DOCKETED

Docket Number:	17-BSTD-02
Project Title:	2019 Title 24, Part 6, Building Energy Efficiency Standards Rulemaking
TN #:	222224
Document Title:	2019 Standards Notice of Proposed Action
Description:	Notice that the California Energy Commission (Energy Commission) proposes to adopt changes to the Building Energy Efficiency Standards contained in the California Code of Regulations (CCR), Title 24, Part 6 (also known as the California Energy Code), and associated administrative regulations in Chapter 10 of Part 1. - Hearings to discuss the 45-Day Language is scheduled for February 5 and 6, 2018.
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Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	1/18/2018 4:15:48 PM
Docketed Date:	1/18/2018

CALIFORNIA ENERGY COMMISSION
1516 Ninth Street Sacramento, California 95814
Main website: www.energy.ca.gov

NOTICE OF PROPOSED ACTION

PROPOSED REVISIONS TO THE CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS

THE 2019 CALIFORNIA ADMINISTRATIVE CODE THE 2019 CALIFORNIA ENERGY CODE

CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 1, CHAPTER 10, and PART 6 (2019 CALIFORNIA ENERGY CODE)

California Energy Commission
DOCKET NO. 17-BSTD-02
January 19, 2018

INTRODUCTION

Notice is hereby given that the California Energy Commission (Energy Commission) proposes to adopt changes to the Building Energy Efficiency Standards contained in the California Code of Regulations (CCR), Title 24, Part 6 (also known as the California Energy Code), and associated administrative regulations in Chapter 10 of Part 1. The proposed amended standards are called the "2019 Building Energy Efficiency Standards" (Standards) and will go into effect on January 1, 2020.

The Energy Commission has prepared this Notice of Proposed Action (NOPA) and an Initial Statement of Reasons (ISOR) regarding the need for the proposed revisions, and has made available all the information upon which its proposal is based. The Energy Commission has also published the Express Terms (45-Day Language) of the proposed amendment language. These documents can be obtained from the contact persons designated below or from the Energy Commission website at: http://www.energy.ca.gov/title24/2019standards/.

PUBLIC COMMENT PERIOD AND HEARINGS

The Energy Commission's Energy Efficiency Lead Commissioner will hold public hearings to receive public comments on the proposed action. At these hearings, any person may present statements or arguments relevant to the proposed regulatory action summarized below. The proposed language (45-Day Language Express Terms) is posted on the Energy Commission's website at: http://www.energy.ca.gov/title24/2019standards/.

The 45-Day Language Express Terms are also available from the Energy Commission's Building Standards Office (contact persons are listed later in this NOPA). The Energy Efficiency Lead Commissioner Hearings to discuss the 45-Day Language are scheduled as follows:

February 5 and 6, 2018
9:00 a.m.
CALIFORNIA ENERGY COMMISSION
Hearing Room A
1516 Ninth Street
Sacramento, California
(Wheelchair Accessible)

The Energy Efficiency Lead Commissioner Hearing will be held on the first date listed. The Energy Efficiency Lead Commissioner Hearing may continue on the second date listed, as necessary.

Audio for the Energy Efficiency Lead Commissioner Hearings will be broadcast over the internet. For details, please go to: www.energy.ca.gov/webcast.

If you have a disability and require assistance to participate in these hearings, please contact Poneh Jones at (916) 654-4425 at least 5 days in advance.

A Hearing before the Energy Commission, for possible final adoption of the Express Terms, is scheduled to be held on the date below. This date may be postponed by the Energy Commission through a notice to the docket of this proceeding..

PROPOSED ADOPTION DATE – FULL ENERGY COMMISSION HEARING

March 21, 2018
10 a.m.
CALIFORNIA ENERGY COMMISSION
Hearing Room A
1516 Ninth Street
Sacramento, California
(Wheelchair Accessible)

Audio for the hearings will be broadcast over the internet. For details, please go to: www.energy.ca.gov/webcast.

If you have a disability and require assistance to participate in these hearings, please contact Poneh Jones at (916) 654-4425 at least 5 days in advance.

The public comment period for the 2019 Building Energy Efficiency Standards will begin on January 19 2018, and end at 5:00 p.m. on March 5, 2018. Any interested person may submit written comments on the proposed amendments. Regarding the Energy Efficiency Lead Commissioner and Adoption Hearings, the Energy Commission

requests written comments at the earliest possible date: for the February 5th and 6th, 2018 hearings, please provide written comments by February 20, 2018. However, written comments will still be accepted if they are received by 5:00 p.m. on March 5, 2018. Written comments must be emailed to Docket@energy.ca.gov or mailed or delivered to the following address (emailing is preferred):

CALIFORNIA ENERGY COMMISSION
Attention: Docket No. 17-BSTD-02
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

All written comments must contain the official number of the proceeding "Docket No. 17-BSTD-02," prominently displayed on the first page. When comments are emailed on behalf of an organization, the comments should be a scanned copy of the original on the organization's letterhead and include a signature of an authorized representative.

Written comments may also be filed electronically by emailing adrian.ownby@energy.ca.gov or faxing them to (916) 654-4304, as long as they are received no later than March 5 2018, at 5:00 p.m.

