2016 Energy Standards, Forms and Resources

Outreach and Education Unit
Efficiency Division
California Energy Commission

Updated March, 2018

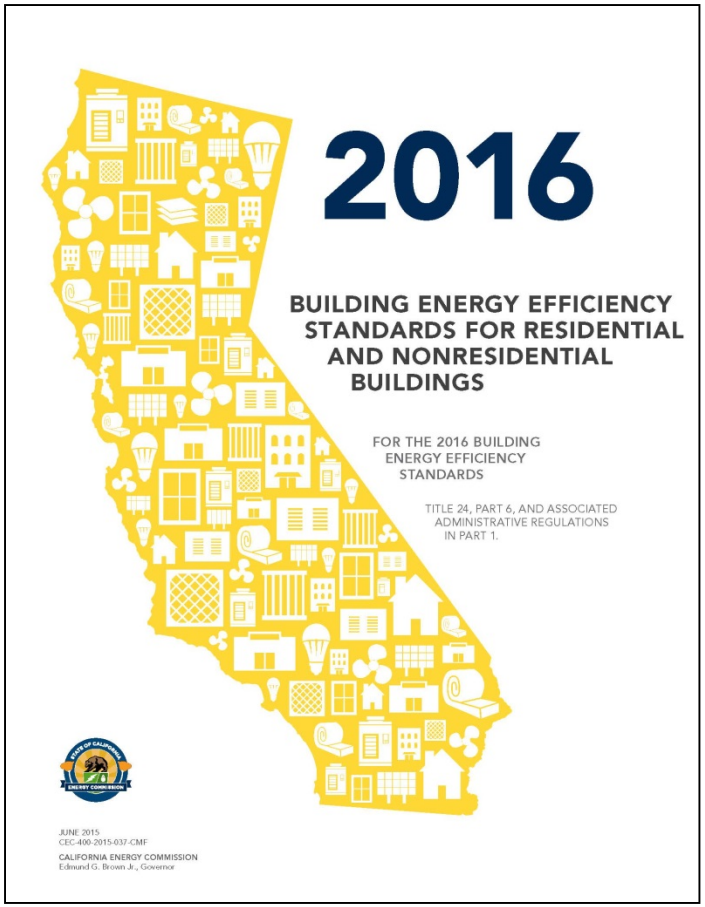
Overview

- General Info & Navigation
- Energy Standards Basics - 101
- Forms
- Resources

General Info & Navigation

2016 Building Energy Efficiency Standards

- **Effective January 1, 2017**
  - Building permit applications submitted on or after effective date
- **Master plans for tract homes affected**
  - Resubmit if permits pulled on or after effective date



Navigating Title 24

TITLE 24 - THE CALIFORNIA BUILDING STANDARDS CODE

- **Part 1 - Administrative Code**
  - Chapter 10
  - These are administrative requirements

- **Part 6 - Energy Code**
  - Subchapters 1 through 9
  - Mostly referred to by Section numbers
  - These are technical requirements

Part 1 Administrative Sections

- 10-101 – Scope
- 10-102 – Definitions
- 10-103 – Requirements for Designers, Enforcement…
- 10-103.1 – Lighting ATTCP
- 10-103.2 – Mech. ATTCP
- 10-104 – Exceptional Designs
- 10-105 – CEC Enforcement
- 10-106 – Local Standards
- 10-107 – Interpretations
- 10-108 – Exemption
- 10-109 – Software & Registry
- 10-110 – Application Procedures
- 10-111 – Fenestration
- 10-112 – Default Tables
- 10-113 – Roofing Products
- 10-114 – Outdoor Lighting Zones

Part 6 Residential Sections

TABLE 100.0-A APPLICATION OF STANDARDS

Occupancies	Application	Mandatory	Prescriptive	Performance	Additions/Alterations
General Provisions for All Buildings		100.0, 100.1, 100.2, 110.0			
Nonresidential, High-Rise Residential, And Hotels/Motels	General	120.0	140.0, 140.2	140.0, 140.1	141.0
	Envelope (conditioned)	110.6, 110.7, 110.8,120.7	140.3		
	Envelope (unconditioned process spaces)	N.A.	140.3(c)		
	HVAC (conditioned)	110.2, 110.5, 120.1, 120.2, 120.3, 120.4, 120.5, 120.8	140.4		
	Water Heating	110.3, 120.3, 120.8, 120.9	140.5		
	Indoor Lighting (conditioned, process spaces)	110.9, 120.8, 130.0, 130.1, 130.4	140.3(c), 140.6		
	Indoor Lighting (unconditioned and parking garages)	110.9, 120.8, 130.0, 130.1, 130.4	140.3(c), 140.6	N.A.	
	Outdoor Lighting	110.9, 130.0, 130.2, 130.4	140.7		
	Electrical Power Distribution	110.11, 130.5	N.A.		
	Pool and Spa Systems	110.4, 110.5, 150.0(p)	N. A.		141.0
	Solar Ready Buildings	110.10	N.A.		141.0(a)
Covered Processes[1]	Envelope, Ventilation, Process Loads	110.2, 120.6	140.9	140.1	120.6, 140.9
Signs	Indoor and Outdoor	130.0, 130.3	140.8	N.A.	141.0, 141.0(b)2H
Low-Rise Residential	General	150.0	150.1(a, c)	150.1(a), 150.1(b)	150.2(a), 150.2(b)
	Envelope (conditioned)	110.6, 110.7, 110.8, 150(a), 150.0(b), 150.0(c), 150.0(d), 150.0(e), 150.0(g)			
	HVAC (conditioned)	110.2, 110.5, 150.0(h), 150.0(i), 150.0(j), 150.0(m), 150.0(o)			
	Water Heating	110.3, 150.0(j, n)			
	Indoor Lighting (conditioned, unconditioned and parking garages)	110.9, 130.0, 150.0(k)			
	Outdoor Lighting	110.9, 130.0,150.0(k)			
	Pool and Spa Systems	110.4, 150.0(p)	N. A.	N.A.	150.2(a), 150.2(b)
	Solar Ready Buildings	110.10	N. A.	N.A.	N.A.

[1] Nonresidential, high-rise and hotel/motel buildings that contain covered processes may conform to the applicable requirements of both occupancy types listed in this table.

