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Statewide IOU Codes and Standards Program Comments on Existing Building Energy Efficiency Standards (Workshop 7/27/15)

Additional submitted attachment is included below.



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California Energy Commission
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Re: Docket 15-IEPR-05: Energy Efficiency – Comments of the Statewide IOU Codes and Standards Program on the Staff Workshop on Existing Building Energy Efficiency Standards

I. Introduction

The Statewide IOU Codes and Standards Program (C&S Program) appreciates the opportunity to provide comments on the July 27, 2015 Workshop on Existing Building Energy Efficiency Standards (Workshop). The individual Investor Owned Utilities (IOUs) have previously provided comments on several of the workshop topics in other comments related to the 2015 Integrated Energy Policy Report (IEPR) and on the California Energy Commission's (CEC) Draft of California's Existing Buildings Energy Efficiency Action Plan (the AB758 Draft Action Plan).¹

The C&S Program agrees with the CEC that significantly improving the efficiency of the existing building stock is imperative to reaching the State's climate- and energy-related policy goals. Although the current and future energy standards, i.e., Title 24, Title 20, federal appliance standards will make a significant impact toward meeting those goals, additional efforts beyond

¹ Comments to the CEC on AB758 Existing Buildings Draft Energy Efficiency Action Plan. Retrieved from: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=15-IEPR-05>

the C&S Program will be required to fully meet them (“...the vast majority of these additional savings will result from new efforts and revised approaches”).²

The C&S Program offers the following discussion as an over-arching theme to guide all activities related to Standards Implementation and Development. Despite a very vocal chorus from nearly all corners of the industry that complying with the Standards is too complex, costly, time-consuming, and requires too much paperwork, the Standards development and implementation process has employed a “supply-side” approach to the market. In the interest of increasing savings, the Standards have become even more complex: they require more forms, more documentation, more inspections, and apply to more additions and alterations.

The Standards and compliance process must be a model of efficiency. The C&S Program applauds the CEC’s willingness to step back and develop an approach to the Standards that specifically acknowledges the challenges of meeting and exceeding code in existing buildings. We encourage the CEC to approach this challenge from the “demand-side”, first asking “What do we want to achieve?” and then, “What is the most efficient way to achieve it?”

II. C&S Program Response to July 27, 2015 Existing Building Efficiency Standards Questions

The C&S Program appreciates the variety of stakeholder opinions put forth at the Existing Building Efficiency Standards Workshop on July 27, 2015. In the Workshop Agenda,³ several specific questions were presented. The C&S Program responds to each as follows:

Standards Implementation for Existing Buildings

1. How can compliance be assessed and improved?

The IOU team agrees that assessing compliance in existing buildings is extremely important, yet can be difficult. While working with compliance chain participants, we have identified the following challenges to assessing compliance, which if addressed may be a starting point to determining a better compliance assessment process going forward:

- Defining the universe of projects:
It can be very challenging to estimate the number of projects completed without a permit, although for some measures it may be possible to calculate a reasonable estimate.

² CEC Existing Buildings Energy Efficiency Action Plan, March 2015, Page 24

³ Agenda for Staff Workshop on Existing Building Efficiency Standards. Retrieved from:

http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-05/TN205472_20150723T162607_AGENDA_IEPR_Commissioner_Workshop_Existing_Building_Energy_Effi.pdf

- **Project timing:**
There is often a delay between permit application and project completion, especially for larger projects. This is less pronounced in existing buildings, but it still presents challenges for assessing compliance.
- **Cyclic updates and enforcement staff changes:**
Anecdotal information indicates compliance is lower when the code initially changes and that it increases as people learn the new requirements. These changes in compliance connected to timing of updates could skew assessment results.
- **Data access:**
Access to as-built data is currently very difficult and costly to obtain. Going forward, this access, via the Home Energy Rating System (HERS) registries and the planned nonresidential repository (once built) will provide a much more robust set of data for registered projects. The CEC will still require a method of obtaining data for projects that do not require use of the registries.

Compliance improvement is an ongoing process and a top priority for realizing the full energy savings of the Energy Standards as they continue to evolve. The C&S Program strongly supports the CEC's willingness to closely examine and refine the compliance process for existing buildings. Because the compliance process is perceived as too complex and cumbersome, the uncertainty, confusion and time required to comply often results in avoiding the process altogether. Many market actors ultimately decide that the consequences of being out of compliance are less aversive (and less costly) than navigating the compliance process.

One of the most notable program offerings is the EnergyCodeAce (ECA), which is a suite of completely free resources developed by the IOU C&S Program provides resources to all actors in the compliance "supply chain" with the objective of improving compliance. EnergyCodeAce responds to feedback received directly from the industry, via interactions at trainings, conferences and events, and through the Compliance Improvement Advisory Group (CIAG).