Oral comments may be made at the Energy Efficiency Lead Commissioner hearing(s). In addition, oral comments may be made at the March 21, 2018, Full Commission Adoption Hearing.

POTENTIAL POST-HEARING MODIFICATIONS TO THE TEXT OF THE REGULATIONS

Interested persons should be aware that these amendments may be subject to change as a result of public comment, staff recommendations, or discussions at meetings with the Energy Efficiency Lead Commissioner or other Commissioners. The proposed regulations could be changed, withdrawn, or replaced.

Pursuant to Government Code 11346.8(c), no state agency may adopt, amend, or repeal a regulation which has been changed from that which was originally made available to the public pursuant to Section 11346.5, unless the change is (1) non-substantial or solely grammatical in nature, or (2) sufficiently related to the original text that the public was adequately placed on notice that the change could result from the originally proposed regulatory action. If a sufficiently related change is made, the full text of the resulting adoption, amendment, or repeal, with the change clearly indicated, shall be made available to the public for at least 15 days before the agency adopts, amends, or repeals the resulting regulation. Any written comments received regarding the change must be addressed in the final statement of reasons required by Government Code section 11346.9.

To be notified of any modifications, please sign-up on the Building Standards list-serve to be informed of ongoing activities regarding the 2019 Update. You can sign up for this list-serve here: http://www.energy.ca.gov/efficiency/listservers.html.

For assistance in participating in this the rulemaking proceeding, please contact the Energy Commission's Public Adviser's Office, at (916) 654-4489, toll free at (800) 822-6228, or by email at publicadviser@energy.ca.gov.

AUTHORITY AND REFERENCE

The Energy Commission proposes to adopt the Express Terms under the authority granted by Public Resources Code Sections 25213, 25402, subdivisions (a)-(b), 25402.1, 25402.4, 25402.5, 25402.8, 25910, 25942, and 25943.

The Energy Commission proposes to adopt the Express Terms in order to implement, interpret, or make specific Public Resources Code Sections 25402, subdivisions (a)-(b), 25402.1, 25402.4, 25402.5, 25910, 25942, and 25943, and Health and Safety Code Sections 18390, 18934 & 18935.

INFORMATIVE DIGEST

A. Summary of Existing Laws

Public Resources Code Sections 25402 and 25402.1 were enacted in the 1970s as part of the enabling legislation establishing the Energy Commission and its basic mandates. These sections require the Energy Commission to adopt, implement, and periodically update energy efficiency standards for both residential and nonresidential buildings. In addition, Public Resources Code Section 25910 directs the Energy Commission to adopt standards for the minimum amount of additional insulation installed in existing buildings. Senate Bill (SB) 639 (Statutes of 1993) added Section 25402.5, which expressly directs the Energy Commission to consider both new and replacement, and both interior and exterior, lighting devices when adopting building standards. SB 5X (Statutes of 2001) added subsection (c) to Section 25402.5 to clarify and expand the Energy Commission's authority to adopt standards for outdoor lighting.

The Global Warming Solutions Act (Assembly Bill (AB) 32, Núñez, Chapter 488, Statutes of 2006) has been the foundation of California's efforts over the past five years to reduce greenhouse gas emissions (GHG); AB 32 requires that by 2020 the state reduce its GHG emissions to the level that existed in 1990. *Improving the energy efficiency of existing residential and commercial buildings is the single most important activity to reduce greenhouse gas emissions that result from electricity and natural gas use*. The Energy Commission's 2017 Integrated Energy Policy Report (IEPR), which is California's official statement of the state's energy policy, concludes that climate change is the single most important environmental and economic challenge of the century, that greenhouse gas emissions are the largest contributors

to climate change, and that California's ability to slow the rate of greenhouse gas emissions will depend first on energy efficiency.

Similarly, the California Long-Term Energy Efficiency Strategic Plan (2008) adopted by the California Public Utilities Commission (CPUC) identifies the importance of the Energy Commission's Building Energy Efficiency Standards in reaching the State's goal of having new homes be "zero net energy" buildings by 2020 and of having commercial buildings be "zero net energy" buildings by 2030.

Governor Brown's Clean Energy Jobs Plan (2010) combines existing state energy policy with economic recovery and growth goals by focusing on developing renewable energy and energy efficiency technologies and creating more than half a million green jobs. In the area of building efficiency, the Governor's Plan calls for:

- Adopting stronger appliance standards for lighting, consumer electronics, and other products;
- Creating new efficiency standards for new buildings;
- Increasing public education and enforcement efforts so that the gains promised by California's efficiency standards are realized;
- Adopting a plan for achieving "zero-net-energy" homes and businesses;
- Making existing buildings more efficient, especially the half of California homes that were built before the advent of modern building standards; and
- Providing information to commercial investors and homebuyers by disclosing building energy consumption prior to building sale.

