

BLUEPRINT

EFFICIENCY DIVISION

SEPTEMBER - OCTOBER 2013

The 2013 Standards Will Go Into Effect January 1, 2014

The Blueprint is your guide to information, training and resources for the 2013 Building Energy Efficiency Standards. The California Energy Commission has partnered with the Statewide Codes & Standards Program to provide training and resources for building officials. California's building energy code can help save energy, keep our air cleaner and offset the need to build new power plants. We understand it can be quite technical and difficult to navigate new standards, especially when time and resources are limited.

The Statewide Codes & Standards Program offers free energy code training, tools and resources for building department personnel, as well as others who need to understand and meet the requirements of Title 24, Part 6. Designed to improve compliance with the state's building energy code, the program aims to

advance the adoption and effective implementation of energy efficiency measures and building practices to lock in long-term energy savings. The program recognizes that codes and standards are one of the most effective pathways to ensuring sustained market transformation. The key to making them work well is found in the enforcement efforts of building department professionals. Program offerings are designed for counter staff, plans examiners, field inspectors and building officials.

The California Statewide Codes & Standards Program is funded by California utility customers under the auspices of the California Public Utilities Commission and implemented by Pacific Gas and Electric Company, San Diego Gas and Electric, Southern California Edison and Southern California Gas, in support of the California Energy Commission.

Fall 2013 Classroom Trainings Offered

- ▶ Title 24 Residential *or* Nonresidential Standards Essentials for Plans Examiners & Building Inspectors
- ▶ Residential Lighting: Title 24 & Technology Update
- ▶ Retail Lighting: Title 24 and Technology Update
- ▶ Title 24 Standards Essentials for Supermarket Refrigeration
- ▶ Title 24 Standards Essentials for Residential AC Quality Installation Contractors
- ▶ Title 24 Standards Essentials for Small Commercial AC Quality Installation Contractors

Courses are offered at utility energy training centers and at special locations upon request. For more information please email wendy@mbaenergy.com. For scheduled classes, check these energy center websites to register:

- ▶ <http://www.pge.com/pec>
- ▶ <http://www.sdge.com/eic>
- ▶ <http://www.socalgas.com/innovation/energy-resource-center>
- ▶ <https://www.sce.com/wps/portal/home/business/consulting-services/energy-education-centers>

Decoding: Let's Talk Series for Building Officials

Utilize these FREE 90-minute interactive online events to discuss and decode Title 24 Part 6 Nonresidential Indoor Mandatory Lighting Controls. These webinars will help you with Field Inspection preparation, time management, and dealing with non-compliant projects.

Decoding Lighting: Let's Talk Nonresidential Indoor Mandatory Lighting Controls for Building Inspectors

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| <input checked="" type="checkbox"/> November 12, 8:00am – 9:30am
http://t24.cc/DecodeLightingNov12AM | <input checked="" type="checkbox"/> November 13, 8:00am – 9:30am
http://t24.cc/DecodeLightingNov13AM |
| <input checked="" type="checkbox"/> November 12, 3:00pm – 4:30pm
http://t24.cc/DecodeLightingNov12PM | <input checked="" type="checkbox"/> November 13, 3:00pm – 4:30pm
http://t24.cc/DecodeLightingNov13PM |
| | <input checked="" type="checkbox"/> November 14, 8:00am – 9:30am
http://t24.cc/DecodeLightingNov14 |

For more information on the Statewide Codes and Standards Program, please contact Jill Marver at JKZ1@pge.com.

Free Tools and Resources

In addition to trainings, the program provides free tools and resources to help make complying with Title 24 easier and more efficient. These can be found at www.t24ace.com and include:

- ▶ **Fact Sheets & Trigger Sheets** - Residential HVAC Changeouts, Cool Roofs Residential Re-Roofing, Residential Fenestration, and Commercial HVAC Alterations
- ▶ **Reference Ace** - helps you navigate the Title 24, Part 6 Standards documents using key word search capabilities along with hyperlinked tables and related sections. *2008 available now, 2013 coming soon!*
- ▶ **Forms Ace** – aids in determining which Title 24, Part 6 Forms are applicable to your specific projects using a series of questions in order to determine the appropriate forms. *2008 beta available now, 2013 coming soon! Feedback encouraged – let us know what you think.*
- ▶ **Installation Ace (Coming Soon)** – a “field guide” to assist you in identifying proper installation techniques related to Title 24, Part 6 components and includes visual aids for some components that are commonly improperly installed.

