

DOCKETED

Docket Number:	23-HERS-02
Project Title:	HERS Home Energy & Labeling Program Updates Pre-Rulemaking
TN #:	252091
Document Title:	Presentation - April 2022, to CEC on CA HERS Index Project
Description:	N/A
Filer:	Jennifer Brazell
Organization:	CalCERTS, Inc.
Submitter Role:	Public
Submission Date:	8/31/2023 2:26:50 PM
Docketed Date:	8/31/2023

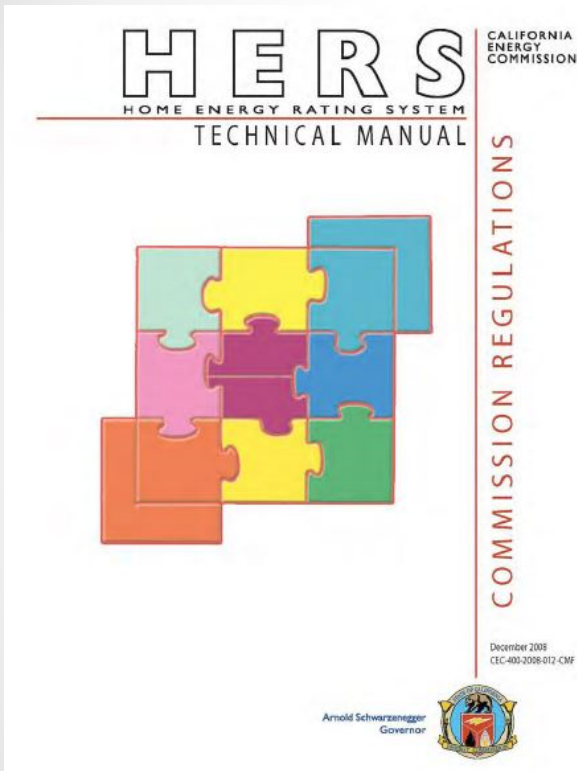
California



Program



California Whole House Program



- **Purpose:** The California Whole House program (HERS II), was designed as a systematic process to produce whole-house energy ratings. It created **consistent, accurate, and uniform** ratings based on a **single** statewide rating scale (CA HERS Index).
- **Transparency:** Helped to create reasonable estimates of potential utility bill savings through the recommendation of cost-effective measures to improve energy efficiency.

History

- **HERS Ratings:** Title-24 Field Verification and Diagnostic Testing
- **CA Whole House Program:**
 - Commission to retain jurisdiction over California's energy policy
 - RESNET Scores were not permitted in California
 - Builders wanted consistency in the national market
 - California recognized for its tougher standards

***California's adoption of EDR**



California RESNET



What is Residential Energy Services Network? (RESNET)

RESNET is a recognized national standards-making body for building energy efficiency rating and certification systems in the United States involving:

- a consensus based standard development and amendment process.
- a transparent review and adoption process.
- a formal public review and comment process.



California RESNET

In October of 2020, the California RESNET *Pilot* Work is Completed

- CA RESNET Rater and Energy Consultant Manuals are created.
- CBECC-RESNET, a California specific RESNET Score modeling software is produced. It is based on CBECC-Res version 2019.1.3

***Pilot* Program Name Change**

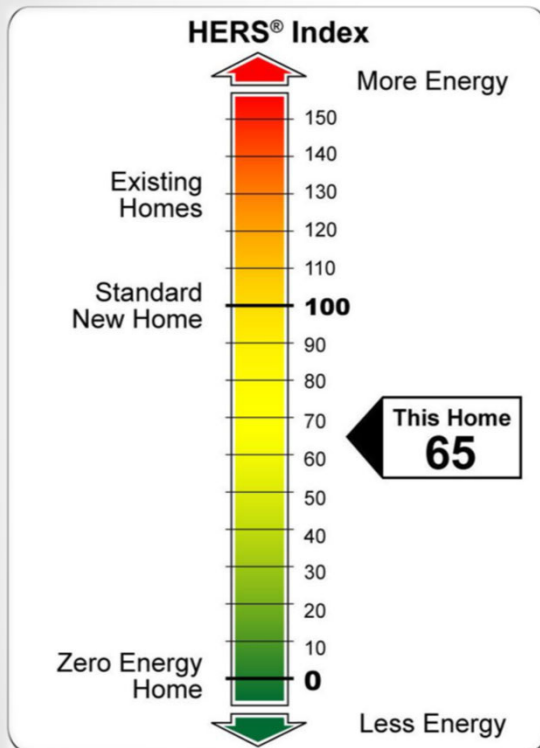
- Outreach showed Builders and HERS Ratings firms reluctant to engage in a *Pilot* program.
- CalCERTS worked with RESNET to change the program name to CA RESNET, providing assurances to Builders that RESNET would honor scores on a National market.



