Introduction to Mentoring Program
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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 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 and 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 efficiency 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 and construction community by creating a consistent and recognizable standard of achievement. The CEA certification represents the energy analyst’s level of knowledge, experience, and 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 feedback and guidance 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.

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**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 and 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

**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 and/or training and development activities
- Gains career development opportunities
- Gets assistance with ideas and honest feedback

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 1-hour Monthly Mentoring Meeting when possible via online meeting platforms such as “ZOOM”
  - Commit to presenting, at least, one of the prescribed monthly training meetings per year
  - One-hour meetings with mentee pods and engage in prescribed mentoring activities after monthly meetings
- Review all mentoring documents that are you provided
  - Fill out and update the Mentor/Mentee meeting tracker provide in the Mentor Toolbox for all mentee pod 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
- Stay accessible, committed, and engaged during the length of the program
  - Practice active listening
  - Be a positive role model
  - Be a resource and a sounding board
  - Maintain confidentiality
- 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 1-hour Monthly Mentoring Meeting in addition to 1-hour 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 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(s):**

- Maintain CABEC Mentoring Program materials
  - Google Docs (or other as determined by CABEC 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. For mentees that do not fall into the “mentoring group #1” and should be placed in “mentoring group #2” because they do not need to attend all flight paths, determine which existing pods they can join based on need, or determine if a new pod is required (or ask mentors if they can take a one-on-one mentee).
  - Mentoring Group #1: Those starting from the very beginning of which this program is currently structured around.
  - Mentoring Group #2: Failed parts of the CEA exam and mentoring to study and be prepared to take the CEA again and be successful. These may not need to follow all of the flight paths maybe only part of one and may need to be addressed outside of the CABEC Mentoring Program Monthly Meetings.
- Coordinate monthly CABEC Mentoring Program meetings to support Learning/Flight Paths required by “mentoring group #1”. 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, 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:**

- Confidentiality agreement – Agreement that the mentoring program must be a safe environment for mentees and mentors to freely share information with one another.

- Mentoring meeting tracker - The mentee and mentor should record their meetings and activities to show progress achieved. This log can be reviewed periodically to reflect on how to facilitate more effective engagement. It will also assist with end-of-program feedback for future program improvements.

- Evaluation - 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: Monthly Mentoring Program Meetings
Appendix C: 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
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
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

<table>
<thead>
<tr>
<th>Month</th>
<th>Topic</th>
<th>Classes</th>
<th>Activity</th>
</tr>
</thead>
</table>
| February| Introduction           | • Energy Efficiency Concepts online self-study (OLSS)  
• Live Res Standards for Energy Consultants  
• Prep: Modeling Software for Beginners: Energy Pro | N/A                           |
| March   | Intro to Modeling      | • Intro to Modeling  
• Modeling Software for Beginners (CBECC-Res) | Pick a Project                |
| April   | Job Organization       | • OLSS Res Building Envelope  
• Code & Coffee Plan take-offs, both ADU sessions (total of 3) | Research insulation and use Job Aide to complete envelope intake. |
| May     | Envelope: Opaque Assemblies | • Res Envelope & Solar Workshop  
• Code & Coffee Shading; 2 story; E+E+A (3 total)  
• Code Breaker: ADU / BAYREN QII (2 total) | Model opaque envelope using personal project. |
| Month    | Envelope: PV, Solar Ready, Battery | Code & Coffee on PV  
OLSS Solar  
Code & Coffee on HVAC  
OLSS Res HVAC  
OLSS HERS | Model PV and Battery using personal project.  
Model HVAC using personal project.  
Model DHW using personal project.  
Research lighting products.  
Present 3 compliance approaches for personal project.  
Sign up for CEA exam. |
|----------|-----------------------------------|-----------------------------------------------------------------|
| July     | Envelope: PV, Solar Ready, Battery | • Contractor HVAC classes  
• OLSS Res Water Heating  
• Res Mech Systems Workshop  
• C&C: Townhomes | |
| August   | Mechanical: HVAC                  | • OLSS Res water heating | |
| September| Mechanical: IAQ                   | • Res lighting class  
• Intermediate software modeling class (Energy Pro or CBECC-Res) | |
| October  | Lighting                          | • CF1R class  
• Modeling tips | |
| November | Modeling                          | | |
| December | Final                             | • CEA Prep | |
**February (1st meeting) - Introduction**

