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**CALIFORNIA  
ENERGY COMMISSION**



**CALIFORNIA  
NATURAL  
RESOURCES  
AGENCY**

California Energy Commission

## **FINAL STAFF REPORT**

# **2022 Update of the Home Energy Rating System Requirements**

**California Code of Regulations Title 20,  
Division 2, Chapter 4, Article 8, Sections  
1670–1675**

**January 2023 | CEC-400-2022-017-F**



# California Energy Commission

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## **ACKNOWLEDGMENTS**

This report is the result of several years of investigations, public meetings, and focused research into the performance of the California Home Energy Ratings System program and field verification and diagnostic testing. The current authors would like to acknowledge the important contributions of individuals who were at one time members of the staff team conducting this work. The following individuals contributed to the early development of this report and the order instituting an informational proceeding (Order Number 12-1114-6):

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## ABSTRACT

The Home Energy Rating System (HERS) regulations (Title 20, the California Code of Regulations, sections 1670-1675) establish a Whole House Rating program, which is a voluntary home energy usage rating program that provides efficiency upgrade recommendations to improve the home rating. The HERS program utilizes HERS Providers and HERS Raters. HERS Providers certify, train, and oversee HERS Raters. HERS Raters perform the whole-house ratings.

Another program, the Field Verification and Diagnostic Testing program, also utilizes HERS Providers and Raters. The Field Verification and Diagnostic Testing program is a mandatory administrative program used to collect data and verify compliance with the Building Energy Efficiency Standards (Energy Code) located in Title 24, Parts 1 and 6 of the California Code of Regulations.

As this staff report presents, the overlap of the Whole House Rating program and Field Verification and Diagnostic Testing program has made Energy Code compliance difficult and confusing for stakeholders; and management of the HERS program challenging for the California Energy Commission (CEC). As a result, the CEC is proposing to add all aspects of the Field Verification and Diagnostic Testing program requirements to Title 24 of the California Code of Regulations. Correspondingly, this report proposes to remove any provisions relevant to the Field Verification and Diagnostic Testing program from Title 20 of the HERS regulations.

**Keywords:** Field verification and diagnostic testing, ratings, Home Energy Rating System, raters, providers

Loyer, Joe. January 2023. *2022 Update of the Field Verification and Diagnostic Testing, Home Energy Rating System Requirements*. California Energy Commission. Publication Number: CEC-400-2022-017-F.

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# EXECUTIVE SUMMARY

The Warren-Alquist Act, Public Resources Code, sections 25000 *et seq.*, establishes the California Energy Commission (CEC) as the state's primary energy policy and planning agency. Section 25007 of the Act directs the CEC to "employ a range of measures to reduce wasteful, uneconomical, and unnecessary uses of energy, reducing the rate of growth of energy consumption, prudently conserve energy resources, and assure statewide environmental, public safety, and land use goals." One of these measures was the development of a program to provide estimates of potential utility bill savings, and reliable recommendations on cost-effective ways to improve home energy efficiency, known as the Whole House Rating program. Another measure was the development of energy standards for newly constructed buildings, additions to existing buildings, and alterations to existing buildings, known as the Building Energy Efficiency Standards or the Energy Code.

The CEC promulgated regulations for the Home Energy Rating System (HERS) program in sections 1670-1675 of Title 20 of the California Code of Regulations. The regulations established requirements for the Whole-House Home Energy Ratings program as well as requirements for the Field Verification and Diagnostic Testing program.

The Whole-House Home Energy Ratings program is voluntary and provides efficiency upgrade recommendations to improve a home's energy rating. The HERS program utilizes HERS Providers and HERS Raters. The Field Verification and Diagnostic Testing program is a mandatory administrative program to verify compliance with the Energy Code and collect compliance data. Both services use HERS Providers and HERS Raters. HERS Providers certify, train, and oversee HERS Raters, who perform the ratings, verification, and testing.

