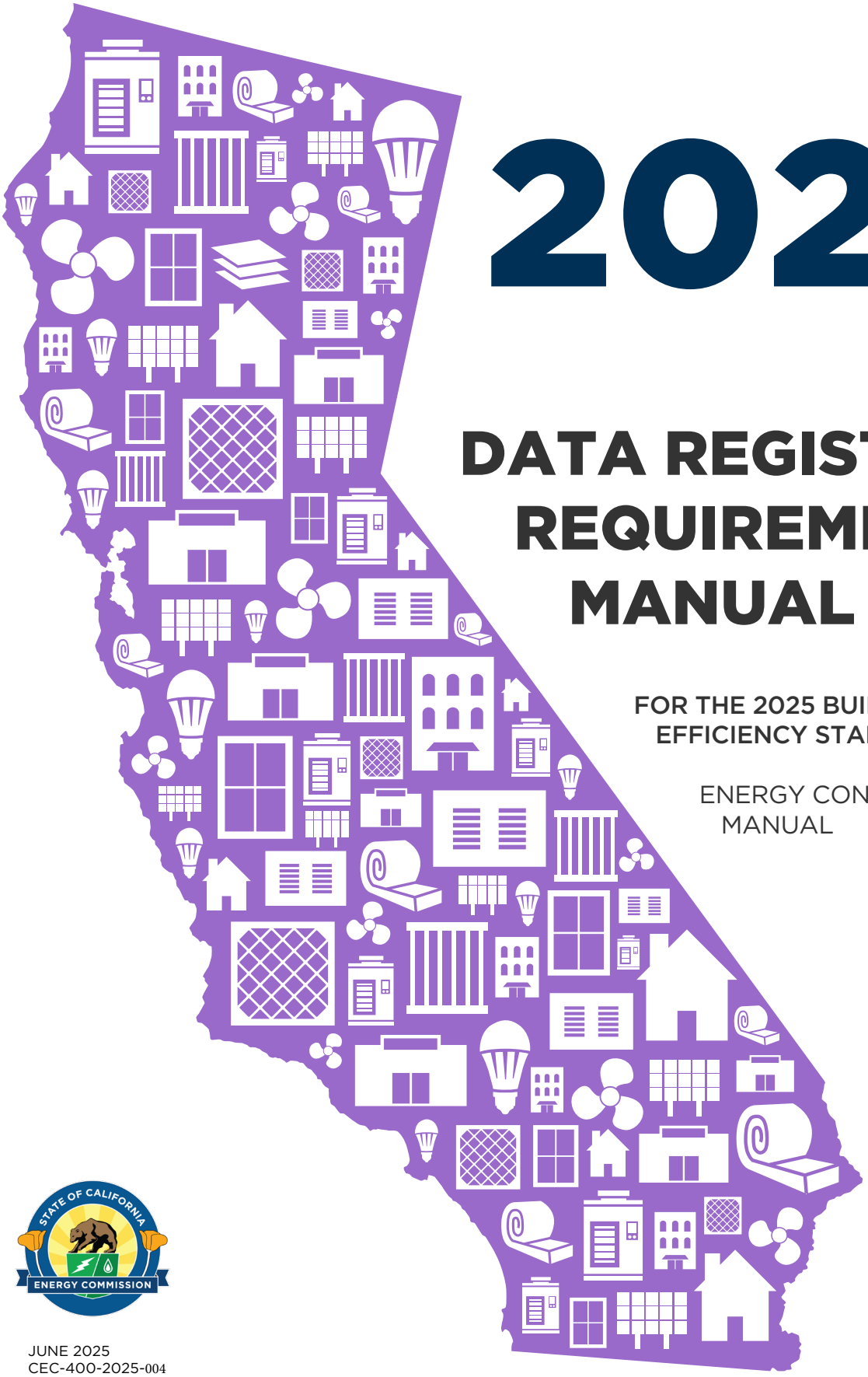

2025

DATA REGISTRY REQUIREMENTS MANUAL

FOR THE 2025 BUILDING ENERGY EFFICIENCY STANDARDS

ENERGY CONSERVATION MANUAL

JUNE 2025
CEC-400-2025-004

CALIFORNIA ENERGY COMMISSION
Gavin Newsom, Governor

CALIFORNIA ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

California Energy Commission

STAFF REPORT

Data Registry Requirements Manual

FOR THE 2025 BUILDING ENERGY EFFICIENCY STANDARDS

June 2025 | CEC-400-2025-004

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DISCLAIMER

This manual is intended to provide guidance on how to comply with the *2025 Building Energy Efficiency Standards*. However, use of or compliance with the guidance does not assure compliance with the *2025 Building Energy Efficiency Standards,* and it is the responsibility of the user of this document to ensure compliance with the *2025 Building Energy Efficiency Standards* and all other applicable laws and regulations. The California Energy Commission, the State of California, its employees, contractors, and subcontractors make no warrant, express or implied, and assume no legal liability regarding the use of this manual; nor does any party represent that the uses of this information will not infringe upon privately owned rights.

ACKNOWLEDGMENTS

The Building Energy Efficiency Standards (Energy Code) were first adopted and put into effect in 1978 and are updated periodically. The Building Energy Efficiency Standards are a unique California asset and have benefitted from the conscientious involvement and enduring commitment to the public good of many people and organizations along the way. The 2025 Energy Code development and adoption process continued that long-standing practice of maintaining the Energy Code with technical rigor, challenging but achievable design and construction practices, public engagement, and full consideration of stakeholder knowledge and opinions. The 2025 Energy Code was updated through the dedicated work of California Energy Commission (CEC) staff and consultants working under contract to the CEC.

CEC Efficiency Division staff would like to acknowledge Commissioner Andrew McAllister, his adviser, Bill Pennington, Efficiency Division Director Michael Sokol, and Efficiency Division Deputy Director Will Vicent for their unwavering leadership throughout the standards development.

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ABSTRACT

Public Resources Code Section 25402 was enacted in 1975 as part of the enabling legislation establishing the California Energy Commission (CEC) and its mandates. This section requires the CEC to adopt, implement, and periodically update the *Building Energy Efficiency Standards* (Energy Code) for residential and nonresidential buildings. Accordingly, the CEC has adopted and periodically updated the Energy Code to ensure that building construction, system design, and installation meet energy efficiency and other state climate action goals. The CEC adopted the 2025 Energy Code on September 11, 2024. The California Building Standards Commission approved the 2025 Energy Code on December 17, 2024. Statewide enforcement of the 2025 Energy Code begins January 1, 2026.

