

**INITIAL STATEMENT OF REASONS
PROPOSED AMENDMENTS TO
CALIFORNIA HOME ENERGY RATING SYSTEM PROGRAM REGULATIONS
California Code of Regulations, Title 20, Chapter 4, Article 8
Sections 1670 to 1675**

**CALIFORNIA ENERGY COMMISSION
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INTRODUCTION

Existing law (Public Resources Code section 25942) requires the Energy Commission to adopt a statewide home energy rating program for residential buildings. The program is required to establish the following:

- Consistent, accurate and uniform ratings based on a single statewide scale;
- Reasonable estimates of potential utility bill savings and reliable recommendations on cost-effective measures to improve energy efficiency;
- Training and certification procedures for home raters and quality assurance procedures to promote accurate ratings and protect consumers;
- In coordination with home energy rating system organizations, procedures to establish a centralized database including a uniform reporting system for information on residential dwellings;
- Labeling procedures that meet the needs of home buyers, homeowners, the real estate industry and mortgage lenders.

The overall goal of this program is to provide reliable information to differentiate the energy efficiency among California homes and guide investment in cost effective home energy efficiency measures. Information may also be provided to field verify the physical characteristics and measures installed in new homes to demonstrate compliance with the Building Energy Efficiency Standards (Standards) pursuant to California Code of Regulations, Title 24, Part 6. The Home Energy Rating System (HERS) Program is intended to promote home energy efficiency, reduce energy utility bills and make housing more affordable in California, provide more comfortable and safe home environments, increase property values, and preserve California environmental quality and energy security.

In 1999, the Energy Commission adopted the Phase I California HERS Program regulations under this statutory authority to utilize HERS raters to provide field

verification and diagnostic testing services for showing compliance with the Standards. Under the Phase I regulations, the basic infrastructure for training and certification of raters, quality assurance and uniform reporting and database management was established. The Commission is now conducting the Phase II rulemaking to extend the existing scope of the Phase I HERS Program to include whole-house home energy ratings for existing and newly constructed homes and make some limited refinements of the Phase I rules for field verification ratings. This regulatory action is necessary to put in place the remaining statutory elements to achieve full compliance with Public Resource Code (PRC) section 25942.

SPECIFIC PURPOSE, RATIONALE, AND NECESSITY OF EACH PROPOSED ADOPTION, AMENDMENT, AND REPEAL

There are over 13 million residential dwelling units in California, many of which were built with limited energy efficiency measures before adoption of the first Standards in 1978. Homes that were built since that time continue to have significant opportunities for energy efficiency improvements.

Home energy ratings provide valuable information regarding the existing condition of energy consuming features in a home and the cost-effectiveness of alternatives to improve their energy use. That information is important to the value and desirability of a particular property and is necessary for owners who consider investing in energy efficiency improvements. Phase II of the HERS Program proceeding will set in place the remaining statutory elements of PRC section 25942 necessary to extend the HERS program to establish an oversight function for whole-house home energy ratings for existing and newly constructed homes, consistent with legislative intent.

Under the Phase I HERS Program regulations, the Energy Commission has approved three HERS providers to train and certify over 1,000 HERS raters statewide, conduct quality assurance programs to monitor those HERS raters, and maintain databases of rating results. The Phase I HERS raters are paid by builders and contractors to conduct independent third-party field verification and diagnostic testing to ensure compliance with the Standards for newly constructed buildings and additions and alterations of existing buildings. They perform similar duties for demonstrating that homes and installations qualify for incentives for energy efficiency beyond that required by the Standards, which are offered by utility Public Goods Charge funded new construction programs, the Energy Star Homes Program, the New Solar Homes Partnership, and federal energy efficiency tax credits. Builders, contractors, and the administrators of these public incentives programs rely on the HERS Program to ensure that energy efficiency measures are reliably installed.

Phase II of the HERS Program rulemaking establishes the delivery of whole-house home energy ratings that provide California homeowners and home buyers with information about the relative energy efficiency of the homes they live in or homes that they are considering for purchase, and evaluation of the cost effectiveness of options to achieve greater energy efficiency in those homes. The HERS Phase II regulations set

up a structure to ensure that these ratings and cost effectiveness analyses are technically accurate, are done with quality, and avoid conflicts of interest to protect consumers. These regulations govern what is to be addressed by whole-house home energy raters, how they are to be established and the procedures for persons providing the services of a HERS provider or HERS rater. The regulations do not require that anyone provide these services; if a person chooses to pursue the business opportunity to provide HERS provider or HERS rater services, they must comply with the regulations. Existing HERS providers and HERS raters who provide field verification rating services must adjust their work to comply with limited modifications to existing rules.

