



Advanced Energy Rebuild

Program Manual

Version – 6/21/18



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1. Program Background

Sonoma Clean Power (SCP), Pacific Gas and Electric Company (PG&E), and Bay Area Air Quality Management District have joined efforts to help homeowners affected by the October 2017 firestorms rebuild energy-efficient, sustainable homes. The program will be an enhancement to PG&E's long-standing California Advanced Homes Program and offers two incentive packages tailored to Sonoma and Mendocino Counties. Each package has a flexible performance pathway or a simple prescriptive menu. To get started, coordinate with a certified energy analyst (CEA) who will walk you through the process. If you have any questions about the program, please e-mail programs@sonomacleanpower.org.

2. Glossary of Terms

Throughout this document, acronyms of certain terms have been used to simplify instructions. The following is a list of these terms:

ADU: Accessory Dwelling Unit, also known as a "casita" or "granny unit"

BIG: Build It Green

CABEC: California Association of Building Energy Consultants

CAHP: California Advanced Homes Program

CalCERTS: California Certified Energy Rating & Testing Services (HERS Provider)

CEA: Certified Energy Analyst

CEC: California Energy Commission

CF-1R: Certificate of Compliance

CF-2R: Certificate of Installation, go to www.energy.ca.gov and search for "Residential Manual"

CF-3R: Certificate of Field Verification and Diagnostic Testing, go to www.energy.ca.gov and search for "Residential Manual"

CHEERS: California Home Energy Efficiency Rating Services (HERS Provider)

CIR: CAHP Incentive Report

CMFNH: California Multifamily New Homes (PG&E Program)

CPUC: California Public Utilities Commission

DOE ZER: Department of Energy Zero-energy ready program

EDR: Energy Design Rating

HEMS: Home Energy Management Systems

HERS: Home Energy Rating System

HPA: High Performance Attics

HPF: High Performance Fenestration

HPW: High Performance Walls

IOU: Investor-owned Utility

IRF: Incentive Request Form

MECH-1-C: Mechanical Field Inspection Energy Checklist, usually for High-rise projects

MECH-INST: Mechanical Installation Certificate, usually for High-rise projects

MF: Multifamily

MFHR: Multifamily High-rise

MFLR: Multifamily Low-rise

NFRC: National Fenestration Rating Council

PERF-1: Performance Certificate of Compliance

PG&E: Pacific Gas and Electric Company

Rater: Inspector certified by a CEC-approved HERS provider to provide third-party verification for Title 24 measures.

RNC: Residential New Construction

SF: Single-family

SHGC: Solar Heat Gain Coefficient

3. General Requirements

Incentives are only available to homes, condominiums, apartments, and accessory dwelling units that were destroyed by the October 2017 wildfires and have service provided by Sonoma Clean Power and/or PG&E.

You must submit an application package prior to any HERS testing beginning or drywall installation. All participating units must be new construction dwellings and modeled accordingly.

Applicant agrees to not accept duplicate funding from multiple utility-sponsored energy-efficiency programs for the same measures. Measures that save multiple fuel types can accept funding for EACH fuel type from ONE utility.

For verification purposes, all projects must contract with a certified HERS rater, even if HERS measures are not required. The HERS rater will be required to enter project verifications into the HERS registry for the program. This includes verifications of non-HERS measures as applied in the project's specified registry. The HERS rater is responsible for field verifying all measures used for program compliance.

Incentive payments are available only to owners named on the Application.

Funds are limited and will be reserved on a first-come, first-served basis to projects that meet the program requirements. No payments will be made for any changes made to the unit that may affect compliance without prior written approval from your program representative.

Contact Sonoma Clean Power at programs@sonomacleanpower.org or (866) 202-2139 or additional program details and funding availability prior to submitting applications.

The funding for this program will expire December 31, 2019 or once funding is depleted. Application is valid for 36 months from date of utility acceptance.

4. Program Process Overview

Step 1: Find a Certified Energy Analyst (CEA)

Your Certified Energy Analyst will walk you through potential energy measures you can install in your new home and process the energy documentation for your permit. They will be your go-to resource for all things energy related. To find a CEA, [click here](#).

Step 2: Complete Your Energy Model

Your CEA will create an energy model for your project that is required for your permit from the city or county. Be sure that all features of your incentive pathway are reflected in the energy model.

Step 3: Submit Program Application

Submit your online program application [here](#). In addition to this form, you will need to upload and submit the following items:

- Title 24 CF1-R documentation authored and signed by a 2016 Title 24 code CEA
- Energy model file (.bld or .ribd)
- CAHP Incentive Report/calculator spreadsheet
- Complete set of construction plans, including architectural, mechanical, and electrical pages
- Letter, account statement, service application, or any documentation issued by PG&E verifying the project address is or will be receiving gas and/or electric service from Sonoma Clean Power or PG&E.
- [Program Enrollment Survey](#)
- A completed [IRS W-9 form](#).
- If requested, the following specifications:
 - Specification sheet for windows, glazed doors, and skylights with manufacturer's name, U-factor, and Solar Heat Gain Coefficient (SHGC)
 - Specification for heating equipment with manufacturer's name/model number and efficiency rating
 - Specification for Air conditioner with manufacturer's name/model numbers for condenser/coil match or AHRI reference number for each proposed unit (ahridirectory.org).

- Specification for water heater with manufacturer's name/model number and efficiency rating.
- If installing a Solar Water Heater, a CF-SR form is also required.
- Please share the project with "TRC Energy Services" in the registry.

Please be aware that according to submittal requirements, projects will not be accepted after drywall has been installed or HERS testing has begun unless the eligibility date has been reserved.

Step 4: Receive 50% of Total Incentive

The program implementer, TRC, will review all documentation and respond within 6 weeks. Once approved, you will receive an acceptance letter, an incentive request form, and a check within 12 weeks.

Please be aware that according to submittal requirements, projects will not be accepted after drywall has been installed or HERS testing has begun unless the eligibility date has been reserved.

Step 5: Find a HERS Rater and "Share" Project

Every project built in California requires a HERS Rater to verify the energy features of your new home. To find a list of HERS Raters, [click here](#) (Calcerts) or [here](#) (Cheers). Your contractor and HERS rater will upload a CF-2R and CF-3R form to the HERS registry verifying that they installed the proper energy efficient equipment. Your HERS rater will then complete an on-site inspection and/or testing and upload a CF-3R form to confirm that you are getting the efficient equipment that you paid for. Both the CF2-R and 3-R forms will need to be shared with and reviewed by TRC before the final incentive can be issued.

Steps for "Sharing" a Project:

For CalCERTS:

If we do not appear in your list of Energy Consultants, you may need to add us.

If you or your rater need registry sharing instructions, please contact us immediately at CAHP@trcsolutions.com and we will provide detailed instructions.

For CHEERS:

Please add "TRC Solutions" to the project member team.

If the project is a custom home, let us know who is listed as the "builder".

Step 6: Incentive Request Form

After HERS rating is complete, complete, sign, and date the incentive request form that was provided during the initial project review. If you need another copy of the incentive request form, please email CAHP@trcsolutions.com. Note: the form cannot be signed by the Energy Consultant or HERS Rater due to conflict of interest.

