The Past, Present, and Future of HERS Raters



Regional Forum

May 15, 2024



Agenda

Intro & Icebreaker

2025 Code Cycle HERS Updates – David Choo

The History of HERS – Cassie Sonne

The Future of HERS – Moderated Panel

Where Do We Go from Here?

Closing Remarks

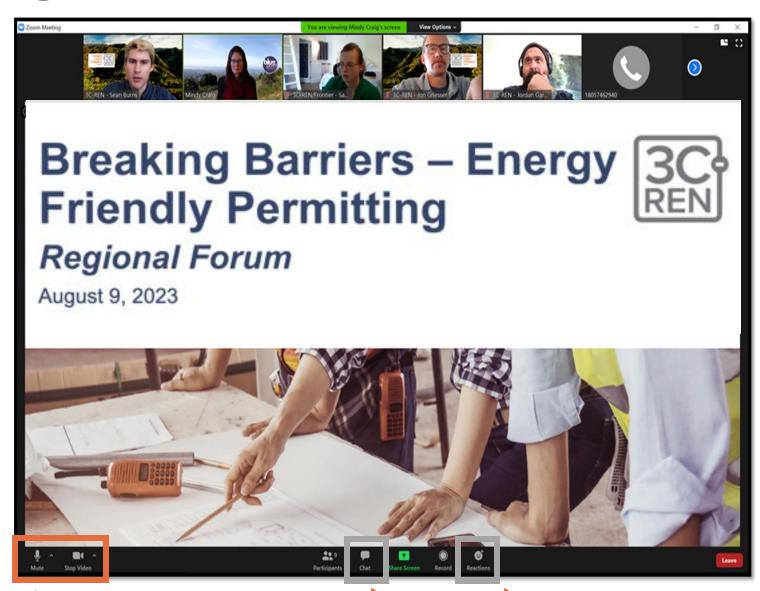




Introduction Mindy Craig, BluePoint Planning

Online Tools For Engagement

- Please be sure your full name is displayed
- Please mute upon joining
- Use Chat box to share questions or comments
- Under Reactions select Raise Hand to share a question or comment verbally
- The session may be recorded and posted to 3C-REN's on-demand page. Feel free to ask questions via the chat and keep video off if you want to remain anonymous in the recording.











California 2025 Field Verification & Diagnostic Testing Rulemaking Update – 45 Day Language

David Chuu, CalCERTS



David, a licensed mechanical contractor, has worked as a CalCERTS Rater since 2011 and joined the Quality Assurance team in 2016. He has personally conducted thousands of HERS verifications in the field and has worked directly with many contractors as both a Rater and QA Reviewer. David has a unique perspective of how the energy code and the real world intersect.



The History of HERS from 1992-2024



Cassie Sonne – Frontier Energy

Cassie Sonne is a consultant at Frontier Energy, where she leads codes and standards training and education efforts within the Inland Empire. With a Masters in Environmental Governance, she brings deep experience with the energy sector and assisting jurisdictions policy.

History of HERS

- HERS in California vs nation-wide
- •Initial use: provide cost effectiveness calculations for Energy Efficient Mortgages
- Originally, a 1-100 scale (higher = better)
- Funded partly by the CEC, but not regulated by it
- AB 32, Global Warming Solutions Act of 2006, increased the prominence of HERS



Source: blowerdoortester.com

In 2008...

- HERS regulations were updated to cover "wholehouse home energy ratings of existing and new constructed homes"
- Meant to ensure consistent, uniform ratings based on one state-wide scale
- Could provide reliable recommendations on cost effective energy efficiency measures
- Uses CEC software EnergyPro and CBECC



Source: energycodehelp.com



By 2011...

Selling?

A HERS rating will:

- Help determine facts about the energy efficiency of your home.
- Identify energy improvements that may make your home more attractive to buyers.
- Alert appraisers to add value for any energy improvements you may have made already.

Buying?

- Use a HERS rating to shop and compare the energy efficiency of homes you are considering.
- Learn about the most costeffective options for lowering the energy bills in any home you are considering buying.
- Identify and qualify for energy efficiency financing.

