

BLUEPRINT

CALIFORNIA ENERGY COMMISSION
EFFICIENCY DIVISION


IN THIS ISSUE

- 2019 Energy Code: NRFC Rated Exterior Doors
- 2019 Energy Code: Compliance Software
- 2019 Energy Code: HERS Providers
- Process Space
- Q&A
 - Daylighting Controls and Opaque Curtain Walls
 - Building Commissioning
 - HVAC Occupancy Sensor Zone Control Requirements
 - Lighting Power Exceptions and Control Requirements
 - Occupant Controlled Smart Thermostats

2019 ENERGY CODE: NRFC RATED EXTERIOR DOORS

The California Energy Commission's (CEC) *2019 Building Energy Efficiency Standards (Energy Code)* requires non-field fabricated exterior doors to meet U-factor and labeling requirements for all buildings. This includes opaque doors, defined as having less than 25 percent glazing material.

Exterior doors' labeled efficiency values must either use a National Fenestration Rating Council (NFRC) rating or use the default values listed in **Reference Joint Appendix JA4.5**. The default values are intentionally conservative and will not meet low-rise residential prescriptive requirements. Note: Doors with 25 percent or greater glazing are treated as fenestration.

 National Fenestration Rating Council® CERTIFIED	World's Best Door Co. Entrance Door Insulated Steel Edge Door LowE (2), argon, Clear XYZ-X-1*			
	ENERGY PERFORMANCE RATINGS			
Product Description** Default Frame*** Steel	U-Factor [†] / Solar Heat Gain Coefficient (SHGC)			
	Individual Option Number			
	1/4 Lite ≤410†	1/2 Lite ≤900†	3/4 Lite ≤1100†	Full Lite >1100†
Without Grids	0.29 0.06 00001-00001	0.30 0.19 00001-00002	0.36 0.33 00003-00003	0.40 0.40 00001-00004
With Grids	0.21 0.04 00002-00001	0.24 0.11 00002-00002	0.26 0.31 00002-00003	0.28 0.36 00002-00004
Non-Thermally-Broken	0.23 0.05 00003-00001	0.28 0.13 00003-00002	0.33 0.34 00003-00003	0.34 0.40 00003-00004
Thermally Broken	0.21 0.04 00004-00001	0.25 0.10 00004-00002	0.27 0.35 00004-00003	0.29 0.40 00004-00004
Flush / Embossed 00005-00001	U-Factor [†] 0.19		SHGC 0.04	
Air Leakage ≤0.5 cfm/ft ²				
<small> * Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. † Numbers below the performance ratings are referenced in the NFRC Certified Products Directory (e.g., XYZ-X-1-00001-00001 or 860-X-1-00001-00001) ** Door components specific to this product. *** per NFRC 100 † square inches † bu/hr/ft²F www.nfrc.org </small>				

NFRC Door Label

2019 ENERGY CODE: COMPLIANCE SOFTWARE

The CEC has approved several compliance software programs for the 2019 Energy Code. The list of approved software versions and their corresponding approval and expiration dates is available on the **2019 compliance software** web page. Check back often for approved version updates.

For residential buildings, the following programs are approved:

- CBECC-Res 2019.1.0
- EnergyPro 8.0

For nonresidential buildings, the following programs are approved:

- CBECC-Com 2019.1.0
- EnergyPro 8.0

2019 ENERGY CODE: HERS PROVIDERS

The CEC has approved CalCERTS and CHEERS as Home Energy Rating System (HERS) providers for the 2019 Energy Code. The purpose of the HERS program is to inspect, test, and rate the installation of energy efficient measures in buildings. HERS providers are approved based upon several factors, including their ability to:

- Train and certify HERS raters.
- Create and maintain a registry and database.
- Provide ongoing access to their registry and database for CEC staff.
- Create a quality assurance program and conduct quality assurance inspections on their HERS raters' work.
- Report annually to the CEC as required per Title 20.

CalCERTS is approved for:

- Field verification for newly constructed, additions, and alterations of residential and nonresidential buildings.
- California whole-house home energy ratings.
- HERS building performance contractors.

CHEERS is approved for:

- Field verification for newly constructed, additions, and alterations of residential and nonresidential buildings.

For more information, please visit the **HERS program** web page (shown below).

Need Training?

Request 2019 Energy Code training from CEC's Building Standards Outreach and Education staff by emailing **Title24@energy.ca.gov**.

For Energy Code training in-person, online, or on-demand see Energy Code Ace's **Training Schedule**.



