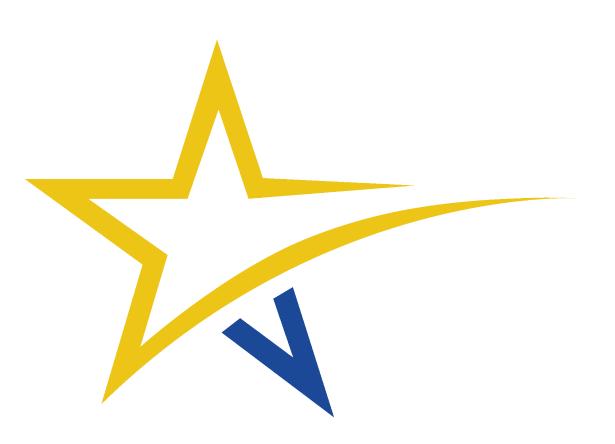
11.2 CEC QA PORTAL

CalCERTS maintains accounts for CEC personnel that provide access through multiple search modules. The modules provided CEC access to all current Rater projects along with immediate access to information that is summarized into the Annual QA Reports. Any CEC personnel with appropriate credentials can conduct searches by clicking on the "CEC Searching" icon once logged into the CalCERTS registry.



Appendix I

Quality Assurance Program: Subscriber Agreement





Subscriber Agreement

This Subscriber Agreement (the "**Agreement**") is made by and between CalCERTS, Inc. ("**CalCERTS**") and the individual or entity identified on the signature page and Attachment A hereto in his, her or its capacity as a Subscriber (as defined below) pursuant to the California Home Energy Rating System Regulations set forth at California Code of Regulations, Title 20, Section 1670 *et seq.* and related applicable authority ("**HERS Regulations**").

- 1. <u>Intent of Parties</u>. In entering into this Agreement it is the intent of the parties to set forth their relative rights and responsibilities with regard to the Subscriber's use of CalCERTS Materials (as defined herein), the Registry (as defined herein), and related aspects of the business relationship.
- 2. <u>Definition of Subscriber</u>. As used in this Agreement, "**Subscriber**" refers to a person or entity that has paid the required fees to CalCERTS, and that is one or more of the following: a certified rater pursuant to the HERS Regulations (as described and defined therein); a certified rater's employer; a non-rater user (as defined herein); a non-rater user's employer; a California Code of Regulations Title 24 consultant; or any other user approved by CalCERTS.
- 3. <u>Definition of Registry</u>. As used in this Agreement, "**Registry**" refers to CalCERTS online data registry service provided in connection with ratings and related activities.
- 4. <u>Fee Schedule and Payments</u>. Subscriber shall pay all amounts due CalCERTS in accordance with the then in effect Fee Schedule (aka Price Sheet), receipt of which the Subscriber acknowledges which includes the annual subscription fee. Fees will be incurred upon registration of documents, and before they can be accessed by the user. CalCERTS reserves the right to allow some users to be invoiced at its sole discretion, and on a case- by-case basis. CalCERTS will assess a late charge on all unpaid and past due balances at the rate of 1.5% per month (18% per annum). Payments received by CalCERTS will be applied to Subscriber's account in a manner determined by CalCERTS. Subscriber will pay all collection fees incurred by CalCERTS, including the services of a collection agency or reasonable attorneys' fees and costs in connection with such collection. CalCERTS, in its sole discretion, may change the Fee Schedule upon thirty (30) days' prior written notice to Subscriber. Notwithstanding the foregoing, the Annual Subscription Fee is subject to change without notice.

Required payments may be made through CalCERTS' website, online merchant services or by other method agreeable to both parties.

- 5. <u>Use of Registry</u>. Subject to payment of the required fees, a Subscriber will be provided access and may use the Registry subject to the Terms and Conditions posted on the website in connection with permitted and/or required activities under the HERS Regulations. Subscriber will be issued a secure login and password to the Registry. Subscriber may not provide their login and password to any person including, without limitation, a fellow employee or their employer. Subscriber shall report any unauthorized use of their login or password to CalCERTS immediately upon discovery. A certified Compliance Rater, Whole House Rater and/or a HERS BPC Rater ("Rater") may designate a Subscriber other than him, her, or it to enter data on the Rater's behalf (a "Non-Rater User"); provided, however, that any Subscriber that is an employer or entity shall only designate current employees as Raters and/or Non-Rater Users.
- 6. <u>Compliance with CalCERTS Policies</u>. Subscriber hereby acknowledges receipt of CalCERTS Quality Assurance Procedures and Policies, and CalCERTS Rater Code of Ethics (the "CalCERTS' Policies"). Subscriber agrees that CalCERTS may revise the CalCERTS' Policies from time to time, in its sole discretion, and that Subscriber shall comply with any such revised CalCERTS' Policies from and after the date they are transmitted by email.
- 7. <u>Compliance with Law</u>. Subscriber shall comply with all applicable authority including, without limitation, the HERS Regulations.
- 8. <u>Subscriber's Contact Information Requirements</u>. CalCERTS uses email notifications as its sole means of communicating technical changes, policy changes, important notices, and information that may be useful to the Subscriber. Subscriber shall maintain with CalCERTS a current telephone number, personal email address (different from a work email address), and a U.S. mailing address (not a PO Box), notifying CalCERTS in writing within ten (10) days of any changes of mailing address, email address or telephone number.
- 9. <u>Subscriber's Employer Information Requirements</u>. Subscriber shall maintain with CalCERTS current employment information, whether the Subscriber is self-employed or employed by a multi-rater firm or other third party entity. Subscriber must notify CalCERTS in writing within ten (10) days of any changes to Subscriber's employment status.
- 10. <u>Confidentiality of Information on Registry</u>. Subscriber shall keep confidential all rating results and any related data, notes or information, personal identification information of consumer(s) and all information gathered from ratings except for transmitting to CalCERTS, the builder, the local building department, the homeowners, the real estate listing agent, lender, utility, or energy efficiency