**Review:**
Welcome to the CABEC Mentoring Program: Introduction (review “Intro to Mentoring” document)
Set up monthly platform to use each month (1st Wednesday of each month at 5:30 PM for 1 hour)

**Provide:**
- CABEC Introduction To Mentoring / Confidentiality Agreement / Quick Reference Glossary

**Mentees to do:**
- Review and sign mentoring documents Confidentiality Agreement

**Mentees to take:**
- Prepare for next month: Modeling Software for Beginners (Energy Pro 2/28/22 or CBECC-Res 3/10-11/22)

**Mentor check in:**
- Set up monthly check in date with your mentee(s). Suggest it be the same day of month and time each month using online platform of choice (screen sharing essential)
- Get mentoring paperwork done, ask and document about the mentee(s) goals, confirm they are taking the class(es)
- Set up and use Mentoring Tracker with your group (via CABEC google docs)

**March (2nd meeting) – Intro to Modeling**

**Review:**
The basics

**Provide:**
- Applicable ECA resources: Quick Reference (all CZ); EDR Factsheet

**Mentees to do:**
- Pick a project to use throughout this program

**Mentees to take:**
- Job Aides and Pick a Project/start modeling
- Prep for next month: Intro to Modeling March 15-17, 2022 / Modeling Software for Beginners (Energy Pro 2/28/22 or CBECC-Res 3/10-11/22)

**Mentor check in:**
- Confirm they are taking the class(es)
- Determine if they have a project they would like to work on throughout this program, or assign a “sample” project provided by the program
- Update Mentoring Tracker
### April (3rd meeting) Job Organization

**Review:**
- Job Aides and Pick a Project/start modeling

**Provide:**
- Applicable ECA resources: Envelope App Guide; Opaque Factsheet; Rebuild Factsheet/Insulation Guide / Job Aide

**Mentees to do:**
- Research at least 5 different insulation products (batt, rigid, blow-in, spray, etc) and be comfortable with specifications, R-value, and install criteria (cost is a bonus) – Be ready to share with pod resources you used
- Personal Project: Fill out “opaque envelope” sections of intake sheet; set up modeling spreadsheet

**Mentees to take:**
- Envelope Insulation

**Mentor check in:**
- Confirm they are taking the class(es)
- Review their intake sheets; Confirm they are on target; Share stories about the importance of being organized
- Update Mentoring Tracker

### May (4th meeting) Envelope: Opaque Assemblies

**Review:**
- Envelope Insulation

**Provide:**
- Applicable ECA resources

**Mentees to do:**
- Personal Project: Taking into consideration the insulation products you researched, model at least 3 different wall types, roof types and floor types SEPERATELY from each other (9 different runs) with at least 2 runs including each building feature being prescriptive options. Record change in compliance margins in spreadsheet. Do this for at least 2 climate zones (you decide based on where you think you will be doing your work, or asked to be assigned CZ’s by your mentor) (now you have 18 different runs 😊). Be ready to talk about the assemblies used and the cost/install implications that would have to be communicated to client
| Mentees to take: | Envelope Opaque  
| Prep for next month: Catch up on classes if needed / Code & Coffee Shading; 2 story; E+E+A (3 total) / Code Breaker: ADU / BAYREN QII (Gina to set up) |
| Mentor check in: | Confirm they are taking the class(es)  
| Show example of modeling spreadsheet correctly filled out with opaque surface runs required (see above)  
| Review modeling of opaque assemblies and talk about swings in compliance margins they are getting. Have a discussion about the research they are doing on insulation products and how that fits into the prescriptive assembly requirements  
| Review any software error messages they are getting and how you suggest they work through them  
| Update Mentoring Tracker |

