Panel + Q&A

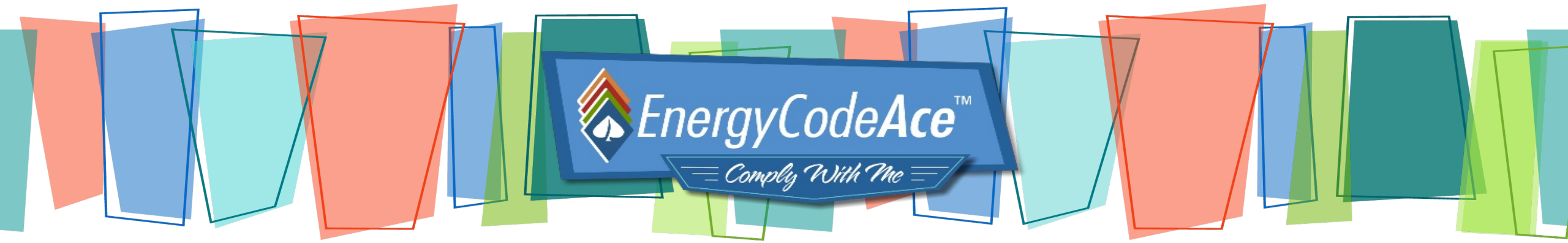
Advancing BEM Certifications: Overcoming Barriers in California and Nationwide

Panelists

Gina Griffiths Rodda, Gabel Energy
Dimitri Contoyannis, Model Efficiency
Sally Blair, NORESCO

Moderator

Dave Intner, Southern California Edison



Certified Energy Analyst (CEA) Program

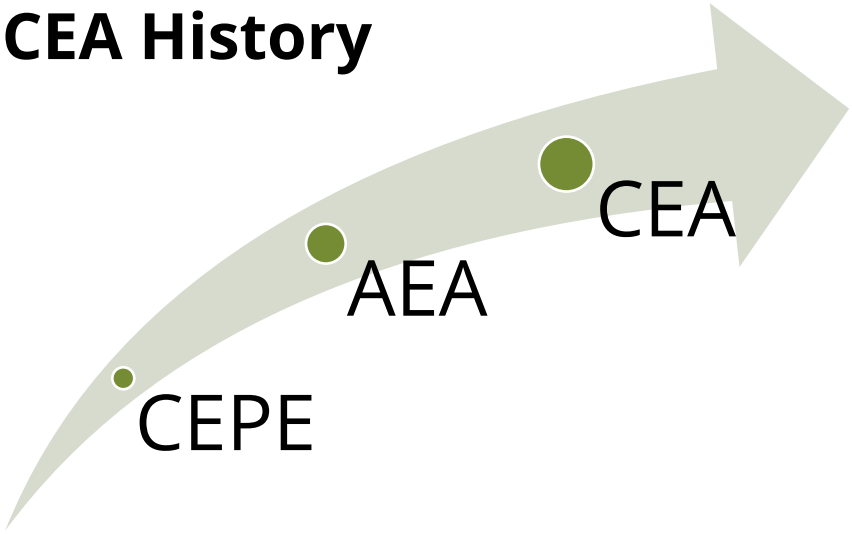
Gina Griffiths Rodda
Energy Code Ace Instructor
Gabel Energy, Principal

Certified Energy Analyst (CEA) Program

1. History

2. CEA Competencies
3. Training
4. Next Steps

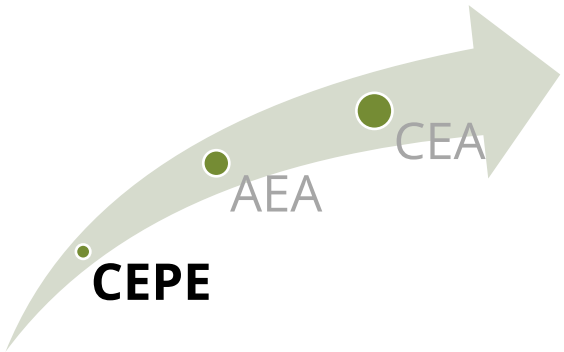
CEA History



Certified Energy Plans Examiner (CEPE)

