
2. Compliance and Enforcement

2.1 Overview

Primary responsibility for compliance and enforcement with the Building Energy Efficiency Standards (Standards) rests with the local enforcement agency, typically associated with a city or county government. A building permit must be obtained from the local jurisdiction before a new nonresidential or high-rise residential building, outdoor lighting system, or a sign may be constructed, before constructing an addition, and before significant alterations may be made to existing buildings or systems. Before a permit is issued, the local jurisdiction examines the plans and specifications for the proposed building to verify compliance with all applicable codes and standards. Verification of compliance with the Standards, by comparing the requirements specified on the Certificate of Compliance with the plans and specifications for the building are the enforcement agency's plan checker's responsibility. The enforcement agency's plans examiner must also verify that the plans and specifications for the building are in compliance with the building, plumbing, electrical, and the mechanical codes, and all other applicable codes and standards adopted by the local enforcement agency.

Once the enforcement agency has determined that the proposed building (as represented in the plans and specifications) complies with all applicable codes and standards, a Building Permit may be issued at the request of the builder or the owner of the proposed building. This is the first significant milestone in the compliance and enforcement process. After building construction is complete, the enforcement agency issues the Certificate of Occupancy. If the enforcement agency's final inspection determines that the building conforms to the plans and specifications approved during plan check, and complies with all applicable codes and standards, the enforcement agency may approve the building. The enforcement agency's final approval is also a significant milestone.

While obtaining the Building Permit and Certificate of Occupancy are two significant steps, the compliance and enforcement process is significantly more involved and requires participation by a number of other persons and organizations including the architect or building designer, specialty engineers (mechanical, electrical, civil, etc.), building developers, purchasing agent, general contractor, subcontractor/installers, energy consultant, plan checkers, inspectors, realtors, the owner, and third-party inspectors (HERS raters). This chapter describes the overall compliance and enforcement process and identifies the responsibilities for each person or organization.

Where the building construction is under the jurisdiction of a state agency, no construction of any state building can begin until the Department of General Services or the state agency that has jurisdiction over the property determines that the construction is designed to comply with the requirements of Part 6, that the documentation requirements of §10-103(a)1 have been met, and that the plans indicate the features and performance specifications needed to comply with the Standards. The responsible state agency must notify the Commission's Executive Director of its determination.

This chapter is organized as follows:

- 2.1 Overview
- 2.2 The Compliance and Enforcement Process
- 2.3 Compliance Documentation
- 2.4 Roles and Responsibilities

2.2 The Compliance and Enforcement Process

The process of complying with and enforcing the Standards involves many parties. Those involved may include the architect or building designer, building developers, purchasing agent, general contractor, subcontractor/installers, energy consultant, plan checkers, inspectors, realtors, the owner, and third party inspectors (HERS raters). Communication between these parties is essential for the compliance/enforcement process to run efficiently.

The Standards specify detailed reporting requirements that are intended to provide design, construction, and enforcement parties with needed information to complete the building process and ensure that the energy features are installed.

Each party is accountable for ensuring that the building's energy features are correctly installed as applicable to their area of responsibility.

This section outlines each phase of the process, discussing responsibilities and requirements during the phase.