5. General Building Requirements

To qualify for the incentive payment, each home covered by the Application must meet the following criteria:

- A new construction project/home built on a lot previously retagged by CalFIRE. The project/home must receive electric distribution and/or natural gas distribution service from Sonoma Clean Power and/or PG&E.
- A single-family detached dwelling or two-dwelling building, including accessory dwelling units of any number of stories, R-3 occupancy, and on Sonoma Clean Power or PG&E residential rates.
- Permitted under the 2016 Energy Efficiency Standards Residential Compliance Manual (Title 24) effective January 1, 2017 and achieving compliance using a CEC-approved computer method. Projects must meet, at a minimum, CEC and Advanced Energy Rebuild installation and field verification requirements, as documented by a certified HERS Rater.
- Modular manufactured housing may qualify when regulated by Title 24 standards (not HUD – U.S. Department of Housing and Urban Development). Please contact us at programs@sonomacleanpower.org for more information.
- The following defines the dwelling unit types that qualify for program participation:
 - Detached: A single or multiple-story structure consisting of one unit not attached to another building (except a garage or casita). This may be either a custom home or part of a larger project consisting of multiple lots.
 - Duplex: A structure consisting of two dwelling units. The duplex can be a single structure or part of a larger project consisting of multiple structures and units but must be modeled as two separate units.
 - Townhome: A single-family dwelling unit constructed in a group of three or more attached units in which each unit extends from the foundation to roof and with open space on at least 2 sides. Must be modeled as individual separate units.
- Accessory Dwelling units: Structures detached from the primary residence that are residential living areas (e.g., casitas, accessory dwelling units) are eligible to receive ½ of the single family incentives listed (ie: \$3,750 for Advanced Energy Home package) as long as both dwelling units comply with program eligibility.
- Multifamily: Projects with three or more attached units per building that meet the Title 24 multifamily residential designation, as follows: “a dwelling unit of occupancy group R, as defined in the CBC (California Building Code); that shares a common wall and/or floor/ceiling with at least one other dwelling unit” are eligible to receive ½ of the single family incentives listed (ie: \$3,750 for Advanced Energy Home package). Both low-rise and high-rise buildings are eligible. For multifamily specific incentives, see Section 6.4.
- The following facilities do **not** qualify for participation: Remodels, Additions, Manufactured housing (modular and house trailers), Residential care facilities, Hotels, Motels, Dormitories, Community facilities.

6. Financial Incentives

The following incentives are available for homes, ADUs, and multifamily projects.

Project Type	Advanced Energy Home	All-Electric Home	Kicker for Renewables	Kicker for Design Charrette
Single Family Home, Duplex, or Townhome	\$7,500	\$12,500	\$5,000	N/A
ADU	\$3,750	\$6,250	\$5,000	N/A
Multifamily Project	\$3,750 per unit	\$6,250 per unit	\$5,000 per project	\$5,000 per project

Requirements for the program are detailed in the graphic below. For a more in-depth description of requirements and exemptions, see Section 6.1-6.3.

1 **Advanced Energy Home**

\$7,500

Flexible Performance Path

- 20% above Title 24 energy code
- 220V outlet at stove/range, water heater, and clothes dryer
- Design roof for additional structural loads associated with solar panels, and add conduit for future installation
- Electric Vehicle Charging Station - Equipment free from Sonoma Clean Power

2 **All Electric Home**

\$12,500

Flexible Performance Path

- 20% above Title 24 energy code, all electric end uses
- Design roof for additional structural loads associated with solar panels, and add conduit for future installation
- Electric Vehicle Charging Station - Equipment free from Sonoma Clean Power

\$7,500

Simple Menu-Based Path

- 2016 Title 24 High Performance Walls or 2016 Title 24 High Performance Attics* (note: unvented attic can qualify)
- 2019 Code windows (Max U-factor 0.30, SHGC 0.23)
- High efficiency water heater: Heat Pump Water Heater w/ EF of 3.0+ or gas tankless w/ EF of 0.92 and 220v outlet
- Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried ducts as defined by Title 24 can qualify)
- WaterSense efficient plumbing fixtures
- Water efficient landscaping
- Energy Star Appliances
- 220V outlet at stove/range and clothes dryer
- Electric Vehicle Charging Station – Equipment free from Sonoma Clean Power

*Must meet requirement of CEC Climate Zone 4. See program handbook.

\$12,500

Simple Menu-Based Path

- 2016 Title 24 High Performance Walls
- 2016 Title 24 High Performance Attics* (note: unvented attic can qualify)
- Insulation Inspected by a HERS Rater (QII)
- Building Enclosure Airtightness verified by a HERS Rater (less than 3 ACH50)
- "Cool" Roof
- 2019 Title 24 Windows (Max U-factor 0.30, SHGC 0.23)
- NEEA Tier 3 Heat Pump Water Heater w/ grid-integration controls installed
- High efficiency heat pump for heating/cooling (EER of 12.5+, HSPF of 9.5+)
- Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried ducts as defined by Title 24 can qualify)
- Smart Thermostat
- WaterSense efficient plumbing fixtures
- Water efficient landscaping
- Induction Cooking
- Energy Star Appliances for all Refrigerators, Dishwashers, Clothes Washers, and Bathroom Fans
- Heat Pump or Electric Clothes Dryer
- Electric Vehicle Charging Station – Equipment free from Sonoma Clean Power

*Must meet requirement of CEC Climate Zone 4. See program handbook.

Add solar to either option

\$5,000

- Solar panel system designed to offset annual electric usage with 7.5 kWh battery storage system

OR

- Pre-purchase of 20-year premium on 100% local renewable power (e.g., EverGreen).

6.1 Advanced Energy Home Requirements

The Advanced Energy Home is eligible for a \$7,500 incentive for single family homes, duplexes, or townhomes. For ADUs or multifamily projects, an incentive of \$3,750 is available. This program option offers a flexible performance pathway and a simple prescriptive menu option detailed below.

6.1.1 Advanced Energy Home Performance Pathway Requirements

The following measures must be completed as a part of the Advanced Energy Home performance pathway.

20% above Title 24 Energy Code

Demonstrate a 20% improvement in TDV (time dependent valuation) energy, as shown on a CF-1R report generated by an approved 2016 Title 24 compliance software. The Title 24 compliance software must be approved by the California Energy Commission at the time the permit was approved. The energy model and associated CF1-R must be completed by a 2016 Title 24 Certified Energy Analyst (CEA).

How this is verified – At time of application, Title 24 CF1-R documentation authored and signed by a 2016 Title 24 code CEA and the associated energy model (.bld or .ribd) will be submitted for review. Energy features associated with this documentation will be field verified by a HERS Rater.

220V outlet at stove/range, water heater, and clothes dryer

For all natural gas and/or propane equipment installed in the home, it is required that dedicated circuits and receptacles be installed to accommodate for future electrification of the appliance. The amperage supplied shall be no less than: Water Heating (30 amp), Clothes Dryer (30 amp), Stove/Range (50 amp) and shall be permanently labeled at the service panel as “For Future [Appliance Name]”.

How this is verified: Construction plans shall show receptacles and associated loads for stove/range, water heater, and clothes dryer. A HERS rater will field verify location of receptacles and labelling of service panel.

Design Roof for Additional Structural Loads Associated with Solar Panels and Add Conduit for Future Installation

The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents or provided in supplemental documentation. This is required so that the structural loads are known if a solar energy system is installed in the future. Conduit must be routed from the proposed future solar zone to the main service panel. The main electrical service panel shall have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation and shall be permanently labeled as “For Future Solar Electric.”

How this is verified: Construction plans shall show dead and live loads associated with the roofing. A HERS rater will verify labelling of service panel.

Electric Vehicle Charging Station (Equipment Free from Sonoma Clean Power)

All projects shall have a minimum of (1) level 2 electric vehicle charging station installed and activated. For Sonoma Clean Power customers, this equipment is available for free at: <https://sonomacleanpower.org/drive-evergreen/>.

How this is verified: If ordered through Sonoma Clean Power, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

6.1.2 Advanced Energy Home Simple Menu-Based Pathway Requirements

The following measures must be completed as a part of the Advanced Energy Home simple menu pathway.

- **2016 Title 24 Code High Performance Walls or 2016 Title 24 Code High Performance Attics**

Complete 1 of the following:

High Performance Attics: The home is constructed with a high performance attic Option A, B, or C as defined by the prescriptive requirements in the 2016 Building Efficiency Standards (Title 24, Part 6) TABLE 150.1-A or a totally sealed, unventilated attic that meets the same overall U-value requirements of the prescriptive high performance attic requirements.

Note: Because Climate Zone 2 does not have a requirement for High Performance Attics in Title 24, please reference the U-value and insulation requirements of Climate Zone 4.