Taking advantage of the whole-house home energy ratings conducted under these regulations is voluntary on the part of homeowners, home purchasers, or home sellers. These regulations do not mandate the use of home energy ratings or the improvement of the energy efficiency of homes. The Phase II HERS Program regulations are expected to add considerable value to the real estate market for residential homes, providing valuable information for buyers, sellers, realtors, lenders, and appraisers. Also, these regulations are expected to add considerable value for homeowners to understand the advisability of investments in energy efficiency improvements for the homes they live in. The Energy Commission does expect that administrators of incentives programs, such as utility public goods charge programs and local governments, will provide incentives for performance of home energy ratings that meet the requirements of these regulations and for installing energy efficiency improvements that are recommended as a result of these regulations. The Commission expects that this reliance on the whole-house home energy ratings meeting the requirements of these regulations will provide substantial business opportunities for persons who become certified to perform HERS provider and HERS rater services and for suppliers of energy efficiency improvements.

Specific requirements for whole-house energy ratings, providers, raters, and other energy efficiency service providers related to procedures, training, testing, certification, and home energy rating activities of the proposed HERS Phase II regulations, as well as limited refinements of the Phase I rules for field verification ratings, are summarized below.

Section 1670. Scope.

Section 1670 is amended to include whole-house home energy ratings for existing and newly constructed homes.

The specific purpose and rationale for the amendment to this section are to extend the HERS program to deliver whole-house energy ratings to fully comply with Public Resources Code section 25942.

Section 1671. Definitions.

Section 1671 adds new definitions that include: *Building Performance Contractor, California Field Verification and Diagnostic Testing Rater, California Home Energy Analyst, California Home Energy Audit, California Home Energy Auditor, California Home Energy Inspector, California Whole-House Home Energy Rater, California Whole-House Home Energy Rating, Energy Rated Home, Executive Director, HERS Technical Manual, Net Zero Energy Home, Reference Home, and Time Dependent Valued (TDV) Energy*. This section amends the terms *Rater* and *Rating*, and repeals the term *Source Energy*.

The specific purpose and rationale for the amendments to this section are to establish whole-house energy rating activities as well as roles and functions of the different service providers delivering home energy ratings to comply with Public Resources Code section 25942.

Section 1672. Requirements for Rating System.

Subdivision (a) is amended to repeal the site inspection and diagnostic testing rating system procedures and adds specified procedures for completing a California whole-house home energy rating or a California home energy audit.

The specific purpose and rationale for the changes to subdivision (a) are to establish the whole-house energy rating system under the proposed regulations.

Subdivision (b) is added to specify data collection procedures to produce ratings for existing and newly constructed homes and to establish the levels of rater certifications needed to perform the services.

The specific purpose and rationale for subdivision (b) are to institute data collection requirements for home energy ratings to meet database requirements required by the Public Resources Code section 25942(a)(4) and provide for effective program oversight.

Subdivision (c) is added to specify the rater certification needed for the data analysis component of a whole-house energy rating or energy audit.

The specific purpose and rationale for subdivision (c) are to establish data analysis requirements within the rating system as required by Public Resources Code section 25942(a)(3).

Subdivision (d) is amended to expand the components of energy uses within each rating system.

The specific purpose and rationale for the changes to subdivision (d) are to include other energy uses for the ratings of homes to comply with Public Resources Code section 25942(a)(3).

Subdivision (e) is added to specify rating procedures for homes with on-site renewable generation.

The specific purpose and rationale for subdivision (e) are to clarify that when on-site renewable generation is installed, two separate ratings need to be provided, one with the home's energy efficiency measures alone and a second including both the energy efficiency measures plus the on-site generation. This will protect consumers from being misled by having the on-site generation mask the underlying energy efficiency of the home, meeting the consumer protection requirements of Public Resources Code section 25942(a)(3).

Subdivision (f) is amended to clarify the rating scale for determining a whole-house energy rating score.

The specific purpose and rationale for the changes to subdivision (f) are to comply with Public Resources Code section 25942(a)(1) requirements for consistent and accurate ratings based on a uniform scale.

Subdivision (g) is added to clarify how the energy that is used for determining the rating is to be determined.

The specific purpose and rationale for subdivision (g) are to provide specific approaches to determine ratings as required by Public Resources Code section 25942(a)(1) to ensure consistent and accurate ratings based on a uniform scale.

Subdivision (h) is added to include a utility bill analysis in the rating or audit.