California Association of Building Energy Consultants

https://cabec.org/



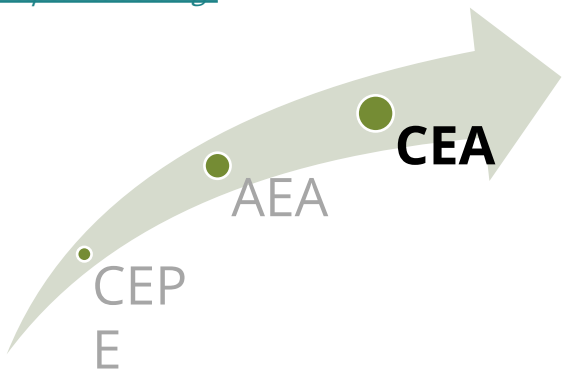
The first organizing meeting of the California Association of Building Energy Consultants (CABEC) occurred in Oakland in September **1985**.

- The need grew to clarify how energy consultants should correctly interpret and implement the Building Energy Efficiency Standards; and the lack of certification among individuals preparing performance calculations and compliance documentation.
  - In **1987**, the California Energy Commission contracted with CALBO to establish a Certified Energy Plans Examiner (CEPE) examination for enforcement personnel. Residential and Nonresidential CEPE exams were in place in July 1988 for the start of that set of Standards.
    - In **1998**, the Energy Commission discontinued funding the CEPE program and CALBO declined to keep the CEPE certification going. The CEC informally asked CABEC if they would assume the administration and support of the CEPE trainings, exam and certification.

Certified Energy Analyst (CEA)

California Association of Building Energy Consultants

https://cabec.org/

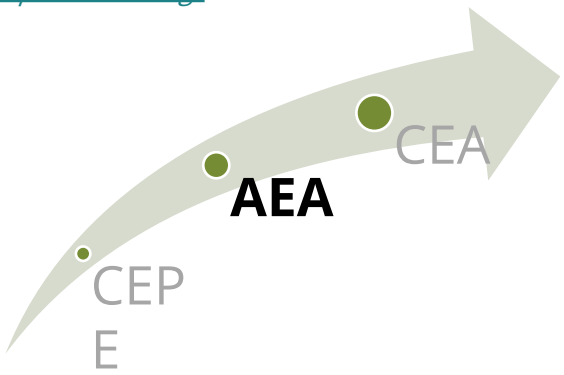


- In late **2010**, the IOUs Codes and Standards team, led by PG&E, assembled a team of Subject Matter Experts and certification testing experts to develop an entirely new CEA exam tailored to energy analysts.
  - The new CEA exam tests **five core competencies** of what energy analysts must be able to do in analyzing, modeling and documenting a building for compliance with the Standards. **New CEA exams are created for each code cycle.**
- Certification demonstrates a commitment on the part of the energy analyst to maintain a high degree of professional excellence pertaining to the Building Energy Efficiency Standards. **Separate certification is offered for the Residential and Nonresidential Standards**.
  1. Pass the appropriate two-part (Multiple Choice and ACM Modeling) CEA Exam for Residential and/or Nonresidential
  2. Have verified experience and/or education and other certifications related to Title 24 compliance work
  3. Participate in a Professional Practices Workshop (PPW), sponsored by CABEC
  4. Attend at least nine hours per year of continuing education training

Associate Energy Analyst (AEA)

California Association of Building Energy Consultants

https://cabec.org/



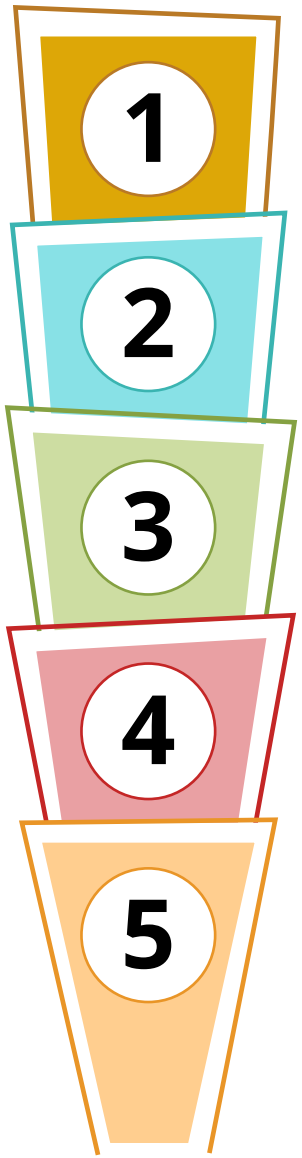
- The AEA provides professional recognition for passing the **multiple-choice portion** of the rigorous CEA exams without CEU's or direct work experience requirement.
  - This helps serve candidates new to the energy industry, California Energy Commission staff, utility staff, Building Officials, Architects, Engineers, Manufacturers and similar. **There will be separate AEA accreditations for the residential and nonresidential energy standards**.
- Requirement Qualifications:
  - Be a current CABEC Member in good standing
  - Pass the multiple-choice portion of the CEA exam for the current code cycle
  - Take the Professional Practices Workshop on the CABEC website
  - No application or maintenance fees as long as applicant is a CABEC Member in good standing.

