Minutes of the March 11, 2016 Chapter Meeting

President Scott Byrnes called the meeting to order at 1075 West Capitol Ave, West Sacramento at 10:03 and welcomed everyone for coming. Randy Goodwin welcomed everyone for coming and covered typical housekeeping. Flag salute was led by Greg M and self-introductions followed.

The February minutes were approved as submitted.

BOARD REPORTS:

Secretary/Treasurer Report:
Chapter Secretary/Treasurer, Greg Anderson reported as of February 29th we have a balance of $44,275.31 which is down $10,975.38 from January, this is mainly attributed to rental fees paid for the Minstitute which will be held in May, we should see funds return through the class registration fees throughout March and April. The total will be filed for audit.

Vice Presidents Report:
Chapter Vice-President, Scott Zangrando was not present, Scott Byrnes commented on the following: Next meeting will be held in the City of Rancho Cordova on April 8th, Michael Devaney with Owen & Corning and he will be the speaker regarding cool roofs and radiant barriers. We will also have a short presentation from Mark Woods regarding a new CASP program. RSVP’s this month look pretty good, looks like we had 25. The 50/50 Raffle is up to $ 30

Presidents Report:
Chapter President, Scott Byrnes commented on the following: Website, a lot of the information is outdated, looks like it stopped around 2013. We are working on getting that information updated, Yelena thinks she has all the information regarding past award winners and other missing information and will update as soon as possible. We will also be posting the SVABO board meeting minutes on the web site, I am not aware that it has been done in the past, we discussed it in our board meeting this morning and decided they should be posted on the website. Greg M, stated he had been on many of the other chapter web sites lately and ours by far is the most up to date he has seen. Scott B- when Susan D was at our meeting in January she made comment about our chapter and was impressed with all the interaction. Speaking of Susan, ICC has a lot of information on their website in regards to Building Safety Month in May, you all should take a look at it, they have Proclamation’s that can be made specific for you jurisdiction. CALBO ABM is next week, should be a good time, they will be having dinner on the Midway.

Past Presidents Report:
Randy Goodwin last Wednesday the seismic safety commission held a workshop to discuss the good and bad things that happened during the Napa earthquake. It was
discussed that every jurisdiction should have at least one person certified as a coordinator through OES.

**Code Quiz:**

Presented by Ken, see questions and answers

Attachment #1

Committee Reports:

**Code Development Committee:**
Code Development Committee Chair, Jay Hyde-See, see March 11th, meeting agenda

Attachment # 2

**Education Committee:**
Education Committee Chair, Steve Burger- we have an Intermediate Permit Technician class coming up which will cover some basic over the counter plan review. We have an Electrical Bonding and Grounding class on April 14th. We will be offering some classes in the early fall regarding the existing building code. We have the minstitute that will be held in Citrus Heights May 2nd through May 5th

See Attachment # 3

Scott B- Thanks to everyone on the education committee, you are doing a wonderful job.

**Outreach committee:**
Mike V- our last meeting was on 2-23, the main topic of discussion was the difficulty finding staff, seems to be a dwindling supply but our work loads are continuing to expand as the economy looks a little better. A number of things we talked about was the ICC High School Program, Consumes River College programs and their curriculum, possible currier night, community outreach programs that offer adult classes such as at the Parks & Recreation’s within your jurisdictions, maybe we can offer free classes. Our main focus this year is how to get the word out to expand our profession. Greg M- we have a meeting March 25th from 10am to 11:30 at Consumes River College with Dean Bob Johnson to discuss the industry needs for more classes, it would be great if any of you can attend to give your input. Michael V- if you can’t make it but have comments you would like us to move forward on your behalf please contact me, Greg or Andrea and we will ensure that information is moved forward. Greg M- Bob Johnson is looking for feedback from the people that will be hiring these students.

**Scholarship Committee:**
Jim Mangino—During the SVABO board meeting this morning there was a motion made to approve changes to the eligibility requirements of the Jack Atkins scholarship, the motion was approved, the applications will be available on the website soon.
Permit Technician Ad-Hoc Committee:
Steve Burger – next meeting will be March 23rd in Folsom, the City arborist will be speaking on MENWELLO. Michelle will talk about Facebook and LinkedIn accounts.

PASS Ad-Hoc Committee:
Randy G - LA Basin has had a lot of questions about PASS & Permit Simplicity. Scott B - Roseville had our first PASS submittal this last week, there was some confusion and a few comments but overall went pretty well.

Installation dinner committee:
Andrea Coley - The installation dinner will be held in Lincoln again this year at McBean Park December 3rd. Ken W - asked about whether we wanted to keep the DJ or not, he did not see very many people dancing at the event. Majority was in favor of keeping the music.

Agency reports:

CALBO Report:
Shane M - Ed weeks this year will be concentrated on code changes. Shane announced he will be running for the board at CALBO.

CEC:
Chris O - discussed some of the changes for 2016 and covered some items in the March Blueprint, also mentioned the CEC will have a booth at the CALBO ABM
See attachment #4

HCD:
Greg M - the committee for disability approved language to add backing in bathroom showers and at water closets, there will also be tier 1 and tier 2 requirements for disability.
Greg talked about issues with the Energy Standards and the letter he has been drafting, Randy G - commended Greg for his efforts on leading the charge regarding difficulties jurisdictions are having in regards to enforcement and documentation. Chris O - it’s always good to hear from the enforcing agencies.

ICC:
Nancy S - talked about Building Safety Month and what information and tools are available on the ICC website, mentioned that a proclamation is available through ICC and also that SVABO has a proclamation on the website

CSLB:
Nancy S — CSLB will be at the ABM Tuesday night and I will introduce then on Wednesday morning, there has been a lot of discussion about the proposed new contractor classification.

Old Business:
Scott B - the board has been discussing how to change the bylaws regarding how to provide more clarification on procedures when changes may be required. We are
looking at adding a new standing committee, the way the bylaws are currently written it is a very extensive process to make a change, we do want to make the process too easy to make changes, but the process does need to be clarified and possibly amended.

New Business:
Nancy S-asked what the chapter would like to have as a program for the September chapter meeting in Butte County. Scott B- we are still short on a few programs for this year, if anyone has any ideas please forward them to Greg A, Scott Z or myself

Announcements:
Andrea C-we have been passing around the committee sign-up sheets, they are on the table here at each meeting, your participation and input in the committees is important. On another note, I want to mention I forgot my badge today so I am putting in a dollar. Scott B- we are on the honor system here, so just think about karma if you don’t come up with your dollar.
Randy G- complemented Chando’s catering

50/50 Raffle:
Michael V- we have $30 and $15 goes to Jim M, Jim said he would donate it back to the chapter.

Next Meeting:
Scott B—next meeting will be on April 8th in Rancho Cordova, 2729 Prospect Park Dr

Speaker:
Scott B- CEC will be giving the presentation
See Attachment # 5

Meeting adjourned

Respectfully Submitted
Greg Anderson
SVABO Secretary/Treasurer
CODE QUIZ
March 2016

1) According to the 2013 California Residential Code Section 303.1, a living room is required to have a minimum of 4% of openable glazing area except:
   a. If a whole-house ventilation system is installed in accordance with the California Mechanical Code
   b. An approved air purifier is installed in accordance with the California Mechanical Code
   c. In climate zones 6, 7 and 8
   d. If a bath fan has been installed to run continuously

2) HGTV wants to build a “Tiny Home” for a family of Leprechauns in your community. The Tiny Home contains a very small shower compartment. According to the 2013 California Plumbing Code Section 408.6, the minimum size of the shower compartment in a dwelling must be___________.
   a. 36 inches by 36 inches
   b. 24 inches by 24 inches
   c. 32 inches by 24 inches
   d. 32 inches by 32 inches

3) According to Information Bulletin 2016-01 produced by HCD dated February 4, 2016, Tiny Homes__________________:
   a. must meet all the requirements of the 2013 Residential Code
   b. must meet all the requirements of Factory Built Housing
   c. must meet all the requirements of a HUD-Code Manufactured Home
   d. can be of any size or type of construction if they comply with R301.1.1.1 Alternate provisions for limited-density owner-built rural dwellings
   e. All of the above

4) O’Malley’s Tavern wants to convert an existing attached shade structure to interior space at the rear of their building to provide more seating area for their St. Patty’s Day celebration. According to the 2013 California Building Code Section 903.2.1.2 the building must have an automatic sprinkler system if___________.
   a. the entire space including the addition has an occupant load over 50
   b. the new addition is more than 1,000 square feet
   c. the fire area exceeds 12,000 square feet
   d. the fire area exceeds 5,000 square feet
   e. None of the above

5) According to Assembly Bill 1236 which Governor Brown signed October 8, 2015, jurisdictions with populations of under__________must have an ordinance regarding streamlining Electric Vehicle Charging stations in place by______________.
   a. 100,000, December 31, 2016
   b. 200,000, September 30, 2017
   c. 200,000, September 30, 2016
   d. None of the above this bill did not pass
REPORT TO MEMBERSHIP
SVABO CODE DEVELOPMENT AND REVIEW COMMITTEE
MARCH 11, 2016

1. ACTIVE COMMITTEE MEMBERS
   a. Members Present: George Kellogg, Randy Goodwin, Murray McCool, Jay Hyde Todd Morgan

2. ADDITIONAL DISTRIBUTION
   a. Greg Mahoney, Tim Sullivan, Scott Zangrando, Scott Brynes, Ron Beehler, Michael Vieira, Andrea Cooley, Ylena Martynovskaya, Brad Wingluck.

3. MEETING SCHEDULE FOR 2016
   a. The Committee decided to maintain the current Schedule of meeting at 8:00 AM on the fourth Friday every other month at Mogavero Architects 2012 K Street, Sacramento, CA.
   b. Meeting Schedule:
      i. March 25, 2016
      ii. May 27, 2016
      iii. July 22, 2016
      iv. September 23, 2016
      v. November 25 (Thanksgiving Weekend – this will change).

