CALIFORNIA ENERGY COMMISSION

A SOLID FOUNDATION OF THE ENERGY STANDARDS

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American Institute of Architects, Redwood Empire Chapter
March 11, 2015

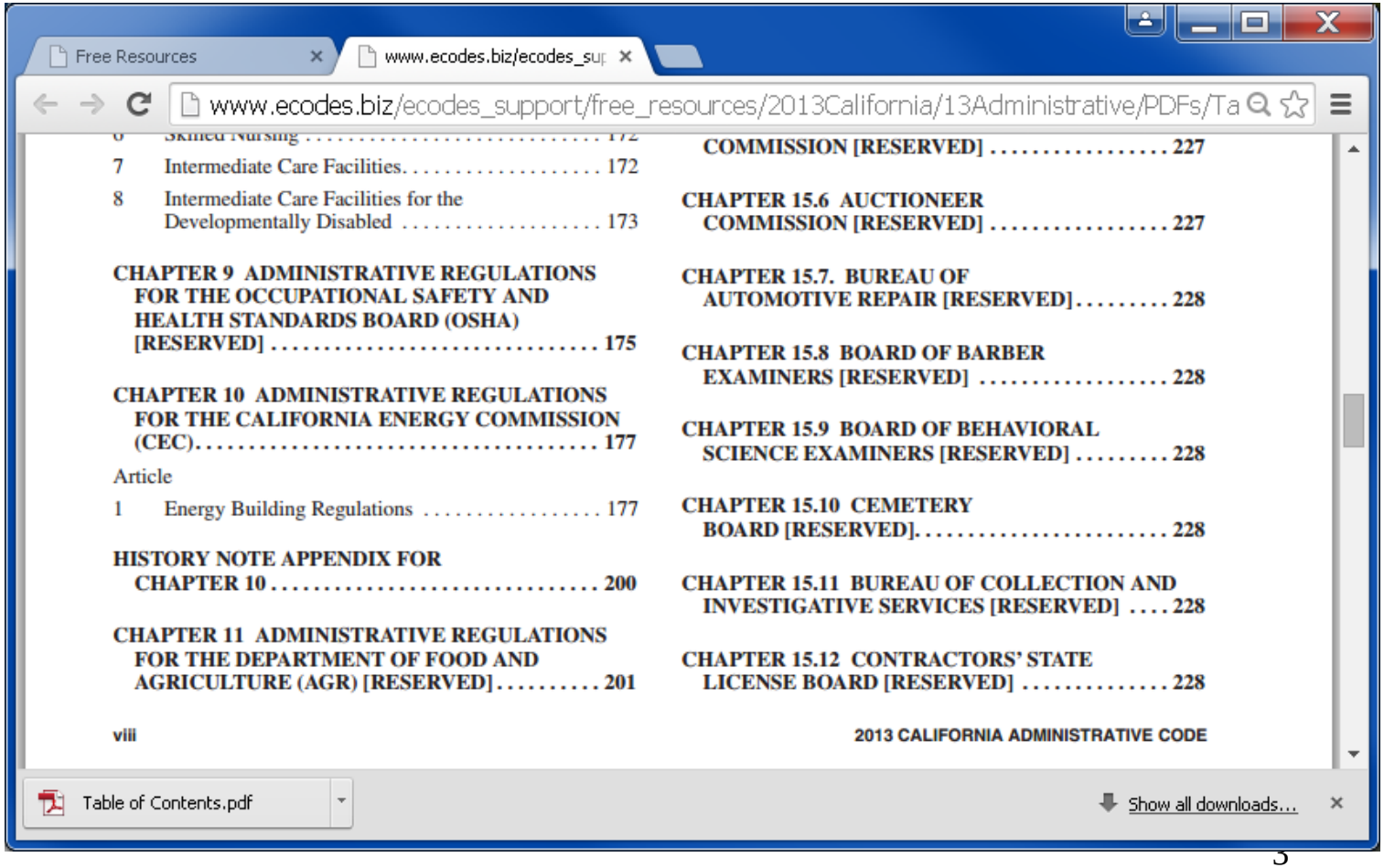
"How do I know what energy regs apply to my project?"