Certified Energy Analyst (CEA) Program

1. History
2. **Competencies**
3. Training
4. Next Steps

- CEA Competencies

CEA Exam Competencies



Energy Basics
Comprehend Key Residential Energy Efficiency Design Concepts and Issues

Project Assessment
Conduct Initial Project Assessment and Determine How to Apply the 2022 Energy Standards

Project Take-Offs
Gather, calculate and organize all information needed for energy modeling

Modeling and Troubleshooting Results
Modeling the building with approved energy compliance software

Energy Consulting
Consider recommendations for improving energy performance and comfort

Certified Energy Analyst (CEA) Program

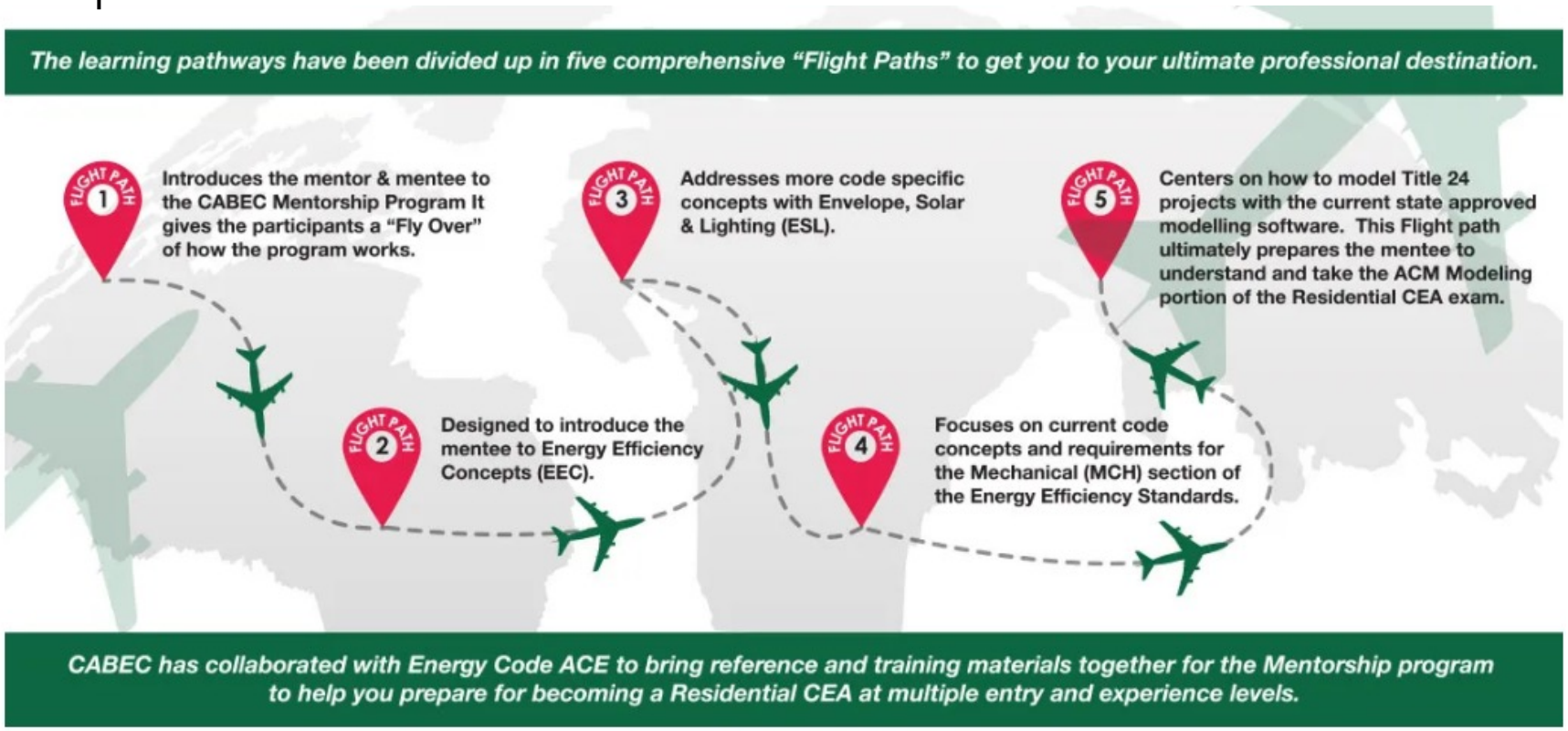
1. History
2. CEA Competencies
3. **Training**
4. Next Steps