Moreover, EnergyCodeAce is a "one-stop shop" website designed to effectively communicate with and distribute its offerings to primary target market actors.⁴ The suite of free tools available at www.EnergyCodeAce.com is designed to help users identify the forms, installation techniques, and standards relevant to building projects in California. Free trainings offered by the program target a wide range of "hot topic" measures and audience groups, and are provided in a variety of formats, including traditional classroom, virtual classroom, online self-study and online facilitated discussions with industry professionals ("Decoding Talks"). Site resources such as Fact Sheets, Trigger Sheets and Checklists, as well as a list of useful links and downloadable documents, FAQs and a place to submit questions help to improve understanding of when Title 24, Part 6 is "triggered" and how to correctly comply when it is. EnergyCodeAce outreach

⁴ <http://energycodeace.com/>

efforts are based on the belief that communication and collaboration are critical to improving code compliance, and include targeted email messages, exhibiting and presenting at industry events, placing articles and ads in industry publications, partnering with industry organizations and agencies, and supplying all California building department offices with loaded jump drives and collateral materials. To date EnergyCod Ace activities have focused primarily on Title 24, Part 6, but are currently being expanded to increasingly address Title 20.



- [Forms Ace™](#) - web-based tool that aids in determining which compliance forms are applicable to your specific project;
- [Reference Ace™](#) - helps you navigate the Standards using key word search capabilities, hyperlinked tables and related sections;
- [Installation Ace™](#) - a "field guide" that uses an array of photographs along with easy-to-understand text to help you visualize and demonstrate correct installation of a number of residential and nonresidential measures required by 2013 Title 24, Part 6;
- [Navigator Ace™](#) - "roadmap" to energy code compliance, illustrating the compliance process step by step from the big picture down to the fine details, including links to resources and tips and tricks; and
- [Crack the Code Industry Workshops™](#) - downloadable packages designed to help building departments facilitate trainings for local installation contractors.



Free trainings offered by the program target a wide range of "hot topic" measures and audience groups, and are designed to prepare targeted market actors with the specific skills and knowledge they need to effectively perform their job tasks. Participants each receive a comprehensive workbook that some are now referring to as their first "go-to" resource. Program courses were developed based on the information gathered in a training needs assessment and include a series of "Title 24 Part 6 Essentials," including:

- Residential Standards for Plans Examiners and Building Inspectors
- Residential Standards for Energy Consultants
- Residential Standards for AC Quality Installation Contractors
- Nonresidential Standards for Plans Examiners and Building Inspectors
- Nonresidential Standards for Energy Consultants
- Nonresidential Standards for Small Commercial AC Quality Installation Contractors
- Standards & Technology for Retail Lighting
- Standards & Technology for Residential Lighting
- Standards & Technology for Office Lighting
- Standards for Refrigeration in Retail Food Storage

- Residential Modeling
- Nonresidential Modeling

Trainings are provided in a variety of formats, including:

- Traditional classroom - available through sponsoring utility energy centers or at a requested location and time to better meet schedule constraints of industry professionals;
- Virtual classroom - delivered online in real-time by an instructor;
- Online self-study - allows you to take trainings at your convenience (coming soon); and
- Decoding Talks™ –online facilitated discussions with industry professionals, covering key compliance issues



The site also offers a number of free resources to help facilitate effective implementation of California's energy building code. These include:

- [Trigger Sheets](#) – "Quick reference" component-by-component summaries of sections of 2013 Title 24, Part 6 "triggered" based on project scope;
- [Fact Sheets](#) – "Quick reference" summaries of key requirements, forms, definitions and resources for implementing 2013 Title 24, Part 6;
- [Checklists](#) – Step-by-step guidance for plans checks and field inspections;
- A list of [useful links](#), telephone numbers and handy documents;
- [FAQs](#) on the program, this site and the code, itself;
- A place to [submit questions](#);

In addition to this existing compliance improvement work, the CEC, IOUs, and other providers must develop new resources to support the industry and to reduce the resources and time required to comply. Some additional activities for consideration include:

- Invite enforcement agencies into the development process from the beginning. Enforcement staff have first-hand knowledge of the real challenges people face with compliance. The statewide IOU team is already engaged in reaching out to building officials and will continue to do so.
- Offer more “prescriptive” alternatives. Allow flexibility within the prescriptive process to reduce the need for completing a full simulation via the performance approach..
- Develop online permitting and other electronic resources, which the C&S team supports whenever possible.
- Provide resources to local governments and facilitate development of regionally consistent requirements, especially for routine equipment change-outs.

- Acknowledge resource limitations for enforcement staff, building owners, and businesses supplying energy efficiency services, and design the process to fit into existing workflows.
- Integrate energy into other Title 24 sections so all relevant information is in the contextually appropriate location on the plans. This would greatly improve cross-checking and avoid duplication, particularly when the compliance process moves to electronic.
- Simplify the Energy Code language wherever possible.
- Launch a systematic effort to mine data to ascertain compliance levels by sector/end use/building type to quantify the root causes for low compliance.

