

BLUEPRINT

California Energy Commission
Efficiency Division

In This Issue

- » **Water and Energy Saving Economizer Approved**
- » **Lighting Acceptance Test Technician Certification Provider Certificates of Acceptance**
- » **Nonresidential Computer Compliance Program Updates**
 - **EnergyPro**
 - **Integrated Environmental Solutions**
- » **Energy Standards Presentations**
- » **Q&A**
 - **Radiant Floor Heating Panels**
 - **Signatures for Residential Compliance Documents**
- » **Energy Code Ace Training Schedule**

Water and Energy Saving Economizer Approved

During the September 9, 2015, Business Meeting, the California Energy Commission (Energy Commission) **approved** a new compliance option for economizers that save both water and energy. This approval allows pumped refrigerant based economizers to be used as an alternative to water-side economizers for com-

puter rooms (covered process), which are also commonly known as data centers. The benefit of using economizers is that they allow air conditioning systems to provide cool air to a space without operating the mechanical cooling system when outside temperatures are sufficiently cool. This results in energy savings.

Prescriptively, **Sections 140.9(a)1A and B** of the 2013 Building Energy Efficiency Standards (Energy Standards) require that mechanical cooling equipment serving a computer room be equipped with an air-side or water-side economizer. The approval to use pumped refrigerant economizers is an alternative to the use of water-side economizers per Section 140.9(a)1B, and is specific to pumped refrigerant economizers installed in climate zones 1-9, 11-14, and 16. This approval does not affect the use of air-side economizers per **Section 140.9(a)1A**.

Pumped refrigerant economizers bypass the compressor, and pump refrigerant through the evaporator and condenser. The difference in energy consumption between the pump and compressor is where the energy savings occur. In a scenario where a water-side economizer would otherwise be installed, this alternative has the added benefit of conserving California's water.

A pumped refrigerant economizer was **modeled and compared** to a water-side economizer serving a computer room for all 16 cli-

mate zones in California. The results showed the pumped refrigerant economizer system used less energy based on the time dependent valuation (TDV) for 14 of the 16 climate zones while using no water. An evaluation of computer room locations in California indicates most computer rooms are located within the 14 climate zones approved for the use of pumped refrigerant economizers. By switching from a water-side economizer to a pumped refrigerant economizer, roughly 4,000,000 gallons of water can be saved each year for a computer room with a load of 1.2 megawatts.

Lighting Acceptance Test Technician Certification Provider Certificates of Acceptance

Enforcement agencies should only see lighting control Certificates of Acceptance (NRCA-LTI-02-A, NRCA-LTI-03-A, NRCA-LTI-04-A, and NRCA-LTO-02-A) that have a logo from one of the following approved Acceptance Test Technician Certification Providers (ATTCPs):

- » **California Advanced Lighting Controls Training Program (CALCTP)**
- » **National Lighting Contractors Association of America (NLCAA)**

Background

The goal of the ATTCP program is to provide training, certification, and oversight of technicians who perform the acceptance tests

required by the Energy Standards. ATTCPs are professional organizations who are required to provide:

- » A training curriculum for technicians and their employers.
- » Certification procedures.
- » Complaint resolution, including disciplinary procedures.
- » Quality assurance.
- » Accountability measures.

Acceptance testing ensures that installed equipment, controls, and systems operate as required. ATTCPs monitor acceptance test employers and Acceptance Test Technicians (ATTs) who perform acceptance testing.

CALCTP and NLCAA have prepared Energy Commission approved Certificates of Acceptance (certificates). These certificates bear their respective association's logo, representing their accountability for the work of their certified ATTs. These certificates provide enforcement agencies the data necessary to verify compliance. Certificates submitted to enforcement agencies without the logo of an approved ATTCP may not have been prepared by a certified lighting controls ATT. Enforcement agencies should be suspicious of lighting control certificates that do not have an ATTCP logo. The Energy Commission will continue to provide lighting control Certificates of Acceptance, without ATTCP logos, for reference.