| June (5th meeting) Envelope: Fenestration |
| Review: | Envelope Opaque |
| Provide: | Applicable ECA resources: Fenestration Factsheet |

| Mentees to do: | Research at least 3 different window types and be comfortable with specifications, U-factor/SHGC, and install criteria (cost is a bonus) – Be ready to share with pod resources you used  
| Personal Project: Model at least 3 different window types (U-factor, SHGC, NFRC versus default) and add each without an overhang, and each with 10’ overhangs SEPERATELY from each other (6 different runs) with at least 1 run meeting prescriptive efficiency and area requirements. Record change in compliance margins in spreadsheet. Be ready to talk about the values used and the cost/install implications that would have to be communicated to client |


| Mentor check in: | Confirm they are taking the class(es)  
| Show example of modeling spreadsheet correctly filled out with fenestration runs |
Review modeling of fenestration features and talk about swings in compliance margins they are getting. Have a discussion about the research they are doing on insulation products and how that fits into the prescriptive fenestration requirements

Review any software error messages they are getting and how you suggest they work through them

Update Mentoring Tracker

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**July (6th meeting) Envelope: PV, Solar Ready, Battery**

**Review:**

- Fenestration & Renewables

**Provide:**

- Applicable ECA resources: N/A

**Mentees to do:**

- Research PV and Battery costs (3 PV system sizes: 2 kW, 5 kW, 12 kW; 2 Battery technologies: 10 kWh (lithium and 1 other)
  - Be ready to share at mentor meeting the resources you used
- Personal Project: Model the 3 different PV sizes for 2 different climate zones (6 different models)
  - Take one of those models, and add 10 kWh battery (1 additional model)
  - Record change in compliance margins in "Job Aide-Building Feature Summary".
  - Be ready to talk about the systema controls used and the cost/install implications that would have to be communicated to client.

**Mentees to take:**

- Prep for next month: Code & Coffee on HVAC / OLSS Res HVAC / OLSS HERS

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**Mentor check in:**

- Confirm they are taking the class(es)
- Show example of modeling spreadsheet correctly filled out with HVAC runs
- Review modeling HVAC features/options and talk about swings in compliance margins they are getting and impact of distribution. Discuss how all-electric Reach Codes may dictate HVAC system type ([www.localenergycodes.com](http://www.localenergycodes.com)). Review applicable HERS measures
- Review any software error messages they are getting and how you suggest they work through them
- Update Mentoring Tracker
### August (7th meeting) Mechanical: HVAC

**Review:** HVAC

**Provide:** Applicable ECA resources

**Mentees to do:**
- Research at least 3 different HVAC systems (ducted, ductless, radiant) considering utility (gas, electric)
- Personal Project: Model 3 different HVAC system types (ducted, ductless, radiant) at minimum efficiency for both natural gas and electric/heat pump (6 different runs) in 2 different CZ’s (12 different runs)
- Research at least 3 different IAQ systems (exhaust, balanced, HRV/ERV) and how to find HVI/AHAM kitchen hood
- Personal Project: Model 3 different IAQ system types (exhaust, balanced, HRV/ERV) (3 different runs) in 2 different CZ’s (6 different runs)

**Mentees to take:**
- Residential Standards for HVAC Contractors – Installers 8/30/22 & Designer/Estimators 8/31/22

**Mentor check in:**
- Confirm they are taking the class(es)
- Show example of modeling spreadsheet correctly filled out with IAQ runs
- Review modeling IAQ features/options and talk about swings in compliance margins they are getting. Review applicable HERS measures
- Review any software error messages they are getting and how you suggest they work through them
- Update Mentoring Tracker

