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Comment Received From: Travis Wade
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Requiring CEAs for Energy Compliance

Additional submitted attachment is included below.

Require CEAs for Energy Code compliance

September 28, 2026

California Energy Commission | Dockets Office, MS-4
715 P Street, Sacramento, CA 95814

Docket 24-BSTD-05 | 2025 Energy Code Compliance Initiatives
Docket 25-BSTD-03 | 2028 Energy Code Pre-Rulemaking

Dear Commissioners and Energy Code staff:

> **I request that the Commission require current Certified Energy Analyst (CEA) certification for individuals responsible for design-stage compliance documentation and its substantive technical review, including licensed design professionals. Fund the expansion of CABEC's existing program, establish continuing quality assurance and verifiable credentials, and pursue the earliest lawful adoption route.**

Brian Selby's white paper, Expanding the Certified Energy Analyst Program to Support Requirement for Performance Compliance Documentation Authors, identifies staffing, assessments and technology to expand CABEC's program. I support a funded implementation plan with measurable results. The complete paper is Appendix B.

CALGreen qualification provisions and a current local CEA requirement provide implementation precedents. Appendix C explains their scope and proposes a comparative evaluation.

Qualified energy review supports local enforcement

Public Resources Code §25402.1(f) directs CEC technical assistance, training and plan-review support; §25402.1(g)(1) requires local energy review before permit issuance. The 2025 Single-Family Residential Compliance Manual, Chapter 2, Plan Check, printed page 2-5, describes fire and life safety as primary review priorities and energy efficiency as secondary. A qualified analyst can help authorities having jurisdiction (AHJs) meet their energy-review duties amid competing demands. AHJs retain approval and enforcement authority.

Professional licensure alone does not establish modeling competence

Project and source	2 Examples for the last 6 months of what reached approval or construction and was completely missed and inaccurate. Thousands more exist	Illustrative cost exposure
Single-family HVAC Appendix D slides 13-15	• The same licensed mechanical engineer, not a CEA, prepared the design and energy report. • Modeled EER2: 12.48; equipment schedule: 11.3 / 8.5. • Wade reports city and third-party approval without reconciling the discrepancy.	**$7,275-$26,425** Gross correction cost for one system if replacement is needed after installation, including model coordination and an additional verification visit.
Multifamily hot water Appendix D slides 35-40	• Domestic hot water (DHW) marked "Not Included" in the performance scope. • Wade reports approval and installation of electric-resistance tanks, instead of HPWH • CEA review was conducted for potential incentives. The project failed by 50% - but it was too late to fix.	**$61,900-$77,900/year** Higher water-heating electricity cost for electric resistance v.s heat-pump water heaters. Energy Use increase of 100-200 MWh/year (depending on occupants) due to incorrect modeling and approval

These are illustrative costs, not measured project losses. The DHW scenario assumes three people per apartment and SDG&E optional DR energy rates effective August 1, 2026; fixed charges are excluded. Full assumptions appear in Appendix D, slides 15 and 38-40.

Early CEA review should reconcile equipment ratings, DHW compliance scope and required verification before purchase or fabrication. Authors and responsible designers must resolve document conflicts; ECC raters must report actual findings and cannot certify unsupported passing results.

CEAs support licensed and exempt designers

Business and Professions Code §§5537 and 6737.1 permit certain residential design without architectural or engineering licensure. These exemptions make access to an energy specialist particularly valuable. CEAs can explain requirements across building systems and coordinate the compliance work while designers retain their responsibilities. CEA certification does not confer design licensure. Existing engineering competence duties under 16 CCR §415 also remain applicable.

Build on CALGreen and local qualification precedents

CALGreen, Title 24, Part 11, §702.2 recognizes task-specific qualifications for special inspectors, including energy-organization certification under the HCD provisions. Section 703.1 addresses compliance documentation. These provisions support the principle that specialized compliance work requires demonstrated competence; they do not already mandate CEA authorship. [Appendix C, pp. 1–2]

Palo Alto requires CEA preparation and signature for the modeled alternative to its residential FlexPath measures under local Energy Code §150.0(w), Exception 6. The CEC adopted the required findings for Ordinance 5665 on January 21, 2026. This is a scoped local Part 6 precedent; CALGreen inspection is a separate role. Comparative benefits should be tested, not presumed.

Requested qualification and oversight

Require current CABEC CEA certification appropriate to the building type and code cycle for the responsible authors and project-side designated technical reviewers of Certificates of Compliance and supporting analyses for single-family, multifamily and nonresidential projects. Architectural or engineering licensure should not create an automatic exemption. Other practitioners may assist under a named CEA's substantive review and responsibility. Preserve lawful design services, AHJ approval, independent field verification and applicable acceptance-testing duties.

Require the responsible individual's identity, credential scope, signed review and report revision to be traceable. The review should reconcile plans and model inputs, substantiate equipment ratings, identify required verification and coordinate changes. Software should check credential status when final compliance documents are issued, with historical records, a documented outage procedure and a way to correct disputed status.

CEC recognition of a certification provider should be governed by published competency standards, transparent fees and access without association membership. Define assessment frequency, remediation, appeals, privacy and reporting obligations. Use practical assessments to evaluate proficiency, with a complaint and targeted project-review process to address actual errors. An active credential does not establish that every project is correct. The same named-person accountability should apply to work produced manually or with AI assistance.

Build a qualification program that remains accountable

Selby's paper describes enhancements to CABEC's established certification and continuing-education program: standardized practical modeling assessments, additional administrative capacity, automated continuing-education records and a database that can verify active credentials through compliance software. Exercises would test whether practitioners can correct models, address additions or alterations and resolve review comments. These proposals support demonstrated competence throughout a career, beyond an initial examination. [Appendix B, white paper pp. 3–6]

The paper is a discussion framework prepared by Brian Selby, Selby Energy, Inc., for a potential requirement covering performance documentation authors. It is not an adopted regulation, approved budget or final program design. My request extends to prescriptive documentation and project-side designated technical reviewers. The Commission should define the appropriate competencies and transition for those additional responsibilities.

Use the administrative framework and a lawful adoption schedule

Direct staff and counsel, in coordination with the California Building Standards Commission, to develop the qualification rule through Title 24, Part 1, Chapter 10, §§10-102 and 10-103(a)1. Section 10-103(a)2C supports requests for model inputs; §10-103(d)1–2 connects compliance to permits and final approval. Part 2, Chapter 2 definitions alone cannot impose this requirement. No change to Part 6 technical performance requirements is requested.

Selby proposes readiness for January 1, 2029. CEC's 2028-cycle materials identify nonresidential updates and no 2028 update for residential units under AB 130. Evaluate Health and Safety Code §18930(g) before selecting an effective date; a Part 1 placement does not establish an exception. Pursue the earliest lawful route for each building category, including targeted legislation if needed. Training, pilots and enforcement of existing accuracy requirements can begin while adoption proceeds.

Coordinate with HCD, the California Building Standards Commission and DSA within their respective jurisdictions under Health and Safety Code §18930.5(b). Develop complementary CALGreen provisions without duplicating duties or treating a documentation author as an independent inspector of the same work. CALGreen placement does not avoid AB 130; voluntary tiers alone cannot establish a statewide mandate.

Fund existing capacity and verify readiness

Make CEA program expansion an early implementation priority. RFQ-25-401 describes an Energy Code Compliance Evaluation Support contract of up to $11.5 million over three years. Direct eligible work authorizations toward program design, transition planning and evaluation; identify separately authorized funds for delivery where necessary. This contract is not an unrestricted grant pool, and this request does not presume an award to CABEC. Publish the allowable sources, procurement approach, amounts and deliverables.

Build on CABEC's exam administration and candidate support, including its mentorship program led by Gina Griffiths Rodda. Fund additional mentors, supervised practice, assessment development and administrative staff. Coordinate with Energy Code Ace, CalBEM Working Group 2 and university outreach, including A2 Efficiency's BEM Career Pathways initiative and Neil Bulger's student lecture work. Explain the courses, experience, software skills and examinations that lead to CEA certification and compliance careers.

Make the transition accessible

The ECC program already requires rater training, testing and certification under Title 24, Part 1, §10-103.3(d)1–2. A comparable commitment to demonstrated competence is warranted for analysts whose documents establish what must be installed and verified. Keep the transition attainable through published fees, accessible training, exam capacity and financial assistance where authorized. Establish clear rules for projects already in process and avoid indefinite exemptions that leave the qualification optional.

A concrete work plan and public measures of success

Within 60 days, publish responsible staff and a statement of work identifying the legal pathway, building categories, staffing, budget, deliverables and decision dates. Convene CABEC, utilities, software providers, AHJs, design professionals, raters and consumer representatives. Develop the assessment and credential systems, pilot them with practitioners of varied experience, and publish results before a mandatory launch. The paper's proposed development schedule should be updated to the actual authorization and funding dates.

Readiness should include adequate training and exam availability, reliable credential checks, consistent assessment scoring, workable remediation and appeals, and tested support for AHJs. Measure applicant cost and wait time as well as certification capacity. Begin eligible training and system development alongside the compliance evaluation rather than waiting for its full three-year term.

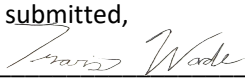
Compare implementation outcomes

Include a focused comparison in the compliance evaluation: examine jurisdictions using CEA requirements or independent CALGreen review against matched projects elsewhere. Record actual CEA involvement and independent review separately. Use consistent independent audits to measure material plan/model errors, AHJ review time, correction rounds, late revisions, verification failures and total compliance and rework costs. Adjust for code cycle, reach requirements, project mix, climate and review resources. Distinguish documentation errors from installation defects; more detected errors may reflect stronger review. Publish uncertainty and avoid attributing causation or savings without supporting evidence. Appendix C sets out the proposed design. Conduct this work alongside authorized training and pilots, without making a multiyear study a prerequisite for preparation.

For Californians, the objective is fewer avoidable corrections, unexpected equipment changes and delays. For industry, it is clearer responsibility and a credible path into skilled work. For ratepayers and the CEC, it is a better prospect that installed and verified features match the compliance assumptions, with transparent use of program funds. Track document discrepancies, correction cycles, unresolved field issues and delivery costs; quantify savings only when evidence supports them.

The Commission can act now on a defined program of qualification, practical assessment and implementation support while completing the required rulemaking. I ask it to assign that work, fund eligible early delivery and establish a clear decision schedule.

Respectfully submitted,

Name:  Travis Wade Firm: Wade Energy

Appendix A Code provisions and supporting policy, training and funding authorities.
Appendix B Brian Selby's complete seven-page white paper with a scope and implementation note.
Appendix C CALGreen and local CEA precedents, implementation limits and evaluation design.
Appendix D Travis Wade's CABEC presentation, 98 slides, two per page.

Appendix A

Selected code provisions and supporting authorities

Excerpts are identified by section and printed page. Source URLs appear in the supplement; active links are disabled for docket filing. Notes provide context and are not regulatory text. Only the identified selections are reproduced.

1. Plan review and the administrative framework

CEC 2025 Single-Family Residential Compliance Manual

Chapter 2 - Compliance Phases - Plan Check | Printed p. 2-5 | Selected sentence

> This plan check focuses primarily on the fire, life, and safety requirements of the CBC and secondarily on the building energy efficiency requirements.

Note. The surrounding discussion assigns energy plan-check duties to local agencies, including checking the plans against CF1R features. It explains that complete, accurate submissions support prompt review. This passage supports technical assistance to AHJs while preserving their enforcement role.

2025 Energy Code - Part 1, Chapter 10, §10-101(a)-(b)

Administrative scope | Printed p. 2 | Selected subsections

> (a) This article contains administrative regulations relating to the energy building regulations in Title 24, Part 6. This article applies to all residential and nonresidential buildings.
>
> (b) Nothing in this article lessens any necessary qualifications or responsibilities of licensed or registered building professionals or other designers or builders, or the duties of enforcement agencies that exist under state or local law.

2025 Energy Code - Part 1, §10-102

DOCUMENTATION AUTHOR | Printed p. 4 | Complete definition

> DOCUMENTATION AUTHOR is a person who prepares a Title 24 Part 6 compliance document that must subsequently be reviewed and signed by a responsible person in order to certify compliance with Part 6.

Note. The administrative qualification proposal concerns this documentation role. Part 6 §100.0(g), printed p. 99, directs readers to Part 1 for administrative requirements. The proposal does not require a change to Part 6 energy budgets or technical performance thresholds.

2. Documentation accuracy and design responsibility

2025 Energy Code - Part 1, §10-103(a)1

Certificate of Compliance | Printed p. 7 | First paragraph

> For all buildings, the Certificate of Compliance described in Section 10-103 shall be signed by the person who is eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design (responsible person); and submitted in accordance with Sections 10-103(a)1 and 10-103(a)2 to certify conformance with Part 6. If more than one person has responsibility for the building design, each person shall sign the Certificate of Compliance document(s) applicable to that portion of the design for which the person is responsible. Alternatively, the person with chief responsibility for the building design shall prepare and sign the Certificate of Compliance document(s) for the entire building design. Subject to the requirements of Sections 10-103(a)1 and 10-103(a)2, persons who prepare Certificate of Compliance documents (documentation authors) shall sign a declaration statement on the documents they prepare to certify the information provided on the documentation is accurate and complete. In accordance with applicable requirements of 10-103(a)1, the signatures provided by responsible persons and documentation authors shall be original signatures on paper documents or electronic signatures on electronic documents conforming to the electronic signature specifications in Reference Joint Appendix JA7.

2025 Energy Code - Part 1, §10-103(a)1A(iv)

Consistency with the submitted design | Printed pp. 7-8 | Complete item

> iv. Include a declaration statement to the effect that the building energy features, performance specifications, materials, components, and manufactured devices for the building design identified on the Certificate of Compliance indicate the building is in compliance with the requirements of Title 24, Parts 1 and 6, and the building design features identified on the Certificate of Compliance are consistent with the building design features identified on the other applicable compliance documents, worksheets, calculations, plans, and specifications submitted to the enforcement agency for approval with the building permit application.

Note. These provisions already require accuracy, completeness and a legally eligible responsible-person signature. They do not establish a universal residential CEA requirement. A qualification requirement would add a defined competency standard while retaining the responsible designer’s duties. The proposed review concerns the CF1R and its supporting analysis; installer and independent field-verification responsibilities remain separate.

3. Established precedent for verified competence

2022 Reference Appendices - Appendix JA1

HERS RATER | Printed p. JA1-11 | Complete definition - historical framework

> HERS RATER is a person who has been trained, tested, and certified by a HERS Provider to perform the field verification and diagnostic testing required for demonstrating compliance with the Part 6, as described in Title 20, Chapter 4, Article 8, Section 1670 et seq.

2025 Energy Code - Part 1, §10-102

ECC-RATER | Printed p. 4 | Complete definition - current framework

> ECC-RATER is a person trained, tested, and certified by an ECC-Provider to perform field verification and diagnostic testing for the ECC program pursuant to the requirements of Section 10-103.3.

2025 Energy Code - Part 1, §10-103.3(d)1A(vi)

Written test | Printed p. 43 | First sentence and item (c); intervening text omitted

> An ECC-Rater applicant shall take a written test, offered by an ECC-Provider, to confirm the applicant’s understanding of all mandatory training information specified in Sections 10-103.3(d)1Ai and 10-103.3(d)1Aii.
>
> c. Require a passing score of no less than 70 percent.

2025 Energy Code - Part 1, §10-103.3(d)1A(vii)

Practical test | Printed p. 44 | First sentence

> ECC-Rater applicants shall take a practical test offered by an ECC-Provider to demonstrate competence in all subjects specified in Sections 10-103.3(d)1Ai and 10-103.3(d)1Aii as they apply to the performance of FV&DT procedures.