mortgage facilitator, as reasonably required. Subscriber's obligation of confidentiality under this section shall survive termination or expiration of this Agreement.

- 11. <u>CalCERTS Materials</u>. CalCERTS may provide a Subscriber with copies of and/or access to its intellectual property, copyrighted materials, trademarks, service marks, trade secrets, and/or confidential and proprietary information including, without limitation, training manuals and materials, user's guides, checklists, forms, related documents and/or software, the data registry, data and rating processes, and documents and information that is not publically available ("**CalCERTS Materials**").
- 12. <u>Confidentiality of CalCERTS Materials</u>. Subscriber agrees that the CalCERTS Materials that may be provided are owned by CalCERTS and shall be kept confidential and used by the Subscriber pursuant to a non-exclusive terminable license. Subscribers may not at any time disclose the CalCERTS Materials and/or derivative documents and information, including, but not limited, the registry and rating processes, to anyone other than CalCERTS or the Commission. All materials shall be returned in the event that this Agreement is terminated. Subscribers may not alter or copy any of the CalCERTS Materials other than the collection forms. Any breach of the obligations of confidentiality may cause irreparable harm in which case injunctive and monetary relief shall be available. A Subscriber's obligations pursuant to this section shall survive termination of this Agreement.
- 13. <u>License to Use CalCERTS Materials</u>. Subject to the limitations below, CalCERTS grants to Subscriber a non-exclusive, terminable license to use CalCERTS Materials.
- 14. License to Use CalCERTS Marks. Without limiting the generality of the foregoing, and subject to the limitations below, CalCERTS grants to Subscriber a non- exclusive, terminable license to use the following CalCERTS trade and/or service marks: "CalCERTS Accredited Rater," "CalCERTS Certified Rater," "CalCERTS Registered Home," "CalCERTS Rated Home," and the "flying" or "elongated" star with CalCERTS, Inc. superimposed on the logo (collectively, the "CalCERTS Marks"); provided that such use is only on, near, or in reference to, a home that has been rated by a CalCERTS' certified Rater and accompanied by the name of a CalCERTS certified Rater or used in conjunction with a rating business.
- 15. <u>Disclaimers Regarding Subscribers Use of Registry</u>. CalCERTS makes no representations or warranties, express or implied, and expressly disclaims any such warranties, as to the operation, functionality, reliability, speed, error rate, or compatibility of the Registry and related software; provided, however, that CalCERTS will reasonably cooperate with, and attempt to facilitate Subscriber's access to and use of the Registry and related software.



- 16. <u>Term</u>. The term of this Agreement shall be for one (1) year; provided, however, that this Agreement shall automatically renew for successive one (1) year periods unless 30 days prior written notice of termination is provided to CalCERTS by Subscriber or to Subscriber by CalCERTS.
- 17. <u>Termination of Agreement</u>. Subscriber may terminate this Agreement ten (10) days after written notice is provided to CalCERTS. Upon written notice to Subscriber, CalCERTS may terminate this Agreement upon the occurrence of any of the following events:
 - i. failure of Subscriber or Subscriber's employee to comply with any of the terms and conditions of this Agreement, or any other agreement between Subscriber and CalCERTS;
 - ii. failure of Subscriber or Subscriber's employee to comply with the HERS Regulations;
 - iii. failure to respond promptly and truthfully to any request for information from Subscriber or Subscriber's employee reasonably required by CalCERTS;
 - iv. failure of Subscriber or Subscriber's employee to provide accurate information to CalCERTS in this Agreement, in the Rater Agreement, or in any other agreement, document or statement delivered to CalCERTS;
 - v. misrepresentation to any party of Subscriber's relationship with CalCERTS;
 - vi. failure of Subscriber to promptly pay CalCERTS any monies due;
 - vii. any conduct by Subscriber or Subscriber's employee which is detrimental to CalCERTS' business, reputation, and/or status as a Commission certified "Provider";
 - viii. Subscriber, Subscriber's business, or Subscriber's employer is adjudicated bankrupt, placed in the hands of a receiver, makes an assignment for the benefit of creditors, takes the benefit of any insolvency act, or is liquidated or dissolved
- 18. <u>Effect of Termination of Agreement</u>. Upon termination of this Agreement for any reason and by either party:
 - Subscriber shall immediately remit to CalCERTS all monies and fees, including interest penalties, which are due and payable to CalCERTS. Any monies paid in advance by Subscriber to CalCERTS for services not rendered will be returned to Subscriber, subject to offset against any monies due to CalCERTS by Subscriber;
 - Subscriber shall have no access to the Registry which will prevent Subscriber from submitting data to the Registry;
 - iii. Subscriber shall cease use and immediately return to CalCERTS all CalCERTS Materials and copies;
 - iv. Subscriber shall cease use of CalCERTS Marks and related materials.