2. How can the compliance documentation be improved?

Accurate compliance documents provide a complete picture of the building energy performance as designed, and when the process is completed thoroughly, as constructed. While extremely important, the volume of the documentation requirements has resulted in many implementation challenges throughout the industry. Some recommendations for improving the compliance documents follow:

- Eliminate inconsistencies:
Energy documentation requirements are inconsistent with other parts of the code. For example, the plans are the documents of record, and are the primary source of information for field inspectors. Most information is noted in standard locations on the plans, except for the energy information, which is often isolated on a separate page, out of context and difficult to read.
- Reduce the number of forms and eliminate duplication and repetition:
Consider eliminating installation forms for both residential and nonresidential projects. The information on the residential 2R forms is a fourth set of records, duplicating information on the T24 report, plans, and HERS documents. Also, many of the nonresidential compliance (NRCI) forms simply indicate where information is located on the plans.
- Allow contractors to sign electronically.
- Ensure forms are appropriate for the intended author:
The NRCI forms are intended to document equipment installed, but some of these forms ask contractors and installers to provide specific information about the Title 24 calculations, such as “this qualifies for a PAF because...” and “This videoconferencing studio complied using the Area Category Method.” Including questions that the author doesn’t typically know tends to result in avoidance. The documents become an extra layer of work without perceived value, but with potential liabilities.

There are many opportunities for improving the form design, as noted below:

- Remove cell numbers. Cell numbers add no relevant information for the user as there is already a descriptive label for each cell.
- Re-design to highlight relevant information. All information is currently the same size and font and the relevant information is easily overlooked.
- Project Summary Form. Consider requiring ACM vendors to include a “dynamic” one- to two-page checklist that documents the main project features for use in the field (similar to the Res Measures Summary form in EnergyPro).
- Eliminate irrelevant information. Simple changes to the PERF form could easily eliminate five pages from each report.
 - List only relevant forms for the project. There are approximately two pages of forms listed on each PERF report that are not applicable to the project. Eliminating unused forms would reduce the list to approximately one-half page.
 - Eliminate process uses, outdoor lighting, and other prescriptive-only features from the performance form. Eliminate placeholders for tailored lighting.
 - Eliminate self-referential information. Some references indicate envelope information is contained in the envelope section of the PERF form, on the PERF form.
 - Eliminate duplicate information, such as the lists of acceptance forms. All acceptance forms are listed, twice, irrespective of applicability to the project.

3. What can be done to reduce the transactional cost of compliance?

Simplifying and streamlining the compliance process is the most effective way to reduce the cost of compliance.

- Continue building and supporting development of electronic infrastructure to allow online permitting and other electronic submittals whenever possible.
- Integrating the energy code with the other code sections will increase efficiency and reduce costs across the board. Consider working with educators, design professionals, and other industry organizations to establish standard places for energy information on the plans, with other relevant information.
- Ensure other parts of the code refer to the energy requirements. For example, in the Water Heating chapter of the plumbing code, there is no reference to Part 6, nor any mention of energy efficiency, energy factor, or any other Part 6 requirements. Including a reference to the energy code in the appropriate context will help to raise awareness of the requirements.

Standards Development for Alterations and Additions in Existing Buildings

1. What can be changed for the Standards to better address the existing building market and the constraints of working within an existing building?

- Acknowledge the “do it yourself” (DIY) market in existing buildings. Provide simple, easy to understand resources regarding the requirements. Work with retail chains and equipment distributors to provide resources or links to resources, or a method to download information to a mobile device in the store.
- Provide reasonable prescriptive alternatives for common measures, similar to the cool roof requirements.
- Provide support to enforcement agencies to create and establish regionally consistent guides, resources, and requirements, especially for new measures and requirements.
- Eliminate penalties for legal improvements. For example, replacing existing windows in a residential project with thermally-broken dual pane windows is allowed prescriptively, but results in a penalty under the performance method. Nonresidential electric water heating is similar: allowed prescriptively, but penalty in performance runs.
- Work with industry education and training providers and the Contractors State License Board (CSLB) to include energy efficiency in curriculum and continuing education requirements, etc. Consider establishing a “traffic school” for non-complying contractors.

2. Can you offer examples of measures for which the cost-effectiveness of a retrofit varies significantly from that of the same measure in new construction?

The current cost-effectiveness model does not acknowledge the tremendous variation in the conditions at existing buildings. For example, as the Standards already acknowledge, the cost to convert from a storage tank to an instantaneous water heater is much higher than to install in new construction. Instantaneous models can require a larger diameter supply line and different venting configurations, raising the retrofit costs to reconfigure these beyond new construction costs. Even more efficient tank models can be wider in diameter than base models, which can create problems in fitting them in their previous location.

In addition, building shell/insulation is another instance where retrofit costs often vary significantly. Performing work in the building shell area can result in necessary upgrades to other systems. For instance, many times the addition of insulation can require electrical upgrades (e.g. knob and tube replacement) that raise the cost substantially beyond what it would be for new construction.

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IX. CONCLUSION

The C&S Program thanks the CEC for the opportunity to review and provide comment on the Existing Building Efficiency Standards. We look forward to continued collaboration with the CEC on this subject in the future.

Sincerely,

/s/

Valerie Winn

On behalf of the Statewide Codes and Standards Program

cc: P. Strait by email (peter.strait@energy.ca.gov)