The specific purpose and rationale for subdivision (h) are to comply with Public Resources Code section 25942(a)(2) requirements of reasonable estimates of utility bill savings.

Subdivision (i) is added to require cost effective energy efficiency improvement recommendations in a rating or audit.

The specific purpose and rationale for subdivision (i) are to comply with by Public Resources Code section 25942(a)(2) requirements for audit recommendations.

Subdivision (j) is added to require that an estimate of greenhouse gas emissions be included in a rating or audit.

The specific purpose and rationale for subdivision (j) are to establish the requirement for carbon dioxide emission estimate in a rated home to comply with Public Resources Code section 25942(a)(5).

Subdivision (k) is added to specify rating report requirements.

The specific purpose and rationale for subdivision (k) are to require comply consistent and accurate ratings based on a uniform scale to comply with Public Resources Code section 25942(a)(1).

Subdivision (l) is amended to specify limited changes to field verification and diagnostic testing of energy efficiency improvements for purposes of qualifying for Building Standards compliance credit.

The specific purpose and rationale for the changes to subdivision (l) are to adjust field verification and diagnostic testing requirements for providers and raters to ensure effective compliance with the Building Standards regulations.

Subdivision (m) is added to specify the proper conduct and responsibility of providers and raters in providing rating information or results.

The specific purpose and rationale for subdivision (m) are to comply with Public Resources Code section 25942(a)(3) requirements of quality assurance to ensure accurate ratings and consumer protection.

Section 1673. Requirements for Providers.

Subdivision (a) is amended to allow for additional training for raters, details the training requirements for each of the raters covered by these regulations, expands existing and adds new training areas, and amends to specify training in the provider's database for all certifications and raters.

The specific purpose and rationale for the changes to subdivision (a) are to specify training requirements for each role involved in HERS ratings as required by Public Resources Code section 25942(a)(3).

Subdivision (b) is amended to clarify the scope for true, accurate, and complete rater work and adds a statement to the rater agreement that payment will not be accepted for work that does not meet the requirements of these regulations.

The specific purpose and rationale for the changes to subdivision (b) are to clarify requirements for raters, improve compliance with the regulations, and contribute to consumer protection as required by Public Resources Code section 25942(a)(3).

Subdivision (d) amends the Field Verification and Diagnostic Testing Data Collection requirement to a Data Maintenance requirement for ratings and increases the retention period from five years to ten years. The list of information to be collected is moved from subdivision (f) to subdivision (d) and subdivision (f) is amended to refer to subdivision (d).

The specific purpose and rational for the changes to subdivisions (d) and (f) are to specify the data collection requirements for the new types of raters as required by Public Resources Code section 25942(a)(4).

Subdivision (e) is amended to clarify the Field Verification and Diagnostic Testing Evaluation.

The specific purpose and rationale for the changes to subdivision (e) are to clarify requirements for the regulations.

Subdivision (h) amends the requirements for Quality Assurance to be performed by the HERS providers, increases the amount of Quality Assurance checks to be performed, and details the collection of Quality Assurance results.

The specific purpose and rational for the changes to subdivision (h) are to specify the Quality Assurance checks for raters to comply with Public Resources Code section 25942(a)(1) and (3), and to stipulate the data collection requirements as required by Public Resources Code section 25942(a)(4).

Subdivision (i) is amended to clarify conflict of interest requirements for the new types of raters and provides an exception for approved Building Performance Contractors to perform work on the house with additional conflict of interest provisions.

The specific purpose and rational for the changes to subdivision (i) are to specify conflict of interest requirements for providers and raters to conform to Public Resources Code sections 25942(a)(1) and (2), and to contribute to consumer protection as required by Public Resources Code section 25942(a)(3).

Subdivision (j) is added to specify the requirement for providers to develop and maintain a database of the cost of implementing the efficiency improvements measures.

The specific purpose and rational for subdivision (j) are to provide reliable recommendations on cost-effective measures to improve energy efficiency as required by Public Resources Code section 25942(a)(2).

Section 1674. Certification of Providers and Rating Systems.

Subdivision (a) is amended to apply to the existing and new types of ratings covered by these regulations.

The specific purpose and rationale for the changes to subdivision (a) are that they clarify requirements for the regulations.

Subdivision (c) is amended to clarify the Energy Commission's certification process for providers.

The specific purpose and rationale for the changes to subdivision (c) are to clarify requirements for the regulations.