- 19. <u>Indemnification</u>. Subscriber shall indemnify and hold harmless CalCERTS, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of Subscriber's services and conduct, including all expenses, costs, settlements, judgments, awards, and legal fees (including attorneys' fees) incurred by CalCERTS in defense or settlement of such claims.
- 20. <u>Assignment</u>. Subscriber may not assign this Agreement to any party.
- 21. <u>Governing Law</u>. This Agreement, together with the parties' respective rights and obligations hereunder, shall be governed by, and interpreted and construed in accordance with the laws of the State of California.
- 22. <u>Sole Agreement</u>. This Agreement and documents referenced in it, along with the Rater Agreement, contains the entire and only agreement between the Subscriber and CalCERTS and supersedes all preexisting agreements between them respecting its subject matter. This Agreement may not be amended or modified except in a writing issued by CalCERTS and signed by Subscriber.
- 23. <u>Acknowledgement</u>. Subscriber acknowledges that Subscriber has read this Agreement, understands it and agrees to be bound by its terms and conditions. Subscriber further acknowledges that he/she has read and understands the HERS Regulations and will comply with them. For a Subscriber that is a either a Whole House Rater or a HERS BPC Rater, such individual additionally acknowledges that they have read and understand the HERS Technical Manual, found in Publication # CEC-400-2008-012-CMF dated December 2008 and available on the Commission website, incorporated herein by reference.
- 24. <u>Counterparts</u>. This Agreement may be executed in two (2) or more counterparts and all counterparts so executed shall for all purposes constitute one agreement, binding on all parties.
- 25. <u>Severability</u>. If a court of competent jurisdiction finds any provision in this Agreement to be invalid or unenforceable, such invalidity or unenforceability shall not affect the remainder of the Agreement; the provision shall be deemed severed therefrom and the remainder of the Agreement shall remain valid and enforceable in accordance with its terms and of full force and effect.
- 26. <u>Waiver</u>. No waiver of any provision of this Agreement shall constitute or be deemed a waiver of any other provision, whether or not similar, nor shall any waiver constitute a continuing waiver. No waiver shall be binding unless it is executed in writing by the party making the waiver.
- 27. <u>Subscriber Relationships.</u> Subscribers who are Raters or Non-Rater Users must identify their employer or indicate self-employed on Attachment A which is hereby made a part of this Agreement. Subscribers who are employers of Raters or Non-Rater Users must sign the most current Subscriber Agreement BEFORE CalCERTS, Inc. will activate the Rater or Non-Rater User. An employer only



needs to sign once, and then all employee relationships will be managed on the CalCERTS Registry. All Subscribers are responsible for the accuracy of the relationships attested to in this Agreement and/or in the CalCERTS Registry.

SUBSCRIBER

CalCERTS

_By:	By:
Name:	Name:
Title:	Title:
Date:	Date:



<u> Attachment A – In Progress</u>

Section I Subscriber Information (All items required)

Full Name (First, Last, MiddleInitial):		
Home Address (No POBox):		
City:	State:	Zip Code:
Personal Email (NOT a Company Addre	ss):	
Home Phone:	Mobile Phone:	
Employer:		
Type of Subscriber: (check only one)		
Rater Employee: Self-Employed Rater: Non-Rater User Rater AND Employer Non-Rater Employer	(Complete Section II (Complete Section II (Complete Section II (Complete Section II	below)
Employer or Self-En	Section II nployed Information (ALL ite	ems required)
Company Name		
Company Address (No P.O. Box)		
City		Zip Code

CalCERTS HERS PROVIDER Company

Phone_____Fax_____ _____Company Contact_____

Company Contact Email_

Billing Contact_

Billing Email_____



Appendix II

Quality Assurance Program: Rater Agreement





Rater Agreement

This Rater Agreement (the "**Agreement**") is made by and between CalCERTS, Inc. ("**CalCERTS**") and the individual identified on the signature page hereto seeking certification as a Rater (as defined below) pursuant to the California Home Energy Rating System Regulations set forth at California Code of Regulations, Title 20, Section 1670 *et seq.*, and related applicable authority ("**HERS Regulations**").