2025 Energy Code - Part 1, §10-103.3(d)2A

Certification Requirements | Printed p. 45 | First sentence

> Certification as an ECC-Rater is limited to a single Triennial Code Cycle.

Note. The rater framework is a precedent for demonstrated competence in a defined role. It does not make a CEA an ECC-Rater or substitute analyst review for independent field verification. Section 10-103.3(d)1B addresses an existing-rater challenge pathway; subsection (d)1C addresses update training and testing. Practical testing is not necessarily repeated for every code-cycle update.

4. Design licensing and residential exemptions

California Building Code - Part 2, Chapter 2, §202

2025 CBC, July 2025 publisher text | Complete defined term

> [A]REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

Note. This definition points to statutory professional registration laws. It does not itself require CEA certification or confer a design license on a CEA.

Business and Professions Code §5537(a), (a)(1)

Selected opening clause and single-family category; other categories omitted

> (a) This chapter does not prohibit any person from preparing plans, drawings, or specifications for any of the following:
>
> (1) Single-family dwellings of woodframe construction not more than two stories and basement in height.

Business and Professions Code §5537(b)

First two sentences; final explanatory sentence omitted

> If any portion of any structure exempted by this section deviates from substantial compliance with conventional framing requirements for woodframe construction found in the most recent edition of Title 24 of the California Code of Regulations or tables of limitation for woodframe construction, as defined by the applicable building code duly adopted by the local jurisdiction or the state, the building official having jurisdiction shall require the preparation of plans, drawings, specifications, or calculations for that portion by, or under the responsible control of, a licensed architect or registered engineer. The documents for that portion shall bear the stamp and signature of the licensee who is responsible for their preparation.

Note. The exemption is limited; it does not cover every residential project or every design component. An applicable design exemption does not establish Energy Code or modeling competence. Qualified energy support can assist both licensed and exempt designers while respecting the scope of their legal responsibilities.

5. Findings required for emergency adoption

Government Code §11346.1(b)(2)

First sentence; remaining sentences separately selected or summarized below

> Any finding of an emergency shall include a written statement that contains the information required by paragraphs (2) to (6), inclusive, of subdivision (a) of Section 11346.5 and a description of the specific facts demonstrating the existence of an emergency and the need for immediate action, and demonstrating, by substantial evidence, the need for the proposed regulation to effectuate the statute being implemented, interpreted, or made specific and to address only the demonstrated emergency.

Government Code §11346.1(b)(2)

Fourth sentence; intervening sentences omitted

> A finding of emergency based only upon expediency, convenience, best interest, general public need, or speculation, shall not be adequate to demonstrate the existence of an emergency.

Note. The same paragraph requires identification of relied-upon studies and, where an agency knew of the situation in sufficient time, facts explaining why nonemergency rulemaking was not used. Project examples can support a request to develop an emergency record; they do not by themselves establish that the statutory test has been met.

Government Code §11346.1(c)

Complete subsection - building standards approval

> Notwithstanding any other provision of law, no emergency regulation that is a building standard shall be filed, nor shall the building standard be effective, unless the building standard is submitted to the California Building Standards Commission, and is approved and filed pursuant to Sections 18937 and 18938 of the Health and Safety Code.

Health and Safety Code §18937(a)

CBSC law compilation effective January 1, 2026 | Printed p. 15 | First sentence

> Emergency standards shall be acted on by the commission within 30 days and only when the adopting agency or state agency that proposes the building standards has made the finding of emergency required by Sections 11346.1 and 11346.5 of the Government Code and the adopting agencies have adopted the emergency standard in compliance with Section 11346.1 of the Government Code, and the commission concurs with that finding.

Note. The remaining sentence specifies the CBSC voting threshold. Section 18938(d) addresses approval, filing and the effective date. Emergency adoption also requires timely completion of the applicable permanent-rulemaking process; it is not permanent adoption by staff memorandum.

6. Current residential restrictions and administrative rules

Health and Safety Code §18930(g), (g)(1)

CBSC law compilation effective January 1, 2026 | Printed p. 9 | Opening clause and emergency exception

> Commencing October 1, 2025, to June 1, 2031, inclusive, proposed building standards affecting residential units shall not be considered, approved, or adopted by the commission or any other adopting agency, unless any of the following conditions are met:
>
> (1) The commission deems those changes necessary as emergency standards to protect health and safety.

Health and Safety Code §18929.1(c), (c)(1)

Same compilation | Printed p. 7 | Parallel code-adoption-cycle restriction - summary

Note. Section 18929.1(c) addresses the same October 1, 2025 through June 1, 2031 period and bars consideration, approval or adoption of proposed building standards affecting residential units unless a listed condition applies. Subsection (c)(1) provides the same emergency health-and-safety exception. Both statutes contain additional exceptions not reproduced here.

Health and Safety Code §18909(c)

Same compilation | Printed p. 2 | Complete subsection

> “Building standard” includes a regulation or rule relating to the implementation or enforcement of a building standard not otherwise governed by statute, but does not include the adoption of procedural ordinances by a city or other public agency relating to civil, administrative, or criminal procedures and remedies available for enforcing code violations.

Health and Safety Code §18929(a)

Same compilation | Printed p. 7 | First sentence

> Except as otherwise provided in subdivision (b), administrative regulations adopted by state agencies that apply directly to the implementation or enforcement of building standards shall be forwarded to the California Building Standards Commission for approval.

Note. Placing a qualification requirement in Part 1 does not, by itself, establish an exemption from the residential adoption restrictions. The requested action is for CEC and CBSC to determine the applicable lawful route and develop the necessary findings, while preserving existing technical performance requirements and enforcement roles.

CBSC - Emergency Rulemaking

Official process overview and examples of emergency building standards

Supplemental implementation authorities

Appendix A | Source supplement for the revised request

The summaries below are explanatory, not statutory quotations. The revised letter defines the requested scope. All presentation slides and the preceding source excerpts are retained.

Technical assistance and local enforcement

Public Resources Code §25402.1(f) requires continuing technical assistance, local-official training, review forms and procedures, and contract review of plans submitted by local building departments. Subsections (g) and (g)(1) assign local enforcement and require energy review before permit issuance. These provisions support assistance and accountability; they do not expressly establish a CEA mandate. Funding, procurement and authority for a new qualification rule require agency assessment.

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=25402.1.

Residential restrictions and an available future adoption route

Health and Safety Code §18929.1(c)(7) and §18930(g)(8) permit consideration of standards effective on or after January 1, 2032. Earlier implementation requires an applicable exception or legislative change if the proposal falls within the residential restrictions. Section 18909(c) includes implementation and enforcement regulations in the definition of building standard. Section 18930(a)(2), (4) and (5) requires statutory authority, fairness and reasonable public cost. See the official compilation, printed pp. 8 and 10, for the 2032 exceptions.

https://www.dgs.ca.gov/-/media/Divisions/BSC/07-About/Law/CBSC_LAW_2025-Eff01-01-2026.pdf

Implementation precedent

The CEC's 2021 mechanical acceptance-technician certification report evaluated workforce availability and access to training under Part 1 §10-103.2(b). It is a rollout precedent, not authority for the particular CEA proposal or a basis for copying its numerical workforce threshold. Publication CEC-400-2021-001, February 22, 2021.

https://www.energy.ca.gov/publications/2021/technician-certification-energy-code-required-mechanical-acceptance-testing

CEA qualification pathway

CABEC's CEA program requires knowledge and compliance-modeling examinations, verified experience or education, professional training and annual continuing education. The residential credential is the relevant pathway for the letter's single-family component. CABEC identifies multifamily within its nonresidential certification track.

https://cabec.org/cea/

Source locations for the preceding excerpts

2025 Energy Code: https://www.energy.ca.gov/sites/default/files/2025-07/CEC-400-2025-010-F_0.pdf

2025 single-family manual Chapter 2: https://www.energy.ca.gov/filebrowser/download/8634?fid=8634

2022 Reference Appendices: https://www.energy.ca.gov/sites/default/files/2022-08/CEC-400-2022-010-AP.pdf

2025 California Building Code Chapter 2: https://codes.iccsafe.org/content/CABC2025P1/chapter-2-definitions

Residential design exemptions: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=BPC&sectionNum=5537.

Emergency findings: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=11346.1.

Funding and workforce implementation sources

Appendix A | Additional sources for the CEA requirement and funded transition

The current letter defines the requested scope. Earlier explanatory references to an initial single-family rollout do not limit the revised request for single-family, multifamily and nonresidential design-stage compliance work. These summaries are not regulatory text.

Existing contract and implementation funding

CEC RFQ-25-401 proposes up to $11.5 million over three years for Energy Code Compliance Evaluation Support. Addendum 3, Tasks 9 and 10, covers early implementation support and technical support for separate implementation funding mechanisms. Task 10 does not award grants or MOUs from this contract. The August 26, 2026 selection notice names NORESCO, LLC; federal funding, Commission approval and an executed agreement remain conditions. The letter requests eligible early work and separately authorized delivery funding, not unrestricted grants from the contract.

RFQ and official attachments: https://www.energy.ca.gov/solicitations/2026-05/rfq-25-401-energy-code-compliance-evaluation-support

Manual: https://www.energy.ca.gov/sites/default/files/2026-06/00_RFQ-25-401_Solicitation_Manual_Addendum_03_ada.docx

Selection notice: https://www.energy.ca.gov/sites/default/files/2026-08/RFQ-25-401_Notice_of_Selection_2026-08-26_ada.docx

CABEC certification and mentorship

CABEC administers CEA examinations, experience or education requirements, continuing education and recertification. Its residential and nonresidential tracks serve different building types; multifamily falls within its nonresidential track. Certification is available without paid membership. The existing mentorship program supports aspiring analysts; CABEC identifies Gina Griffiths Rodda as a program leader. Additional staff, mentors, training capacity and candidate support are requested investments.

https://cabec.org/cea/ | https://cabec.org/mentorship-program/ | https://cabec.org/about/board/

Energy Code Ace and CalBEM university outreach

Energy Code Ace provides free training, tools and resources. CalBEM Working Group 2 addresses education and workforce skills. CalBEM's July 2025 update describes A2 Efficiency's BEM Career Pathways initiative, led by Neil Bulger and Michael Sawford, to introduce students to building energy modeling careers through a lecture series. Its May 2026 Working Group 2 agenda includes the A2 BEM Awareness project. Making CEA preparation explicit in university outreach is the requested policy action.

https://www.energycodeace.com/content/about | https://calbem.ibpsa.us/working-groups/

https://calbem.ibpsa.us/2025/07/16/summer-2025-working-group-updates/

https://calbem.ibpsa.us/event/calbem-working-group-2-webinar-project-updates-and-2026-priorities/

Professional competence and residential design exemptions

16 CCR §415 requires engineers to practice within their competence. The letter therefore distinguishes general licensure from demonstrated Energy Code and modeling proficiency; it does not suggest engineers have no competence duty. Business and Professions Code §6737.1 permits specified conventional residential design work without engineering licensure, subject to its limits. These provisions complement §5537 and the energy-administration authorities already included in this appendix.

Board rules, §415: https://www.bpelsg.ca.gov/laws/boardrules.pdf

Professional Engineers Act, §6737.1: https://www.bpelsg.ca.gov/laws/pe_act.pdf

The residential project facts about the preparer and plan-review approvals are attributed to Travis Wade. The presentation documents the numerical conflict; final project outcomes and the engineer's intent are not asserted.

CEA program expansion proposal

Appendix B | Brian Selby white paper and implementation context

Source and purpose

The following seven pages reproduce the supplied white paper, Expanding the Certified Energy Analyst Program to Support Requirement for Performance Compliance Documentation Authors, prepared by Brian Selby, Selby Energy, Inc. The supplied copy has no visible date or page numbers. Its original page sequence and content are preserved; references in the letter use that seven-page sequence.

The paper describes a potential expansion of CABEC's CEA program for performance compliance documentation authors. Proposed components include practical modeling assessments, more administrative capacity, continuing-education tracking, a certification-status database, connections to compliance software and a pilot before statewide implementation. It calls for a detailed statement of work, staffing, schedule and budget.

How it supports this submission

The letter asks the Commission to use this proposal as the basis for funded development and testing. The submitter additionally requests qualification for prescriptive documentation and project-side technical review, public oversight, accessible training and measurable results. Those additional requests should not be attributed to the white paper's author. Inclusion does not imply CABEC, Selby or another organization has endorsed every request in the accompanying letter.

Practical assessments test analyst proficiency. Automated credential checks establish qualification status. Neither substitutes for accurate project documents, the responsible designer's signature, AHJ approval or independent field verification and applicable acceptance testing.

Readiness and the legal effective date

The paper's January 1, 2029 target is a proposed readiness objective. CEC's 2028-cycle materials identify nonresidential updates and no 2028 update for residential units under AB 130. Health and Safety Code §18930(g) restricts residential adoption, subject to listed exceptions; §18909(c) includes implementation and enforcement rules within building standards. Staff and counsel must establish the lawful route for each category. Training and system development can proceed under applicable authority without treating a proposed mandate as already adopted.

CEC 2028 Energy Code program
https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2028-building-energy-efficiency

CEC staff AB 130 briefing, slides 3–4
https://efiling.energy.ca.gov/GetDocument.aspx?DocumentContentId=103621&tn=266568

Health and Safety Code §18930
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=18930.

The paper is a discussion proposal, not an adopted regulation, approved budget or executed implementation agreement. Its duration estimates should be updated when funding and authorization are established. Existing certification, funding and statutory sources remain in Appendix A.

Expanding the Certified Energy Analyst Program to Support Requirement for Performance Compliance Documentation Authors

White Paper prepared by: Brian Selby, Selby Energy, Inc.

Executive Summary

As California's Energy Code continues to evolve and become more stringent, preparing performance compliance documentation requires an increasingly high level of technical knowledge and proficiency in energy modeling. Currently, anyone can prepare an energy model and serve as the documentation author for performance-based compliance documentation, regardless of their level of experience or proficiency with the compliance software. This can result in inconsistent, inaccurate, or, in some cases, intentionally misleading compliance documentation. These challenges present an opportunity to further strengthen the role of the Certified Energy Analyst (CEA) program as California's recognized standard for professionals preparing performance-based compliance documentation.

The CEA program is a mature certification program (beginning with the 2013 Energy Code) that is already well-established and well-known within California's energy consulting community. The California Association of Building Energy Consultants (CABEC) administers the Certified Energy Analyst program, maintains the certification infrastructure, delivers continuing education, and works collaboratively with the California Energy Commission and industry stakeholders to improve Energy Code compliance throughout California.

The enhancements described in this white paper are intended to strengthen, not replace, that foundation. The proposed program expands the existing certification framework by introducing practical quality assurance measures, modernizing certification administration, automating continuing education tracking, enhancing certification verification capabilities, and establishing stronger integration with California's compliance software ecosystem. Together, these improvements create a comprehensive quality assurance program that verifies both technical knowledge and practical proficiency throughout a professional's certification lifecycle.

With timely direction from the California Energy Commission and continued collaboration among CABEC, the Investor-Owned Utilities, and key stakeholders, CABEC is confident that the proposed enhancements can be designed, developed, tested, and implemented in advance of the January 1, 2029, effective date of the 2028 Energy Code. The approximately two-and-a-half-year implementation window provides sufficient time to develop the quality assurance framework, modernize certification systems, pilot new processes, integrate certification verification with compliance software, and conduct stakeholder outreach to ensure a successful statewide deployment.

This white paper outlines CABEC's vision for expanding the existing CEA program to support a potential California Energy Commission requirement that individuals preparing performance compliance documentation using the Performance Approach hold an active CEA certification beginning with the 2028 Energy Code, effective January 1, 2029.