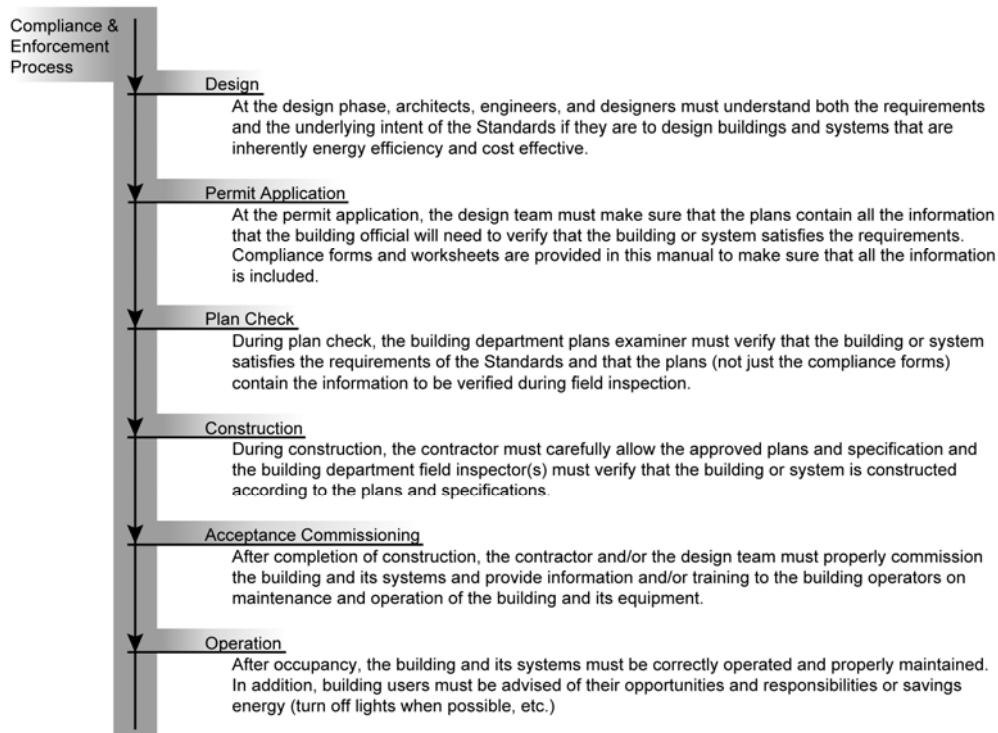


Figure 2-1 – The Compliance and Enforcement Process

2.2.1 Design Phase – Certificate of Compliance

§10-103(a)1

During the design phase, the plans and specifications are developed that define the building or system that will be constructed or installed. The design must incorporate features that are in compliance with applicable codes and standards. The building or system overall design must be detailed in the construction documents and specifications, and these documents must be submitted to the enforcement agency for approval.

Parties associated with the design phase must ensure that the building or system design specifications comply with the Standards, and that the specifications for the energy features given on the construction documents are consistent with the Certificate of Compliance for the building or system.

During the design phase, the architect, mechanical engineer and lighting designer must determine whether the building or system design complies with the Standards. An energy consultant or other professional (Documentation Author) may assist the building designer(s) by providing calculations that determine the energy compliance impact of building features being proposed for the design. Additionally, throughout the design phase, recommendations or alternatives may be suggested by energy consultants or energy documentation author to assist the designer in achieving compliance with the Standards.

The building or system design plans and specifications are required to be complete with regard to specification of the energy efficiency features selected for compliance with the Standards, and those specifications must be detailed on the Certificate of Compliance submitted to the enforcement agency. Any change in the design specifications, during any phase of design or construction that changes the energy features specified for the design, necessitates recalculation of the energy code compliance and issuance of a revised Certificate of Compliance for approval by the enforcement agency that is consistent with the revised plans and specifications for the proposed building or system. If recalculation indicates that the building no longer complies, alternate building features must be selected that bring the design back into compliance with the Standards. Also, the plans and specifications documentation for the design must be revised to be consistent with the energy features shown on the revised Certificate of Compliance, and then the revised plans and specifications must be resubmitted to the enforcement agency for approval.

The discussion in this section emphasizes the need to coordinate energy efficiency feature selection considerations concurrently with other building design considerations as part of the overall design development process so that the completed design specifications represented on the final construction documents submitted to the enforcement agency for approval are complete, consistent with the Certificate of Compliance; thus in compliance with the Standards' requirements. The next section on Integrated Design discusses briefly how concurrent development of other aspects of the design can serve to improve the quality of the final design, and diminish the need for revision of the construction documentation later in the plan check or construction process.

Integrated Design

Integrated design is the consideration that brings the design of all related building systems and components together. It brings together the various disciplines involved in designing a building or system and reviews their recommendations as a whole. It recognizes that each discipline's recommendations have an impact on other aspects of the building project. This approach allows for optimization of both building performance and cost. Too often, HVAC systems are designed without regard for lighting systems. Or, lighting systems are designed without consideration of daylighting opportunities. The architect, mechanical engineer, electrical engineer, contractors, and other team members each have their scope of work and often pursue the work without adequate communication and interaction with other team members. This can result in improper system sizing, or systems that are optimized for non-typical conditions.

Even a small degree of integration provides some benefit, allowing professionals working in various disciplines to take advantage of design opportunities that are not apparent when they are working in isolation. This can also point out areas where trade-offs can be implemented to enhance resource efficiency. Design integration is the best way to avoid redundancy or conflicts with aspects of the building project planned by others. The earlier that integration is introduced in the design process, the greater the benefit that can be expected.

For a high performance school project, team collaboration and integration of design choices should begin no later than the programming phase. In addition, the project team is likely to be more broadly defined than in the past, and may include energy analysts, materials consultants, lighting designers, life-cycle cost consultants and commissioning agents. Design activities may expand to include charrettes, modeling exercises, and simulations.

This manual provides details and implementation rules for individual design strategies. Though these individual strategies can improve building or system energy efficiency, whole-building analysis and integrated design can balance energy and cost concerns more effectively.

2.2.2 Permit Application – Certificate of Compliance

§10-103(a)1; §10-103(a)2

When the design is complete, construction documents are prepared, other approvals (planning department, water, etc.) are secured, and the owner, developer, or architect submits an application for a Building Permit to the enforcement agency. Permit application is generally the last step in the process of planning and design. At this point, the infrastructure (streets, sewers, water lines, electricity, gas, etc.) is likely to be in place or is under construction, and the process of preparation for the construction or installation of the building or system design can begin.

A Certificate of Compliance is required to be submitted along with the construction documents, and these documents must be approved by the enforcement agency. If the prescriptive method is utilized for compliance, the Certificate of Compliance documentation forms for the building envelope, mechanical systems, and the lighting systems must all be submitted. If the performance method is utilized for the entire building, a compiled set of Certificate of Compliance documentation pages is prepared utilizing one of the compliance software applications approved

by the Energy Commission. Certificate of Compliance documentation requirements are specified in §10-103(a)1 and §10-103(a)2.