### September (8th meeting) Mechanical: IAQ

**Review:** IAQ & DHW

**Provide:** Applicable ECA resources
| Mentees to do: | □ Research at least 3 different water heating systems (tankless, tank, solar thermal) considering utility (gas, electric)  
□ Personal Project: Model 3 different DHW system types (tankless, tank, solar thermal) at minimum efficiency for both natural gas and electric/heat pump (6 different runs) in 2 different CZ’s (12 different runs) |
| Mentees to take: | □ Prep for next month: OLSS Res water heating |

| Mentor check in: | □ Confirm they are taking the class(es)  
□ Show example of modeling spreadsheet correctly filled out with DHW runs  
□ Review modeling DHW features/options and talk about swings in compliance margins they are getting. Review applicable HERS measures and how they might get “extra credit”  
□ Review any software error messages they are getting and how you suggest they work through them  
□ Update Mentoring Tracker |

| Review: | DHW |
| Provide: | Applicable ECA resources |

| Mentees to do: | □ Go to local hardware store and research lighting controls and lighting fixtures/bulbs and see if you can find enough that meets Energy Code requirements for permitted work  
□ Personal Project: Sketch out a lighting plan, schedule and controls for at least 4 rooms |
| Mentees to take: | □ Lighting  
□ Prep for next month: Res lighting class 10/21/22; Intermediate software modeling class (Energy Pro 10/14 or CBECC-Res 10/10-11/22) |
Mentor check in:
- Confirm they are taking the class(es)
- Review room sketches and discuss their findings from the hardware store adventure
- Update Mentoring Tracker

### November (10th meeting) Modeling

<table>
<thead>
<tr>
<th>Review:</th>
<th>Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide:</td>
<td>Applicable ECA resources</td>
</tr>
<tr>
<td>Mentees to do:</td>
<td>Personal Project: Come up with 3 overall compliance approaches “minimum to meet compliance” / “meeting all-electric Reach Code” / “Incentive program meeting 10 EDR margin”</td>
</tr>
<tr>
<td>Mentees to take:</td>
<td>Prep for next month: CF1R class 11/8/22 / Modeling tips 11/9/22</td>
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</tbody>
</table>

Mentor check in: Confirm they are taking the class(es)
- Review compliance packages – ask them to be prepared to share at next CABEC Mentoring Program Monthly meeting
- Review any software error messages they are getting and how you suggest they work through them
- Update Mentoring Tracker

<table>
<thead>
<tr>
<th>December (11th meeting) Final</th>
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<tbody>
<tr>
<td><strong>Review:</strong></td>
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<tr>
<td>Have volunteers share their projects and their three compliance packages</td>
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<tr>
<td><strong>Provide:</strong></td>
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<tr>
<td>Applicable ECA resources</td>
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<tr>
<td><strong>Mentees to do:</strong></td>
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<tr>
<td>□ Look into CEA testing dates</td>
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<td><strong>Mentees to take:</strong></td>
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<tr>
<td>□ Prep for res CEA exam</td>
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<tr>
<td><strong>Mentor check in:</strong></td>
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<tr>
<td>□ Have a party</td>
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Appendix C: 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.

<table>
<thead>
<tr>
<th>Task</th>
<th>Module 1 EEC</th>
<th>Module 2 Intro Modeling</th>
<th>Module 3 Envelope Insulation</th>
<th>Module 4 Envelope Opaque</th>
<th>Module 5 Envelope Fenestration</th>
<th>Module 6 Renewables</th>
<th>Module 7 HVAC</th>
<th>Module 8 IAQ</th>
<th>Module 8 DHW</th>
<th>Module 9 Lighting</th>
<th>Module 10 Intermediate Modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Describe methods of heat transfer and ways to maintain comfort conditions within living spaces and energy units.</td>
<td>OLSS EE Concepts</td>
<td>Res Stots EC</td>
<td></td>
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<tr>
<td>1.4 Describe mechanical and water heating design elements and explain how they affect energy design and efficiency.</td>
<td>OLSS EE Concepts, Res Stots EC</td>
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<tr>
<td>1.5 Describe lighting design elements and explain how they affect energy design and efficiency.</td>
<td>OLSS EE Concepts</td>
<td>Res Stots EC</td>
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<tr>
<td>1.6 Explain what common building energy performance metrics measure, and what factors are included in the calculation of these metrics.</td>
<td>OLSS EE Concepts</td>
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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.