ATTCP Agreements

Lighting controls ATTs are required through technician agreements with their ATTCP to use their electronic acceptance test system to record testing results and to generate Certificates of Acceptance. The ATTCPs use the electronic acceptance test system to track the completed work of ATTs and their employers for quality assurance purposes.

The Energy Commission considers this a temporary measure until a nonresidential data registry is approved and mandatory registration is required for all nonresidential compliance documents. To date, no application for a nonresidential data registry has been submitted for Energy Commission approval.

If you have any questions, please contact Joe Loyer at: (916) 654-4811 or Joe.Loyer@energy.ca.gov.

Nonresidential Computer Compliance Program Updates

EnergyPro

EnergyPro 6.7, using the simplified geometry two-dimensional (2D) option of the CBECC-COM application program interface (API), is approved as an alternative calculation method. This version can be used to demonstrate performance compliance with the nonresidential provisions of the Energy Standards.

EnergyPro 6.6 continues to be valid for demonstrating compliance with the nonresidential provisions of the Energy Standards. All permit applications submitted on or after August 17, 2015, which are modeled using EnergyPro, must use version 6.6 or 6.7.

Integrated Environmental Solutions

Integrated Environmental Solutions (IES) Virtual Environment (VE) 2015 Feature Pack 1, version 2015.1.0 is approved as an alternative calculation method to demonstrate performance compliance with the nonresidential provisions of the Energy Standards. This version uses the detailed geometry three-dimensional (3D) option of the CBECC-COM API.

IES VE 2014 Feature Pack 1, version 2014.1.0 and 2014 Feature Pack 2, version 2014.2.0.0 are expired. These versions may not be used to demonstrate compliance for permit applications submitted on or after on August 17, 2015.

Additional information on approved computer compliance programs can be viewed at: http://www.energy.ca.gov/title24/2013standards/2013_computer_prog_list.html.

Energy Standards Presentations

The Energy Commission has created eight Energy Standards presentations, which are now available on the Energy Commission's website at: <http://www.energy.ca.gov/title24/training/>.

The following presentations are available:

- » Acceptance Testing
- » Cool Roofs
- » Envelope Overview
- » Nonresidential Alterations Overview
- » Nonresidential Compliance Documents
- » Nonresidential Indoor Lighting
- » Residential Alterations
- » Solid Foundation of the Energy Standards

Q&A

Radiant Floor Heating Panels

If I install radiant floor heating panels on top of a slab floor, is the slab subject to the insulation requirements for heated slab floors in Section 110.8(g)?

A heating element installed on top of a slab floor does not meet the definition of a heated slab because the heating element is not embedded into the concrete. While it would be good practice to install rigid insulation between the floor sheathing and concrete to reduce the heat loss, there are no insulation requirements for this system or the slab per the Energy Standards.

Signatures for Residential Compliance Documents

Who signs compliance documents for residential building projects?

The documentation author and responsible person must sign the Certificates of Compliance (CF1R), Installation (CF2R), and Verification (CF3R). Each certificate has two signature blocks. The first is the declaration statement for the documentation author, and the second block is for the responsible person.

Does the California Business and Professions Code (B&P) address responsibility for compliance with the Energy Standards?

No. However, **Division 3** of the B&P and the **Contractor State License Board (CSLB)** restrict who can perform certain kinds of work on any construction-related project, usually requiring an appropriate professional license.

Who is the documentation author?

The documentation author is the person that completes the document. Their signature certifies that the information entered on the document is accurate and complete. There are no licensing or training requirements for a documentation author. The documentation author performs a service under the authority of the person with overall project responsibility. After the documentation author signs the document, it must be reviewed and signed by the responsible person.

Who is the responsible person?