The inclusion of certain field verification and diagnostic testing provisions in the HERS program regulations has made compliance with the Energy Code difficult and confusing for stakeholders; and management of the Whole-House Home Energy Rating program and Field Verification and Diagnostic Testing program challenging for the CEC. For these reasons, the CEC will conduct a rulemaking to add all aspects of the Field Verification and Diagnostic Testing program requirements to Title 24 of the California Code of Regulations. This would unify the administrative function of Energy Code compliance with the substantive standards in the Energy Code. As a result, this report proposes to remove all provisions relating to the Field Verification and Diagnostic Testing program from the HERS regulations, in order to avoid duplicative and potentially conflicting regulations existing in Title 20

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# CHAPTER 1:

## Legislative Criteria

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Public Resources Code section 25942 directs the California Energy Commission (CEC) to “establish criteria for adopting a statewide home energy rating program for residential dwellings.” The statute further directs the CEC to include the following as part of the program criteria:

- (1) Consistent, accurate, and uniform ratings based on a single statewide rating scale;
- (2) Reasonable estimates of potential utility bill savings, and reliable recommendations on cost-effective measures to improve energy efficiency;
- (3) Training and certification procedures for home raters and quality assurance procedures to promote accurate ratings and to protect consumers;
- (4) In coordination with home energy rating service organization databases, procedures to establish a centralized, publicly accessible, database that includes a uniform reporting system for information on residential dwellings, excluding proprietary information, needed to facilitate the program. There shall be no public access to information in the database concerning specific dwellings without the owner’s or occupant’s permission; and
- (5) Labeling procedures that will meet the needs of home buyers, homeowners, renters, the real estate industry, and mortgage lenders with an interest in home energy ratings.

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# CHAPTER 2:

## Efficiency Policies

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The Warren-Alquist Act establishes the CEC as the state’s primary energy policy and planning agency.<sup>1</sup> The act directs the CEC to “employ a range of measures to reduce wasteful, uneconomical, and unnecessary uses of energy, reducing the rate of growth of energy consumption, prudently conserve energy resources, and assure statewide environmental, public safety, and land use goals.”<sup>2</sup> As part of accomplishing this mandate, the act mandates the CEC to promulgate energy standards for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The Energy Code is a unique California asset that has placed the state on the forefront of energy efficiency, sustainability, energy independence, and climate change issues and has provided a template for national standards within the United States as well as for other countries around the globe.

The following legislation and executive orders are relevant to program objectives.

### **Assembly Bill 32 (Nuñez, Chapter 488, Statutes of 2006)**

The landmark Global Warming Solutions Act of 2006 established a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions levels in 1990 to be achieved by 2020. Assembly Bill (AB) 32 made the following legislative findings:

- (a) Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California.
- (b) Global warming will increase the strain on electricity supplies necessary to meet the demand for summer air-conditioning in the hottest parts of the state.
- (c) California has long been a national and international leader on energy conservation and environmental stewardship efforts, including energy efficiency requirements. The program established by this division will continue this tradition of environmental leadership by placing California at the forefront of national and international efforts to reduce emissions of greenhouse gases.
- (d) National and international actions are necessary to fully address the issue of global warming. However, action taken by California to reduce emissions of greenhouse gases will have far-reaching effects by encouraging other states, the federal government, and other countries to act.
- (e) By exercising a global leadership role, California will benefit from national and international efforts to reduce emissions of greenhouse gases. More importantly, investing in the development of innovative and pioneering technologies will assist California in achieving the

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1 The [Warren-Alquist State Energy Resources Conservation and Development Act, Division 15 of the Public Resources Code, sections 25000 et seq.](https://www.energy.ca.gov/rules-and-regulations/warren-alquist-act), available at <https://www.energy.ca.gov/rules-and-regulations/warren-alquist-act>.

2 Public Resources Code section 25007.

2020 statewide limit on emissions of greenhouse gases established by this division and will provide an opportunity for the state to take a global economic and technological leadership role in reducing emissions of greenhouse gases.

### **Assembly Bill 758 (Skinner, Chapter 470, Statutes 2009)**

AB 758 requires the CEC to establish a comprehensive program to achieve greater energy savings in the state's residential and nonresidential building stock.

### **Senate Bill 350 (De León, Chapter 547, Statutes of 2015)**

Senate Bill (SB) 350 was approved by former Governor Edmund G. Brown Jr. as a call for a new set of objectives in clean energy, clean air, and pollution reduction for 2030 and beyond. These objectives include doubling the energy efficiency savings in electricity and natural gas end uses of retail customers through energy efficiency and conservation. The Legislature expressed its intent in enacting SB 350 to codify the targets to ensure they are permanent, enforceable, and quantifiable. SB 350 also directs the CEC to "adopt, implement, and enforce a responsible contractor policy for use across all ratepayer-funded energy efficiency programs that involve installation or maintenance, or both installation and maintenance, by building contractors to ensure that retrofits meet high-quality performance standards and reduce energy savings lost or foregone due to poor-quality workmanship" (Public Resources Code section 25943[a])[3]). The CEC will also establish consumer protection guidelines for energy efficiency products and services (Public Resources Code section 25943[a])[4]).