2013 Energy Standards documents are available online at www.energy.ca.gov/title24/2013standards/supporting_docs.html

What's New for 2013 Non-Residential

The process to develop the 2013 Standards began with a call for ideas in winter of 2010, moved through a series of IOU sponsored stakeholder meetings throughout the state, Energy Commission staff workshops and Energy Commission hearings in 2011 through 2012 and concluded at the adoption hearing on May 23, 2012. Energy Commission staff, contractors, utilities and many others participated in the process. The following paragraphs summarize the principle changes that resulted.

All Buildings

Revisions to the administrative §10-103 sets the format and informational order for electronic compliance document registration and submittal and for electronic retention of compliance documentation, including the nonresidential forms, for future use and clarifies the roles and responsibilities of the documentation author and the responsible person.

1. §10-109 describes the rules for approving compliance software, alternative component packages, exceptional methods, data registries and related data input software, or electronic document repositories.
2. §10-111 describes the rules for reporting fenestration U-factor, SHGC, and VT.
3. §110.3(c)5 explains the requirements for the water heating recirculation loops serving multiple dwelling units, high-rise residential, hotel/motel, and nonresidential occupancies.
4. Revisions to §110.9 now covers ballasts and luminaires and residential vacancy sensors.

Non-Residential Buildings

Envelope

1. Increased low-slope cool roof requirements (increase reflectance from 0.55 to 0.63 for new construction and alterations). (§140.3(a)1Aia1)
2. Established a maximum air leakage rate (0.04 cfm/sf) except in mild climate zones. (§140.3(a)9B)
3. Increased fenestration requirements to reduce solar gains and increase visual transmittance for daylighting; 0.36 U-factor, 0.25 SHGC, VT 0.42 for fixed windows; the numbers are different for operable windows and skylights. (§140.3(a)5B,C & D)
4. Fenestration. The Standards now include Dynamic Glazing, Window Films and new maximum values for Visible Transmittance (VT). New Dynamic Glazing, Window Films requirements and changes are in the Reference Nonresidential Appendix NA6 and NA7.4

5. Added mandatory Roof insulation requirements and minimum insulation for demising walls. (§110.8(e) & (f))

Lighting

1. Clarification and simplification of existing language; removing exceptions no longer relevant. (§130.0-130.5, 140.6-140.8)
2. Lighting control devices moving from Title 24 Part 6 to Title 20; lighting control systems shall now be acceptance tested for Title 24. (§110.9(b) & §130.4(a))
3. Nonresidential indoor lighting, advanced multi-level lighting controls (controllable ballasts) increased in granularity (in addition to ON/OFF, increasing from one intermediate level to three intermediate levels or continuous dimming), favoring dimmable ballasts for linear fluorescent lighting systems. These controls will allow precise and non-interruptive adjustment of lighting to match the available daylighting, and provide dimming and demand response function