Ultimately, this initiative represents the realization of the investments made in the long-term integrity of California's performance compliance process. By establishing a consistent, objective standard for professional competency and strengthening the mechanisms used to maintain that competency over time, the enhanced CEA program will improve the quality and consistency of compliance documentation, increase confidence among building departments and the California Energy Commission, and support more effective implementation of California's increasingly sophisticated building energy standards.

Purpose

The purpose of this implementation plan is to outline the activities necessary to prepare the Certified Energy Analyst (CEA) Program for a potential California Energy Commission requirement that individuals preparing performance compliance documentation using the Performance Approach hold an active CEA certification beginning with the 2028 Energy Code, effective January 1, 2029.

This document is intended to facilitate discussion among CABEC leadership, the California Investor-Owned Utilities (IOUs), and California Energy Commission staff regarding the program enhancements that would be necessary to support such a requirement. Rather than serving as a detailed scope of work, this implementation plan presents a high-level vision for how the existing certification program can evolve into a comprehensive statewide qualification and quality assurance program.

Background

Performance compliance has become an increasingly important component of California's Energy Code compliance process. As the code has evolved, energy modeling has grown more sophisticated, requiring a deeper understanding of building science, compliance software, mechanical systems, lighting systems, and the interaction between mandatory, prescriptive, and performance requirements. The quality of performance compliance documentation has a direct impact on code enforcement, plan review efficiency, and ultimately the energy savings realized through California's Building Energy Efficiency Standards.

The Certified Energy Analyst program was established by CABEC to provide an objective measure of competency for professionals preparing Title 24 performance compliance documentation. Through a comprehensive examination process and continuing education requirements, the program verifies that certified professionals possess the knowledge and skills necessary to prepare accurate compliance documentation.

The Certified Energy Analyst program already includes an established framework for maintaining professional competency. To remain certified, CEAs are required to complete nine hours of approved continuing education annually and successfully pass a multiple-choice recertification examination at the beginning of each new code cycle. These requirements help ensure that certified professionals remain current with changes to California's Energy Code, compliance software, and industry best practices. The enhancements proposed in this white paper are intended to build upon this existing recertification framework by adding a practical quality assurance component that evaluates continued proficiency in energy compliance modeling and the application of the Energy Code.

If the California Energy Commission elects to require documentation authors using the Performance Approach to hold an active CEA certification, the existing program will need to expand beyond initial certification and recertification every new code cycle. It will need to function as a comprehensive quality assurance program that not only evaluates competency at the time of certification but also demonstrates that certified professionals maintain their knowledge and technical proficiency throughout each code cycle update.

The purpose of this effort is not simply to administer additional examinations. Rather, it is to establish the administrative, technical, and quality assurance infrastructure necessary to support a statewide professional qualification program that the Energy Commission, local jurisdictions, and the building industry can rely upon.

Vision for the Program

The expanded CEA program would become the statewide framework for qualifying individuals who prepare performance compliance documentation. It would provide confidence that documentation authors possess both the technical knowledge and practical modeling skills required to prepare accurate compliance documentation while maintaining those competencies through continuing education, periodic recertification, and ongoing quality assurance.

The program would build upon the existing certification process by introducing practical modeling assessments as part of the recertification cycle, strengthening administrative oversight of certification maintenance, modernizing certification tracking, and creating automated methods for verifying certification status through California's compliance software ecosystem.

Rather than viewing certification as a one-time achievement, the program would recognize professional competency as an ongoing responsibility supported by continuing education, demonstrated proficiency, and active participation within the profession.

Program Elements

Successfully implementing a mandatory certification requirement will require the development of several interconnected program components.

The first is an expansion of the administrative infrastructure supporting the CEA program. The existing certification program was designed to certify qualified individuals, but a statewide regulatory requirement would substantially increase the need for certification management, customer support, continuing education tracking, recertification processing, quality assurance administration, and reporting. Additional staffing and clearly defined administrative procedures will be necessary to ensure certifications remain current, records are maintained accurately, and participants receive timely support throughout the certification lifecycle.

A second component involves establishing a formal Quality Assurance program. Discussions to date have consistently concluded that reviewing complete project submissions would be cumbersome, expensive, and difficult to administer consistently. Instead, the preferred approach is to develop standardized modeling exercises that evaluate an individual's ability to correctly prepare and modify performance compliance documentation using approved compliance software. These exercises would be based on predefined scenarios, allowing objective scoring while evaluating practical modeling skills that closely resemble real-world consulting activities. Examples may include correcting intentionally non-compliant models, modeling additions or alterations, resolving plan review comments, or recommending appropriate compliance strategies for a project that does not initially comply.

This practical assessment would complement, rather than replace, the existing multiple-choice recertification examination. Continuing education requirements ensure that certified professionals remain informed about changes to the Energy Code, while the written examination confirms continued knowledge of code requirements. The modeling assessment provides an additional measure by demonstrating that certified professionals can successfully apply that knowledge using compliance software. Together, these elements create a comprehensive quality assurance framework that evaluates both knowledge and professional competency.

Technology modernization represents another critical component of the implementation effort. A centralized certification database capable of maintaining real-time certification status will be necessary to support statewide implementation. In addition to maintaining certification records, the database should support continuing education tracking, quality assurance completion records, renewal notifications, reporting, and audit capabilities.

The expanded database also creates the opportunity for direct integration with California's compliance software and report generation systems. Under this concept, compliance software would automatically validate that the documentation author possesses an active CEA certification when compliance documentation is generated. This "handshake" between CABEC's certification database and the compliance software would provide building departments and the California Energy Commission with confidence that certification requirements are being met without introducing additional administrative burden during project submittal.

Because these systems have not previously been implemented at this scale, a comprehensive test should be conducted before any certification requirement becomes effective. Participants would complete the proposed quality assurance assessment, participate in testing of the certification database, and validate software integration with compliance tools. The test would also provide valuable feedback regarding examination length, administrative procedures,

scoring consistency, and participant experience, allowing refinements before statewide deployment.

Implementation Strategy

The proposed implementation is intended to occur in phases so that all program elements can be fully developed, tested, and refined before the 2028 Energy Code becomes effective.

The initial phase would focus on program planning, policy development, quality assurance design, administrative procedures, and modernization of the certification database. During this period, assessment materials would be developed, certification policies refined, and coordination initiated with software vendors and the California Energy Commission regarding system integration requirements.

The second phase would emphasize pilot implementation and operational testing. Quality assurance assessments would be administered to pilot participants, software integration would be validated, continuing education automation would be implemented, and stakeholder feedback would be incorporated into the final program design. This phase would also include outreach to the building industry, local jurisdictions, and existing documentation authors to ensure the transition occurs smoothly.

Following successful completion of the pilot, the program would be prepared for statewide implementation concurrent with the effective date of the 2028 California Energy Code on January 1, 2029.

Benefits

Expanding the Certified Energy Analyst program in this manner would provide significant benefits to California's building compliance community. Building departments would receive performance compliance documentation prepared by individuals who have demonstrated both technical knowledge and practical competency. Documentation authors would benefit from a clearly defined professional qualification that recognizes their expertise and commitment to maintaining current knowledge of the Energy Code. The California Energy Commission would gain a transparent and auditable process for verifying professional qualifications while supporting improved compliance with increasingly complex building energy standards.

Perhaps most importantly, the program would provide a sustainable framework for maintaining professional competency as future Energy Code cycles introduce new technologies, compliance methodologies, and software capabilities. By establishing ongoing quality assurance rather than relying solely on initial certification, the program supports the long-term integrity of California's performance compliance process.

Next Steps

This implementation plan is intended to begin a conversation rather than present a final program design. Several implementation details—including quality assurance frequency, remediation procedures, certification transition policies, software integration requirements, and long-term funding, will require continued collaboration among CABEC, the IOUs, the California Energy Commission, and other stakeholders.

Following review of this implementation plan, the next step would be to develop a detailed Statement of Work describing the activities, staffing, deliverables, schedule, and budget necessary to fully implement the program before the 2028 Energy Code takes effect.

CALGreen and CEA qualification precedents

Appendix C | Current provisions and proposed implementation
2025 CALGreen effective January 1, 2026 | Sources reviewed September 25, 2026

This appendix supports a statewide CEA qualification framework through existing energy-compliance administration and coordinated CALGreen provisions. It distinguishes current law, local precedent and the submitter's recommendations. The comparative evaluation on page 3 is proposed; no improved outcome or cost saving is asserted as an established finding.

Existing CALGreen qualification framework

Title 24, Part 11, §702.2 [HCD] allows the enforcing agency to consider energy-organization certification when evaluating special inspectors for particular tasks. The BSC-CG provisions require an applicable association certification for required special inspectors. Section 703.1 identifies documentation used to substantiate compliance. Section 702.1 separately addresses HVAC installer training and certification. These provisions illustrate task-specific qualification within building-code enforcement. [1, 2]

The special-inspector role is distinct from preparing an energy model and includes independence provisions. CEA certification alone does not establish competence for every CALGreen subject or authorize someone to independently inspect their own work. The proposal preserves required field testing, designer responsibilities and AHJ decisions.

A current local requirement for CEA authorship

Palo Alto Municipal Code §16.17.120, local Energy Code §150.0(w), Exception 6, requires CEA preparation and signature for the modeled alternative to residential FlexPath measures. Its CALGreen chapter separately defines CEA and CALGreen inspector roles. The CEC adopted findings for Ordinance 5665 on January 21, 2026. This is a limited Part 6 reach-code precedent, not a CALGreen mandate covering every energy report. It establishes an implementation example, not comparative proof of effectiveness. [3–5]

Sources for current provisions

[1] HCD 2025 CALGreen mandatory-measures summary, pp. 18–19
https://www.hcd.ca.gov/sites/default/files/docs/building-standards/CALGreen/hcd-shl-625.pdf

[2] City of Santa Monica 2025 CALGreen text, p. 4, §§702–703
https://www.santamonica.gov/media/CDD/Building%20%26%20Safety/Information%20Bulletins/california-2025-calgreen-nonresidential-mandatory-measures-technical-guide.pdf

[3] Palo Alto current §16.17.120, Exception 6 to §150.0(w)
https://codelibrary.amlegal.com/codes/paloalto/latest/paloalto_ca/0-0-0-93749

[4] Palo Alto current §16.14.070, CEA and CALGreen inspector definitions
https://codelibrary.amlegal.com/codes/paloalto/latest/paloalto_ca/0-0-0-72456

[5] CEC Resolution 26-0121-03cii, adopted January 21, 2026
https://efiling.energy.ca.gov/GetDocument.aspx?tn=268299

Coordinated implementation and legal scope

Appendix C | Proposed policy path

Retain a consistent statewide energy-documentation rule

Develop the responsible-author and designated-reviewer requirement principally in Title 24, Part 1, Chapter 10. Ask CEC staff to coordinate complementary CALGreen qualification and documentation provisions with HCD for residential occupancies, CBSC for nonresidential occupancies within its authority, and DSA for its covered schools. Health and Safety Code §18930.5(b) provides for interagency technical and fiscal input; §18930(a)(1)–(2) requires respect for agency authority and avoidance of conflicting or duplicative standards. [6, 7]

CALGreen's mandatory energy provisions refer to the CEC's standards; the CEC's current CALGreen proceeding addresses voluntary energy provisions in Appendices A4.2 and A5.2. A qualification added only to voluntary provisions would have limited reach. CALGreen residential alteration triggers also do not automatically encompass all Part 6 documentation work. Define the scope expressly rather than assuming the two codes cover identical projects. [1, 8]

Address residential restrictions directly

Health and Safety Code §18930(g) restricts new state standards affecting residential units from October 1, 2025 through June 1, 2031, subject to listed exceptions, including standards effective January 1, 2032 or later. Section 18909(c) includes implementation and enforcement rules within building standards. A Part 1 or Part 11 placement does not itself supply an exception. Identify a lawful effective date for each category and seek targeted legislation if earlier implementation requires it. [7, 9]

Local residential changes face separate restrictions under §§17958.5(c) and 17958.7(c), including green building standards. A city cannot obtain grandfathered status merely by copying another city's ordinance. Any claimed administrative exception must satisfy its specific statutory conditions. Voluntary pilots and appropriately authorized review services can develop evidence without representing a new statewide credential requirement as already enacted. [10]

A common record for compliance and future code work

The accompanying comment addresses Docket 24-BSTD-05, current compliance initiatives, and Docket 25-BSTD-03, 2028 Energy Code pre-rulemaking. The CEC's 2028 CALGreen proceeding also points to 25-BSTD-03. Agency coordination is requested; inclusion here does not assert that a filing in a CEC docket completes a separate HCD or CBSC rulemaking. Previously supplied appendices retain their original dates and context. [8, 11]

[6] HSC §18930.5
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=18930.5.

[7] HSC §18930
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=18930.

[8] CEC 2028 CALGreen proceeding
https://www.energy.ca.gov/proceeding/2028-california-green-building-standards-code-calgreen

[9] HSC §18909
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=18909.

[10] HSC §§17958.5 and 17958.7
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=17958.5.
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=17958.7.

[11] September 28, 2026 CEC compliance-workshop notice, Docket 24-BSTD-05
https://efiling.energy.ca.gov/GetDocument.aspx?tn=272817

Compare compliance outcomes fairly

Appendix C | Proposed evaluation within eligible compliance work

Test whether CEA involvement and independent CALGreen review are associated with better compliance and lower total burden. Compare representative projects under those requirements with matched projects elsewhere. Record actual CEA participation, the specific review duties and the applicable local requirement separately; a jurisdiction without a mandate may still use CEAs. Treat Palo Alto's modeled-alternative projects as a defined subgroup.

Use a common audit and outcome framework

Outcome	Comparable measure
Documentation accuracy	Material plan/model discrepancies per audited project, classified by type and severity.
AHJ workload	Active staff review hours and correction rounds; distinguish elapsed queue time.
Field verification	First-attempt failures and unresolved issues; separate documentation errors from installation defects.
Late changes	Post-permit model/design revisions, equipment substitutions and associated retests.
Owner and industry burden	Total consultant, inspection, rework and delay costs; include costs transferred from AHJs to applicants.
Correction quality	Resolution time, traceable approval/revision history and closure supported by evidence.
Workforce access	Service availability, geographic coverage, fees, candidate wait times and certification capacity.

Control for differences before drawing conclusions

Match or adjust for code cycle, local reach requirements, building type, project size and complexity, climate zone, delivery method and review resources. Use a predefined sampling plan and the same independent audit rubric across groups; blind auditors to author credentials where feasible. Establish sample size and baseline data before claiming a meaningful effect. If suitable data exist, compare before-and-after changes with a contemporaneous comparison group.

Report sample sizes, missing records, uncertainty and limitations. More recorded failures can reflect better detection rather than worse work. Selected modeled alternatives may differ from ordinary projects. Report associations unless the design supports causal conclusions; do not attribute energy savings without appropriate performance evidence. Protect client information and publish aggregate results.

Use results to improve implementation

Publish the protocol, responsible team, eligible funding, milestones and interim findings. Use results to refine competencies, review workflows, training and transition support. Continue authorized workforce development and pilots while evaluation proceeds. This focused study should inform implementation without postponing preparation for the full term of a multiyear compliance contract.

Appendix D

Final CABEC presentation

CEAs and the Construction Cost Reduction Value Proposition

Travis Wade, CEA | 2026 CABEC Conference

Source file: CABEC_2026_CEA_Travis Wade.pptx

This appendix contains 98 slides in their original order, two per page. The slide content is unchanged. Speaker notes are not included.

The added labels identify the actual order in this final presentation. Some original slide footers retain numbering from an earlier version; use the added Presentation slide labels for references within this submission.