Staying in your current home?

- · Find out your HERS rating.
- · Discover the best options for lowering your energy bills.
- Identify energy efficiency improvements that may also make your home more comfortable.
- · Find resources to help finance your improvements.
- · Improve your home's resale value.

Federal tax credits now available include:

10 percent of the cost, up to \$500 or a specific amount from \$50-\$300, through 2011 (existing homes only) for:

- · Windows and Doors
- · Biomass Stoves
- Insulation
- · Roofs
- · HVAC
- Water Heaters

30 percent of the cost, with no upper limit through 2016 (existing homes and new construction) for:

- · Geothermal Heat Pumps
- Small Wind Turbines (Residential)
- . Solar Energy Systems

For more news on energy efficiency tax credits, visit: www.energystar.gov/taxcredits

- •HERS was promoted as a way to increase home value and help residents qualify for financial benefits
- •0-250 scale, lower is better
- Reference home is 100



Why is HERS important?

- Independent, 3rd party regulated by the CEC
- Ensures compliance with the Energy Code
- Increases home's resale value
- Helps qualify homes for energy efficient rebates, tax credits, etc.
- Better comfort for residents



Source: calhers.net



What does HERS test?

- Any new construction home or ADU
- Any addition over 1000 square feet
- Any addition or alteration that involves adding or replacing:
 - An A/C condenser
 - An A/C coil
 - An air handler (furnace) or
 - 40 feet or more of duct
- Four metrics:
 - Duct measures
 - Heating and cooling equipment measures
 - Mechanical ventilation measures
 - Building envelope measures

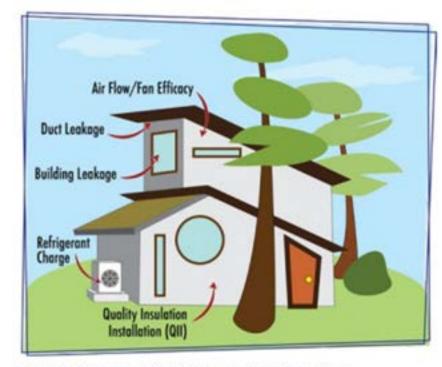


Figure 1. Examples of HERS Measures in a Single-family Home

Source: Energy Code Ace



How does HERS fit into the building permitting process?

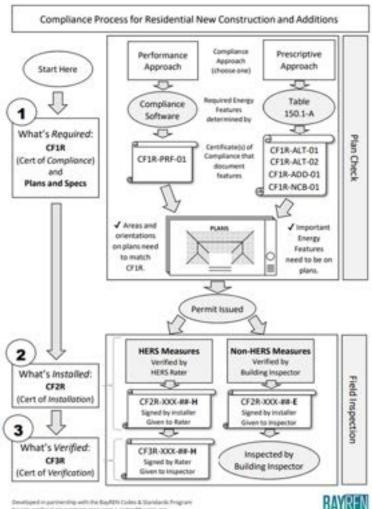


- Ideally involved from the start
- Example: quality insulation installation
- •Get to know your local HERS raters!



Source: beyondfoam.com

Forms and more forms



- CF1R (plan check) --> CF2R (field inspection) --> CF3R (what's verified)
- CF1R Certificate of Compliance (and all subsequent CF2R and CF3R documents) must be "registered" with a HERS provider
- HERS online registry is a database that generates, tracks, and scores all documents for a registered project – CalCERTS, **CHEERS**
- Anyone involved in the process can track its development, including the building department



Even more forms!