For all buildings, the Certificate(s) of Compliance must be signed by the person(s) eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design to certify conformance with the building energy code. If more than one person has responsibility for building design, each person must 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 design may prepare and sign the Certificate of Compliance document(s) for the entire design. The signatures must be original signatures on paper documents or electronic signatures on electronic documents.

The length and complexity of the Certificate of Compliance documentation may vary considerably depending upon the size and complexity of the building(s) or system(s) that are being permitted, regardless of whether the performance approach or the prescriptive approach is utilized for compliance. The Certificate of Compliance documents are commonly prepared by an energy consultant or an energy compliance professional (Documentation Author). An energy consultant should be knowledgeable about the details of the requirements of the energy code and can benefit the design team by offering advice for the selection of the compliance methodology (prescriptive or performance), the selection of the energy features utilized for compliance with the Standards. An energy consultant may also provide recommendations for the most cost effective mix of building energy features for the design.

The Administrative Regulations §10-103(a)2 require that the Certificate(s) of Compliance and any applicable supporting documentation be submitted with permit applications. This will enable the plans examiner to verify that the building or system design specifications shown on construction documentation is consistent with the energy features specified on the Certificate of Compliance. The Certificate of Compliance forms submitted to the enforcement agency to demonstrate compliance must be readily legible and of substantially similar format and informational order as those specified in this compliance manual. A listing of Certificate of Compliance forms is given in Table 2-1 below, and copies of these forms are located in Appendix A.

Table 2-1 – Certificate of Compliance Forms

Envelope	Mechanical	Lighting	Outdoor Lighting	Sign Lighting
ENV-1C Certificate of Compliance and Field Inspection Checklist ENV-2C Envelope Component Approach ENV-3C Overall Envelope TDV Energy Approach ENV-4C Skylight Area Support Worksheet	MECH-1C Certificate of Compliance and Field Inspection Checklist MECH-2C Air, Water Side System, Service Hot Water & Pool Requirements MECH-3C Mechanical Ventilation and Reheat MECH-4C Fan Power Consumption	LTG-1C Certificate of Compliance and Field Inspection Checklist LTG-2C Lighting Controls Credit Worksheet LTG-3C Indoor Lighting Power Allowance LTG-4C Tailored Method Worksheet LTG-5C Line Voltage Track Lighting Worksheet	OLTG-1C Certificate of Compliance and Field Inspection Checklist OLTG-2C Outdoor Lighting Worksheet	SLTG-1C Certificate of Compliance (Sign Lighting) Refrigerated Warehouse RWH-1C Certificate of Compliance (Refrigerated Warehouse)

2.2.3 Plan Check

§10-103(d)1

Local enforcement agencies are required to check submitted plans and specifications to determine whether the design conforms to the applicable codes and standards, thus the plan check must include checking the energy efficiency specifications for the design to confirm compliance with the Standards. Vague, missing, or incorrect information on the construction documents may be identified by the plans examiner as requiring correction, and the permit applicant must revise the construction documents to make the corrections or clarifications, and then resubmit the revised plans and specifications for verification by the plans examiner. When the permit applicant submits comprehensive, accurate, clearly defined plans and specifications, it helps to speed the plan check process.

During plan check, the enforcement agency must verify that the building's design details specified on the construction documents conform to the applicable energy code features information specified on the Certificate of Compliance documents submitted. It is important that the building design features represented on the approved plans and specifications for the proposed building conform to the energy features specified on the approved Certificate(s) of Compliance. This is necessary since materials purchasing personnel and building construction craftsmen in the field may rely solely on a copy of the plans and specifications approved by the enforcement agency for direction in performing their responsibilities. It is worthwhile to mention here that later in the construction/installation process, the person responsible for construction will be required to sign an Installation Certificate confirming that the installed features, materials, components or manufactured devices conform to the requirements specified in the plans and specifications and the Certificate(s) of Compliance approved by the enforcement agency. If at that time it is determined that the actual construction/installation is not consistent with the approved plans and specifications or Certificate(s) of Compliance, the applicable documentation is required to be revised to reflect the actual construction/installation specifications, and the revised documentation must indicate compliance with the energy code requirements. If necessary, corrective action must be taken in order to bring the

construction/installation into compliance. Thus to emphasize, it is of utmost importance that the building design features represented on the approved plans and specifications for the proposed building comply with the Standards' requirements specified on the approved Certificate(s) of Compliance, and that the actual construction/installation is consistent with those approved documents.

The enforcement agency is responsible for verifying that the compliance documents submitted for plan check do not contain errors. When the compliance documents are produced by an Energy Commission-approved computer software application, it is unlikely that there will be computational errors on the Certificate of Compliance documents, but it is essential that the plans examiner verifies that the building design represented on the proposed plans and specifications is the same building design represented in the Certificate of Compliance documents.

To obtain a list of Energy Commission-approved energy code compliance software applications visit the Commission Website at:

www.energy.ca.gov/title24/2008standards/2008_computer_prog_list.html

Or call the Efficiency Standards Hotline at 1-800-772-3300.