The screenshot shows the California Energy Commission website. The header includes the CEC logo, social media links, and navigation menus for About, Careers, Contact, Events, Newsroom, Resources, and Settings. The main navigation bar lists HOME, PROCEEDINGS, RULES AND REGULATIONS, PROGRAMS AND TOPICS, FUNDING, DATA AND REPORTS, and SHOWCASE. The breadcrumb trail reads: Home > Programs and Topics > All Programs > Home Energy Rating System Program - HERS. The main content area features a large blue banner with the text "Home Energy Rating System Program - HERS". Below the banner, a paragraph describes the HERS program: "The Home Energy Rating System (HERS) Program tests and rates the energy performance of a home. The California Energy Commission's HERS Program addresses construction defects and poor equipment installation, including HVAC systems and insulation. The Energy Commission has a list of approved HERS providers who train and certify raters." To the right of this text is a yellow box with the contact information: CONTACT, Suzie Chan, and 916-653-0379.

HERS Program web page

PROCESS SPACE

The difference between process space and covered processes needs to be understood to apply the Energy Code requirements properly. A process space is a space that is controlled to maintain temperatures below 55 degrees Fahrenheit or above 90 degrees Fahrenheit. Spaces that are maintained within the temperature range of 55 degrees Fahrenheit to 90 degrees Fahrenheit are considered conditioned spaces. There are 10 covered processes with specific efficiency requirements in **Energy Code Sections 120.6** and **140.9**.

In both the 2016 Energy Code and the 2019 Energy Code, the mandatory requirements for space conditioning equipment in **Section 110.2** do not apply to equipment used solely for process spaces.

Section 100.0(b) describes the parts of buildings regulated by the Energy Code in the buildings covered under the occupancy groups listed in Section 100.0(a) and as set forth in Table 100.0-A. Table 100.0-A lists the requirements in Section 110.2 for HVAC systems in conditioned spaces and for covered processes, but it does not cover the requirements for HVAC systems in process spaces.

Therefore, equipment used for covered processes must meet the requirements in Section 110.2, except where the equipment meets specific exceptions in the Energy Code or has specific efficiency requirements stated in Sections 120.6 or 140.9. If the equipment serves both conditioned and process spaces, the equipment must meet the requirements in Section 110.2. Equipment used solely for process spaces, and not for covered processes, does not need to meet the requirements in Section 110.2.

Daylighting Controls and Opaque Curtain Walls

Are automatic daylighting controls required for daylight zones adjacent to opaque glazing in curtain walls per Section 130.1(d) and 140.6(d)?

No. The automatic daylighting control requirements do not apply to daylight zones adjacent to opaque curtain walls. The Energy Code defines sidelit daylight zones as the areas in plan view directly adjacent to each vertical glazing. Glazing is a fenestration product that is defined as being transparent or translucent. Note: Automatic daylighting control requirements will apply to daylight zones adjacent to transparent or translucent curtain walls.

Building Commissioning

Do the commissioning requirements apply to nonresidential areas in high-rise residential buildings?

Yes. The commissioning requirements in **Section 120.8** apply to all nonresidential building occupancy groups. For a mixed-use building, any space or area that is not classified as a residential building occupancy (R) is subject to commissioning, when it is classified as one of these building occupancy groups: A, B, E, F, H, M, S, and U.

ENERGY
STANDARDS

HOTLINE

Available to help
with Energy Standards
(Title 24, Part 6) questions.

title24@energy.ca.gov

800-772-3300 Toll free in CA
916-654-5106 Outside CA

HOURS 8 a.m.–12 p.m. and 1 p.m.–4:30 p.m.

HVAC Occupancy Sensor Zone Control Requirements

Are both occupancy sensor ventilation control (OSVC) and occupancy sensors zone control (OSZC) required to control ventilation and space conditioning systems as described in Sections 120.1(d)5 and 120.2(e)3?

Yes, when both of the following conditions exist:

- Occupant sensors are required for lighting controls per **Section 130.1(c)5, 6, or 7**.
- All occupancy categories in the zone have Note F in **Table 120.1-A** allowing the ventilation to be reduced to zero when the space is in occupied-standby mode.

Can ventilation to a zone be reduced to zero if an occupancy sensor is used when it is not required?

Yes. If an occupancy sensor is used when it is NOT required by Sections 130.1(c)5, 6, or 7, the airflow to the zone can be reduced to zero as described in Section 120.2(e)3. However, all occupancy categories in the zone must have Note F in Table 120.1-A allowing ventilation to be reduced to zero when in occupied-standby mode.

Are OSVC and OSZC still required for HVAC systems in a multi-occupancy category zone if one or more of the occupancy categories do not have a Note F in Table 120.1-A, but occupancy sensors are required by Sections 130.1(c)5, 6, or 7?