Public Resources Code Section 25402.1(e) requires the CEC to certify an energy conservation manual no later than 180 days after the California Building Standards Commission approves the Energy Code to help designers, builders, and contractors of residential and nonresidential buildings comply with the updated Energy Code during design, construction or installation, and field verification. The energy conservation manual is not an adopted regulation but instead is certified by the CEC to provide guidance to the building industry.

The *Data Registry Requirements Manual* is one portion of the energy conservation manual, and the intent is to give a data registration provider a clear detailed description of how to comply with the Energy Code and Reference Joint Appendix 7. This *Data Registry Requirements Manual* provides additional detailed information and explanations regarding the functional and technical aspects of the requirements given in Reference Joint Appendix 7. This manual is intended as a resource for data registry providers to aid in the design and implementation of software procedures and user interface features for their data registries.

Keywords: Data Registry Requirements Manual, DRRM, data registry requirements, compliance document, document registration, Building Energy Efficiency Standards, Energy Code, California Energy Commission, CEC, ECC, certificate of compliance, CF1R, certificate of installation, CF2R, certificate of verification, CF3R, LMCC, LMCI, LMCA, LMCV, NRCV, certificate of acceptance, NRCA, digital signature, electronic signature

Alhabibi, Haider and Armando Ramirez. 2025. *Data Registry Requirements Manual.* California Energy Commission. Publication Number: CEC-400-2025-004.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 Introduction

1.1 Purpose and Scope

Residential and nonresidential data registries provide services to authorized users to produce, register, retain, and distribute copies of the Building Energy Efficiency Standards (Energy Code) compliance documents when required by Title 24, Part 6. The *2025 Reference Appendices,* Joint Appendix 7 (JA7), specifies required functional and technical elements including user data input and validation, document access, and other registration provider responsibilities.

This *Data Registry Requirements Manual* (DRRM) offers additional detailed guidance to registration providers regarding requirements given in JA7. Providers may refer to this DRRM for guidance on implementation of a registry's software procedures and user features.