CA RESNET Program Overview



Program Overview



California's RESNET Standard provides a consistent, uniform methodology for evaluating and labeling energy performance of newly constructed *residential buildings*. It is aligned to the original Whole House Rating (HERS Phase II) concept.

- It compares the energy performance of a newly constructed home with a reference home.
- If the actual home and reference home are equal, the Energy Rating Index is 100.
- If the actual home requires *no net purchased energy annually*, the Energy Rating Index is 0.

Why Create a RESNET Score

Builders:

- **Marketing advantage** – This allows builders to demonstrate energy efficiency features in a home with an independently verified HERS Index rating.
- **Opportunity to increase appraised value** – With RESNET's Appraisal Portal, your appraiser can verify the HERS Index.
- **Lower Mortgage Default Risk** – Lenders are taking notice after a study showed Energy Star labeled homes with a better HERS score have a 32% lower mortgage default rate.



Why RESNET in California

- **High Efficiency Homes** – RESNET scores in California allow consumers to better understand the energy efficiency of our newly built homes compared to the rest of the country.
- **Builder Involvement** – Builders will view energy efficiency as an advantage and not just a compliance requirement.
- **Energy Efficient Industry** – More of the building industry will adopt the idea of energy efficiency as a basic requirement of design.



Qualify as a CA RESNET Rater

- To qualify for the California RESNET program CA HERS Raters must have the following **certifications**:
 1. Alterations to existing homes,
 2. New Construction, and
 3. Whole House Rater.
- Much of the inspection process is a blend between new construction and whole house ratings.



RESNET and California's Standards

How RESNET is Implemented in California

Unlike National RESNET Raters, California's RESNET Raters will **NOT** need to model the home using approved *national* modeling software.

- The main modeling process is done by the Energy Consultant when preparing the CF1R in *CBECC-Res based software*.
- There are a few ***additional RESNET inputs*** added to the software.
- These additional inputs allow the home to be rated using all the other Title 24, Part 6 features.

Overall Process

The overall process can vary somewhat. Blue = Energy Consultant Green = Rater Black = Either

1. Demonstration of energy code compliance by Energy Consultant
2. Run house in CBECC-RESNET software, calculate RESNET rating
3. Verification of all CF1R features by HERS Rater, including diagnostic testing
4. Verification of non-CF1R Features by HERS Rater (lighting, appliances, etc.)
5. Rater confirms rating
6. Process rating through CalCERTS
7. Issue Rating



Additional RESNET Features

RESNET Checklist

- 9.1 Lighting
- 9.2 Refrigerators
- 9.3 Range/Oven
- 9.4 Dishwashers
- 9.5 Clothes Washer
- 9.6 Clothes Dryer
- 9.7 Water Heating System
- 9.8 Programmable Thermostat
- 9.9 Opaque Surfaces - Walls
- 9.10 Opaque Surfaces – Cathedral Ceilings
- 9.11 Opaque Surfaces – Attic Roof
- 9.12 Construction Assemblies
- 9.13 HVAC Systems

(Section Numbers Refer to the CalCERTS RESNET Manual)

Training Manuals

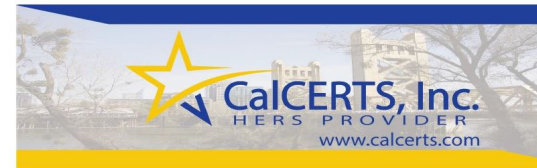


RESNET HOME ENERGY RATING

California RESNET Home Energy Rating Manual for the
2019 Building Energy Efficiency Standards



Version: May, 22 2020
www.calcerts.com



RESNET HOME ENERGY RATING Energy Consultant Manual

California RESNET Home Energy Rating Manual for the
2019 Building Energy Efficiency Standards