Hint: The key is knowing how to navigate the Standards

LET'S COVER:

- How all the Parts, Articles, Sections, & Chapters differ & come into play
- Dissecting the Index
- Classifying my project
- Acid tests for my project
- Further study

Title 24/Part 1 Index



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Format Order ("Where am I?")

- Title 24
  - Part 1
    - Chapter 10
      - Article 1 (this is what we'll explore next)
  - Part 6
    - Subchapters 1 through 9 ("hey wait—how did all these section numbers get in here?")

"What Does Part 1 Have to do with Design?"

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Let's Go Through Part 1/Chapter 10

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- 112 – Default Tables
- 113 – Roofing Products
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- **CH 3 – USE & OCCUPANCY CLASSIFICATION**
- **CH 4 – SPECIAL DETAILED REQUIREMENTS**
- **CH 5 – GENERAL BUILDING HEIGHTS & AREAS**
- **CH 6 – TYPES OF CONSTRUCTION**
- **CH 7 – FIRE & SMOKE PROTECTION**
- **CH 8 – INTERIOR FINISHES**
- **CH 9 – FIRE PROTECTION SYSTEMS**
- **……..etcetera**

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- **SubCh 1, §100** **ALL OCCUPANCIES—GENERAL PROVISIONS**
- **SubCh 2, §110** **ALL OCCUPANCIES—MANDATORY REQUIREMENTS FOR THE MANUFACTURE, CONSTRUCTION AND INSTALLATION OF SYSTEMS, EQUIPMENT AND BUILDING COMPONENTS**
- **SubCh 3, §120** **NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, HOTEL/MOTEL OCCUPANCIES, AND COVERED PROCESSES—MANDATORY REQUIREMENTS**
- **SubCh 4, §130** **NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, AND HOTEL/MOTEL OCCUPANCIES—MANDATORY REQUIREMENTS FOR LIGHTING SYSTEMS AND EQUIPMENT, AND ELECTRICAL POWER DISTRIBUTION SYSTEMS**
- **SubCh 5, §140** **NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, AND HOTEL/MOTEL OCCUPANCIES—PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR ACHIEVING ENERGY EFFICIENCY**
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- **SubCh 8, §150.1** **LOW-RISE RESIDENTIAL BUILDINGS - PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR NEWLY CONSTRUCTED RESIDENTIAL BUILDINGS**
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- **SubCh 3- §120** **NONRESIDENTIAL, MANDATORY REQUIREMENTS**
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- **SubCh 7- §150** **RESIDENTIAL, MANDATORY FEATURES & DEVICES**
- **SubCh 8- §150.1** **RESIDENTIAL, PERFORMANCE & PRESCRIPTIVE COMPLIANCE APPROACHES**
- **SubCh 9- §150.2** **RESIDENTIAL, ADDITIONS, ALTERATIONS**

Classifying the Project: Identify the Project by Category

Part 6 – considered at once

- **Functional Use**
- **Project Actions**
- **Compliance Method**
- **Registration Potential**
- **Incidentals**

Part 2 – considered in sequence

- Occupancy Type
- Area/Height
- Construction Type

Identify the Project by Functional Use

- Residential
- NonResidential
- Combination of the above
  - What of the issue of “minor” & “mixed” occupancies?

Occupancy / Functional Use

Title 24/Part 2

- A
- B
- E
- F
- H
- I
- M
- C
- L
- R
- S
- U

Title 24/Part 6

- A
- B
- E
- F
- H
- M
- R
- S
- U

Occupancy / Functional Use

- How is “high-rise” residential handled?
- How is “hotel/motel” handled?
- What about “live/work” spaces?
- How do “process loads” affect spaces?