Forms depend on:

- Building type
- Measure being inspected
- Come with a description

Appendix A Compliance Documents

Doc Type	Doc Category	Category Description	Description
CF2R-	L7G-02-E	Lighting-NonHERS	Lighting - Multifamily Dwellings
CF2R-	MCH-01-€	Mechanical-NonHERS	Space Conditioning Systems
CF2R-	MCH-02-E	Mechanical-NonHERS	Whole House Fan
CF2R-	MCH-04-E	Mechanical-NonHERS	Evaporative Coolers
CF2R-	MCH-20-H	Mechanical-HERS	Duct Leakage Diagnostic Test
CF2#-	MCH-21-H	Mechanical-HERS	Duct Location Verification
CF2R-	MCH-22-H	Mechanical-HERS	Fan Efficacy
CF28-	MCH-23-H	Mechanical-HERS	Airflow Rate
CF28-	MCH-24H	Envelope-HERS	Building Envelope Air Leakage Worksheet
CF28-	MCH-25-H	Mechanical-HERS	Refrigerant Charge verification
crza-	MCH-26-H	Mechanical-HERS	Rated Space Conditioning System Equipment Verification
CF2R-	MCH-27-H	Mechanical-HERS	Indoor Air Quality and Mechanical Ventilation
CF2R-	MCH-20-H	Mechanical-HERS	Return Duct Design and Air Fifter Grille Device Sizing According to Tables 150.0-8 or C
CF28-	МСН-29-Н	Mechanical-HERS	Duct Surface Area Reduction, R-Value, Buried Ducts Compliance Credit
CF28-	MCH-30-E	Mechanical-HERS	Ventilation cooling compliance credit
CF2R-	MCH-31-H	Mechanical-HERS	HERS Verified Whole House Fan
CF2R	MCH-32-H	Mechanical-HERS	Kitches Ventilation
CF2R-	PLS-01-E	Plumbing-CHW-NonHERS	Multifamily Central Hot Water System Distribution
CF2R-	PLB-02-E	Plumbing (DHW)-NonHERS	Single Dwelling Unit Hot Water System Distribution
CF28-	PLB-03-E	Plumbing (DMW)-NonMERS	Pool and Spa Heating Systems
CF2R-	PLB-21-H	Plumbing (DHW)-HERS	HERS Verified Multifamily Central Hot Water System Distribution
CF2R-	PLB-22-H	Plumbing (DHW)-HERS	MERS Verified Single Dwelling Unit Not Water System Distribution
CF28-	PV8-01-E	Photovoltaics-NonmERS	Photovoltaic Systems
CF2R-	PV9-02-E	Photovoltaics-NonHERS	Battery Storage Systems.
CF2R-	58A-01-E	Solar Ready	Solar Ready Areas
CF2R-	58A-02-E	Solar Ready	Minimum Solar Zone Area Worksheet
CF28-	5TH-01-E	Solar Thermal	Solar Water Heating Systems

2019 Residential Compliance Documents

Appendix A Compliance Documents

NOTE: For Documents and User Instructions, please visit our website at: http://energy.ca.gov/title24/2019standards

Doc Type	Doc Category	Category Description	Document Description
CF1R's-	Certificate of Co	mpliance	8
CF1R-	ADD-01-E	Additions	Prescriptive Additions Less Than 1,000 ft ²
CF1R-	A00-02-E	Additions	Prescriptive Additions – Simple NonHERS (paper version)
CF1R-	ALT-01-E	A/terations	Prescriptive Alterations
CF1R-	ALT-02-E	Alterations	Prescriptive Alterations HVAC
CF1R-	ALT-05-E	Alterations	Prescriptive Alterations – Simple NonHERS (paper version)
CF1R-	ENV-02-E	Envelope	Area Weighted Average Calculation Workshe
CF1R-	ENV-03-E	Envelope	Solar Heat Gain Coefficient (SHGC) Workshee
CF1R-	ENV-04-E	Envelope	Solar Reflective Index (SRI) Worksheet
CF1R-	ENV-05-€	Envelope	Alternative Default Fenestration Procedure () Worksheet
CF1R-	ENV-06-E	Envelope	Interior and Exterior Insulation Layers Works
CF1R-	NC8-01-E	Newly Constructed Buildings	Prescriptive Newly Constructed Buildings and Additions Equal to or Greater Than 1,000 ft ²
CF1R-	PL8-01-E	Plumbing (DHW)	Hydronic Heating System Worksheet
CF1R-	PRF-01-E	Performance	Residential Performance Compliance Method
CF1R-	STH-01-E	Solar Thermal	OG 100 Solar Water Heating Worksheet
CF2R's -	Certificate of Ins	stallation	
CF2R-	ADD-02-E	Additions	Prescriptive Additions – Simple NonHERS (paper version)
CF2R-	ALT-05-E	Alterations	Prescriptive Alterations – Simple NonHERS (paper version)
CF2R-	ENV-01-E	Envelope-NonHERS	Fenestration Installation
CF2R-	ENV-03-E	Envelope-NonHERS	Insulation Installation
CF2R-	ENV-04-E	Envelope-NonHERS	Roofing - Radiant Barrier
CF2R-	ENV-20-H	Envelope-HERS	Building Leakage Diagnostic Test
CF2R-	ENV-21-H	Envelope-HERS	QII - Framing Stage
CF2R-	ENV-22-H	Envelope-HERS	QII – Insulation Installation Stage
CF2R-	LTG-01-E	Lighting-NonHERS	Lighting - Single Family Dwellings