- Training
  - Mentoring Program
  - Energy Code Ace

CABEC Mentoring Program

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.

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.



Join us at

www.EnergyCodeAce.com

Your one-stop shop for no-cost tools, training and resources to help you comply with California's Title 24 part 6 building Energy Code and Title 20 appliance standards.

We're powered by the California Statewide Codes & Standards Team and vetted by the California Energy Commission.

Our tools include:

- Image Ace
- Nonres. Indoor Lighting Wheel
- Fact Sheets
- Reference Ace
- Timeline Ace
- Virtual Compliance Assistant
- Useful Links

Certified Energy Analyst (CEA) Program

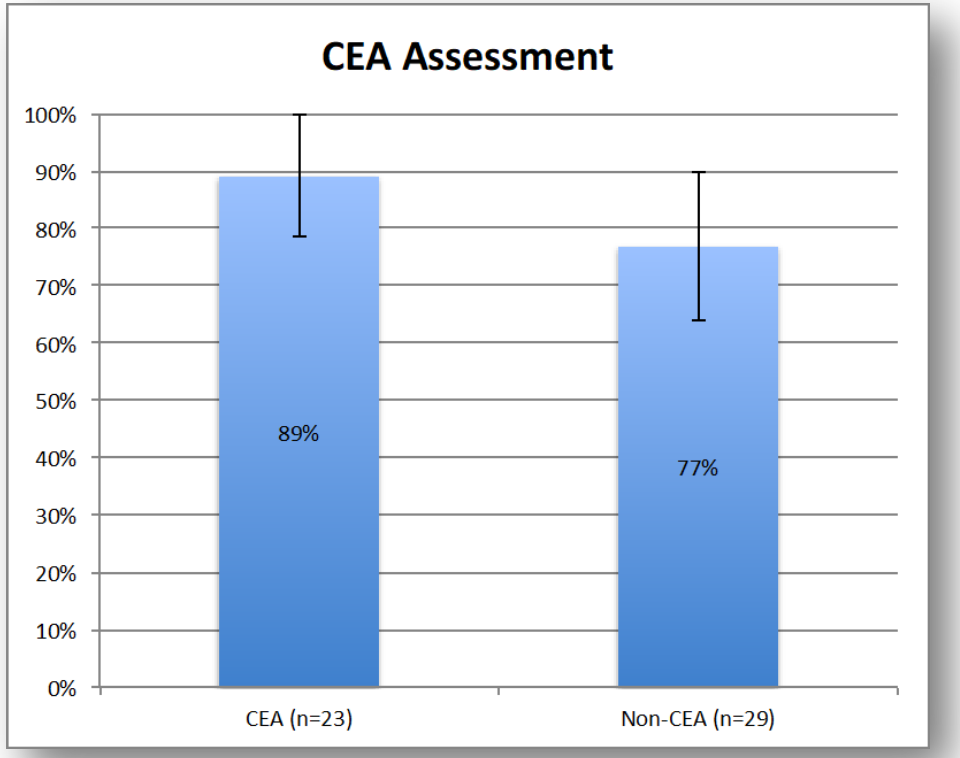
1. History
2. CEA Competencies
3. Training
4. **Next Steps**

- **Next Steps**
  - Acknowledging Value of CEA
  - Establishing Goals with CEA's

CEA Assessment Research Project

Where we're at with the CEA Assessment research project

- Meticulously collected data for approx. 75 residential new construction projects
  - 9 different building departments in Northern CA