2.2.4 Building Permit

§10-103(d)1

After the plans examiner has checked and approved the plans and specifications for the project, a building permit may be issued by the enforcement agency at the request of the builder. Issuance of the building permit is the first significant milestone in the compliance and enforcement process. The building permit is the green light for the contractor to begin work. In many cases, building permits are issued in phases. Sometimes there is a permit for site work and grading that precedes the permit for actual building construction. In large Type I or II buildings, the permit may be issued in several phases: site preparation, structural steel, etc.

2.2.5 Construction Phase – Installation Certificate

§10-103(a)3A

Upon receiving a building permit from the local enforcement agency, the general contractor can begin construction. The permit requires the contractor to construct the building or system in substantial compliance with the approved plans and specifications, but often there are variations. Some of these variations are formalized by the contractor through change orders. When change orders are issued, it is the responsibility of the design team and the local enforcement agency to verify that compliance with the energy code is not compromised by the change order. In some cases, it is obvious that a change order could compromise energy code compliance; for instance, when an inexpensive single glazed window is substituted for a more expensive high performance window. However, it may be difficult to determine whether a change order would compromise compliance, for instance when the location of a window is changed or when the orientation of the building with respect to the direction north is changed. Field changes that result in non-compliance require enforcement agency approval of revised plans and energy compliance documentation to confirm that the building is still in compliance.

During the construction process, the general contractor or specialty subcontractors are required to complete various construction certificates. These certificates verify that the contractor is aware of the requirements of the Standards, and that the actual construction/installation meets the requirements.

Installation Certificates are required to be completed and submitted to certify compliance of regulated energy features such as windows, water heater, plumbing, HVAC ducts and equipment, and building envelope insulation. The licensed person responsible for the building construction or for the installation of a regulated energy feature must ensure their construction or installation work is done in accordance with the approved plans and specifications for the building. The responsible person must complete and sign an Installation Certificate to certify that the installed features, materials, components or manufactured devices for which they are responsible conform to the plans, specifications and the Certificate of Compliance documents approved by the enforcement agency for the building. A copy of the completed, signed and dated Installation Certificate must be posted at the building site for review by the enforcement agency, in conjunction with requests for final inspection for the building.

If construction on any regulated feature or portion of the building will be impossible to inspect because of subsequent construction, the enforcement agency may require the Installation Certificate(s) to be posted upon completion of that portion. A copy of the Installation Certificate(s) must be included with the documentation the builder provides to the building owner at occupancy as specified in §10-103(b).

If for any reason the approved plans and specifications and Certificate(s) of Compliance for the building are inconsistent with regard to their requirements for the building, or if the actual construction/installation performed does not conform to the approved plans and specifications and Certificate(s) of Compliance, corrective action must be performed to bring all approved documentation and the actual installation into compliance prior to completion and submittal of the Installation Certificate. A listing of Installation Certificate forms is given in Table 2-2 below, and copies of the forms are located in Appendix A. Installation Certificate specifications are given in §10-103(a)3A.

Table 2-2 – Installation Certificate Forms

Component	Installation Certificate Form Identifier
Envelope	ENV-INST
Mechanical	MECH-INST
Lighting	LGT-INST
Outdoor Lighting	OTLG-INST
Sign Lighting	SLTG- INST
Refrigerated Warehouse	RWH-INST

2.2.6 Acceptance Testing – Certificate of Acceptance

§10-103(a)3B

Acceptance testing or acceptance criteria verification is required for certain lighting, HVAC controls, air distribution ducts, and envelope features, and for equipment that requires proper calibration at the time of initial commissioning in order to ensure that operating conditions that could lead to premature system failure are prevented, and optimal operational efficiency is realized. The features that require acceptance testing are listed in Table 2-3 below.

Table 2-3 – Measures Requiring Acceptance Testing

Category	Measure
Envelope	
Fenestration Acceptance	Site-Built Fenestration – Label Certificate Verification
Mechanical	
Outdoor Air	Variable Air Volume Systems Outdoor Air Acceptance Constant Volume System Outdoor Air Acceptance
HVAC Systems	Constant- Volume Single Zone, Unitary A/C and Heat Pumps
Air Distribution Systems	Air Distribution Acceptance
Air Economizer Controls	Economizer Acceptance
Demand Control Ventilation (DCV) Systems	Packaged Systems DCV Acceptance
Variable Frequency Drive Systems	Supply Fan Variable Flow Controls
Hydronic System Controls Acceptance	Valve Leakage Test Hydronic Variable Flow Controls Supply Water Temperature Reset Controls
Mechanical Systems	Automatic Demand Shed Control Acceptance Fault Detection & Diagnostics for DX Units Automatic Fault Detection & Diagnostics for Air Handling & Zone Terminal Units Distributed Energy Storage DX AC Systems Test Thermal Energy Storage (TES) Systems
Indoor Lighting	
Indoor Lighting Control Systems	Automatic Daylighting Controls Acceptance Occupancy Sensor Acceptance Manual Daylighting Controls Acceptance Automatic Time Switch Control Acceptance
Outdoor Lighting	
Outdoor Lighting Control	Outdoor Motion Sensor Acceptance Outdoor Lighting Shut-off Controls <ul style="list-style-type: none"> • Outdoor Photocontrol • Astronomical Time Switch • Standard (non-astronomical) Time Switch

Acceptance testing must be conducted and a Certificate of Acceptance must be completed and submitted before the enforcement agency can issue the Certificate of Occupancy. The procedures for performing the acceptance tests are documented in Reference Nonresidential Appendix NA7.