Subdivision (d) is added to specify the approval process for HERS rating software, allow for comments from interested parties on complete applications, explain that the Executive Director may request any additional information needed to evaluate the application, allow the Executive Director to convene a workshop to gather additional information from the applicant, and require the Executive Director to submit a written recommendation on the application.

The specific purpose and rationale for subdivision (d) are to provide consistent, accurate, and uniform ratings based on a single statewide rating scale as required by Public Resources Code section 25942(a)(1).

Subdivision (e) is added to establish the special approval required for California Home Energy Inspectors, Building Performance Contractors, and Third Party Quality Control programs.

The specific purpose and rationale for subdivision (e) are to allow these diverse groups to provide consistent, accurate, and uniform ratings based on a single statewide rating scale as required by Public Resources Code section 25942(a)(1) and to provide consumer protection in accordance with Public Resources Code section 25942(a)(3).

Document Incorporated by Reference

The *Home Energy Rating System Technical Manual (HTM)*, California Energy Commission Publication No. CEC-400-012, September 2008, provides details for implementing the proposed regulations. It will be incorporated by reference into the HERS Program regulations. The *HTM* is designed for the specific target audiences of the HERS providers and raters who are familiar with the technical terminology used in the manual.

The specific purpose and reasons for adopting the *HTM* is to elaborate and clarify the HERS regulations by explaining to the regulated parties, in terms that the regulated parties are familiar with, the requirements for the HERS Program, including the requirements for HERS providers, the modeling procedures and assumptions for HERS software, and the procedures for California Whole-House Home Energy Raters that are required to use to develop ratings for homes and other low-rise residential buildings. The *HTM* also explains the roles, requirements, and procedures for persons certified to perform specific functions related to HERS ratings. In addition, the *HTM* explains the requirements for completion of California Home Energy Audits that are provided for people who do not wish to have a formal rating but want recommendations for cost-effective energy efficiency improvements. The *HTM* also explains the HERS reports, data collection procedures, and certification and quality assurance procedures.

Section 1. Overview

The first major section of the *HTM* gives a general overview of the structure of the *HTM* which, as stated therein, “is organized as follows:”

- *Section 2 specifies the minimum and optional reports that shall be produced by the HERS provider.*
- *Section 3 explains how the California HERS Index is calculated.*
- *Section 4 details the modeling rules and assumptions for calculating energy use for both the rated home and the reference home.*
- *Section 5 covers the procedures for analyzing energy bills history for the rated home.*
- *Section 6 spells out the procedures for determining cost-effective energy efficiency measures for the rated home using both the Standard Approach and the Custom Approach.*
- *Section 7 identifies inputs to the model and provides guidelines on how this information is to be collected from on-site inspections.*
- *Section 8 reviews quality control procedures and discusses the roles of the various parties involved in the rating process.”*

Section 1.1. Minimum Modeling Capabilities, and all Sections 4

These sections of the *HTM* describe the specifications and details for modeling the energy use of a home or a low-rise residential building, its associated indoor appliances, and lighting attached to the home or garage. The specific purpose of these sections taken together is to provide “consistent, accurate, and uniform ratings based on a single statewide rating scale” as required by statute in Public Resources Code section 25942(a)(1) by standardizing methods and assumptions used for modeling homes, appliances inside of homes, and lighting attached to homes.

These parts of the *HTM* that explain the requirements and specifications for HERS software rely heavily upon the regulations adopted as part of the *2008 Building Energy Efficiency Standards*, Title 24, Part 6, particularly the *2008 Residential Alternative Calculation Method (ACM) Approval Manual* which describes the requirements and specifications for the software that may be approved for use in modeling the heating, cooling, and domestic hot water energy consumption for demonstrating compliance with the *2008 Building Energy Efficiency Standards*, Title 24, Part 6, and the *2008 Residential Appendices* which describe protocols for specific diagnostic tests such as HVAC duct leakage tests and air conditioner refrigerant charge tests.

The specific purpose and reason for the all of the requirements, calculation methods, specifications (including fixed and restricted modeling assumptions), and output details for HERS rating software are to establish and provide “consistent, accurate, and uniform

ratings based on a single statewide rating scale” as required by Public Resources Code section 25942(a)(1).

Sections 4.1. Overview and 4.2. Residential ACM Modeling Assumptions

For the modeling of heating, cooling, and domestic hot water, the details of modeling used the same details described in the *2008 Residential ACM Approval Manual* adopted as part of Title 24, Part 6, both to provide a consistent framework for modeling these types of energy uses in homes and to rely upon the research, development, and public process and participation that went into the regulatory process for the development of the *2008 Building Energy Efficiency Standards*, Title 24, Part 6. This reliance on the modeling procedures and requirements of the *2008 Building Energy Efficiency Standards*, Title 24, Part 6 means that HERS rating software will model heating, cooling, and hot water energy consumption for homes in a manner consistent with the modeling methods used for demonstrating building code compliance for newly-constructed homes.