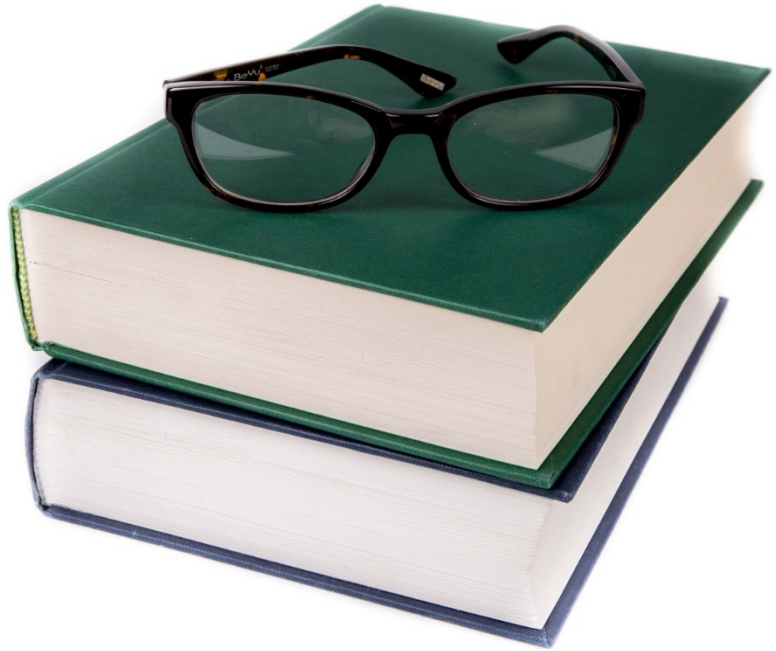
- Preliminary data indicates on average CEAs are more accurate than non-CEAs.

However, the data did not indicate a statistically significant difference after factoring the margin of error based on the very small sample size (50 projects at the time of the analysis).

CEA Assessment Research Project

We received more information than we set out to collect.

- Compiling a database of common modeling and compliance errors
  - Aid in training development
  - Assess the impact of compliance
  - Help identify potential energy savings
- Research data also indicated there's typically not enough information on the plans to adequately plan check energy documentation.



Establishing Goals with CEA Requirements

- At this time, the CEA is a voluntary program, with a few programs supporting the need for a CEA:
  - Most utility rebate programs require the work be done, or be reviewed, by a CEA
  - Some Reach Codes (local ordinances) allow flexibility in how the requirements are met when using a CEA
  - The pilot program Sally Blair will present

Thank you

Please feel free to reach out to us with your questions and comments!

Contact	Role	Email	Phone
Gina Rodda	Instructor	Use the Energy Code Ace Helpdesk!	
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Jill Marver	Energy Code Ace Program Manager	Jill.Marver@PGE.com	(925) 415-6844
Jeremy Reefe	Codes & Standards Project Manager	JMReefe@sdg&e.com	(619) 676-8811
Energy Code Ace	Multiple	http://energycodeace.com/content/contact	
Linda Pierce	CABEC Executive Director	linda@cabec.org	

IBPSA-USA's Certification Program Development

Dimitri Contoyannis, Model Efficiency

Weijun Allen Mei, Cyclone Energy Group

Timothy P McDowell, Thermal Energy System Specialists, LLC

Maria Karpman, Karpman Consulting

IBPSA USA
International Building Performance Simulation Association

IBPSA-USA Certification Committee

Background

Scope

Committee Accomplishments

Overview

The Certification Committee is focused on improving quality control of building performance analysis ***for National code compliance and beyond-code programs.***

Desire to share concepts and collaborate with CalBEM to cross-pollinate with California-focused efforts

Background

Status quo:

- Program development is inefficient - redundant efforts

- Program participation is inconsistent and confusing

- Software developers must comply with many similar (but not identical) requirements

- The QA and review processes lack sufficient rigor

The Certification Committee seeks to develop consistent frameworks to alleviate these issues.

Committee Scope

Develop framework(s) for:

- *Software tool certification*
- *Modeler certification*
- *Model reviewer certification*

Long-term goal is for an organization to implement these certification processes and partner with AHJs.

Committee Accomplishments

Industry research:

- *Reviewed past and present certification initiatives and published report.*

Developed framework(s) for:

- *Software tool certification*
- *Modeler certification*
- *Model reviewer certification*

Thank you to the U.S. Department of Energy for sponsoring these initiatives!