- Intent of the Parties. In entering into this Agreement it is the intent of the parties to set forth their relative rights and responsibilities, and specifically to provide for the manner in which a Rater that is certified by CalCERTS shall conduct himself or herself consistent with the HERS Regulations so as to promote accurate ratings and protect consumers and to not harm CalCERTS' status as a "Provider" certified by the State of California Energy Resources Conservation and Development Commission ("Commission").
- 2. <u>Definition of Rater</u>. As used in this Agreement, the term "Rater" means an applicant who has signed this Agreement, a separate Subscriber Agreement, met CalCERTS' required training and certification procedures, and is a "Compliance Rater," a "Whole House Rater," and/or a "HERS BPC Rater" as defined herein. "Prospective Rater" simply refers to a Rater who has not yet been certified by CalCERTS.
- 3. <u>Certification of Rater</u>. Upon completion of CalCERTS' training and testing requirements in effect at the time of a Prospective Rater's application and upon the payment of applicable fees, CalCERTS shall provide a certificate of completion and a notice of certification as a Rater to the Commission.
- 4. <u>Type of Certification</u>. Subject to completion of CalCERTS' training and testing requirements, a Rater may be certified as a Compliance Rater, a Whole House Rater, and/or a HERS BPC Rater all of which are referred to generically in this Agreement as a Rater.
 - i. <u>Compliance Rater</u>. A "Compliance Rater" is a rater performing the site inspection and data collection required to produce a home energy rating or the field verification and diagnostic

testing required for demonstrating compliance with the Building Energy Efficiency Standards set forth in Title 24, Part 6 of the California Code of Regulations ("**Building Energy Efficiency Standards**") and who is listed on a registry in compliance with the HERS Regulations.

- <u>Whole House Rater</u>. A "Whole House Rater" is a Rater who has been trained, tested, and certified by a provider to perform one or more of the functions or procedures used to develop a California Whole-House Home Energy Rating and a California Home Energy Audit and who is listed on a registry in compliance with the HERS Regulations.
- iii. <u>HERS BPC Rater</u>. A "HERS BPC Rater" is a Whole House Rater who has also met the requirements of CalCERTS' HERS Building Performance Contractor Program, as approved by the Commission, and is employed by (or is personally) a general contractor with a current and active Class B license that is in good standing according to the California Contractors State License Board.
- 5. <u>Registry</u>. CalCERTS shall maintain a registry of all Raters who meet the requirements for certification, provide an electronic copy of the registry to the Commission and make that registry available in printed or electronic form upon written request to the Commission.
- 6. <u>Credential Requirements</u>. Rater shall meet CalCERTS' Credential Requirements, receipt of which the Rater hereby acknowledges. Rater shall meet all of CalCERTS' continuing education requirements as promulgated from time to time in its sole discretion.
- 7. <u>Code of Ethics</u>. Rater hereby acknowledges receipt of CalCERTS' Rater Code of Ethics incorporated by this reference and will abide by the same.
- 8. <u>Compliance with Law and Accuracy of Ratings</u>. Rater shall comply with all applicable laws and regulations including, without limitation, the HERS Regulations. Rater shall provide true, accurate and complete data collection, analysis, ratings, and field verification and diagnostic testing in accordance to the HERS Regulations. Each rating shall be based on a Rater's *personal* inspection, testing, and verification of the subject property, unless the HERS Regulations provide otherwise. A certified Whole House Rater may use inspection and testing data gathered by another certified Whole House Rater for analysis or entry into simulation software; provided however, the Rater issuing the final rating is held responsible for the accuracy of all data used for the rating, as well as for the rating itself.
- 9. <u>HERS BPC Rater Additional Requirements.</u> HERS BPC Raters must be current and active licensed class B building contractors, or a W-2 employee thereof, and abide by the laws and regulations of the California Contractors State License Board ("CSLB"), including, but not limited to, complying with



advertising requirements, home improvement contract requirements, and use of properly licensed subcontractors. HERS BPC Raters must provide home energy rating services only under a Commission-approved Building Performance Contractor program pursuant to Section 1674(e) of the HERS Regulations; and, in the case that the HERS BPC Rater is also the class B license holder, then he must comply with requirements for the issuance of building permits, state and local building codes, and other requirement of Section 7110 of the Contractor's License Law. HERS BPC Raters must notify CalCERTS of any citation, suspension, or revocation actions by the CSLB against them.