Compliance with the acceptance requirements for a construction/installation project is accomplished by three main categories of verification and documentation:

- Plan review
- Construction inspection and Installation Certificate verification
- Functional testing and completion of the Certificate of Acceptance

Plan Review

The installing contractor, engineer/architect of record, or owner's agent is responsible for reviewing the plans and specifications and ensuring they conform to the requirements of the Certificate of Compliance and the acceptance requirements applicable to the construction/installation. Plan Review should be done prior to signing a Certificate of Compliance for submittal to plan check, and also prior to completing and signing the Installation Certificate. The person responsible for performing the acceptance tests is required to confirm that the Installation Certificate has been properly completed and signed as a prerequisite to issuance of a Certificate of Acceptance.

To the extent that making changes on paper documents may be less costly as compared to the cost of altering or replacing a completed but non-compliant building energy feature construction/installation, attention should be given to plan review early in the process, and also at critical decision points such as during subcontractor bid proposal review and materials procurement activities. If design or material specification for the construction/installation is changed subsequent to plan check approval by the enforcement agency, revised plans and specifications and Certificates of Compliance must be submitted for approval to the enforcement agency.

Construction Inspection and Installation Certificate Verification

The installing contractor, engineer/architect of record or owner's agent is responsible for performing construction inspection to confirm compliance of the regulated energy features. A properly completed Installation Certificate is required to be submitted or posted at the building site prior to proceeding with functional testing and completion of the Certificate of Acceptance.

All regulated energy features, materials, components, or manufactured devices that were incorporated into the completed construction/installation must be inspected to confirm that they conform to the requirements detailed on the plans and specifications, and the Certificate(s) of Compliance approved by the local enforcement agency. The Installation Certificate must be verified to be properly completed, signed by the person responsible for the construction/installation, and a copy submitted/posted on the job site with the building permits or made available for applicable inspections. Corrective action must be taken if the installation/construction is not in compliance with the plans and specifications and Certificate (s) of Compliance approved by the enforcement agency, or if an Installation Certificate has not been properly completed and posted. Corrective action must be performed prior to proceeding with the acceptance tests and prior to proceeding with completion and submittal or posting of the Certificate of Acceptance.

Functional Testing and Completion of the Certificate of Acceptance

The installing contractor, engineer/architect of record or owner's agent is responsible for insuring that all applicable acceptance requirement procedures identified in the plans and specifications and in Reference Nonresidential Appendix NA7 are conducted. All performance deficiencies must be corrected, and the acceptance requirement verification procedures must be repeated until all specified systems and equipment conform to the required performance criteria,

and the construction/installation is confirmed to be in compliance with the Standards.

The installing contractor, engineer/architect of record, or owner's agent is responsible for documenting the results of the acceptance requirement verification procedures, including paper or electronic copies of the measurement and monitoring results. They are responsible for performing data analysis, calculation of performance indices and cross-checking results with the Standards. They are responsible for issuing a Certificate of Acceptance.

A copy of the Certificate(s) of Acceptance must be posted or made available with the building permit(s) issued for the construction/installation, and must be made available to the enforcement agency for all applicable inspections. If construction on any regulated feature or portion of the building will be impossible to inspect because of subsequent construction, the enforcement agency may require the Certificate(s) of Acceptance to be posted upon completion of that portion. A copy of the Certificate of Acceptance must be included with the documentation the builder provides to the building owner at occupancy as specified in §10-103(b).

Certificate of Acceptance Forms

Acceptance tests are required to be documented using the applicable forms. Table 2-4 lists Envelope, Lighting, and Mechanical Certificate of Acceptance Forms and provides references to applicable sections of the Standards and the Reference Nonresidential Appendix NA7. Copies of the forms are located in Appendix A.

Table 2-4 – Certificate of Acceptance Forms

Component	Form Name	Standards Reference	Reference Nonresidential Appendix
Envelope	ENV-1A (not used)	----	-----
	ENV-2A – Fenestration Acceptance	§10-111 & §116	NA7.4.1
Mechanical	MECH-1A (not used)	----	-----
	MECH-2A – Ventilation Systems - Variable and Constant Volume Systems	§10-103(b)4 & §121(b)2	NA7.5.1.1 NA7.5.1.2
	MECH-3A – Constant-Volume, Single-Zone, Unitary A/C and Heat Pumps	§121(b)2	NA7.5.2
	MECH-4A – Air Distribution Systems	§144(e)	NA7.5.3
	MECH-5A – Air Economizer Controls	§144(k)	NA7.5.4
	MECH-6A – Demand Control Ventilation (DVC)	§121(c)4E	NA7.5.5
	MECH-7A – Supply Fan Variable Flow Controls (VFC)	§144(c)	NA7.5.6
	MECH-8A – Valve Leakage Test	§144(j)6	NA7.5.7
	MECH-9A – Supply Water Temperature Reset	§125(a)9 & 144(j)4	NA7.5.8
	MECH-10A – Hydronic System Variable Flow Control	§125(a)7 & 144(j)1	NA7.5.9
	MECH-11A – Automatic Demand Shed Control Acceptance	§122(h) & 125(a)10	NA7.5.10
	MECH-12A – Fault Detection and Diagnostics for DX Units	§125(a)11	NA7.5.11
MECH-13A – Automatic Fault Detection and Diagnostics for Air Handling and Zone Terminal Units	§125(a)12	NA7.5.12	
MECH-14A – Distributed Energy Storage DX AC Systems Test	§125(a)13	NA7.5.13	
MECH-15A – Thermal Energy Storage (TES) Systems	§125(a)14	NA7.5.14	
Lighting	LTG-1A (not used)	----	-----
	LTG-2A – Lighting Controls	§119(d) and §131(d)	NA7.6.2, 6.3 and 6.4
	LTG-3A – Automatic Daylighting	§119(f)	NA7.6.1
Outdoor Lighting	OLTG-1A (not used)	----	-----
	OLTG-2A – Outdoor Motion Sensor Acceptance	§119(d) and §132(a)	NA7.7.1