Sections 4.3. through 4.12.

Certain modeling procedures or assumptions are different for HERS rating software compared to residential compliance software for the *2008 Building Energy Efficiency Standards*, Title 24, Part 6, including the modeling of appliances used in a home or garage, the modeling of lighting, and the modeling of occupancy in the home. The specific reasons for these differences are described below.

For building standards compliance software, the energy use of appliances, indoor lighting, and other energy-consuming equipment is not directly calculated but the internal heat generation from such appliances and equipment as well as that from the occupants of the home is estimated by a simple linear equation with a constant and a portion that increases with house size (conditioned floor area) and modeled using a single schedule. For the HERS ratings and the energy efficiency measure recommendations which are required by statute, it is important to have better estimates of the energy use of appliances, electronic equipment, and lighting. Estimates for the energy consumption for five types of major appliances required to be accounted for were estimated from Residential Appliance Saturation Survey (RASS) data and from the assumptions and information from the Building America program, an existing federal Department of Energy program for evaluating the energy efficiency of homes. The energy used by these appliances is compared to appliances in new homes that must meet the new appliance efficiency standards of Title 20. Additional energy use is included for multiple appliances of the same type, such as second refrigerators.

The specific purpose and rationale for including better estimates of these energy uses in the rating are to provide more accurate and reliable ratings and more reasonable and reliable energy efficiency recommendations as required by Public Resources Code sections 25942(a)(1) and (2). Information on the number and type of appliances is rarely known for new homes when their designs are being modeled for compliance with

the *2008 Building Energy Efficiency Standards*, but is known for specific existing homes which will be rated or audited under these proposed regulations.

Section 4.6. Lighting

Lighting is an important component of energy consumption in and around the home. The Building Energy Efficiency Standards regulate permanently-mounted indoor lighting in homes, garage lighting, and lighting attached to buildings. The *HTM* requires that the energy use of lighting be estimated in specific ways to standardize these estimates and to establish these estimates on the best research available. Lighting that is not permanently-mounted is considered to be “portable lighting” and is assumed to use low efficacy screw-in lamps (typically incandescent) for the purposes of a HERS rating since high-efficacy lamps (typically compact fluorescent) in these fixtures may move with the occupant or are likely to be replaced with low efficacy incandescent lamps. The *Custom Approach* for recommended energy efficiency measures may account for better lamps and better than assumed likelihood of replacement with equally efficient or better lamps.

The specific purpose and rationale for the assumptions and methods of estimating lighting energy consumption are to provide accurate and reliable ratings and more reasonable and reliable energy efficiency recommendations as required by Public Resources Code sections 25942(a)(1) and (2).

Lighting outside of the home and garage and not attached to a building is not included in the HERS rating because of the wider variation in possible energy consumption and the systems used. In addition, most homes do not have this type of lighting or, if they do, the power consumption is relatively small. The *Custom Approach* allows for including such lighting and reconciling such energy uses with utility bills.

Section 4.7. Internal Heat Gain

Occupants, appliances, and energy-consuming equipment all generate heat if they are inside of the home and this heat must be accounted for to determine the heat gains and losses of the building and the building’s energy efficiency. Since the five major appliances were disaggregated and determined more specifically the heat gains due to other uses were examined more closely and modified from the older assumptions underlying the internal heat gains for the Building Energy Efficiency Standards to bring these assumptions up to date with current research, improve their accuracy, and to provide consistency with the estimates of energy consumption of the specific appliances evaluated in the production of HERS ratings.

The specific purpose and rationale for including better estimates of assumed schedules and heat gains of these energy uses in the rating are to provide more accurate and reliable ratings and more reasonable and reliable energy efficiency recommendations as required by Public Resources Code sections 25942(a)(1) and (2).

Section 4.8. U-factors of Uninsulated Construction Assemblies

Past evaluations of home energy ratings compared to energy uses have consistently produced reasonable estimates for new, well-insulated homes but have consistently overestimated the consumption of energy in older, existing homes where the lack of insulation in walls or ceilings was common. While there are likely to be several factors that have caused this effect, many scientists and technicians believe that the effective U-factor of uninsulated walls and roof/ceilings is better than current theoretical calculations estimate. The Building Energy Efficiency Standards already recognizes this effect for floors with crawl spaces by giving a specific R-value addition for a crawl space. The *HTM* extends this concept by crediting a wall or roof/ceiling with a heat loss factor of no more than 0.25 for uninsulated walls or roof/ceiling combinations.