- 10. <u>Independent Status</u>. Rater shall be independent from, and not an employee or agent of, any person or company that performs work on the subject property (including, for example only, a general contractor or a subcontractor) and shall have no financial interest in the work performed on the subject property or in the subject property itself. Rater shall comply with the conflict of interest requirement specified in section 1673(j) of the HERS Regulations.
- 11. <u>Limited Exception to Independent Status</u>. A Whole House Rater or a HERS BPC Rater who is an employee of a HERS Building Performance Contractor shall not be required to be an independent entity from the person or company performing the work on a subject property unless performing field verification or diagnostic testing to verify compliance with Building Energy Efficiency Standards. A HERS BPC Rater shall retain a signed copy of all disclosures of the business relationship between the HERS BPC Rater and building performance contractor, as required in the HERS Technical Manual, Section 8.3.5 to be given to the homeowner, including the disclosures regarding conflicts of interest that are subject to the Title 20, Article 8, Chapter 4, Sections 1673(j)(1-3) of the HERS Regulation for other types of Raters.
- 12. <u>Payment for Services.</u> Rater shall not accept payment or consideration in exchange for reporting data gathered for a rating, analytical results used for a rating, or a rating result that was not in fact conducted and reported in compliance with the HERS Regulations.
- 13. <u>No Recommendations</u>. Rater shall not recommend contractors or subcontractor installers for potential services to customers.
- 14. <u>No Employment Relationship</u>. Rater acknowledges and agrees that he/she is not an employee or agent of CalCERTS and shall not represent himself or herself as such.
- 15. <u>CalCERTS Materials</u>. As part of the training and certification process CalCERTS may provide a Rater or a Prospective Rater with copies of and/or access to its intellectual property, copyrighted materials, trademarks, service marks, trade secrets, and/or confidential and proprietary information including, without limitation, training manuals and materials, user's guides, checklists, forms, related documents and/or software, the data registry, data and rating processes, and documents and



information that is not otherwise publically available ("**CalCERTS Materials**"). Rater's use of CalCERTS Materials is specifically governed by a Subscriber Agreement.

- 16. <u>Confidentiality of CalCERTS Materials</u>. Rater agrees that the CalCERTS Materials that may be provided as part of the training and certification process are owned by CalCERTS and shall be kept confidential and used by the Rater pursuant to a non-exclusive terminable license. Raters may not at any time disclose the CalCERTS Material and/or derivative documents and information, including, but not limited to, the registry and rating processes, to anyone other than CalCERTS or the Commission. All materials shall be returned in the event that a Prospective Rater is not ultimately certified or a Rater is subsequently decertified. Raters may not alter or copy any of the CalCERTS Materials other than the collection forms. Any breach of the obligations of confidentiality may cause irreparable harm in which case injunctive and monetary relief shall be available. A Rater's obligations pursuant to this section shall survive termination of this Agreement.
- 17. <u>Marketing Materials.</u> A Rater may indicate on marketing materials that it is a CalCERTS Certified Rater. A Rater may use CalCERTS' trademark in good faith and solely for the purpose of marketing rating services so long as use of the trademark does not diminish the goodwill associated with the CalCERTS' name and reputation.
- 18. <u>Access to Registry Login & Passwords</u>. Rater will be issued a secure login and password to the CalCERTS data registry (the "**Registry**"). Rater may not provide their login and password to any person. Raters shall report any unauthorized use of their login or password to CalCERTS immediately upon discovery. Rater's access to and use of the Registry shall be subject to a Subscriber Agreement.
- 19. <u>Transmission of Ratings</u>. Rater shall transmit, within 48 hours of the field verification and/or diagnostic testing work being completed, or may designate a user to transmit within 48 hours of the work being completed, all rating data, as described in paragraph 8, to CalCERTS via the CalCERTS Registry. If a Rater designates a user, the user must obtain their own secure login and password from CalCERTS. Rater is personally responsible for the accuracy, truth, completeness and timeliness of all rating data transmitted to CalCERTS' Registry under the Rater's electronic signature whether or not the Rater personally entered the data.
- 20. <u>Confidentiality of Ratings</u>. Rater shall keep confidential all ratings results and any related data, notes or information, personal identification information of consumer(s) and all information gathered from ratings except for transmitting to CalCERTS, the builder, the local building department, the homeowners, the real estate listing agent, lender, utility, or energy efficiency mortgage facilitator, all only as reasonably required. Rater's obligation of confidentiality under this section shall survive termination or expiration of this Agreement.