2.2.7 HERS Verification – Certificate of Field Verification and Diagnostic Testing

When single-zone, constant volume air distribution systems serving less than 5,000 ft² of floor area have more than 25 percent of the system duct area located in unconditioned space, duct sealing is prescriptively required by §144(k). A third-party inspection and diagnostic test of the duct system must be conducted by a

certified HERS rater to verify that the system air distribution duct leakage is within specifications required by the Standards.

The Energy Commission approves Home Energy Rating System (HERS) providers, subject to the Energy Commission's HERS Regulations. Approved HERS providers are authorized to train and certify HERS raters and are required to maintain quality control over HERS rater field verification and diagnostic testing activities.

<http://www.cheers.org>

<http://www.calcerts.com>

<http://www.cbpc.org>

The certified HERS providers are California Home Energy Efficiency Rating System (CHEERS), California Certified Energy Rating & Testing Services (CalCERTS) and California Building Performance Contractors Association (CBPCA).

The HERS rater must perform field verification and diagnostic testing of the air distribution ducts and transmit all required data describing the results to a HERS provider data registry. The HERS rater must confirm that the air distribution ducts conform to the design detailed on the plans and specifications and the Certificate of Compliance approved by the enforcement agency for the building, and that applicable information on the Installation Certificate and Certificate of Acceptance is consistent with the Certificate of Compliance. The test results reported on the Certificate of Acceptance for the air distribution ducts must be consistent with the test results determined by the HERS rater's diagnostic verification and meet the criteria for compliance with the Standards.

Results from the rater's field verification and diagnostic test must be reported to the HERS provider Data registry, regardless of whether the result indicates compliance. If the results indicate compliance, the HERS provider data registry will make available a registered copy of the Certificate of Field Verification and Diagnostic Testing. A registered copy of the Certificate of Field Verification and Diagnostic Testing must be posted at the building site for review by the enforcement agency, and made available for all applicable inspections. A copy of the Certificate of Field Verification and Diagnostic Testing must be included with the documentation the builder provides to the building owner at occupancy as specified in §10-103(b). A listing of Certificate of Field Verification and Diagnostic Testing forms is given in Table 2-5 below, and copies of the forms are located in Appendix A.

Table 2-5 – Certificate of Field Verification and Diagnostic Testing Forms

Component	Form Name	Standards Reference	Reference Nonresidential Appendix
Mechanical	MECH-4-HERS Air Distribution System Leakage Diagnostic	§10-103(a)5; §144(k)	NA1; NA2

2.2.8 Final Inspection by the Enforcement Agency and Issuance of the Certificate of Occupancy

§10-103(d)2

Local enforcement agencies or their representatives must inspect all new buildings or systems to ensure conformance with applicable codes and standards. The inspector may require that corrective action be taken to bring the construction/installation into compliance. Thus, the total number of inspection visits and the timing of the inspections that may be required before passing the final inspection may depend on the size and complexity of the building or system.

Enforcement agencies are required to withhold issuance of a final Certificate of Occupancy until all compliance documentation is submitted, certifying that the specified systems and equipment conform to the requirements of the Standards.

2.2.9 Occupancy Permit

The final step in the compliance and enforcement process is when an Occupancy Permit is issued by the enforcement agency. This is the green light for the building to be occupied. Although a developer may lease space prior to the issuance of the occupancy permit, the tenant cannot physically occupy the space until the enforcement agency issues the occupancy permit. The building is not legally habitable until the Occupancy Permit is issued.

2.2.10 Occupancy – Compliance, Operating, and Maintenance Information

§10-103(b)

At the occupancy phase, the general contractor and/or design team is required to provide the owner with copies of the energy compliance documents. These include documents for the construction/installation, operating, maintenance, and ventilation information and all documentation that provides instruction for operating and maintaining the features of the building efficiently.

2.3 Compliance Documentation

Compliance documentation includes the forms, reports and other information that are submitted to the enforcement agency with an application for a building permit (Certificate of Compliance). Compliance documentation also includes documentation completed by the installing contractor, engineer/architect of record, or owner's agent to verify that certain systems and equipment have been correctly installed and commissioned (Installation Certificate, and Certificate of Acceptance).