Appendix A Compliance Documents

Page :

CF3R's-	Certificate of In	stallation	
CF3R-	ENV-20-H	trivelope-HERS	Building Leakage Diagnostic Test
CF3A-	EWV-21-H	Envelope HERS	Qti - Framing Stage
CF3R-	EWV-22-H	Envelope-HERS	Qt - Insulation Installation Stage
CFSR-	Ехс-20-Н	Existing Conditions	HERS Verification of Existing Conditions for Residential Alterations
CF3R-	MCH-20-H	Mechanical-HERS	Duct Leakage Diagnostic Test
CF3R-	MCH-21-H	Mechanical-HERS	Ouct Location Verification
CF3R-	MCH-22-H	Mechanical-HERS	Fan Efficacy
CF3R-	MCH-23-H	Mechanical-HERS	Airflow Rate
CF3R-	MCH-24-H	Envelope-HERS	Building Envelope Air Leakage Worksheet
CF3R-	MCH-25-H	Mechanical-HERS	Refrigerant Charge Verification
CFSA-	MOH-26-H	Mechanical-HERS	Rated Space Conditioning System Equipment Verification
CF3R-	M0H-27-H	Mechanical-HERS	Indoor Air Quality and Mechanical Ventilation
CF3A-	MOH-28-H	Mechanical-HERS	Return Duct Design and Air Filter Device Sizing According to Tables 150.0-8 or C
CF3R-	MCH-29-H	Mechanical-HERS	Duct Surface Area Reduction; 8-value; Buried Ducts Compliance Credit
CF3R-	MCH-31-H	Mechanical-HERS	HERS Verified Whole House Fan
CF3R-	MCH-314H	Mechanical-HERS	xitchen ventilation
CF3R-	PL8-21-H	Flumbing (DHW)-HERS	HttRS Verified Multifamily Central Hot Water System Distribution
CF3R-	PLB-22-H	Plumbing (DHW)-HERS	PRERS verified High Rise Residential/Hotel/Motel Single Owelling Unit Hot Water System Distribution
NRCV-	MCH-04-H	Mechanical-HERS	Duct Leakage Diagnostic Test
NRCV-	MCH-24-H	Mechanical-HERS	Building Envelope Air Leakage Worksheet
NRCV-	MCH-27-H	Mechanical-HERS	Indoor Air Quality and Mechanical Ventilation
NRCV-	PL8-21-H	Plumbing (DHW)-HERS	HERS Verified Multifamily Central Hot Water System Distribution
NACV-	PL8-22-H	Mumbing (DHW)-HERS	HERS verified High Rise Residential/Hotel/Motel Single Dwelling Unit Hot Water System Distribution

2019 Residential Compliance Documents

January 2019

2019 Residential Compliance Documents

January 2019
REN

HERS Raters and Code Enforcement

- Varies slightly based on project type, but...
 - Make sure all accepted CF1Rs are registered. Do not accept any unregistered forms.
 - Make sure the forms are registered with the right jurisdiction.
 - For all projects that could potentially have HERS tests, confirm any exemptions.
 - Coordinate plan checking and field inspections.
 - Before closing out the project, double check that all forms are complete and in the registry.