4. PROPOSED CODE CHANGES TO 2015 IBC
   a. ICC posted a preliminary Online Governmental Consensus Vote tally online. The Committee is currently reviewing the approved Code Changes and will report to the Membership at the next Membership Meeting.

5. GROUP B CODE HEARING SCHEDULE
   a. Code change proposals have been posted on the ICC Website. The Committee has been appraised and will discuss proposed changes at or March 25, 2016 Meeting.
   b. Code Change Proposals are for the following Codes:
      i. IBC: Structural Chapters
      ii. IEBC: Structural Chapters
      iii. IRC: Building and Energy Chapters
      iv. IFC: All
      v. IECC All
      vi. I Wildland-Urban Interface Code: All
   c. Committee Action Hearings: April 17-27, Louisville, Kentucky.
   d. In order to vote during the Online Governmental Consensus Vote, ICC Governmental Memberships must be current by March 18, 2016.

6. COORDINATION WITH OTHER CALIFORNIA JURISDICTIONS
   a. The LA Basin Administrative Committee has an ongoing project of tracking Governmental Code Change Proposal recommendations.
      i. The Committee will continue to provide input
      ii. Other SVABO Jurisdictions are encouraged to also provide recommendations on Code Change Proposals.

NEXT MEETING: 8:00 AM, FRIDAY, MARCH 25, 2016 AT 2012 K STREET, SACRAMENTO, CA.
Join us for this 4th annual training event!
This year brings a full schedule of the latest in training for the building industry as well as some returning favorites. Strategic focus will be on code updates in preparation for the 2016 California Codes, coming up soon!

We are an ICC Preferred Provider—enjoy an outstanding assembly of the finest industry instructors, dynamic and informative classes as well as extremely affordable pricing.

We look forward to seeing you there!

**COSTS**

Early Registration: Until April 15th  $125 Per Class for Members
OR $150 Per Class for Non-Members

Late Registration: After April 15th  $150 Per Class for Members & Non-Members

Registration includes lunch and light snacks.
Please visit [www.svabo.org](http://www.svabo.org) to complete the registration form and provide payment.

**CLASS MATERIALS**

An added bonus this year is early and convenient access to all class handouts. Log onto [www.svabo.org](http://www.svabo.org) to download and print your seminar/class information ahead of time!
Don’t forget to bring all handouts and necessary code books with you to the conference.

**LODGING**

Overnight Accommodations | Reserve by April 11th
Best Western Plus Orchid Hotel & Suites
130 North Sunrise Avenue | Roseville, CA 95661
For reservations: 916-784-2222
Group Rate: $109 | Mention “SVABO”

Lake Natoma Inn
702 Gold Lake Drive | Folsom, CA 95630
Group Rate: $95 | Group Name: SVABO
[www.lakenatomainn.com](http://www.lakenatomainn.com)

**ACCESSIBILITY**

Additional information and online reservation link is available at [www.svabo.org](http://www.svabo.org)
Contact us for any special accessibility or dietary needs.
Inspection Skills/Legal Aspects/Conflict Resolution
Patrick Headington | Yuma County, AZ
Mike Coldiron, CBO | Shums Coda Associates

Residential Fire Sprinklers
Patrick Chew | City of Roseville

California Historical Buildings Code
Jay Salazar, PE, CASp, CBO | City of Vacaville

What's New for the 2016 Energy Standards
Chris Olvera | California Energy Commission

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Plan Check 1
Bill Rodgers, SE | Bob Berna
Interwest Consulting Group

Significant Updates to the CBC
Suzanne Park, PE | Shums Coda Associates

SAP Training
Greg Mahoney, CBO | City of Davis
Gene Ashdown, CBO | City of Winters

Acing the 2016 Energy Code
Gina Rodda | Brian Selby
Energy Code Ace

Rainwater Catchment and Gray Water
CALGreen Updates
MWELO
Greg Mahoney, CBO

Abatement of Substandard and Dangerous Buildings and
Legal Aspects of the Building Department
Josh Pino | City of Sacramento

Electrical 101
Adam Sessions | Shums Coda Associates

CBC Chapter 11B
Mark Wood | CalCASp

Building Department 101
Gene Paolini, CBO | City of Roseville (Ret.)

So, You Want to be a Building Official?
Steve Burger, CBO | City of Folsom
Inspection Skills/Legal Aspects/Conflict Resolution
Patrick Headington, CBO | County of Yuma, AZ
Mike Coldiron, CBO | Shums Coda Associates
Success as an inspection professional depends on credibility, consistency and communication. This class is designed to prepare students who are entering the inspection field and even some inspection veterans with some useful tools to establish credibility and consistency while building effective relationships. This course also examines the legal aspects of inspection as it relates to property owners, occupants, contractors and construction professionals. 0.6 CEU’s

What’s New for the 2016 Energy Standards
Chris Olvera | California Energy Commission
This course provides an overview of the new requirements in the 2016 Energy Standards for both residential and nonresidential buildings. All project types will be covered, including newly constructed buildings, additions, and alterations. The new requirements for residential buildings addressed include: high performance attics and walls; instantaneous water heaters; high efficacy lighting; and much more. The new requirements for nonresidential buildings that will be addressed include: elevators and escalators; window and door HVAC lockout sensors; direct digital controls (DDC); and much more. Through this training Building Department staff will be provided with the tools and knowledge necessary to enforce the 2016 Energy Standards. 0.6 CEU’s

Plan Check 1
Bill Rodgers, SE | Bob Berna | Interwest Consulting Group
This seminar provides prospective and beginning plans examiners with the fundamentals of plan review. The seminar provides an overview of the intent and objective of plan review, methods of plan review, a discussion of building codes and referenced standards, and discussion about the information to be provided in permit submittal documents. This discussion will go over fire and life safety plan reviews, and will also touch upon structural plan reviews. 0.6 CEU’s

Electrical Code 101
Adam Sessions | Shums Coda Associates
This class is designed for electrical inspectors, plans examiners, contractors, and permit technicians who have a beginning to intermediate level of knowledge of the National Electrical Code. We will discuss basic electrical theory, organization of the electrical code, definitions, services, wiring methods, panelboards and switchboards, appliances and more. The discussion will be kept at a level that can be understood by nonelectricians. You will leave with a basic understanding of how to use the electrical code and be aware of some of the new California updates. 0.6 CEU’s

Patrick Headington, Building Official, Yuma County, AZ is a former Plans Examiner and is currently the Chief Building/Fire Code Official for Yuma County Arizona. He has been involved with projects ranging from small residential to large commercial, utility scale solar photovoltaic sites and a new water park in Yuma area. He is certified as a Combination Inspector, Plans Examiner and Building Official and was licensed as a Residential General Contractor in the State of Arizona. He has also been involved with the Arizona Building Officials (AZBO) Education Committee for 6 years and has been an instructor since 2015.

Christopher Olvera has over a dozen years of experience at the California Energy Commission. He began work as a student on the Energy Standards Hotline, fielding questions from the design, building, and enforcing industries and has served in several other positions supporting a variety of programs. Chris is the Supervisor of the Outreach and Education Unit that develops training tools, presentations and communications to educate Building Departments and the building industry about the Building Energy Efficiency Standards.

Bob Berna is an ICC-certified plans examiner with 30 years of experience as an inspector, plan reviewer and building official for jurisdictions throughout California.

Bill Rodgers, SE is a civil / structural engineer licensed in California and Nevada. Bill has over 25 years of experience in the field of structural engineering, the last 13 years of which include experience conducting plan reviews on behalf of local and state agencies throughout California and Nevada. Bill’s design and plan review experience ranges from small, simple structures to large high-rise construction. Bill is a Senior Structural Engineer in the Interwest Roseville and Pleasanton offices.

Adam Sessions is a former building official and is currently a senior plans examiner for Shums Coda Associates. He has performed residential inspections and plan reviews since 1995 on projects ranging in size from 900 to 6000 square feet and custom homes from small remodels to 20,000 square foot, multi-level mansions. His experience has covered the entire range of buildings and materials covered in the International Residential Code. He is certified by ICC as a combination inspector. He has been a regular instructor for the AZBO (Arizona Building Officials) institute since 2000.
Residential Fire Sprinklers
Patrick Chew | Supervising Fire Inspector
City of Roseville
This class is based on the 2016 edition of NFPA standard 13D, reviewing the process from permit application to final approval. During the process we will focus on the critical path starting from the water purveyor to a three dimensional viewpoint while reviewing plans. The Inspections process involves a review of the minimum code requirements and understanding the core issues required in having a functional system prior to occupancy. Both Plan Checkers and Inspectors will gain valuable knowledge in understanding the entire approval process from start to finish. Most importantly, you will learn to ask questions upon returning to your jurisdiction. A scientific calculator is recommended for this class. 0.6 CEUs

What’s New for the 2016 Energy Standards
Chris Olvera | California Energy Commission
This course provides an overview of the new requirements in the 2016 Energy Standards for both residential and nonresidential buildings. All project types will be covered, including newly constructed buildings, additions, and alterations. The new requirements for residential buildings addressed include: high performance attics and walls; instantaneous water heaters; high efficacy lighting; and much more. The new requirements for nonresidential buildings that will be addressed include: elevators and escalators; window and door HVAC lockout sensors; direct digital controls (DDC); and much more. Through this training Building Department staff will be provided with the tools and knowledge necessary to enforce the 2016 Energy Standards. 0.6 CEUs

Significant Updates to the 2016 CBC
Suzanne Park, PE | Shums Coda Associates
This class is designed for permit technicians, plans examiners, inspectors and contractors. The focus of the course will be to enable people responsible for enforcement of the codes to quickly assess if a plan check submittal under the 2016 CBC reflect the new requirements. Participants should leave with the ability to identify the revisions for commercial applicaton and understand the history of the revision.0.6 CEUs

CBC Chapter 11B
Mark Wood | CalCASp
The California Building Standards Commission has adopted the Division of the State Architects proposed standards for Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing. It was a historical event because for the first time in California there will be one code that will address both State and Federal access regulations. The class will be a very dynamic class focusing on major changes that will affect accessibility in construction immediately including new and amended regulations, how to apply and effectively use the new scoping and technical sections, and examples of application of the new requirements in today’s built environment. 0.6 CEUs

Patrick has a total of 26 years’ experience in the world of fire protection having spent the last 14 years with the Roseville fire department. Patrick is a graduate of Cal Poly, San Luis Obispo, Class of 1989 with a degree in Electronic Engineering. Pat also received a degree certification from UCLA in 2005 in Fire Protection Engineering. Pat found his love with the fire service soon after working for Insurance Services Office, evaluating fire departments for their insurance ratings. His first employment with the fire service was with the San Jose Fire Department where he naturally moved up the ranks as the lead for all future developments within the city representing his department at the table. Patrick believes his greatest asset is his willingness to listen to options and alternatives, as long as the decisions do not impact the public and firefighters safety.