Compliance documentation may include reports and test/inspection results by third-party HERS raters (Certificate of Field Verification and Diagnostic Testing).

Each portion of the applicable compliance documentation must be completed and/or submitted at:

- The building permit phase
- The construction phase
- The testing and verification phase
- The final inspection phase

All submitted compliance documentation is required to be compiled by the builder or general contractor. A copy of the compliance documentation is required to be provided to the building owner so that the end user has information describing the energy features that are installed in the building.

2.3.1 Construction Documents

Construction documentation consists of the plans and specifications for construction of the building or installation of the system, and also includes the energy calculations and the energy compliance (Certificate of Compliance) forms necessary to demonstrate that the building complies with the Standards requirements. The plans and specifications, referred to as the construction documents (or CDs), define the scope of work to be performed by the general contractor and the subcontractors.

2.3.2 Signing Responsibilities

The Certificate of Compliance must be signed by the person responsible for preparation of the plans and specifications for the building and the documentation author. The principal designer is also responsible for the energy compliance documentation, even if the actual work of filling out the forms for the energy compliance documentation is delegated to someone else (the Documentation Author described above).

The Certificate of Compliance is utilized by the building permit applicant, the enforcement agency plans examiner, and the field inspector. This way, the permit application can call the plans examiner's attention to the relevant drawings sheets and other information and the plans examiner can call the field inspector's attention to items that may require special attention in the field. The compliance forms and worksheets encourage communication and coordination within each discipline. The Certificate of Compliance documentation approved by the enforcement agency is required to be consistent with the plans and specifications approved by the enforcement agency.

The Business and Professions Code specifies the requirements for professional responsibility for design and construction of buildings. Energy code compliance documentation certification statements require that a person who signs a compliance document shall be a licensed professional who is eligible under Division 3 of the Business and Professions Code to accept responsibility for the applicable design or construction information contained on the submitted compliance form. The Certificate of Compliance must be signed by an individual eligible to accept responsibility for the design. Installation Certificates and Certificates of Acceptance must be signed by the individual eligible to take responsibility for construction, or their authorized representative.

Applicable sections from the Business and Professions Code (based on the edition in effect as of January 2008), are provided as follows:

5537 Structure exemption

(a) This chapter does not prohibit any person from preparing plans, drawings, or specifications for any of the following:

(1) Single-family dwellings of wood framed construction not more than two stories and basement in height.

(2) Multiple dwellings containing no more than four dwelling units of wood frame construction not more than two stories and basement in height. However, this paragraph shall not be construed as allowing an unlicensed person to design multiple clusters of up to four dwelling units each to form apartment or condominium complexes where the total exceeds four units on any lawfully divided lot.

(3) Garages or other structures appurtenant to buildings described under subdivision (a), of wood framed construction not more than two stories and basement in height.

(4) Agricultural and ranch buildings of wood framed construction, unless the building official having jurisdiction deems that an undue risk to the public health, safety, or welfare is involved.

(b) If any portion of any structure exempted by this section deviates from substantial compliance with conventional framing requirements for wood framed construction found in the most recent edition of Title 24 of the California Code of Regulations or tables of limitation for wood framed 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. Substantial compliance for purposes of this section is not intended to restrict the ability of the building officials to approve plans pursuant to existing law and is only intended to clarify the intent of Chapter 405 of the Statutes of 1985.

5537.2. This chapter shall not be construed as authorizing a licensed contractor to perform design services beyond those described in Section 5537 or in Chapter 9 (commencing with Section 7000), unless those services are performed by or under the direct supervision of a person licensed to practice architecture under this chapter, or a professional or civil engineer licensed pursuant to Chapter 7 (commencing with Section 6700) of Division 3, insofar as the professional or civil engineer practices the profession for which he or she is registered under that chapter.

However, this section does not prohibit a licensed contractor from performing any of the services permitted by Chapter 9 (commencing with Section 7000) of Division 3 within the classification for which the license is issued. Those services may include the preparation of shop and field drawings for work which he or she has contracted or offered to perform, and designing systems and facilities which are necessary to the completion of contracting services which he or she has contracted or offered to perform.

However, a licensed contractor may not use the title "architect," unless he or she holds a license as required in this chapter.

5538. This chapter does not prohibit any person from furnishing either alone or with contractors, if required by Chapter 9 (commencing with Section 7000) of Division 3, labor and materials, with or without plans, drawings, specifications, instruments of service, or other data covering such labor and materials to be used for any of the following:

For nonstructural or nonseismic storefronts, interior alterations or additions, fixtures, cabinetwork, furniture, or other appliances or equipment.

For any nonstructural or nonseismic work necessary to provide for their installation.

For any nonstructural or nonseismic alterations or additions to any building necessary to or attendant upon the installation of those storefronts, interior alterations or additions, fixtures, cabinetwork, furniture, appliances, or equipment, provided those alterations do not change or affect the structural system or safety of the building.