Tricks of the Trade: "The Rater is the Educator"

- HERS raters can often be the participant in the permitting process to bring people up to speed on the Energy Code
- Everyone on the building project has the same goal to provide homeowners with the best home alteration/addition/new construction as possible
- Experience is the best teacher encountering different situations builds up knowledge
- Get information straight from trusted sources such as CEC,
 Energy Code Ace, and 3C-REN

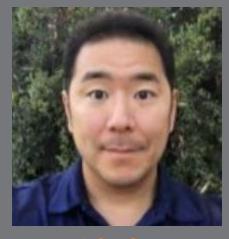






Panel Discussion

Moderated by Mindy Craig



David Choo
Director of Compliance
CalCERT



Director of Technical Services

CHEERS



Local HERS Rater
County of Ventura



Mike Little
Local HERS Rater
Central Coast



Where Do We Go From Here? Jordan Garbayo

3C-REN: Tri-County Regional Energy Network

- Three counties working together to improve energy efficiency in the region
- Services for
 - Building Professionals
 - Households
 - Small to Medium Businesses
 - Agriculture and Farmers
 - Emergency Use Facilities
- Funded by ratepayer dollars that 3C-REN returns to the region













- Serves all building professionals
- Three services
 - Energy Code Coach
 - Training and Forums
 - Regional Forums
- Makes the Energy Code easy to follow

Energy Code Coach: 3c-ren.org/codes

Event Registration: **3c-ren.org/events**





Energy Code Coach

- Personalized LOCAL support for all building professionals Energy Code and CalGreen needs
- Online, over the phone, in-person support
- Customizable Training Opportunities
- Response within 24 Hours!





Questions about the California **Energy Code?**

Our local experts are here to help. We'll respond within one business day so that your project meets Title 24 Part 6 requirements

- · Help with compliance, installation, and verification forms
- All electric pathway compliance
- Modeling support for PV, heat pump technology, and beyond

Who We Are

Our team of local experts are Central Coast professionals with of experience in the construction industry working as cororact planning consultants, HERS raters, GreenPoint Raters, architec Certified Energy Analysts. We understand your needs.

Energy Code Coach will answer your technical questions about modeling and compliance reparting, with the references and resources to support you and your department or first

How it Works

Energy Code Coach offers free, professional and friendly comute onsine, over the phone, or in the field/office, Call or enail us with a question and we will respond within one business day.

How can Energy Code Coach help you?

- Personalized Support: Energy Code Coach answers your
- Plan Review; Energy Code Coach can review plans and building department comments.
- Department Meetings: Energy Code Coach can present to your staff on how to take advantage of this free service.
- Field Visits: Energy Code Coach can meet with you for on-site
- Training: Energy Code Coach can offer customized code trainings for your team, online or in-person.

Energy Code Code: It is sense a of Energy Code Connect by 3C 85% If purchasely between the country of Modern, Some Reduce and Son Law Obsers.