Requirements for Roof/Ceiling Insulation Per Residential Compliance Manual (§150.1(c).1)

Strategy		How to Comply
High-Performance Ventilated Attics		
Option A	Vented attic with continuous insulation applied above the roof deck. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option A
Option B	Vented attic with batt, spray in cellulose/fiberglass secured with netting, or SPF. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option B
Ducts in Conditioned Space		
Option C	Vented attic with no insulation at roof deck. Ceiling insulation required separately above finished attic ceiling. Ducts and air handler equipment in conditioned space that is NOT a sealed attic.	Table 150.1-A of the Energy Standards Roof Assembly Option C Form: CF2R-MCH-20b

High Performance Walls: The home is constructed with high performance walls in compliance with the prescriptive requirements as defined in the 2016 Building Efficiency Standards (Title 24, Part 6) TABLE 150.1-A. Per this requirement, walls shall have a maximum U-factor of 0.051. U-factors can be calculated by building the construction assembly in Commission-approved compliance software, including the inside finish, sheathing, cavity insulation, and exterior finish. Some examples of various wood-framed wall assemblies, associated construction, and U-values are provided below.

Examples of Wood-Framed Wall Assemblies and U-Factors, Assuming Gypsum Board Interior

Stud	Cavity Insulation	Cavity Insulation Type	Exterior Insulation	U-Factor
2x6	R21	Loose-fill cellulose or high density batt	R4	0.051
2x6	R19	Low density batt	R5	0.051
2x4	R15	High density batt	R8	0.050
2x6	R31	Closed-cell spray foam (ccSPF)	R2	0.050
2x6	R23	High density batt or mineral wool	R4	0.049

How this is verified: High performance wall and/or attic shall be modeled in the energy model submitted at project application. A HERS rater will field verify construction assembly.

2019 Title 24 Code windows (Max U-factor 0.30, SHGC 0.23)

All windows must have a maximum U-factor of 0.30 and a maximum SHGC of 0.23. (excludes doors, sliding glass doors, and skylights)

How this is verified: At the time of application, project shall submit specification sheet for windows, glazed doors, and skylights with manufacturer’s name, U-factor, and Solar Heat Gain Coefficient (SHGC). This is verified by a HERS rater in field.

High efficiency water heater: Heat Pump Water Heater w/ EF of 3.0+ or gas tankless w/ EF of 0.92 and 220v outlet

Install either a heat pump water heater with an energy factor (EF) of 3.0 or greater **OR** a gas tankless water heater with an energy factor (EF) of 0.92 or greater. For gas tankless water heaters, a 30 amp 220V receptacle must be provided for future installation of a heat pump water heater. The electrical service panel shall be permanently labeled as “For Future Water Heater.”

How this is verified: At the time of application, project shall submit specification for water heater with manufacturer's name/model number and efficiency rating. If installing a Solar Water Heater, a CF-SR form is also required. Water heater nameplate and efficiency is verified in the field by a HERS rater.

□ **Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried deeply in attic insulation can qualify)**

Where ducts are installed for heating and/or cooling purposes, they shall be verified by a HERS rater to have a leakage rate of 5% or less than nominal system air handler airflow per the procedures described in Residential Appendix RA3.1. All ducts shall be insulated to R-8. Ducts shall either a) be verified by a HERS rater to have 12 linear feet or less of ducts located outside conditioned space per Residential Appendix RA3.1.4.1.2 or b) meet the definition of buried ducts per Residential Appendix RA3.1.4.1.5. Systems without ducts are exempted from this requirement.

How this is verified: Duct leakage, location, and insulation levels shall be noted on the CF1-R documentation provided at time of application. A HERS rater will field test and verify the duct location/design, airtightness, and insulation levels and upload a completed CF-3R to the HERS registry.

□ **WaterSense efficient plumbing fixtures**

All installed toilets, urinals, showerheads, faucets, automatic irrigation controls shall be certified to the performance criteria of the [US EPA WaterSense Specification](#). Flow rates for these items shall be per CalGreen (2016 Title 24 Code, Part 11).

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

□ **Water efficient landscaping**

Meet the requirements for your local landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent or use one of the free landscape design templates provided by Sonoma-Marín Saving Water Partnership.

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

□ **Energy Star Appliances**

Energy Star certified appliances shall be installed for all refrigerators, dishwashers, clothes washers, and bathroom exhaust fans.

How this is verified: A HERS Rater shall field verify that all appliances are Energy Star rated.

□ **220V outlet at stove/range and clothes dryer**

For all natural gas and/or propane equipment installed in the home, it is required that dedicated circuits and receptacles be installed to accommodate for future electrification of the appliance. The amperage supplied shall be no less than: Water Heating (30 amp), Clothes Dryer (30 amp), Stove/Range (50 amp) and shall be permanently labeled at the service panel as ““For Future [Appliance Name]”.

How this is verified: Construction plans shall show receptacles and associated loads for stove/range, water heater, and clothes dryer. A HERS rater will field verify location of receptacles and labelling of service panel.

□ **Electric Vehicle Charging Station – Equipment free from Sonoma Clean Power**

All projects shall have a minimum of (1) level 2 electric vehicle charging station installed and activated. For Sonoma Clean Power customers, this equipment is available for free at: <https://sonomacleanpower.org/drive-evergreen/>.

How this is verified: If ordered through Sonoma Clean Power, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

6.2 All-Electric Home Requirements

The All Electric Home is eligible for a \$12,500 incentive for single family homes, duplexes, or townhomes. For ADUs or multifamily projects, an incentive of \$6,250 is available. This program option offers a flexible performance pathway and a simple prescriptive menu option detailed below.

6.2.1 All-Electric Home Performance Pathway Requirements

The following measures must be completed as a part of the All-Electric Home performance pathway.

□ **20% above Title 24 Energy Code with all Electric Appliances**

Demonstrate a 20 improvement in TDV (time dependent valuation) energy, as shown on a CF-1R report generated by an approved Title 24 compliance software using only electric equipment. The Title 24 compliance software must be approved by the California Energy Commission at the time the permit was approved. The energy model and associated CF1-R must be completed by a Certified Energy Analyst (CEA).

How this is verified – At time of application, Title 24 CF1-R documentation authored and signed by a 2016 Title 24 code CEA and the associated energy model (.bld or .ribd) will be submitted for review. Energy features associated with this documentation will be field verified by a HERS Rater.

□ **Design Roof for Additional Structural Loads Associated with Solar Panels and Add Conduit for Future Installation**

The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents or provided in supplemental documentation. This is required so that the structural loads are known if a solar energy system is installed in the future. Conduit must be routed

from the proposed future solar zone to the main service panel. The main electrical service panel shall have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation and shall be permanently labeled as “For Future Solar Electric.”

How this is verified: Construction plans shall show dead and live loads associated with the roofing. A HERS rater will verify labelling of service panel.

□ **Electric Vehicle Charging Station (Equipment Free from Sonoma Clean Power)**

All projects shall have a minimum of (1) level 2 electric vehicle charging station installed and activated. For Sonoma Clean Power customers, this equipment is available for free at:

<https://sonomacleanpower.org/drive-evergreen/>.

How this is verified: If ordered through Sonoma Clean Power, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

6.2.2 All-Electric Home Simple Menu-Based Pathway Requirements

The following measures must be completed as a part of the All Electric Home simple menu pathway.

□ **2016 Title 24 Code High Performance Walls**

The home is constructed with high performance walls in compliance with the prescriptive requirements as defined in the 2016 Residential Compliance Manual (Title 24, Part 6) TABLE 150.1-A. Per this requirement, walls shall have a maximum U-factor of 0.051. U-factors can be calculated by building the construction assembly in Commission-approved compliance software, including the inside finish, sheathing, cavity insulation, and exterior finish. Some examples of various wood-framed wall assemblies, associated construction, and U-values are provided below.