Identify the Project by Project Actions (not by construction type)

- Newly constructed
- Addition
- Alteration
- Combination of above
- Repair

"Newly Constructed" vs All Other

- What constitutes "addition"?
  - What is "CFA"?
- When does a "repair" become an "alteration"?
- When does a conversion become "new" work?

Identify the Project by Compliance Method

- Prescriptive
  - Follow a package of measures
  - Minimal amount of options/design flexibility
- Performance
  - Trade-offs & options allow great design flexibility
  - Modeling may not be as cutting edge as your design
- Not to mention the “mandatory measures”

Identify the Project by Registration Potential

- Register
  - If HERS is triggered
- Don't Register
  - If no HERS requirement

This is for Residential only
…and yes, HERS does get involved with NonRes occasionally.
What happens with NonRes projects?
…there is no registry at this time for NonRes.

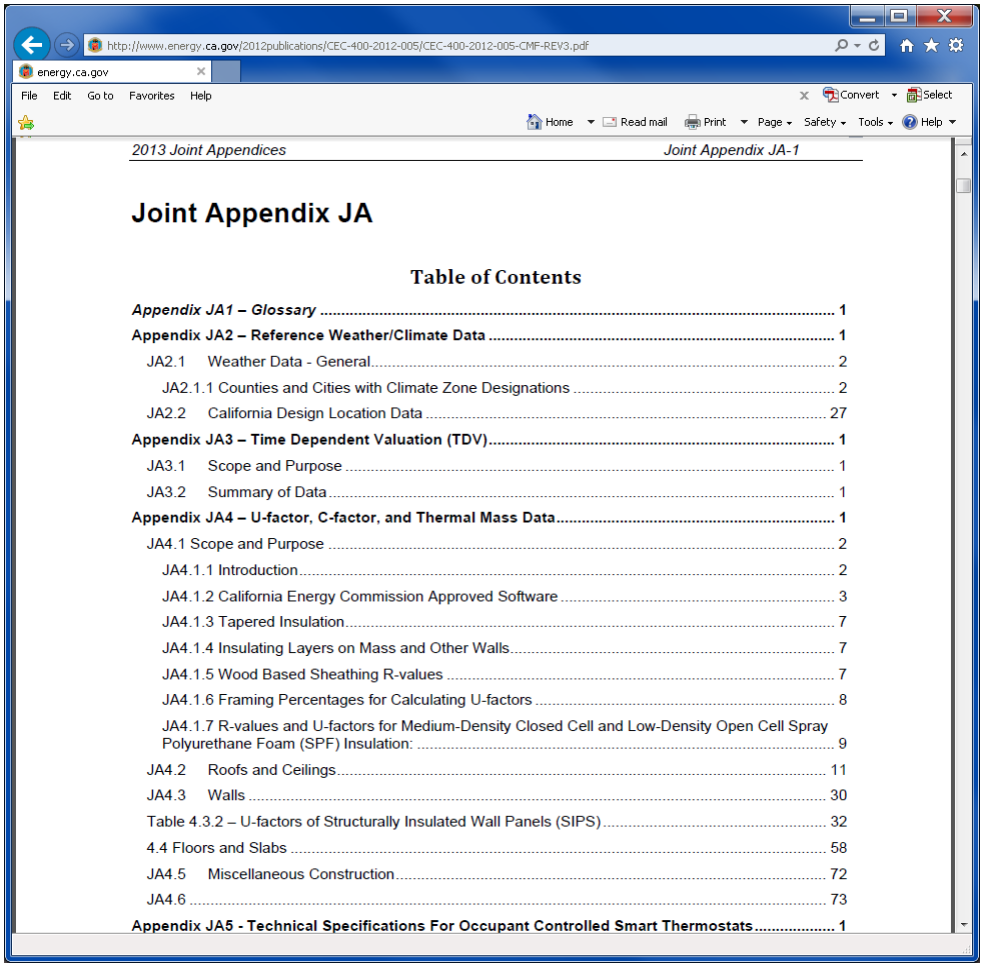
Identify the Project by Incidental Factors

- Appliances
  - Interface with Title 20
  - Includes cooking appliances, water heaters, etcetera
- Equipment, components, devices
  - Interface with Title 20, but installation is controlled by Title 24 & there are added requirements
  - Includes “smart thermostats”, air economizers, etcetera

"But why does it seem to be so complicated?"