This assumption has been included for the specific purpose and rationale to make the HERS ratings more accurate and consistent with actual utility bills in accordance with the requirements of Public Resources Code sections 25942(a)(1).

Section 4.9. Infiltration

Infiltration and infiltration reduction measures are treated the same as the Building Energy Efficiency Standards. The specific purpose and rationale for using the same modeling requirements and assumptions for infiltration as the Building Energy Efficiency Standards is that these measures were specifically re-examined for the *2008 Building Energy Efficiency Standards* and there was no evidence or research that supported modifying these rules for new or existing homes and to provide accurate and reliable ratings and more reasonable and reliable energy efficiency recommendations as required by Public Resources Code sections 25942(a)(1) and (2).

Section 4.10. Mechanical Ventilation

Mechanical ventilation modeling rules were newly developed for the Building Energy Efficiency Standards over the past three years. The rules proposed in the *HTM* are the same for consistency with the building standards except that existing homes are required to be modeled with a basic mechanical ventilation system even if one is not present. This is required to avoid a situation where an existing home is given HERS rating credit for what the state now believes is an inadequate ventilation system.

Section 4.11. Ancillary Energy Uses

Actual energy bills for people's homes often include a variety of energy uses not directly associated with the building or where the presence and energy consumption of the equipment varies even more extremely than for more common appliances or equipment. Since these uses are either less common (hot tubs/spas), are less predictable (video games), or have been inadequately researched, these "ancillary energy uses" are not included in the HERS rating. However, specific common sense recommendations are spelled out in Appendix B of the *HTM* and are required to be

included on the HERS list of recommendations if the specific equipment or appliances are present in the home or contribute to the homeowner's utility bills for the property being evaluated.

Section 4.12. On-Site Photovoltaic (PV) Production

The estimated energy production due to photovoltaics is determined in the same manner as the methods for the Building Energy Efficiency Standards found in the 2008 Low-Rise Residential Alternative Calculation Method Approval Manual which were only developed over the past three years.

The specific purpose and rationale for this section are to provide accurate and reliable ratings that include the energy production of photovoltaics and more reasonable and reliable energy efficiency recommendations as required by Public Resources Code sections 25942(a)(1) and (2).

Section 5. Energy Bill Analysis

Section 5 and all of its subsections require that HERS rating software be capable of determining the monthly temperature dependence of energy consumption of electricity and natural gas if monthly bills and average daily temperatures are available for at least 12 previous months. Section 5.1 describes the Inverse Modeling method that takes a sequential series of at least 12 monthly utility bills and the corresponding average daily temperatures for that period of time and uses piecewise linear regression to fit the energy consumption data to the temperature data. This technique is used to separate out heating, cooling, and base load energy uses when the energy consumption data is available. This method was chosen for HERS software because it is published in the scientific literature and is available to the public. Utilities use similar but more complex methods to disaggregate energy consumption data for their customers, but these methods are privately owned and licensed to utility companies for their customers use. If the energy consumption data is available, HERS software must perform this analysis and derive the estimated energy consumption for the standard weather data used in the HERS rating simulation to provide "normalized" energy consumption estimates for each month for electricity and also for natural gas if used in the home.

The specific purpose and rationale for these sections are to provide reasonable and reliable energy efficiency recommendations as required by Public Resources Code section 25942(a)(2).

Section 6. Recommendations for Energy Efficiency Improvements

As required by statute [Public Resources Code section 25942(a)(2)], HERS ratings must include "reasonable and reliable energy efficiency recommendations." Section 6 specifies the methodology for developing those recommendations using two approaches. The first of these approaches, the *Standard Approach*, is mandatory when producing a HERS rating for a home and is standardized for developing

recommendations for consistency across HERS raters. The *Custom Approach* for developing recommendations allows the rater more latitude in customizing the recommendations to the building owner and the behavior of the occupants, the specific home or building being rated, and the specific costs and benefits, such as specific utility rates and specific financing terms, available to the building owner. In the *Custom Approach* owner tax brackets, owner preferences and utility incentives may be included to determine recommendations suited to individual building owner or occupants.

The specific purpose and rationale for the requirements of this section are to provide reasonable and reliable energy efficiency recommendations in accordance with Public Resources Code section 25942(a)(2).