- **§110.0 – 110.10 as applicable**
  - Covers both residential and nonresidential
- **§150.0 for residential mandatory measures**
- **§150.1 for <u>ALL</u> prescriptive requirements**
  - Newly constructed buildings
- **§150.2 for additions and alterations**

Part 6 Nonresidential Sections

TABLE 100.0-A APPLICATION OF STANDARDS

Occupancies	Application	Mandatory	Prescriptive	Performance	Additions/Alterations
General Provisions for All Buildings		100.0, 100.1, 100.2, 110.0			
Nonresidential, High-Rise Residential, And Hotels/Motels	General	120.0	140.0, 140.2	140.0, 140.1	141.0
	Envelope (conditioned)	110.6, 110.7, 110.8,120.7	140.3		
	Envelope (unconditioned process spaces)	N.A.	140.3(c)		
	HVAC (conditioned)	110.2, 110.5, 120.1, 120.2, 120.3, 120.4, 120.5, 120.8	140.4		
	Water Heating	110.3, 120.3, 120.8, 120.9	140.5		
	Indoor Lighting (conditioned, process spaces)	110.9, 120.8, 130.0, 130.1, 130.4	140.3(c), 140.6		
	Indoor Lighting (unconditioned and parking garages)	110.9, 120.8, 130.0, 130.1, 130.4	140.3(c), 140.6	N.A.	
	Outdoor Lighting	110.9, 130.0, 130.2, 130.4	140.7		
	Electrical Power Distribution	110.11, 130.5	N.A.		
	Pool and Spa Systems	110.4, 110.5, 150.0(p)	N. A.		141.0
	Solar Ready Buildings	110.10	N.A.		141.0(a)
Covered Processes[1]	Envelope, Ventilation, Process Loads	110.2, 120.6	140.9	140.1	120.6, 140.9
Signs	Indoor and Outdoor	130.0, 130.3	140.8	N.A.	141.0, 141.0(b)2H
Low-Rise Residential	General	150.0	150.1(a, c)	150.1(a), 150.1(b)	150.2(a), 150.2(b)
	Envelope (conditioned)	110.6, 110.7, 110.8, 150(a), 150.0(b), 150.0(c), 150.0(d), 150.0(e), 150.0(g)			
	HVAC (conditioned)	110.2, 110.5, 150.0(h), 150.0(i), 150.0(j), 150.0(m), 150.0(o)			
	Water Heating	110.3, 150.0(j, n)			
	Indoor Lighting (conditioned, unconditioned and parking garages)	110.9, 130.0, 150.0(k)			
	Outdoor Lighting	110.9, 130.0,150.0(k)			
	Pool and Spa Systems	110.4, 150.0(p)	N. A.	N.A.	150.2(a), 150.2(b)
	Solar Ready Buildings	110.10	N. A.	N.A.	N.A.

[1] Nonresidential, high-rise and hotel/motel buildings that contain covered processes may conform to the applicable requirements of both occupancy types listed in this table.

- **§110.0 – 110.10 as applicable**
  - Covers both residential and nonresidential
- **§120 – 130 series for mandatory measures**
- **§140 series for prescriptive requirements**
  - Newly constructed buildings
- **§141.0 for additions and alterations**

New Features for 2016

- **Easy Navigation Features**
  - Section and Table references hyperlinked throughout Energy Standards
  - TABLE 100.0-A separated with section hyperlinks
  - Chapter hyperlinks in Residential and Nonresidential Compliance Manuals
  - Links work online and in the downloaded version

Energy Standards Documents

- 2016 Building Energy Efficiency Standards
- Residential and Nonresidential Compliance Manuals
- Reference Appendices
- Available online

www.energy.ca.gov/title24/2016standards

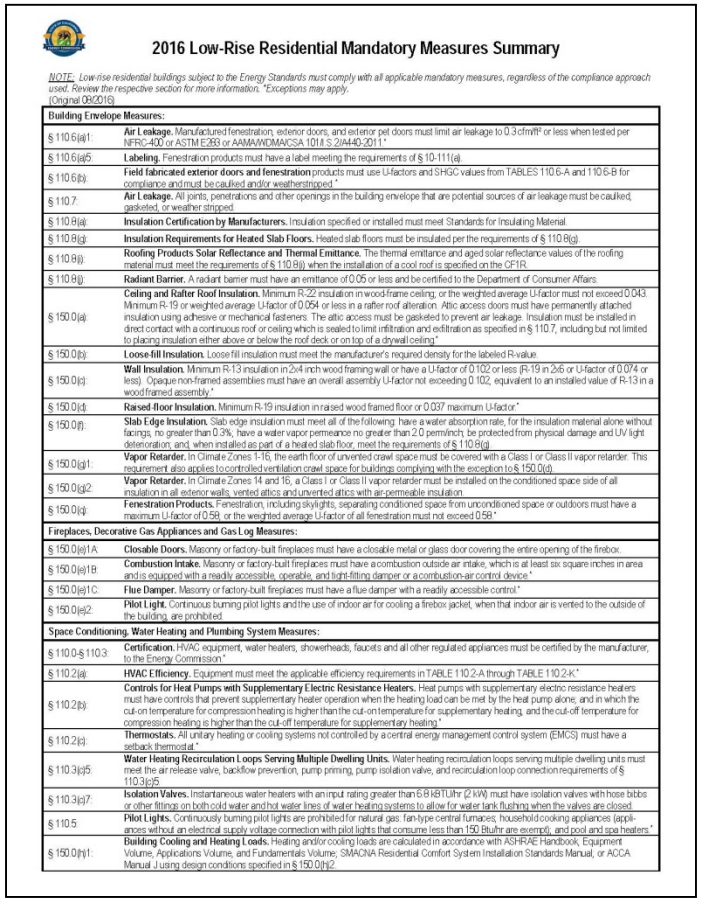
Energy Standards Basics - 101

Mandatory Measures

- Must always be met
- Establish minimum level of energy efficiency and performance
- Apply to various building components
- Sometimes are superseded by more stringent prescriptive or performance requirements

Residential Mandatory Measures Summary

- Summary of residential mandatory measures
- Not a form – note block
  - ➢ Designers can chose to include on plans
  - ➢ Enforcement agencies may require on plans



2016 Low-Rise Residential Mandatory Measures Summary

*NOTE: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. *Exceptions may apply.*
(Original 08/2016)