- throughout the building. (§130.1(a) 2C) & §130.1(b)
4. Enhancing, modifying, and adding to the prescriptive and mandatory daylighting control requirements; daylighting language significantly simplified. (§130.1(d) & (§140.6(d))
 5. Requirements for demand responsive reduction of lighting power being applied to smaller spaces. (§130.1(e))
 6. Mandatory Automated Lighting Controls and Switching Requirements in Warehouses and Libraries - Require the installation of occupancy sensors in warehouse aisle ways and open spaces, and library stack aisles. (§130.1(c)6A & B)
 7. Mandatory automated lighting controls and switching requirements for hotels and multifamily building corridors - Require the installation of occupancy sensors in corridors and stairwells in lodging and multifamily buildings. (§130.1(c)6C)
 8. New mandatory occupancy sensor and daylighting controls in parking garage spaces. (§130.1(d)3)
 9. Increased requirements for multi-level lighting controls for nonresidential outdoor lighting. (§130.2(c)3B)
 10. Alternate path to comply with existing outdoor lighting cutoff (shielding) requirements, phasing in the new Backlight, Uplight, Glare (BUG) requirements. (§130.2(b))
 11. Reduction of allowed lighting power density for some nonresidential indoor and outdoor lighting applications. (§140.6(c) and §140.7(d))
 12. Tailored lighting revisions - Reduce the allowed LPD for Floor Display, Wall Display, and Ornamental Lighting under the Tailored Compliance. §140.6(c)3I, J & K)
 13. Plug Load Circuit Controls - requiring automatic shut-off controls of electric circuits that serve plug loads, including task lightings, in office buildings. (§130.5(d)1)
 14. Hotel/Motel Guest Room Occupancy Controls for HVAC and lighting systems - would require installation of occupancy controls for HVAC equipment, and all lighting fixtures in hotel/motel guest rooms, including plug-in lighting. (§120.2(e)4 & §130.1(c)8)
 15. Reduction of threshold when lighting alterations must comply with the Standards, from when 50% of the luminaires are replaced, to when 10% of the luminaires are replaced. Consistent with proposed changes to ASHRAE 90.1- 2010. (§141.0(b)2I & J)
- ### Mechanical
1. Added requirements for Fan Control and Integrated Economizers. Packaged units down to 6 tons must be VAV with the ability to modulate cooling capacity to 20% of maximum. Economizers must also be able to modulate cooling capacity to match VAV units. (§140.4(c) & (e))
 2. Reduced ability for HVAC systems to reheat conditioned air. (§140.4(d))
 3. Increased chiller efficiency requirements, consistent with ASHRAE 90.1-2010. (§140.4(i))
 4. Increased cooling tower energy efficiency and WATER Savings. (§140.4(k)2)
 5. Added requirements for commercial boiler combustion controls. (§140.4(k)3)
 6. Added acceptance tests for HVAC sensors and controls, including those for demand controlled ventilation. (§120.5(a))
 7. Added efficiency requirements for small motors. (§140.4(c)4)
 8. Added credit for evaporative systems that meet the Western Cooling Efficiency Challenge (WCEC program to acknowledge high energy and water efficiency in evaporative systems).
 9. Moving Fault Detection and Diagnostics (FDD) protocols for air temperature, economizers, damper modulation, and excess outdoor air to mandatory measures from the current compliance option. (§120.2(i))

2013 Energy Standards documents are available online at www.energy.ca.gov/title24/2013standards/supporting_docs.html

Electrical

1. Added mandatory requirement for receptacle controls in private offices, open office areas, reception lobbies, conference rooms, kitchens, and copy rooms to automatically shut off task lighting and other plug loads when the area is not occupied. (§130.5(d))
2. Added mandatory requirement for electrical panels to be isolated by energy end use (e.g. lighting, HVAC, plug loads). (§130.5(b)2)

Covered Processes

The 2013 Standards now cover some specific process energy applications, such as supermarket refrigeration, refrigerated warehouses, commercial kitchen ventilation requirements, laboratory exhaust, parking garage ventilation, compressed air, and computer rooms.

Definitions for Covered Processes and Exempt Processes were added. Covered Processes are defined as processes for which there are listed requirements. All other processes are Exempt Processes. Specific requirements for Covered Processes are in separate sections (§120.6 Mandatory and §140.9 Prescriptive). It should be noted that the HVAC equipment efficiencies in §110.1 and §110.2 also apply to Covered Processes. In the 2013 Standards, the Covered Processes include:

1. Increased mandatory requirements for refrigerated warehouses. (§120.6(a))
2. Added mandatory requirements for commercial supermarket refrigeration. (§120.6(b))
3. Added mandatory ventilation control requirements for parking garages. (§120.6(c))
4. Added mandatory requirements for process boilers. (§120.6(d))

5. Added mandatory requirements for storage and unloading for compressed air systems (§120.6(e))
Added prescriptive requirements for HVAC systems serving computer rooms. (§140.9(a))
6. Added prescriptive ventilation control requirements for commercial kitchens. (§140.9(b))
7. Added prescriptive requirements for variable air volume for laboratory exhaust systems. (§140.9(c))