<table>
<thead>
<tr>
<th>Competency</th>
<th>1 EEC</th>
<th>2 Intro Modeling</th>
<th>3 Envelope Insulation</th>
<th>4 Envelope Opaque</th>
<th>5 Envelope Penetration</th>
<th>6 HVAC</th>
<th>7 IAQ</th>
<th>8 DHW</th>
<th>9 Lightning</th>
<th>10 Intermediate Modeling</th>
</tr>
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<tbody>
<tr>
<td>2.2 Analyze information about a proposed project (e.g., drawings, related schedules and documents, information from client) to determine scope and key attributes.</td>
<td>Res Modeling</td>
<td>CodeB ADU</td>
<td>Vshop Res Env &amp; Solar</td>
<td>CodeB ADU</td>
<td>Res Stds EC</td>
<td>Res Stds EC</td>
<td>Res Stds EC</td>
<td>Res Stds EC</td>
<td>Res Stds EC</td>
<td>Res Stds EC</td>
</tr>
<tr>
<td>2.5 Analyze proposed project information to determine if all data is correct and internally consistent, and whether relevant information is missing or incomplete.</td>
<td>Tools</td>
<td>Vshop Res Env &amp; Solar</td>
<td>CodeB ADU</td>
<td>OLSS Res Solar</td>
<td>OLSS Res HVAC</td>
<td>OLSS Res Lighting</td>
<td>OLSS Res Lighting</td>
<td>OLSS Res Water Heating</td>
<td>Final Project activity</td>
<td>Final Project activity</td>
</tr>
</tbody>
</table>
### 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.

<table>
<thead>
<tr>
<th></th>
<th>1 EEC</th>
<th>2 Intro Modeling</th>
<th>3 Envelope Insulation</th>
<th>4 Envelope Opaque</th>
<th>5 Envelope Fenestrations</th>
<th>6 HVAC</th>
<th>7 IAQ</th>
<th>8 DHW</th>
<th>9 Lighting</th>
<th>10 Intermediate Modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>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.</strong></td>
<td>• Res Modeling</td>
<td></td>
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</tr>
<tr>
<td><strong>3.2 Analyze a proposed project to identify pertinent data regarding water heating system(s) to input into energy modeling software.</strong></td>
<td>• Res Modeling</td>
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</tr>
<tr>
<td><strong>3.3 Organize and perform zone-by-zone area take-offs in accordance with the scope, type, and compliance approach for the project.</strong></td>
<td>• Res Modeling</td>
<td>• C&amp;C Detached</td>
<td>• C&amp;C Detached</td>
<td>• C&amp;C Detached</td>
<td>• C&amp;C Detached</td>
<td>• C&amp;C Detached</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>3.4 Analyze take-offs for a proposed project to identify any relevant information that is missing or inconsistent.</strong></td>
<td>• Tools</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td>• C&amp;C Take-off &amp; Analysis</td>
<td></td>
</tr>
</tbody>
</table>
## 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).

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEC</td>
<td>Intro Modeling</td>
<td>Envelope Insulation</td>
<td>Envelope Opaque</td>
<td>Envelope Fenestration</td>
<td>Renewable s</td>
<td>HVAC</td>
<td>IAQ</td>
<td>DHW</td>
<td>Lighting</td>
</tr>
</tbody>
</table>

### 4.1 Create an accurate energy model of a proposed project using state-approved energy modeling software.

- Beg EnergyPro/C BECC Res Model ing
- C&C PV
- OLSS Res HVAC
- Vshop Res Mechanical Systems
- C&C Advanced HVAC & DHW
- Intermedia te EnergyPro/C BECC Res Model ing

### 4.2 Explain how the Standard Design is established based on the modeled envelope, HVAC and water heating.

- Res Exam Prep
- Res Model ing
- Res Model ing
- 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 Model ing
- C&C Res Model ing
- 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 Model ing
- C&C Res Model ing
- 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

### 4.5 Summarize the mandatory envelope, mechanical, water heating, and lighting measures that apply to a proposed project.