Section 7. Data Collection Procedures

Data collection procedures are specified to provide repeatable, accurate, and reliable ratings. The minimum sets of data to be collected in and around the dwelling, specific methods for collecting this data, and specifications for those who are allowed to collect the data to produce HERS ratings are detailed in the *HERS Technical Manual* in this section. Only two types of individuals are allowed to gather data in homes and buildings pursuant to the development of a HERS rating. For Whole-House Home Energy Ratings, only individuals who are trained and certified by a HERS provider as a California Whole-House Home Energy Rater or a California Home Energy Inspector may gather this data. For field verification and diagnostic testing for showing compliance with the *2008 Building Energy Efficiency Standards, Title 24, Part 6* requirements, an individual trained and certified as a California Field Verification and Diagnostic Testing Rater by a HERS provider may perform this work.

The specific purpose and rationale for these procedures are to assure that adequately trained personnel gather the information required for a rating and to provide accurate and reliable ratings as required by Public Resources Code section 25942(a)(1).

The HERS regulations and the *HERS Technical Manual* recognize the existing methods of delivering energy efficiency evaluation and information on homes which use home inspectors to gather data by having HERS providers train and certify California Home Energy Inspectors. The types of data that home inspectors, certified as California Home Energy Inspectors, can gather for producing California Whole-House Home Energy Ratings is specified.

The purpose and rationale for these specifications are to allow less expensive means of gathering data by using trained home inspectors who are visiting a home to inspect for non-energy efficiency related reasons while ensuring that the requirements of Public Resources Code section 25942 are met.

Section 8. Certification and Quality Assurance Procedures

Section 8.1. Rater Certifications

The HERS regulations require HERS providers to train, certify, and provide quality assurance for raters. There are two primary types of raters: (1) the California Field Verification and Diagnostic Testing Rater and (2) the California Whole-House Home Energy Rater. The first of these raters provides field verification and diagnostic testing for the *2008 Building Energy Efficiency Standards, Title 24, Part 6* while the second type develops and produces California Whole-House Home Energy Ratings and California Home Energy Audits. There are also two types of provider-certified individuals who may perform some of the functions required to develop a California Whole-House Home Energy Rating when supervised by a California Whole-House Home Energy Rater: (1) a California Home Energy Inspector and (2) a California Home Energy Analyst. These two subordinate roles are specified to accommodate existing roles in the marketplace. At least one California business utilities home inspectors to gather data on energy efficiency while the inspections are in the home doing home inspections for other purposes. The data they gather is in turn analyzed by personnel at a central office facility to produce energy efficiency evaluations of homes.

The specific purpose and rationale for including the role of California Home Energy Inspector are to accommodate this business model for delivering energy efficiency information on homes while maintaining training and standardization of data gathering and analysis methods to provide accurate and reliable ratings as required by Public Resources Code section 25942(a)(1).

The role of California Home Energy Analyst is included to accommodate and allow the use of energy consultants who already play a role in demonstrating compliance with the *2008 Building Energy Efficiency Standards, Title 24, Part 6* for newly constructed homes and for qualifying homes for beyond Standards incentive programs.

The specific purpose and rationale for including this role are to allow a California Whole-House Home Energy Rater to gather data and deliver the data to a California Home Energy Analyst, an expert in energy simulation, to utilize the HERS rating software to perform the data analysis if this specialization is more efficient for the rater's business.

Section 8.2. Provider Quality Assurance

The specific purpose and rationale for this section are to clarify the quality assurance requirements in the regulations.

Section 8.3. Special Requirements for Building Performance Contractors

The HERS regulations also recognize the pre-existing roles of building performance contractors whose philosophy is to improve homes while treating the house as a system and to evaluate safety, comfort, and code compliance along with the energy efficiency of a home when doing home improvements. For the HERS regulations, Building Performance Contractors are a special class of California Whole-House Home Energy

Rater where certain conflict of interest restrictions in the regulations are relaxed in return for greater disclosure and greater oversight and quality assurance by HERS providers.

The specific purpose and rationale for these distinctions are to balance the protection of the consumer with the additional services provided by the Building Performance Contractor and the more in-depth and accurate assessment of the practical energy efficiency measures for a home to provide more accurate and reliable ratings as required by Public Resources Code section 25942(a)(1).

Appendix A. Data Input Requirements and On-Site Inspection Procedures for California HERS Ratings

The specific purpose and rationale for Appendix A are to detail and clarify the data input requirements and on-site inspection procedures for California Whole-House Home Energy Ratings and hence to provide accurate and reliable ratings as required by Public Resources Code section 25942(a)(1).