Building Envelope Measures:	
§ 110.6(a)1:	**Air Leakage.** Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 cfm/ft² or less when tested per NFRC-400 or ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.*
§ 110.6(a)5:	**Labeling.** Fenestration products must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	**Field fabricated exterior doors and fenestration** products must use U-factors and SHGC values from TABLES 110.6-A and 110.6-B for compliance and must be caulked and/or weatherstripped.*
§ 110.7:	**Air Leakage.** All joints, penetrations and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	**Insulation Certification by Manufacturers.** Insulation specified or installed must meet Standards for Insulating Material.
§ 110.8(g):	**Insulation Requirements for Heated Slab Floors.** Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	**Roofing Products Solar Reflectance and Thermal Emittance.** The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	**Radiant Barrier.** A radiant barrier must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	**Ceiling and Rafter Roof Insulation.** Minimum R-22 insulation in wood-frame ceiling, or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.*
§ 150.0(b):	**Loose-fill Insulation.** Loose-fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	**Wall Insulation.** Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less (R-19 in 2x6 or U-factor of 0.074 or less). Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102, equivalent to an installed value of R-13 in a wood framed assembly.*
§ 150.0(d):	**Raised-floor Insulation.** Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*
§ 150.0(f):	**Slab Edge Insulation.** Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3%, have a water vapor permeance no greater than 2.0 perm/inch, be protected from physical damage and UV light deterioration, and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)1:	**Vapor Retarder.** In Climate Zones 1-16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d).
§ 150.0(g)2:	**Vapor Retarder.** In Climate Zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics and unvented attics with air-permeable insulation.
§ 150.0(q):	**Fenestration Products.** Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58, or the weighted average U-factor of all fenestration must not exceed 0.58.*
Fireplaces, Decorative Gas Appliances and Gas Log Measures:	
§ 150.0(e)1A:	**Closable Doors.** Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)1B:	**Combustion Intake.** Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or a combustion-air control device.*
§ 150.0(e)1C:	**Flue Damper.** Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*
§ 150.0(e)2:	**Pilot Light.** Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.
Space Conditioning, Water Heating and Plumbing System Measures:	
§ 110.0-§ 110.3:	**Certification.** HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances must be certified by the manufacturer, to the Energy Commission.*
§ 110.2(a):	**HVAC Efficiency.** Equipment must meet the applicable efficiency requirements in TABLE 110.2-A through TABLE 110.2-K.*
§ 110.2(b):	**Controls for Heat Pumps with Supplementary Electric Resistance Heaters.** Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone, and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.*
§ 110.2(c):	**Thermostats.** All unitary heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*
§ 110.3(c)5:	**Water Heating Recirculation Loops Serving Multiple Dwelling Units.** Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(c)5.
§ 110.3(c)7:	**Isolation Valves.** Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr (2 kW) must have isolation valves with hose bibbs or other fittings on both cold water and hot water lines of water heating systems to allow for water tank flushing when the valves are closed.
§ 110.5:	**Pilot Lights.** Continuously burning pilot lights are prohibited for natural gas fan-type central furnaces, household cooking appliances (appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.*
§ 150.0(h)1:	**Building Cooling and Heating Loads.** Heating and/or cooling loads are calculated in accordance with ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; SMACNA Residential Comfort System Installation Standards Manual; or ACCA Manual J using design conditions specified in § 150.0(h)2.

Prescriptive Approach

- Set of predefined efficiency requirements that must ALL be met or exceeded
- Applies to various building components
- Simplest approach, but less flexible
- Establishes baseline for standard energy budget under Performance Approach

Performance Approach

- Also known as the computer method
- Requires the use of Energy Commission approved software
- Most flexible approach, allows for trade-offs
- Proposed energy budget ≤ Standard energy budget
- Most applicants use this approach
- Modeling, budgets, assumptions, etc. located in Res and Nonres ACM Reference Manuals

Forms

Forms Used To Demonstrate Compliance

- Compliance documents (forms) confirm compliance with the Energy Standards
- Completed by designers, consultants, builders, contractors, technicians, HERS raters, etc.
- Submitted to enforcement agencies for verification:
  - Certificate of Compliance
  - Certificate of Installation
  - Certificate of Acceptance
  - Certificate of Verification

When are forms required?

- When the Energy Standards are applicable
- Both residential and nonresidential projects
- Newly constructed buildings, additions, alterations
- Different forms are required at various stages of the permit and construction process
  - Permit and Plan Review
  - Final Inspection

Which forms are required?

- **Depends on:**
  - Building type (residential or nonresidential)
  - Project type (new, addition, alteration)
  - Scope of the project (i.e. HVAC, lighting, envelope, etc.)
  - Compliance approach (Prescriptive vs. Performance)

Certificate of Compliance

CF1R – Residential / NRCC – Nonresidential

- Required with plans at permit
- Demonstrates compliance at design phase
- Completed by designer, architect, energy consultant, engineer, etc.
- Plans Examiner verifies form matches specs on plans

Certificate of Installation

CF2R – Residential / NRCI – Nonresidential

- Required for final inspection
- Confirms compliance at installation
- Completed by builder or installing contractor
- Field Inspector verifies efficiencies and components match installed equipment and systems

Certificate of Verification

CF3R – Residential / NRCV – Nonresidential

- Required for final inspection
- Confirms compliance with HERS testing requirements at installation (duct leakage, airflow, refrigerant charge)
- Completed by certified HERS rater, and forms must be registered with an approved HERS Provider
- Field Inspector verifies testing and forms are completed, signed, and registered

Certificate of Acceptance

NRCA – Nonresidential only

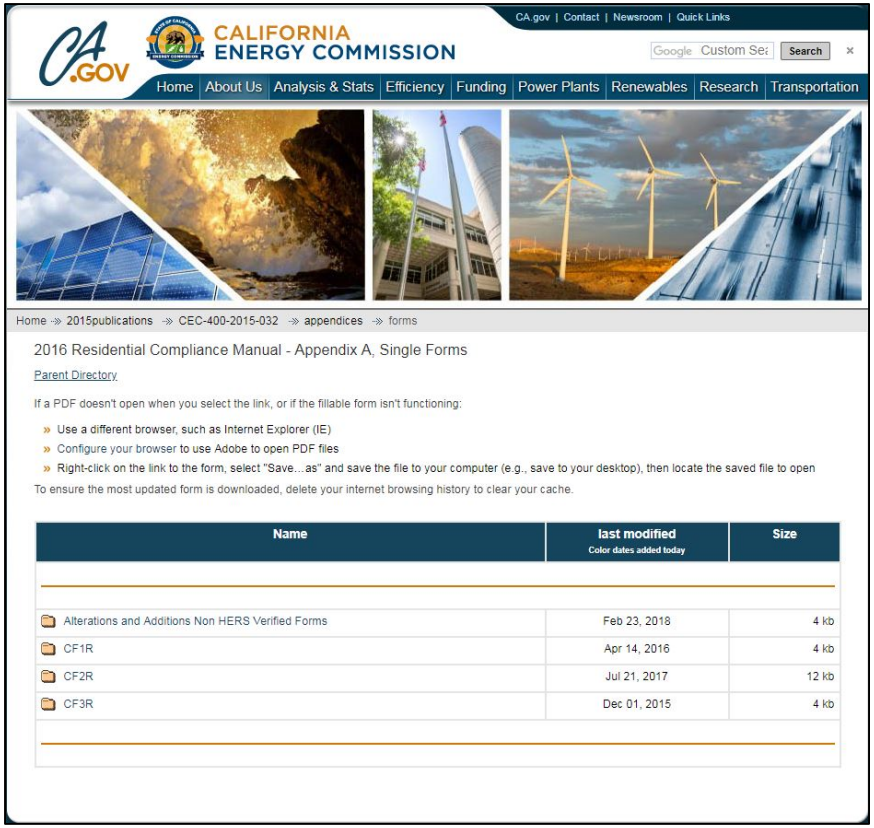
- Required for final inspection
- Confirms compliance with acceptance testing requirements at installation (HVAC, lighting, etc.)
- Completed by builder or installing contractor; OR an Acceptance Test Technician (ATT) when required
- Field Inspector verifies applicable tests and forms are completed and signed