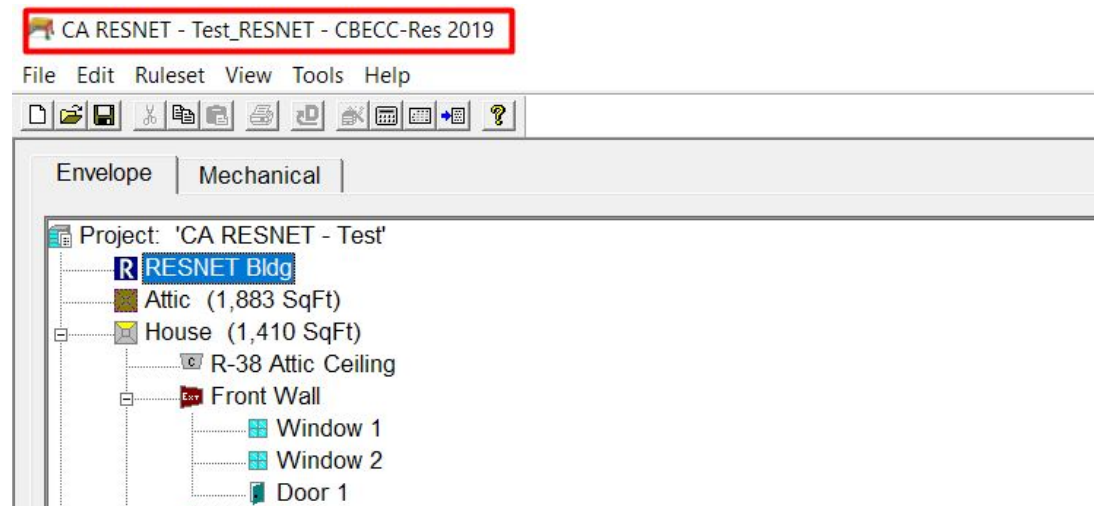
Version: May, 22 2020
www.calcerts.com



Overall Process - Energy Consultant

Calculate RESNET Rating

- The Energy Consultant models the project for compliance as usual.
- The CBECC file is then opened in a special version of CBECC for calculating the RESNET score. We've dubbed it CBECC-RESNET.



Overall Process - Energy Consultant

Calculate RESNET Rating

- RESNET specific inputs are completed by the Energy Consultant.
- These inputs don't affect Title 24 compliance.

CA RESNET - Test_RESNET - CBECC-Res 2019

File Edit Ruleset View Tools Help

Envelope Mechanical

Project: 'CA RESNET - Test'

RESNET Bldg

RESNETBuilding: RESNET Bldg

Verifier, Lighting, Water Fixtures Appliances

Verifier Name: Johnny Rater ID: 0

Lighting fixtures in qualified locations: Unqualified: 0 Tier 1 (flour.): 0 Tier 2 (LED): 24 fixtures
Annual electric use: 415 kWh/yr
(reference home elec use: 1,583 kWh/yr)

Exterior lighting fixtures: Unqualified: Tier 1 (flour.): Tier 2 (LED): 3 fixtures
Annual electric use: 28 kWh/yr
(reference exterior elec use: 170 kWh/yr)

Garage lighting fixtures: Unqualified: Tier 1 (flour.): Tier 2 (LED): 6 fixtures
Annual electric use: 17 kWh/yr
(reference garage elec use: 100 kWh/yr)

CA RESNET - Test_RESNET - CBECC-Res 2019

File Edit Ruleset View Tools Help

Envelope Mechanical

Project: 'CA RESNET - Test'

RESNET Bldg

RESNETBuilding: RESNET Bldg

Verifier, Lighting, Water Fixtures Appliances

Refrigerator: Specified Type: Vintag
Annual electric use: 565 kWh/yr (reference electric use: 691 kWh/yr)

Range/Oven: Fuel: Gas Oven: All other
Annual electric use: 31 kWh/yr (reference electric use: 31 kWh/yr)
Annual gas use: 31 Therms/yr (reference gas use: 31 Therms/yr)

Dishwasher: eStar standard Size: Standard Elec: 270 kWh/yr Gas: 22 \$/yr Elec:
Annual electric use: 116 kWh/yr (reference electric use: 132 kWh/yr)
Daily hot water use: 2 gal/day (reference hot water use: 4 gal/day)

Clothes Washer: eStar 2018-present IMEF: 2.06 Cap: 4.2 cf Elec: 152 kWh/yr Gas: 12 \$/yr Elec:
Annual electric use: 47 kWh/yr (reference electric use: 99 kWh/yr)

Overall Process - Energy Consultant

Calculate RESNET Rating

Once the CBECC RESNET calculation has been completed, it is uploaded to CalCERTS.