Modeler Certification

Overview

Neither ASHRAE 90.1 nor IECC *incorporates provisions pertaining to modeler qualification.*

In most jurisdictions, ***anyone can run an energy model!***

Qualification Score System

Table 1: Qualification Score System and Example Combinations

Credentials	Points	1	2	3	4	5	6	7	8	9	10
P.E. HVAC&R	3	3	3								
P.E. Electrical or Thermal	2			2	2						
P.E. Other	1					1	1				
R.A.	2							2	2		
BEMP	5	5		5		5		5		5	
Total of 5 Project Experience	5	5		5		5		5		5	
Total of 10 Project Experience	7		7								
Total of 11-20 Project Experience	9				9		9		9		
Total >20 Project Experience	11										11
Total points		13	10	12	11	11	10	12	11	10	11

*Must achieve a minimum of **10 points**.*

No mandatory credential or license requirements, i.e. P.E. or BEMP.

***Emphasize project experience**.*

Software Certification

Overview

The Software Certification initiative endeavors to produce a list of software that satisfies a set of requirements.

Submission Process

- *Web portal for the submission of documents*
- *Required documentation:*
  - *Document stating that the software meets the specific requirements of **ASHRAE 90.1, App. G and/or ECB***
  - *ASHRAE Standard 140 output reports – test results automatically validated*

IBPSA USA

ASHRAE Standard 140 Acceptance Criteria - All Approved Software

Software Name	Version	Last Validated Date	Thermal Fabric Low Mass	Thermal Fabric High Mass	Cooling Equipment	Heating Equipment	Air-Side Equipment
DesignBuilder	7.3.0.043	10/18/2024	Y	Y	Y	Y	Y
Modelica Buildings Library	11.0.0	06/24/2024	Y	Y	Not Validated	Not Validated	Not Validated
TRNSYS	18.05.0001	06/10/2024	Y	Y	Y	Y	Y
	18.06.0002	10/07/2024	Y	Y	Y	Y	Y

Review Process (90.1)

- *Documents are reviewed for completeness*
- *Software vendors "self-certify" that their responses are truthful*

A full review of all responses for a software would be very time-consuming and dramatically increase the cost of a certification program.

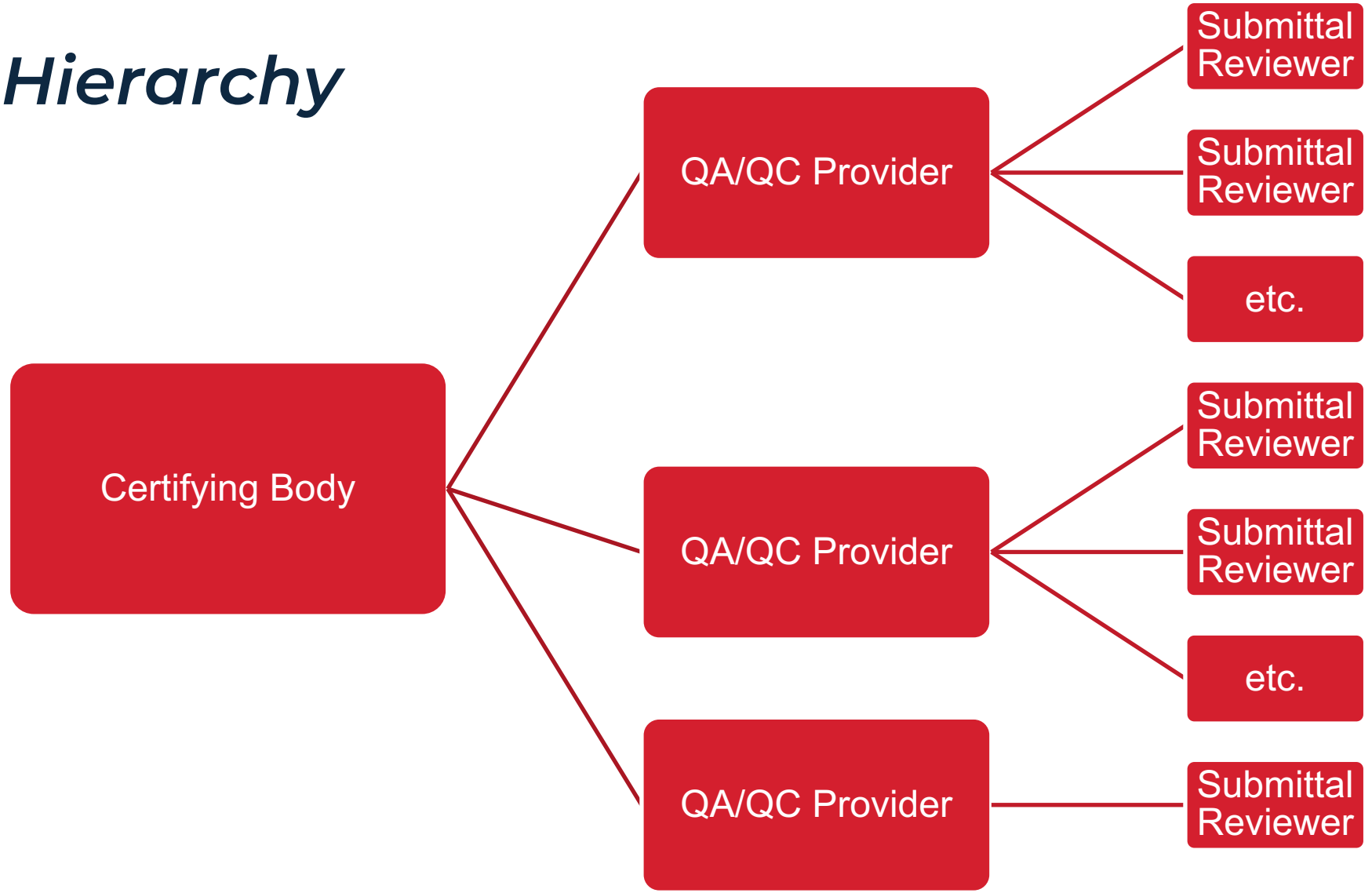
QA/QC Provider and Reviewer Certifications