Appendix B. Standard Recommendations

The specific purpose and rationale for Appendix B are to provide specific wording for standard recommendations for ancillary energy uses to provide reasonable and reliable energy efficiency recommendations as required by Public Resources Code section 25942(a)(2) for those energy uses.

REASONS FOR MANDATING SPECIFIC ACTIONS, PROCEDURES, TECHNOLOGIES, OR EQUIPMENT; CONSIDERATION OF PERFORMANCE STANDARDS

To fully comply with PRC 25942, Phase II of the HERS Program rulemaking sets up a structure for the delivery of whole-house home energy ratings for existing and newly constructed homes. These regulations govern what is to be addressed by whole-house home energy raters, the various roles and functions of other service provider entities within the rating systems, training and certifications required, and the procedures for persons providing the services of a HERS provider or a HERS rater. However, there is no mandate that any home energy ratings or energy efficiency measures be completed. The proposed regulations are intent to provide information to homeowners, home buyers, and home sellers regarding the relative energy efficiency of the homes they live in or homes that they consider for purchase, and evaluation of the cost effectiveness of options to achieve greater energy efficiency. The consumers have the choice of selecting the appropriate levels of services to be done on their homes, based on their needs and financial considerations.

The regulations establish a system where HERS providers train and certify raters to follow these regulations and the HERS Technical Manual in order to implement the program criteria specified in Public Resources Code sections 25942(a)(1) to (5).

STUDIES, REPORTS, AND DOCUMENTS RELIED UPON

- “Options for Energy Efficiency in Existing Buildings,” Energy Commission Publication No. CEC-400-2005-039-CMF, December 2005
<http://www.energy.ca.gov/2005publications/CEC-400-2005-039/CEC-400-2005-039-CMF.PDF>
- “Low-Rise Residential Alternative Calculation Method (ACM) Approval Manual,” Energy Commission Publication No. CEC-400-2008-002, April 2008
<http://www.energy.ca.gov/2008publications/CEC-400-2008-002/CEC-400-2008-002-15DAY.PDF>
- “2006 Mortgage Industry National Home Energy Rating Systems Standards,” Residential Energy Services Network
[http://www.resnet.us/standards/mortgage/RESNET Mortgage Industry National_HERS_Standards.pdfwww.resnet.us/](http://www.resnet.us/standards/mortgage/RESNET_Mortgage_Industry_National_HERS_Standards.pdfwww.resnet.us/)
- “Home Energy Rating System Topic Report,” Energy Commission Publication No. CEC-2008-013-D, May 2008
<http://www.energy.ca.gov/2008publications/CEC-400-2008-013/CEC-400-2008-013-D.PDF>
- “California Statewide Residential Appliance Saturation Study,” Energy Commission Publication No. CEC-400-04-009, June 2004
http://www.energy.ca.gov/reports/400-04-009/2004-08-17_400-04-009VOL2B.PDF
- “Building America Research Benchmark Definition,” National Renewable Energy Laboratory, January 2008
<http://www.nrel.gov/docs/fy08osti/42662.pdf>

REASONABLE ALTERNATIVES, IF ANY, TO THE PROPOSED AMENDMENTS THAT WERE CONSIDERED, INCLUDING ALTERNATIVES TO LESSEN IMPACTS ON SMALL BUSINESS, AND REASONS FOR REJECTING THEM

The Energy Commission has found no reasonable alternatives to the proposed amendments that would be more effective or less impacting on small business. The proposed regulations do not require that anyone provide whole-house home energy rating services. Small businesses that wish to be certified in the existing home rating system must comply with the regulations and are subject to incur the costs for training, reporting, and/or oversight. However, the acquired skills and certification will result in income-generating opportunities for the small businesses.

FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE RELIED UPON TO SUPPORT THE INITIAL DETERMINATION, IN THE NOTICE OF PROPOSED ACTION THAT THE REGULATION WILL NOT HAVE A SIGNIFICANT ADVERSE ECONOMIC IMPACT ON BUSINESSES

The basis for this determination is supported by the findings in the following documents:

- *“Options for Energy Efficiency in Existing Buildings,”* Energy Commission Publication No. CEC-400-2005-039-CMF, December 2005
- *“Home Energy Rating System Topic Report,”* Energy Commission Publication No. CEC-2008-013-D, May 2008

EFFORTS TO AVOID UNNECESSARY DUPLICATION OR CONFLICT WITH THE CODE OF FEDERAL REGULATIONS

There is no existing federal law governing a national HERS program. The proposed regulations neither duplicate nor conflict with any federal regulation.