At the time of publication of this DRRM, there are no approved nonresidential data registries. At such time as the California Energy Commission (CEC) approves a nonresidential data registry, additional information will be included in this DRRM as a similar resource for implementing nonresidential data registries. The text in this manual will typically default in preference to a residential data registry that will be developed and operated by a CEC-approved Energy Code Compliance Provider (ECC-Provider).

1.2 Documents Relied Upon

This *Data Registry Requirements Manual* relies upon information found in the following documents:

a. *2025 Building Energy Efficiency Standards for Residential and Nonresidential Buildings.* California Title 24, Part 6, and Associated Administrative Regulations in Part 1. CEC 400-2025-010-F

b. *2025 Reference Appendices for Residential and Nonresidential Buildings.* California Title 24, Part 6, and Associated Administrative Regulations in Part 1. CEC-400-2025-010-AP

c. *2025 Single-Family Residential Alternative Calculation Method Reference Manual.* California Title 24, Part 6, and Associated Administrative Regulations in Part 1. CEC-400-2025-006

d. *2025 Nonresidential and Multifamily Alternative Calculation Method Reference Manual.* California Title 24, Part 6, and Associated Administrative Regulations in Part 1. CEC-400-2025-007

e. *2025 Single-Family Residential Compliance Manual.* California Title 24, Part 6, and Associated Administrative Regulations in Part 1. CEC-400-2025-005

f. *2025 Multifamily Compliance Manual.* California Title 24, Part 6, and Associated Administrative Regulations in Part 1. CEC-400-2025-009

g. *2025 Nonresidential Compliance Manual.* California Title 24, Part 6, and Associated Administrative Regulations in Part 1. CEC-400-2025-008

1.3 Definitions for Terminology Used in This Manual

Definitions for some terms used in this *Data Registry Requirements Manual* may be found in the following documents as detailed below:

- Title 24, Part 1, Standards Section 10-102
- Title 24, Part 6, Standards Section 100.1
- Title 24, Part 6, Reference Joint Appendix Section JA1
- Title 24, Part 6, Reference Joint Appendix Section JA7.2
- Title 24, Part 6, Reference Residential Appendix Section RA2

2 Standardized Data and Electronic Documents

2.1 Overview

The Energy Code is administered and enforced using compliance documents, described in Title 24, Part 1, Section 10-103(a), specific to each of the phases of a construction project.

- The *certificate of compliance* applies to the design phase of the project and is submitted to the enforcement agency by the person responsible for the building/system design at the time of application for the building permit.
- The *certificate of installation* applies to the installation/construction phase of the project and is posted or made available to the enforcement agency by the person responsible for the installation/construction after the installation/construction has been completed.
- The *certificate of acceptance* is applicable to the acceptance testing phase of a nonresidential project and is posted or made available to the enforcement agency by the acceptance test technician who performed the acceptance test.
- The *certificate of verification and diagnostic testing* is applicable to the ECC verification phase of the project and is posted or made available to the enforcement agency by the ECC Rater who performed the verification services.

To standardize the documents created by various data registries and multiple compliance software tools, the 2025 Energy Code specifies use of standardized schemas for each of the compliance documents. The standards also require that documentation created by permit applicants, building designers, building construction contractors, and ECC Raters shall be registered by a data registry approved by the CEC before submittal of the documents to the enforcement agency. Adobe Acrobat Portable Document Format (PDF) format compliance documents are produced by a single-point web service maintained by the CEC referred to as the Compliance Report Generator (also called Report Generator or RG). The RG validates adherence to the standardized schemas for each of the compliance documents as part of document registration.

Note: The requirement for registration of nonresidential compliance documents is contingent upon approval of a nonresidential data registry by the CEC as specified by Energy Code Section 10-109.

2.2 Compliance Report Generator (RG) Web Service

The RG receives standardized document data exchange files from CEC-approved software applications and data registries and produces the document registration package required to complete the registration of compliance documents in data registries. The RG provides standardized reporting services for the following:

- California Building Energy Code Compliance Residential (CBECC-Res) compliance software and all third-party vendor users of CBECC-Res.
- CBECC Nonresidential and Multifamily (CBECC) compliance software and all third-party vendor users of CBECC.