Examples of Wood-Framed Wall Assemblies and U-Factors, Assuming Gypsum Board Interior

Stud	Cavity Insulation	Cavity Insulation Type	Exterior Insulation	U-Factor
2x6	R21	Loose-fill cellulose or high density batt	R4	0.051
2x6	R19	Low density batt	R5	0.051
2x4	R15	High density batt	R8	0.050
2x6	R31	Closed-cell spray foam (ccSPF)	R2	0.050
2x6	R23	High density batt or mineral wool	R4	0.049

How this is verified: High performance wall and/or attic shall be modeled in the energy model submitted at project application. A HERS rater will field verify construction assembly.

□ **2016 Title 24 Code High Performance Attics**

The home is constructed with a high performance attic Option A, B, or C as defined by the prescriptive requirements in the 2016 Residential Compliance Manual (Title 24, Part 6) TABLE 150.1-A or a totally sealed, unventilated attic that meets the same overall U-value requirements of the prescriptive high performance attic requirements.

Note: Because Climate Zone 2 does not have a requirement for High Performance Attics in Title 24, please reference the U-value and insulation requirements of Climate Zone 4.

Requirements for Roof/Ceiling Insulation Per Residential Compliance Manual (§150.1(c).1)

Strategy		How to Comply
High-Performance Ventilated Attics		
Option A	Vented attic with continuous insulation applied above the roof deck. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option A
Option B	Vented attic with batt, spray in cellulose/fiberglass secured with netting, or SPF. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option B
Ducts in Conditioned Space		
Option C	Vented attic with no insulation at roof deck. Ceiling insulation required separately above finished attic ceiling. Ducts and air handler equipment in conditioned space that is NOT a sealed attic.	Table 150.1-A of the Energy Standards Roof Assembly Option C Form: CF2R-MCH-20b

How this is verified: High performance wall and/or attic shall be modeled in the energy model submitted at project application. A HERS rater will field verify construction assembly.

□ **Insulation Inspected by a HERS Rater (QII)**

Insulation and air leakage control methods are inspected by a HERS rater per methods detailed in the Residential Appendix RA3.5.

How this is verified: A HERS rater will submit documentation of compliance with QII test to the appropriate HERS registry. This documentation will be verified by program staff when the final incentive check is requested.

- **Building Enclosure Airtightness Verified by a HERS Rater to be less than 3 ACH50**
Building enclosure air tightness is verified by a HERS rater to be less than 3 ACH50 per methods detailed in the Residential Appendix RA3.8.

How this is verified: A HERS rater will submit documentation of compliance with blower door test to the appropriate HERS registry. This documentation will be verified by program staff when the final incentive check is requested.

- **Cool Roof**
For a low-sloped roof (a surface with a pitch less than or equal to 2:12), install a product labeled by the Cool Roof Rating Council (CRRC) to have a minimum aged solar reflectance of 0.20 and a minimum thermal emittance of 0.75, or a minimum SRI of 16. For a steep-sloped roof (a surface with a pitch greater than 2:12), install a product labeled by the Cool Roof Rating Council (CRRC) to have a minimum aged solar reflectance of 0.63 and a minimum thermal emittance of 0.75 or a minimum SRI of 75.

How this is verified: Project shall submit a specification sheet which shows emissivity and reflectivity value of roofing product. A calculator has been produced by Lawrence Berkeley National Laboratory that calculates the SRI by designating the solar reflectance and thermal emittance of the desired roofing material. The calculator can be found at http://www.energy.ca.gov/title24/2016standards/documents/solar_reflectance/

- **2019 Title 24 Code windows (Max U-factor 0.30, SHGC 0.23)**
All windows must have a maximum U-factor of 0.30 and a maximum SHGC of 0.23
How this is verified: At the time of application, project shall submit specification sheet for windows, glazed doors, and skylights with manufacturer's name, U-factor, and Solar Heat Gain Coefficient (SHGC). This is verified by a HERS rater in field.

- **High efficiency water heater: NEEA Tier 3 Heat Pump Water Heater w/ grid integration controls installed**
Install a heat pump water heater that meets NEEA's Tier 3 Advanced Water Heater Specification **and** has an installed communication port that operates in compliance with CTA 2045 (or equivalent open modular interface standard) with specific demand response signals. An up-to-date list of water heaters that comply with the NEEA Tier 3 Advanced Water Heater Specification can be found here: <http://neea.org/advancedwaterheaterspec>.

How this is verified: At the time of application, project shall submit specification for water heater with manufacturer's name/model number and efficiency rating. If installing a Solar Water Heater, a CF-SR form is also required. Water heater nameplate and efficiency is verified in the field by a HERS rater.

- **High efficiency heat pump for heating/cooling (EER of 12.5+, HSPF of 9.5+)**
Install a heat pump (ducted or ductless) for space heating and space cooling with a minimum EER of 12.5 and/or HSPF of 9.5.

How this is verified: At the time of application, project shall submit specification for heating equipment with manufacturer's name/model number and efficiency rating and specification for air conditioner with manufacturer's name/model numbers for condenser/coil match or AHRI reference number for each proposed unit (ahridirectory.org). HVAC nameplate, efficiency, and ducting airtightness is verified in the field by a HERS rater.

Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried deeply in attic insulation can qualify)

Where ducts are installed for heating and/or cooling purposes, they shall be verified by a HERS rater to have a leakage rate of 5% or less than nominal system air handler airflow per the procedures described in Residential Appendix RA3.1. All ducts shall be insulated to R-8. Ducts shall either a) be verified by a HERS rater to have 12 linear feet or less of ducts located outside conditioned space per Residential Appendix RA3.1.4.1.2 or b) meet the definition of buried ducts per Residential Appendix RA3.1.4.1.5. Systems without ducts are exempted from this requirement.

How this is verified: Duct leakage, location, and insulation levels shall be noted on the CF1-R documentation provided at time of application. A HERS rater will field test and verify the duct location/design, airtightness, and insulation levels and upload a completed CF-2R to the HERS registry.

Smart Thermostat

Install a smart thermostat that provides the following: intelligent recovery, staging, ramping, or another control mechanism that prevents the unnecessary operation of supplementary electric resistance heating when the heat pump alone can meet the heating load. Ductless mini-split systems are exempt from this requirement.

How this is verified: A HERS Rater shall field verify the smart thermostat.

WaterSense efficient plumbing fixtures

All installed toilets, urinals, showerheads, faucets, automatic irrigation controls shall be certified to the performance criteria of the [US EPA WaterSense Specification](#). Flow rates for these items shall be per CalGreen (2016 Title 24 Code, Part 11).

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

Water efficient landscaping

Meet the requirements for your local landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELo), whichever is more

stringent or use one of the free landscape design templates provided by Sonoma-Marín Saving Water Partnership.

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

Induction Cooking

Install induction technologies for all ovens and ranges. To test out an induction cooktop for free from Sonoma Clean Power, please visit <https://sonomacleanpower.org/inductioncooking/> or email programs@sonomacleanpower.org.

How this is verified: A HERS Rater shall field verify the induction cooktop.

Energy Star Appliances

Energy Star certified appliances shall be installed for all refrigerators, dishwashers, clothes washers, and bathroom exhaust fans. A list of current Energy Star appliances can be found here: <https://www.energystar.gov/products/appliances>.

How this is verified: A HERS Rater shall field verify that all appliances are Energy Star rated.

Heat Pump or Electric Clothes Dryer

Install a heat pump or electric clothes dryer.

How this is verified: A HERS Rater shall field verify the heat pump or electric clothes dryer.

Electric Vehicle Charging Station – Equipment free from Sonoma Clean Power

All projects shall have a minimum of (1) level 2 electric vehicle charging station installed and activated. For Sonoma Clean Power customers, this equipment is available for free at: <https://sonomacleanpower.org/drive-evergreen/>.

How this is verified: If ordered through Sonoma Clean Power, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

6.3 Bonus for Renewable Energy

In addition to the base incentives, there is a \$5,000 bonus incentive for homes that install renewable energy. This can be accomplished through one of two pathways.

6.3.1 Onsite Renewable Energy

Install a solar PV system with a DC rating per the calculation below:

$$kW_{PV} = (CFA \times 0.621) / 1000 + 1.22$$

Where:

kW_{PV} = kW size of the PV system (DC)

CFA = Conditioned floor area

The PV system shall be paired with a minimum 7.5 kWh battery system.