The residential examples appear on presentation slides 11-33. The presentation also includes multifamily and nonresidential examples, implementation proposals and supporting material.

The presentation contains project observations and illustrative cost scenarios. Such scenarios are not documented realized savings or measurements of statewide compliance outcomes. The letter requests accountable review and evaluation of its results.

Multifamily evidence note

The source slides give conflicting unit counts for the reported project. The 60-apartment water-heating calculation is a separate illustrative scenario, not measured project performance. The letter reports no verified incentive loss; the presentation's $500,000-plus incentive figure is attributed to Wade and is not substantiated by the supplied excerpts.

Presentation slide 1 of 98



CEAs and the Construction Cost Reduction Value Proposition

How to win more contracts, save energy, and decarbonize the built environment

Travis Wade, CEA · Principal, Wade Energy
2026 CABEC "California Dreamin'" Conference · Sonoma Sheraton · September 15–17, 2026

Presentation slide 2 of 98

THE WORK AND THE PROFESSIONAL STANDARD

Agenda

01 **How the project gets built**

02 ***Residential Case Study***: Decisions and Cost

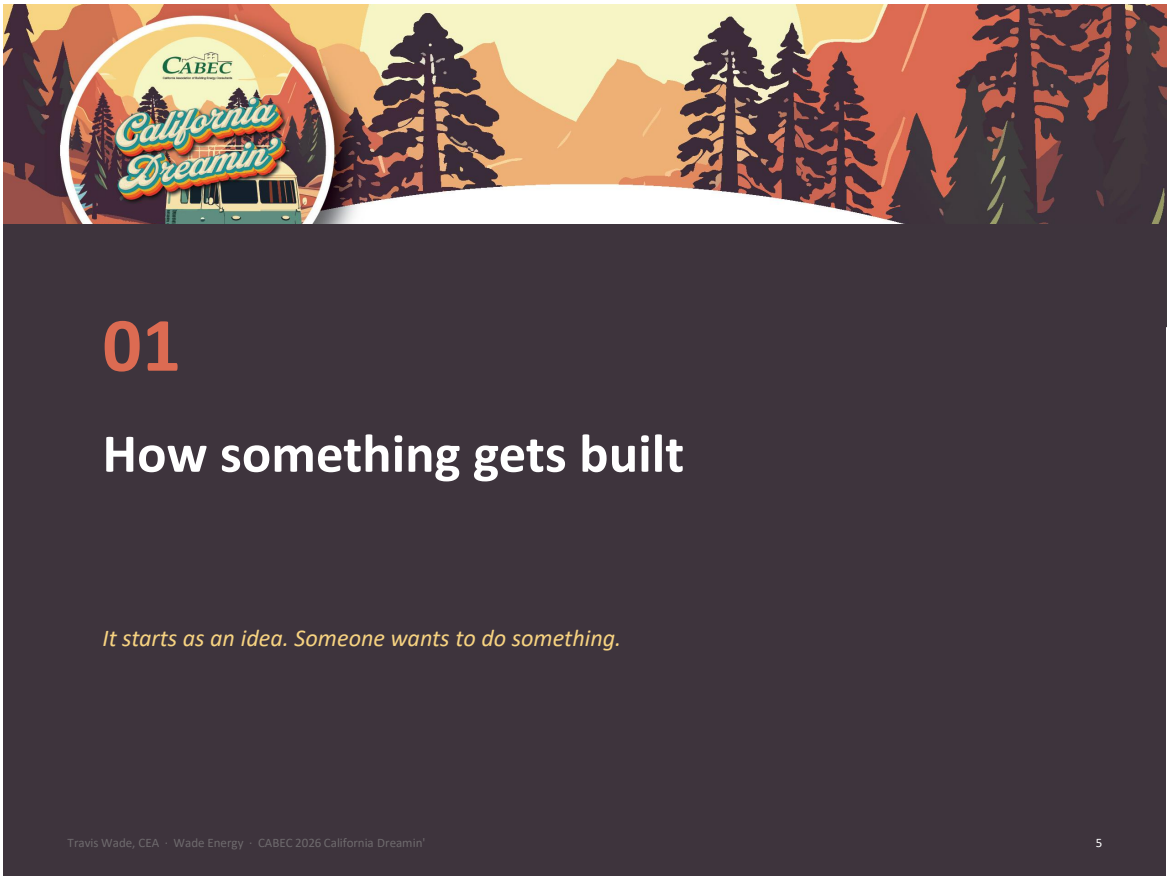
03 ***Multifamily Case Study***: Energy and Cost

04 ***Nonresidential Case Study***: Decisions and closeout

05 AI and additional professional services

06 The case for a required CEA

Presentation slide 3 of 98



Presentation slide 4 of 98



Presentation slide 5 of 98



The CEA connects energy choices across the disciplines.

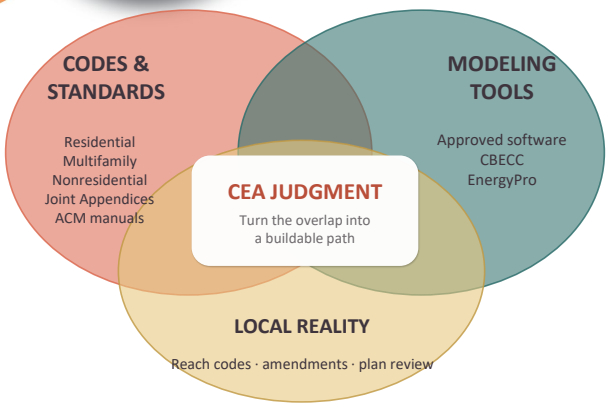
Travis Wade, CEA · Wade Energy · CABEC 2026 California Dreamin'

8

Presentation slide 6 of 98



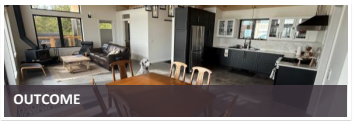
This industry is complex.



THE RULES MEET THE FIELD







…and every three years, the codes change.

Travis Wade, CEA · Wade Energy · CABEC 2026 California Dreamin'

9

Presentation slide 7 of 98



Presentation slide 8 of 98



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THE FEE PROBLEM

Fast modeling still needs time to think

- Can you actually think about this project?
- Can you coordinate with the team?
- Can you communicate, inform, and advise the architect?
- Did the plans show all the requirements and notes?
- Can you tell them why it matters and how to control it?

The service needs time to think and coordinate.

A fast model can leave the plans and equipment disconnected.

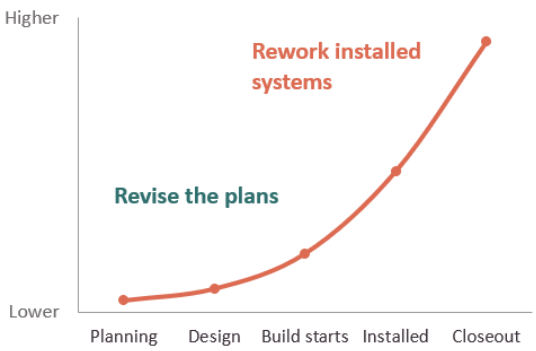
The fee supports the work that connects the model to the building.

Presentation slide 10 of 98

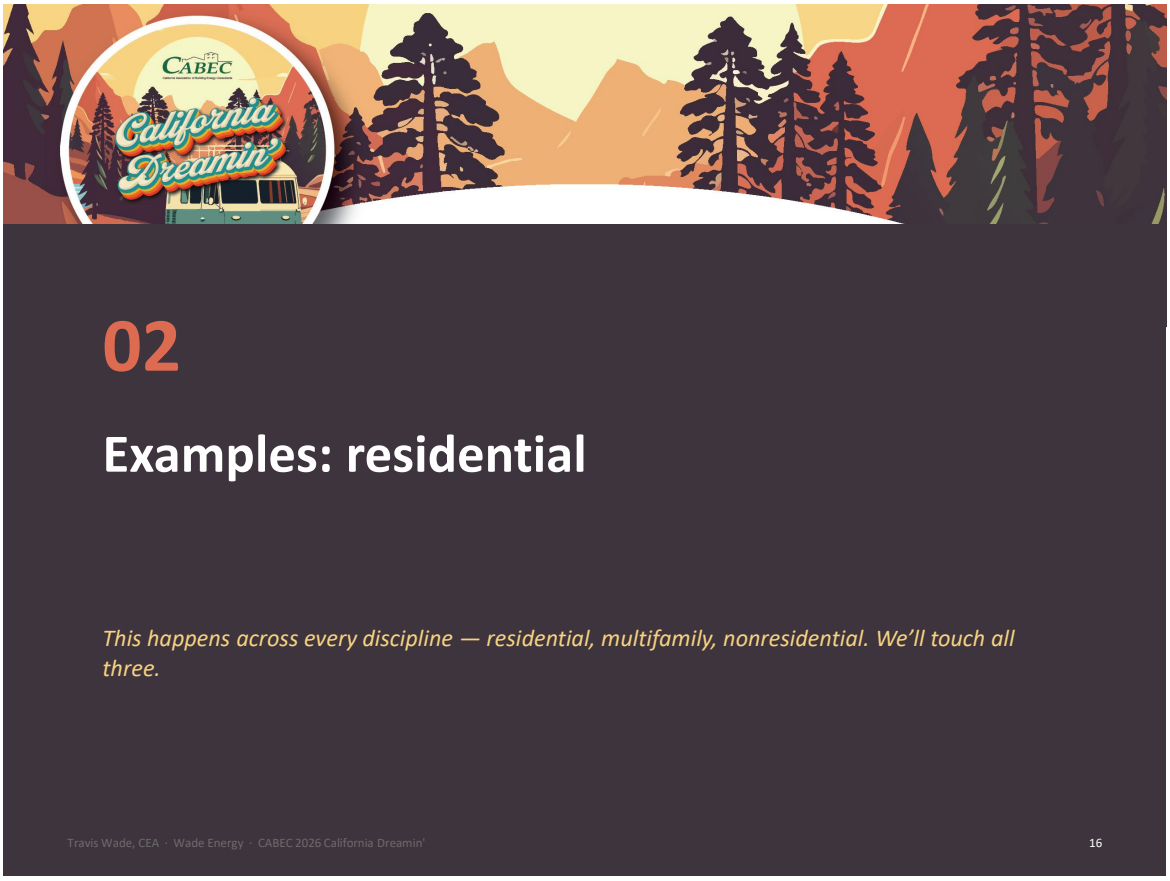
HOW SOMETHING GETS BUILT

Earlier advice can change the building





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RESIDENTIAL

The schedule and report disagree

ACTUAL MECHANICAL SCHEDULE

VRF OUTDOOR UNIT SCHEDULE

SYSTEM TAG	MANUFACTURER	MODEL	ASSOCIATED INDOOR UNITS	NOMINAL COOLING CAPACITY (BTU/HR)	NOMINAL HEATING CAPACITY (BTU/HR)	EER2/SEER2	HEATING COP [HSPF2]	C
HP-1-1	DAIKIN	RXTQ36TBVJUB	FCU-1-3/ FCU-1-4	36,000	40,000	11.3/16	8.5	
HP-1-2	DAIKIN	RXTA48AAVJU	FCU-1-1	48,000	52,000	8.5/16	8.5	
HP-1-3	DAIKIN	RXTA60AAVJU	FCU-1-2 / FCU-2-2	60,000	60,000	8.5/16	8.5	
HP-2-1	DAIKIN	RXTA48AAVJU	FCU-2-1	48,000	52,000	8.5/16	8.5	

1. DISCONNECT BY ELECTRICIAN.

ACTUAL COMPLIANCE REPORT

HVAC - HEAT PUMPS

01	02	03	04	05	06	07	08	09	10	11	12	13
			Heating				Cooling					
Name	System Type	Number of Units	Heating Efficiency Type	HSPF/HSPF2/COP	Cap 47	Cap 17	Cooling Efficiency Type	SEER/SEER2	EER/EER2/CEER	Zonally Controlled	Compressor Type	HERS Verification
Heat Pump System	Central split HP	3	HSPF2	9	57000	50000	EER2SEER2	18	12.48	Not Zonal	Single Speed	Heat Pump System -hers-htpump
Heat Pump System 2-ADU	Central split HP	1	HSPF2	7.5	36000	30000	EER2SEER2	16	12.48	Not Zonal	Single Speed	Heat Pump System 2-ADU-hers-htpump

HVAC HEAT PUMPS - HERS VERIFICATION

EER2: schedule 11.3 / 8.5; report 12.48

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RESIDENTIAL PROJECT

The model and equipment schedule disagree

The report uses EER2 12.48. The Daikin schedule lists 11.3 and 8.5.

Without early CEA review	With CEA review
The contractor can install from the schedule. At field verification, the team must reconcile the installed equipment with the approved model and registered forms.	The CEA checks the exact equipment combination before purchase, reruns the actual design and coordinates an accepted correction while changes are still on paper.

Permit approval does not reconcile conflicting documents.

Project observation. The final outcome is undocumented. Potential correction costs follow.

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RESIDENTIAL COST SCENARIO

Late equipment correction can cost thousands

One-system example if replacement becomes necessary after installation

Correction item	Planning amount
Installed HVAC replacement[1]	$6,000–$25,000
Model and coordination allowance	$1,000
Additional verification visit[2]	$275–$425

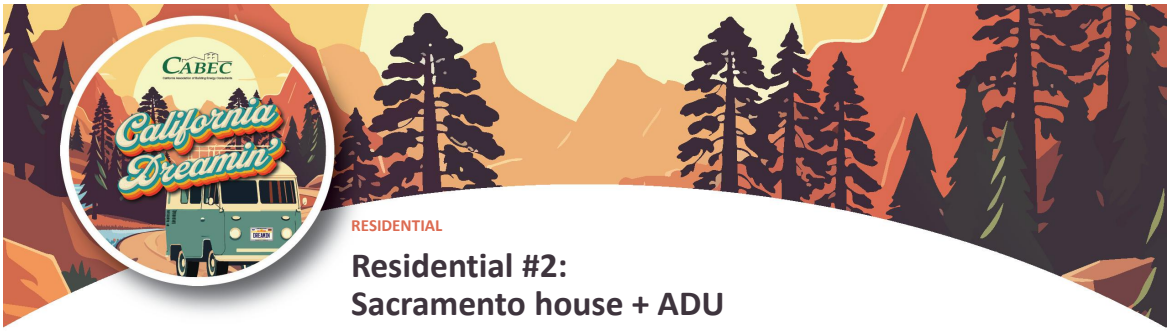
$7,275–$26,425

Illustrative gross correction cost for one system

[1] National installed-cost range, including removal. [2] Published test-scope benchmark. Actual bids, credits, fees and delay determine the project cost.

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RESIDENTIAL

Residential #2: Sacramento house + ADU

Main house and ADU

- The structural engineer prepared the original compliance reports.
- The house and ADU specified demanding assemblies and equipment.
- The team needed a coordinated package the owner could build.

CEA + HVAC coordination

- A CEA developed revised compliance options.
- Wade Energy provided HVAC design and equipment coordination.
- The comparison covers scope, glass, insulation, solar and storage.

Travis Wade, CEA · Wade Energy · CABEC 2026 California Dreamin' 21

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SACRAMENTO CASE STUDY: MAIN HOUSE

The remodel path changes the budget

Report input	Structural engineer	CEA package
Model scope	Newly constructed 3,604 ft²	Existing + addition 2,770 + 860 ft²
Solar + storage	20 kW PV* 40 kWh battery	PV optional for scope No battery modeled
Exterior walls	R-49 cavity + R-6 exterior 2×8 framing	R-21 cavity only 2×6 framing

About $70,000

Presenter's budget allowance for the earlier main-house solar/storage package

Potential gross cost avoidance if the original package would otherwise be purchased.