Christopher Olvera has over a dozen years of experience at the California Energy Commission. He began work as a student on the Energy Standards Hotline, fielding questions from the design, building, and enforcing industries and has served in several other positions supporting a variety of programs. Chris is the Supervisor of the Outreach and Education Unit that develops training tools, presentations and communications to educate Building Departments and the building industry about the Building Energy Efficiency Standards.

Ms. Park has nearly two decades of plan review experience. She is a graduate of California Polytechnic University, Pomona and is a licensed California Civil Engineer. She has performed plan reviews which include residential single-family construction, complex multi-story buildings, commercial, office, medical and industrial uses. Suzanne has diverse experience in job types and jurisdictions with time spent at cities of Santa Clara, Merlo Park, Redwood City, West Sacramento, Elk Grove and Napa. She served for six years as the Assistant Building Official of the City of West Sacramento.

Mark has more than 30 years of experience in construction and government organizations including an extensive background in accessibility standards, building code administration, Building Department administration, and program development. Mark is a past president and board member of the SVABO. He is a Certified Access Specialist and founding member of the Certified Access Specialist Institute (CASI). He is a Subject Matter Expert working for the DSA CASp Committee tasked with development of the CASp Certification Exam. Mark is co-owner and principal of California Certified Accessibility Specialists (CalCASp Inc.) and holds various certifications from national organizations such as ICC, IAPMO, NFPA, and the State of California.
**California Historical Buildings Code**

Jay Salazar, PE, CASp, CBO | City of Vacaville

This new course is designed for inspectors, plans reviewers and permit technicians. The CHBC provides alternative building regulations for permitting repairs, alterations and additions necessary for the preservation, rehabilitation, relocation, related construction, change of use, or continued use of a "qualified historical building or structure." All 9 parts of the California Historical Building Code are covered in relation to other sections of Title 24, including green building code, water conservation, energy, and accessibility. The course compares and contrasts the CHBC with other Title 24 Regulations and highlights the differences as well as exams, State Statutes, Access Case law, and proposed 2016 regulations. 0.6 CEU's

Jay Salazar has worked in Land Development and Building Code Application for over 30 years. He has taught junior college courses in plan review, inspection, structural design, construction processes and materials of construction and has written and taught a number of courses for CALBO Training Institute including, Energy Fundamentals, Retail Tenant Improvements, Elderly Care Facilities, Egress Fundamentals, Access Case Law, How to Create a Harmonious Workplace, and Critical Thinking. He is a recipient of United States Congressional Special Recognition (2005) for his work in his community and CALBO Training Institute Educator of the Year Award, as well as the CALBO Course Development Award.

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**SAP Training**

Greg Mahoney, CBO | City of Davis
Gene Ashdown, CBO | City of Winters

This training provides guidelines and procedures for post-earthquake building safety evaluations which determine whether damaged, or potentially damaged, buildings are safe for use or if entry should be restricted or prohibited. The class provides procedures for two different levels of safety evaluation and advice on evaluating structural, geotechnical and nonstructural hazards. Credentialed persons (licensed civil engineers, architects, or certified building inspectors and plans examiners) will be trained to be SAP Evaluators to work in the field inspecting buildings for safety or usability, and building officials and emergency managers will be trained to be SAP Coordinators, using best practices to manage the field activities. 0.6 CEU's

Greg Mahoney has been involved with building code enforcement for 27 years. He is currently serving as Chief Building Official for the City of Davis. He has also taught in the Building Inspection Technology Program (BIT) at Cosumnes River College for over 11 years.

Gene Ashdown is entering his 36th year in the building trades. He has currently served as the Building Official of the City of Winters for the last eleven years and prior to this he was a field inspector/plan checker for County of Yolo for six and one half years. He is also a trainer for the CALBO's SAP Program and spent six days assisting in the SAP program for the City of Napa responding to the August 4, 2014 earthquake. He serves on the Napa Solano ICC Board and the Education Committee. He also serves on the CALBO Outreach and Communications Committee.

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**Acing the 2016 Energy Code**

Gina Rodda, Principal, Owner | Gabel Associates
Brian Selby, Principal | Selby Energy, Inc.

Be prepared for January 1, 2017 when Title 24 Part 6 (the Energy Code) goes into effect! Building on the knowledge you'll gain attending the California Energy Commission's class, "What's New for the 2016 Energy Standards," Energy Code Ace instructors Brian Selby and Gina Rodda will walk you through design challenges incorporating the 2016 Title 24 Part 6 code requirements using Energy Code Ace resources (e.g., trigger sheets and factsheets.) 0.6 CEU's

Ms. Rodda has been in the energy modeling field since 1991. She is an instructor of several dozen full day ICIUs Codes and Standards trainings on the Residential and Nonresidential Title 24 Building Energy Efficiency Standards for building department staff, energy consultants, architects, contractors and design engineers. Certified Energy Analyst (CEA) through CABEC and a LEED AP. Brian has developed and delivered energy code training for the Energy Codes Ace Title 24 Essentials courses. He has over 30 years' experience as an energy consultant and residential building designer and a HERS rater for over 15 years. He interacts with the California Energy Commission (CEC), Investor Owned Utilities (IOUs), association professionals and other industry stakeholders to foster education, promotion and compliance with the California Building Energy Standards. Brian is a Certified Energy Analyst (CEA). HERS Rater and is on the CABEC board of directors.

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**Building Department 101**

Gene Paolini, CBO | City of Roseville (Ret.)

This class explores building departments and the requirements to operate and enforce building regulations. The course looks at the career paths in building code enforcement, with an understanding of the purpose and evolution of codes and the governmental agencies responsible for supporting and enforcing those codes. This class will cover the potential career path in building code enforcement, create an interest for future employees and further the knowledge of permit technicians, administrative staff, and those new to government employment of the duties and responsibilities of all members of Building Department staff. 0.6 CEU's

Gene Paolini is a retired Building Official from the City of Roseville serving in that capacity for over 20 years. Past President of CALBO 2007/2008 and actively involved with the CALBO Training Institute for the past 10 years including serving as a Commissioner and Instructor as well as participating in the creation and implementation of the BOLA (Building Official Leadership Academy) program. He has created classes in finance and administration for CALBO sharing his knowledge and experience as a Building Official in the class room. He is also past president of SVABO and served on the education committee including service as chairperson for that as well.
California Residential/Multi Family Housing Accessibility Requirements (CBC 11A and FHA)
Paul Klein, CBO, CASp, Principal | CalCASp
This class is designed for architects, engineers, building department personnel and any other professionals interested in CBC Chapter 11A - Housing Accessibility, the Fair Housing Amendments Act of 1988. The class will thoroughly examine California-mandated access requirements for newly constructed covered multifamily dwellings, dwelling unit features, common use spaces versus public use spaces serving covered multifamily dwellings, accessibility upgrades to existing multifamily dwellings, and public housing. 0.6 CEUs.

Rainwater Catchment and Gray Water | CALGreen Updates | MWELO
Greg Mahoney, CBO | City of Davis
CALGreen. This half day course is designed for those involved with compliance and enforcement of the 2016 California Green Building Standards Code (CALGreen). The course will explore challenges and issues faced by inspectors, plans examiners, contractors and design professionals concerning construction, inspection, documentation and compliance. The course will address supplements that went into effect on July 1, 2015 and changes that will go into effect January 1, 2017. Strategies for compliance will also be discussed. This class will cover both residential and non-residential requirements of the 2016 California Green Building Standards Code. Graywater and MWELO: This half day course will cover the California Plumbing Code chapters addressing the reduction of potable water use by utilizing alternate sources such as gray water and rain catchment. The course will address and explain code changes that will affect design, plan review, construction, inspection and documentation. The course will cover system design, allowable uses, water quality requirements, protection of potable water systems, materials and methods. Primary focus will be code requirements and how they relate to non-potable water systems. The course will also cover DWR's Model Water Efficient Landscape Ordinance (MWELO). 0.3 CEUs per class / Total 0.6 CEUs.

Abatement of Dangerous Buildings & Legal Case Preparation for Administrative Civil & Criminal Enforcement
Josh Pino | City of Sacramento
Attendees will learn about relevant codes, abatement procedures, cost recovery, summary abatement and case law. Attendees will also learn about the various avenues available to local jurisdictions for the abatement of nuisance, substandard housing and dangerous buildings. In addition, attendees will learn how to prepare these cases from their inception. 0.6 CEUs.