CA RESNET - Test_RESNET - CBECC-Res 2019

File Edit Ruleset View Tools Help

Envelope Mechanical

Project: CA RESNET - Test_RESNET - Compliance

Compliance Summary | CO2 Emissions | Energy Design Rating | Energy Use Details | CO2 Details

RESNET HERS Energy Rating Index: 23

Rated home normalized modified loads (TnML): 22.8 Index Adjustment Savings Factor (IAD):

Reference home total enduse loads (TRL): 39.5 Index Adjustment Factor (IAF_{rh}):

Enduse	RATED Home Energy Use and Loads				REFERENCE Home Energy Use and Loads			
	Elec (kWh)	Fuel (MBtu)	Total (MBtu)	Loads (MBtu)	Elec (kWh)	Fuel (MBtu)	Total (MBtu)	
Space Heating	12	1.72	1.77	1.38	49	5.34	5.83	
Space Cooling	170	0.58	0.58	2.41	351	4.87	5.22	
Water Heating	867	0.50	0.50	2.07	1634	1.00	1.50	

CA RESNET HERS Index Score

calcerts.com/resnet_lot.php?project_id=1849287&lot_id=2155185

CalCERTS, Inc. HERS PROVIDER

Project Home (ID: 1849287) / RESNET / Unit 1 - 111 Test Lane

RESNET CA RESNET HERS Index Score

Project: CA RESNET - Test (1849287)

LOT ID: 2155185

Lot Label: Unit 1

Address: 111 Test Lane

Zip: 90066

City: Culver City

RESNET ZIP Upload File: Instructions: Select the ZIP file from your calculation that contains the RESNET HERS Index Score. Choose File No file chosen

SAVE

SQL SERVER 10.10.10.10

Overall Process – HERS Rater

Field Verification

HERS Rater field verifies CF1R features, including diagnostic testing as well as non-CF1R features (lighting, appliances, etc.) listed on RESNET Verification Worksheet.

CERTIFICATE OF COMPLIANCE
Project Name: CA RESNET - Test
Calculation Description: Compliance

Calculation Date/Time: 2022-04-04T14:36:40-07:00
Input File Name: CA RESNET - Test.rbd19

CF1R-PRF-01E
(Page 1 of 10)

GENERAL INFORMATION			
01	Project Name	CA RESNET - Test	
02	Run Title	Compliance	
03	Project Location	111 Test Lane	
04	City	Culver City	05 Standards Version
06	Zip code	90066	07 Software Version
08	Climate Zone	6	09 Front Orientation (deg/ Cardinal)
10	Building Type	Single family	11 Number of Dwelling Units
12	Project Scope	NewConstruction	13 Number of Bedrooms
14	Addition Cond. Floor Area (ft²)	0	15 Number of Stories
16	Existing Cond. Floor Area (ft²)	n/a	17 Fenestration Average U-factor
18	Total Cond. Floor Area (ft²)	1410	19 Glazing Percentage (%)
20	ADU Bedroom Count	n/a	21 ADU Conditioned Floor Area
22	Is Natural Gas Available?	Yes	

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

Registration Number: 222-P010064372A-000-000-0000000-0000
CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time: 2022-04-04 14:51:42
Report Version: 2019.2.000
Schema Version: rev 20200901

HERS Provider: CalCERTS, Inc.
Report Generated: 2022-04-04 14:37:31

CA RESNET Pilot Program

CA RESNET Field Checklist (Page 1 of 2)

Project Name	CA RESNET - Test	City of Culver City	Test Number	TEST
Project Address	111 Test Lane	Culver City	City Code	90066

Instructions: Refer to the CalCERTS CA RESNET Home Energy Rating Manual for instructions.

General Information
HERS Rater must verify that the house is built with features that meet or exceed the CF1R-PRF-01 on file (CEC Reg# 222-P010064372A).
HERS Rater must verify that all of the following RESNET specific features (or better) are installed in the house.
2006 IECC Climate Zone: **6**

LIGHTING

	Unqualified	Tier 1	Tier 2
Interior Fixtures	0	0	24
Garage Fixtures			6
Exterior Fixtures			3

CEILING FANS

Number	CFM/Watts
0	70.4225

APPLIANCES

Refrigerator
Source of Performance Values: Name: CEECC (inputs not in XML)
Specified: 965

Range/Oven
Fuel: Induction Rating top? Convection oven?
Gas: No:

Dishwasher
Source of Performance Values: Size: kWh/yr: Gas \$/yr: Elec \$/kWh: Gas \$/therm:
eStar standard: Standard: 270: 22.23: 0.12: 1.09