* Original report resizes PV to 8.89 kW for calculation. Confirm approved scope and procurement basis.
The $70,000 figure is a planning allowance. Supplied CEA reports are unregistered copies.

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SACRAMENTO CASE STUDY: WALL CONSTRUCTION

R-49 walls carry a spray-foam premium

The original reports explicitly check high-R spray foam.

Wall component	Main house	ADU
Cavity change	R-49 SPF in 2×8 R-21 fiberglass option	R-30 SPF in 2×6 R-23 mineral-wool option
SPF allowance*	$13,400–$22,300	$4,300–$7,200
Batt allowance*	$2,600–$3,800	$2,700–$4,000
Cavity reduction*	$9,600–$19,800	$300–$4,500
R-6 reduction*	$3,200–$9,600	$1,700–$5,000

About 7 in. of foam for R-49. The batt options fit 2×6 cavities.

* Illustrative installed-cost scenarios using 80% cavity area. Products, takeoff and local bids need confirmation.
SPF = spray polyurethane foam. Roof spray foam remains. Structural framing savings are excluded.

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SACRAMENTO CASE STUDY: GLAZING

The glazing targets differ by building

Lower U-factor limits heat transfer. Lower SHGC limits solar gain.

Report option	U-factor	SHGC	Opening area
Main / original	0.26–0.27	0.23	1,634 ft²
Main / CEA	0.31	0.22	1,574 ft²
ADU / original	0.27	0.23	798 ft²
ADU / CEA with PV	0.27	0.18	748 ft²
ADU / CEA no PV*	0.22	0.18	748 ft²

Main house: easier U-factor. ADU: tighter solar control.

CEA fenestration area equals 43% of main-house floor area and 62% of ADU floor area.
* Conditional no-PV alternate. Whole-product ratings and actual opening sizes must match the selected system.

Presentation slide 20 of 98

SACRAMENTO CASE STUDY: HVAC SELECTION

HVAC efficiency must match real equipment

Cooling: SEER2 / EER2. Heat pumps also list HSPF2.

System	Structural engineer	CEA + HVAC design
Main house	High-velocity AC 22 / 12.48 Boiler: 80% AFUE	Ducted heat pump 16.4 / 9.4 / 9.5 MXZ-SM60NL
ADU	Generic ductless 18 / 12 / 9	Ducted heat pump 20.1 / 12.5 / 9.2 PUZ-AK36NL

Main: a different system. ADU: higher specified efficiency.

The original 22 SEER2 lacks a documented high-velocity system match.
Manufacturer records support the CEA ratings.

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SACRAMENTO CASE STUDY: EXPANDED BUDGET

Main-house exposure is about $83k–$100k

Illustrative gross cost avoidance for selected components

Main-house component	Earlier package compared with CEA	Allowance
PV + 40 kWh storage	20 kW PV package omitted by scope*	$70,000
Wall cavity insulation	R-49 SPF compared with R-21 batts	$9,600–$19,800
Exterior insulation	R-6 layer omitted	$3,200–$9,600

Glass and HVAC price differences are additional bid items.

The ADU adds PV/storage in the uploaded option.
A combined house + ADU net saving needs the full bid comparison.

* Presenter's $70k assumption. Original PV calculation also states 8.89 kW. All figures are scenarios.
Total excludes framing, roof/floor changes, testing, fees and incentives. No realized savings established.

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SACRAMENTO CASE STUDY: THE CEA'S ROLE

Coordination makes the package buildable

A compliance report alone	CEA + HVAC coordination
Generic equipment ratings leave the contractor to resolve the actual matched system.	The team selects equipment, checks its ratings and aligns the energy form with the schedule.
A demanding wall or window input can become a costly purchase requirement.	The team compares available products and tests alternate packages before procurement.

On this project, the CEA and HVAC designer coordinated equipment selection, mechanical space and duct routes.

Final coordination still needs ERV ratings, capacities, load inputs and return-duct locations to agree.

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Residential #3: the San Francisco ordinance

The architect asked: "The July 2026 ordinance says all-electric. What does that mean for this renovation, radiant heat, cooling, and cost?"

What we found

- Start with the actual scope of work.
- Read definitions, exceptions, and cross-references.
- Confirm the applicable path and current DBI guidance.

How it got solved

- Our office used the CABEC Discord.
- Luke helped locate the relevant provisions.
- We gave the architect a documented explanation for the project.

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RESIDENTIAL

The actual consultant response

PROJECT CORRESPONDENCE

Despite the advertisement of an all-electric ordinance, there is a significant exception that actually does allow gas.

"

Federal appliance standards - Appliances regulated by US Department of Energy are allowed, including gas-fueled models. However, state energy standards and regional air quality rules apply.

"

What does this mean? If a specific gas-fueled appliance has been certified to meet a given EPCA energy efficiency standard, the appliance may be installed in an 'all-electric' project. So, if it is certified and located on the DOE database or the California Appliance database, it can be installed... which represents quite a lot of equipment..

MAEDBS Quick Search
CCMS - Public Database

I think the hope if that people read "All-Electric Ordinance" and don't read the fine print.

SFDBI requires a form to document this path - Attachement 5 All-Electric Ordinance: Gas-Fueled Appliance Meeting a Federal Efficiency Standard. So, if you want to install a gas tankless water heater, you can. We just need to document the make/model, record the gas use, and confirm any new gas connections isn't oversized to meet the function of the appliance.

The value: a clear, sourced answer to the architect's question.

Project interpretation. Confirm the actual scope and current ordinance/DBI guidance.

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SAN FRANCISCO COST CONTEXT

Radiant heating choices change the installed scope

Published benchmarks help define the questions for comparable bids.

Gas combi + domestic hot water	Air-to-water heat pump
From $7,000 Bay Area installer starting price	$15,000–$35,000 U.S. installed planning range with compatible distribution

Electrical service, when required

Overhead service: $3,000–$8,000 panel upgrade
Underground service: $20,000+ can be possible

CEA review defines the compliant equipment and coordinated site scope.

Different scopes and sources. No percentage savings claimed. Gas eligibility is project-specific.
Indoor tanks, outdoor placement and electrical scope require design-team review.

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COMMUNITY EXPERIENCE

CEA colleagues help resolve difficult projects

The CABEC community brings working modelers into the conversation.

1 **A specific project question**
Share the scope, model result and disputed requirement.

2 **Experienced practitioners compare the evidence**
Check the code, software behavior and field conditions.

3 **The CEA documents a usable answer**
Test the supported path and explain it to the project team.

The following cases show potential consequences and interventions.

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RESIDENTIAL COMMUNITY CASE R1

ADU cooling measures

A 1,200 sf ADU in climate zone 12 fails Peak Cooling.

Without early CEA review	With CEA review
The team may buy continuous insulation, quality insulation installation and floor changes to solve the cooling result before understanding which measures affect it.	The CEA checks the Standard Design, tests a whole-house fan that exhausts outdoors and targets west-window solar gain before choosing the compliance package.

$6,500–$13,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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RESIDENTIAL COMMUNITY CASE R2

A water-heater change alters cooling

Changing only water-heating fuel unexpectedly changes the Peak Cooling result.

Without early CEA review	With CEA review
The team may specify a heat pump water heater or unrelated envelope upgrades without finding why a water-heating fuel change altered cooling compliance.	The CEA compares otherwise identical model runs, isolates the baseline change and documents an accepted compliance path before the owner commits to additional work.

$4,000–$15,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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RESIDENTIAL COMMUNITY CASE R3

Insulation credit and header details

The model claims quality insulation installation with solid-wood headers.

Without early CEA review	With CEA review
The report may claim an insulation credit before the team coordinates header details, leaving the contractor with a failed inspection and possible retrofit work.	The CEA resolves the header pocket and verification requirements before permit, seeks a written determination or tests a compliance package without the disputed credit.

$2,000–$12,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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RESIDENTIAL COMMUNITY CASE R4

Ducted inverter systems and field tests

A ducted inverter system appears in the wrong software category.

Without early CEA review	With CEA review
A central split-system input may produce a fan-power test the selected equipment cannot support, leading to extra site visits, revised documents or equipment changes.	The CEA matches the model category to the actual system and confirms applicable field tests with the verification team before the compliance report is registered.

$1,000–$8,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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RESIDENTIAL COMMUNITY CASE R5

Crawlspace ducts and an attic trigger

New crawlspace ducts trigger an unexpected R-49 attic requirement.

Without early CEA review	With CEA review
The team may add attic insulation because the software treats new crawlspace ducts as though they were in a vented attic, expanding the construction scope.	The CEA checks the actual duct location against the reported ruleset issue and documents an accepted workaround or an applicable prescriptive path before specification.

$3,000–$5,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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RESIDENTIAL COMMUNITY CASE R6

Stacked ADUs and solar scope

Two stacked ADUs need a project-specific photovoltaic determination.

Without early CEA review	With CEA review
The team may treat both units as one building and buy a larger photovoltaic array before checking how the definitions, threshold and roof area apply.	The CEA confirms the building treatment under current guidance, tests the applicable threshold and solar access area, and coordinates the result with the metering plan.

$9,000–$17,500

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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RESIDENTIAL COMMUNITY CASE R7

A loft inside the existing envelope

A closet fills an open area within existing conditioned volume.

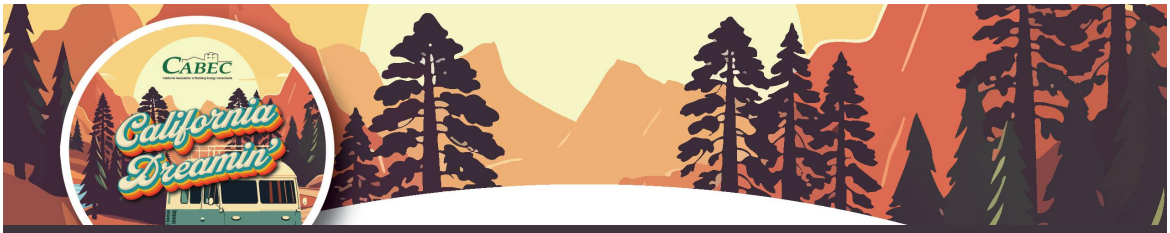
Without early CEA review	With CEA review
The team may classify the new floor as an addition and trigger new-construction measures even though the project does not increase the existing conditioned volume.	The CEA confirms the exact scope and applicable definitions with the building department, then models the affected features under the supported alteration or addition treatment.

$3,000–$10,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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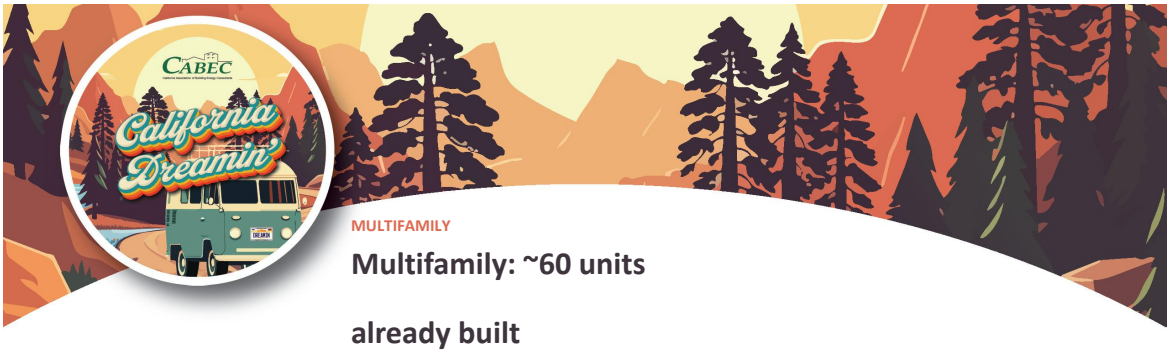


03

Examples: multifamily

200 units. Water-heating scope needed review.

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MULTIFAMILY

Multifamily: ~60 units already built

The setup

- San Diego modular multifamily project, built in a factory.
- The MEP firm had in-house energy modelers.
- A CEA review was requested for an incentive application.

What we found

- DHW marked “Not Included” in the performance scope.
- Plans specified small electric-resistance tanks.
- Modules already built, with limited replacement space.
- The shown schedule is rated 27 gallons.

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MULTIFAMILY

The performance scope excludes domestic hot water

B. PROJECT SUMMARY								
Table Instructions: Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within permit application.								
Building Components Complying via Performance						Building Components Complying Prescriptively		
Envelope (see Table G)	☒	Performance	Covered Process: Commercial Kitchens	☐	Performance	*The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).*		
	☐	Not Included		☒	Not Included			
Mechanical (see Table H)	☒	Performance	Covered Process: Computer Rooms	☐	Performance	Indoor Lighting (Unconditioned)§140.6	*NRCC-LTI-E*	
	☐	Not Included		☒	Not Included	Outdoor Lighting §140.7	*NRCC-LTO-E*	
Domestic Hot Water (see Table I)	☐	Performance	Covered Process: Laboratory Exhaust	☐	Performance	Sign Lighting §140.8	*NRCC -LTS-E*	
	☒	Not Included		☒	Not Included	Mandatory Measures		
Lighting (Indoor Conditioned, see Table K)	☒	Performance				*Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)*		
	☐	Not Included				Electrical Power Distribution S110.11	*NRCC-ELC-E*	
Solar Thermal Water Heating (see Table I)	☐	Performance				Commissioning S120.8	*NRCC-CXR-E*	
	☒	Not Included				Solar Ready S110.10	*NRCC-SRA-E*	

Excluded from this scope still requires a compliance path.

Actual excerpt from the approximately 200-unit project.

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MULTIFAMILY PROJECT

The report and water-heater schedule need reconciliation

Actual compliance-report summary

C3. ENERGY USE SUMMARY						
Energy Component	**Standard Design Site (MWh)**	**Proposed Design Site (MWh)**	**Margin (MWh)**	**Standard Design Site (MBtu)**	**Proposed Design Site (MBtu)**	**Margin (MBtu)**
Space Heating	0.0	1.8	-1.8	21.8	--	21.8
Space Cooling	22.6	13.0	9.6	--	--	--
Indoor Fans	13.6	14.1	-0.5	--	--	--
Heat Rejection	0.3	--	0.3	--	--	--
Pumps & Misc.	1.2	--	1.2	--	--	--
Domestic Hot Water	--	--	--	419.9	419.9	0.0
Indoor Lighting	9.4	9.4	0.0	--	--	-->
Compliance Total	**47.1**	**38.3**	**8.8**	**441.7**	**419.9**	**21.8**
Receptacle	82.8	82.8	0.0	--	--	--
Process	40.5	40.5	0.0	209.7	209.7	0.0
Other Ltg	10.8	10.8	0.0	--	--	--
Process Motors	--	--	--	--	--	--
TOTAL	**181.2**	**172.4**	**8.8**	**651.4**	**629.6**	**21.8**

Actual heater schedule

WATER HEATER SCHEDULE										
CALLOUT	DIMENSION (IN)		RATED	RECOVERY	UEF	WEIGHT	ELECTRICAL REQUIREMENT			BASIS OF DESIGN
	DIAMETER	HEIGHT	CAPACITY (GAL)	@ 90˚ RISE (GPH)		(LB)	VOLT	PHASE	WATT	(1)(2)(3)(4)
WH-1	20	30	27	21	0.92	110	240	1	4,500	RHEEM PERFORMANCE XE30S06ST45U1
(1) INSTALL PER MANUFACTURER RECOMMENDATIONS IN COMPLIANCE WITH LOCAL CODES.										
(2) SECURE WATER HEATER WITH DUAL STRAPS AT UPPER AND LOWER 1/3 AS DIRECTED BY CALIFORNIA HEALTH AND SAFETY CODE SECTIONS 19210-19217.										
(3) PROVIDE ISOLATION VALVES ON INLET AND OUTLET. PROVIDE CHECK VALVE BEFORE THE XPANSION TANK ON THE WATER HEATER COLD WATER CONNECTION.										
(4) PROVIDE WITH AMTROL ST-5 EXPANSION TANK (2 GAL). PROVIDE ISOLATION VALVE ON EXPANSION TANK.										