- Residential Data Registry compliance document registration software operated by Residential Registration Providers that are also ECC-Providers.
- Nonresidential Data Registry compliance document registration software operated by Nonresidential Registration Providers.

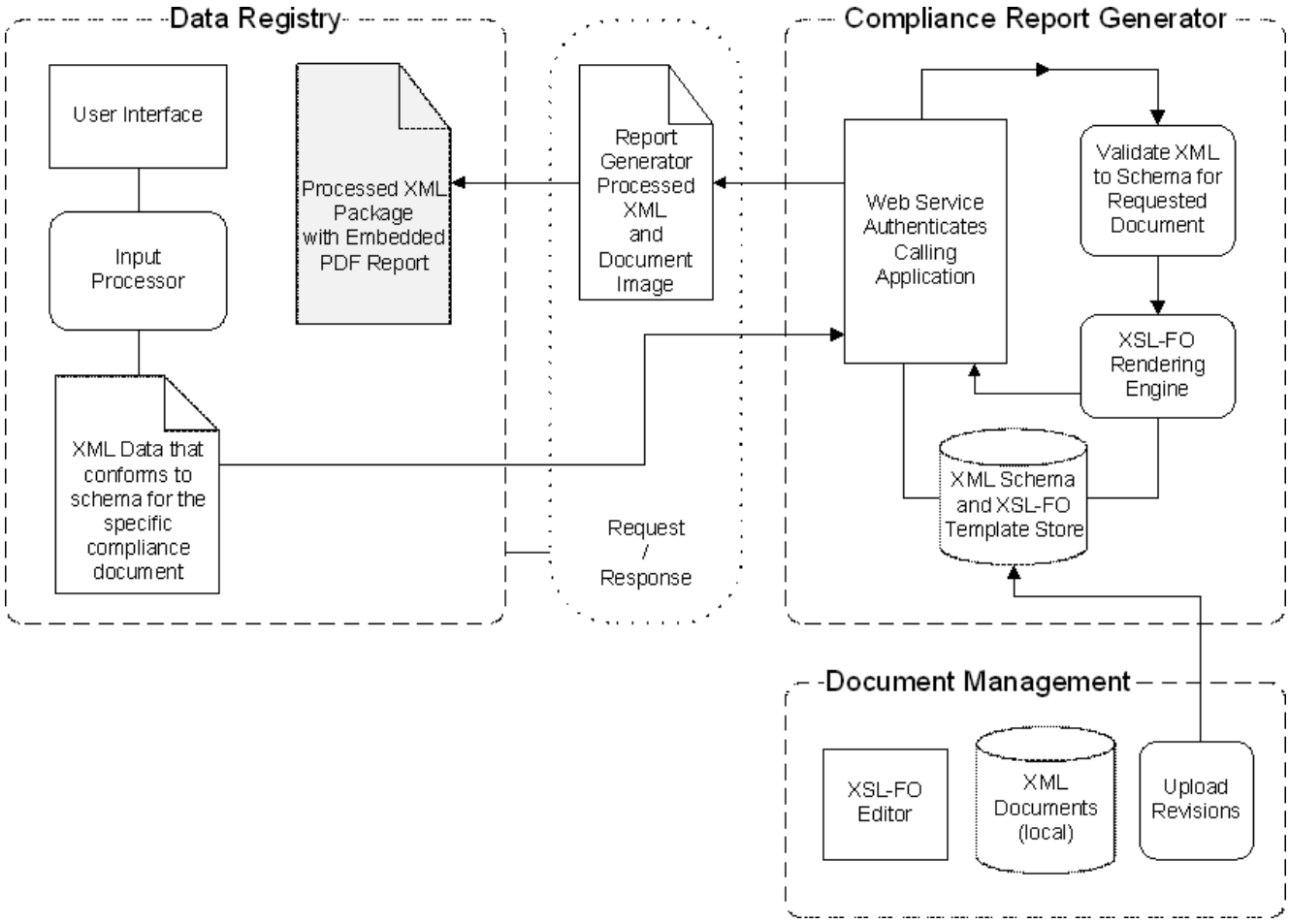
Note: The requirement for registration of nonresidential compliance documents is contingent upon approval of a nonresidential data registry by the CEC as specified by Energy Code Section 10-109.