SB 350 calls for major changes in achieving rapid greenhouse gas reductions through building energy efficiency. SB 350 recognizes that a major handicap to achieving that reduction is the energy savings lost or foregone due to poor-quality work resulting from contractors failing to meet minimum Energy Code and performance standards governing installations of energy efficiency measures.

### **Senate Bill 32 (Pavley, Chapter 249, Statutes of 2016)**

SB 32 updated the Global Warming Solutions Act of 2006 to reduce the state's greenhouse gas emissions to 40 percent below 1990 levels by 2030.

### **Assembly Bill 3232 (Friedman, Chapter 373, Statutes of 2018)**

The findings of the Legislature in AB 3232 make clear the importance of effective building energy savings and include the following:

- Buildings are responsible for 25 percent of all emissions of greenhouse gases.
- Decarbonizing California's buildings is essential to achieve the state's greenhouse gas emission reduction goals at the lowest possible cost.

AB 3232 stated the intention of the Legislature is to achieve significant reductions in greenhouse gas emissions by the state's residential and commercial building stock. The law directs the CEC to, in consultation with the California Public Utilities Commission (CPUC), the California Air Resources Board (CARB), and the California Independent System Operator

(CAISO), assess the state’s potential for reducing greenhouse gas emissions in its residential and commercial building stock by at least 40 percent below 1990 levels by January 1, 2030. <sup>3</sup>

### **Executive Order B-55-18 (Brown, 2018)**

This executive order established California’s principal climate change directive to achieve carbon neutrality in all sectors of the state as soon as possible, and no later than 2045, and to maintain and achieve negative emissions thereafter.

### **Executive Order N-19-19 (Newsom, 2019)**

This executive order called for a concerted commitment and partnership by government, the private sector, and California residents to reach some of the strongest climate goals in the world and required every aspect of state government to redouble its efforts to reduce greenhouse gas emissions and mitigate the impacts of climate change while building a sustainable, inclusive economy.

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<sup>3</sup> Kenney, Michael, Nicholas Janusch, Ingrid Neumann, and Mike Jaske. 2021. [California Building Decarbonization Assessment](https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment). California Energy Commission. Publication Number: CEC-400-2021-006-CMF. <https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment>.

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# CHAPTER 3:

## Background on the HERS Program

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### Program Development

Beginning in the latter part of the 1980s, concerns had been raised regarding construction and installation defects of energy efficient equipment. For example, field research conducted by Lawrence Berkeley National Laboratory (LBNL) in 1989 demonstrated major inadequacies in the design, installation, and sealing of heating and air-conditioning ducts that, conservatively, wasted 30 to 40 percent of the conditioned air of a home, severely impairing the energy efficiency of heating and air-conditioning equipment.<sup>4</sup> A third-party approach was proposed because the Field Verification & Diagnostic Testing (FV&DT) was beyond the resources of local building departments.<sup>5</sup> Also, numerous studies and technical papers published between 1990 and 1998, many of them focused on California, demonstrated that improvement in the installation of central air conditioners and heat pumps would have major positive impacts on energy efficiency, and would also provide non-energy benefits, such as improved comfort, reduced maintenance costs, and longer equipment life.<sup>6</sup> These studies concluded that installation quality improvements could achieve approximately 30 to 40 percent energy savings and 15 to 30 percent peak demand savings, reducing consumer energy bills accordingly.<sup>7</sup>

In the 1990s, Public Resources Code section 25942 directed the CEC to develop and implement a Home Energy Rating and Labeling program (Home Energy Rating System or HERS) to assist homebuyers and others in understanding the energy performance and potential of their homes. Starting in 1995, the CEC began developing the HERS program seeking to establish basic administrative procedures and a “whole-house” rating system. In that same time period, construction defect litigation related to many different construction characteristics became a major problem for California builders, resulting in liability insurance becoming extremely expensive or unavailable, and causing a major downturn in construction

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4 Modera, M. P., et al. 1989. “[Residential Duct System Leakage: Magnitude, Impacts, and Potential for Reduction](https://www.aivc.org/sites/default/files/airbase_3618.pdf).” Lawrence Berkeley National Laboratory, VA-89-5-5, [https://www.aivc.org/sites/default/files/airbase\\_3618.pdf](https://www.aivc.org/sites/default/files/airbase_3618.pdf).