Summary of Forms Table

	Residential	Nonresidential
Certificate of Compliance	CF1R	NRCC
Certificate of Installation	CF2R	NRCI
Certificate of Verification	CF3R	NRCV
Certificate of Acceptance	-	NRCA

Where are the Residential forms?

Appendix A of the 2016 Residential Compliance Manual



http://www.energy.ca.gov/2015publications/CEC-400-2015-032/appendices/forms/

Residential Project Status Report (PSR)

Project Status Report — **CalCERTS, Inc** — 1 of 2

GENERAL INFORMATION	
Code Year Standards:	2013
Project Name:	Shewmaker Performance Demo
Project Type:	New Construction SFR
Address:	1516 9th Street
City / State / Zip:	Sacramento / CA / 95814
Enforcement Agency:	City of Sacramento
Permit Number:	123456789

Easy to Verify @ calcerts.com

HERS VERIFIABLE MEASURES: **NOT COMPLETE**

OVERALL STATUS: **NOT COMPLETE**

CF1R INFORMATION - Certificate of Compliance ✓

Certificate Type:	Compliance
Registered Form:	CF1R-PRF-01-E
Registered Date:	04/05/2016 08:30
Registration Number:	216-N0125429A-000000000-0000

ADDITIONAL CF1Rs

System	Form	Registered Date	Registration Number	
	CF1R-SRA-01		216-N0125443A-000000000-0000	●

CF2R INFORMATION - Certificate of Installation ●

System	Form	Registered Date	Registration Number	
	CF2R-ENV-01 (Fenestration Installation)		216-N0125429A-E0100001A-0000	●
	CF2R-ENV-02 (Envelope Air Sealing)		216-N0125429A-E0200001A-0000	●
	CF2R-ENV-03 (Insulation Installation)		216-N0125429A-E0300001A-0000	●
	CF2R-ENV-04 (Roofing-Radiant Barrier)		216-N0125429A-E0400001A-0000	●
	CF2R-MCH-01 (Space Conditioning Systems, Ducts and Fans)	04/05/2016 09:40	216-N0125429A-M0100001A-0000	✓
System 1	CF2R-MCH-20 (Duct Leakage)	04/05/2016 09:40	216-N0125429A-M2000002A-0000	✓
System 1	CF2R-MCH-23 (Airflow)	04/05/2016 09:40	216-N0125429A-M2300002A-0000	✓
System 1	CF2R-MCH-22 (Fan Efficacy)	04/05/2016 09:40	216-N0125429A-M2200002A-0000	✓
System 1	CF2R-MCH-25 (Refrigerant Charge)	04/05/2016 09:40	216-N0125429A-M2500002A-0000	✓
	CF2R-MCH-27 (IAQ and MV)	04/05/2016 09:40	216-N0125429A-M2700001A-0000	✓
	CF2R-PLB-02 (SD HWS Distribution)	04/05/2016 09:40	216-N0125429A-P0200003A-0000	✓

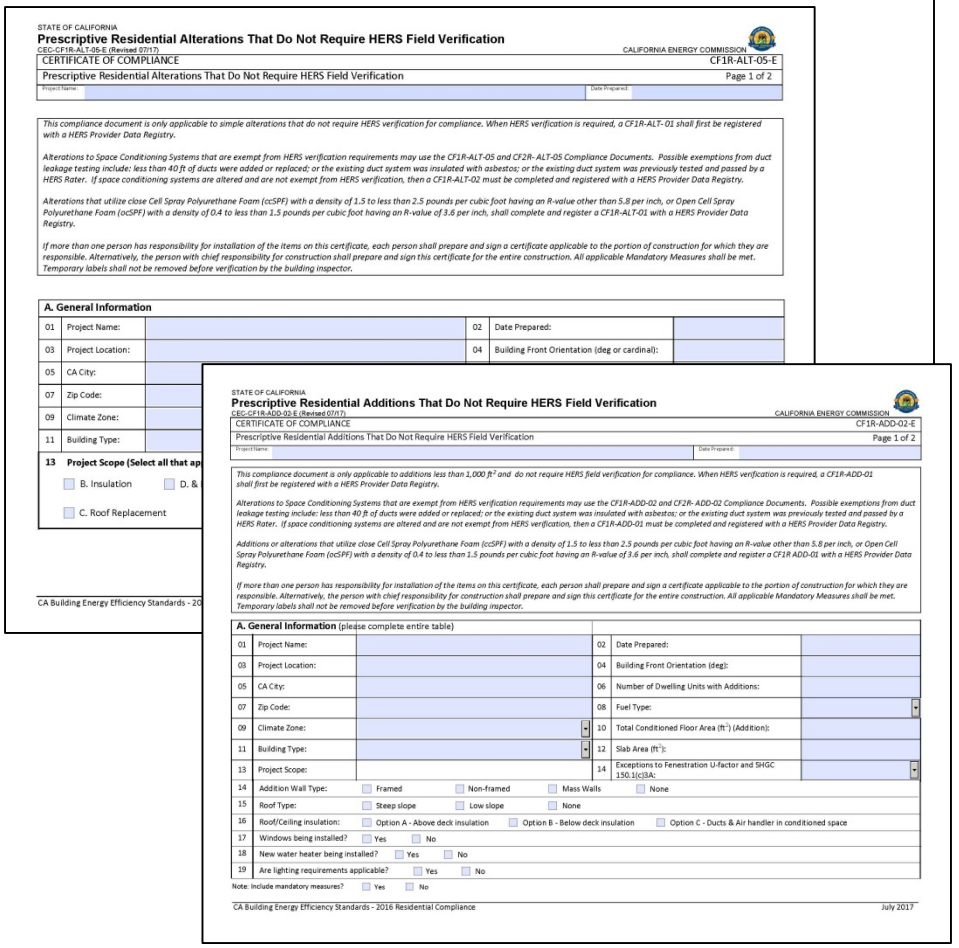
CF3R INFORMATION - Certificate of Verification ●