Solar Ready

1. Added mandatory requirements for nonresidential buildings (3 stories or less) to make provisions to more easily enable the future addition of solar electric or solar water heating systems. (§110.10(a)4)

Commissioning

1. Moved Part 11 commissioning requirements to Part 6 for energy-related building components. (§120.8)
2. Added mandatory requirements for design-phase commissioning, which includes an early review of design intent documents and highlighting efficiency specifications in both construction documents and Standards compliance forms. (§120.8(d))

Compliance Option

Hybrid Evaporative Cooling Systems in Nonresidential Buildings

What's New for 2013 Residential

All compliance approaches

1. Revisions to the administrative section §10-103 sets the format and informational order for electronic compliance document registration and submittal and for electronic retention of compliance documentation for future use and clarifies the roles and responsibilities of the documentation author and the responsible person; §10-109 describes the rules for approving compliance software, alternative component packages, exceptional methods, data registries and related data input software, or electronic document repositories. §10-111 describes the rules for reporting fenestration U-factor, SHGC, and VT.
2. §110.3(c)5 explains the requirements for the water heating recirculation loops serving multiple dwelling units, high-rise residential, hotel/motel, and nonresidential occupancies.
3. Revisions to §110.9 now covers ballasts and luminaires and residential vacancy sensors.

Mandatory Measures

1. Duct sealing in all climate zones (CZs). (Section 150.0(m)11)
2. Return duct design or fan power, airflow testing, and grill sizing requirements (Residential HVAC Quality Installation Improvements). (Section 150.0(m)13)
3. Lighting – Improving and clarifying the mandatory lighting requirements for all residential buildings including kitchens, bathrooms, dining rooms, utility rooms, garages, hall ways, bedrooms, and outdoor lighting. (Section 150.0(k))
4. New luminaire efficacy levels in Table 150.0-B
5. Hot water pipe insulation - Requires insulation on pipes $\frac{3}{4}$ inch and larger. (Section 150.0(j)2Aii)
6. Solar Ready Measure – 250 square feet of solar ready zone on single family roofs in subdivisions of 10 or more dwelling units. (Section 150.0(r))
7. Walls with 2x6 framing and larger must have at least R-19 insulation. (Section 150.0(c)2)
8. New mandatory U-factor of 0.58 for vertical fenestrations products and skylights. (Section 150.0(q))
9. New third party HERS verifications requirement for Ventilation for Indoor Air Quality, ASHRAE 62.2 requirements. (Section 150.0(o))

Prescriptive Compliance

1. High Performance Windows – Reducing the U-Factor to 0.32 and SHGC to 0.25 in most climate zones. (Section 150.1(c)3A)
2. Duct Insulation – Raise minimum from R-4.2 to R-6.0 in climate zones 6, 7, and 8. (Section 150.1(c)9)
3. Night Ventilation – Whole house fan required to be installed in climate zones 8 through 14; a Smart Vents and Night Breeze allowed as performance path alternatives. (Section 150.1(c)12)
4. Expand the Radiant Barrier requirements to climate zones 3, and 5 through 7. (Section 150.1(c)2)
5. Refrigerant charge and verification now expanded to include ducted package units, mini-splits, and other units. (Section 150.1(c)7)
6. Increase wall insulation to R15+4 in all CZs. (Section 150.1(c)1B)

Performance Compliance

The modeling procedures and requirements for compliance software have been significantly modified for the 2013 Standards. All compliance software vendors must use a single modeling approach and a single interpretation of the performance compliance rules. This “Compliance Manager” software will be integrated into vendor-supplied compliance software that is certified by the Energy Commission. More information is available in the 2013 Residential ACM Approval Manual and the 2013 Residential ACM Reference Manual.

Additions and Alterations

1. Simplified Compliance documentation requirements for small additions and alteration projects that do not involve a HERS measure. (Section 10-103(a)1C and Section 10-103(a)3C)
2. Simplified rules for both the prescriptive and performance paths for additions, alterations, and existing plus additions plus alterations. (Section 150.2(a) and (b))

The California Energy Commission welcomes your feedback on the Blueprint. Please contact Daniel Johnson at (916) 651-3746 or daniel.johnson@energy.ca.gov.

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