- Energy is complex to begin with
  - Runs through all things associated with buildings
  - So many climates in CA; Standards cover many disciplines
- Many options to meet compliance
  - In fairness to building owners
- Thresholds, to keep cost contained
  - Stepped actions
- So many actions we can do to a building
  - Add to, partly demolish & replace, renovate, etcetera
- So many building assembly types
  - Reference Joint Appendix JA4

How Does the Joint Appendix Affect Design?



http://www.energy.ca.gov/2012publications/CEC-400-2012-005/CEC-400-2012-005-CMF-REV3.pdf

2013 Joint Appendices *Joint Appendix JA-1*

Joint Appendix JA

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- The U-values are used for all project calcs.
- Organized by assembly, & type of construction.
- Use only recognized assemblies, or …

Apply What You Know to the First Sub-Chapter

- Subchapter 1 – Section 100.0 – Scope
  - Which projects are governed & which projects are not
  - Parts of the building regulated
  - Conditioned vs unconditioned space
  - Mixing functional uses
  - The beauty of Table 100.0-A
  - Definitions are so important

"Acid Tests For My Project"

Ask these of your project, periodically

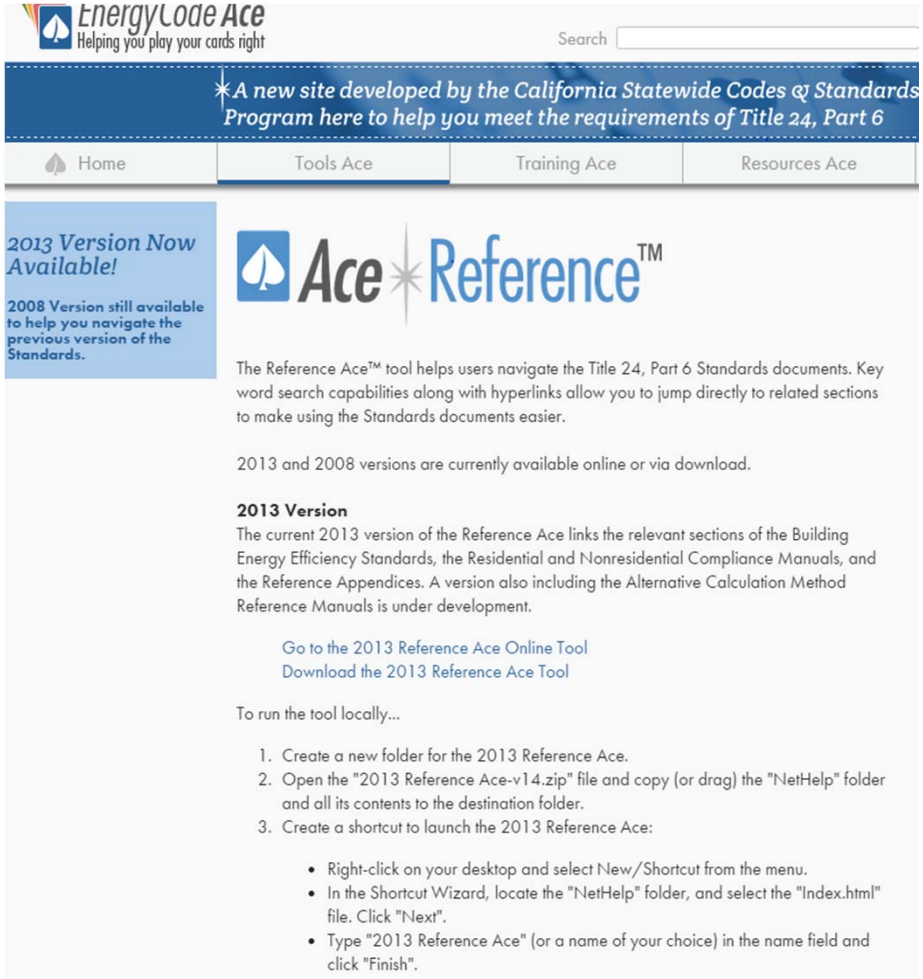
- Is it a regulated functional use (occupancy)?
- Does it have minor use?
- Is it newly built, an addition, an alteration, or a repair?
- How does it impact the 3 fundamentals?
- Is it conditioned, or unconditioned?
- What compliance method?
- Does it need registration?