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MULTIFAMILY

60 units: what does hot water require?

Separate 60-unit illustration: resistance tanks vs sized HPWHs

Occupants per unit	Hot water gal/unit/day	Resistance kWh/unit/year	HPWH kWh/unit/year
2	40	2,380	710
3	60	3,570	1,070
4	80	4,760	1,430

Basis: 20 gal/person/day at 120°F; assumed 60°F inlet.
Annual effective factors: resistance 0.90; HPWH 3.0.

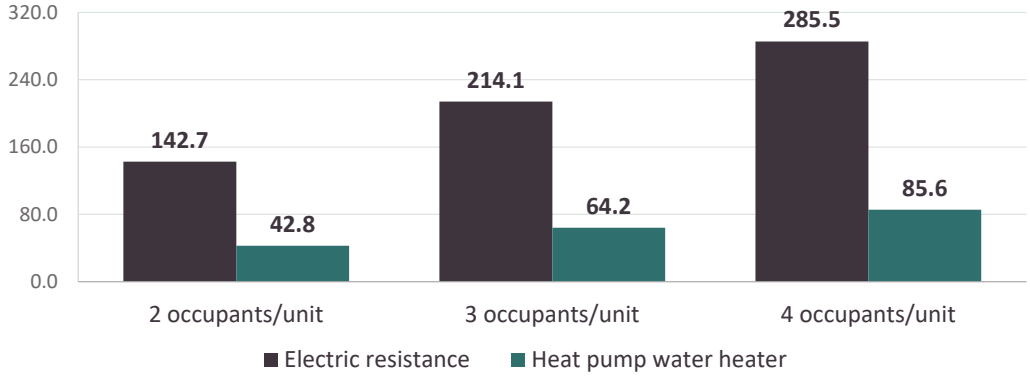
Same delivered hot water. Illustration, not measured use or a Title 24 compliance run.

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MULTIFAMILY

Water-heater choice changes annual electricity use

Illustrative annual electricity for 60 apartments, MWh/year



At 3 occupants: about 150 MWh less electricity each year

70% under the assumed factors. 20 gal/person/day, 120°F delivery, 60°F inlet.
This is a scenario, not measured project savings. Actual use and operating modes vary.

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MULTIFAMILY

The annual cost of the water-heater decision

$62k–$78k

illustrative annual difference: 60 apartments, 3 people per unit

People	Resistance	Heat pump	Difference
2	$59.0k–$74.2k	$17.7k–$22.3k	$41.3k–$52.0k
3	$88.4k–$111.3k	$26.5k–$33.4k	$61.9k–$77.9k
4	$117.9k–$148.5k	$35.4k–$44.5k	$82.5k–$103.9k

Annual water-heating electricity only. Values in $ thousands.

SDG&E optional Standard DR: $0.41299–$0.52000/kWh, effective Aug. 1, 2026.
Generation + delivery. Eligible separate meters assumed; fixed charges excluded.

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MULTIFAMILY

Heat pumps change the demand profile

29-gal resistance vs. 40-gal A. O. Smith HPWH

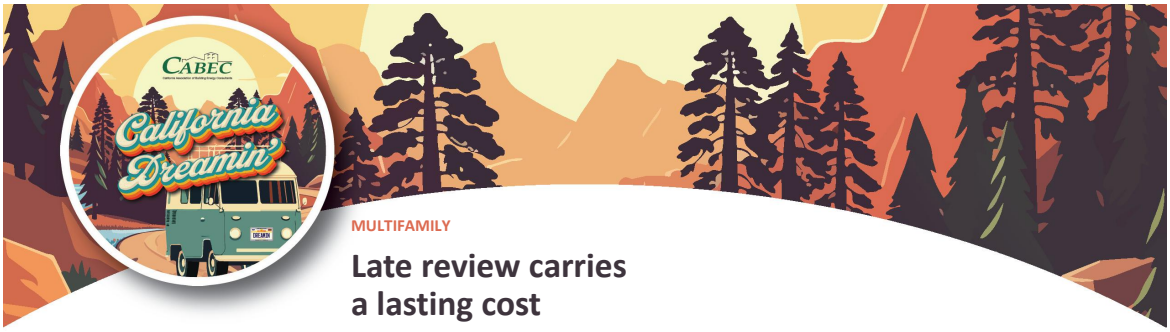
What changes	29-gal resistance	40-gal heat pump
Connected load	4.5 kW element 60 units = 270 kW*	4.5 kW backup elements No automatic service reduction
Operating demand	4.5 kW while heating	Lower draw in compressor mode Backup can restore high demand
Peak timing	Reheats after hot-water use Can shift with added controls	Preheat off-peak; coast on storage TOU / demand-response controls

CEA value: size storage and recovery, then coordinate controls.

Stagger recovery across units and verify hot-water delivery during peak hours.

*Undiversified element total. HPTA-40 example: 4.5 kW elements, 23.6 A listed; 30 A circuit required. Use the complete equipment nameplate and electrical load calculation for service sizing.

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MULTIFAMILY

Late review carries a lasting cost

$500K+
Missed incentives reported by Travis

60
Factory-built units in the reported project

Lock-in
Equipment and space fixed before review

- The supplied excerpts do not verify the $500K+ incentive total.
- The separate 60-unit illustration shows why water heating deserves analysis.
- Resolve the actual compliance path, equipment, and space while the design can change.

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MULTIFAMILY COMMUNITY CASE M1

Wall inputs across 60,000 square feet

A steel-stud assembly input changes the multifamily envelope result.

Without early CEA review	With CEA review
An incorrect or unsupported wall input may lead the team to add continuous insulation across about 60,000 square feet, multiplying one modeling decision across the building.	The CEA documents a supported assembly calculation and reruns the applicable model, allowing the team to evaluate the actual wall before buying additional insulation and cladding work.

$180,000–$300,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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MULTIFAMILY COMMUNITY CASE M2

Heated bathroom floors in 100 units

The owner wants radiant floors alongside primary heat-pump systems.

Without early CEA review	With CEA review
Modeling bathroom floor heat as the primary system may create 100 resistance-heated zones, prompting the owner to remove the amenity or pay for other measures.	The CEA confirms whether the supplemental-heating provision applies and models the primary heat-pump system correctly, so the owner can evaluate the requested amenity on that basis.

$50,000–$150,000

Scenario estimate of cost or amenity value

Practitioner scenario. The range includes option value, not measured savings.

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MULTIFAMILY COMMUNITY CASE M3

Conversion scope and HVAC requirements

Five affected units sit within a seven-story conversion project.

Without early CEA review	With CEA review
The team may model the entire building or split one dwelling between statuses, shifting the baseline and creating extra modeling work or unnecessary HVAC requirements.	The CEA confirms the affected units and their status, models the supported scope consistently and evaluates an applicable prescriptive alternative before the team selects upgrades.

$15,000–$40,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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MULTIFAMILY COMMUNITY CASE M4

Heating choices across 100 apartments

A climate zone 3 project needs a complete heating comparison.

Without early CEA review	With CEA review
The owner may receive heat pumps as the only proposed compliant option, without seeing whether another permitted heating package changes the initial cost or design trade-offs.	The CEA tests a valid resistance-heat offset package alongside heat pumps and explains construction cost, operating cost and comfort implications before the owner chooses a system.

$400,000–$700,000

Gross heat-pump option budget

Scenario budget only. Alternative equipment and offsets are unpriced.

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MULTIFAMILY COMMUNITY CASE M5

Central water-heater inputs

A 100-unit building uses a central heat pump water heater.

Without early CEA review	With CEA review
A generic equipment-library selection may show a penalty that leads the team to buy envelope or ventilation measures before checking the selected system's supported performance.	The CEA verifies the actual system's current JA14 listing and supported model inputs, then tests compliance using the equipment the project intends to install.

$30,000–$100,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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MULTIFAMILY COMMUNITY CASE M6

Common spaces and solar requirements

A multifamily common space inherits a default building type.

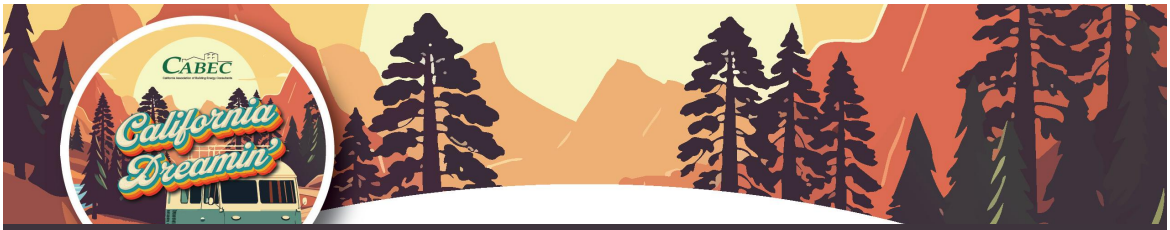
Without early CEA review	With CEA review
The team may accept the software's default common-space classification and size solar panels and storage from a table row that does not match the building's use.	The CEA documents how the space supports the residential building and obtains the building department's determination before setting the photovoltaic and battery scope for purchase.

$60,000–$175,000

Scenario estimate of PV cost exposure

Practitioner scenario. PV allowance shown. Battery cost is not established.

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04

Examples: nonresidential

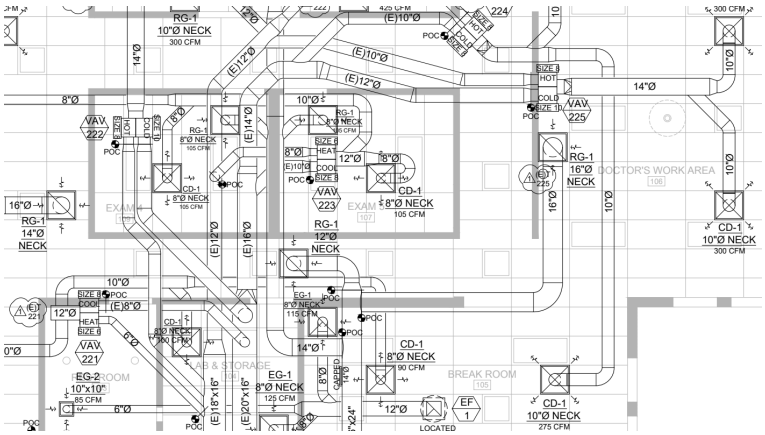
The energy model must match the building and its required verification.

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NONRESIDENTIAL CASE STUDY: VAV TENANT IMPROVEMENT

This TI needed a report for seven VAV zones

Primary Care



Detail from M2.0, April 14 coordination set

7 VAV zones

Existing JCI building controls

The original report treated the suite as one generic zone.

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NONRESIDENTIAL CASE STUDY: VAV TENANT IMPROVEMENT

The revised report describes the VAV work

Verified changes in the compliance documents

Report item	Original, Mar 24	CEA revision, Apr 29
Use classification	Healthcare Facility	Office
Ventilation mapping	System 1 / Zone 1	VAV-219 through VAV-225
System controls	Blank	DDC and supply-air reset documented
Terminal controls	Not applicable	Seven VAV rows with DDC at each zone

Project-specific inputs clarify what the field team must verify.

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NONRESIDENTIAL CASE STUDY: VAV TENANT IMPROVEMENT

Plan-check comments needed a scoped response

The engineer questioned comments on an existing system.

Plan-check issue	Documented response
Control sequences	Add the VAV/DDC sequences and references to the report and drawings.
Occupied standby and sensors	Show existing temperature sensors. Explain the team’s position that the lighting-related trigger is outside this mechanical-only scope.

CEA review separates a missing detail from a scope-dependent requirement.

The occupied-standby response is the team’s position. AHJ acceptance is not documented.

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NONRESIDENTIAL CASE STUDY: VAV TENANT IMPROVEMENT

The revised report identifies acceptance testing

Original report: no acceptance forms required

April 29 acceptance item	Report assignment
Outdoor air NRCA-MCH-02-A	VAV-219 through VAV-225
Supply-air-temperature reset NRCA-MCH-16-A	All new VAV boxes*

The tester needs a clear scope, airflow targets and control sequences.

* Both forms apply by system. Confirm the assignments and complete test scope.
The revision uses Office. A legally defined healthcare exemption needs confirmation.
Original NRCI installation documentation was already listed. No test results were supplied.

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NONRESIDENTIAL CASE STUDY: VAV TENANT IMPROVEMENT

Unresolved field issues can hold up final sign-off

If the paperwork or installation is still wrong when testing starts

What the field team finds	What has to happen
Wrong or incomplete scope, zone data or forms	Designer and author reconcile the report, drawings and test requirements.
Airflow or controls fail the required test	Contractor corrects the deficiency. Technician repeats the affected test.
Required acceptance evidence is missing or still fails	Resolve the compliance deficiency before final occupancy approval.

Early CEA coordination can prevent late report and field rework.

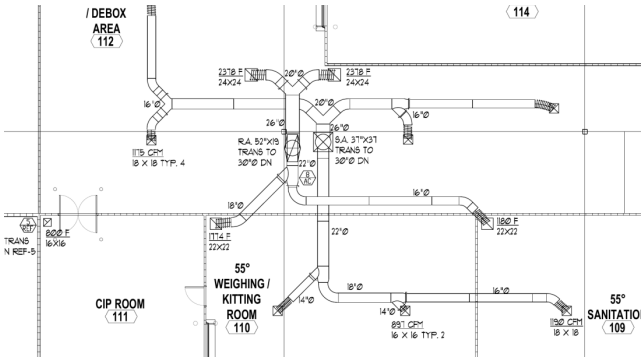
Conditional consequences. This project has no documented failed test, occupancy hold or measured rework cost.

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NONRESIDENTIAL WAREHOUSE CASE

Refrigerated warehouse: competing reports

The team must agree on what belongs in the performance model.



62.5 tons

AC-6, AC-7 and AC-8
Scheduled cooling capacity

Engineer: comfort model
Wade: process forms

A CEA reconciles the report with the actual design and code scope.

Actual project documents. Final classification and construction outcome remain unresolved.

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NONRESIDENTIAL WAREHOUSE CASE

The reports use different model boundaries

Reported input	Engineer report	Wade report
Project scope	Existing alteration	Complete Addition
Conditioned floor area	27,401 ft²	4,786 ft²
Exterior wall area	4,124 ft²	1,177 ft²

22,615 ft²

Difference in reported conditioned floor area

The difference includes 1,119 ft² among the other four zones. A room takeoff must resolve it.
Report dates: engineer July 29, 2026 / Wade July 1, 2026. This is not a controlled rerun.

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NONRESIDENTIAL WAREHOUSE CASE

Refrigeration has mandatory requirements

Comfort performance model	Refrigerated warehouse
Uses incorrect space classification and thermal boundaries.	Must meet §120.6(a), including insulation and applicable controls and testing.

55°F needs a documented operating sequence

A room label alone cannot establish process-space exclusion.
The supplied plans need a specific control sequence and IMP assembly details.

Mandatory refrigeration requirements remain outside performance tradeoffs.