Senate Bill 350 (de León, Chapter 547, Statutes of 2015) established California's 2030 greenhouse gas reduction target of 40 percent below 1990 levels. To achieve this goal, SB 350 set specific 2030 targets for energy efficiency and renewable electricity, among other actions aimed at reducing greenhouse gas emissions across the energy and transportation sectors. In particular, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. (Senate Bill 32 (Pavley, Chapter 249, Statutes of 2016) followed by amending the California Global Warming Solutions Act of 2006 to establish a matching emissions limit in California's Cap and Trade program.)

The Energy Commission's Integrated Energy Policy Report (2017) includes an energy efficiency chapter that emphasizes the energy policy goals for the state's residential and nonresidential buildings. It articulates how the Building Energy Efficiency Standards, including Reach Standards, will be updated periodically to attain the aggressive levels of energy efficiency required to make energy efficient buildings cost-effective for consumers.

The 45-Day Language Express Terms described in this NOPA are designed to comply with all of these state laws and policies. To summarize:

As required by law, the proposed Standards are cost-effective to consumers (that is, the energy bill savings over the life of the building will be greater than any increased construction costs that will result from the Standards).

The proposed Standards take a crucial step in meeting the 2020 and 2030 zero net energy goals; if adopted, they will advance new residential buildings closer to achieving California's goal of having all new residential buildings be zero net energy by 2020. They will also advance California's requirements for nonresidential buildings in a manner that harmonizes California with national nonresidential building standards, ensuring California neither lags behind nor departs from the national work of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the U.S. Department of Energy.

By saving large amounts of energy, the Standards will make a major contribution in meeting the state's goals for reductions in greenhouse gas emissions.

By making buildings more affordable to operate, the Standards encourage investment in new construction, make capital available for other investments, stimulate economic growth, and create new jobs.

B. Summary of Existing Regulations

The Standards were first adopted in 1976 and have been updated periodically since then as directed by statute. In 1975 the Department of Housing and Community Development adopted rudimentary energy conservation standards under their State Housing Law authority that were a precursor to the first generation of the Standards. However, the Warren-Alquist Act was passed one year earlier with explicit direction to the Energy Commission (formally titled the State Energy Resources Conservation and Development Commission) to adopt and implement the Standards. The Warren-Alquist Act created separate authority and specific direction regarding what the Standards are to address, what criteria are to be met in developing the Standards, and what implementation tools, aids, and technical assistance are to be provided.

The Standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. Public Resources Code Sections 25402 subdivisions (a)-(b) and 25402.1 emphasize the importance of building design and construction flexibility by requiring the Energy Commission to establish performance standards, in the form of an "energy budget" in terms of the energy consumption per square foot of floor space. For this reason, the Standards include both a prescriptive option, allowing builders to comply by using methods known to be efficient, and a performance option, allowing builders complete freedom in their designs provided the building achieves the same overall efficiency as an equivalent building using the prescriptive option. The Standards have done so since 1976 and the 45-Day Language Express Terms described in this NOPA will do the same if adopted.

Public Resources Code Section 25402.1 also requires the Energy Commission to support the performance standards with compliance tools for builders and building designers. Thus in its Alternative Calculation Method (ACM) Approval Manuals, which are adopted by regulation in support of the Standards, and which are described in more detail below, the Energy Commission establishes requirements for input, output and calculational uniformity in computer programs that are used to demonstrate compliance with the Standards. The ACM Manuals thereby allow private firms to develop compliance software for approval by the Energy Commission, which further encourages flexibility and innovation.

The Energy Commission also adopts Reference Appendices that contain data and other information that help builders comply with the Standards.

The Standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards – the energy budgets – that vary by climate zone (of which there are 16 in California) and building type; thus the Standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach. A summary outline of the Standards is as follows:

- Mandatory requirements that apply to all building types are in Part 6, Sections 110.

- The requirements for nonresidential buildings, high-rise residential buildings, and hotels/motels are in Part 6, Sections 120 and 130 to 141. Specialized mandatory requirements for such buildings are in Sections 120 and 130; the performance compliance approach is explained in Section 140.1; nonresidential prescriptive packages are in Sections 140.2 to 140.9; and requirements for additions, alterations, and repairs to existing nonresidential buildings are in Section 141.

- The requirements for low-rise residential buildings are in Part 6, Section 150. Specialized mandatory requirements for these buildings are in Section 150.0; the performance compliance approach is explained in Section 150.1; prescriptive packages are also in Section 150.1; and requirements for additions and alterations to existing buildings are in Section 150.2.

- Additional direction relating to the Standards in Part 6 are in the Reference Appendices: the Residential Appendices, the Nonresidential Appendices, the Joint Appendices, and the Alternative Calculation Method Approval Manual.

- The administrative regulations for the Standards are in Part 1, Chapter 10.

- The voluntary Reach Standards are in Part 11, the Green Building Standards (CALGreen).

C. Summary of the Effect of the Proposed Regulations

Overview

The 2019 Standards focus on three key areas: proposing new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and Indoor Air Quality (IAQ) requirements, including references to ASHRAE 62.1 and 62.2; and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 standards also propose several smaller improvements in energy efficiency, such as efficiency standards for laboratory fume hoods, that are described in greater detail below.