How this is verified: The solar PV system and battery location shall be shown on the construction plans and Title 24 documentation. Projects pursuing this bonus shall provide the CSI or MASH calculator (or equivalent) showing PV system layout and size.

6.3.1 Offsite Renewable Energy

Pre-purchase a 20 year commitment to a 100% renewable, local energy product from your power provider (EverGreen from Sonoma Clean Power). The cost of the pre-purchase will be determined by the annual electricity usage in Kwh from the CF1-R documentation multiplied by the cost premium of the power provider's 100% local, renewable product over the power provider's standard product. The pre-payment would be paid into an account for building additional local renewable sources. Once built, the occupant of the home would pay the default product rate for energy while receiving the 100% local, renewable product for twenty years. The benefit would remain with the property if it is sold, just like a solar array.

Example:

$$\text{Pre-Cost Obligations (\$)} = 20 \text{ years} \times \text{Title 24 Annual kWh} \times \text{EverGreen Cost Premium}^1 \times 0.83^2$$

1. For reference, the 20-yr forward estimate of SCP's EverGreen premium is 2.9 cents per kWh in 2018 dollars.
2. The factor of 0.83 is to discount the stream of costs by 2% annually.

In an example where the annual kWh from the Title 24 report was 1,050 kWh and the homeowner chose Sonoma Clean Power's EverGreen, the total pre-payment obligation for a home would be:

$$20 \text{ yrs} \times (12 \text{ mos} \times 1,050 \text{ kWh}) \times 0.029 \times 0.83 = \$6,065$$

How this is verified: Contractor and/or homeowner would sign an agreement with the power provider of choice.

6.4 Multifamily Buildings

Projects with three or more attached units per building that meet the Title 24 multifamily residential designation, as follows: "a dwelling unit of occupancy group R, as defined in the CBC (California Building Code); that shares a common wall and/or floor/ceiling with at least one other dwelling unit" are eligible to receive ½ of the single family incentives listed (ie: \$3,750 for Advanced Energy Home package). Both low-rise and high-rise buildings are eligible.

Requirements for the program are detailed in the graphic below. For a more in-depth description of requirements and exemptions, see Section 6.4.1-6.4.3.



Design Charette

\$5,000

Developers are eligible to receive an extra \$5,000 incentive if their project team participates in a design charrette

1

Advanced Energy Home

\$3,750

Flexible Performance Path

- 220V outlet at stove/range, water heater, and clothes dryer
- Roof designed for additional structural loads associated with solar panels, and add conduit for future installation
- Design roof for additional structural loads associated with solar panels, and add conduit for future installation
- Electric Vehicle Charging Stations provided for 3%+ of parking spaces (minimum 1 station)

2

All Electric Home

\$6,250

Flexible Performance Path

- 20% above Title 24 energy code, all electric end uses
- Roof designed for additional structural loads associated with solar panels, and add conduit for future installation
- Electric Vehicle Charging Station provided for 3%+ of parking spaces (minimum 1 station)

\$3,750

Simple Menu-Based Path

- 2016 Title 24 High Performance Walls or 2016 Title 24 High Performance Attics* (note: unvented attic can qualify)
- 2019 Code windows (Max U-factor 0.30, SHGC 0.23)
- High efficiency water heater(s): In-unit - Heat Pump w/ EF of 3.0+ or gas tankless w/ EF of 0.92 with 220v outlet Central - Heat Pump w/ EF of 3.0+ or gas boiler w/ AFUE of 0.95
- Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried ducts as defined by Title 24 can qualify)
- WaterSense efficient plumbing fixtures
- Water efficient landscaping
- Energy Star Tier 2 Appliances
- 220V outlet at stove/range and clothes dryer
- Electric Vehicle Charging Station – provided for 3%+ of parking spaces (minimum 1 station)

*Must meet requirement of CEC Climate Zone 4. See program handbook.

\$6,250

Simple Menu-Based Path

- 2016 Title 24 High Performance Walls
- 2016 Title 24 High Performance Attics* (note: unvented attic can qualify)
- Insulation Inspected by a HERS Rater (QII)
- "Cool" Roof
- 2019 Title 24 Code windows (Max U-factor 0.30, SHGC 0.23)
- NEEA Tier 3.0+ Heat Pump Water Heater w/ grid-integration (central systems exempt from grid-integration)
- For central domestic hot water systems: Drain water heat recovery or demand controlled recirculation
- High efficiency heat pump(s) for heating/cooling (EER of 12.5+, HSPF of 9.5+)
- Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried ducts as defined by Title 24 can qualify)
- Smart Thermostat (central systems exempt)
- Induction Cooking
- Heat pump or electric clothes dryer(s) (note: including any central laundry rooms)
- WaterSense efficient plumbing fixtures
- Water efficient landscaping
- Energy Star Tier 2 Appliances
- All LED Lighting, including common areas and exterior
- Electric Vehicle Charging Station provided for 3%+ of parking spaces (minimum 1 station)

*Must meet requirement of CEC Climate Zone 4.



Add solar to either option

\$5,000

- Solar panel system designed to offset annual Title 24 annual electric usage with 7.5 kW battery storage system

OR

- Pre-purchase of 20-year premium on 100% local renewable power (e.g., EverGreen).

6.4.1 Multifamily Design Charrette

An early design charrette to review the energy efficiency goals of a project is eligible to receive either a \$1,500 or \$5,000 incentive (paid to the developer). The \$1,500 incentive is available for any CMFNH enrolled project that participates in a program hosted design charrette. An extra \$3,500 (total of \$5,000) incentive is available for a project that makes any of the program-approved efficiency changes suggested during the design charrette. To receive the design charrette incentive, the charrette must include, but is not limited to, the developer, architect, mechanical engineer, energy consultant, general contractor, HERS rater, and a TRC representative. Charrettes may occur in-person or over a conference call, and should include representatives from other programs that the project may be participating in, such as Build It Green's GreenPoint Rated or New Solar Homes Partnership. The meeting is intended to discuss and formalize the energy efficiency strategies of the building including the common areas. The design charrette will draw upon the knowledge and expertise of all participants. To facilitate a successful design charrette, the project must be at a design or construction phase where efficiency measure changes can still occur. If, for example, the project has started construction and purchased all the mechanical equipment already, the project is not eligible for the design charrette incentive.

At that point in construction, suggestions from the charrette will not be possible to implement. To avoid ineligibility for this incentive, please involve CMFNH staff as early as possible in the project design. The following criteria will qualify a project to receive this incentive:

- The design team must be able to discuss and formalize the energy efficiency strategies of the building
- The design team must include the developer, architect, mechanical engineer, general contractor, energy consultant, and TRC representative
- The design team must complete the brief required documentation provided by TRC

6.4.2 Multifamily Advanced Energy Home Requirements

The Advanced Energy Home is eligible for a \$3,750 incentive for multifamily projects. This program option offers a flexible performance pathway and a simple prescriptive menu option detailed below.

6.4.2.1 Multifamily Advanced Energy Home Performance Pathway Requirements

The following measures must be completed as a part of the Advanced Energy Home performance pathway.

20% above Title 24 Energy Code

Demonstrate a 20% improvement in TDV (time dependent valuation) energy, as shown on a CF-1R or PERF-1C report generated by an approved 2016 Title 24 compliance software. The Title 24 compliance software must be approved by the California Energy Commission at the time the permit was approved. The energy model and associated CF1-R must be completed by a 2016 Title 24 Certified Energy Analyst (CEA).

How this is verified – At time of application, Title 24 CF1-R documentation authored and signed by a 2016 Title 24 code CEA and the associated energy model (.bld or .ribd) will be submitted for review. Energy features associated with this documentation will be field verified by a HERS Rater.