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NONRESIDENTIAL WAREHOUSE CASE

AC-8’s schedule and model disagree

Actual AC-8 schedule, M.7

8 AC ADDISON 17.5 TON PACKAGE ELE/ELE. MODEL NO. PRMA210C2J4FABGEFI 7,930 CFM @ 1.15 SP. 10 Kw STRIP HEATER OUTPUT 34.2 MBH 6 ROW COOLING COIL, 7.5 HP SUPPLY FAN VFD, DUAL SCROLL DUAL CIRCUIT WITH LEAD CIRCUIT VFD (2) CONDENSER FANS POWER 460/3/60 Hz MCA. 62.55 MOP 70 ACCESSORIES FACTORY ROOF CURB, FACTROY SUPPLY SMOKE DETECTORS, OSA DAMPER SET TO 840 CFM 4" MERV-13 FILTERS WT. 3135 LB. EER 10.0 BUILT IN BACNET IP/TP

AC-8 input	Engineer model	Plan schedule
EER	11.0	10.0
Rated input at 17.5 tons	19.09 kW	21.00 kW
Outdoor air	1,261.5 cfm	840 cfm

1.91 kW lower rated input in the model

Equal cooling output at comparable rating conditions. Annual energy and cost require a rerun.

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NONRESIDENTIAL WAREHOUSE CASE

Both reports pass with different model scopes

Reported result	Engineer report	Wade report
Performance status	COMPLIES	COMPLIES
Efficiency LSC margin	2.0%	8.8%
Annual electricity	430.0 MWh	85.2 MWh

344.8 MWh difference in reported electricity

Different model scopes prevent a savings comparison.
A corrected paired rerun must isolate the refrigeration effect.

Engineer LSC: fan credit +1.68 offsets cooling penalty −1.54 ($/ft²-yr as printed).
LSC measures California energy-system cost. It is not a predicted utility bill.

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NONRESIDENTIAL WAREHOUSE CASE

The model changes the closeout paperwork

AC-6, AC-7 and AC-8 appear under different acceptance categories.

Engineer PRF package	Wade process package
Outdoor-air acceptance MCH-02	Evaporator-fan controls PRC-04
Constant-volume acceptance MCH-03	Condenser controls PRC-06

The actual system determines the applicable work and qualified tester.

References do not equal site visits. Separate mandatory process documentation still applies.

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NONRESIDENTIAL WAREHOUSE CASE

CEA review can prevent costly corrections

The value comes from resolving conflicts before the team commits.

Without coordinated review	With CEA review
A passing report can reach procurement while room classifications, equipment and test assignments still conflict.	The CEA checks the code basis, reconciles both packages and coordinates corrections before purchase and startup.

Exposure: revisions, disputed tests and delayed closeout

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NONRESIDENTIAL

Nonresidential: the window schedule at closeout

MEP goes prescriptive → Prescriptive forms → Building gets built → Inspector: windows miss prescriptive → Gets our quote. Says no. → Compliance unresolved

Why it keeps happening

- The team used the prescriptive path.
- The inspector found a window-schedule mismatch after construction.
- The project needed a proper performance evaluation.

How it ends

- The client declined our performance-model quote.
- Closeout pressure replaced early coordination.
- No completed passing model was supplied for this case.

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NONRESIDENTIAL COORDINATION

Acceptance testing needs a plan before closeout

Timing	Lead team	Deliverable
Design	CEA + MEP team	List applicable installation, acceptance and commissioning requirements.
Buyout	GC + subcontractors	Assign forms, qualified testers and fees. Use approved-provider directories.
Installation	Installer + test technician	Schedule startup, access and tests while corrections remain manageable.
Closeout	Project team + AHJ	Resolve findings and submit completed records for final approval.

CEA education helps the team plan the work and explain it to the owner.

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NONRESIDENTIAL

The actual closeout email and form list

1. Commissioning is a separate process and requirement than acceptance testing
    a. Fact Sheet about commissioning is attached – have Joe and Brian review
2. Acceptance testing is like HERS testing that Brian would have dealt with when getting his final on his ADU build.
    a. Link to acceptance testers are below
    b. Fact sheet about acceptance testing also attached

The following will be required to be completed by acceptance testers and the contractor – there may be more for your project, I haven’t seen the Title-24 – but it’s going to be noted through out it – the boys can send me the pdf of the T24 report and I’ll take 5 min to go through and highlight it all – will look like the following:

1. NRCI-ENV-E
2. NRCI-MCH-E
3. NRCI-PLB-E
4. NRCI-SAB-E
5. NRCI-LTI-E
6. NRCA-ENV-02-F
7. NRCA-LTI-02-A
8. NRCA-MCH-02-A
9. NRCA-MCH-03-A
10. NRCI-ELC-E
11. NRCI-LTO-E
12. NRCA-LTO-02-A

CEC Links
https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/energy-code-support-center-1
https://www.energy.ca.gov/programs-and-topics/programs/acceptance-test-technician-certification-provider-program/acceptance

Lighting Acceptance Tester Database
https://calctp.org/acceptance-technicians/contractors
https://www.nlcaa.org/

Mechanical Acceptance Tester Database – pick one to find approved agency
https://www.attcp.org/find-a-contractor-offering-mechanical-acceptance-testing-services/
http://www.calpipes.org/
https://rses.org/general/custom.asp?page=title-24

ENV forms and non acceptance test forms require an account on EnergyCodeAce.com – feel free to reach out to me about this – set up an account to get the forms to fill out. It’s basic information like what windows were put in, insulation, etc. Depending on the T24 and what they used for windows it may require a bit more – again, just have the guys send me the report and I’ll let you know if it’s going to be easy or require further coordination and if it is going to be more I’ll provide a recommendation on how to not let it be more complicated.
https://energycodeace.com/2022-forms-ace-tool

Travis Wade, M.Eng, CEA
Principal

NRCC compliance · NRCI installation · NRCA acceptance

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NONRESIDENTIAL COMMUNITY CASE N1

R&D classification and rooftop equipment

An R&D building needs an energy-code building-type determination.

Without early CEA review	With CEA review
The team may translate building-code occupancy labels directly into office or warehouse energy categories, then size rooftop solar panels and batteries against the wrong classification.	The CEA applies the energy code's building-type definitions, tests the applicable area rule and obtains a written building department determination before the equipment scope is set.

$300,000–$500,000

Scenario estimate of cost exposure

Practitioner estimate. The supplied PV and battery total is not itemized.

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NONRESIDENTIAL COMMUNITY CASE N2

Pool surface area and collector sizing

A hotel pool design depends on how surface area is defined.

Without early CEA review	With CEA review
The team may size solar thermal from an unconfirmed interpretation of pool surface area, risking a rejected design or roughly 50 percent more collector area.	The CEA obtains the interpretation before permit and compares permitted solar-thermal, heat-pump and heat-recovery paths, giving the owner a supported equipment choice before procurement.

$70,000–$105,000

Scenario estimate of extra collector cost

Practitioner scenario. Illustrative cost, not measured project savings.

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NONRESIDENTIAL COMMUNITY CASE N3

Recovering a performance model

A 430 sf R-1 project has unusual glazing and assemblies.

Without early CEA review	With CEA review
The team may abandon performance compliance after the software crashes and redesign specialty glazing or assemblies to fit prescriptive tables before investigating the error.	The CEA traces the conflicting equipment input, corrects it using supported values and restores the performance analysis so the team can evaluate the intended design.

$5,000–$25,000

Scenario estimate of extra cost

Practitioner scenario. Illustrative cost, not measured project savings.

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NONRESIDENTIAL COMMUNITY CASE N4

Spray-foam roof performance

A steel-framed roof uses spray foam across 3,000 square feet.

Without early CEA review	With CEA review
The team may apply batt-insulation values to the spray-foam roof and add continuous insulation without first establishing the thermal performance of the assembly it will build.	The CEA calculates and documents the actual roof assembly using an approved method, then tests the supported U-factor before the team specifies additional roof insulation.

$7,500–$12,000

Scenario estimate of extra insulation cost

Practitioner scenario. Illustrative cost, not measured project savings.

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NONRESIDENTIAL COMMUNITY CASE N5

Retail work inside a 600-unit tower

The permit covers a ground-floor retail tenant improvement.

Without early CEA review	With CEA review
The team may model the entire 600-unit tower for the retail work, spending unnecessary modeling time and creating upgrades from a baseline that includes unrelated space.	The CEA confirms the tenant-improvement scope and applicable sections, models the supported retail area and documents requirements for the remainder without expanding the analysis unnecessarily.

$20,000–$80,000

Scenario estimate of extra cost

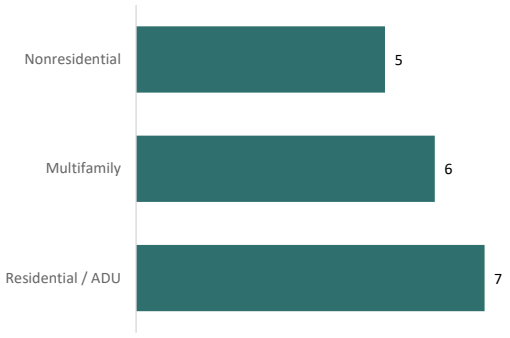
Practitioner scenario. Illustrative cost, not measured project savings.

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COMMUNITY EXPERIENCE

CEA judgment across 18 practitioner cases

Questions from the supplied practitioner review



Correct scope

Which building, alteration or system does the rule cover?

Defensible inputs

Does the model represent the actual assembly and equipment?

Buildable requirements

Can the team procure, install and verify the selected solution?

The professional contribution is the decision the team can act on.

Reported scenarios and potential consequences. Cost ranges are not additive or measured savings.

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THE PROFESSIONAL STANDARD

What makes a CEA different

Demonstrated competence

Code knowledge and hands-on modeling exams establish a professional baseline.

Continued learning

Code-cycle updates and continuing education support current practice.

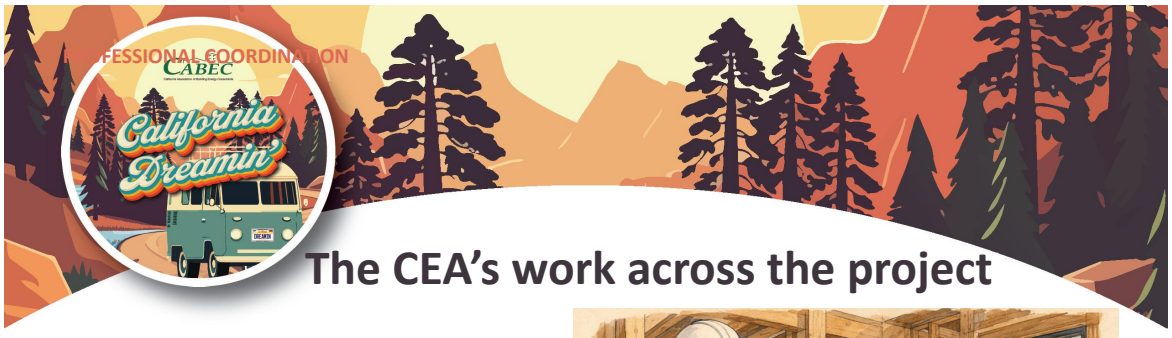
A reachable project collaborator

The CEA checks assumptions, asks colleagues for help and works through the result with the design team.

Qualification establishes the baseline. The work must sustain it.

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The CEA's work across the project

DESIGN
CEA and designers agree on the compliance path.

PROCUREMENT
Schedules match the model and installation requirements.

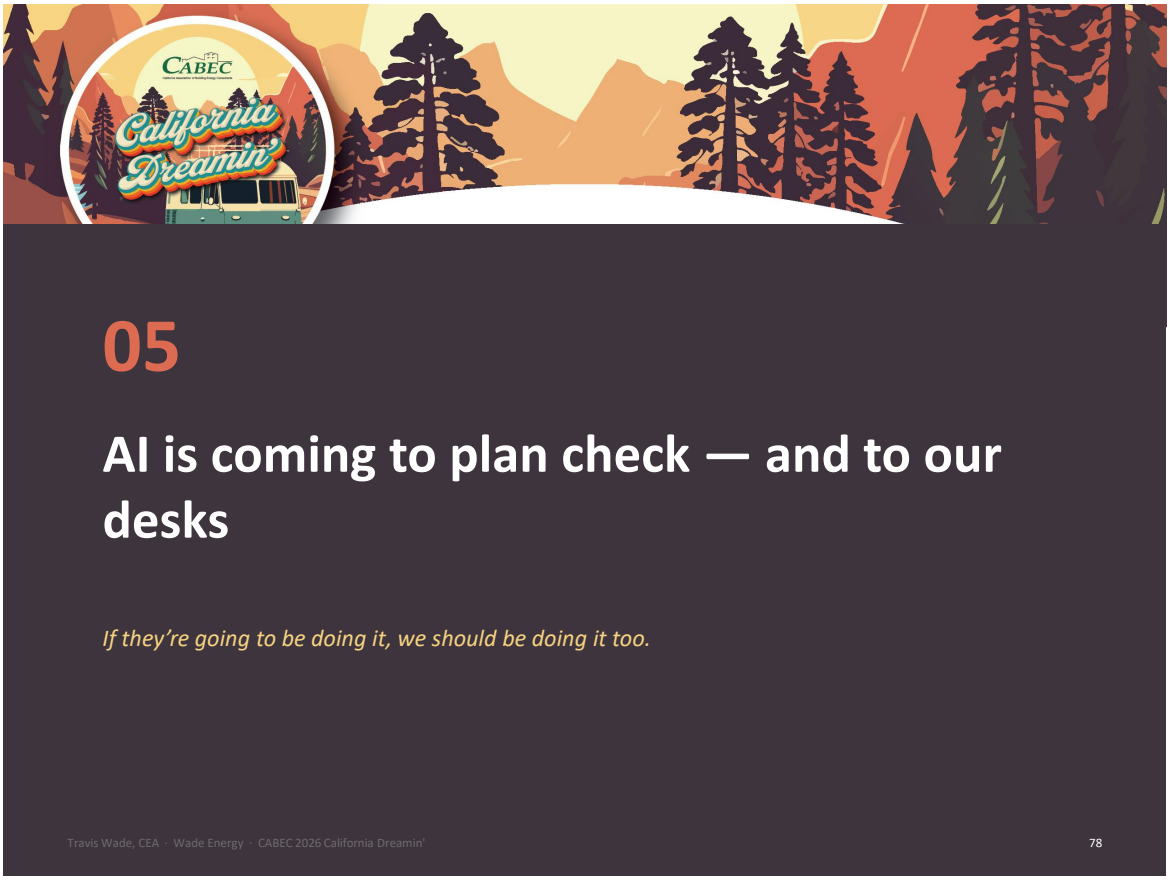
CLOSEOUT
Installers and qualified verifiers complete the required checks.