In addition to updating the Standards in Title 24 Parts 1 and 6, the Energy Commission is also proposing updates to the CALGreen energy efficiency provisions in Title 24, Part 11, in a separate, parallel rulemaking.

The following is a list of the specific proposals currently included in the Express Terms. A detailed list of all proposed changes, with descriptions of each change, is located in the Initial Statement of Reasons released concurrently with this notice.

Residential

The proposed changes to the residential sections of the Standards include prescriptive options reflecting updates to building technologies and best practices, and include the following:

- Adding new prescriptive requirements for installing solar photovoltaic systems in newly constructed residential buildings, and specifying use of an Energy Design Rating in the performance approach to compliance to support solar photovoltaic requirements. In addition, Joint Appendix 11 and 12 have been added to support solar photovoltaic and battery storage systems installed to comply with Part 6.

- For ventilation:

    - References to ASHRAE 62.2 have been updated to incorporate the current version by reference. The current version moves high-rise multifamily buildings from 62.1 to 62.2, which is a significant change from prior versions.

    - Amendments to the current version of ASHRAE 62.2 are proposed as found to be appropriate to ensure efficiency and indoor air quality.

    - Increasing air filter filtration requirements to a Minimum Efficiency Reporting Value (MERV) of 13, necessary for filtering out the smallest category of potentially harmful particulates. This change includes requiring that certain return grills accommodate a 2” filter depth, to ensure that

MERV 13 filters can be installed with little or no impact on overall system performance.

- Extending air filtration requirements to apply to supply-only ventilation systems and the supply side of balanced ventilation systems.

- Changes to multifamily ventilation include specifying that dwelling units may either use balanced ventilation or verify leakage rates with a blower door test.

- Extending HERS requirements to include verifying HVI certification of kitchen range hoods.

- Updating HERS procedures specified in the Residential Appendix where needed to support the changes in Part 6.

- For attics, increasing the prescriptive R-value for below roof deck insulation from R-13 to R-19.

- For walls, increasing prescriptive R-value requirements from R19 fill and R5 continuous insulation to R21fill with R5 continuous insulation, reflecting an overall decrease in the performance U-factor for the assembly from 0.051 to 0.048.

- For fenestration:

  - Updating the definitions of “door” and “glazed door” to match National Fenestration Rating Council (NFRC) definitions. This lowers the threshold for a door to be considered a glazed door from 50% glazing to 25% glazing.

  - Updating the prescriptive U-factor for windows from 0.32 to 0.30, and updating the prescriptive Solar Heat Gain Coefficient (SHGC) required in Climate Zones 2 and 5 - 15 from 0.25 to 0.23.

  - Adding QII to the prescriptive requirements for newly constructed buildings.

- For lighting, JA8 has been revised to align testing requirements with current federal, state and ENERGY STAR test procedures. In addition, path lights, step lights, and lighting internal to drawers, cabinetry, and closets other than walk-in closets have new options for compliance.

- For water heating:
    - The specifications for compact distribution have been revised.
    - New specifications for Drain Water Heat Recovery have been added.
    - An option for prescriptive compliance using a heat pump water heater has been added.
- For furnaces, updating minimum fan efficacy requirements to 45 cfm per watt.
- Adding addition and alteration requirements that are specific to creating Accessory Dwelling Units.

Nonresidential

The proposed changes to the nonresidential sections of the Standards include prescriptive options reflecting updates to building technologies and best practices, and include the following:

- Extending the Scope of Part 6 to healthcare facilities, and incorporating several Exceptions to ensure appropriate application of efficiency standards.
- For ventilation:
    - Updating references to ASHRAE 62.1 to incorporate the current version by reference.
    - Updating filtration requirements to a minimum MERV 13, necessary for filtering out the smallest category of potentially harmful particulates.
    - Updating equipment efficiency requirements for cooling towers, and adding new efficiency requirements for adiabatic condensers.
    - Adding airflow requirements specific to Small Duct High Velocity (SHDV) systems. This resolves an issue of flow rates for standard ducting being applied to SHDV systems.
- For lighting:
    - Updating prescriptive indoor and outdoor lighting power allowance values to assume the use of LED lighting, and added new Power Adjustment Factors for several daylighting devices.
    - Reducing wattage thresholds for Exceptions to outdoor lighting controls to account for lower wattage LED fixtures.
    - Updating the procedure for determining installed lighting power to allow the efficiency of installed lamps to be considered, and to create a more comprehensive framework for evaluating modular lighting (including track lighting).

- Adding occupancy sensing requirements for restrooms.
- Merging and standardizing the prescriptive alteration requirements for lighting controls, and limiting the projects that can proceed without determining the square footage of the affected spaces.