□ **220V outlet at all stove/ranges, water heaters, and clothes dryers**

For all natural gas and/or propane equipment installed in the units or common areas, it is required that dedicated circuits and receptacles be installed to accommodate for future electrification of the appliance. The amperage supplied shall be no less than: Water Heating (30 amp), Clothes Dryer (30 amp), Stove/Range (50 amp) and shall be permanently labeled at the service panel as “For Future [Appliance Name]”.

How this is verified: Construction plans shall show receptacles and associated loads for stove/range, water heater, and clothes dryer. A HERS rater will field verify location of receptacles and labelling of service panel.

□ **Design Roof for Additional Structural Loads Associated with Solar Panels and Add Conduit for Future Installation**

The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents or provided in supplemental documentation. This is required so that the structural loads are known if a solar energy system is installed in the future. Conduit must be routed from the proposed future solar zone to the main service panel. The main electrical service panel shall have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation and shall be permanently labeled as “For Future Solar Electric.”

How this is verified: Construction plans shall show dead and live loads associated with the roofing. A HERS rater will verify labelling of service panel.

□ **Electric Vehicle Charging Stations Provided for 3%+ of Parking Spaces**

3% of the total amount of parking spaces, but in no case less than one space, provided shall have level 2 electric vehicle charging station installed and activated. Resources for discounted and/or free charging stations are available from [Sonoma Clean Power](#) and [PG&E](#).

How this is verified: If ordered through Sonoma Clean Power or PG&E, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

6.4.2.2 Advanced Energy Home Simple Menu-Based Pathway Requirements

The following measures must be completed as a part of the Advanced Energy Home simple menu pathway.

□ **2016 Title 24 Code High Performance Walls or 2016 Title 24 Code High Performance Attics**

Complete 1 of the following:

High Performance Attics: The home is constructed with a high performance attic Option A, B, or C as defined by the prescriptive requirements in the 2016 Building Efficiency Standards (Title 24, Part 6) TABLE 150.1-A or a totally sealed, unventilated attic that meets the same overall U-value requirements of the prescriptive high performance attic requirements.

Note: Because Climate Zone 2 does not have a requirement for High Performance Attics in Title 24, please reference the U-value and insulation requirements of Climate Zone 4.

Requirements for Roof/Ceiling Insulation Per Residential Compliance Manual (§150.1(c).1)

Strategy		How to Comply
High-Performance Ventilated Attics		
Option A	Vented attic with continuous insulation applied above the roof deck. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option A
Option B	Vented attic with batt, spray in cellulose/fiberglass secured with netting, or SPF. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option B
Ducts in Conditioned Space		
Option C	Vented attic with no insulation at roof deck. Ceiling insulation required separately above finished attic ceiling. Ducts and air handler equipment in conditioned space that is NOT a sealed attic.	Table 150.1-A of the Energy Standards Roof Assembly Option C Form: CF2R-MCH-20b

High Performance Walls: The home is constructed with high performance walls in compliance with the prescriptive requirements as defined in the 2016 Building Efficiency Standards (Title 24, Part 6) TABLE 150.1-A. Per this requirement, walls shall have a maximum U-factor of 0.051. U-factors can be calculated by building the construction assembly in Commission-approved compliance software, including the inside finish, sheathing, cavity insulation, and exterior finish. Some examples of various wood-framed wall assemblies, associated construction, and U-values are provided below.

Examples of Wood-Framed Wall Assemblies and U-Factors, Assuming Gypsum Board Interior

Stud	Cavity Insulation	Cavity Insulation Type	Exterior Insulation	U-Factor
2x6	R21	Loose-fill cellulose or high density batt	R4	0.051
2x6	R19	Low density batt	R5	0.051
2x4	R15	High density batt	R8	0.050

2x6	R31	Closed-cell spray foam (ccSPF)	R2	0.050
2x6	R23	High density batt or mineral wool	R4	0.049

How this is verified: High performance wall and/or attic shall be modeled in the energy model submitted at project application. A HERS rater will field verify construction assembly.

☐ **2019 Title 24 Code windows (Max U-factor 0.30, SHGC 0.23)**

All windows must have a maximum U-factor of 0.30 and a maximum SHGC of 0.23. (excludes doors, sliding glass doors, and skylights)

How this is verified: At the time of application, project shall submit specification sheet for windows, glazed doors, and skylights with manufacturer's name, U-factor, and Solar Heat Gain Coefficient (SHGC). This is verified by a HERS rater in field.

☐ **High efficiency water heater: For In-Unit Water Heaters - Heat Pump Water Heater w/ EF of 3.0+ or gas tankless w/ EF of 0.92 and 220v outlet. For Central Water Heaters - Heat Pump Water Heater w/ EF of 3.0+ or gas boiler w/ AFUE of 0.95 and 220v outlet.**

For in-unit water heating systems, install either a heat pump water heater with an energy factor (EF) of 3.0 or greater **OR** a gas tankless water heater with an energy factor (EF) of 0.92 or greater. For gas tankless water heaters, a 30 amp 220V receptacle must be provided for future installation of a heat pump water heater. The electrical service panel shall be shall be permanently labeled as "For Future Water Heater."

For central water heating systems, install either a heat pump water heater with an energy factor (EF) of 3.0 or greater **OR** a gas boiler/water heater with an AFUE or energy factor (EF) of 0.95 or greater. For gas boilers/water heaters, a 30 amp 220V receptacle must be provided for future installation of a heat pump water heater. The electrical service panel shall be shall be permanently labeled as "For Future Water Heater."

How this is verified: At the time of application, project shall submit specification for water heater with manufacturer's name/model number and efficiency rating. If installing a Solar Water Heater, a CF-SR form is also required. Water heater nameplate and efficiency is verified in the field by a HERS rater.

☐ **Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried deeply in attic insulation can qualify)**

Where ducts are installed for heating and/or cooling purposes, they shall be verified by a HERS rater to have a leakage rate of 5% or less than nominal system air handler airflow per the procedures described in Residential Appendix RA3.1. All ducts shall be insulated to R-8. Ducts shall either a) be verified by a HERS rater to have 12 linear feet or less of ducts located outside conditioned space per Residential Appendix RA3.1.4.1.2 **or** b) meet the definition of buried

ducts per Residential Appendix RA3.1.4.1.5. Systems without ducts are exempted from this requirement.

How this is verified: Duct leakage, location, and insulation levels shall be noted on the CF1-R documentation provided at time of application. A HERS rater will field test and verify the duct location/design, airtightness, and insulation levels and upload a completed CF-3R to the HERS registry.

WaterSense efficient plumbing fixtures

All installed toilets, urinals, showerheads, faucets, automatic irrigation controls shall be certified to the performance criteria of the [US EPA WaterSense Specification](#). Flow rates for these items shall be per CalGreen (2016 Title 24 Code, Part 11).

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

Water efficient landscaping

Meet the requirements for your local landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent or use one of the free landscape design templates provided by Sonoma-Marín Saving Water Partnership.

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

Energy Star Tier 2 Appliances

Energy Star Tier 2 certified appliances shall be installed for all refrigerators, dishwashers, clothes washers, and bathroom exhaust fans in either apartment units or common areas.

How this is verified: A HERS Rater shall field verify that all appliances are Energy Star rated.

220V outlet at stove/range and clothes dryer

For all natural gas and/or propane equipment installed in the apartment units or common areas, it is required that dedicated circuits and receptacles be installed to accommodate for future electrification of the appliance. The amperage supplied shall be no less than: Water Heating (30 amp), Clothes Dryer (30 amp), Stove/Range (50 amp) and shall be permanently labeled at the service panel as ““For Future [Appliance Name]””.

How this is verified: Construction plans shall show receptacles and associated loads for stove/range, water heater, and clothes dryer. A HERS rater will field verify location of receptacles and labelling of service panel.

□ **Electric Vehicle Charging Stations Provided for 3%+ of Parking Spaces**

3% of the total amount of parking spaces, but in no case less than one space, provided shall have level 2 electric vehicle charging station installed and activated. Resources for discounted and/or free charging stations are available from [Sonoma Clean Power](#) and [PG&E](#).