The responsible person is the person who accepts responsibility for complying with the Energy Standards. The responsible person for each compliance document is listed below:

- » CF1R: The responsible person, also referred to as the responsible designer, accepts responsibility for the building design.
- » CF2R: The responsible person, also referred to as the responsible builder/installer, accepts responsibility for the construction or installation of features, materials, components, or manufactured devices regulated by the Energy Standards or Appliance Efficiency Regulations.
- » CF3R: The responsible person, also referred to as the responsible rater or Home Energy Rating System (HERS) rater, accepts responsibility for performing field verification and diagnostic testing services.

Is the responsible designer for the CF1R required to be licensed?

Not always. The **B&P** allows unlicensed professionals to prepare design documentation for wood framed single family and multi-family (four units or less) dwellings that are two stories or less. In these cases, the builder may sign as the responsible person per **Section 2.4.3** of the 2013 Residential Compliance Manual.

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:

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**CALIFORNIA
ENERGY COMMISSION**

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CEC-400-2015-031



Title 24 Part 6

Essentials Training Courses

Currently Scheduled for 2015

The California Statewide Codes & Standards Program

Here to help you meet the requirements of Title 24, Part 6

We offer FREE

- Trainings
- Tools
- Resources

All designed to improve compliance with the state's building energy code and aimed at locking in long-term energy savings.



EnergyCodeAce.com

Classes added frequently -- Please check EnergyCodeAce.com/training for all our up-to-date offerings

Register for a scheduled FREE class or contact us at

energycodeace.com/content/training-request/ to bring a training to a location of your choice!

09/1/15



Traditional Classroom™

Residential Standards for Plans Examiners and Building Inspectors

DATE • TIME	LOCATION	INSTRUCTOR	REGISTRATION LINK
September 21 • 1:00 - 5:00 (pA)	San Luis Obispo	Brian Selby	goo.gl/25hUIN
September 22 • 8:30 - 12:30 (pB)	San Luis Obispo	Brian Selby	goo.gl/25hUIN
September 23 • 8:30 - 4:30	San Jose	Marina Chavez	goo.gl/N8cNex
October 15 • 8:30 - 4:30	San Bernadino	Bruce Cheney	sce.com/workshops
October 20 • 8:30 - 4:30	San Francisco	Marina Chavez	goo.gl/doPWKo
October 28 • 8:30 - 4:30	Folsom	Brian Selby	goo.gl/hUwpsV

Residential Standards for Energy Consultants

October 14 • 8:30 - 4:30	Irwindale	Martyn Dodd	sce.com/workshops
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Residential Standards for AC Quality Installation Contractors

November 19 • 8:30 - 3:00	Irwindale	David Wylie	sce.com/workshops
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Nonresidential Standards for Plans Examiners and Building Inspectors

October 1 • 8:30 - 4:30	Mammoth Lakes	Bruce Cheney	sce.com/workshops
October 19 • 1:00 - 5:00 (pA)	San Luis Obispo	Brian Selby	goo.gl/hxpG2p
October 20 • 8:30 - 12:30 (pB)	San Luis Obispo	Brian Selby	goo.gl/hxpG2p
October 29 • 8:30 - 4:30	Folsom	Brian Selby	goo.gl/a1StxW

Nonresidential Standards for Energy Consultants

October 29 • 8:30 - 2:30	Downey	Martyn Dodd	seminars.socialgas.com
November 19 • 8:30 - 4:30	Irwindale	Martyn Dodd	sce.com/workshops

Standards & Technology for Residential Lighting

October 8 • 8:30 - 3:30	Irwindale	Kelly Cunningham	sce.com/workshops
December 2 • 8:30 - 3:30	Irwindale	Kelly Cunningham	sce.com/workshops

Standards & Technology for Office Lighting

September 17 • 8:30 - 4:30	San Ramon	Kelly Cunningham	goo.gl/H5MIJv
October 7 • 8:30 - 3:30	Irwindale	Kelly Cunningham	sce.com/workshops
November 10 • 8:30 - 4:30	Folsom	Kelly Cunningham	goo.gl/xpZlbp
December 3 • 8:30 - 3:30	Irwindale	Kelly Cunningham	sce.com/workshops