So, You Want to Be a Building Official?
Steve Burger, CBO | City of Folsom
This class is designed for any Building Department employees who would like more information on just what it takes to be a successful Building Official. The class will discuss basic decision-making, legal and ethical topics, customer service, image of the Building Department and its employees, professional issues, professional development, dealing with the media, staffing and budgeting. The discussion will be kept at a level that can be understood by all attendees and will encourage an abundance of input and discussion. 0.6 CEUs.

Paul is co-owner and principal with California Certified Accessibility Specialists, Inc. He has worked as a Building Inspector, Senior Plans Examiner, Assistant Building Official and Chief Building Official. Paul previously served on the CALBO Access Committee. From 2001 to 2005 he was a Plan Review instructor for the California Association of Building Officials (CALBO). Paul is currently an instructor for the SVABO, and AIA Central Valley. Paul is a Certified Access Specialist (CASp) by the DSA, is certified by ICC as an Accessibility Inspector/Plans Examiner and holds certifications from a variety of organizations such as ICC, IAPMO and NFPA. He is a member of the National Association of Accessibility Consultants (NAAC).

Greg Mahoney has been involved with building code enforcement for 27 years. He is currently serving as Chief Building Official for the City of Davis. He has also taught in the Building Inspection Technology Program (BIT) at Cosumnes River College for over 11 years.

Josh is Building Inspector/Principal Building Inspector/Code Enforcement Manager/Emergency Management for the City of Sacramento.

Steve has been in the code industry since 1972. He is a Certified Building Official, LEED A.R., Certified Code Official, Plans Examiner, Building Inspector, Mechanical Inspector, Electrical Inspector, Accessibility/Usability Specialist, 1 and 2-family Electrical Inspector and Fire Inspector II. He has served on the following ICBO/ICC Committees: Permit Technician Exam Committee, Education Committee, Certification Committee and the Legacy Codes Exam Committee as well as the AZBEO Education Committee and Legislative Committee. He has authored the original ICC "Permit Technician Study Companion", updated "The Public Counter" (Chapter 12) in the revised ICC "Building Department Administration" book, and updated the ICC "You Can Build It!" and "Basic Code Enforcement" reference books.
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Changes for nonresidential buildings include:

**Envelope**

1. Revisions to the mandatory requirements for metal framed and demising walls (§120.7(b)).
2. Changes to the prescriptive envelope requirements (§140.3(a)).
3. Revisions to the roof/ceiling insulation tradeoff for aged solar reflectance (TABLE 140.3 of the Energy Standards).
4. Significant changes to the total skylight area requirement (§140.3(c)(4)).
5. Revisions to the requirements for all fenestration alterations (§141.0(b)2A).

**Lighting**

1. Clarification and simplification of existing language; removing exceptions no longer relevant (§130.0 through §130.5 and §140.6 through §140.8).
2. Reductions to Lighting Power Density (LPD) values in Tables 140.6-B, 140.6-C, and 140.6-G.
3. Removal/addition of Power Adjustment Factors (PAFs) (§140.6(a)2).
4. Significant reductions in outdoor lighting power allowances (TABLE 140.7-A).
5. Changes to lighting alteration requirements to allow for the reduction of existing lighting power in lieu of multi-level, automatic daylight, and demand responsive controls (§141.0(b)2i, and §141.0(b)2ii).

**Mechanical**

1. Revision of the mandatory requirements for equipment efficiency in TABLES 110.2-A through 110.2-K of the Energy Standards.
2. Interlock controls requirements when operable wall or roof openings are present (§140.4(n)).
3. Revisions to fan control system requirements in TABLE 140.4-D of the Energy Standards.
4. Energy Management Control System (EMCS) to comply with the thermostatic control requirements (§120.2(a)).
5. Changes to the requirements for dampers installed on outdoor air supply and exhaust equipment (§120.2(f)).
6. New section specifying direct digital controls (DDC) applications and qualifications (§120.2(j)).
7. Revisions to the requirements for space conditioning systems with DDC to the zone level (§120.2(k)).
8. New general requirements for pipe insulation (§120.3(a)).

**Electrical**

1. New definitions of electrical metering, service equipment, plug load, and low voltage dry-type distribution transformer are added to §100.1.
2. Revisions and clarifications of service electrical metering §130.5(a), separation of electrical circuits in §130.5(b), voltage drop in §130.5(c), and circuit controls in §130.5(d).

**Covered Processes**

1. New mandatory requirements for elevators, escalators and moving walkways (§120.6(f) and §120.6(g)).

**Commissioning**

1. Revisions to language and content to make §120.8 more clear.
California Energy Commission
2016 Building Energy Efficiency Standards
What’s New for Residential

The most significant changes in the 2016 Building Energy Efficiency Standards affecting residential buildings include the new requirements for high-performance insulation within walls and attics. Other changes for residential buildings include:

**Mandatory Measures:**

1. Insulation in roof/ceiling construction must be at least R-22 (maximum U-factor of 0.043) (§150.0(a)1).
2. New duct total leakage reduced to 5 percent or less (§150.0(m)11B1).
3. All installed air-conditioner and heat pump systems shall be equipped with liquid line filter driers as specified by manufacturer’s instructions (§150.0(h)3B).
4. Storage hot water heaters no longer need to be externally wrapped (§150.0(j)1).
5. All luminaires must be “high-efficacy” (§150.0(k)1A).
6. Isolation valves must be installed on instantaneous water heaters that have a minimum input of 6.8 kBTU/hr (§110.3(c)7).

**Prescriptive Compliance:**

1. Increased flexibility for envelope compliance (§150.1(c)).
2. Increased roof assembly requirements to include insulation installed either above or below roof deck (§150.1(c)1A).
3. Requirements for water-heating systems in single-family and multifamily buildings have been updated and more options have been added (§150.1(c)8).
4. High-performance attics and ducts in conditioned spaces have been added as option for a space-conditioning distribution system (§150.1(c)9).
5. If a whole house fan (WHF) is required, it must comply with a total air flow of at least 1.5 CFM/ft² and have 1 square foot of attic vent free area for each 750 CFM (§150.1(c)12).

**Performance Compliance:**

All compliance software programs that are approved by the Energy Commission must use a single interpretation of the performance compliance rules that the Energy Commission has integrated into the public domain software. More information is available in the 2016 Residential ACM Approval Manual and the 2016 Residential ACM Reference Manual.

**Additions and Alterations:**

1. Changes to the prescriptive requirements for the building envelope (specifically wall insulation) for additions (§150.2(a)1).
2. With alterations, the prescriptive requirements for mechanical cooling, water heating, and lighting have been revised (§150.2(b)).
In This Issue

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» Small Duct High Velocity Space Conditioning Systems
» Demand Responsive Controls for Additions and Alterations
» Residential Water Heating Options
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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.

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.
Performance Options
CBECC-Res Version 4b can model SDHV systems.
Refrigerant charge verification can also be modeled, as with any other cooling system.
Where applicable, compliance credits for buried ducts or deeply buried ducts can be taken.

Demand Responsive Controls for Additions and Alterations
For alterations, demand responsive controls are triggered when all of the following conditions are met:

1. Any number of existing luminaires are altered (TABLE 141.0-E).
2. There is a change in the area of the enclosed space, space type, or increase in lighting power (TABLE 141.0-E).
3. The area of all altered enclosed spaces is greater than 10,000 square feet, excluding spaces with a lighting power density of 0.5 watts per square foot or less (Section 130.1(e)).

Demand responsive control requirements apply only to the enclosed space(s) being altered as indicated on the building permit. The Energy Standards apply only to those portions of the systems being altered. These controls are not required if the area of all altered enclosed spaces is 10,000 square feet or less.

For example, an existing 15,000 square foot building is undergoing a 5,000 square foot lighting system alteration. Demand responsive controls are not required since the area of the altered enclosed space(s) is less than 10,000 square feet.

If the entire 15,000 square foot building is undergoing a lighting system alteration and there is no change in the area of the enclosed space(s), space type, or increase in lighting power, demand responsive controls are not required.

For additions, demand responsive control requirements are triggered when the area of the addition is greater than 10,000 square feet, excluding spaces with a lighting power density of 0.5 watts per square foot or less (Sections 141.0(a)1 and 130.1(e)).

Continuing with additions, the demand responsive control requirements apply only to the enclosed space(s) being added as indicated on the building permit.

For example, a 5,000 square foot addition to a 15,000 square foot existing building does not trigger demand responsive control requirements.

Residential Water Heating Options
If it takes an extended period for hot water to get to a fixture, a common cost-effective solution is to install a demand recirculation system. These systems reduce both wait time and water waste (see Section 5.3.2 of the 2013 Residential Compliance Manual for more information). The installation of a manually controlled demand recirculation system that meets the requirements of RA4.4.9 of the 2013 Reference Residential Appendices, also meets the prescriptive alteration requirements of the Energy Standards. Per Section 150.2(b)1Giv, the Energy Commission used the performance compliance approach and determined that energy use is no more than the standard design system. Thus, manually controlled demand recirculation systems can be installed prescriptively for residential single dwelling unit alterations. Any other alteration to the hot water distribution system, such as timer or temperature control recirculation systems, must be analyzed using the performance compliance approach.

To decrease the wait time, another alternative is to install a second water heater near the fixture. Historically, adding a water heater to an existing building’s water heating system required a performance run to demonstrate compliance. Again, using Section 150.2(b)1Giv, the Energy Commission used the performance compliance approach and determined that an additional natural gas or propane instantaneous water heater uses no more energy than the standard design system, and can be installed prescriptively. If an additional storage or electric instantaneous water heater is added, the performance compliance approach must be used.

EnergyPro Version 7.0
EnergyPro Version 7.0. has been approved as compliance software for the 2016 Energy Standards. The Energy Commission has reviewed and approved both the residential and nonresidential modules of EnergyPro Version 7.0. This version of EnergyPro allows users to evaluate the impacts of the 2016 Energy Standards on projects.