- Adding requirements for laboratory fume hoods to use efficient fans and incorporate automatic sash closure.
- Updating requirements in several areas to maintain alignment with ASHRAE 90.1:
  - Fan system power requirements
  - Equipment efficiency requirements
  - Transfer air for exhaust air makeup
  - Demand control ventilation requirements for classrooms
  - Occupant sensor ventilation control requirements (with amended setpoints)
  - Waterside economizer requirements (with amended minimum efficiency requirements)

Standards Cleanup

The proposed changes to the Standards also include changes throughout the regulations to clarify, simplify, and streamline the existing language and requirements. The most significant of these changes are the following:

- Acceptance Test Training and Certification – The changes to Title 24 Part 1, Section 10-103.1 and10-103.2 add requirements for ATTCPs to disclose when an ATT or ATE is decertified, and to include in their application the conditions and procedures that applies to testers seeking to regain certification. Smaller changes have also been made to standardize the content of amendment applications and to adjust the on-site audit requirements that apply to mechanical ATTCPs.

- Lighting – Sections 130.0, 130.1, 130.2, and 150.0(k) have been rewritten for clarity, in addition to the changes noted previously. A new Section 130.1(f) has been added to clarify the expected interactions of the lighting controls required by Section 130.1.

- Alternative Calculation Method Approval Manual – The changes to the Alternative Calculation Method manual adopted as appendices to the Standards permit the use of other simulation engines that produce results identical to the Energy Commission's CBECC software.

- Pipe Insulation – Requirements for pipe insulation have been harmonized with the Plumbing Code, an ambiguity regarding insulation of heat pump lines has been corrected, and the requirements for protecting insulation have been standardized between residential and nonresidential piping.

- Demand Responsive Controls – Requirements throughout Part 6 for demand responsive thermostats and lighting controls have been consolidated into one location in Part 6.

- Joint Appendix 1 – Definitions that are redundant with the definitions in Part 6 have been removed.

- Joint Appendix 2 – This Appendix has been amended to allow use of GIS software tools in determining climate zone, and to move the zip code list into a document that can be updated between code revisions.

- Joint Appendix 5 – This Appendix has been rewritten for clarity.

- Joint Appendix 7 – This Appendix has been augmented to more clearly specify the requirements applicable to data registries and external data sources and to do so at a greater level of detail.

- Residential and Nonresidential Appendices – The sections relating to Third Party Quality Control Programs (TPQCPs) have been revised for clarity.

D. Policy Statement Overview

The benefits anticipated from adopting these amendments to Title 24 Part 6 support a myriad of State policy goals, including goals of improving California's economy, reducing pollution and carbon emissions, improving energy security, reducing consumption of imported fuels and nonrenewable resources, maximizing the benefit provided by California's energy infrastructure and minimizing the need for additional energy infrastructure spending.

Energy efficiency allows each unit of generated energy to go farther and do more, which slows the growth in demand for new energy production. Reducing this growth in demand also reduces the strain growth places on California's energy grid, and where demand is met by nonrenewable fuels, reduces the rate at which we consume these fuels, the cost of procuring these fuels, and the amount of pollutants released as these fuels are consumed. Lastly, reducing this growth also reduces the costs of transitioning California to renewable energy resources.

These avoided upstream costs, and the associated monetary savings to consumers in lower monthly energy bills, frees up capital to flow through other areas of California's economy and improve the State's overall economic health.

IMPORTANT NOTE: These proposed changes are discussed in more detail in the Initial Statement of Reasons that is being published simultaneously with this NOPA.

Specific Benefits Anticipated from the 2019 Standards

The proposed Standards are expected to save California residents and businesses hundreds of millions of dollars in energy costs over the next decade. These energy savings also benefit the environment due to the reductions in natural resource utilization and greenhouse gas emissions from energy production. The non-monetary benefits of the proposed Standards include more reliable ventilation and better thermal comfort for the health and welfare of building occupants. The proposed Standards also increase transparency in government by improving the clarity and increasing the simplicity of the Standards. In addition, the proposed Standards will help residential and nonresidential buildings achieve California's zero net energy goals.

Documents incorporated by reference into the 2019 Standards

The Energy Commission proposes to incorporate the following documents by reference:

Source / Reference #	Title	Version / Publication Date	Available From
JA1-12, NA1-7, RA1-4	Title 24, Part 6 Reference Appendices	2019	California Energy Commission 1516 9th Street Sacramento, CA 95814 www.energy.ca.gov
ACM	Alternate Calculation Method Approval Manual	2019	
ANSI/AMCA Standard 500-D	Laboratory Methods of Testing Dampers For Rating	2012	American National Standards Institute 25 West 43rd Street, 4th Floor New York, NY 10036 (212) 642-4900 https://www.ansi.org/
ANSI Z9.5	Laboratory Ventilation	2012	
AHRI 550/590	Performance Rating of Water Chilling Packages Using the Vapor Compression Cycle	2015 with Addendum 1	Air-Conditioning and Refrigeration Institute 4301 North Fairfax Drive, Suite 425 Arlington, Virginia 22203 (703) 524-8800 http://www.ahrinet.org/
AHRI 680	Performance Rating of	2015	