- 21. <u>Rater's Contact Information Requirements</u>. CalCERTS uses email notifications as its sole means of communicating technical changes, policy changes, important notices, and information that may be useful to the Rater. Rater must provide a personal email address and a personal mailing address to CalCERTS. A personal email address, different from a work email address, if applicable, and a personal mailing address (no P.O. Boxes) must be current within the CalCERTS' Registry at all times. Rater must notify CalCERTS immediately in writing if the Rater's contact information changes.
- 22. <u>Quality Assurance of Rater</u>. CalCERTS may annually perform a quality assurance review of certified Raters as more specifically described in CalCERTS' Quality Assurance Procedures and Policies, receipt of which the Rater hereby acknowledges ("**QA Policy**"). Rater shall cooperate with CalCERTS' quality assurance and CalCERTS' QA Policy.
 - i. <u>Quality Assurance for BPC Raters</u>. A Prospective Rater who is ultimately certified as a BPC Rater acknowledges and agrees that any quality assurance failure of a rating conducted under the employment of a HERS Building Performance Contractor will be attributed equally and fully to the BPC RATER and the HERS Building Performance Contractor.
 - ii. <u>Quality Assurance for HERS Building Performance Contractors</u>. A prospective Rater who is ultimately certified as a HERS Building Performance Contractor understands that any quality assurance failure of a rating conducted by an employee will be attributed equally and fully to both the BPC RATER and the HERS Building Performance Contractor.
- 23. <u>Investigation of Rater Conduct and Performance</u>. Rater acknowledges and agrees that CalCERTS may, at its sole discretion, conduct investigations of Rater's conduct and performance whether due to complaints received from third parties, quality assurance reviews, or otherwise. As part of its investigation, CalCERTS may conduct additional quality assurance reviews of the Rater in addition to the minimum number otherwise required. CalCERTS may require Rater to pay, in its sole discretion, reasonable costs for such additional quality assurance reviews conducted due to additional quality assurance or investigations. Rater shall be informed of the existence of an investigation, and shall have an opportunity to present information and documents related to the substance of the investigation; all before CalCERTS' concludes the investigation and takes any disciplinary action set forth in Section 24.
- 24. Suspension of Rater During Investigation. In the event that CalCERTS commences an investigation of Rater, CalCERTS may, for purposes of determining the validity of any complaint or investigation, temporarily suspend a Rater's ability to enter data into the CalCERTS' Registry during the



investigation period when further activity by the Rater could interfere with CalCERTS' investigation or continued ratings might jeopardize a consumer's rights to true, accurate and complete Ratings.

- 25. Discipline of Rater. Following its investigation, CalCERTS may, at its sole discretion (i) require additional education or training; (ii) suspend Rater for a period of time beyond the investigation; (iii) decertify Rater; and/or (iv) terminate this Agreement, upon occurrence of any of the following:
 - i. failure to comply with this Agreement, or any other agreement between Rater and CalCERTS;
 - ii. failure to comply with the HERS Regulations;
 - iii. disciplinary action against Rater by the Contractors State License Board or any similar authority, including another HERS training and certification provider;
 - iv. failure to provide a true, accurate and complete rating, field verification or diagnostic testing in accordance with all regulations;
 - v. two or more valid complaints about Rater from Rating customers, or potential customers, or any other source;
 - vi. failure to respond promptly and truthfully to any request for information from the Rater reasonably required by CalCERTS;
 - vii. failure to provide accurate information to CalCERTS in this Agreement, the Subscriber Agreement, or in any other agreement, document, or statement delivered to CalCERTS by Rater;
 - viii. misrepresentation to any party of Rater's relationship with CalCERTS;
 - ix. failure to promptly pay CalCERTS any monies due;
 - x. any conduct which is detrimental to CalCERTS' business, reputation, and/or status as a Commission certified "Provider."
- 26. <u>Termination of Agreement</u>. CalCERTS may terminate this Agreement pursuant to the preceding section. Rater may terminate this Agreement ten (10) days after written notice is provided to CalCERTS.
- 27. <u>Effect of Termination</u>. Upon termination of this Agreement, for any reason, by either party:
 - i. Rater's certification shall be deemed immediately revoked and Rater will no longer be permitted to perform Ratings as a CalCERTS certified Rater and/or enter data into the CalCERTS Registry;
 - ii. Rater shall arrange to have pending ratings completed by another CalCERTS certified rater;



- CalCERTS shall notify the Commission of the termination, along with the reason(s) for termination, including any disciplinary, legal, and/or administrative proceedings that may be involved;
- iv. Rater shall immediately remit to CalCERTS all monies and fees, including interest penalties, which are due and payable to CalCERTS. Any monies paid in advance by Rater to CalCERTS for services not rendered will be returned to Rater, subject to offset against any monies due to CalCERTS by Rater;
- v. Rater shall cease use of and immediately return any and all CalCERTS Materials and copies;
- vi. Rater shall immediately cease the display of any CalCERTS credentials, logos or other media materials and cease any representation to the public that Rater is CalCERTS certified.
- 28. <u>Indemnification</u>. Rater shall indemnify and hold harmless CalCERTS, its officers, directors, agents, and employees from and against all claims of all kinds arising from or in connection with performance of Rater's services and conduct, including all expenses, costs, settlements, judgments, awards, and legal fees (including attorneys' fees) incurred by CalCERTS in defense or settlement of such claims.
- 29. <u>Assignment</u>. Rater may not assign this Agreement or Certification as a Rater to any party.
- 30. <u>Governing Law</u>. This Agreement, together with the parties' respective rights and obligations hereunder, shall be governed by, and interpreted and construed in accordance with the laws of the state of California.
- 31. <u>Sole Agreement</u>. This Agreement and agreements referenced in it, including the Subscriber Agreement, contain the entire and only agreement between the Rater and CalCERTS and supersedes all preexisting agreements between them respecting its subject matter. This Agreement may not be amended or modified except in a writing signed by CalCERTS and Rater.
- 32. <u>Acknowledgement</u>. Rater acknowledges that Rater has read this Agreement, understands it and agrees to be bound by its terms and conditions. Rater further acknowledges that he/she has read and understands the HERS Regulations and will comply with them. For a Rater that is a Whole House Rater or a HERS BPC Rater, such individual additionally acknowledges that he/she has read and understands the HERS Technical Manual, found in Publication #CEC-400-2008-012-CMF dated December 2008 and available on the Commission website, incorporated herein by reference.
- 33. <u>Counterparts</u>. This Agreement may be executed in two (2) or more counterparts and all counterparts so executed shall for all purposes constitute one agreement, binding on all parties.