The RG is a web-based, service-oriented application implemented using the Microsoft Windows Communication Foundation, a distributed computing framework that runs in Windows IIS 7 (Internet Information Service). It requires a Windows Server 2008 (minimum) operating environment and is accessed via specific Uniform Resource Identifiers (URI) that allow remote clients to interact with the instance of the service that is requested. A Secure Socket Layer (SSL) connection is required and provides communication security over the Internet.

The RG is implemented using representational state transfer (ReST) architecture style principles and is accessed using a single Hypertext Transfer Protocol (HTTP) POST method call. This means that the instructions and data sent to the server in the URI request will be interpreted and processed to return a single response in one round trip from the client to the server and back. The request and response data are streams. No other type of access is implemented or planned.

The RG application and connected database can run on a properly configured Windows Server (2008 or later). The current implementation is deployed through infrastructure as a service (IaaS), a basic cloud computing service model. In this case, which is the most common type, the "computer" on which the application is running is a "virtual machine" that is controlled by a "hypervisor." The hypervisor is a software platform that controls pools of computing resources for processing, storage, and networking.

Figure 2-1: Process Flow Diagram for the Data Registry Interface With RG



Source: California Energy Commission

2.3 RG Versioning Procedures

To allow changes to the standardized compliance document schemas and XSL templates used by the RG, the deployment of the RG web service is segregated into separate instances of the RG operating on separate servers at separate URLs as follows:

1. RG Development Site

The RG development site is accessible only to CEC staff and technical contractors. This instance of the RG is used for initial testing of new and revised XML schema definition language (XSD) and Extensible Stylesheet Language (XSL) files used by the RG prior to making the revised files available to the data registries.

2. RG Test Site

The RG test site is accessible by any registration provider that has been approved by the CEC or any prospective registration provider being considered for approval by the CEC. This instance of the RG is used for testing data registry user interfaces and data registry document registration results as part of the data registry approval process. This site is also used for vetting revisions to XSD and XSL files before release of new RG software versions to the RG production site.

3. RG Production Site

The RG production site is accessible by any CEC-approved data registry. This instance of the RG is used for producing documentation that can be registered and used for submittal to enforcement agencies.

Revisions to existing standardized document schemas or XSL templates require the following procedure. To provide adequate functional testing by technical staff responsible for RG maintenance and allow vetting of the revisions by participating registration providers before deployment of the revised files for use for production of registered compliance documents.

2.3.1 Version Scope and Numbering Convention

CEC staff and technical consultants will communicate revisions with registration providers, to identify the affected file names and changes. Once the version scope has been determined and documented, any further changes to the scope should not be made except as described in Section 2.3.5. Otherwise, revision scopes will follow the steps that begin with Section 2.3.6.

The new version should be identified by incorporating the schema version number determined according to the policies described in Section 2.5.4. The numbering convention and examples are described below.

Table 2-1: RG and Document Schema Version Numbering Convention

Text included in RG URL	Title 24 Energy Code Version Year	RG and Schema Major Version Number	RG and Schema Minor Version Number
DocsV	2025	x	xxx

Source: California Energy Commission

Examples: DocsV2025.x.xxx

The numeric digits represented in the numbering convention should be sequential, beginning with DocsV2025.1.000 for the first major version, progressing through DocsV2025.1.999 for subsequent minor versions. For the second major version, the numbering begins with DocsV2025.2.000 progressing through DocsV2025.2.999 for subsequent minor versions, etc. The major version is a numbered series starting at 1 with no leading zeroes and no limit on the number of digits. The minor version is fixed at three digits with the leading zeroes showing as applicable (for example, 001, 002, 003, etc.) Note: Major and minor versioning policies are described in Section 2.5.4.

When updates are made to the Energy Code, the year associated with the new update will be incorporated into the numbering convention (for example, for the compliance documents applicable to the 2025 update to the Title 24, Part 6, Standards, use DocsV2025.x.xxx).

2.3.2 Version Development Stage

Once the scope of a batch of revisions for a new version has been identified and documented, CEC staff and technical consultants should coordinate to make the changes to all applicable files.

Changes could include plain-language data instructions ("*pseudocode*") and layouts in document design files, XSD schema files, and XSL template files. Any XSD or XSL files used directly by the RG that are changed must be inspected using the RG development site to confirm the data validation and ensure the functionality is correct for all affected documents. When testing confirms all changes are validating and the functionality conforms to expectation, these new files can be deployed to the RG testing site for vetting by the data registries.