5 Based on original findings of the HERS rulemaking in 1998.

6 Proctor, John, Chris Neme, and Steve Nadel. 1999. National Energy Savings Potential from Addressing Residential HVAC Installation Problems, p 21. <https://www.proctoreng.com/dnld/NationalEnergySavingsPotentialfromAddressingResidentialHVACInstallationProblems.pdf> (citing, among other studies, Hammarlund, Jeff et al., “Enhancing the Performance of HVAC and Distribution Systems in Residential New Construction”, Proceedings of 1992 ACEEE Summer Study on Energy Efficiency in Buildings, Volume 2, pp. 85-87, Proctor, John, “Pacific Gas and Electric Appliance Doctor Pilot Project”, Final Report Summer 1990 Activity, January 8, 1991, and Proctor, John and Ronald Pernick, 1992a, “Getting It Right the Second Time: Measured Savings and Peak Reduction from Duct and Appliance Repairs”, Proceedings of 1992 ACEEE Summer Study on Energy Efficiency in Buildings, Volume 2, pp. 217-224.)

7 Ibid at p. 16.

for multifamily housing.<sup>8</sup> A major remedy that was proposed for reducing litigation problems was the use of third-party inspectors to ensure construction defects were avoided or corrected.<sup>9</sup>

The California Building Industry Association strongly advocated that the HERS program be used to establish a third-party verification process to check that those energy efficiency measures that are prone to construction/installation defects do not waste energy. A third-party approach was necessary because the cost of the test equipment and the time required to use it to verify quality performance were beyond the resources of local building departments to conduct. This approach was also supported by the California Building Officials (CALBO), the statewide building official organization that promotes public health and safety in building construction through responsible building code development.

The CEC developed the HERS program using raters for two key services:<sup>10</sup> (1) FV&DT consistent with the California Building Energy Efficiency Standards, Title 24, Parts 1 and 6 and (2) Whole-House Home Energy Ratings of newly constructed and existing homes. The CEC established regulations for the Home Energy Rating System program in two phases: Phase I was to establish the Field Verification and Diagnostic Testing program. Phase II was to establish the Whole-House Home Energy Ratings Program.

In 1999, CEC promulgated the Phase I regulations in the California Code of Regulations, Title 20, sections 1670 *et seq.* The regulations fully addressed the Field Verification and Diagnostic Testing program, but also developed administrative requirements that could be used for the Whole-House Energy Ratings program, that would come later in Phase II. In 2009, the CEC adopted the Phase II regulations for Whole-House Home Energy Ratings, amending and extending the Phase I regulations.<sup>11</sup>

Because of the concerns over the serious design and installation defects found through field research, the CEC included FV&DT provisions in its HERS program to help ensure consumers receive the energy savings they expected from their investments in energy efficiency measures. The Energy Code compliance program uses the providers and raters of the HERS program as provided for in Title 20, sections 1670 *et seq.*

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8 California Building Industry Association. SB 800 The Homebuilder, "FIX IT" Construction Dispute Resolution Law. 2003 [http://paladinriskmanagement.com/wp-content/paladindocs/6\\_may\\_09\\_g000035.pdf](http://paladinriskmanagement.com/wp-content/paladindocs/6_may_09_g000035.pdf), Kroll, Cynthia et. al., The Impact of Construction-Defect Litigation on Condominium Development, Cal. Policy Research Center Brief Vol. 14, No. 7 October 2002, University of California, p. 2, [https://www.novoco.com/sites/default/files/atoms/files/defect\\_litigation\\_effects.pdf](https://www.novoco.com/sites/default/files/atoms/files/defect_litigation_effects.pdf), San Diego Association of Governments, 2001, Condominium Construction Defect Litigation and Affordable Housing p. 6, [https://www.sandag.org/uploads/publicationid/publicationid\\_146\\_576.pdf](https://www.sandag.org/uploads/publicationid/publicationid_146_576.pdf).

9 California Building Industry Association. SB 800 The Homebuilder, "FIX IT" Construction Dispute Resolution Law. 2003 [http://paladinriskmanagement.com/wp-content/paladindocs/6\\_may\\_09\\_g000035.pdf](http://paladinriskmanagement.com/wp-content/paladindocs/6_may_09_g000035.pdf).