Overview

*Committee research suggested that a **market-based** QA/QC framework requires certifying both QA/QC provider organizations and individual reviewers.*

*The framework described in the seed document is **modeled after RESNET** Rating Provider/Rater certifications and EPA Multifamily Review Organization recognition.*

QA/QC Hierarchy



Modeler Certification

Only a few jurisdictions in the U.S. currently mandate qualifications for modelers performing energy models for commercial energy code compliance or other rating programs. Neither ASHRAE 90.1 nor IECC incorporates provisions pertaining to modeler qualification. The Modeler Certification initiative endeavors to explore a qualification framework that can be upheld by a Certifying Body and potentially adopted by various jurisdictions.

Scope

The framework defines energy modeler responsibilities and ethics. Additionally, it outlines the authorities and duties of a Certifying Body tasked with hosting and maintaining this framework. A Qualification Score System is established, necessitating modelers to achieve a predetermined threshold of points for qualification. Notably, this scoring system prioritizes project experience over mandatory licensure or certification, with said experience necessitating proficiency in whole-building energy simulation using acceptable tools. Moreover, the framework contemplates a continuous education mandate, ensuring modelers remain updated on evolving modeling requirements while enabling the Certifying Body to sustain this framework.

Modeler Certification Framework Seed documentation

Comment Submission form

QA/QC Provider and Model Reviewer Certifications

Based on A National BEM Certification Scoping Study, establishing a network of third-party quality assurance and quality control providers (QA/QC Providers) is one of the key focus areas for improving public's trust and market penetration of compliance modeling and creating a successful market-based certifying body. Responsibilities of QA/QC providers include establishing a submittal review process, overseeing submittal reviewers, facilitating submittal reviews, and maintaining files and records for reviewed projects.

Scope

As a first step in creating such provider network, IBPSA-USA Certification Committee developed a Commercial Performance-based Compliance QA/QC Provider and Submittal Reviewer Accreditation Framework Document that includes the following:

- Examples of a possible engagement between rating authorities and jurisdictions, the Certifying Body and the accredited QA/QC Providers.
- QA/QC provider roles and responsibilities
- QA/QC provider accreditation process including initial accreditation, termination and renewal
- Application to become an accredited QA/QC provider
- Submittal reviewer qualification requirements
- Informative appendix describing possible variation in the target submittal review rigor that rating authorities and jurisdictions may adopt.

BEM QA/QC Provider and Model Reviewer Certification document

Comment Submission form

Please submit formal comments!