System	Form	Registered Date	Registration Number	
	CF3R-MCH-27 (IAQ and MV)		216-N0125429A-M2700001A-M27A	●
System 1	CF3R-MCH-20 (Duct Leakage)	04/11/2016 12:52	216-N0125429A-M2000002A-M20A	✓

- Summarizes status of ALL forms
- Available for any project in HERS registry
- "Overall" and "HERS" should be marked Complete
  - ➢ Can access directly in registry
  - ➢ Can request as a hard copy in lieu of a stack of forms

Residential Alterations and Additions Forms

- Available online
- Interactive instructions
- Dynamic
  - Scope specific
  - Add and delete table rows
  - Simple logic



STATE OF CALIFORNIA
Prescriptive Residential Alterations That Do Not Require HERS Field Verification
CEC-CF1R-ALT-05-E (Revised 07/17)
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE — CF1R-ALT-05-E
Prescriptive Residential Alterations That Do Not Require HERS Field Verification — Page 1 of 2
Project Name: Date Prepared:

This compliance document is only applicable to simple alterations that do not require HERS verification for compliance. When HERS verification is required, a CF1R-ALT-01 shall first be registered with a HERS Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from HERS verification requirements may use the CF1R-ALT-05 and CF2R- ALT-05 Compliance Documents. Possible exemptions from duct leakage testing include: less than 40 ft of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by a HERS Rater. If space conditioning systems are altered and are not exempt from HERS verification, then a CF1R-ALT-02 must be completed and registered with a HERS Provider Data Registry.

Alterations that utilize close Cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value other than 5.8 per inch, or Open Cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R-ALT-01 with a HERS Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

A. General Information

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg or cardinal):	
05	CA City:				
07	Zip Code:				
09	Climate Zone:				
11	Building Type:				

13 Project Scope (Select all that ap

B. Insulation D. &

C. Roof Replacement

CA Building Energy Efficiency Standards - 20

STATE OF CALIFORNIA
Prescriptive Residential Additions That Do Not Require HERS Field Verification
CEC-CF1R-ADD-02-E (Revised 07/17)
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE — CF1R-ADD-02-E
Prescriptive Residential Additions That Do Not Require HERS Field Verification — Page 1 of 2
Project Name: Date Prepared:

This compliance document is only applicable to additions less than 1,000 ft² and do not require HERS field verification for compliance. When HERS verification is required, a CF1R-ADD-01 shall first be registered with a HERS Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from HERS verification requirements may use the CF1R-ADD-02 and CF2R- ADD-02 Compliance Documents. Possible exemptions from duct leakage testing include: less than 40 ft of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by a HERS Rater. If space conditioning systems are altered and are not exempt from HERS verification, then a CF1R-ADD-01 must be completed and registered with a HERS Provider Data Registry.

Additions or alterations that utilize close Cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value other than 5.8 per inch, or Open Cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R ADD-01 with a HERS Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

A. General Information (please complete entire table)

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg):	
05	CA City:		06	Number of Dwelling Units with Additions:	
07	Zip Code:		08	Fuel Type:	
09	Climate Zone:		10	Total Conditioned Floor Area (ft²) (Addition):	
11	Building Type:		12	Slab Area (ft²):	
13	Project Scope:		14	Exceptions to Fenestration U-factor and SHGC 150.1(c)3A:	
14	Addition Wall Type:	Framed Non-framed Mass Walls None			
15	Roof Type:	Steep slope Low slope None			
16	Roof/Ceiling insulation:	Option A - Above deck insulation Option B - Below deck insulation Option C - Ducts & Air handler in conditioned space			
17	Windows being installed?	Yes No			
18	New water heater being installed?	Yes No			
19	Are lighting requirements applicable?	Yes No			

Note: Include mandatory measures? Yes No

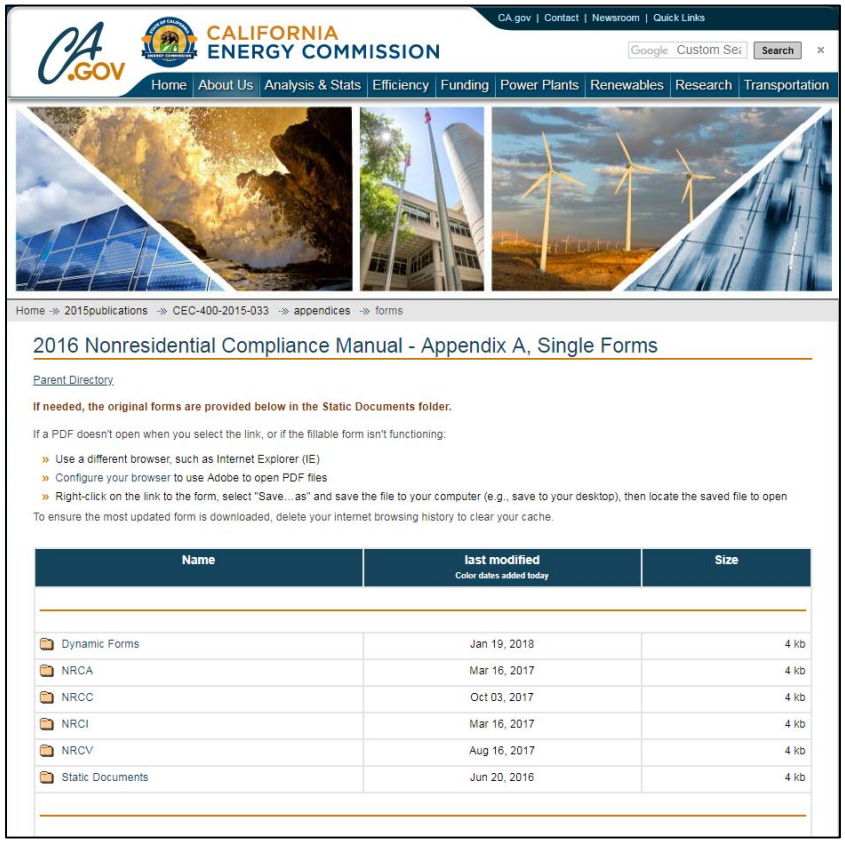
CA Building Energy Efficiency Standards - 2016 Residential Compliance — July 2017

Residential ALT/ADD Forms Exception §10-103

- For alterations and additions < 300 ft^2 that do not require HERS testing:
  - Building Department has the discretion to exempt CF1R and CF2R form requirements, or create simplified versions
- Does not exempt applicant from complying with code
- Can include requirements on permit application

Where are the Nonresidential forms?