	Residential Air Filter Equipment		
ASHRAE Standard 52.2	Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size	2017	ASHRAE 1791 Tullie Circle N.E. Atlanta, Georgia 30329-2305 www.ashrae.org
ASHRAE Standard 62.1	Ventilation for Acceptable Indoor Air Quality	2016, including Addenda K	
ASHRAE Standard 62.2	Ventilation and Acceptable Indoor Air Quality in Residential Buildings	2016, including Addenda b, d, l, q, and s	
ASTM E903	Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres	2012	American Society for Testing and Materials 100 Bar Harbor Dive West Conshohocken, Pennsylvania 19428-2959 (800) 262-1373 or (610) 832-9585 https://www.astm.org/
ASTM E1175	Standard Test Method for Determining Solar or Photopic Reflectance, Transmittance, and Absorptance of Materials Using a Large Diameter Integrating Sphere	2015	
CTI ATC-106	Acceptance Test Code for Mechanical Draft Evaporative Vapor Condensers	2011	Cooling Technology Institute 2611 FM 1960 West, Suite A-101 Houston, Texas 77068-3730 or PO Box 73383 Houston, Texas 77273-3383 (281) 583-4087 https://www.cti.org/
OpenADR 2.0a	OpenADR 2.0 Profile Specification, A	2011	OpenADR Alliance 16820 Jackson Oaks Drive, Suite 1A

	Profile		Morgan Hill, CA 95037 (408) 778-8370 https://openadr.memberclicks.net
OpenADR 2.0b	OpenADR 2.0 Profile Specification, B Profile	2015	

All of these documents will be made available for review at the Energy Commission during the rulemaking action, and will continue to be available in the future by contacting the agency contacts identified in this Notice. All of these documents are also available directly from the publishing entities, as described in the table above. All available contact information, including internet addresses, physical addresses, and phone for these entities has been provided where possible.

These documents are incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not needed because the interested audience for these documents includes only the technical and engineering staff employed by builders, local building departments, and environmental groups, most of whom are already familiar with these methods and documents.

COMPARABLE FEDERAL STATUTES OR REGULATIONS

There are no federal energy standards applicable to nonfederal buildings within the scope of Title 24 Part 6. (The current and proposed California Standards do, however, reference federal energy standards for particular *appliances*.) Therefore, the proposed regulations do not differ substantially from existing, comparable federal regulations or statutes, as no such regulations or statutes exist.

CONSISTENCY AND COMPATIBILITY WITH EXISTING STATE REGULATIONS

The Energy Commission has conducted an evaluation for any other regulations that are applicable to buildings within the Scope of Title 24, Part 6 and for which energy efficiency standards apply, and has concluded that the proposed regulations are neither inconsistent nor incompatible with any other existing state regulations. In the few cases identified where other State or federal laws could potentially apply, specific language was added to the Express Terms to ensure consistency with applicable provisions of State and federal law.

OTHER MATTERS PRESCRIBED BY STATUTE APPLICABLE TO THE ENERGY COMMISSION, OR TO ANY SPECIFIC REGULATION OR CLASS OF REGULATIONS PROPOSED FOR ADOPTION

All of the laws applicable to the proposed Standards, primarily Public Resources Code Sections 25402 and 25402.1, are discussed above.

POTENTIAL MANDATES ON LOCAL AGENCIES OR SCHOOL DISTRICTS

The Energy Commission has determined that the proposed regulatory action would not impose a new mandate on local agencies. Existing law already obligates local building departments to serve as enforcement agencies for the Standards (see Public Resources Code Sections 25402(a)-(b), 25402.1). Existing law already requires compliance with the Standards as they apply to school buildings, and all other buildings, owned by local agencies (see California Code of Regulations, Title 24, Part 1, Chapter 14, Administrative Regulations for the Department of Education). While the proposed Standards add requirements for schools and other building types owned by local agencies, those requirements are the same as those applicable to all nonresidential buildings regardless of owner. Moreover, the proposed Standards recognize the unique characteristics of relocatable school buildings, and they establish procedures to facilitate compliance by relocatables. Finally, the Standards for schools, and for all other buildings, are cost effective, and they will thereby reduce the costs of building and operating school buildings over their useful life.

ESTIMATE OF COSTS OR SAVINGS

See the Economic and Fiscal Analysis (Form 399), published simultaneously with this NOPA, for complete details. To summarize:

A. ***Total statewide costs and benefits:*** The Standards are estimated to deliver $3,870 million in benefits at a cost of $2,170 million, for a cost-effectiveness ratio of 1.78 to 1.

B. ***Cost or savings to any state agency:*** Buildings owned and occupied by state agencies are required to comply with the Standards, as are all other nonresidential buildings. State agencies will benefit from reduced energy bills that more than pay for the costs of the Standards.

C. ***Cost to any local agency required to be reimbursed under Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code:*** The Standards do not result in new mandates to local agencies. Buildings owned and occupied by local agencies are required to comply with the Standards as any other nonresidential building. Local agencies will benefit from reduced energy bills that more than pay for the costs of the Standards.

D. ***Cost to any school district required to be reimbursed under Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code:*** School buildings are covered by the Standards, and the Administrative regulations of the Division of the State Architect require public school buildings to comply with the Standards. Costs of complying with the Standards are not required to be reimbursed. Schools benefit from reduced energy bills, and these reductions fully offset the costs of the Standards over time.