Link to framework docs:
https://www.ibpsa.us/resources/national-bem-certification-program/

Software certification feedback form link:
https://docs.google.com/forms/d/e/1FAIpQLSeiTSZVQJdp6wpKuHSC0XfY8ZCqsAkmemQneyA9S_ipL7pRjw/viewform

Modeler certification feedback form link:
https://docs.google.com/forms/d/e/1FAIpQLScugQ7XVkEMvA9k1DIInejhFj6ZngmAEDv3UfaWIFULDxajUQ/viewform

Model reviewer certification feedback form link:
https://docs.google.com/forms/d/e/1FAIpQLSd5j-ZBi_I9WICqcofZPBey5K7TO7-pOGYIlDSzu04exa4m7A/viewform

IBPSA-USA Certification Committee

Email: certification@ibpsa.us

IBPSA USA
International Building Performance Simulation Association

INCREASING DEMAND FOR CREDENTIALED ENERGY CODE EXPERTS

Sally Blair
Director, Codes & Standards
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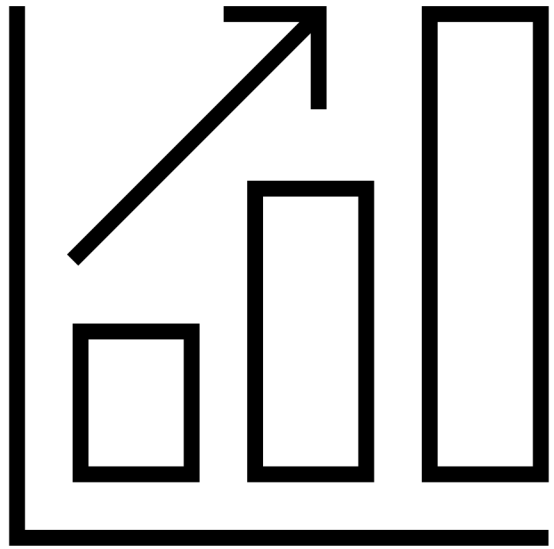
NORESCO

NORESCO



Source; K. Weinkle E-infrastructure Compliance Process Infographic.

“WE QUIT”

Source; C.Mills Keynote Address CABEC Conference, 2024.

Source; K. Weinkle E-infrastructure Compliance Process Infographic.

NORESCO

Some of the roadblocks we already know about:

- Pushback from licensed professionals that their license isn't enough to complete tasks such as being Documentation Author.
- BEM credentials (CEA as opposed to AEA) requires modeling experience and that's NA to plans examiners, etc.
- Hiring a 3rd party plans examiner "reviewer" most likely adds costs to a project.
- BOs worried more thorough Energy Code plan check will require more time (from internal or 3rd party plans examiners).
- Already hard to find applicants for plans examiner positions.
- Mandatory and Prescriptive compliance typically only requires expertise on a single system (lighting, plumbing, etc.) but the credentials require expertise on all systems.

Ace Plan Check Support Pilot™

Need some help with Energy Code compliance? Get expert help for free!

Energy Code Ace is launching a new pilot program to support building departments.

Introducing the Plan Check Support Pilot

This free program will help improve Title 24, Part 6 (Energy Code) compliance while easing the burden on building departments. The program will have a credentialed Energy Code expert provide support during the design or plan check phase for New Construction, Additions, and Alterations of residential, multifamily, or nonresidential projects.

How the Pilot Works

We have ideas for how the program works, but we want to adapt it to your team's needs! Our experts can collaborate with you to help determine where to incorporate a credentialed Energy Code expert into your workflow.

EnergyCodeAce™

energycodeace.com

Source; Energy Code Ace Plan Check Support Pilot Flyer.

Office of
ENERGY EFFICIENCY & RENEWABLE ENERGY

Meet BTO's 2024 Cohort of Projects to Support More Resilient and Efficient Building Codes

SEPTEMBER 16, 2024

California Energy Commission (Sacramento, California) will establish and scale a network of credentialed California energy code experts to support local governments and the construction industry in reviewing compliance documentation and plans during the permit application and plan-review phase of construction. (Award amount: $4 million)

Source; U.S. Department of Energy 2024 Projects Announcement.
https://www.energy.gov/eere/buildings/articles/meet-btos-2024-cohort-projects-support-more-resilient-and-efficient

Break

2:30 – 2:45pm PT

Return here at 2:45 for the grand finale,
the Updated Working Group Action Plans!