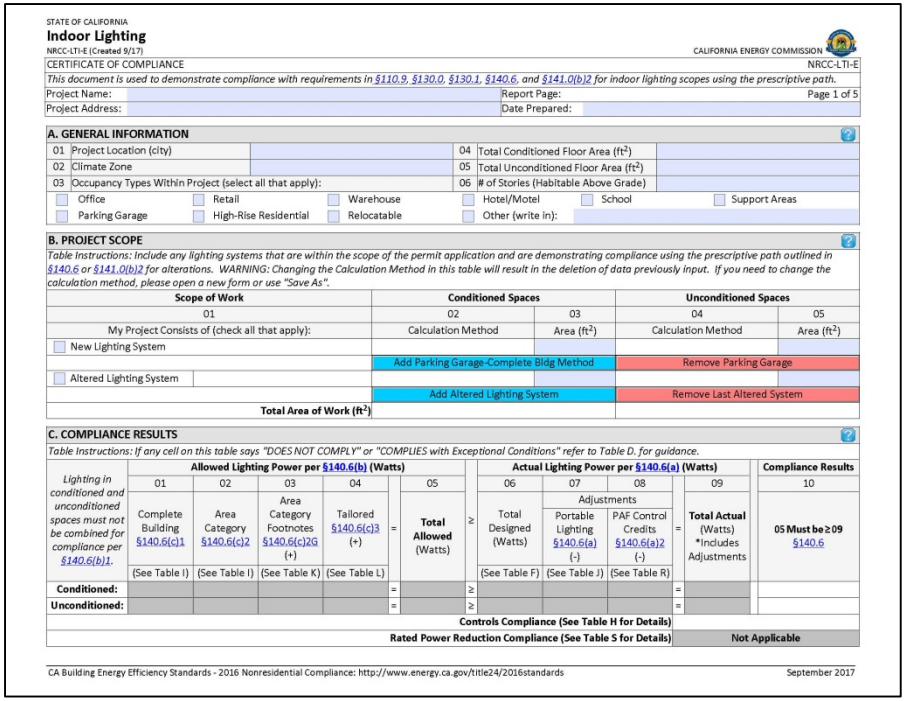
Appendix A of the 2016 Nonresidential Compliance Manual



http://www.energy.ca.gov/2015publications/CEC-400-2015-033/appendices/forms/

Nonresidential Dynamic Forms

- ALL forms fillable
  - Interactive instructions
- New dynamic* NRCC forms
  - Scope specific
  - Auto fill
  - Conduct auto-calculations
  - Add and delete table rows



STATE OF CALIFORNIA
Indoor Lighting
NRCC-LTI-E (Created 9/17)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-LTI-E

This document is used to demonstrate compliance with requirements in §110.9, §130.0, §130.1, §140.6, and §141.0(b)2 for indoor lighting scopes using the prescriptive path.

Project Name: | Report Page: Page 1 of 5
Project Address: | Date Prepared:

A. GENERAL INFORMATION

01	Project Location (city)	04	Total Conditioned Floor Area (ft²)
02	Climate Zone	05	Total Unconditioned Floor Area (ft²)
03	Occupancy Types Within Project (select all that apply):	06	# of Stories (Habitable Above Grade)

☐ Office ☐ Retail ☐ Warehouse ☐ Hotel/Motel ☐ School ☐ Support Areas
☐ Parking Garage ☐ High-Rise Residential ☐ Relocatable ☐ Other (write in):

B. PROJECT SCOPE

Table Instructions: Include any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.6 or §141.0(b)2 for alterations. WARNING: Changing the Calculation Method in this table will result in the deletion of data previously input. If you need to change the calculation method, please open a new form or use "Save As".

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☐ New Lighting System				
	Add Parking Garage-Complete Bldg Method		Remove Parking Garage	
☐ Altered Lighting System				
	Add Altered Lighting System		Remove Last Altered System	
Total Area of Work (ft²)				

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

	Allowed Lighting Power per §140.6(b) (Watts)						Actual Lighting Power per §140.6(a) (Watts)				Compliance Results
Lighting in conditioned and unconditioned spaces must not be combined for compliance per §140.6(b)1.	01 Complete Building §140.6(c)1 (See Table I)	02 Area Category §140.6(c)2 (See Table I)	03 Area Category Footnotes §140.6(c)2G (+) (See Table K)	04 Tailored §140.6(c)3 (+) (See Table L)	=	05 Total Allowed (Watts)	≥	06 Total Designed (Watts) (See Table F)	07 Adjustments: Portable Lighting §140.6(a) (-) (See Table J)	08 Adjustments: PAF Control Credits §140.6(a)2 (-) (See Table R)	=	09 Total Actual (Watts) *Includes Adjustments	10 05 Must be ≥ 09 §140.6
Conditioned:					=		≥				=		
Unconditioned:					=		≥				=		
Controls Compliance (See Table H for Details)													
Rated Power Reduction Compliance (See Table S for Details)												Not Applicable	

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance: http://www.energy.ca.gov/title24/2016standards — September 2017

** Converting all NRCCs by end of 2018*

Nonresidential Data Registry Status Update

- Effective January 1, 2015 – all nonresidential forms must be registered (§10-103)
  - Dependent upon approval of a nonresidential data registry
- To date, no such registry has been approved
  - No application has been submitted for review
  - *Which means: registration is not currently required*

Resources

Online Resource Center (ORC)

Online Resource Center

The Online Resource Center is provided to assist the building community and enforcement agencies with Building Energy Efficiency Standards (Energy Standards) compliance. Energy Standards apply to newly constructed buildings, as well as additions and alterations for existing buildings. Presently, the Energy Standards are updated every three years.

To assist in the compliance process, we provide compliance documents and free Public Domain Compliance Software programs for commercial and residential buildings. Training and links to the Energy Standards and compliance software are available on the Energy Commission website and at utility training centers throughout the state. To help direct you to an appropriate resource, Energy Commission and external resource information are provided on this page.

Building Energy Efficiency Standards

2016 Energy Standards

2013 Energy Standards

Past Energy Standards

Energy Standards Information and Training Materials

Overview

Commissioning

Covered Processes

Follow

Energy Standards Questions?