2.3.3 Version Testing Stage

Release of a new batch of revisions to the RG testing site should be accompanied by communications to all affected data registry providers giving a listing of all changed files, a description of the changes, and the RG Docs version number for the batch of revisions.

Release of a new batch of revisions to the RG testing site should also be accompanied by a commit (i.e., a summary of itemized changes) of the revised files to the CEC's repository, hosted at GitHub.com, thus making the revised files available for use by data registry providers and providing a method for revision tracking and version control. Additional information about the repository and related content is given in Section 2.5 and Appendix B.

Furthermore, the internet address (uniform resource locator, or URL) for the testing site of the new version should be revised to incorporate the updated RG Docs Version number for the new batch as shown in the examples below. This URL for the testing site should remain the same throughout the vetting/testing of the new version and remain the same after the vetted new version has been deployed/released to the RG production site. The URL for the test site should remain active/available during the testing and after release of the new version to the production site. When a subsequent newer version must be released to the RG testing site, the URL that is made obsolete by the release of the new testing site version should be removed from availability.

Backward compatibility for use of previous versions of the files used by the RG (previous RG Docs version numbers) will not be maintained. All calls to the RG will be required to use the current URL, thus will be required to use only the current versions of the XSD and XSL files deployed to the RG.

An example URL for RG Docs Version number DocsV2025.1.000 follows:

https://beesreporting.energy.ca.gov/DataRegistryTest**DocsV2025.1.000**/DRReportingService.svc/

When the next batch of revisions is released, the URL should be **incremented**, thus:

https://beesreporting.energy.ca.gov/DataRegistryTest**DocsV2025.1.001**/DRReportingService.svc/

Data registry providers should implement the new revisions into their data registry software. Then they should perform testing to confirm their revised XML data files validate and function correctly with the new RG Docs version files. If further revisions or corrections to any of the new RG Docs version files are needed, further-revised files can be deployed to the RG testing site and committed to the CEC repository described above in Section 2.3.3 such that testing can continue using the further-revised files. Alternatively, files for which testing found additional problems may be removed entirely from the version batch. Regardless of whether there were further changes made to files in the version batch, the RG Docs version number should not be changed for the version

batch in process. A testing period of two weeks is recommended to allow sufficient time for the registration providers to implement the revisions and test them. Testing periods longer or shorter than two weeks may be used if needed and agreed to by the CEC staff and affected data registry providers. When vetting/testing by the data registries of the new RG Docs version is completed, the files can be deployed to the RG production site.

2.3.4 Version Deployment to Production Stage

Release of a new batch of revisions to the RG production site should be accompanied by communications to all affected data registry providers advising them that the production site will be updated to use the new RG Docs version. A final listing of all changed files, including a description of the changes, and the RG Docs version number for the batch of revisions will be posted on the CEC repository for reference. The final list of changes may be the same information as what was distributed when the batch was released to the test site. But if files were removed from the revision batch, or if there were additional modifications made during vetting/testing with the registries, this list of changes should be updated to list only the changes that were made.

The URL for the RG production site should never change. When a new RG Docs version is released to the production site, the tested/vetted version at the test site is committed to the instance of the RG available at the production site URL.

2.3.5 Urgent or Emergency "Patch" Modifications to RG Versioning Procedures

When there is an urgent need to make modifications to the scope of the revisions in an RG versioning procedure for which work is already in progress by CEC staff or technical consultants, CEC project managers must determine whether to modify the scope of the revisions contained in the version. Consideration must be made for the type of urgency and consequences of interrupting the process flow for the current versioning work. Three general categories of considerations that apply to determining the approach for these urgent situations are summarized below in Sections 2.3.5.1, 2.3.5.2, and 2.3.5.3.

2.3.6 Modifying the Scope of a Version in the Development Stage

In the beginning of the development stage (i.e., DocsV2025.1.000), before the schemas have been generated, negative effects to the versioning procedure are minimal. At this step CEC staff can modify the written scope for the batch of revisions in the version and will distribute the revised scope to the persons affected by the change.