- Res Exam Prep
- Tools C&C Take-off & Analysis
- Vshop Res Env & Solar
- OLSS Res Solar
- Vshop Res Env & Solar
- OLSS Res Solar
- Final Project activity
- Res lighting
- Res lighting
- Res lighting
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.

<table>
<thead>
<tr>
<th>5.1 Evaluate the energy model for a proposed project to determine defensible recommendations for improving envelope design to meet or exceed code.</th>
<th>Res Modeling</th>
<th>Res Stds EC</th>
<th>Analyzing the CFIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Res Modeling</td>
<td>Res Stds EC</td>
<td>Analyzing the CFIR</td>
</tr>
<tr>
<td>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.</td>
<td>Res Modeling</td>
<td>Vshop Rs Env &amp; Solar</td>
<td>Res Lighting</td>
</tr>
<tr>
<td>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.</td>
<td>CodeB Solar</td>
<td>Res Modeling Tips</td>
<td></td>
</tr>
</tbody>
</table>
**Key to Roadmap Abbreviations:**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing the CF1R</td>
<td>Title 24 Part 6 Essentials: Residential Analyzing the CF1R: ECA Workshop</td>
</tr>
<tr>
<td>DLSS 1:</td>
<td>Modeling Downloadable Self Study 1: Project Scope and Envelope Take-offs</td>
</tr>
<tr>
<td>DLSS 2:</td>
<td>Modeling Downloadable Self Study 2: Create Computer Model and Show Compliance</td>
</tr>
<tr>
<td>DLSS 3:</td>
<td>Modeling Downloadable Self Study 3: Analyze CF1R for More Compliance Options</td>
</tr>
<tr>
<td>EE Concepts:</td>
<td>Residential and Nonresidential Energy Efficiency Concepts: Online Self Study</td>
</tr>
<tr>
<td>HVAC &amp; DHW DLSS:</td>
<td>HVAC &amp; DHW Downloadable Self Study: Model and Analyze System Options</td>
</tr>
<tr>
<td>Intro to HERS:</td>
<td>Introduction to HERS: Online Self Study</td>
</tr>
<tr>
<td>Res Exam Prep:</td>
<td>Residential CEA Exam Preparation Workshop</td>
</tr>
<tr>
<td>Res Modeling:</td>
<td>Title 24 Part 6 Essentials: Residential Modeling</td>
</tr>
<tr>
<td>Res Modeling Tips:</td>
<td>Title 24 Part 6 Essentials: Residential Modeling Tips</td>
</tr>
<tr>
<td>Res Stds &amp; Tech DHW</td>
<td>Title 24, Part 6 Essentials on Demand — Residential Standards &amp; Technology: Water Heating: Online Self Study</td>
</tr>
<tr>
<td>Res Stds &amp; Tech Env</td>
<td>Title 24, Part 6 Essentials on Demand — Residential Standards &amp; Technology: Building Envelope: Online Self Study</td>
</tr>
<tr>
<td>Res Stds &amp; Tech HVAC</td>
<td>Title 24, Part 6 Essentials on Demand — Residential Standards &amp; Technology: Heating, Ventilation, and Air Conditioning: Online Self Study</td>
</tr>
<tr>
<td>Res Stds &amp; Tech Lighting</td>
<td>Title 24 Part 6 Essentials: Standards and Technology for Residential Lighting: Online Self Study</td>
</tr>
<tr>
<td>Res Stds &amp; Tech Solar</td>
<td>Title 24, Part 6 Essentials on Demand — Residential Standards &amp; Technology: Solar Systems: Online Self Study</td>
</tr>
<tr>
<td>Res Stds EC:</td>
<td>Title 24 Part 6 Essentials: Residential Standards for Energy Consultants</td>
</tr>
<tr>
<td>Res Stds Vent:</td>
<td>Title 24, Part 6 Essentials on Demand — Residential Standards: Ventilation: Online Self Study</td>
</tr>
</tbody>
</table>

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