Call anytime, response within one business day 805-220-9991

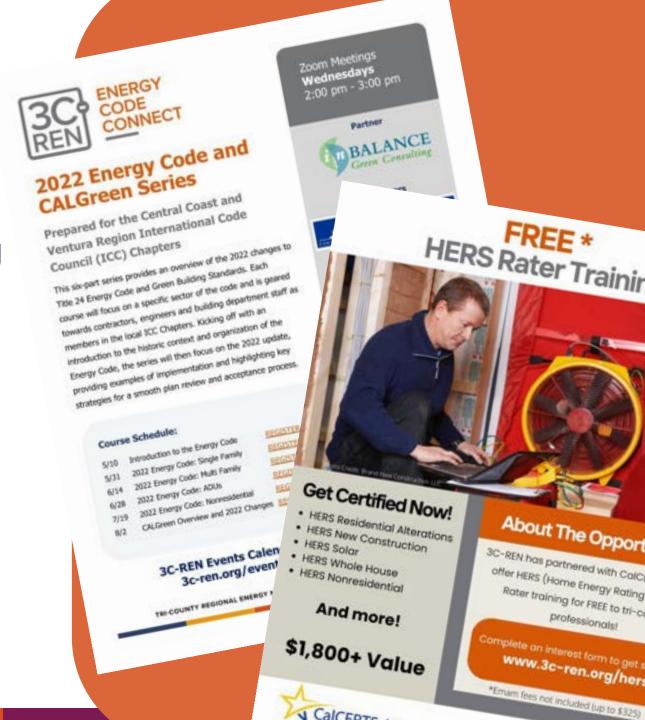
Or submit online: www.3c-ren.org/ecc

TRI-COUNTY REGIGNAL ENERGY NETWORK



Energy Code and CalGreen Building Standards Training

- Energy Code 101
- Single Family, Multifamily, and Nonresidential
- ADU's, Existing/Additions/Alterations
- CalGreen Building Standards
- HERS Rater Training
- Certified Energy Analyst (CEA)





Reach Code Support

- Free Expert Guidance and Technical Support throughout the development, adoption, and implementation process
- Education and Outreach Support to the public and building professionals
- Workforce, Education, and Training for local contractors

Definition O'clock!!!

Reach codes are a method for jurisdictions to pass energy policy that "reaches", or goes beyond, California state standards. They can include codes for building electrification, energy and water efficiency, solar panel installation, energy audits and benchmarking.

Reach codes can be sited as an overlay to the Title 24 Energy Code or as a municipal code (e.g., Health & Safety, Fire Code, Building Code).



Closing Remarks



Thank you!

For more info: 3c-ren.org

For questions: info@3c-ren.org



TRI-COUNTY REGIONAL ENERGY NETWORK

SAN LUIS OBISPO + SANTA BARBARA + VENTURA





California 2025 Field Verification & Diagnostic Testing Rulemaking Update – 45 Day Language

v. 2024-05-15

2025 Changes to Mandatory Measures & Efficiencies



2025 Changes to Efficiency Metric Long-Term System Cost vs EDR

Long-Term System Cost Replacing Energy Design Rating

After

- Long-Term System Cost (LSC)
 - LSC = CEC-projected value of costs over a 30 year period for California's energy system.

Before -

- Energy Design Rating (EDR)
 - EDR = A way to express energy performance of a home in comparison to the 2006 IECC standard home.



2025 Changes to Efficiencies 150.0(c) – Mandatory Wall Insulation

Section 150.0(c) - Mandatory Wall Insulation

- Reduce maximum U-factor as follows:
 - For 2x4 framing to U-0.095
 - Equivalent to R-15 cavity insulation in a 2x4 wood framed assembly.
 - For 2x6 or greater framing to U-0.069
 - Equivalent to R-21 cavity insulation in a 2x6 wood framed assembly.

These same changes also apply to Multifamily, Section 160.1(b).



2025 Changes to Efficiencies 150.0(h) – Mandatory Space Conditioning Equipment

Section 150.0(h) – Many Changes! Load calculation requirements have loosened.

- Block loads allowed for additions.
- More design conditions are allowed.
 - JA2 is no longer the only design condition. Designer can also use ASHRAE Handbook, SMACNA Res Standards Manual, ACCA Manual J.



2025 Changes to Efficiencies 150.0(h) - Mandatory Space Conditioning Equipment

Section 150.0(h) - Heat Pumps

- Heat Pumps with supplemental heating strips will be highly regulated.
- Multifamily, Non-Res, Single Family all have slightly different limits on the allowed sizing.



2025 Changes to Mandatory Measures Blower Door Testing

Multi-point testing!



Multi-point testing is being adopted.



Only single-point testing was allowed in previous code.



2025 Changes to Mandatory Measures Single Family

Change to Refrigerant Charge Testing in Alterations



 Refrigerant Charge Testing required in all Climate Zones when Heat-Pump installed.
 Other system type rules remain the same.



Refrigerant Charge Testing required in CZ 2, 8-15



2025 Changes to Mandatory Measures Multifamily

After

• Balanced *or* Supply only Ventilation <u>AND</u> Compartmentalization (Blower Door).