In the later parts of the development stage (e.g., DocsV2025.1.002), all changes for a batch have been made to the base schema and the document schemas, and the schemas have been committed to the development site. At this stage, work may have begun on updating the XSL documents, so there may be significant negative effects if changes are made to the completed files included in the batch for the versioning procedure. At this point, the new schema version is "locked in," but the new version has not been released to the providers for testing, so negative impacts affect only CEC staff and technical contractors assigned to perform the revision for the new version. Possible negative effects include added project costs of rework and confusion or errors from tracking changes between versions. Project time and budget may be lost when changing the scope of a version in the later parts of development since the XSL and XSD files may

have to be revised again, and the schemas will have to be regenerated before XSL work can resume.

In the later parts of development, when a modification to the scope of a version is necessary, CEC changes the written scope and specification of the batch of revisions contained in the new version and distributes the revised scope information to the persons affected by the change.

2.3.7 Modification of the Scope of a Version in the Testing Stage

During testing, all changes for the batch of revisions have been completed for the base schema, document schemas, and the XSL documents, all of which have been committed to the testing site and are available to the data registry providers to use. The data registry providers may have invested their time and resources into incorporating the revisions into their user interfaces and other document registration software processes. Therefore, the possible negative impacts affect CEC staff, technical contractors assigned to perform the revision work, and data registry provider technical staff. Negative impacts to data registry providers increase in proportion to their completion status and the complexity of the scope of the revisions. Negative effects to all parties include added project costs of rework and confusion or errors from tracking changes between versions. Significant project time and budget may be lost when changing the scope of a version in the testing stage as the change affects the Data Registry User Interface software, XSL and XSD files. Moreover, the schemas will have to be regenerated before XSL work can resume.

When determining whether or not to allow a modification to the scope of the version during the testing phase, the CEC project manager must take into account the schema versioning policies described in Section 2.5.4. If evaluation finds the request for a nonbackward-compatible change to be trivial or too disruptive, it will be added to the list of changes for the next regular major release. If evaluation finds the request for a non-backward compatible change to have a high issue severity or a very low disruptiveness, then final approval of the nonbackward-compatible change requires input from representatives of all stakeholders that use the affected schemas. If approved, the change will be implemented.

In the testing stage, when a change to the scope of a version is necessary, CEC staff modifies the written scope and specification of the batch of version revisions and distributes the revised scope information to the persons affected by the change in scope.

2.3.8 Deploying an Emergency "Patch" to a Version in the Production Stage

In the production stage, all revisions for the version have been completed, the changes have been implemented and vetted by the data registry providers, and the new version has been committed to the production instance of the RG. Thus, the completed version is "live" and available for public use for completing compliance documentation for posting or making available to enforcement agencies. When an issue or error that requires a revision is found in the production version of the RG, the urgency can be extreme since it may prevent the progress or approval of building projects in California.

Determining the correct response to a request for an urgent revision to the production version of the RG must consider the schema versioning considerations described in Section 2.5.4. When the severity of the error is major, a patch may be warranted to resolve the issue. A patch could be an

immediate repair that is only a temporary solution or may only partially resolve a problem. Patches to the production version must be backward compatible.

Patches should be implemented only when approved by the CEC project manager. Patches may be informal or temporary changes made by data registries to the user interfaces or to the document registration procedures. As an alternative, the patch may be a change to the production version of the RG software made by CEC or technical contractors. After deploying a patch, immediate follow-up actions by CEC staff should document the details of the patch that was implemented. Then the needed revision work that addresses the issue completely should be initiated according to the versioning procedures described in Sections 2.3.1 through 2.3.4 and Section 2.5.4.

2.3.9 Patches to RG Software

The following information should be compiled by the responsible CEC project manager and made available to technical consultants or staff when determining to make an emergency patch to the production version of the RG software:

a. XML data file(s) that were sent to the RG that triggered the problem that requires the patch. Alternatively, provide the date/time of the error to enable referencing the XML in the RG log.

b. A written description of the problem.

c. If applicable, a written description of the proposed fix submitted by the person requesting the patch (for example, a solution may have been proposed by a data registry technical person or the CEC's responsible technical contractor or staff).

d. Written direction from the responsible CEC project manager directing the technical contractor or staff to proceed with the patch.

Patches to the production version of the RG software must be backward compatible. If the resolution requires a revision that is not backward compatible, the RG software must be revised according to the versioning procedures described in Sections 2.3.1 through 2.3.4 and Section 2.5.4. If another versioning procedure is in progress, refer to Sections 2.3.5.1 or 2.3.5.2 for further direction.