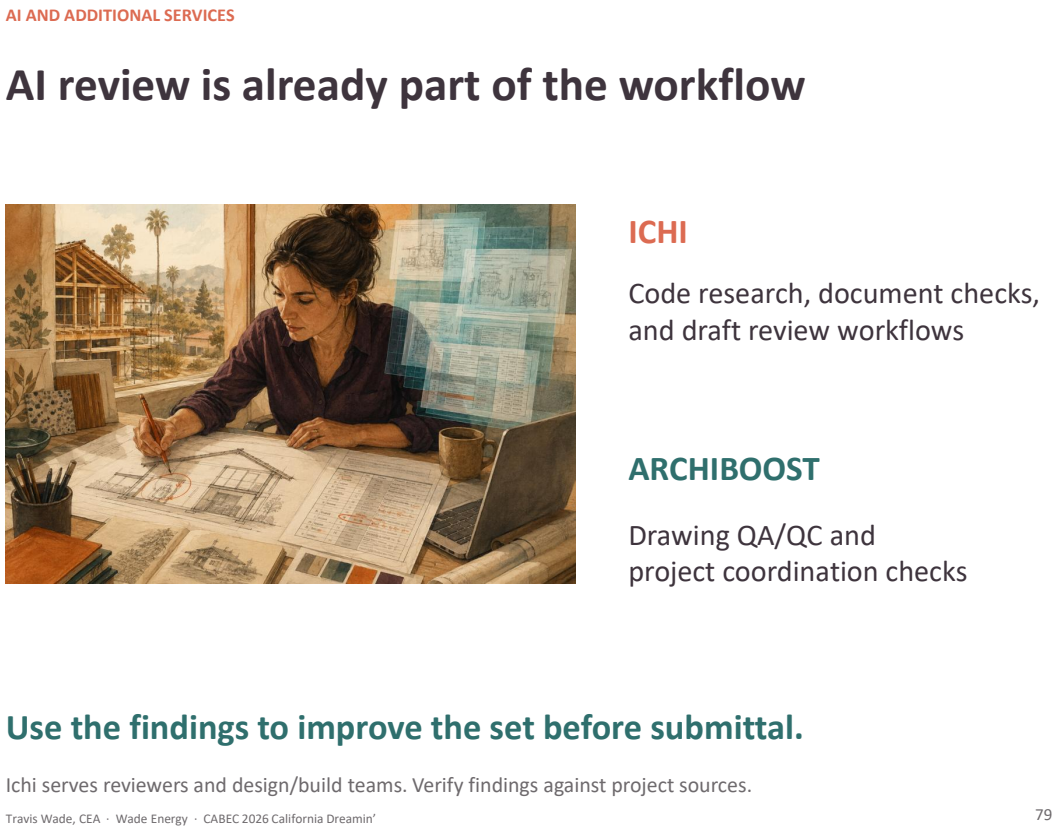
Clear responsibility and timing help prevent closeout surprises.

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AI AND ADDITIONAL SERVICES

Ichi now markets one platform to both sides of the counter

Context	Publicly described position
What it does	Drafts first-pass plan review comments, answers code questions with citations, checks intake and completeness, and supports comment responses and RFIs.
Who it serves	Jurisdictions, third-party plan review firms, architects and engineers, contractors, and owners.
Published examples	San Luis Obispo: 2 hours to 15 minutes for an email response. WC3: plan review from 8 hours to 4.
Published coverage	269 code groups, 3,148 licensed books, and 184 municipal groups in an August 3, 2026 vendor snapshot.

Ichi says it works with dozens of jurisdictions, but its public customer page names only some. Code coverage does not prove city adoption.

Vendor-published product descriptions and outcomes. See speaker notes for links and qualifications.

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AI AND ADDITIONAL SERVICES

ArchiBoost focuses on design-side code research and drawing QA

Context	Publicly described position
What it does	Connects cited code research, firm knowledge, drawings, specifications, and BIM models. It flags coordination and compliance risks before permit or construction.
Who it serves	Architecture and engineering firms, owners and developers, and general contractors.
Named customer	OTJ Architects uses code-compliance agents, its Knowledge Hub, and automated QA/QC. The vendor reports 60 percent less code and QA/QC research time.
Where it is used	OTJ reports project work in New York City, Washington, D.C., and Boston. Those are project jurisdictions, not city-agency deployments.
Published reach	The vendor says 20-plus firms use the platform and publicly displays OTJ, Beam, WRNS, EDG, BuildCasa, and other firm logos.

ArchiBoost's public evidence describes design-firm use. The vendor does not present these examples as municipal plan-review deployments.

Vendor-published product descriptions and outcomes. See speaker notes for links and qualifications.

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AI

AI needs context and a knowledgeable reviewer

A passing model and a polished AI answer both depend on the inputs and the reviewer.

The client with ChatGPT

- A client drops the report into an AI tool.
- The tool lacks the full project and applicable code context.
- We spend time checking the questions and explaining the errors.

The rule

- Provide the scope, plans, code cycle, and report.
- Verify the cited source and the conclusion.
- Recognize when an answer is wrong.

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AI AND PROFESSIONAL JUDGMENT

A CEA verifies the AI-assisted answer

Step	Useful work
Project context	Plans, model, equipment schedules, applicable code and local requirements.
AI assistance	Compare documents, surface conflicts and draft a supported response.
CEA review	Open the source. Check applicability and calculations. Resolve discrepancies.
Project deliverable	Provide a clear recommendation and traceable evidence the team and AHJ can review.

Professional judgment determines whether the answer fits this project.

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AI AND ADDITIONAL SERVICES

AI creates room for a broader professional service

Faster analysis gives the practitioner time to resolve more of the client's project.

Equipment research	A short selection list matched to the model and verified product data.
HVAC design support	Load calculations and coordinated system choices within the professional's scope.
ADU capacity review	An electrical-load assessment and a clear path for utility and design-team review.

Each service needs a defined deliverable, professional review and a fee.

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AI AND ADDITIONAL SERVICES

The client needs equipment they can specify



AI can help collect the information

Manufacturer spec sheets

Applicable AHRI match

Capacity and efficiency at project conditions

A short list the designer can verify

Useful guidance includes a real product and its source.

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AI AND ADDITIONAL SERVICES

Load calculations can become another service

Kwik Model 3D EAGLE

Russ King / Coded Energy

Load calculations
Equipment selection
Duct design

Wrightsoft Right-Suite Universal

MiTek

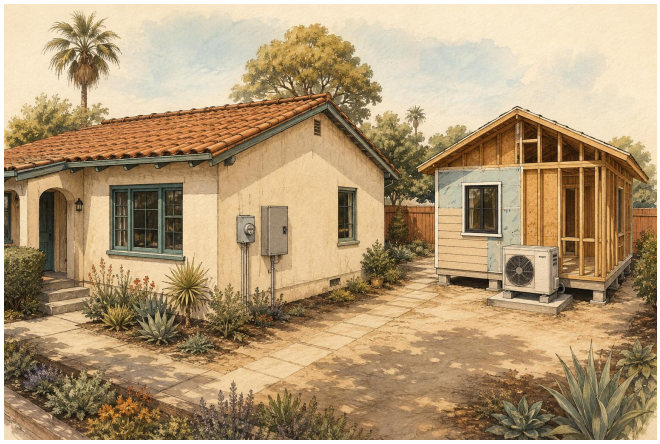
HVAC loads and design
Plans and schedules
Project documentation

A competent CEA can offer a more complete service.

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AI AND ADDITIONAL SERVICES

An ADU creates a bigger coordination opportunity



Existing house + ADU

Gas and electric inventory

HVAC size and equipment

NEC load calculation with qualified review

AI can organize inputs and draft the calculation for review.

A 200A service label alone does not establish spare capacity.

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AI AND ADDITIONAL SERVICES

Better tools still support a paid professional service

2–4 hours

Illustrative service allowance

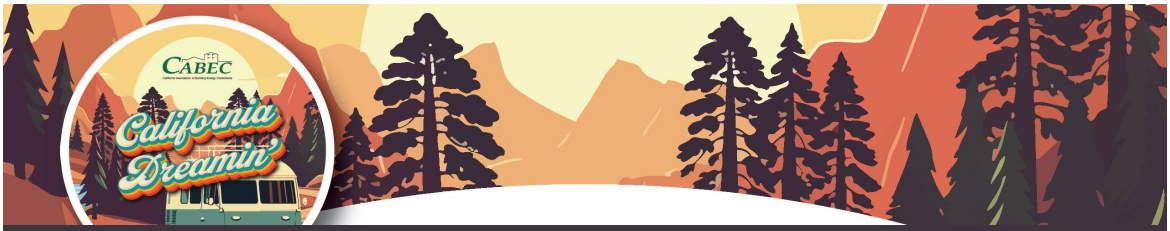
Correct inputs
Equipment coordination
Calculation review
A usable explanation



The client pays for the completed, reviewed result.

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06

Why this matters beyond our fees

The state's cost-benefit math assumes the model describes the building.

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WINNING MORE CONTRACTS

Practical solutions keep projects moving





Energy performance and electrification

Cost, constructability, and the owner's goals

The CEA helps the team evaluate those decisions together.

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THE BIGGER PICTURE

Projected benefits depend on what gets built

$200B+
Building + appliance rules
50-year energy-cost savings

$8.8B
2022 Energy Code
Estimated lifetime benefits

$4.8B
2025 Energy Code
Projected 30-year savings

The implementation matters: the modeled measures must reach the real building.

A qualified, engaged CEA helps connect the plans, installation, and verification.

CEC estimates: Jan. 13, 2026 release; 2022 Form 399. Different scopes; not additive or attributable to CEAs.

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THE BIGGER PICTURE

Studies document gaps in implementation

Study and scope	Result	Meaning
BayREN, 2015 49 reviewed projects	**16%**	Error-free Energy Code documentation
CPUC / DNV, 2017 Residential HVAC replacements	**8–29%**	Estimated permit rate
CPUC / DNV, 2017 70 applicable airflow tests	**19%**	Met the minimum airflow requirement

Different samples and measures. No single statewide rate.

Historic findings: Bay Area documentation review and California HVAC replacement research.

Sources: BayREN PROP (2015), pp. 14–15. CPUC / DNV GL (2017), pp. 3–4 and Table 15.

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THE BIGGER PICTURE

The statewide picture is still incomplete

Process compliance

Permits and accurate documents
Required inspections and tests
A complete record of the work

Energy performance

The completed building’s efficiency
Consistency with the energy budget
Savings realized in practice

CEC’s 2025 gap analysis calls for a stronger statewide baseline

Reported savings factors, permit rates and documentation checks answer different questions.

Source: CEC-400-2025-011, executive summary and study comparisons.

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THE BIGGER PICTURE

CEC's next compliance evaluation

Up to $11.5 million

Energy Code Compliance Evaluation Support

2027–2029

Planned three-year term

Federal IRA funding

Evaluation, fieldwork and implementation support

RFQ-25-401. Maximum available contract funding. Planned start: January 1, 2027.

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THE BIGGER PICTURE

What the CEC plans to examine

Design and construction	Compare compliance records with observed work
Coverage	Include permitted and unpermitted construction
Barriers and variation	Find failure points across building types and jurisdictions
Implementation	Guide technical assistance and future improvements

The study will provide a snapshot of current outcomes

Its stated scope excludes changes over time and causal effects of interventions.

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THE BIGGER PICTURE

CEA involvement belongs in the data

Our proposed research questions

Record the work

Current CEA and relevant experience
Scope of the analyst's service
Timing of involvement
Coordination through construction

Compare the outcomes

Model and document accuracy
Independent field findings
Corrections and rework costs
Unnecessary construction measures

Comparable projects and independent review can show which practices are associated with better outcomes.

Proposed research extension. Account for project complexity, code cycle and jurisdiction.

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THE BIGGER PICTURE

Energy modeling and construction verification

Models establish energy requirements. Field and construction checks confirm compliance within their own scope.

Role or program	Scope and requirement
Energy-model author / CEA	Develops and coordinates the energy model. CEA demonstrates competence. A statewide CEA mandate is our proposal.
ECC rater	Verifies installed energy measures. Approved providers train, test and certify raters for the applicable scope.
CALGreen inspector / verifier	Verifies construction measures. Required special inspectors demonstrate competence to the enforcing agency.

Proposal: require CEA qualification for energy-model authors.

CEA certification does not replace a professional license, ECC certification or another required inspection qualification.

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THE BIGGER PICTURE

CEA requirements already exist in California programs

BUILD

CEA-created models at construction reservation and project completion.

CTCAC / CUAC

Current CEA for the selected utility-allowance pathway. HERS credential also required.

A qualification requirement is already workable in defined California programs.

Program-specific precedents. They do not establish a universal Energy Code mandate or measured statewide impact.

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THE BIGGER PICTURE

CEA roles in programs and local codes

The required role depends on the program and selected compliance path.

Role or program	Scope and requirement
GreenPoint Rated New Home	Published California home certification: a CABEC CEA prepares and signs the energy compliance documents.
Palo Alto	Single-family measure-menu alternative: a CEA prepares and signs the Certificate of Compliance.
Solana Beach	Specified remodel PV relief requests: a certified energy analyst supplies a supporting written report.

Qualified analysis already supports specific compliance decisions.

These are defined program and local-code roles. CALGreen does not create a universal CEA signoff requirement.

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THE BIGGER PICTURE

Qualified modelers have a policy precedent

California has a CEA credential. Other jurisdictions show how qualifications can become part of a compliance path.

Role or program	Scope and requirement
CABEC CEA	Code knowledge + hands-on compliance modeling. Exams, verified experience, ethics and continuing education.
ASHRAE BEMP	Professional modeling competency. Eligibility requirements, an exam and ongoing professional development.
Denver + Washington	Denver: BEMP or equivalent supervisor. Washington: BEMP, BESA, or five approved Appendix G projects in three years.

Qualifications can become part of the compliance path.

These are specific jurisdictional requirements. ASHRAE 90.1 and IECC do not create a universal national certification requirement.

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THE BIGGER PICTURE

A required CEA standard needs a workforce pipeline

Required CEA

- A current CEA for the applicable work.
- A named analyst of record.
- Credential checks and audits of actual work.

Defined responsibility

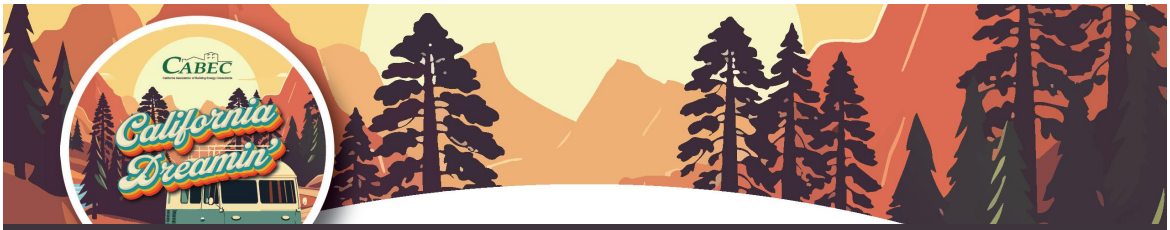
- A clear scope for the energy analyst.
- Existing professional licensing duties continue.
- A firm transition date and consistent enforcement.

Workforce pipeline

- CABEC mentorship and Energy Code Ace training.
- CalBEM and IBPSA-USA education and collaboration.
- Supervised project work and continuing development.

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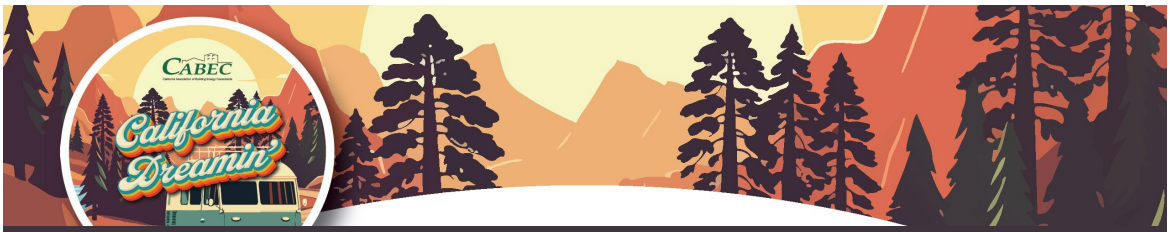
Our policy position

No more code cycles without a required CEA

TODAY	Name a current CEA in scopes and consultant selection.
TOGETHER	Advocate a clear statewide requirement with an implementation date.
ACCOUNTABILITY	Verify the credential. Audit the work. Recognize the designation.

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Winning more contracts

Better work	Fewer discipline conflicts
Stronger client trust	Greater professional respect
Fewer plan-check comments	Clearer explanations

More reasons to hire you again and refer you.

Let's build right. Questions? travis@wadeenergy.com

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