6737.1. Structure exemption

(a) This chapter does not prohibit any person from preparing plans, drawings, or specifications for any of the following:

(1) Single-family dwellings of wood framed construction not more than two stories and basement in height

(2) Multiple dwellings containing no more than four dwelling units of wood framed construction not more than two stories and basement in height. However, this paragraph shall not be construed as allowing an unlicensed person to design multiple clusters of up to four dwelling units each to form apartment or condominium complexes where the total exceeds four units on any lawfully divided lot.

(3) Garages or other structures appurtenant to buildings described under subdivision (a), of wood framed construction not more than two stories and basement in height.

(4) Agricultural and ranch buildings of wood framed construction, unless the building official having jurisdiction deems that an undue risk to the public health, safety or welfare is involved.

(b) If any portion of any structure exempted by this section deviates from substantial compliance with conventional framing requirements for wood framed construction found in the most recent edition of Title 24 of the California Code of Regulations or tables of limitation for wood framed 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 charge of, a licensed engineer, or by, or under the responsible control of, an architect licensed pursuant to Chapter 3 (commencing with Section 5500). The documents for that portion shall bear the stamp and signature of the licensee who is responsible for their preparation.

6737.3. Exemption of contractors

A contractor, licensed under Chapter 9 (commencing with Section 7000) of Division 3, is exempt from the provisions of this chapter relating to the practice of electrical or mechanical engineering so long as the services he or she holds himself or herself out as able to perform or does perform, which services are subject to the provisions of this chapter, are performed by, or under the responsible charge of a registered electrical or

mechanical engineer insofar as the electrical or mechanical engineer practices the branch of engineering for which he or she is registered.

This section shall not prohibit a licensed contractor, while engaged in the business of contracting for the installation of electrical or mechanical systems or facilities, from designing those systems or facilities in accordance with applicable construction codes and standards for work to be performed and supervised by that contractor within the classification for which his or her license is issued, or from preparing electrical or mechanical shop or field drawings for work which he or she has contracted to perform. Nothing in this section is intended to imply that a licensed contractor may design work which is to be installed by another person.

2.4 Roles and Responsibilities

Effective compliance and enforcement requires coordination and communication between the architects, engineers, lighting and HVAC designers, permit applicant, contractors, plans examiner and the field inspector.¹ This manual recommends procedures to improve communication and, therefore, compliance with the Standards.

The building design and construction industry, as well as enforcement agencies are organized around engineering disciplines.² The design of the building's electrical and lighting system is typically the responsibility of the lighting designer, electrical engineer or electrical contractor. This person is responsible for designing a system that meets the Standards, producing the plans and specifications, and for completing the compliance forms and worksheets. In larger enforcement agencies, an electrical plans examiner is responsible for reviewing the electrical plans, specifications and compliance documents and an electrical field inspector is responsible for verifying the correct installation of the systems in the field. This same division of responsibility is typical for the mechanical systems: the mechanical plans examiner is responsible for reviewing the mechanical plans; and the mechanical field inspector is responsible for verifying correct construction in the field. For the building envelope, the architect is typically responsible for designing the building and completion of the forms, the enforcement agency is responsible for reviewing the design and forms and the enforcement agency field inspector is responsible for verifying the construction in the field.

Unless the whole building performance approach is used, the compliance and enforcement process can be completed separately for each discipline. This enables each discipline to complete its work independently of others. To facilitate this process, compliance forms have been grouped by discipline. These groupings include Standards worksheets for calculations and a summary form which includes a checklist.

¹ For small projects, an architect or engineer may not be involved and the contractor may be the permit applicant.

² Small building departments may not have this type of specialization.

2.4.3 Permit Applicant Responsibilities

The permit applicant is responsible for:

1. Providing information on the plans and/or specifications to enable the enforcement agency to verify that the building complies with the Standards. It is important to provide all necessary detailed information on the plans and specifications. The plans are the official record of the permit. The design professional is responsible for certifying that the plans and specifications are consistent with the energy features listed on the Certificate of Compliance, and the design is in compliance with the Standards.
2. Performing the necessary calculations to show that the building or system meets the Standards. These calculations may be documented on the drawing or on the worksheets provided in the manual and supported when necessary with data from national rating organizations or product and/or equipment manufacturers.
3. Completing the Certificate of Compliance. The Certificate of Compliance is a listing of each of the major requirements of the Standards. The summary form includes information from the worksheets and references to the plans where the plans examiner can verify that the building or system meets the Standards.

2.4.4 Plans Examiner Responsibilities

The plans examiner is responsible for:

1. Reviewing the plans and supporting material to verify that they contain the necessary information for a plan check.
2. Checking the calculations and data contained on the worksheets.
3. Indicating by checking a box on the summary forms that the compliance documentation is acceptable.
4. Making notes for the field inspector about which items require special attention.

2.4.5 Field Inspector Responsibilities

The field inspector is responsible for:

1. Verifying that the building or system is constructed according to the plans.
2. Checking off appropriate items on the summary form at each relevant inspection.

The Certificate of Compliance may be used by the building permit applicant, the plans examiner and the field inspector. This way, the permit application can call the plans examiner's attention to the relevant drawings sheets and other information and the plans examiner can call the field inspector's attention to items that may require special attention in the field. The compliance forms and worksheets encourage communications and coordination within each discipline.