If applying for a permit before January 1, 2017, compliance software approved for the 2013 Energy Standards must be used. All approved software for the 2013 Energy Standards may be viewed at:

For a list of compliance software approved for the 2016 Energy Standards, please visit:

Alternative Path for Complying with Lighting Alteration Requirements
A staff analysis that considers allowing aspects of the 2016 nonresidential indoor lighting alteration requirements to be used for compliance with the 2013 Energy Standards is available for review. Public comments may be submitted until 5 p.m. on March 21, 2016.

For more information, please visit:
Lighting Standards to Save Californians More Than $4 Billion in Electricity Costs

The Energy Commission adopted first-in-the-nation appliance standards for the next generation of light bulbs. The standards cover small-diameter directional lamps, often used in track lighting, and general purpose light-emitting diodes (LEDs) used to replace typical existing home lighting.

With these new standards, consumers will save more than $4 billion in aggregate over the first 13 years and conserve enough electricity to power all of the households in Santa Barbara and Ventura counties (about 400,000 average homes). Bulbs that meet the new standards are already available to consumers.

The adopted standards will save consumers money in both electricity and bulb replacement costs. For a $4 investment in the more efficient small-diameter directional lamps, the Energy Commission estimates consumers will save nearly $250 in reduced energy and bulb replacement costs when averaged over 11 years. The lifetime savings for general purpose LEDs range from $4.50 to $12 and will likely grow as purchase prices decline.

Small-diameter directional lamps

Small-diameter directional lamps are often used in track lighting at commercial sites, such as stores and museums. In California, nearly 16 million of these bulbs are in use. The standards cover bulbs with a diameter of 2.25 inches or less and will go into effect January 1, 2018. The standards include:

- A requirement that bulbs have either an efficacy greater than or equal to 80 lumens per watt or a color rendering index + Efficiency score of at least 165 with a minimum efficiency of at least 70 lumens per watt.

- A minimum lifetime of 25,000 hours for each product. LED bulbs are the only products that meet this lifetime standard. The adoption is expected to cause a transition to LEDs from less efficient technologies.

LEDs

The standards for general purpose LEDs include omnidirectional, directional, and decorative bulbs, as well as LEDs designed for retrofitting the covered socket types. LED bulbs consume less energy than other bulbs and have a longer lifespan, making the lifetime energy savings far greater than the incremental cost.

The standards for LEDs include efficiency and quality improvements which take effect January 1, 2018. Additional amendments to strengthen efficiency and limit power in standby mode took effect July 1, 2019. The standards include:

- A requirement for omnidirectional bulbs to produce a light distribution pattern that aligns with requirements adopted by the U.S. EPA ENERGY STAR® program for bulbs.

- A minimum lifetime requirement of 10,000 hours, equivalent to ten years in a typical home.

- Limitations on how distorted a particular color appears under the bulbs.

- A requirement that manufacturers meet minimum performance thresholds before making claims about dimmability or other qualities.

- A limit to the amount of power a connected LED can use in standby mode.

Q&A

Illuminated Areas

Section 140.7(d)1A, discusses calculating the illuminated hardscape area using the luminaire mounting height for outdoor lighting. Regarding the passage below, what does, “ten times the luminaire mounting height” refer to?

“In plan view of the site, determine the illuminated hardscape area, which is defined as any hardscape area that is within a square pattern around each luminaire or pole that is ten times the luminaire mounting height with the luminaire in the middle of the pattern, less any areas that are within a building, beyond the hardscape area, beyond property lines, or obstructed by a structure.”

Ten times the luminaire mounting height refers to the sides of the square, centered around the pole of the luminaire.

First, consider the height at which the luminaire is mounted to the pole. In Figure 1, that height is 20 feet.

Figure 1 - Luminaire mounted to the pole at 20 feet.

Next, multiply the mounting height by 10, which yields 200 feet. Two hundred feet is “ten times the luminaire mounting height.” A square, whose sides are 200 feet, is drawn with the pole in the center (Figure 2). The 200 feet by 200 feet square is the illuminated area.

Figure 2 - Illuminated area centered around the luminaire.
Example 6-22 in Chapter 6 of the 2013 Nonresidential Compliance Manual also explains how to determine the illuminated area.

Are there similar visual examples for determining skylit and sidelit daylit zones?

**Skylit Daylit Zones**
The skylit daylit zone is the area below the skylight, plus 0.7 times the average ceiling height, see Section 130.1(d)1A.

In Figure 3, the average ceiling height is 10 feet. The ceiling height is multiplied by 0.7, giving 7 feet (10 feet x 0.7 = 7 feet). Seven feet is then added to the rough opening of the skylight to give the skylit daylit zone.

![Figure 3 - Skylit daylit zone originates from the skylight and extends an additional 7 feet in this example.](image)

**Sidelit Daylit Zones**
The sidelit daylit zone is the area directly adjacent to a vertical window, see Sections 130.1(d)1B and 130.1(d)1C.

To calculate the area of the sidelit daylit zone, determine the window head height by measuring from the floor to the top of the window frame (Figure 4). Then add 0.5 times the window head height to each side of the window, widthwise, to determine the width of the sidelit daylit zone. The primary sidelit daylit zone is then determined by extending one window head height from the window. The secondary sidelit zone is determined by extending two window head heights from the window.

![Figure 4 - Primary and secondary sidelit daylit zones.](image)

If a new track is added to the space, are lighting system alteration requirements triggered?

If the lighting power in the enclosed space increases, the enclosed space must meet the applicable requirements of Sections 110.9, 130.0, 130.1, 130.4, 140.3(c), 140.6, and 141.0(b)21v.

**Compliance Documents**
If someone changes out a wall heater with the same size wall heater, do they need to fill out energy compliance documentation and if so which documents?

Sections 10-103(a)1C and 10-103(a)3C of the 2013 Energy Standards explain that enforcement agencies may, at their discretion, choose to not require compliance documents for residential alteration projects that do not require Home Energy Rating System (HERS) verification. A wall furnace replacement alone would not trigger HERS verification (duct leakage or refrigerant charge). It is at the discretion of the enforcement agency to require compliance documents for these projects.

If compliance documents are required for these types of projects, their are available at: [http://www.energy.ca.gov/title24/2013standards/res_compliance_forms/Alterations_and_Additions_Paper_Forms/](http://www.energy.ca.gov/title24/2013standards/res_compliance_forms/Alterations_and_Additions_Paper_Forms/).

These all-inclusive compliance documents cover alterations to roofs, heating, ventilation and air conditioning (HVAC) systems, and water heating systems. The applicant completes only sections that are applicable to the project.
Townhouses and Duplexes

Are townhouses and duplexes treated as single family buildings when complying with the solar ready requirements of Section 110.10?

Townhouses and duplexes are classified under occupancy group R-3 in Section 1.1.3.1.1 of the 2013 California Residential Code. The 2013 Energy Standards define a single family residence as a building that is of occupancy group R-3. Therefore, townhouses and duplexes are treated as single family residences with each unit being treated separately.

Commissioning

I am constructing a mixed occupancy building. The lower story of the building is for commercial/retail use and is 5 percent of the conditioned floor area. The remaining stories are residential and are 95 percent of the conditioned floor area. Since the building is primarily residential, does it need to be commissioned?

Yes. However, the commissioning requirements of Section 120.8 only apply to the nonresidential portions of the building. Section 100.0(f) requires the space for each occupancy to meet the applicable provisions of the Energy Standards for that occupancy.

NOTE: Commissioning applies to mechanically heated or cooled nonresidential portions of newly constructed mixed occupancy buildings, regardless of the percentage of nonresidential space.

Are the commissioning requirements applicable to additions and alterations under the 2016 Energy Standards?

No. The commissioning requirements of the 2016 Energy Standards are not applicable to additions or alterations. Changes to the 2016 Energy Standards clarify the language of Section 120.8, and do not alter the scope. Commissioning Q&As from Blueprint Issue 107 are still applicable to the 2016 Energy Standards.

For More Information

Home Energy Rating System:
http://www.energy.ca.gov/HERS/

Acceptance Test Technician Certification Provider Program:
http://www.energy.ca.gov/title24/attcp/

Approved Computer Compliance Programs:
http://www.energy.ca.gov/title24/2013standards/2013_computer_prog_list.html

The California Energy Commission welcomes your feedback on Blueprint. Please contact Andrea Bailey at:
Title24@energy.ca.gov

EDITOR

Andrea Bailey

SPECIAL THANKS

Chris Olvera  Mark Alatorre
Daniel Wong  Paula David
Danny Tam  Peter Strait
Dee Anne Ross  Randy Brumley
Javier Perez  Simon Lee
Joe Loyer  Tav Commins
Kristen Driskell  Todd Ferris
# Essential Training Courses

**Title 24 Part 6**

Currently Scheduled for **2016**

## 2013 Residential Standards for Plans Examiners and Building Inspectors

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## 2013 Nonresidential Standards for Plans Examiners and Building Inspectors

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<td>Bruce Cheney</td>
<td>sce.com/workshops</td>
</tr>
<tr>
<td>May 24 • 8:30 • 4:30</td>
<td>Folsom</td>
<td>Brian Selby</td>
<td>goo.gl/adq9Qt</td>
</tr>
<tr>
<td>June 21 • 8:30 • 4:30</td>
<td>Irvine</td>
<td>Bruce Cheney</td>
<td>sce.com/workshops</td>
</tr>
<tr>
<td>June 29 • 8:30 • 4:30</td>
<td>Rancho Cucamonga</td>
<td>Bruce Cheney</td>
<td>sce.com/workshops</td>
</tr>
</tbody>
</table>

## 2013 Nonresidential Standards for Energy Consultants

<table>
<thead>
<tr>
<th>DATE • TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
<th>REGISTRATION LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2 • 8:30 • 4:30</td>
<td>Stockton</td>
<td>Gina Rodda</td>
<td>goo.gl/8w9eNC</td>
</tr>
<tr>
<td>April 26 • 8:30 • 4:30</td>
<td>Folsom</td>
<td>Brian Selby</td>
<td>goo.gl/uz3eTt</td>
</tr>
<tr>
<td>May 18 • 8:30 • 4:30</td>
<td>San Francisco</td>
<td>Gina Rodda</td>
<td>goo.gl/0PLzUq</td>
</tr>
</tbody>
</table>

## 2013 Nonresidential Standards for Small Commercial AC Quality Installation Contractors

<table>
<thead>
<tr>
<th>DATE • TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
<th>REGISTRATION LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 3 • 8:30 • 2:30</td>
<td>Stockton</td>
<td>David Wylie</td>
<td>goo.gl/XoTctA</td>
</tr>
<tr>
<td>June 8 • 8:30 • 2:30</td>
<td>Stockton</td>
<td>David Wylie</td>
<td>goo.gl/6YkJBL</td>
</tr>
</tbody>
</table>

## 2013 Standards & Technology for Residential Lighting

<table>
<thead>
<tr>
<th>DATE • TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
<th>REGISTRATION LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 25 • 8:30 • 4:30</td>
<td>Stockton</td>
<td>Nicole Graeber</td>
<td>goo.gl/LKAitR</td>
</tr>
</tbody>
</table>

## 2013 Standards & Technology for Office Lighting

<table>
<thead>
<tr>
<th>DATE • TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
<th>REGISTRATION LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 27 • 8:30 • 4:30</td>
<td>San Francisco</td>
<td>Nicole Graeber</td>
<td>goo.gl/KRqESb</td>
</tr>
</tbody>
</table>

## 2013 Standards & Technology for Retail Lighting

<table>
<thead>
<tr>
<th>DATE • TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
<th>REGISTRATION LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 26 • 8:30 • 4:30</td>
<td>San Francisco</td>
<td>Nicole Graeber</td>
<td>goo.gl/d2jhAP</td>
</tr>
</tbody>
</table>

## NEW 2013 Nonresidential Standards Essentials for Architects

<table>
<thead>
<tr>
<th>DATE • TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
<th>REGISTRATION LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 8 • 8:30 • 4:30</td>
<td>Irwindale</td>
<td>Martyn Dodd</td>
<td>sce.com/workshops</td>
</tr>
<tr>
<td>May 24 • 8:30 • 4:30</td>
<td>Irwindale</td>
<td>Martyn Dodd</td>
<td>sce.com/workshops</td>
</tr>
</tbody>
</table>

**Title 24: Where We're Headed with the 2016 Standards**

<table>
<thead>
<tr>
<th>DATE • TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
<th>REGISTRATION LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 18 • 8:30 • 12:30</td>
<td>Irvine</td>
<td>Martyn Dodd</td>
<td>sce.com/workshops</td>
</tr>
</tbody>
</table>
Delivered online in real-time by an instructor
Classes are delivered in 3 parts, 1 each day in a series.

### 2013 Residential Standards for Energy Consultants

<table>
<thead>
<tr>
<th>DATE - TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 19 - 21 • 9:00 - 12:00</td>
<td>Online</td>
<td></td>
</tr>
<tr>
<td>June 21 - 23 • 9:00 - 12:00</td>
<td>Online</td>
<td></td>
</tr>
<tr>
<td>July 26 - 28 • 9:00 - 12:00</td>
<td>Online</td>
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</tr>
<tr>
<td>October 25 - 27 • 9:00 - 12:00</td>
<td>Online</td>
<td>Brian Selby</td>
</tr>
<tr>
<td>November 15 - 17 • 9:00 - 12:00</td>
<td>Online</td>
<td></td>
</tr>
<tr>
<td>2013 Nonresidential Standards for Energy Consultants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 31 - June 2 • 9:00 - 12:00</td>
<td>Online</td>
<td>Brian Selby</td>
</tr>
<tr>
<td>August 16 - 18 • 9:00 - 12:00</td>
<td>Online</td>
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</tr>
<tr>
<td>September 20 - 22 • 9:00 - 12:00</td>
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<td>Brian Selby</td>
</tr>
</tbody>
</table>

### 2013 Residential Modeling

<table>
<thead>
<tr>
<th>DATE - TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 12 - 14 • 9:00 - 12:00</td>
<td>Online</td>
<td>Brian Selby &amp; Demian Vonder Kuhlen</td>
</tr>
<tr>
<td>June 14 - 16 • 9:00 - 12:00</td>
<td>Online</td>
<td>Martyn Dodd &amp; Demian Vonder Kuhlen</td>
</tr>
<tr>
<td>July 19 - 21 • 9:00 - 12:00</td>
<td>Online</td>
<td>Martyn Dodd &amp; Demian Vonder Kuhlen</td>
</tr>
<tr>
<td>October 4 - 6 • 9:00 - 12:00</td>
<td>Online</td>
<td>Martyn Dodd &amp; Demian Vonder Kuhlen</td>
</tr>
</tbody>
</table>

### 2013 Nonresidential Modeling

<table>
<thead>
<tr>
<th>DATE - TIME</th>
<th>LOCATION</th>
<th>INSTRUCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 28 - 30 • 9:00 - 12:00</td>
<td>Online</td>
<td>Martyn Dodd &amp; Demian Vonder Kuhlen</td>
</tr>
<tr>
<td>May 3 - 5 • 9:00 - 12:00</td>
<td>Online</td>
<td>Martyn Dodd &amp; Demian Vonder Kuhlen</td>
</tr>
<tr>
<td>August 9 - 11 • 9:00 - 12:00</td>
<td>Online</td>
<td>Martyn Dodd &amp; Demian Vonder Kuhlen</td>
</tr>
<tr>
<td>October 18 - 20 • 9:00 - 12:00</td>
<td>Online</td>
<td>Martyn Dodd &amp; Demian Vonder Kuhlen</td>
</tr>
</tbody>
</table>

### Webinars

#### 2013 Title 24: Where We’ve Landed With the Nonresidential Standards
- March 23 • 9:00 - 11:30 Online Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

#### 2013 Title 24: Where We’ve Landed With the Residential Standards
- March 23 • 1:00 - 2:30 Online Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

#### 2016 Title 24: Where We’re Headed With the Nonresidential Standards
- April 8 • 9:00 - 11:30 Online Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

#### 2016 Title 24: Where We’re Headed With the Residential Standards
- April 8 • 1:00 - 2:30 Online Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

### Software Training

#### Beginning EnergyPro 6 Nonresidential
- March 9 • 8:30 - 12:00 Irwindale Martyn Dodd [sce.com/workshops](http://sce.com/workshops)

#### Beginning EnergyPro 6 Residential
- March 9 • 12:30 - 4:00 Irwindale Martyn Dodd [sce.com/workshops](http://sce.com/workshops)

#### EnergyPro Software for 2013 Title 24 Nonresidential Compliance - Introduction
- May 10 • 8:30 - 12:00 San Francisco Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

#### EnergyPro Software for 2013 Title 24 Nonresidential Compliance - Intermediate/Advanced
- May 10 • 1:00 - 4:30 San Francisco Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

#### EnergyPro Software for 2013 Title 24 Residential Compliance - Introduction
- May 11 • 8:30 - 12:00 San Francisco Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

#### EnergyPro Software for 2013 Title 24 Residential Compliance - Intermediate/Advanced
- May 11 • 1:00 - 4:30 San Francisco Martyn Dodd [pge.com/energyclasses](http://pge.com/energyclasses)

#### IESVE Software Training for 2013 Title 24 Compliance for Nonresidential Buildings
- May 18 • 9:00 - 5:00 San Francisco Liam Buckley [pge.com/energyclasses](http://pge.com/energyclasses)
- July 20 • 9:00 - 5:00 San Francisco Liam Buckley [pge.com/energyclasses](http://pge.com/energyclasses)
- November 1 • 9:00 - 5:00 San Francisco Liam Buckley [pge.com/energyclasses](http://pge.com/energyclasses)

This program is funded by California utility customers under the auspices of the California Public Utilities Commission.
Are you Ready for 2016 Standards?

The 2016 Title 24 standards will become effective 1/1/17... are you ready?

Energy Code Ace is here to help you prepare with our new free offerings focused on what's new in 2016.

Now Available:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Instructor</th>
<th>Registration Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title 24: Where We're Headed with the 2016 Standards</td>
<td></td>
<td></td>
<td></td>
<td></td>
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Webinars

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<th>Instructor</th>
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<tbody>
<tr>
<td>2016 Title 24: Where We’re Headed With the Nonresidential Standards</td>
<td></td>
<td></td>
<td>Martyn Dodd</td>
<td>pge.com/energyclasses</td>
</tr>
<tr>
<td>2016 Title 24: Where We’re Headed With the Residential Standards</td>
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<td></td>
<td></td>
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<td>pge.com/energyclasses</td>
</tr>
<tr>
<td></td>
<td>1:00 – 2:30</td>
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<td>pge.com/energyclasses</td>
</tr>
</tbody>
</table>

Ace + Resources™

Our Fact Sheets offer "quick reference" summaries of key requirements, forms, definitions and resources for implementing Title 24, Part 6.


Coming Soon:

More free 2016 training, tools and resources are in the works! Register with www.EnergyCodeAce.com to receive notices when new offerings are available.

This program is funded by California utility customers under the auspices of the California Public Utilities Commission and in support of the California Energy Commission.
2016 Energy Standards Overview

Christopher Olvera
California Energy Commission
Outreach and Education Unit

SVABO Chapter ICC Meeting
West Sacramento, CA
March 11, 2016

2016 Building Energy Efficiency Standards

• Effective on Jan. 1, 2017
  ➢ Building permit applications submitted on or after this date

• Master plans for tract homes affected:
  ➢ Need to resubmit if permits pulled on/after effective date
2016 Documents

- Building Energy Efficiency Standards
- Res. and Nonres. Compliance Manuals
- Reference Appendices
- All docs. available online at:
  www.energy.ca.gov/title24

2016 Residential Energy Savings

- Overall, 28% more efficient than 2013 Standards
  - Electric savings = 345 GWHs
  - Demand Reduction = 115 MW
  - Gas Savings = 31 Mtherms
- Monthly life cycle cost of $11 with savings of $31 for “typical” home (statewide)
2016 Nonresidential Energy Savings

- Overall, 5% more efficient than 2013 Standards
  - Electric Savings = 192 GWHs
  - Demand Reduction = 80 MW
  - Gas Savings = 0.9 Mtherms

Let's begin with the Admin. Regulation changes for Residential Buildings
Administrative Regulations: Signatures and NSHP (§10-103)

- Delegation of Signature Authority
  - Applies to Certificate of Installation (CF2R) Forms only
  - Installing contractor/builder can designate someone as an authorized representative to sign form (likely a HERS Rater)
  - Agreement, signatures, etc. will be facilitated by HERS Providers

- Exception to waive plan review and inspection for New Solar Homes Projects (NSHP) removed

Now for the changes to the Residential Energy Measures
Summary of Major Changes

- Solar ready zone exceptions revised
- Instantaneous water heaters
  - Baseline for prescriptive and performance compliance
- High efficacy lighting
  - New JA8 requirements

* See summary of changes handout

Solar Ready – Mandatory
(§110.10)

- For single-family residences and low-rise multi family buildings:
  - Smart thermostats and high efficacy lighting exception for solar zone and interconnection/documentation reqs. replaced with:
    - Smart thermostat,
      and:
      - Energy Star dishwasher and fridge, or whole house fan with an ECM; or
      - Home automation controlling appliances and lighting that responds to demand response signals; or
      - Alternate plumbing that dischargers dishwasher and shower/tub water for an irrigation system that complies with CA Plumbing Code; or
      - Rainwater catchment system that complies with CA Plumbing Code and uses rainwater flowing from at least 65% of available roof area
Water Heating – Mandatory
(§110.3(c)7)

- Isolation valves required for instantaneous water heaters > 6.8 kBTU/hr (2 kW)
- Valves must be installed on cold line in, and hot water line leaving
- Valves simplify flushing the heat exchanger for maintenance

Water Heating – Prescriptive
(§150.1(c)8)

<table>
<thead>
<tr>
<th>2013</th>
<th>2016</th>
</tr>
</thead>
</table>
| • Instantaneous gas/propane, or A single gas/propane storage water heater
  ➢ Max input of 75,000 Btu/hr
  ➢ No QII or HERS verification requirements
  • Electric-resistance allowed if natural gas is unavailable | • Instantaneous gas/propane, or If single gas/propane storage is designed:
  ➢ Max input of 105,000 Btu/hr
  ➢ Depending on tank size, QII or other HERS Verification measures required
  • Electric-resistance removed as prescriptive option for newly constructed buildings |
Lighting – Luminaire Efficacy
(§150.0(k)1A)

• Classification of efficacy has changed
  ➢ Screw base can now be considered high efficacy

• Luminaires are either:
  ➢ High efficacy by source types listed, or
  ➢ Must be certified & labeled per JA8 to be classified as high efficacy
  ➢ No low efficacy allowed!

---

Table: Classifications of New Efficient Light Sources

<table>
<thead>
<tr>
<th>High Efficiency Light Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light sources as described in JA8 shall be considered high efficiency.</td>
</tr>
</tbody>
</table>

Light sources as described in JA8 shall be considered high efficiency if:

1. The luminaire or component is compatible with high efficiency light sources.
2. The luminaire or component is designed for use with high efficiency light sources.
3. The luminaire or component is listed or certified for use with high efficiency light sources.
4. The luminaire or component is specifically designed for use with high efficiency light sources.
5. The luminaire or component is intended for use with high efficiency light sources.
6. The luminaire or component is marked or labeled for use with high efficiency light sources.
7. The luminaire or component is compatible with high efficiency light sources.
8. The luminaire or component is designed for use with high efficiency light sources.
9. The luminaire or component is listed or certified for use with high efficiency light sources.
10. The luminaire or component is specifically designed for use with high efficiency light sources.
11. The luminaire or component is intended for use with high efficiency light sources.
12. The luminaire or component is marked or labeled for use with high efficiency light sources.

Light sources as the luminaire or component listed in JA8 shall be considered high efficiency if:

1. The luminaire or component is compatible with high efficiency light sources.
2. The luminaire or component is designed for use with high efficiency light sources.
3. The luminaire or component is listed or certified for use with high efficiency light sources.
4. The luminaire or component is specifically designed for use with high efficiency light sources.
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11. The luminaire or component is intended for use with high efficiency light sources.
12. The luminaire or component is marked or labeled for use with high efficiency light sources.

---

Lighting – Luminaire Efficacy
(§150.0(k)1A, cont’d)

Auto High Efficacy List
(No JA8 Certification Required)

<table>
<thead>
<tr>
<th>2013 Standards</th>
<th>2016 Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin-based linear or Compact Fluorescent</td>
<td>No Change</td>
</tr>
<tr>
<td>GU-24 Sockets rated for CFLs/LEDs</td>
<td>Only GU24 sockets rated for use with other than LED light sources (CFL, induction)</td>
</tr>
<tr>
<td>Pulse Start Metal Halide &amp; High Pressure Sodium</td>
<td>No Change</td>
</tr>
<tr>
<td>Induction.</td>
<td>Luminaires with high frequency generator and induction lamp</td>
</tr>
<tr>
<td>LEDs Certified to the CEC as High Efficacy</td>
<td>Inseparable Solid State Lighting (SSL, aka LED) installed outdoors, or decorative</td>
</tr>
</tbody>
</table>
## Lighting – Luminaire Efficacy

(§150.0(k)1A, cont’d)

<table>
<thead>
<tr>
<th>Light Source Type</th>
<th>More Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recessed Downlights in Ceilings—All Lighting Sources</td>
<td>1. Tested for elevated temperature</td>
</tr>
<tr>
<td></td>
<td>2. Cannot have screw base socket, regardless of lamp</td>
</tr>
<tr>
<td>LEDS – Indoor, Non-decorative</td>
<td>Including GU-24 base luminaires containing LEDs</td>
</tr>
<tr>
<td></td>
<td>Any lamp designed for use in screw base socket</td>
</tr>
<tr>
<td>All others not listed on this or previous table</td>
<td></td>
</tr>
</tbody>
</table>

## Ceiling/Wall Insulation:

**Mandatory** (§150.0(a), (c))

<table>
<thead>
<tr>
<th>2013</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Insulation placement language in §110.8</td>
<td>• Moved to §150.0(a)</td>
</tr>
<tr>
<td>• Roof/ceiling insulation required:</td>
<td>• Roof/ceiling insulation reduced:</td>
</tr>
<tr>
<td>▶ 0.031 max U-factor/R-30</td>
<td>▶ 0.043 max U-factor/R-22</td>
</tr>
<tr>
<td>• Addresses only framed walls</td>
<td>• Non-framed walls must meet max 0.102 U-factor</td>
</tr>
</tbody>
</table>
Ceiling/Roof Insulation: Prescriptive (§150.1(c)1A)

<table>
<thead>
<tr>
<th>2013</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Meet R-Value or U-Factor</td>
<td>• Introduction of “high performance attics” requirements</td>
</tr>
<tr>
<td>• Installed at ceiling or roof</td>
<td>• Insulation required at ceiling &amp; roof depending on Option &amp; CZ</td>
</tr>
<tr>
<td></td>
<td>• Radiant barrier &amp; duct location/insulation requirements also depend on Option &amp; CZ</td>
</tr>
<tr>
<td></td>
<td>• 3 Options available</td>
</tr>
<tr>
<td></td>
<td>• Photovoltaic system trade-off option proportional to HPA &amp; HPW</td>
</tr>
</tbody>
</table>

Ceiling/Roof Insulation: Prescriptive (§150.1(c)1A, cont’d)

• Option A

➢ Per TABLE 150.1-A

• Continuous insulation required above roof rafters in some Climate Zones
• Ceiling insulation required
• Radiant barrier required in Climate Zones 2 through 15
• Must meet §150.1(c)9A
Ceiling/Roof Insulation: Prescriptive (§150.1(c)1A, cont’d)

- Option B
  - Per TABLE 150.1-A
    - Insulation required below roof deck in some Climate Zones
    - Ceiling insulation required
    - Radiant barrier required in Climate Zones 2, 3 and 5 through 7
    - Must meet §150.1(c)9A

- Option C
  - Per TABLE 150.1-A
    - Ceiling insulation required
    - Radiant barrier required in Climate Zones 2 through 15
    - Must meet §150.1(c)9B
    - Duct are located in conditioned space (HERS verified)
Wall Insulation – Prescriptive
(§150.1(c)1B)

<table>
<thead>
<tr>
<th>2013</th>
<th>2016</th>
</tr>
</thead>
</table>
| - Cavity insulation R-value; and  
  - Continuous insulation R-value  
  OR  
  - Meet U-Factor | - “High performance walls” requirements introduced  
  - Per TABLE 150.1-A:  
    ➢ Maximum U-Factor specified  
    ➢ Req. U-Factor lowered (more stringent)  
    ➢ Provides for greater design flexibility |

QUESTIONS...
About the residential requirement changes?
Let’s change course and talk about Nonresidential Buildings

Administrative Regulations: Signatures and ATTCP (§10-103)

- Design Review Kickoff and Checklist NRCC
  - Language revised to be more inclusive of eligible reviewers and signers
  - Can be a licensed professional engineer, architect, or contractor under the direct supervision of a P.E. or architect

- Acceptance Test Technician Certification Providers
  - Section numbers changed to 10-103.1 and 10-103.2
  - Updates to annual reporting and application amendment reqs.
  - These changes will be facilitated by the ATTCPs
Now let's talk about the changes to the Nonresidential Energy Measures

Summary of Major Changes

- Equipment efficiencies
  - Minimum reqs. increased

- Direct digital controls

- Door & window interlocks
  - New sensor reqs. to turn HVAC off

- Covered Processes
  - New reqs. for elevators and escalators

- Envelope U-factors
  - Maximum values lowered

- Indoor and outdoor lighting
  - Power allowances reduced
  - Indoor lighting alterations

* See summary of changes handout
**HVAC Efficiency – Mandatory**  
(§110.2)

- Minimum efficiencies updated for mid-size/larger:
  - A/Cs and condensing units
  - Unitary and applies heat pumps
  - Water chilling packages
  - Packaged terminal A/Cs and heat pumps
  - Warm air unit heaters (oil fired)
  - Gas and oil-fired boilers

- Listed in TABLES 110.2-A through 110.2-K

---

**Direct Digital Controls – Mandatory**  
(§120.2(j))

- DDC to the zone req. per TABLE 120.2

- Be capable of:
  - Monitoring fan and pump pressure, heat/cool
  - Transferring zone and demand info.
  - Removing zones form reset algorithm
  - Displaying input/output points
  - Resetting heat/cool setpoints
HVAC Shut-Off – Prescriptive
(§140.4(n))

- Directly conditioned spaces with operable wall or roof openings shall have interlock controls that:
  - Disable or reset the temperature setpoint to 55°F for heating; and
  - Disable or reset the temperature setpoint to 90°F for cooling

- Controls must initiate when window/skylight is open for more than 5 minutes

- Exceptions:
  - Doors with automatic closing devices
  - Spaces without a thermostatic control (thermostat or temperature sensor) for heating or cooling

Covered Processes: Elevators
(§120.6 (f))

- New mandatory requirements for elevators

  - LPD shall be ≤ 0.6 watts/ft²
  - Ventilation for cabs without A/C shall be ≤ 0.33 watts/cfm
  - Lights and ventilation shut-off when unused for over 15 minutes
    - Lighting & ventilation shall remain operational in event cab is stuck and occupied
  - Acceptance testing required
Covered Processes: Escalators & Moving Walkways (§120.6 (g))

- New mandatory requirements for escalators and moving walkways:
  - Located in airports, hotels, and transportation areas
  - Shall reduce to minimum permitted speed (ASME A17.1/CSA B44) when not conveying passengers
  - Acceptance testing required

Covered Processes: Escalators & Moving Walkways (§120.6 (g), cont’d)

- Automatic speed reduction when not conveying passengers
  - Reduce to max of 100 ft/min for escalators
  - Reduce to max of:
    - 180 ft/min for walkways with slope of 0-8 degrees
    - 140 ft/min for walkways with slope above 8, less than 12 degrees
- Acceleration/deceleration shall not exceed 1.0 ft/s²
- Passenger detection for escalators & moving walkways
- Other safety measures
Envelope – Prescriptive
(§140.3(a), (c))

• Roof/ceiling insulation tradeoff for aged solar reflectance revised
  ➢ Max. U-Factors reqs. lower in TABLE 140.3

• Max. U-Factors for ceiling/roofs and walls lowered
  ➢ TABLES 140.3-B through D

• Min. daylighting requirements updated

Indoor Lighting – Prescriptive
(§140.6(a))

New for 2016:

• LPDs have been reduced for Complete Building, Area Category, and Tailored Method

• Two new PAFs added
  ➢ Daylight dimming plus Off
  ➢ Institutionalized tuning

• Three PAFs removed since the control strategies are now mandatory
  ➢ Partial-ON occupancy sensors
  ➢ Manual Dimming/Multiscene programmable controls
  ➢ Combined manual dimming plus partial-ON occupancy sensor
Power Adjustment Factors - Prescriptive (§140.6(a)2)

- Power Adjustment Factor (PAF): Allows a reduction of calculated actual indoor lighting power by the factors below

<table>
<thead>
<tr>
<th>TABLE 140.6-6 LIGHTING POWER ADJUSTMENT FACTORS (PAF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE OF CONTROL</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>1. Daylight Dimming plus Off Control</td>
</tr>
<tr>
<td>2. Occupant Sensing Controls in Large Open Plan Offices</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3. Institutional Tuning</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>4. Demand Responsive Control</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Indoor Lighting Alterations (§141.0(b)2I, J)

- Simplification of lighting alterations in existing buildings
  - Simplified language, tailored requirements to project size
  - New option to reduce control requirements in exchange for more power reduction for replaced or modified luminaires
  - Acceptance testing no longer required for projects where controls are added to control 20 or fewer luminaires
    - Applies to indoor and outdoor lighting alterations
### §140.1(b)2I, J: Indoor Lighting Alterations cont.

<table>
<thead>
<tr>
<th>2013</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lighting System Alterations</td>
<td>• Entire Luminaire Alterations</td>
</tr>
<tr>
<td>• Luminaire Modification in Place</td>
<td>• Luminaire Component Modification</td>
</tr>
</tbody>
</table>

- Removing and reinstalling same luminaires (≥ 10% of existing)
- Replacing/adding luminaires
- Adding, removing, replacing walls along with redesign of lighting system
- Replacing ballast/driver and lamps
- Changing the light source
- Changing the optical system

### §140.1(b)2I, J: Indoor Lighting Alterations cont.

Two options for meeting power and control req.

1. Meet LPD requirements and controls per **TABLE 141.0-E**
   - Area control
   - Multilevel lighting control
   - Shutoff control
   - Automatic daylight control
   - Demand responsive control
   Similar to 2013

2. Reduce existing lighting power by 50% or 35% and controls
   - Area control
   - Shutoff control

New for 2016
Indoor Lighting Alterations
(Table 5-4 of 2016 Nonresidential Compliance Manual)

<table>
<thead>
<tr>
<th>Applicable Section 130.1 Control requirements</th>
<th>Lighting power is reduced by 35-50% compared to existing</th>
<th>Resulting lighting power, compared to the lighting power allowance specified in Section 130.6.5.2, Annex Category Method</th>
<th>Lighting power is ≤8% of allowance</th>
<th>Lighting power is &gt;8% to 100% of allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 130.6(e), 2 and 3 Area Controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Section 130.10(b) Multi-level Lighting Controls – only for alterations to general lighting of enclosed spaces 100 square feet or larger with a connected lighting load that exceeds 0.5 watts per square foot</td>
<td>Not Required</td>
<td>B-level control for each enclosed space amounts one step between 10-50 percent of lighting power regardless of fixture type, or refer Section 130.10(b)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Section 130.6(e) Shut-Off Controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Section 130.10(e) Automatic Daylight Controls</td>
<td>Not Required</td>
<td>Not Required</td>
<td>No Required</td>
<td>Yes</td>
</tr>
<tr>
<td>Section 130.6(e) Demand Responsive Controls – only for alterations &gt;10,000 sq ft in a single building where the alteration that changes the area of the space, or changes the occupancy type of the space, or increases the lighting power</td>
<td>Not Required</td>
<td>Not Required</td>
<td>No Required</td>
<td>Yes</td>
</tr>
</tbody>
</table>

QUESTIONS...

About the nonresidential requirement changes?
Let's finish with some Resources

Approved 2016 Compliance Software

Used to demonstrate compliance with the Energy Standards when using the Performance Approach

- Residential
  - CBECC-Res
  - Energy Pro

- Nonresidential
  - CBECC-Com
  - Energy Pro

More information at:
http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html
2013 Approved HERS Providers

- New construction and HVAC alterations
  - CalCERTS

- New construction ONLY
  - CHEERS

- HVAC alterations ONLY
  - U.S. Energy Raters Association (USERA)

More information at:
http://www.energy.ca.gov/HERS/providers.html

2013 Approved ATTCPs

- Mechanical ATTCPs
  - NEMIC (replaced TABB)
  - NEBB

- Lighting ATTCPs
  - CALCTP
  - NLCAA

More information at:
http://www.energy.ca.gov/title24/attcp/
Blueprint

- Published every other month
- Clarifications on frequently asked questions
- Receive by email
- http://www.energy.ca.gov/efficiency/blueprint/

2013 Fact Sheets

- 5 published to date
- Detailed clarifications on specific topic/requirements
- Receive by email (listserver)
- http://www.energy.ca.gov/efficiency/factsheets/
2016 Training

- Provided by Utilities
- Free of charge
- Can request for training in your region/area
- CEC training
- http://www.energy.ca.gov/title24/training/

Energy Code Ace

- Forms tools
- Free training (in person and online)
- Checklists, Trigger Sheets for building dept.
- http://www.energycodeace.com/content/home/
Hotline

- Toll-free in California

- Open Monday through Friday
  - 8:00 a.m. to noon, and
  - 1:00 p.m. to 4:30 p.m.

- Call at:
  - 1-800-772-3300 (In CA)
  - (916) 654-5106 (Outside CA)

- Or, e-mail at: Title24@energy.ca.gov

Listservers

- Main conduit for communicating with stakeholders

- Sign up at:
  - [http://www.energy.ca.gov/listservers/](http://www.energy.ca.gov/listservers/)

- Subscribe to the following Efficiency Lists:
  - Building Standards
  - Blueprint

- Respond to confirmation e-mail within 24 hours