2024 Supporting 2022 Energy Code

Introduction to CABEC Mentoring Program

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11/28/2023

California Association of Building Energy Consultants

CABEC

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OVERVIEW

Oversight for the Certified Energy Analyst (CEA) Mentoring Program has been delegated to the California Association of Building Energy Consultants (CABEC). CABEC improves the practice of energy consulting by encouraging its members to participate in a continuing education program of professional development. The education program covers: The State of California's building energy regulations and analysis, energy conservation technologies, ethics, compliance documentation, and any relevant topics that will develop the professional standards of those engaged in energy consulting.

The goal of the CABEC Mentoring Program is to pair seasoned and certified CEAs who are also CABEC Members with individuals currently in pursuit of certification. The mentor will share experiences and practical knowledge to supplement the mentee's development while s/he completes the training and development programs that are available through Energy Code Ace (www.energycodeace.com) and others. While the mentoring program is intended to be customized to the preferences of the mentorship pairing, it is structured around Monthly Mentoring Meetings, which are a series of courses and application activities tied to the five competencies covered in the CEA exam.

What is a Certified Energy Analyst (CEA)?

Certified Energy Analysts (CEA) are professionals who have studied and worked in the field of building energy efficiency and energy code compliance pertinent to the California Code of Regulations, Title 24, Part 6. They have passed an exam that represents an achieved level of professional competency. These experts can help individuals and businesses reduce their building energy needs and costs. This includes reducing the amount of energy used in residential/commercial buildings and switching to alternative energy sources such as solar. Most energy analysts apply their knowledge to serving a large region or possibly the entire state of California.

Practically speaking, in California, CEAs often determine which energy compliance measures are needed to meet the state energy efficiency requirements and prepare the necessary energy code compliance documentation to submit as part of a builder's permit application. An energy analyst uses California Energy Commission-approved compliance software to identify the energy efficiency measures, including solar water heating, that would be most effective for a building. An energy analyst might also use certain tools such as the NSHP PV Calculator to evaluate the performance of a PV solar energy system.

What does it take to become a CEA?

The Certified Energy Analyst (CEA) program is a natural outgrowth of the CABEC Statement of Purpose and is officially recognized by the California Energy Commission for establishing a professional standard as well as providing an important link in energy compliance. The primary goal of the Certified Energy Analyst (CEA) program is to maintain and manage a professional credential for those who assist the building industry in meeting state energy standards.

The CEA certification program is designed to benefit energy analysts and their clients in the design / construction community by creating a consistent and recognizable standard of achievement. The CEA certification represents the energy analyst's level of knowledge, experience, expertise and demonstrates a commitment to maintaining a high degree of professional excellence pertaining to the

Building Energy Efficiency Standards. Separate certification is offered for the Residential and Nonresidential Standards.

How does the mentoring program work?

Mentor interactions are the primary feature of the program that distinguish it from other educational offerings. Energy analysts embark on a varied program for developing the competencies needed for certification, with most activities being self-directed. Mentor interactions are planned at key points within each Monthly Mentoring Meeting, during or following a block of completed training. These interactions provide students with an opportunity to clarify and confirm any outstanding questions from the training, and to receive guidance with feedback from a certified energy analyst in a way that is tailored to the learner's needs.

There are many ways to customize mentoring interactions, including variations on the number of participants, frequency and timing of the interactions, and the information exchanged. Mentoring sessions may occur in person if participants are geographically close, or in a combination of telephone and online meetings; these are currently supported as online meetings. Mentors will need access to an online meeting platform to facilitate online interactions. In addition, mentors may require support materials for each interaction, including sample learning objectives, practice activities and exercises, and recommended review topics related to the coursework in each learning module. In most cases these have been created for you and are included in your coaching guides for each Monthly Mentoring Meeting.

Each Monthly Mentoring Meeting is designed to map to the CEA exam competencies. To facilitate mentorship in a structured way, each block offers suggested opportunities for analysts to meet with a mentor to touch base or debrief about a sample project they've been working on. For example, in the Modeling Block, analysts complete sample projects as a downloadable self-study. When they are complete with the project they'll debrief with their mentor.

BENEFITS, ROLES, RESPONSIBILITIES OF A MENTORING RELATIONSHIP

Mentoring is a special partnership between two people based on commitment to the mentoring process, common goals and expectations, focus, mutual trust and respect. The mentoring relationship allows for the transfer of knowledge and skills from one energy consultant to others, thus benefiting the greater good.