E. ***Other nondiscretionary cost or savings imposed on local agencies:*** The Standards do not result in new mandates to local agencies, and thus do not result in any costs or savings imposed on local agencies (excepting the indirect benefit of reduced building energy costs).

F. ***Cost or savings in federal funding to the state:*** While the Energy Commission does receive federal funding for the Building Standards program, the updates proposed to the Standards do not alter or affect the State's ongoing participation in federal funding programs. For this reason, the proposed updates will not result in either costs or savings in federal funding to the state, except that updating the Standards and continuing the Building Standards program allow the State to continue to receive and spend federal funding relating to this program.

INITIAL DETERMINATION OF NO SIGNIFICANT STATEWIDE ADVERSE ECONOMIC IMPACT ON BUSINESSES, DECLARATION OF EVIDENCE

The Energy Commission has completed an Economic and Fiscal Analysis and made an initial determination that the adoption of the proposed Standards will not have a significant statewide adverse economic impact on businesses, including the ability of California businesses to compete with business in other states, as is described in more detail below.

A. ***Identification of the types of businesses that would be affected.***

The Standards will require energy efficiency measures for all newly constructed buildings, but those measures are cost-effective, so businesses will experience a positive economic impact. Indirectly, the Standards will require changes in practice, and the retraining of employees, in businesses that are involved in the design and construction of buildings, in compliance analysis and documentation, and in field verification. Any costs attributable to such changes and retraining would be short-term, since the incremental cost increases for new technologies will not persist once these technologies become mainstream, and building practice changes requiring retraining will not result in ongoing cost increases. In any case, these incremental construction cost increases would ultimately be borne by the beneficiary of the Standards, the entity paying reduced energy bills.

B. ***A description of the projected reporting, record keeping, and other compliance requirements that would result from the proposed action.***

Most reporting, record keeping, and compliance duties associated with the Standards do not change. New acceptance requirements for nonresidential buildings will formalize and standardize documentation, but these requirements exist in a less structured way in the current Standards. Documentation authors who specify measures requiring field verification will need to notify a professional who will perform the acceptance tests, but this notification can be done by phone or electronically in very little time. Any such costs would, therefore, be insignificant, and to the extent they exist, would ultimately be borne by the beneficiary of the Standards, the entity paying reduced energy bills.

C. ***Evidence relevant to the Energy Commission's initial determination that the adoption of the proposed Standards will not have a significant statewide adverse economic impact.***

The basis for the Energy Commission's findings on economic impacts is that the Standards are cost-effective, and therefore will have a beneficial economic impact on the owners and occupants of buildings built to comply with the Standards. Evidence for the cost-effectiveness of the Standards requirements is contained in the "Documents Relied Upon" listed in the Initial Statement of Reasons and on the Energy Commission's website.

COST IMPACT ON REPRESENTATIVE PRIVATE PERSONS OR BUSINESSES

The Energy Commission has determined that energy bill savings in excess of compliance costs will be received by all private persons and businesses directly affected by the proposed Standards. The Energy Commission estimates that an average of $10,538 additional single family residential construction costs may result from the proposed Standards. This estimate is likely more than what will be realized, since it does not account for volume pricing or reductions in technology costs once these technologies are provided to a mass market. These costs are estimated to result in $16,251 in net present savings in avoided energy bill costs.

The Energy Commission estimates that the nonresidential Standards may result in an incremental construction cost of $10,280 for a 15,000 square foot building, slightly less than five percent of typical construction costs for this building size. This estimate is also substantially higher than what will likely be realized, due to the fact that this cost estimate includes all proposed changes to the nonresidential Standards, but an individual building built under these Standards will not need to include every new efficiency measure in the proposed Standards. These costs are estimated to result in $38,016 in net present savings in avoided energy bill costs.

Table 1 summarizes the expected costs and net present value energy bill savings for all new homes and buildings expected to be permitted in 2020.

Table 1. Summary of Statewide Costs and Energy Bill Savings

Sector	Statewide Measure Costs	Statewide Energy Bill Savings	Statewide Net Savings
Residential	$1,950 Million	$3,050 Million	$1,100 Million
Nonresidential	$220 Million	$820 Million	$600 Million
Total	$2,170 Million	$3,870 Million	$1,700 Million

ASSESSMENT OF THE EFFECTS OF THE PROPOSED STANDARDS ON JOBS AND BUSINESS EXPANSION, ELIMINATION, OR CREATION

The Energy Commission has made a preliminary assessment on whether, and if so to what extent, the proposed Standards will affect the following:

A. ***The creation or elimination of jobs within the State of California.***

Jobs will not be eliminated; the benefits to energy efficiency slow the growth in demand anticipated for California's rising population and growing economy, and are not sufficient to cause total demand for energy to decline. In addition, California's investor-owned utilities are reimbursed for successful deployment of energy efficiency, so that the avoided consumption by consumers is not imposed as a cost upon these utility companies.

It is possible that new jobs may be created as a result of the new compliance procedures. In addition, because the Standards will save hundreds of millions of dollars in energy costs, there will be more money in the economy that can be used for job creation.

B. ***The creation of new businesses or the elimination of existing businesses within the State of California.***

Businesses will not be eliminated. It is possible that new businesses will be created to provide field verification and other compliance services, and to supply energy efficiency products.