10 California Energy Commission. Initial Statement of Reasons. California Home Energy Rating System. February 2, 1999.

11 [Whole-house Home Energy Rating System Program Initial Statement of Reasons](http://www.energy.ca.gov/efiling.energy.ca.gov/GetDocument.aspx?tn=48236&DocumentContentId=36873)  
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=48236&DocumentContentId=36873>

## **Program Concerns**

As currently implemented, the HERS program regulations seek to achieve two different goals between the Whole House and FV&DT programs. The Whole House program seeks to educate and advise consumers on energy efficiency measures to improve the energy consumption of their home. The FV&DT program verifies compliance with the Energy Code in newly constructed projects and some home improvement projects in existing homes.

Since the goals differ greatly, the use of the common regulations is not the most effective approach. The Whole House program is intended not to verify compliance with the Energy Code, but to give homeowners a perspective on the performance of their home. The FV&DT program must address an ever-changing landscape of energy efficiency measures adopted into updates to the Energy Code. This task is difficult to accomplish with a portion of the FV&DT program regulations combined with HERS program in the Title 20 regulations. Further, there are other issues specifically related to the FV&DT program the CEC intends to address separate to this proposal.<sup>12</sup>

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12 This report focuses solely on separating the Whole House and FV&DT programs by moving the FV&DT program into the Energy Code. Specific issues and concerns regarding the current FV&DT program are addressed separately in the Title 24 FV&DT Rulemaking staff report.

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# **CHAPTER 4:**

## **Staff Proposal for Regulatory Framework**

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### **Goals for Program Rulemaking**

The CEC’s goal for this rulemaking is to remove the FV&DT program from the HERS regulations to avoid duplication and confusion for stakeholders and the CEC. This rulemaking coincides with a second rulemaking that, among other changes, consolidates FV&DT administrative requirements related to Energy Code compliance with the substantive standards in Title 24 of the Energy Code.

To accomplish this goal, this rulemaking proposes changes to Title 20, sections 1670–1675. The proposed changes remove all regulations related to the FV&DT program and keeps all other existing regulations related to the HERS program in Title 20. This would create two independent programs that are each tailored to support a single key purpose and service.

### **Staff Proposal**

The proposed amendments to the Title 20 regulations will repeal FD&VT requirements in Title 20 effective January 1, 2026. Staff proposes a separate rulemaking to relocate all FD&VT requirements located in Title 20 into Title 24 effective January 1, 2026. This rulemaking will address only the changes to the HERS regulations (Title 20, sections 1670–1675).

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# CHAPTER 5:

## Alternatives Considered

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Listed below are four options to address the issues in the HERS program:

1. Do nothing.
2. Reimagine the entire HERS program.

### **Option 1: Do Nothing**

This approach is the least desirable option because it leaves the current regulations in place without addressing the issues identified in this staff report, including leaving regulations that are duplicative and potentially conflict with regulations in the Energy Code. Staff does not recommend this option.

### **Option 2: Reimagine the HERS Program**

The only other option would be to move the major components of the HERS program dealing with the FV&DT elements into the Energy Code. Additionally, investigating the feasibility of altering the existing structure of the HERS program in one or more ways. One potential method of reimagining the HERS program would be to remove some functions, such as most quality assurance functions from HERS providers, or requiring that other services, such as compliance document processing through a registry, be done without charge as part of the rater agreements. For example, HERS program quality assurance functions could be delegated to independent third-party quality assurance providers that would need to be approved by the CEC and paid for by the providers. This change would align the HERS program more closely with the Residential Energy Services Network (RESNET) quality assurance program design.<sup>13</sup>

The major benefit of this option would be to ensure that all program elements meet the expected performance standards. A significant disadvantage of this approach is unknown increases in complexity in the regulations, and the number of entities to be regulated. Another drawback to this approach is the need for a complex rulemaking, which would require a substantial amount of staff time and resources. Staff is currently devoting a substantial amount of time and resources to a rulemaking adding regulations related to the FV&DT program to the Energy Code. As such, staff does not recommend this option at this time.