- Energy Standards Hotline

Energy Standards Booth Handouts

- Handouts - 02212017 (zip file, 507 mb)
- Help with the zip file

Forms

- 2016 Residential Compliance Forms
- 2016 Nonresidential Compliance Forms

Trainings & Events

- Energy Standards Outreach & Education Schedule
- Utility Sponsored Training Schedules

Subscribe

Building Standards List Serve

Automated Email Notifications

First name:

Last name:

Email address:

www.energy.ca.gov/title24/orc/

Blueprint

- Email Newsletter
- Published quarterly
- Clarifications on frequently asked questions

Issue 113 | March – April 2016

BLUEPRINT

California Energy Commission
Efficiency Division

In This Issue

New Mechanical Acceptance Test Technician Certification Provider

On January 13, 2016, the California Energy Commission (Energy Commission) approved the National Environmental Balancing Bureau (NEBB), as a mechanical Acceptance Test Technician Certification Provider (ATTCP).

This gives NEBB the authority to train, certify, and oversee acceptance test technicians (ATTs) and their employers. NEBB will train and certify ATTs to perform all 17 mechanical acceptance tests required in the *2013 Building Energy Efficiency Standards* (Energy Standards).

The Conditions of Approval are available for review in the **Executive Director's recommendation**.

For more information, please visit: **http://energy.ca.gov/title24/attcp/**.

Small Duct High Velocity Space Conditioning Systems

Small duct high velocity (SDHV) systems may be used to comply with the Energy Standards. The following is a list of requirements with direction on how SDHV systems can comply with the low-rise residential requirements of the Energy Standards.

Mandatory Requirements

United States Department of Energy Standards:

SDHV systems manufactured on or after January 23, 2006, and before January 1, 2015, must have a minimum Seasonal Energy Efficiency Ratio (SEER) of 11, and a minimum Heating Seasonal Performance Factor (HSPF) of 6.8.

SDHV systems manufactured on or after January 1, 2015, must have a minimum SEER of 12, and a minimum HSPF of 7.2.

Energy Standards:

Section 150.0(m)13B - Single zone systems that use forced air ducts to supply cooled air to an occupiable space must either meet minimum airflow and fan efficacy requirements, or meet the return duct and grille sizing requirements of **TABLES 150.0-C or 150.0-D**.

NOTE: The return duct and grille sizing alternative will likely be the method chosen for compliance when installing a SDHV system.

Section 150.0(m)15 - Specific to systems with multiple thermostatically controlled zones, this section requires the same mandatory airflow and fan efficacy requirements as **Section 150.0(m)13B**. However, it does not have the same duct and grille sizing alternative. If such systems cannot satisfy the airflow and fan efficacy requirements of this section, compliance must be demonstrated via the performance approach.

The duct leakage and insulation requirements apply as with any other system.

Prescriptive Requirements

The refrigerant charge and duct insulation requirements apply as with any other system.

www.energy.ca.gov/efficiency/blueprint/

Email Lists

- Receive updates on the Energy Standards
- Sign up
  - www.energy.ca.gov/listservers/
- Subscribe to the following Efficiency Lists
  - Building Standards
  - Blueprint
- Respond to confirmation email within 24 hours

Approved Compliance Software

Used to show compliance with the Energy Standards when using the performance approach

- **Residential**
  - CBECC-Res
  - Energy Pro
  - Right-Energy Title 24
- **Nonresidential**
  - CBECC-Com
  - Energy Pro
  - IES Virtual Environment

www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html

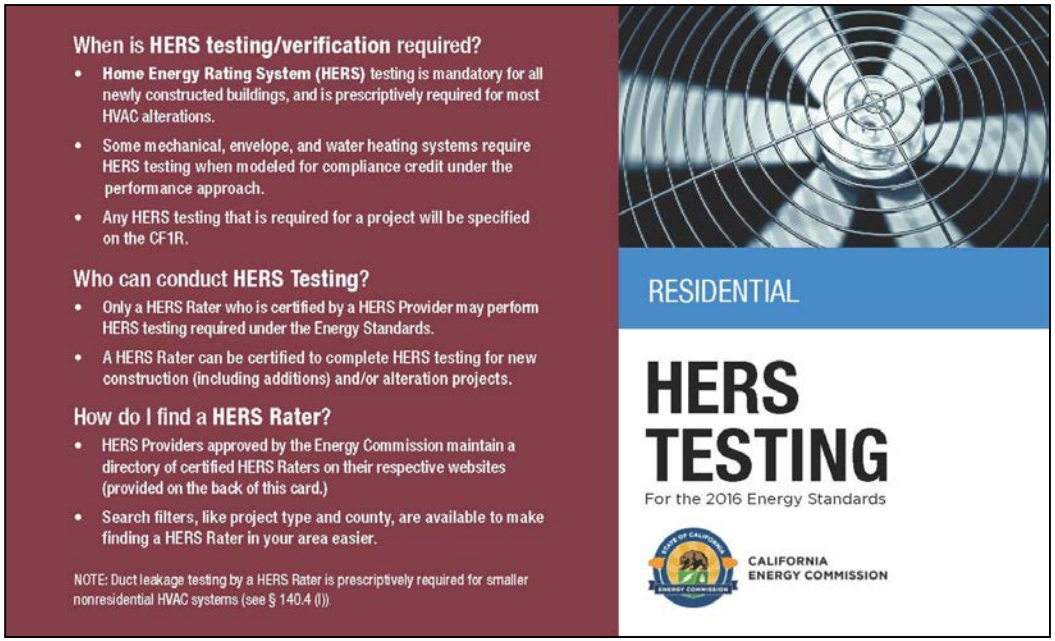
Approved HERS Providers

- New construction, HVAC alterations, and Whole House Ratings
  - CalCERTS
  - CHEERS

www.energy.ca.gov/HERS/providers_2016standards.html

HERS Counter Card

- Intended to assist counter staff and permit technicians
- Inform applicants about HERS testing and verification
- Available online



When is **HERS testing/verification** required?

- **Home Energy Rating System (HERS)** testing is mandatory for all newly constructed buildings, and is prescriptively required for most HVAC alterations.
- Some mechanical, envelope, and water heating systems require HERS testing when modeled for compliance credit under the performance approach.
- Any HERS testing that is required for a project will be specified on the CF1R.

Who can conduct **HERS Testing**?

- Only a HERS Rater who is certified by a HERS Provider may perform HERS testing required under the Energy Standards.
- A HERS Rater can be certified to complete HERS testing for new construction (including additions) and/or alteration projects.

How do I find a **HERS Rater**?

- HERS Providers approved by the Energy Commission maintain a directory of certified HERS Raters on their respective websites (provided on the back of this card.)
- Search filters, like project type and county, are available to make finding a HERS Rater in your area easier.