No. In this case occupancy sensors are not required for ventilation or space conditioning controls as described in Sections 120.1(d)5 and 120.2(e)3, and ventilation must be supplied at all times during scheduled occupancy. All occupancy categories in a zone must have Note F in Table 120.1-A to allow the ventilation to be reduced to zero when the zone is in occupied-standby mode. Note: Occupancy sensors are still required for lighting control.

Can one of either OSVC in Section 120.1(d)5 or OSZC in Section 120.2(e)3 be required and not the other?

No. Sections 120.1(d)5 or §120.2(e)3 are tied together. Either all of Section 120.1(d)5 and all of Section 120.2(e)3 are required, or neither is required.

Is an occupancy sensor required in each room of a zone?

Yes. Whenever using occupancy sensors for ventilation control, whether required or not, all rooms within the zone must have an occupancy sensor and the zone is not considered vacant until all rooms in the zone are vacant. See **Section 120.2(e)3** for exceptions.

Lighting Power Exceptions and Control Requirements

For indoor lighting, if lighting is excluded from the indoor power limitations per Section 140.6(a)3, is that lighting also excluded from the indoor lighting control requirements of Section 130.1?

No. Indoor lighting excluded from the power limitations of **Section 140.6** is not necessarily exempt from the mandatory control requirements of **Section 130.1**. These sections are independent of each other.

For outdoor lighting, if lighting is excluded from the outdoor power limitations per the exceptions to Section 140.7(a), is that lighting also excluded from the outdoor lighting control requirements of Section 130.2?

No. The only outdoor lighting control exception that aligns with the outdoor power exceptions is Exception 2 to **Section 130.2(c)3**. This means that if the lighting in question is exempt from the power limitations, it is also exempt from the motion sensing control requirements of 130.2(c)3. All other sections still apply.

Occupant Controlled Smart Thermostats

Can a thermostat with a cloud-based demand response feature qualify as an occupant controlled smart thermostat (OCST) under the 2019 Energy Code?

Yes. Thermostats with cloud-based demand response features can be listed as an OCST if they are capable of responding automatically to signals and implementing control functions requested by a cloud-based OpenADR 2.0b Virtual End Node (VEN). The manufacturer must certify to the CEC that the OCST has this capability. Reference Joint Appendix JA5 (JA5) contains requirements for OCST certification to the CEC. Declaration forms can be found on the [Manufacturer Certification of Building Equipment](#) web page.

Are devices listed under the CEC's 2016 List of OCSTs automatically included on the CEC's 2019 List of OCSTs?

No. Manufacturers must recertify their products to the CEC to be placed on the eligible 2019 List of OCSTs.

Do devices listed under the CEC's 2016 List of OCSTs require any changes to qualify for the CEC's 2019 List of OCSTs?

No, provided the devices are a certified OpenADR 2.0a or 2.0b VEN. An OCST that complies with the 2016 JA5 requirements by including a certified OpenADR 2.0a or 2.0b VEN will also meet the CEC's 2019 JA5 requirements.

Can an OCST with a cloud-based demand response feature meet the qualifications of CEC's 2019 JA5 if it is only capable of responding to the OpenADR 2.0a set of commands?

No. OpenADR 2.0a is designed to be a reduced set of behaviors appropriate for the limited computing power available in an on-site device. These limits do not apply to cloud computing, and thus OpenADR 2.0b is required for devices that use the cloud to provide demand response. If the OpenADR VEN is physically located in the OCST (not in the cloud), then OpenADR 2.0a is sufficient.

FOR MORE INFORMATION

Online Resource Center (ORC):

www.energy.ca.gov/orc

Home Energy Rating System (HERS):

www.energy.ca.gov/HERS

Acceptance Test Technician Certification Provider Program (ATTCP):

www.energy.ca.gov/ATTCP

2016 Approved Compliance Software:

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

EDITOR

Amie Brousseau

SPECIAL THANKS

Suzie Chan

Javier Perez

Todd Ferris

Michael J. Sokol

Simon Lee

Peter Strait

Christopher Meyer

Gabriel Taylor

Kelly Moriarty

Lorraine White

Chris Olvera

Daniel Wong

Gavin Newsom
Governor

David Hochschild
Chair

Janea A. Scott, J.D.
Vice Chair

Karen Douglas, J.D.
J. Andrew McAllister, Ph.D.
Patricia Monahan
Commissioners

Drew Bohan
Executive Director

Building Standards Office
1516 Ninth St, MS-37, Sacramento, CA 95814
(916) 654-4147



**CALIFORNIA
ENERGY
COMMISSION**

CEC-400-2019-017