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13 RESNET is a recognized oversight body for building energy efficiency rating and certification. RESNET are is recognized by several federal government agencies (including the Internal Revenue Service, the U.S. Environmental Protection Agency, and U.S. Department of Energy), builders, contractors, and industry organizations. Unlike the FV&DT program, which uses a single entity (the HERS provider) to train and oversee raters, RESNET create established two kinds of providers: quality assurance providers and rating providers. Quality assurance providers perform the quality assurance checks on the raters. The rating providers certify new raters and conduct other oversight of the raters they certify.

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# **CHAPTER 6:**

## **Technical Feasibility**

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This proposal regarding Title 20 provisions related to FV&DT are primarily organizational changes. Staff concludes that the proposed changes are technically feasible.

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## **CHAPTER 7: Savings and Cost Analysis**

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CEC staff proposes to remove requirements in Title 20, sections 1670 through 1675 related to the FV&DT program as those requirements will be placed into the Energy Code effective January 1, 2026. Removing the requirements related to the FV&DT program is not intended to have any savings or cost impacts on any stakeholder.

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# **CHAPTER 8:**

## **Environmental Impact Analysis**

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### **Adverse Impacts**

The proposal to separate the Whole-House Home Energy Ratings and FV&DT programs does not affect the energy efficiency measures required by the Energy Code. The proposed changes would not cause additional waste and because of program efficiency improvements could slightly reduce waste of energy and costs from inferior installations of heating, ventilation, and air conditioning (HVAC) and other energy-using residential equipment. The proposed changes do not require the use of any specific materials to improve the efficiency and do not require any further implementation of energy efficiency requirements, as the savings come from improving installation of already-required energy efficiency measures for consumers.

### **Beneficial Impacts**

The proposal to separate the Whole-House Home Energy Ratings and FV&DT programs will benefit consumers and other stakeholders by clarifying the requirements of both programs, ensuring more timely updating of these regulations, and providing more appropriate administrative structures for the different programs.

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# **CHAPTER 9:**

## **Economic and Fiscal Impacts**

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This chapter evaluates the statewide economic and fiscal impacts as a result of the proposed changes to the HERS regulations. The analysis considers impacts to jobs, the creation or elimination of businesses, advantages or disadvantages to businesses, incentives for investment in California, incentives for innovative products, and benefits to health, safety, and welfare of California residents, as well as agencies and businesses.

Based on available information, the proposed changes to separate the Whole-House Home Energy Ratings and FV&DT programs will not affect the job market, businesses, incentives, health, safety, or welfare of California residents, agencies, businesses, or any other stakeholder. Based on the evaluation of available information, neither the costs nor benefits associated with the proposed changes will exceed \$50 million.

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# CHAPTER 10:

## Consumer Equity

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Energy equity encompasses the equitable access to the benefits of energy infrastructure and equitable access to resources for energy improvement. This chapter discusses the economic and environmental benefits to low-income households and disadvantaged communities as a result of the proposal to separate the Whole-House Home Energy Ratings and FV&DT programs.

These programs are statewide programs that provide energy efficiency ratings and protect consumers (homeowner and ratepayers) from poor construction and installation practices common in the housing construction market. For low-income and disadvantaged consumers, getting the most out of their investments in residential energy efficiency measures is extremely important. A 2016 study prepared with National Resources Defense Council (NRDC) support shows that low-income households in some of the largest California metropolitan areas spend, on average, 7.2 percent of their income for energy. That amount is more than double the national median of 3.5 percent.<sup>14</sup> The report also shows that on average these low-income households paid a three times greater percentage of their income on utility bills than higher income households.

The proposal to separate the Whole-House Home Energy Ratings and FV&DT programs is to avoid confusion and consolidate Energy Code requirements and thereby improve both programs, so that consumers receive the energy savings they expected from their investments in energy efficiency measures.

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14 Stamas, Maria. National Resources Defense Council, Inc. April 22, 2016. "[California's Low Income Face a Disproportionate Energy Burden, but Efficiency Can Reduce It](https://www.nrdc.org/experts/maria-stamas/californias-low-income-face-disproportionate-energy-burden-their-better-showing), <https://www.nrdc.org/experts/maria-stamas/californias-low-income-face-disproportionate-energy-burden-their-better-showing>.