Standards & Technology for Retail Lighting

October 21 • 8:30 - 4:30	San Francisco	Kelly Cunningham	goo.gl/CbEnR8
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Online Self-Study™

Take them whenever and wherever you like, at your own pace. Visit EnergyCodeAce.com:

- Residential Standards for AC Quality Installation Contractors
- Residential Standards for Indoor Lighting
- Residential Standards for Ventilation
- Residential Energy Efficiency Concepts
- Nonresidential Standards for Indoor Lighting Mandatory Measures
- Nonresidential Standards for Indoor Lighting Prescriptive Compliance
- Nonresidential Energy Efficiency Concepts



Delivered online in real-time by an instructor
 Classes are delivered in 3 parts, 1 each day in a series.

Residential Standards for Energy Consultants

October 6 - 8 • 9:00 - 12:00	Online	TBD	Coming Soon
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Nonresidential Standards for Energy Consultants

September 8 - 10 • 9:00 - 12:00	Online	Brian Selby	bit.ly/1EiKjLs
December 15 - 17 • 9:00 - 12:00	Online	TBD	Coming Soon

Residential Modeling

November 10 - 12 • 9:00 - 12:00	Online	TBD	Coming Soon
December 8 - 10 • 9:00 - 12:00	Online	TBD	Coming Soon



Facilitated online discussion forums for building department personnel and other industry professionals.

Decoding CBECC-Com: Let's Talk IES and Nonresidential 3D Modeling, Part 2

October 6 • 9 :00 - 11:00 and 2:00– 4:00
 October 7 • 9 :00 - 11:00 and 2:00– 4:00

Led by Gina Rodda with
 Special Guest Liam Buckley of IES



Software Training

DATE • TIME	LOCATION	INSTRUCTOR	REGISTRATION LINK
Advanced EnergyPro 6.4 - Nonresidential			
September 17 • 8:30 - 12:00	Irwindale	Martyn Dodd	sce.com/workshops
November 4 • 8:30 - 12:00	Irwindale	Martyn Dodd	sce.com/workshops
Advanced EnergyPro 6.4 - Residential			
September 17 • 12:30 - 4:00	Irwindale	Martyn Dodd	sce.com/workshops
November 4 • 12:30 - 4:00	Irwindale	Martyn Dodd	sce.com/workshops
Beginning EnergyPro 6.4 - Nonresidential			
October 15 • 8:30 - 12:00	Irwindale	Martyn Dodd	sce.com/workshops
Beginning EnergyPro 6.4 - Residential			
October 15 • 12:30 - 4:00	Irwindale	Martyn Dodd	sce.com/workshops
CBECC-Com 2013 Title 24 Nonresidential Compliance Software Training - Detailed Geometry and Advanced Topics			
September 17 • 8:30 - 4:00	Irwindale	TBD	sce.com/workshops
October 8 • 8:30 - 4:00	Irwindale	TBD	sce.com/workshops
November 5 • 8:30 - 4:00	Irwindale	TBD	sce.com/workshops
CBECC-Com 2013 Title 24 Nonresidential Compliance Software Training - Introduction and Simplified Geometry			
September 16 • 8:30 - 4:00	Irwindale	TBD	sce.com/workshops
October 7 • 8:30 - 4:00	Irwindale	TBD	sce.com/workshops
November 4 • 8:30 - 4:00	Irwindale	TBD	sce.com/workshops
EnergyPro - Advanced			
October 28 • 1:00 - 4:30	Downey	Martyn Dodd	seminars.socalgas.com
EnergyPro - Envelope & Windows			
October 27 • 8:30 - 12:00	Downey	Martyn Dodd	seminars.socalgas.com
EnergyPro - Indoor & Outdoor Light			
October 27 • 1:00 - 4:30	Downey	Martyn Dodd	seminars.socalgas.com
EnergyPro - Mechanical			
October 28 • 8:30 - 12:00	Downey	Martyn Dodd	seminars.socalgas.com



This program is funded by California utility customers under the auspices of the California Public Utilities Commission.