Both the mentor and the mentee give and grow in the mentoring process. The mentee can learn valuable knowledge from the mentor's expertise, lessons learned, and competencies can be strengthened in opportunity areas. Mentees will have the opportunity to establish valuable connections with more experienced energy consultants. Mentors often find that they solidify their own knowledge in the process of preparing to share it with others.

The success of mentoring will depend on clearly defined roles and expectations in addition to the participants' awareness of the benefits of participating in the program.

Benefits of Mentoring for the Mentor:

- Renews enthusiasm for the role of expert
- Obtains a greater understanding of struggles of less experienced energy consultants
- Enhances skills in coaching, counseling, and listening
- Develops and practices a more personal style of leadership
- Demonstrates expertise and shares knowledge
- Personal satisfaction of sharing their skills and experience with a willing learner
- Possible Mentee internship/employment opportunities with mentor company

Benefits of Mentoring for the Mentee:

- Gains sharper focus on what is needed to grow professionally
- Furthers development as a professional
- Gains capacity to translate values and strategies into productive actions
- Complements ongoing formal study, training and additional development activities
- Gains career development opportunities
- Gets assistance with ideas and honest feedback
- Possible Mentee internship/employment opportunities with mentor company

As participants reflect on being mentored, time should be devoted to determining the qualities desired in a mentor and what you would like to gain from the partnership.

Responsibilities – Mentor:

- Support CABEC's mission, vision, and goals
- Attend online 1-hour Monthly Mentoring Meeting including Mentoring Program Manager and all other mentors
    - Commit to presenting, at least, one of the prescribed monthly training meetings per year
    - One-on-one meetings (typically supported online or via phone calls) with mentee pods and engage in prescribed mentoring activities after monthly meetings
- Willingly share your experience
    - Explain how the Mentoring Program is structured
    - Explain how Mentee Pods work
    - Offer encouragement through genuine positive reinforcement
    - Provide open and candid feedback
    - Share lessons learned and stories from your own career
    - Look for experiences that will stretch the mentee
- Let the Mentoring Program Manager at CABEC know as soon as possible if you are having a problem connecting with your mentee
- Estimated monthly time involvement is 4-6 hours per month.

Responsibilities – Mentee:

- Meet with mentor and engage in mentoring activities as prescribed

- Discuss individual development planning with the mentor
- Attend (11) 1-hour Monthly Mentoring Meeting in addition to Mentor/Mentee pod training meetings as scheduled by the mentor
- Be proactive about contacting your mentor and attending scheduled meetings
- Be prepared for every meeting and come with questions
    - Respect the mentor's time and resources
    - Review all mentoring documents that are you provided
    - Mentors are very busy people and have generously volunteered to donate time
    - Commit to self-development
    - Seek advice, opinion, feedback, and direction from the mentor
    - Assume responsibility for acquiring or improving skills and knowledge
- Be open and honest on goals, expectations, challenges, and concerns
    - Actively listen and ask questions
    - Be receptive to constructive criticism/feedback
- Maintain confidentiality
- Stay accessible, committed, and engaged during the length of the program. Understand that if your mentee doesn't fully engage in all of the above, misses more than (3) consecutive meetings or chronically comes unprepared or doesn't attend online trainings, the mentee may be asked to leave the program until such time the required commitment can be made. A meeting with the Program Director may be required.
- Provide candid feedback to the mentor on what is working or not working in the mentoring relationship
- Let the Mentoring Program Manager at CABEC know as soon as possible if you are having a problem connecting with your mentor

Responsibilities – CABEC Mentoring Program Manager:

- Maintain CABEC Mentoring Program materials
    - Google Docs (or other as determined by CABEC Executive Director) for materials utilized between CABEC and the mentor/mentee and between mentor and mentee(s); Monthly calendar supporting CABEC Mentoring Monthly Program Meetings; Suggested for coordination of Monthly Debrief and any other meetings between mentor and mentee(s)
    - CABEC website for CABEC Mentoring Monthly Program Meeting PowerPoint slide decks and sample project material; CABEC Mentoring Program Handbook
- Pair mentor and mentees with consideration to active mentee pods and determine if any new pods are required
- Coordinate monthly CABEC Mentoring Program meetings to support Learning/Flight Paths. Additional monthly meetings may be required as the program grows and not all pods are following the same Learning/Flight Paths. Record these meetings and make available on the CABEC website in the mentoring location for mentors to review and be available for any mentees who could not attend
- Check in the mentors and mentees to confirm everything is going smoothly
- Support any mentee or mentor who is having issues with the CABEC Mentoring Program, or with any mentor and/or any mentees within the program