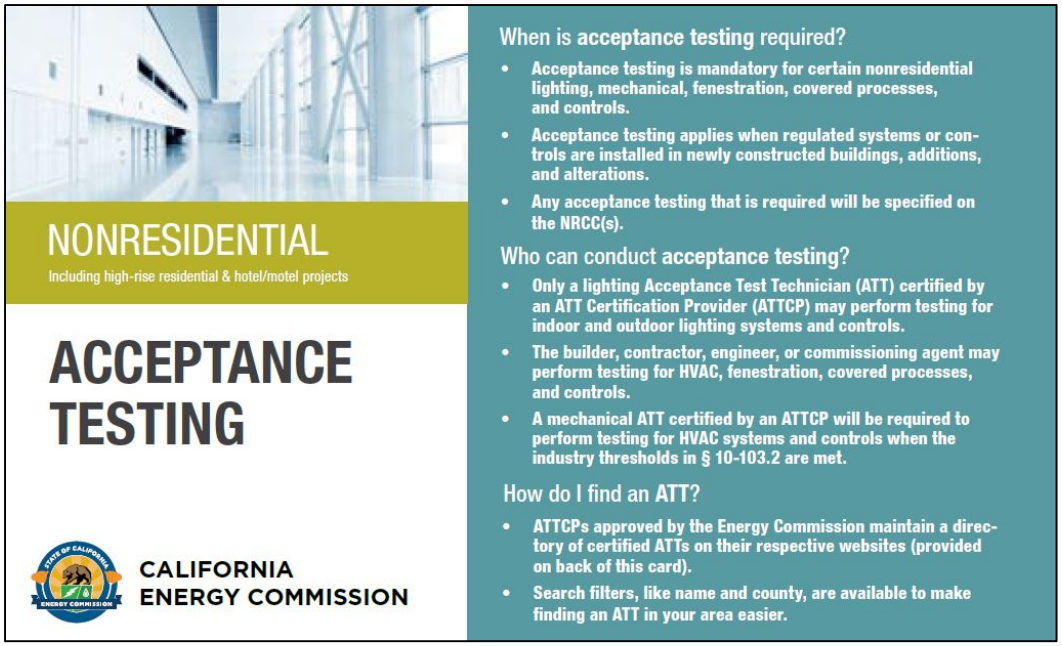
NOTE: Duct leakage testing by a HERS Rater is prescriptively required for smaller nonresidential HVAC systems (see § 140.4 (l)).

Approved ATTCPs

- **Lighting ATTCPs** (*Nonresidential*)
  - CALCTP
  - NLCAA
- **Mechanical ATTCPs** (*Nonresidential*)
  - NEMIC (also referred to as TABB)
  - NEBB
  - CSPTC

www.energy.ca.gov/title24/attcp/providers.html

ATTCP Counter Card



NONRESIDENTIAL

Including high-rise residential & hotel/motel projects

ACCEPTANCE TESTING

CALIFORNIA ENERGY COMMISSION

When is acceptance testing required?

- Acceptance testing is mandatory for certain nonresidential lighting, mechanical, fenestration, covered processes, and controls.
- Acceptance testing applies when regulated systems or controls are installed in newly constructed buildings, additions, and alterations.
- Any acceptance testing that is required will be specified on the NRCC(s).

Who can conduct acceptance testing?

- Only a lighting Acceptance Test Technician (ATT) certified by an ATT Certification Provider (ATTCP) may perform testing for indoor and outdoor lighting systems and controls.
- The builder, contractor, engineer, or commissioning agent may perform testing for HVAC, fenestration, covered processes, and controls.
- A mechanical ATT certified by an ATTCP will be required to perform testing for HVAC systems and controls when the industry thresholds in § 10-103.2 are met.

How do I find an ATT?

- ATTCPs approved by the Energy Commission maintain a directory of certified ATTs on their respective websites (provided on back of this card).
- Search filters, like name and county, are available to make finding an ATT in your area easier.

- Intended to assist counter staff and permit technicians
- Inform applicants about acceptance testing
- Available online

Energy Standards Hotline

- Open Monday through Friday

  8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 4:30 p.m.

- Call

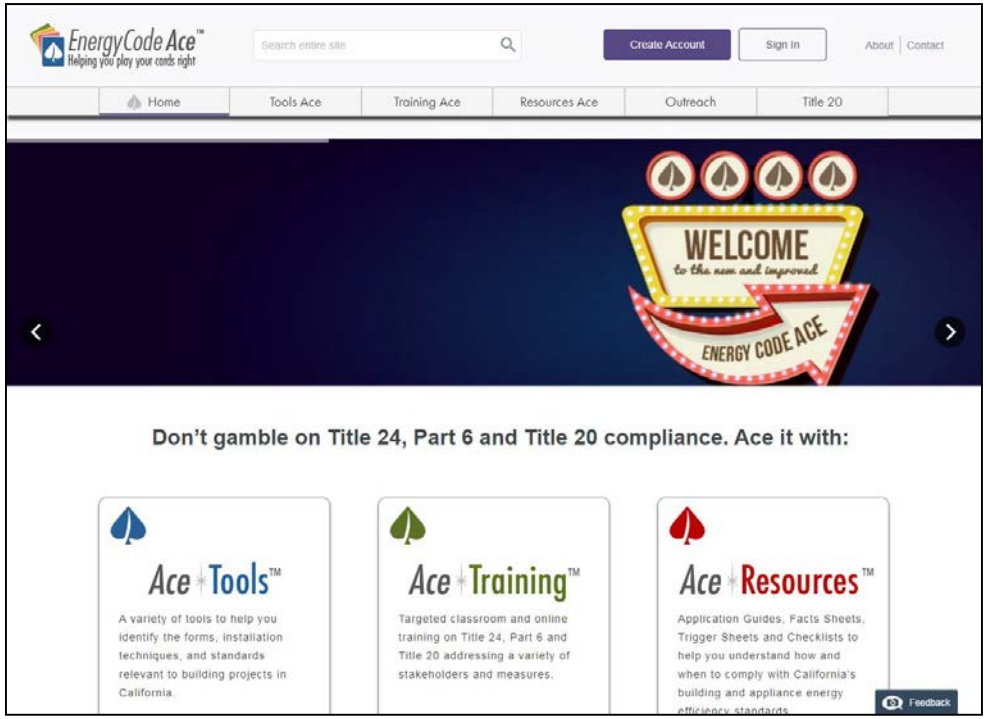
  800-772-3300 (in CA)

  916-654-5106 (outside CA)

- Email

  Title24@energy.ca.gov

Energy Code Ace



- Forms & Resource tools
- Free training in person and online
- Checklists, Trigger Sheets for building departments

www.energycodeace.com