C. ***The expansion of businesses currently doing business with the State of California.***

It is likely that businesses currently doing business in California to provide energy-efficiency products and services, as well as sale and installation of solar photovoltaic systems, will be expanded.

D. ***Benefits of the proposed standards to the health and welfare of California residents, to worker safety, and to the state's environment.***

The proposed Standards modify existing field verification tests, add new verification tests, and add new equipment specifications that will improve ventilation system installations and operations. This will benefit the health and welfare of building occupants, who are typically California residents, as well as workers in these buildings. The proposed Standards should have no effect on worker safety. The increases in energy and water efficiency stringency in the proposed Standards will benefit California's environment by reducing the consumption of natural resources and the greenhouse gas emissions that the use of these resources generate.

FINDING OF NECESSITY FOR THE PUBLIC's HEALTH, SAFETY, OR WELFARE

The proposed Standards require a report as described in the "Initial Determination of no Significant Statewide Adverse Economic Impact on Business, Declaration of Evidence" section of this document. It is necessary for the health, safety, or welfare of the people of the state that the proposed Standards apply to businesses.

INITIAL DETERMINATION OF SIGNIFICANT EFFECT ON HOUSING COSTS

The Energy Commission has made an initial determination that the proposed Standards would have a significant effect on housing costs, as described in the Cost Impacts section above. The initial costs of housing construction will rise, but homeowners and occupants will be the beneficiaries of energy bill savings substantially in excess of the marginal increase in initial costs, so the net result will be more affordable housing.

A detailed analysis of the estimated costs and benefits of the proposed regulations is available in the Economic and Fiscal Impact Statement accompanying the Initial Statement of Reasons for this rulemaking.

CONSIDERATION OF ALTERNATIVES

The Energy Commission has made a preliminary determination that no reasonable alternative considered by it, or that has otherwise been identified and brought to its attention, would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law.

A rulemaking agency must determine in the Final Statement of Reasons that no reasonable alternative considered by the agency or that has otherwise been identified and brought to the attention of the agency would be more effective in carrying out the

purpose for which the action is proposed, would be as effective and less burdensome to affected private persons than the proposed action, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

AVAILABILITY OF RULEMAKING DOCUMENTS

All of the information on which the proposed Standards are based is contained in the rulemaking file, which is available for public review at the Energy Commission's Dockets Office, by contacting the persons named below, or on this website: http://www.energy.ca.gov/title24/2019standards/.

This notice, the express terms, and the initial statement of reasons can also be accessed from the California Building Standards Commission website: http://www.bsc.ca.gov/

Documents incorporated by reference that are subject to copyright can be inspected on-site at the Energy Commission by contacting the Energy Commission contact persons named below.

If the proposed Standards are adopted, interested parties may obtain a copy of the Final Statement of Reasons once it has been prepared either by going to this website, or by making a written request to the contact person named below.

CONTACT PERSON FOR PROCEDURAL AND ADMINISTRATIVE QUESTIONS

Questions on procedural and administrative issues should be addressed to:

Adrian Ownby
CALIFORNIA ENERGY COMMISSION
1516 Ninth Street, MS-25
Sacramento, CA 95814
(916) 651-3008
Email: adrian.ownby@energy.ca.gov

CONTACT PERSONS FOR SUBSTANTIVE AND TECHNICAL QUESTIONS

Questions on the substantive content of the NOPA, ISOR, Express Terms, and other rulemaking documents, including technical questions regarding proposed amendments to regulation, should be addressed to:

Payam Bozorgchami, PE
CALIFORNIA ENERGY COMMISSION
1516 Ninth Street, MS-37
Sacramento, CA 95814
(916) 654-4618
Email:
payam.bozorgchami@energy.ca.gov

or

Peter Strait
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1516 Ninth Street, MS-37
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(916) 654-2817
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PUBLIC PARTICIPATION

For assistance in participating in the rulemaking proceeding, please contact the Energy Commission's Public Adviser's Office, at (916) 654-4489, toll free at (800) 822-6228, or by email at publicadviser@energy.ca.gov.

If you have a disability and require special accommodations to attend or participate in a hearing, please contact Poneh Jones at (916) 654-4425 or by email at poneh.jones@energy.ca.gov five days before the hearing.

FINAL STATEMENT OF REASONS

If the proposed amendments are adopted, the Energy Commission will prepare a Final Statement of Reasons. This document will update the Initial Statement of Reasons and respond to public comments. It will be posted on the Energy Commission's website for this proceeding described below, and will be distributed to interested persons subscribed to the Building Standards list-server described above. This document may also be obtained after the conclusion of the rulemaking by contacting Adrian Ownby at (916) 651-2915 or by email at adrian.ownby@energy.ca.gov.

WEBSITE INFORMATION

This NOPA, the Initial Statement of Reasons, the Express Terms, any 15-Day Language issued subsequently, and all other relevant rulemaking documents can be accessed at the Energy Commission's website at:
http://www.energy.ca.gov/title24/2019standards/

Mailing Date: January 19, 2018