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## ACRONYMS AND DEFINITIONS

| Acronym/Term | Description/Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AB 3232      | <p>Zero-emissions buildings and sources of heat energy.</p> <p>This bill required the CEC, by January 1, 2021, to assess the potential for the state to reduce the emissions of greenhouse gases from the state’s residential and commercial building stock by at least 40 percent below 1990 levels by January 1, 2030. The bill required the CEC to include in the 2021 edition of the <i>Integrated Energy Policy Report</i> and all subsequent integrated energy policy reports a report on the emissions of greenhouse gases associated with the supply of energy to residential and commercial buildings.</p> |
| AHJ          | <p>Authority Having Jurisdiction</p> <p>AHJs have the authority to issue building permits, perform building inspections, issue building citations, and issue certificates of occupancy. They are generally county, city, town building departments, but may include state agencies as well.</p>                                                                                                                                                                                                                                                                                                                     |
| ASHRAE       | <p>American Society of Heating, Refrigerating and Air-Conditioning Engineers. ASHRAE is a professional association that seek to advance heating, ventilation, air conditioning and refrigeration (HVAC&amp;R) systems design and construction through research, education programs and technical standards.</p>                                                                                                                                                                                                                                                                                                     |
| CALBO        | <p>California Building Officials. CALBO is a nonprofit corporation dedicated to promoting public health and safety in building construction through responsible legislation, education, and building code development.</p>                                                                                                                                                                                                                                                                                                                                                                                          |
| CBIA         | <p>The California Building Industry Association is a statewide trade association based in Sacramento representing member companies including homebuilders, trade contractors, architects, engineers, designers, suppliers, and industry professionals in the homebuilding, multifamily, and mixed-use development markets.</p>                                                                                                                                                                                                                                                                                      |
| Title 24     | <p>Title 24 of the California Code of Regulations is the California Building Standards Code. Title 24 is separated into 12 parts (Parts 1-12) that address components or issues regarding construction of building projects (both newly constructed buildings and additions or alterations to existing buildings). Title 24, Part 6, includes the building energy efficiency requirements for California.</p>                                                                                                                                                                                                       |

| Acronym/Term                 | Description/Definition                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Title 20, sections 1670–1675 | Sections 1670-1675 of Title 20 of the California Code of Regulations are known as the HERS Regulations. These were developed beginning in the 1990s with the construction industry and other stakeholders to help address poor-quality HVAC installations and whole-house energy ratings.                                                                                                                                                                 |
| CEC                          | <p>California Energy Commission</p> <p>The CEC is leading the state to a 100 percent clean energy future for all. As the state's primary energy policy and planning agency, the CEC is committed to reducing energy costs and environmental impacts of energy use while ensuring a safe, resilient, and reliable supply of energy.</p>                                                                                                                    |
| CPUC                         | The California Public Utilities Commission is a state agency that regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises.                                                                                                                                                                                                |
| Energy Code                  | California Energy Code (also known as the California Building Energy Efficiency Standards), is Title 24, Part 6, a part of the California Building Standards Code, Title 24.                                                                                                                                                                                                                                                                              |
| FV&DT                        | <p>Field Verification and Diagnostic Testing</p> <p>Tests performed and registered by raters in the provider data registry following the prescribed procedures in the Title 24, Part 6, Residential Appendices (RA1-4).</p>                                                                                                                                                                                                                               |
| HERS                         | <p>Home Energy Rating System</p> <p>The California Home Energy Rating System (HERS) Program is described in Title 20, Chapter 4, Article 8, section 1670. The HERS program regulates providers that train and certify raters to perform whole-house ratings and FV&amp;DT as a third-party to the contractor on a construction project. The providers and raters are responsible for registering the testing results in the provider's data registry.</p> |
| HVAC                         | Heating, ventilation, and air conditioning is the use of various technologies to control the temperature, humidity, and purity of the air in an enclosed space. The goal is to provide thermal comfort and acceptable indoor air quality.                                                                                                                                                                                                                 |
| LBNL                         | Lawrence Berkeley National Laboratory develops science and technology solutions for the world by bringing together multidisciplinary teams of researchers and creating tools for scientific discovery.                                                                                                                                                                                                                                                    |

| <b>Acronym/Term</b> | <b>Description/Definition</b>                                                                                                                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SB 350              | Clean Energy and Pollution Reduction Act of 2015 (De León, Chapter 547, Statutes of 2015). Enacted due to Governor Edmund G. Brown Jr.'s call for a new set of objectives in clean energy, clean air, and pollution reduction for 2030 and beyond. |

Source: California Energy Commission

# **APPENDIX A:**

## **Proposed Regulatory Language**

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The proposed regulatory language is a separate document docketed as part of the rulemaking package.