- 34. <u>Severability</u>. If a court of competent jurisdiction finds any provision in this Agreement to be invalid or unenforceable, such invalidity or unenforceability shall not affect the remainder of the Agreement; the provision shall be deemed severed there from and the remainder of the Agreement shall remain valid and enforceable in accordance with its terms and of full force and effect.
- 35. <u>Waiver</u>. No waiver of any provision of this Agreement shall constitute or be deemed a waiver of any other provision, whether or not similar, nor shall any waiver constitute a continuing waiver. No waiver shall be binding unless it is executed in writing by the party making the waiver.

RATER	CalCERTS
By:	By:
Name:	Name:
Title:	Title:

Dated:

Dated:



Appendix III

Quality Assurance Program: Rater Code of Ethics





Rater Code of Ethics

CalCERTS is committed to certifying raters that have committed to upholding the highest standards of quality and professional service to the public. This Code of Ethics sets forth principles and rules of conduct enforced by CalCERTS through specific procedures contained in its QA Policies and Procedures. This Code of Ethics presents the principles to which all certified CalCERTS Raters must agree and adhere.

Professional Conduct

- Raters shall commit to objectivity and neutrality in conducting a home energy rating or audit and in making any recommendations.
- Raters shall not engage in any conduct that is detrimental to the reputation or the best interests of CalCERTS, the State of California, the Home Energy Rating profession or the Homeowners who ultimately receive the rating services.
- Raters, or a rating organization shall not disclose information concerning the rating or home energy audit for a specific home to parties other than the client or the client's agent without the written permission of the client or the client's agent except to report to CalCERTS for the purposes of registration, certification, or quality assurance.
- Rater acknowledges that the purpose of a rating is to benefit the consumer, as described in Public Resources Code 25942, and that although the Rater may be paid indirectly by the installer, the Rater's first responsibility is to the consumer, not to the installer.

Representations of Services and Fees

- Raters shall make no representations regarding their services or qualifications that are false or misleading in any material respect.
- Raters shall fully disclose all applicable charges, as well as the general scope and deliverables of services, prior to conducting a home energy rating, home energy audit or providing other services.

Conflicts of Interest

- Raters shall not accept compensation, financial or otherwise, from more than one interested party for the same service without the consent of all interested parties.
- Raters shall inform their clients that they have the right to obtain competitive bids for any work recommended by the rating they provide.
- Raters shall inform homeowners before beginning work that they may independently hire a Rater, and do not have to use the installer's recommended Rater.
- Raters shall not allow an interest in any business to affect the results of the rating/home energy audit.

RATER:

By:

Print Name:

Dated:



Appendix IV

Quality Assurance Program: Quality Assurance Policy Agreement





Quality Assurance Policy Agreement

California's Home Energy Rating System ("HERS") regulations require CalCERTS to have a Quality Assurance Program. (Title 20, California Code of Regulations §1670 et seq ("HERS Regulations").) CalCERTS' Quality Assurance Policy ("QA Policy") provides information about CalCERTS' Quality Assurance Program and identifies the rights and obligations of CalCERTS and CalCERTS certified Raters. The QA Policy is designed to promote the HERS Industry and consumer protection by ensuring that all CalCERTS certified Raters are complying with the HERS Regulations.