- Communicate with the CABEC Executive Director and the CABEC Board on progress of the mentoring program and relay any needs or concerns of the program. Further coordination with Jill Marver of PG&E in tandem with the CABEC Executive Director and the CABEC Board to be provided as required

PROGRAM DOCUMENTS

The following documents are provided to support a smooth process and continuously improve the mentoring program. A full list of all training and development resources used during the mentoring process can be found in the Development Plan.

General Mentoring Documents:

- **Introduction to CABEC Mentoring Program** Overview of the mentoring program including expectations of mentee, mentor and mentoring program.

- **Confidentiality and Commitment Agreement** – Agreement that the mentoring program must be a safe environment for mentees and mentors to freely share information with one another. Additionally, is aware of the program attendance and participation requirements.

- **Evaluation (via survey)** - At the end, mentees and mentors will be asked to evaluate the program. Their input will help make any necessary adjustments to ensure the program remains effective.

APPENDICES

Appendix A: Schedule Overview for Mentoring Program
Appendix B: Roadmap between CEA Exam Objectives and Flight Plan

Appendix A: Schedule Overview

Getting Started: Meet your Mentee(s)

Who: Mentor and any new mentee(s)
When: First meeting with mentee(s)
What: Introduce the mentee(s) to the mentor, the CABEC Mentoring Program, discuss goals, rules of engagement, timelines and fill out initial paperwork

Monthly CABEC Mentoring Program Meetings

Who: Mentor who volunteered for this flight path topic/All Mentees/CABEC Mentoring Program Director
When: Monthly for 11 months of the year
What: Work through flights paths in order; link applicable training to that flight path from ECA to mentees, use mentoring program example project(s) to facilitate application of what they should have learned in previous month's ECA classes

Monthly Debrief Pod Check-ins

Who: Mentor/Mentee(s) pod
When: Monthly or as desired by pod
What: Mentees work on sample/personal projects with activities specific to each Flight Plan and then discuss results and issues with the mentor and other mentees in pod

Appendix B: Monthly Agenda's

CABEC 2023 Code Mentoring Program Monthly Meeting Calendar

Month	Topic	Classes/Resources	Activity
January	Introduction/ Intro to Modeling	**Classes** ● Energy Efficiency Concepts online self study (OLSS) https://energycodeace.com/training/?courseId=15156 ● Single-family for Energy Consultants https://energycodeace.com/training/?courseId=67561 ● Prepare for next month: Modeling Software for Beginners o Energy Pro https://energycodeace.com/training/?courseId=69609 o CBECC-Res https://energycodeace.com/training/?courseId=25528 **Resources** ● Glossary: https://energycodeace.com/resources/?itemId=35107 ● What's New: https://energycodeace.com/resources/?itemId=66973 **Other**	N/A
February	Intro to Modeling/Job Organization	**Classes** ● Single-family Compliance: Modeling https://energycodeace.com/training/?courseId=78952 ● Introduction to the Performance Approach https://energycodeace.com/training/?courseId=101755 **Resources** ● Designing Single-Family Homes to Run on Clean Energy https://energycodeace.com/resources/?itemId=91857 ● Accessory Dwelling Units https://energycodeace.com/resources/?itemId=91857 **Other** ● Drawing Basics such as https://www.youtube.com/watch?v=hNzfPIl2AiY	Pick a Project
March	Job Organization/Envelope Opaque	**Classes** ● Single-family Envelope https://energycodeace.com/training/?courseId=100517 ● Code & Coffee (Recorded) o Plan take-offs https://www.youtube.com/watch?v=Yri61Nb5NNY&list=PLVH9EjkDaO5kYnlDpK2rXB4K_6WaFBnL2&index=1 o (2) ADU sessions https://www.youtube.com/watch?v=mq_BnSsoteM&list=PLVH9EjkDaO5m4K_Nx2RE7CGSI--XJn64n **Resources** ● Single-Family Envelope Factsheet https://energycodeace.com/resources/?itemId=116512 **Other** ● CABEC Brown Bags o #1 Modeling 2023 o #2 Let there be light	Research insulation and use Job Aide to complete envelope intake.