Navigating the CEC Website

- Where is everything?
  - http://www.energy.ca.gov/title24/2013standards/
- Where & how can I comment on the Standards?
  - http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/index.html
  - http://www.energy.ca.gov/decisions_pending.html
    - **Docket #15-BSTD-01**

Other references

- www.energycodeace.com



EnergyCode Ace
Helping you play your cards right

Search

A new site developed by the California Statewide Codes & Standards Program here to help you meet the requirements of Title 24, Part 6

Home | Tools Ace | Training Ace | Resources Ace

2013 Version Now Available!

2008 Version still available to help you navigate the previous version of the Standards.

Ace Reference™

The Reference Ace™ tool helps users navigate the Title 24, Part 6 Standards documents. Key word search capabilities along with hyperlinks allow you to jump directly to related sections to make using the Standards documents easier.

2013 and 2008 versions are currently available online or via download.

2013 Version

The current 2013 version of the Reference Ace links the relevant sections of the Building Energy Efficiency Standards, the Residential and Nonresidential Compliance Manuals, and the Reference Appendices. A version also including the Alternative Calculation Method Reference Manuals is under development.

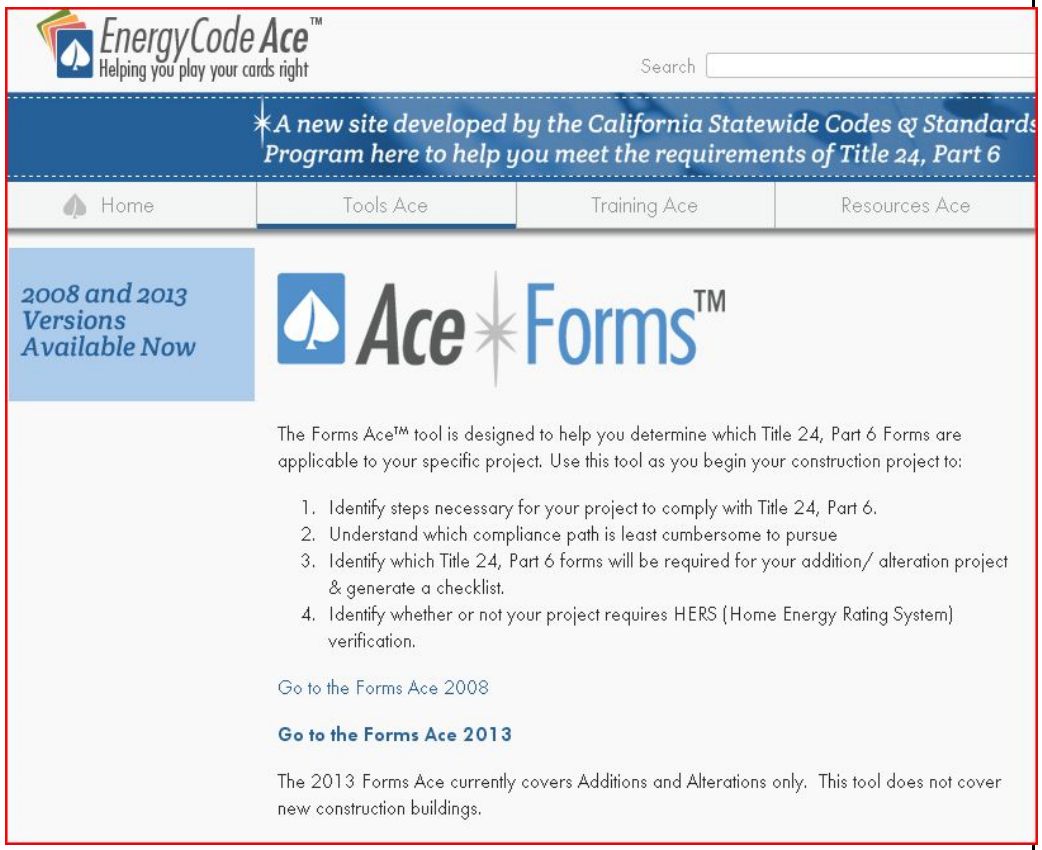
Go to the 2013 Reference Ace Online Tool
Download the 2013 Reference Ace Tool

To run the tool locally...

1. Create a new folder for the 2013 Reference Ace.
2. Open the "2013 Reference Ace-v14.zip" file and copy (or drag) the "NetHelp" folder and all its contents to the destination folder.
3. Create a shortcut to launch the 2013 Reference Ace:
   - Right-click on your desktop and select New/Shortcut from the menu.
   - In the Shortcut Wizard, locate the "NetHelp" folder, and select the "Index.html" file. Click "Next".
   - Type "2013 Reference Ace" (or a name of your choice) in the name field and click "Finish".

Other references

- http://www.energycodeace.com/content/forms-ace/



Output

Energy Code Ace - forms-ac

www.energycodeace.com/2013-forms-ace-tool-results/residential/2927

Your Responses to the Residential Forms Ace Tool

Report

Basic Info

Zip Code : **95821**

Climate Zone : **Zone 12**

Additional Information

AI-1 Which Energy Code Compliance Option will you use? : **Prescriptive**

Prescriptive AI-4 Are you performing an alteration, addition, or combination of the two? : **Addition**

Prescriptive AI-8 What is the Conditioned Floor Area of the addition? : **1,000 sf or less**

Prescriptive AI-10 What type of system are you *adding*? [Click all that apply]: :

- **Lighting**
- **Envelope**

Project Components

Prescriptive PCL-1 Will any hard-wired light fixtures be added, altered, or replaced? : **Yes**

Prescriptive PCL-2 Is your project a single family or multifamily residence? : **Single Family**

Prescriptive PCE-1 Will this project add, alter, or replace *fenestration* including skylights, windows, garden window, bay windows, french doors, sliding glass doors, or any door with glazed area more than 1/2 of door area? : **Yes**

Prescriptive PCE-14 Which calculation method are you using for compliance? : **Calculating SHGC with exterior shading**

Prescriptive PCE-2 Will this project add, alter, or replace *insulation* in a raised floor, slab floor, exterior walls, foundation walls, ceiling, or attic roof? : **Yes**

Prescriptive PCE-15 Which calculation method are you using for compliance? : **I'm using EZ frame**

Prescriptive PCE-3 Will this project have *new roof* area? : **Yes**

Prescriptive PCE-9 Is the addition square footage less than 300 sf? : **No**

Output

Energy Code Ace - forms-ac

www.energycodeace.com/2013-forms-ace-tool-results/residential/2927

Download Your Documents

You can download all the required documents as a single zip here:

Report

Download All 9 Documents

Or you can download the files individually:

PHASE 1

GENERAL

CF1R-ADD-01-E-PrescriptiveAdditionsBuilding.pdf

ENVELOPE

CF1R-ENV-01-E-EzFrameWorksheet.pdf
CF1R-ENV-03-E-ShgcWorkSheet.pdf
CF1R-ENV-04-E-CoolRoofAndSRIWorksheet.pdf

PHASE 2

LIGHTING

CF2R-LTG-01-E-Lighting-SingleFamilyDwellings.pdf

ENVELOPE

CF2R-ENV-01-E-InsulationRoofingFenestrationSpecifications.pdf
CF2R-ENV-02-E-EnvelopeAirSealing.pdf
CF2R-ENV-03-E-InsulationInstallation.pdf
CF2R-ENV-04-E-Roofing-RadiantBarrier.pdf

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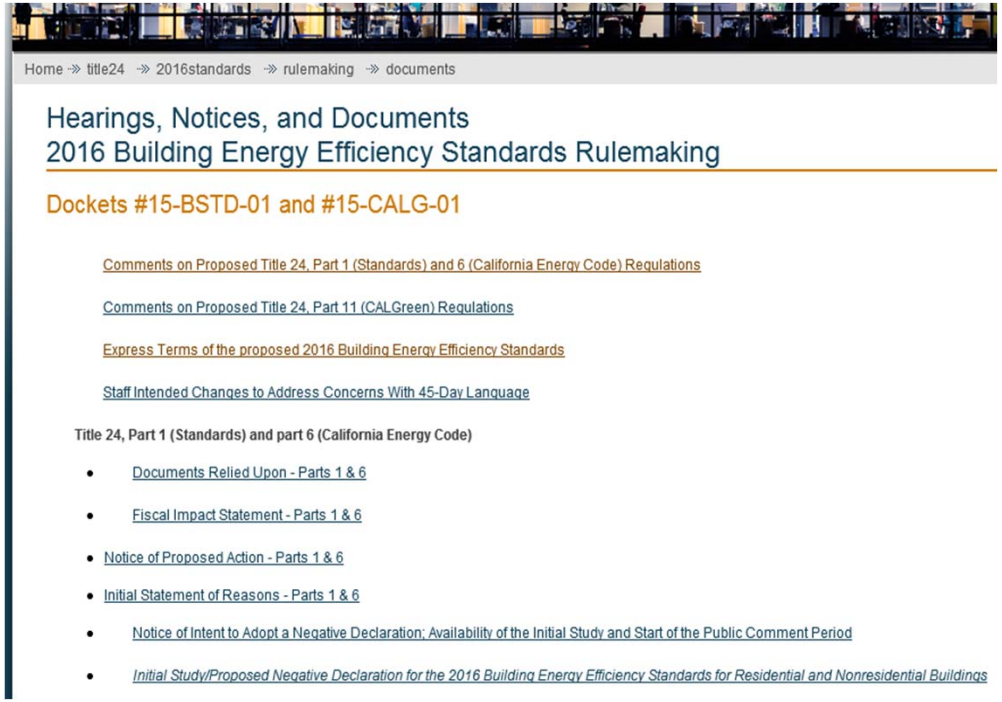
Commenting

http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/

http://www.energy.ca.gov/decisions_pending.html



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Hearings, Notices, and Documents
2016 Building Energy Efficiency Standards Rulemaking

Dockets #15-BSTD-01 and #15-CALG-01

Comments on Proposed Title 24, Part 1 (Standards) and 6 (California Energy Code) Regulations

Comments on Proposed Title 24, Part 11 (CALGreen) Regulations

Express Terms of the proposed 2016 Building Energy Efficiency Standards

Staff Intended Changes to Address Concerns With 45-Day Language

Title 24, Part 1 (Standards) and part 6 (California Energy Code)

- Documents Relied Upon - Parts 1 & 6
- Fiscal Impact Statement - Parts 1 & 6
- Notice of Proposed Action - Parts 1 & 6
- Initial Statement of Reasons - Parts 1 & 6
- Notice of Intent to Adopt a Negative Declaration; Availability of the Initial Study and Start of the Public Comment Period
- *Initial Study/Proposed Negative Declaration for the 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*

Simple Design Problem

- An existing 1,000 sf vehicle service shop
  - Built in 2006
  - Existing ceiling mount unit heater, 20 kbtu
- Project objective
  - Owner wants to add another 20 kbtu heater
- Classify the project