Clothes Washer
Source of Performance Values: Effic: Cap: Elec kWh/yr: Gas \$/yr: Elec \$/kWh: Gas \$/therm:
eStar 2018 present: 2.06: 4.2: 152: 12: 0.12: 1.09

Dryer
Fuel: Effic:
Gas: 3.3

WATER HEATING SYSTEMS

Name (from CF1R-PRF-01)	Fixture Type
DHW	Low-Flow

PROGRAMMABLE THERMOSTAT

Zone Name	Yes/No (No = fail)
House	Yes

OPAQUE SURFACES



Overall Process – HERS Rater

Rating Confirmed and Processed through CalCERTS

HERS Rater confirmed all features, and certifies the CA RESNET rating. A certificate is produced.

CA RESNET - Report Results

calcerts.com/resnet_lot_reportresults.php?project_id=1849287&lot_id=2...

CA RESNET HOME CERTIFIED CFM CFM CFM

Pin Project Actions Activity Johnny Rater

Project Home (ID: 1849287) / CA RESNET / Unit 1 - 111 Test Lane / Certify

R-10 Wall	Standard	Not Inspected
R-10 Wall	Standard	Grade 1
R-10 Ceiling	Standard	Grade 1

HVAC SYSTEMS

Name (from CFM REF-D1)	Ducts verified to be in conditioned space?
HVAC System	No

WATER HEATING SYSTEM

Name (from CFM REF-D1)	2000
System Type	No pipe insulation
Control Efficiency	No
Pipe Length	85.0000
Branch Length	
Loop Length	100.0
Recirc Type	Recirculation with demand control (pressure sensor)
Recirc Pump Power	50
Flow Type	

CERTIFICATION

By clicking the CERTIFY button below, I (Johnny Rater) certify that this home meets all requirements for the CA RESNET Pilot Program.

CERTIFY

SQL SERVER 10.10.10.10

CalCERTS, Inc. HERS PROVIDER

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Help

CA RESNET Pilot Program

CA RESNET Certificate (Page 1 of 1)

Project Name	CA RESNET - Test	Inspector Name	City of Culver City	Test Number	TEST
Project Address	111 Test Lane	City	Culver City	CA Code	90066

RESNET HERS Index Certificate

HERS Index

Existing Homes

Reference Home

Zero Energy Home

More Energy

Less Energy

23.0 This Home

Registry ID: 2155185-1
Index Score: 23.0
Annual Estimates*:
Electricity (kWh): 4144.57
Gas (Therms): 14.58

* Based on standard operating conditions

Registered with:
CalCERTS, Inc.
31 Naitoma St Suite 120
Folsom, CA 95630

Office: 916-985-3400
Toll Free: 877-437-7787
Fax: 916-985-3402

This home has been inspected and performance tested in accordance with Chapter 3 of the RESNET standards.

RESNET
RESIDENTIAL ENERGY SERVICES NETWORK

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California that the information provided on this Certificate is true and correct.

Responsible Rater Name: Johnny Rater	Responsible Signature: Johnny Rater
Company Name: John Rater's HVAC	Rater License: USR900000
City/State/Zip: Folsom / CA / 95630	Phone: 555-555-5555 Date Signed: 04-06-2022

Additional Benefits for California

- HERS Raters conduct verifications of energy code features delegated to Authorities Having Jurisdiction (AHJ – Building Departments).
- HERS Raters provide second set of eyes on energy code compliance for features such as windows, radiant barriers, lighting, etc.
- CA Energy Code is more consistently and thoroughly inspected.



What is Driving Interest in the Program

There is growing involvement in Environmental, Social, and Governance (ESG) programs, where companies are reviewed on ESG metric.

- Builder lending can be impacted. More access to lending if the builder is designated as an ESG company.
- Can impact homebuyer purchasing. Fannie May, Freddie Mac may provide mortgage assistance for homes that are built by ESG builders.
- Builders need to show their investments in efficiency. This will support the market of above code programs, CA RESNET, H2O & Water Sense, ENERGY Star, DOE's Zero Energy Ready Homes.

Who is Interested?

Large Production Builders want access to ESG related benefits. The CA RESNET program would facilitate this.



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America's Builder



Beazer
Homes



How the CEC can Support the Program

- The CBECC-RESNET translator needs to be carried forward from version 2019.1.3, to the latest version of CBECC-Res 2019.2.0
- Support to carry the program into the 2022 Standards cycle.