How this is verified: If ordered through Sonoma Clean Power or PG&E, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

6.4.3 All-Electric Home Requirements

The All Electric Home is eligible for a \$6,250 incentive for multifamily homes. This program option offers a flexible performance pathway and a simple prescriptive menu option detailed below.

6.4.3.1 All-Electric Home Performance Pathway Requirements

The following measures must be completed as a part of the All-Electric Home performance pathway.

□ **20% above Title 24 Energy Code with all Electric Appliances**

Demonstrate a 20 improvement in TDV (time dependent valuation) energy, as shown on a CF-1R or PERF-1C report generated by an approved Title 24 compliance software using only electric equipment. The Title 24 compliance software must be approved by the California Energy Commission at the time the permit was approved. The energy model and associated CF1-R/PERF 1-C must be completed by a Certified Energy Analyst (CEA).

How this is verified – At time of application, Title 24 CF1-R documentation authored and signed by a 2016 Title 24 code CEA and the associated energy model (.bld or .ribd) will be submitted for review. Energy features associated with this documentation will be field verified by a HERS Rater.

□ **Design Roof for Additional Structural Loads Associated with Solar Panels and Add Conduit for Future Installation**

The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents or provided in supplemental documentation. This is required so that the structural loads are known if a solar energy system is installed in the future. Conduit must be routed from the proposed future solar zone to the main service panel. The main electrical service panel shall have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation and shall be permanently labeled as “For Future Solar Electric.”

How this is verified: Construction plans shall show dead and live loads associated with the roofing. A HERS rater will verify labelling of service panel.

□ **Electric Vehicle Charging Stations Provided for 3%+ of Parking Spaces**

3% of the total amount of parking spaces, but in no case less than one space, provided shall have level 2 electric vehicle charging station installed and activated. Resources for discounted and/or free charging stations are available from [Sonoma Clean Power](#) and [PG&E](#).

How this is verified: If ordered through Sonoma Clean Power or PG&E, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

6.4.3.2 All-Electric Home Simple Menu-Based Pathway Requirements

The following measures must be completed as a part of the All Electric Home simple menu pathway.

□ **2016 Title 24 Code High Performance Walls**

The home is constructed with high performance walls in compliance with the prescriptive requirements as defined in the 2016 Residential Compliance Manual (Title 24, Part 6) TABLE 150.1-A. Per this requirement, walls shall have a maximum U-factor of 0.051. U-factors can be calculated by building the construction assembly in Commission-approved compliance software, including the inside finish, sheathing, cavity insulation, and exterior finish. Some examples of various wood-framed wall assemblies, associated construction, and U-values are provided below.

Examples of Wood-Framed Wall Assemblies and U-Factors, Assuming Gypsum Board Interior

Stud	Cavity Insulation	Cavity Insulation Type	Exterior Insulation	U-Factor
2x6	R21	Loose-fill cellulose or high density batt	R4	0.051
2x6	R19	Low density batt	R5	0.051
2x4	R15	High density batt	R8	0.050
2x6	R31	Closed-cell spray foam (ccSPF)	R2	0.050
2x6	R23	High density batt or mineral wool	R4	0.049

How this is verified: High performance wall and/or attic shall be modeled in the energy model submitted at project application. A HERS rater will field verify construction assembly.

□ **2016 Title 24 Code High Performance Attics**

The home is constructed with a high performance attic Option A, B, or C as defined by the prescriptive requirements in the 2016 Residential Compliance Manual (Title 24, Part 6) TABLE 150.1-A **or** a totally sealed, unventilated attic that meets the same overall U-value requirements of the prescriptive high performance attic requirements.

Note: Because Climate Zone 2 does not have a requirement for High Performance Attics in Title 24, please reference the U-value and insulation requirements of Climate Zone 4.

Requirements for Roof/Ceiling Insulation Per Residential Compliance Manual (§150.1(c).1)

Strategy		How to Comply
High-Performance Ventilated Attics		
Option A	Vented attic with continuous insulation applied above the roof deck. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option A
Option B	Vented attic with batt, spray in cellulose/fiberglass secured with netting, or SPF. Ceiling insulation required separately above finished attic ceiling.	Table 150.1-A of the Energy Standards Roof Assembly Option B
Ducts in Conditioned Space		
Option C	Vented attic with no insulation at roof deck. Ceiling insulation required separately above finished attic ceiling. Ducts and air handler equipment in conditioned space that is NOT a sealed attic.	Table 150.1-A of the Energy Standards Roof Assembly Option C Form: CF2R-MCH-20b

How this is verified: High performance wall and/or attic shall be modeled in the energy model submitted at project application. A HERS rater will field verify construction assembly.

Insulation Inspected by a HERS Rater (QII)

Insulation and air leakage control methods are inspected by a HERS rater per methods detailed in the Residential Appendix RA3.5.

How this is verified: A HERS rater will submit documentation of compliance with QII test to the appropriate HERS registry. This documentation will be verified by program staff when the final incentive check is requested.

Cool Roof

For a low-sloped roof (a surface with a pitch less than or equal to 2:12), install a product labeled by the Cool Roof Rating Council (CRRC) to have a minimum aged solar reflectance of 0.20 and a minimum thermal emittance of 0.75, or a minimum SRI of 16. For a steep-sloped roof (a surface with a pitch greater than 2:12), install a product labeled by the Cool Roof Rating Council (CRRC) to have a minimum aged solar reflectance of 0.63 and a minimum thermal emittance of 0.75 or a minimum SRI of 75.

How this is verified: Project shall submit a specification sheet which shows emissivity and reflectivity value of roofing product. A calculator has been produced by Lawrence Berkeley National Laboratory that calculates the SRI by designating the solar reflectance and thermal

emittance of the desired roofing material. The calculator can be found at http://www.energy.ca.gov/title24/2016standards/documents/solar_reflectance/

□ **2019 Title 24 Code windows (Max U-factor 0.30, SHGC 0.23)**

All windows must have a maximum U-factor of 0.30 and a maximum SHGC of 0.23

How this is verified: At the time of application, project shall submit specification sheet for windows, glazed doors, and skylights with manufacturer's name, U-factor, and Solar Heat Gain Coefficient (SHGC). This is verified by a HERS rater in field.

□ **High efficiency water heater: NEEA Tier 3 Heat Pump Water Heater w/ grid integration controls installed (Central Systems exempt from Grid Integration)**

Install a heat pump water heater that meets NEEA's Tier 3 Advanced Water Heater Specification **and** has an installed communication port that operates in compliance with CTA 2045 (or equivalent open modular interface standard) with specific demand response signals. An up-to-date list of water heaters that comply with the NEEA Tier 3 Advanced Water Heater Specification can be found here: <http://neea.org/advancedwaterheaterspec>.

Central hot water systems that serve more than one residential unit are exempt from the requirement for grid integration.

How this is verified: At the time of application, project shall submit specification for water heater with manufacturer's name/model number and efficiency rating. If installing a Solar Water Heater, a CF-SR form is also required. Water heater nameplate and efficiency is verified in the field by a HERS rater.

□ **For Central Domestic Hot Water Systems: Drain Water Heat Recovery or Demand Controlled Recirculation**

For central domestic hot water systems that serve more than 1 residential unit, install either a drain water heat recovery system **or** demand-controlled recirculation system.

Drain water heat recovery systems shall be installed by a qualified plumber and attach the home's incoming cold water line through the unit to the water heater. Vertical drain water heat recovery unit(s) shall be compliant with CSA B55.2, tested and labeled in accordance with CSA B55.1. Sloped drain water heat recovery unit(s) shall be tested and labeled with IAPMO IGC 346-2017 Potable water-side pressure loss of drain water heat recovery units shall be less than 3 psi (20.7 kPa) for individual units connected to one or two showers. Potable water-side pressure loss of drain water heat recovery units shall be less than 2 psi (13.8 kPa) for individual units connected to three or more showers.

Demand controlled recirculation systems in multifamily buildings operate by sensing hot water demand and recirculation return temperatures. The temperature sensor should be installed at the farthest end of the recirculation loop close to the last branch pipe.