Quality Assurance Data & Field Reviews

- CalCERTS will conduct quality assurance data and field reviews on CalCERTS certified Raters.
- Quality Assurance reviews will be conducted by CalCERTS' Quality Assurance Reviewers. Data and field reviews are designed to verify the completeness and accuracy of a Rater's work.
- Raters must provide a standardized written notice, regarding the possibility and purpose of a CalCERTS Quality Assurance Review, to the Homeowner on Alterations, and the Superintendent, Builder (or builder's representative) or Homeowner on New Construction.
- Raters must provide CalCERTS with contact information that includes the name and a valid phone number of the person authorized to facilitate scheduling and provide access for a Quality Assurance Reviews. This contact is usually the Homeowner on Alterations, and the Superintendent, Builder (or builder's representative) or Homeowner on New Construction. The Rater and Installer are not considered valid contacts.
- Raters may be notified of the quality assurance review results, including measures with significant discrepancies, and those with no significant discrepancies. If CalCERTS Quality Assurance personnel determine that a Rater fails a Quality Assurance Review, the Rater will be given a written notice containing the review results and determination. The Rater will be subject to additional Quality Assurance Reviews pursuant to section 1673(i) of the HERS Regulations and their failure will be noted in the registry.
- Raters will be responsible for the costs of additional Quality Assurance Reviews conducted pursuant to section 1673(i) of the HERS Regulations.
- Raters may contact CalCERTS to ask questions about the Quality Assurance Review process or to ask for help from our Support Team, regarding the Registry or Building Standards/Title 24 compliance.

Office: 916-985-3400 ext. 2009

Support Team Email: <u>support@calcerts.com</u> Office: 916-985-3400 ext. *

• If a Rater encounters a problem or unusual circumstances while performing field verification and diagnostic testing, or a home energy rating, the Raters shall contact CalCERTS at support@calcerts.com as soon as possible, and prior to certifying the project so that the problem can be addressed and documented and taken into account during QA review. It is the Rater's obligation to ensure all ratings meet the criteria for truth, accuracy and completeness, set forth in the HERS Regulations.

Complaint Response

- Raters must provide the Homeowner on Alterations, and the Superintendent, Builder (or builder's representative) or Homeowner on New Construction, with a standardized written notice, notifying them they can file a complaint with CalCERTS related to the Rater's ratings and/or field verification and diagnostic testing services.
- CalCERTS will respond to all legitimate and/or verifiable complaints related to ratings and/or field verification and diagnostic testing services performed by a CalCERTS certified Rater.
- CalCERTS will document and retain records of all complaints received, and its response to complaints, for a minimum of five years. A summary of all complaints and action taken is provided annually to the Energy Commission.
- Raters may be notified of complaints issued against them if CalCERTS determines that there is sufficient evidence to warrant an investigation into the Rater's conduct and/or performance.
- CalCERTS may protect the privacy of persons who file a complaint against a Rater by withholding the name of the complainants if CalCERTS has independently verified the information provided by the complainants.

Investigations

- CalCERTS may, at its sole discretion, conduct an investigation of a Rater's conduct and/or performance whether due to complaints received from third parties, Quality Assurance Reviews, or otherwise.
- When appropriate, Rater may be given a written Notice of Investigation, stating the basis of the investigation.
- CalCERTS may temporarily suspend a Rater's Certification during an investigation when further activity by the Rater could interfere with CalCERTS' investigation or continued ratings might jeopardize a consumer's rights to true, accurate and complete Ratings. Raters will be given a written Notice of Suspension. CalCERTS will work diligently to minimize the duration of any suspension.
- As part of its investigation, CalCERTS may conduct additional quality assurance field reviews of the Rater in addition to the minimum number otherwise required under the HERS Regulations.



Investigations may also include data audits, interviews, and/or any other review of the Rater's conduct and performance that is necessary to resolve the issue being investigated.

- Raters shall be given an opportunity to ask questions about the investigation, and shall have an opportunity to submit information and documents related to the substance of the investigation before CalCERTS concludes the investigation. Raters will be encouraged to submit all questions in writing to avoid confusion and ensure accuracy.
- Raters are required to cooperate with the investigation to help ascertain facts and to gain access to important parties. If a Rater fails to cooperate with an investigation, CalCERTS may terminate the investigation and take appropriate action which may include suspension or decertification of the Rater.
- CalCERTS will review all information gathered in an investigation including information submitted by the Rater to determine if disciplinary action is warranted. If CalCERTS determines that disciplinary action is warranted the Rater shall receive a written notice of CalCERTS' findings and recommended disciplinary actions.
- Raters shall have an opportunity to appeal a recommendation of discipline prior to final imposition of discipline. Appeals must be submitted in writing.
- All investigations are considered confidential to protect all parties involved. Release of any details is at the sole discretion of CalCERTS.

Disciplinary Action & Decertification

- CalCERTS may at its sole discretion impose one or more types of disciplinary action including, but not limited to:
 - A formal written warning to the Rater detailing area(s) of concern and suggesting selfdirected corrective actions. For example, CalCERTS may recommend that the Rater attend additional training or receive mentoring.
 - \circ Imposition of additional field reviews at the Rater's expense.
 - Imposition of additional education, mentoring or training at the Rater's expense.
 - o Suspension of the Rater's Certification for a determined period of time.
 - Decertification.
- CalCERTS will document and retain records of all disciplinary action, and may provide this information to the Energy Commission as required by Title 20.
- CalCERTS may publish notifications of Rater discipline on the CalCERTS website.

RATER:	
-	

By:

Print Name:

Dated:

