

Meeting the New Challenges of the 2013 Energy Code

By Charles “Russ” Russell, VCA GREEN, and Kim Hogan, Certified Energy Analyst and Plans Examiner

Effective this January 1, 2014, significant changes to the California Energy Code will present challenges to teams already engaged in pre-design. Residential buildings will have to improve current energy efficiencies by 25% and commercial projects by 30% from today’s baseline. Solar zones for roofs will need to be identified and designated, and lighting controls (automation or occupancy sensors) will need to be installed. To help verify these requirements, building commissioning was relocated from the California Green Building Standards (CALGreen) to the 2013 Energy Efficiency Standards (§120.8.).

These latest changes reflect further progress towards the California Energy Commission’s (CEC) ultimate goal of having buildings produce as much energy as they consume. Also, all new residential units built after January 1, 2020 will be a Net Zero Energy Design, and after January 1, 2030, all non-residential structures will also be Net Zero.

Given these aggressive state goals, this paper will help illustrate some of the compliance mechanisms required in design, highlight some redundancy protocols, and discuss why an Energy Modeler will be a critical design team member.

Compliance Mechanisms

As part of the plan check submittal package, the identified design professionals will now complete and sign four new

documents plus a certificate of compliance with minor changes along with the requisite drawings and energy calculations. The four new certificate documents address design review, construction documents, and HVAC.

The four new documents that will be required are:

1. Design Review Kick-Off Certificate(s) of Compliance
2. Construction Documents Review Checklist Certificate(s) of Compliance
3. Certificate of Compliance for Simple or Complex HVAC System(s)
4. Certificate of Compliance Commissioning - Design Review Signature Page

Signature of Key Members

Because the CEC is emphasizing an integrated design process, a Design Review Kickoff Certificate(s) of Compliance will require the signature of key members of the design team to attest they have participated in early design. Key members include the project owner, architect, mechanical engineer, electrical engineer, document author, and depending on the energy credits being sought, the project’s Certified Energy Analyst (CEA). (See more on the role of the CEA below.)

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To ensure the submitted energy calculations are also represented on construction documents, the Construction Documents Review Checklist Certificate(s) of Compliance requires a CEA to verify by signature, in addition to the design team, that construction documents and energy calculations match. Prior to permit issuance, the local enforcement agency must also sign the form.

HVAC Requirements

For projects that have heating and/or cooling systems, a Certificate of Compliance for Simple or Complex HVAC System(s) must be completed for each system type, simple or complex. A “simple system” consists of a unitary or packaged unit that serves one zone or a two pipe heating only system serving one or more zones. A “complex system” may be comprised of:

1. Multiple thermostatically controlled systems; or
2. Built-up air handler systems (non-unitary or non-packaged); or
3. Hydronic or steam heating systems; or
4. Hydronic cooling systems.

As part of the new requirement for design review commissioning, the Certificate of Compliance Commissioning - Design Review Signature Page was created for use on all projects. Depending on the size of the project, a commissioning agent will also need to be hired. The commissioning agent will work on behalf of the owner and act as a third party by providing design review comments, analyzing existing design, and delivering an issues and observations report.

Energy Modeling Helps Avoid Surprises

Energy modeling is an effective tool for testing various design options and the impact those options will have on all of the systems in the building. Energy modeling, even at the concept level, can establish project efficiency minimums and goals. By progressively evaluating various design strategies as provided from each discipline, the project grows toward its goals with fewer surprises late in the design phase.

This integrated approach provides a single energy model that can be refined at several design stages and shared with the design team as it makes critical decisions throughout the project. Energy conservation measures can be evaluated to see where and which trade-offs will benefit the project and the budget. These different scenarios can be developed before the project is released for bids.

The **Integrated Project Delivery** method, which includes the new requirement for effective energy modeling, is practical and cost effective. It provides a necessary path to meeting energy conservation requirements and best practices by helping project teams view buildings holistically. Intended end products are energy efficient buildings, return on investment for ownership, and improved design.

The Certified Energy Analyst (CEA)

With the 2013 Energy Efficiency Standards, the CEA will replace the CEPE (Certified Energy Plans Examiner) credential with relation to Energy Code modeling. CEAs are professionals who have demonstrated the necessary knowledge, ability and experience to effectively apply the energy code requirements.

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These professionals are certified by California Association of Building Energy Consultants (CABEC).

CEAs help assure project designers, such as architects and engineers, building officials, plan examiners, incentive program administrators and other stakeholders, are receiving quality energy calculations and models.

As discussed in the previous section, a CEA is required to participate early in the design phase. Utilizing a skilled CEA throughout a project's development and completion enables the melding of the design process with productive collaboration between various disciplines. This integrated approach can ultimately contribute to reduced costs in potential design changes that may affect the energy performance and function of a building.

More Information

This paper discussed some critical path compliance documents that will help project teams move through new code requirements. It has also highlighted the need to engage in energy modeling as the design progresses. Due to the volume of code changes, this paper did not discuss the specific choices and compliance options available within the new Energy Code. However, such topics can be presented in further detail as part of the VCA Green Lunch and Learn Workshop series. If you have any questions pertaining to this topic or desire such a presentation, please contact Charles Russell to get updated on the new requirements. ■

About the Authors:

Charles Russell, C.B.O., Vice President of VCA GREEN, is a former building official with 30 years experience. VCA GREEN provides green building consulting, training and commissioning. Mr. Russell is considered an expert on California green building code requirements and is respected for his ability to provide practical building code applications for the benefit of building professionals from both the public and private sectors.

Kim Hogan, CEA, *Certified Energy Analyst and Plans Examiner*, has more than 19 years of energy code project experience ranging from residential and house tract developments to complex non-residential projects which include mixed use, multi-family, high-rise, multiple building campuses and schools.