Before

 Balanced Ventilation or Compartmentalization (Blower Door)



2025 Changes to Mandatory Measures Multifamily

New Multifamily Mandatory Measure!

- HERS Verification of pipe insulation.
 - Building Energy Efficiency Standards 160.4(e)



2025 Changes to Mandatory Measures Non-Res & Multifamily

Duct Leakage Diagnostic Testing Revisions

- Non-res, Hotel/Motel, Multifamily Common Areas no longer require both ATT & HERS Rater testing.
- Only ATT duct leakage diagnostic testing required in the above situation.
- Multifamily dwellings require HERS Rater testing.



2025 Changes to Mandatory Measures High Rise Multifamily

Ventilation Changes

- Only HERS Rater can perform ventilation testing.
- Only HERS Rater can perform compartmentalization testing aka blower door.
- ATT is no longer able to test these.



Rebranding and Restructuring



Proposed Code Changes Rebranding

After

- Separation of Services
 - Field Verification & Diagnostic Testing agents referred to as ECC RATERS (Energy Code Compliance Raters)
 - HERS Raters (Whole House Raters)

Before

• Field Verification & Diagnostic Testing agents referred to as **HERS RATERS**.



Proposed Code Changes Restructuring



- Rater Company officially recognized and must be certified by Provider.
- At least one principal of the Rater Company must be certified as a Rater.

Before

Raters operated as individuals.



Proposed Code Changes Conflict of Interest

Conflict of Interest Rules are Expanding:

- Providers, Rater Companies, Raters must operate independently from builder, designer, or subcontractor as the "Responsible Person".
 - Exception: Declaration of Rater Company Separation of Services submitted.
- Providers, Rater Companies, Raters, or principals shall not perform FVDT for spouse, domestic partner, cohabitation partner, parent, grandparents, sibling, child, grandchild, directly, or related to a spouse, or anyone living in the same household.
- Rater Companies, Raters shall not perform any construction activity.



Proposed Code Changes Consumer Information Form

Consumer Information Form for FVDT must be registered by Rater or Rater Company

- The form must include educational materials regarding the HERS (ECC) Program, the roles and responsibility of Raters, Rater Companies and Providers.
- Valid homeowner contact info must be registered for all projects. For homes with no owner, it must be the landlord, developer, builder, etc.



Proposed Code Changes Rater of Record

Rater of Record will reduce Rater shopping:

- When a Rater <u>registers</u> a failed FVDT measure, they will become the Rater of Record for the specific FVDT at the project site.
- Project can only be transferred within a Rater Company.
- Exceptions:
 - Rater of Record agrees to release the project.
 - Rater of Record is physically unable to continue work on project.
 - Rater of Record is suspended or decertified.
 - Rater of Record is unwilling to continue work on the project.



Proposed Code Changes Rater of Record

How Will Rater of Record be Enforced?

- It must be registered with your Provider.
- The Provider will lock the project by whatever reasonable means, and not allow the failed test to be registered by anyone but the Rater of Record or someone within their Rater Company
- If the Provider suspects a violation, a complaint shall be submitted to the CEC.
- The CEC will investigate all Providers.



Proposed Code Changes Sampling

Sampling May Change Significantly

- Sampling may have been removed from Alterations.
- In New Construction, every 7th Sample Group must have a tested and untested (sample) lot Field QA'd.
 - If Builder does not allow access, all lots moving forward must be 100% tested.
 - Depending on sample group size, including "sampled" lots, QA requirements become between 4-10% of all lots in a community.



Proposed Code Changes Conflicted Data 10-103.3(b)1B

What is Conflicted Data?

- Any data collected by a Rater when they have a conflict of interest, regardless of accuracy.
- Any data collected through sampling where QA is refused access.
- Any data that was recorded by the Rater that is not truthful & accurate must be invalidated.

The Provider must notify the homeowner, Rater, Rater Company, AHJ, and the CEC that the data has been invalidated.



Comment Period is Over

- The comment period for these proposed regulations ended May 13, 2024.
- 15 day language will be released soon. You can still comment on that.