How this is verified: Drain water heat recovery and/or demand controlled recirculation system shall be modeled in the energy model submitted at project application. A HERS rater will field verify installation of these measures.

High efficiency heat pump for heating/cooling (EER of 12.5+, HSPF of 9.5+)

Install a heat pump (ducted or ductless) for space heating and space cooling with a minimum EER of 12.5 and/or HSPF of 9.5 in all residential units.

How this is verified: At the time of application, project shall submit specification for heating equipment with manufacturer's name/model number and efficiency rating and specification for air conditioner with manufacturer's name/model numbers for condenser/coil match or AHRI reference number for each proposed unit (ahridirectory.org). HVAC nameplate, efficiency, and ducting airtightness is verified in the field by a HERS rater.

Heating/cooling ducts that are well sealed, insulated (R-8), and located primarily in conditioned space (note: buried deeply in attic insulation can qualify)

Where ducts are installed for heating and/or cooling purposes, they shall be verified by a HERS rater to have a leakage rate of 5% or less than nominal system air handler airflow per the procedures described in Residential Appendix RA3.1. All ducts shall be insulated to R-8. Ducts shall either a) be verified by a HERS rater to have 12 linear feet or less of ducts located outside conditioned space per Residential Appendix RA3.1.4.1.2 or b) meet the definition of buried ducts per Residential Appendix RA3.1.4.1.5. Systems without ducts are exempted from this requirement.

How this is verified: Duct leakage, location, and insulation levels shall be noted on the CF1-R documentation provided at time of application. A HERS rater will field test and verify the duct location/design, airtightness, and insulation levels and upload a completed CF-2R to the HERS registry.

Smart Thermostat

Install a smart thermostat that provides the following: intelligent recovery, staging, ramping, or another control mechanism that prevents the unnecessary operation of supplementary electric resistance heating when the heat pump alone can meet the heating load. Ductless mini-split systems are exempt from this requirement.

How this is verified: A HERS Rater shall field verify the smart thermostat.

WaterSense efficient plumbing fixtures

All installed toilets, urinals, showerheads, faucets, automatic irrigation controls shall be certified to the performance criteria of the [US EPA WaterSense Specification](#). Flow rates for these items shall be per CalGreen (2016 Title 24 Code, Part 11).

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

Water efficient landscaping

Meet the requirements for your local landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWEL0), whichever is more stringent or use one of the free landscape design templates provided by Sonoma-Marin Saving Water Partnership.

How this is verified: As this measure is included in CalGreen code (2016 Title 24 Code, Part 11), an inspector from your jurisdiction or a CALGreen Special Inspector shall provide field verification of this measure.

Induction Cooking

Install induction technologies for all ovens and ranges. To test out an induction cooktop for free from Sonoma Clean Power, please visit <https://sonomacleanpower.org/inductioncooking/> or email programs@sonomacleanpower.org.

How this is verified: A HERS Rater shall field verify the induction cooktop.

Energy Star Tier 2 Appliances

Energy Star Tier 2 certified appliances shall be installed for all refrigerators, dishwashers, clothes washers, and bathroom exhaust fans. A list of current Energy Star appliances can be found here: <https://www.energystar.gov/products/appliances>.

How this is verified: A HERS Rater shall field verify that all appliances are Energy Star rated.

All LED Lighting, Including Common Areas and Exteriors

All lighting at the property, including in-unit, common area, and exterior lighting shall use LED fixtures and/or bulbs.

How this is verified: Lighting wattages shall be modeled in the energy model. A HERS Rater shall field verify lighting is installed per the Title 24 report. A lighting fixture schedule may be requested by TRC for review.

Heat Pump or Electric Clothes Dryers

Install heat pump or electric clothes dryers for all in-unit or central laundry rooms.

How this is verified: A HERS Rater shall field verify the heat pump or electric clothes dryers.

Electric Vehicle Charging Stations Provided for 3%+ of Parking Spaces

3% of the total amount of parking spaces, but in no case less than one space, provided shall have level 2 electric vehicle charging station installed and activated. Resources for discounted and/or free charging stations are available from [Sonoma Clean Power](#) and [PG&E](#).

How this is verified: If ordered through Sonoma Clean Power or PG&E, charging station can be verified through an electronic signal once installed and activated. For items not ordered through Sonoma Clean Power, a HERS rater shall field verify the installation of the charging station.

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7. Program Frequently Asked Questions

The following section represents questions frequently asked of program staff. For any remaining questions, please contact programs@sonomacleanpower.org.

Program Processes

Q. I have bought a lot where the home was destroyed but I was not the previous occupant. Am I eligible for this program?

Yes, program qualification is based on lot, not occupant.

Q. Can I qualify for the program if I was not previously a Sonoma Clean Power customer?

Yes, all homes, condominiums, and apartments red-tagged by Cal Fire are eligible to participate, regardless of whether service was provided by Sonoma Clean Power or PG&E.

Q. I am building a new home, but not am not on a lot effected by the fire. Can I participate in this program?

The Advanced Energy Rebuild program applies only to homes that were red-tagged by Cal Fire, so you would not be eligible for participation. PG&E runs a separate program for new homes called the California Advanced Homes Program (CAHP) that you would be eligible to participate in. For more information about CAHP, visit: <http://cahp-pge.com/> or e-mail cahp@trcsolutions.com.

Q. What is a certified energy analyst (CEA) and why is it needed for the program?

Certification as a CEA signifies that a consultant understands the California Building Energy Efficiency Standards (Title 24, Part 6) and has an understanding of broader energy efficiency issues, is committed to providing quality service to clients, and that he/she has made a commitment to conduct business in an ethical fashion. For more information on the CEA certification, please visit cabec.org.

Q. Can a professional engineer (PE) substitute the requirement for a certified energy analyst (CEA)?

No. The consultant that generates the Title 24 documentation must be a CEA.

Q. Does the CEA have to be certified for the 2016 standards or is a 2013 certification okay?

A 2016 certification is required.

Q. Do I need a Certified Energy Analyst if I am using the simple menu-based pathway?

Yes, a CEA is always required for all projects.

Q. Do I need to demonstrate that I am 20% better than current Title 24 energy code if I am using the simple menu-based pathway?

No, you would meet program requirements if you install all items outlined under this pathway **and** pass current energy code (at greater than 0%) per Title 24 documentation.

Q. Can a manufactured or prefabricated home participate in this program?

Provided the manufactured/prefabricated home is permitted with Title 24 energy calculations (California specific), rather than the less rigorous country-wide code, prefabricated/manufactured homes are allowed in the program.

All Electric Home

Q. If I have an interior gas fireplace in my home does that prevent me from participating in the All Electric Home Pathway?

Yes, a home with an interior gas fireplace would only be eligible for the \$7,500 Advanced Energy Home incentive. An interior or exterior electric fireplace or an exterior propane fireplace would still be eligible to receive the All Electric Home incentive.

Q. Can my home have a natural gas meter if I pursue the All Electric Home pathway?

No. A home participating in the All Electric Home pathway cannot include a natural gas meter.

Q. Is it possible to get to 20% compliance with an All Electric Home?

For guidance, please contact us at programs@sonomacleanpower.org.

Bonus for Renewable Energy

Q. Can a leased solar panel or battery system get the \$5,000 incentive.

Yes.

Q. Can I only do the solar panel and battery storage system? Or do I need to participate in either the Advanced Energy Home or All Electric Home pathway?

The renewable energy incentive is a bonus and must be combined with either the Advanced Energy Home or All Electric Home incentive. It is not currently offered as a standalone incentive.

Building Features

Q. Can I comply with the menu-based pathways if my ducts are located in the crawlspace?

A. Yes, a sealed crawlspace with a low watt draw exhaust fan (no more than 0.20 watt/cfm exhaust only) will be allowed to meet this requirement. Unvented crawlspaces should meet all code requirements of Section R408.3 of the California Residential Building Code.

Marketing

Q. Are there program marketing materials that I can provide to potential clients?

Yes, for the most up-to-date marketing materials, please email programs@sonomacleanpower.org.