April	Envelope Opaque / Fenestration	**Classes** ● Single-family Envelope (OLSS) https://energycodeace.com/training/?courseId=126947 ● Single-family Envelope (half day) https://energycodeace.com/training/?courseId=100517 ● Code & Coffee (Recorded) o Shading https://www.youtube.com/@energycodeace2115 o 2 story https://youtube.com/watch?v=RvX1PieUifE&feature=shares o E+E+A https://youtube.com/watch?v=E1qg5M1iagc&feature=shares **Resources** ● Insulation Guide https://energycodeace.com/download/82560/file_path/fieldList/insultation-guide.pdf\ ● ADU Factsheet: https://energycodeace.com/resources/?itemId=91865 **Other** ● Code Breaker: (Gina to set up) o BAYREN ADU o BAYREN QII	Model opaque envelope using personal project.
May	Envelope: Fenestration/ Renewables	**Classes** ● Single-Family Solar & Battery (half-day) **https://energycodeace.com/training/?courseId=67760** ● On Demand Solar Systems (OLSS) **https://energycodeace.com/training/?courseId=120439** ● Code & Coffee on PV (Recorded): https://www.youtube.com/watch?v=FAybe0QTSuI&list=PLVH9EjkDaO5lLlAj9tUJ9hljORTXJPukl&index=1 ● Single-family Architect (Extra Credit) https://energycodeace.com/training/?courseId=71994 **Resources** ● Single-family PV and Battery https://energycodeace.com/resources/?itemId=116331 **Other**	Model fenestration using personal project.
June	Renewables/ HVAC	**Classes** ● Code & Coffee on HVAC (Recorded) https://www.youtube.com/watch?v=4KMh2yQXadQ&list=PLVH9EjkDaO5kYnlDpK2rXB4K_6WaFBnL2&index=3 ● Single-Family Mechanical (half-day) https://energycodeace.com/training/?courseId=71187 ● Residential Standards for HVAC Contractors Designer/Estimators https://energycodeace.com/training/?courseId=64330	Model PV and Battery using personal project.

		Resources ● Just the Basics: HERS Verification: https://energycodeace.com/resources/?itemId=106223 ● HVAC Additions and Alterations: https://energycodeace.com/resources/?itemId=78949 ● Electric Readiness: https://energycodeace.com/resources/?itemId=91861 ● Equipment Min. Efficiency: https://energycodeace.com/resources/?itemId=67830 **Other** ● Reach Codes: www.localenergycodes.com ● AHRI: https://www.ahridirectory.org/NewSearch?programId=68&searchTypeId=3&productTypeId=1	
July	HVAC/ IAQ	**Classes** ● Single-Family Heating, Ventilation and AC (OLSS) https://energycodeace.com/training/?courseId=120491 ● C&C: Townhomes (Recorded): https://youtube.com/watch?v=kZeNicRINtg&feature=shares ● HERS (OLSS - 2019) https://energycodeace.com/training/?courseId=33072 **Resources** ● Mandatory Noteblock: https://energycodeace.com/resources/?itemId=82316 **Other** ● Brown Bag: Breath of Fresh Air (IAQ): https://attendee.gotowebinar.com/recording/6085273924792863918	Model HVAC using personal project.
August	IAQ/ DHW	**Classes** ● Modeling Heat pump DHW (OLSS) https://energycodeace.com/training/?courseId=68388 **Resources** ● Residential DHW: coming soon ● Compliance Baseline https://energycodeace.com/resources/?itemId=103024 https://energycodeace.com/resources/?itemId=124100 https://energycodeace.com/resources/?itemId=103036 https://energycodeace.com/resources/?itemId=124103 **Other**	Model DHW using personal project.

		• Brown Bag: That's too Darn Hot (water heating): https://attendee.gotowebinar.com/recording/1203509367057411840	
September	DHW/ Lighting	• Res lighting class https://energycodeace.com/training/?courseId=68732 • Modeling Tips: https://energycodeace.com/training/?courseId=78952 **Resources** • Residential Lighting: https://energycodeace.com/resources/?itemId=70413 • Title 20 versus Title 24: https://energycodeace.com/resources/?itemId=143958 **Other** Sign up for the Blueprint: https://www.energy.ca.gov/newsroom/blueprint-newsletter	Research lighting products.
October	Lighting/ Modeling	**Classes** • Analyzing the CF1R (half day) https://energycodeace.com/training/?courseId=78954 • CBECC-Res Advanced: https://energycodeace.com/training/?courseId=25721 • Energy Pro Advanced: https://energycodeace.com/training/?courseId=78051 **Resources** • Plans Examiner Checklist: https://energycodeace.com/resources/?itemId=73707 **Other**	Present 3 compliance approaches for personal project. Sign up for CEA exam
November	Modeling/ CEA	**Classes** • Prepare for the CEA • Brown Bag: 2018 How to Prepare to Pass the Res CEA Exam	

Appendix B: Roadmap: CEA Exam Competencies and Objectives mapped to Learning Modules

Competency 1: Comprehend Key Residential Energy Efficiency Design Concepts and Issues

Demonstrate knowledge of basic heat transfer, residential energy design measures, and how they relate to building energy performance or metrics.

	1 EEC	2 Intro Modeling	3 Envelope Insulation	4 Envelop Opaque	5 Envelope Fenestration	5 Renewables	6 HVAC	7 IAQ	8 DHW	9 Lighting	10 Intermediate Modeling
1.1 Describe methods of heat transfer and ways to maintain comfort conditions within living spaces and energy units.	• OLSS EE Concepts										
1.2 Determine appropriate general methods for reducing building and end-use energy consumption through energy design and energy efficiency.	• OLSS EE Concepts • Res Stds EC		• Vshop Res Env & Solar	• Code B ADU • Vshop Res Env & Solar	• Vshop Res Env & Solar	• OLSS Res Solar • CodeB Solar • Vshop Res Env & Solar	• OLSS Res HVAC • Vshop Res Mechanical Systems	• OLS S Res Ventilation	• OLSS Res Water Heating	• Res Lighting	
1.3 Describe envelope/PV design elements and explain how they affect energy design and efficiency	• OLSS EE Concepts • Res Stds EC		• Vshop Res Env & Solar	• Code B ADU • Vshop Res Env & Solar	• Vshop Res Env & Solar	• OLSS Res Solar • CodeB Solar • Vshop Res Env & Solar				• Res Lighting	
1.4 Describe mechanical and water heating design elements and explain how they affect energy design and efficiency.	• OLSS EE Concepts, • Res Stds EC						• OLSS Res HVAC • Vshop Res Mechanical Systems	• OLS S Res Ventilation	• OLSS Res Water Heating		
1.5 Describe lighting design elements and explain how they affect energy design and efficiency.	• OLSS EE Concepts • Res Stds EC									• Res Lighting	
1.6 Explain what common building energy performance metrics measure, and what factors are included in the calculation of these metrics.	• OLSS EE Concepts										

Competency 2: Conduct Initial Project Assessment and Determine How to Apply the 2019 California Building Energy Efficiency Standards

Gather preliminary information from drawings, related documents, and the client to determine the nature and scope of the project; determine how to apply the Standards in establishing the correct code requirements and the available energy compliance options.

	1 EEC	2 Intro Modeling	3 Envelope Insulation	4 Envelop Opaque	5 Envelope Fenestration	5 Renewables	6 HVAC	7 IAQ	8 DHW	9 Lighting	10 Intermediate Modeling
2.1 Explain scope and triggers for specified portions of the Title 24 low-rise residential standards, federal and state appliance standards.	• Res Stds EC	• Res Modeling	• Vshop Res Env & Solar	• CodeB ADU	• Vshop Res Env & Solar • CodeB ADU	• OLSS Res Solar • Vshop Res Env & Solar • CodeB ADU • CodeB Solar	• OLSS Res HVAC • Vshop Res Mechanical Systems	• OLSS Res Ventilation	• OLSS Res Water Heating	• Res Lighting	• Res Modeling Tips • Res Lighting
2.2 Analyze information about a proposed project (e.g., drawings, related schedules and documents, information from client) to determine scope and key attributes.	• Res Stds EC	• Res Modeling		• CodeB ADU	• Vshop Res Env & Solar • CodeB ADU	• CodeB ADU • CodeB Solar					• Res Modeling Tips
2.3 Analyze proposed project information to determine which standards apply, possible compliance options and strengths and weaknesses of compliance methods.	• Res Stds EC	• Res Modeling		• CodeB ADU	• Vshop Res Env & Solar • CodeB ADU	• CodeB ADU • C&C PV • CodeB Solar					• Res Modeling Tips
2.4 Review information about a proposed project to determine key data about the building's envelope/PV and mechanical components.	• Res Stds EC	• Res Modeling	• Vshop Res Env & Solar	• CodeB ADU	• Vshop Res Env & Solar • CodeB ADU	• OLSS Res Solar • CodeB Solar • Vshop Res Env & Solar • CodeB ADU	• OLSS Res HVAC				• Final Project activity
2.5 Analyze proposed project information to determine if all data is correct and internally consistent, and whether relevant information is missing or incomplete		• Tools									• Final Project activity

Competency 3: Gather, Calculate and Organize All Information Needed for Energy Modeling

Review drawings, specifications and information provided by the designer or client; gather, calculate and record all pertinent data to input into the energy modeling software.

	1 EEC	2 Intro Modeling	3 Envelope Insulation	4 Envelop Opaque	5 Envelope Fenestration	5 Renewables	6 HVAC	7 IAQ	8 DHW	9 Lighting	10 Intermediate Modeling
3.1 Analyze a proposed project to determine pertinent data regarding HVAC systems and zones, including any HERS measures, to input into energy modeling software.		• Res Modeling					• OLSS Res HVAC • C&C Advanced HVAC & DHW		• C&C Advanced HVAC & DHW		• Res Exam Prep
3.2 Analyze a proposed project to identify pertinent data regarding water heating system(s) to input into energy modeling software.		• Res Modeling					• C&C Advanced HVAC & DHW				• Res Exam Prep
3.3 Organize and perform zone-by-zone area take-offs in accordance with the scope, type, and compliance approach for the project.		• Res Modeling	• C&C ADU Detached • C&C ADU Attached	• C&C ADU Detached • C&C ADU Attached	• C&C ADU Detached • C&C ADU Attached	• C&C PV • C&C ADU Detached • C&C ADU Attached					
3.4 Analyze take-offs for a proposed project to identify any relevant information that is missing or inconsistent.		• Tools	• C&C Take-off & Analysis	• C&C Take-off & Analysis	• C&C Take-off & Analysis		• C&C Take-off & Analysis	• C&C Take-off & Analysis	• C&C Take-off & Analysis		

Competency 4: Model the Building with Approved Energy Compliance Software

Create an energy model of the building from all information gathered. Check to see if on-screen and report results are reasonable, and if not, correct the source of the error(s).

	1 EEC	2 Intro Modeling	3 Envelope Insulation	4 Envelop Opaque	5 Envelope Fenestration	5 Renewables	6 HVAC	7 IAQ	8 DHW	9 Lighting	10 Intermediate Modeling
4.1 Create an accurate energy model of a proposed project using state-approved energy modeling software.	• Res Exam Prep	• Beg EnergyPro/CBECC-Res • Res Modeling,				• C&C PV	• OLSS Res HVAC • Vshop Res Mechanical Systems • C&C Advanced HVAC & DHW		• OLSS Res Water Heating • C&C Advanced HVAC & DHW		• Intermediate EnergyPro/CBECC-Res
4.2 Explain how the Standard Design is established based on the modeled envelope, HVAC and water heating.	• Res Stds EC	• Res Modeling								• C&C 2-Story • C&C E+A+A	• Analyzing the CF1R
4.3 Evaluate the results of a building energy model to determine whether the results shown in reports and on-screen are reasonable.		• Res Modeling	• C&C 2-Story • C&C E+A+A	• C&C 2-Story • C&C E+A+A		• C&C 2-Story	• C&C 2-Story • C&C E+A+A	• C&C 2-Story • C&C E+A+A	• C&C 2-Story • C&C E+A+A		• Analyzing the CF1R
4.4 Compare the CF-1R and other relevant compliance forms relative to known or listed project information (e.g., drawings, schedules and other data from client) to determine any modeling or data entry errors.		• Res Modeling			• C&C Res Modeling					• C&C Advanced HVAC & DHW	• Analyzing the CF1R
4.5 Summarize the mandatory envelope, mechanical, water heating, and lighting measures that apply to a proposed project.	• Res Stds EC	• Tools • C&C Take-off & Analysis • C&C New Construction	• Vshop Res Env & Solar		• C&C Shading	• OLSS Res Solar • Vshop Res Env & Solar	• C&C Advanced HVAC & DHW		• C&C Advanced HVAC & DHW	• Res ligting	• Final Project activity

Competency 5: Consider Recommendations for Improving Energy Performance and Comfort

Use the knowledge of the project design and climate zone to make recommendations for improving energy performances to meet or exceed code.

	1 EEC	2 Intro Modeling	3 Envelope Insulation	4 Envelop Opaque	5 Envelope Fenestration	5 Renewables	6 HVAC	7 IAQ	8 DHW	9 Lighting	10 Intermediate Modeling
5.1 Evaluate the energy model for a proposed project to determine defensible recommendations for improving envelope design to meet or exceed code.	• Res Stds EC	• Res Modeling									• Analyzing the CF1R
5.2 Evaluate the energy model for a proposed project to determine defensible recommendations for improving HVAC and water heating systems to meet or exceed code.	• Res Stds EC	• Res Modeling					• C&C Advanced HVAC & DHW		• C&C Advanced HVAC & DHW		• Analyzing the CF1R
5.3 Identify HERS measures, when they apply, and the HERS registration and verification process; determine installation certificates and other documentation that must be completed after permit issuance.	• Res Stds EC	• Res Modeling	• Vshop Res Env & Solar	• Vshop Res Env & Solar	• Vshop Res Env & Solar	• OLSS Res Solar • Vshop Res Env & Solar	• OLSS Res HVAC • OLSS Res and NR HERS	• OLSS Res and NR HERS		• Res Lighting	• Res Modeling Tips
5.4 Describe the general characteristics and requirements of local Tier 1 energy codes, various utility incentives, tax credits and other energy programs; and energy-related calculation methods other than the Title 24 performance approach.						• CodeB Solar					

Key to Roadmap Abbreviations:

Analyzing the CF1R:	Title 24 Part 6 Essentials: Residential Analyzing the CF1R: ECA Vorkshop
Beg&Adv EnergyPro:	Beginning EnergyPro – Residential, and Advanced EnergyPro – Residential
DLSS 1:	Modeling Downloadable Self Study 1: Project Scope and Envelope Take-offs
DLSS 2:	Modeling Downloadable Self Study 2: Create Computer Model and Show Compliance
DLSS 3:	Modeling Downloadable Self Study 3: Analyze CF1R for More Compliance Options
EE Concepts:	Residential and Nonresidential Energy Efficiency Concepts: Online Self Study
HVAC & DHW DLSS:	HVAC & DHW Downloadable Self Study: Model and Analyze System Options
Intro to HERS:	Introduction to HERS: Online Self Study
Res Env & Solar:	Title 24, Part 6 Essentials — Residential Standards: Envelope & Solar Systems: ECA Vorkshop
Res Exam Prep:	Residential CEA Exam Preparation Workshop
Res Mech:	Title 24, Part 6 Essentials — Residential Standards: Mechanical Systems: ECA Vorkshop
Res Modeling:	Title 24 Part 6 Essentials: Residential Modeling
Res Modeling Tips:	Title 24 Part 6 Essentials: Residential Modeling Tips
Res Stds & Tech DHW:	Title Title 24, Part 6 Essentials on Demand — Residential Standards & Technology: Water Heating: Online Self Study
Res Stds & Tech Env:	Title 24, Part 6 Essentials on Demand — Residential Standards & Technology: Building Envelope: Online Self Study
Res Stds & Tech HVAC:	Title 24, Part 6 Essentials on Demand — Residential Standards & Technology: Heating, Ventilation, and Air Conditioning: Online Self Study
Res Stds & Tech Lighting:	Title 24 Part 6 Essentials: Standards and Technology for Residential Lighting: Online Self Study
Res Stds & Tech Solar:	Title 24, Part 6 Essentials on Demand — Residential Standards & Technology: Solar Systems: Online Self Study
Res Stds EC:	Title 24 Part 6 Essentials: Residential Standards for Energy Consultants
Res Stds Vent:	Title 24, Part 6 Essentials on Demand — Residential Standards: Ventilation: Online Self Study

Note: Go to EnergyCodeAce.com for more information on all classes listed here.