2.3.9.1 Patches to Data Registry Software

When a temporary patch to a data registry's user interface or document registration software can be used to fix severe problems associated with the production version of the RG software, the following information should be compiled by the CEC project manager and made available to the applicable data registry technical staff, CEC technical consultants, and CEC staff:

a. XML data file(s) that were sent to the RG that triggered the problem that requires the patch. Alternatively, provide the date/time of the error to enable referencing the XML in the RG log.

b. A written description of the problem.

c. If applicable, a written description of the proposed fix submitted by persons requesting the patch (for example, a solution may have been proposed by a data

registry technical person or the CEC-responsible technical contractor or staff).

d. Written direction from the responsible CEC project manager directing data registry staff to proceed with the patch.

Patches to Data Registry software that uses the production version of the RG software must be backward compatible. If the issue resolution requires a revision that is not backward compatible, the RG software must be revised according to the versioning procedures described in Sections 2.3.1 through 2.3.4, and Section 2.5.4. If another versioning procedure is in progress, refer to Sections 2.3.5.1 or 2.3.5.2 for further direction.

2.4 Compliance Document Design Files

Appendix A contains a listing of the compliance document design files utilized for 2025 Energy Code compliance document development. The CEC project manager may grant access privileges for Data Registry Providers, CEC staff, and technical contractors to view the current versions of each file in the relevant file repository hosted at the Compliance-Documents-Mockups.

The compliance document design files listed in Appendix A specify the basic requirements for the document data content and the graphical representations of the data reported on the document. These basic requirements guide the creation of the compliance document schemas and XSL files used by the RG. The information contained in each of the compliance document design files is organized into three sections/categories which are described in Section 2.4.1, Section 2.4.2, and Section 2.4.3. Some low-rise multifamily compliance documents are organized in a format that differs from single-family documents, which is outlined in Section 2.4.4. An example of the contents of a compliance document design file is given at the end of Appendix A.

2.4.1 Graphical Layout

For single-family and low-rise multifamily compliance documents, the first section in the design file is the graphical layout section. The graphical layout section describes the graphical representations for the sections contained in the completed compliance document, but without any representation of user-specific data that would otherwise be required to be shown in the data fields on a completed document. This graphical layout, along with the user instructions described below in Section 2.4.2, is published (for information only) on the CEC website in conjunction with the publishing of the *Residential Compliance Manual*.

2.4.2 User Instructions

The second section in the compliance document design file is the user instructions section, which is provided to educate users of the data registries and simplify data collection by users in the field. The instructions are organized according to the section and field numberings used in the relevant sections of the graphic described in Section 2.4.1.

2.4.3 Data Field Definitions and Calculations (Pseudocode)

The third section in the compliance document design file is the Data Field Definitions and Calculations (pseudocode) section. Specification for allowable values for data fields, and specification for calculations and rules for allowable data responses are shown in data fields to guide the creation of XML Schemas and XSL templates required for RG functionality.

2.4.4 Low-Rise Multifamily Documents

There are two types of design files for LRMF documents. For low-rise multifamily certificates of compliance, excepting the LMCC-MCH-02-E, the graphical layout and data field definitions and calculations are contained in a Microsoft Excel spreadsheet called the "Excel mockup." The design files for the LMCC-MCH-02-E and all registered certificates of installation (LMCI) resemble the single-family design files. Additionally, non-registered LMCI types use the Excel design files.

The LRMF design files will be available to data registry providers, CEC staff, and technical contractors and will not be published on the CEC website. More detailed information regarding the data field definitions and calculations within the mockup is in Section 3.3.3.

2.4.5 Versioning

The latest version of a compliance document design file (MS Word docx format for single family, and MS Word docx and MS Excel xlsx for low-rise multifamily) is maintained by the CEC Standards Development staff. RG software functional issues that require resolution, and the revisions implemented to resolve the issues are tracked by CEC staff. When new RG Doc version revisions are completed, and the new RG Docs version is posted to the RG test site, the new versions of the compliance document design files are committed to the repository for reference by data registry technical staff. The CEC project manager may grant access to view the contents of the file repository to persons other than data registry provider staff to enable relevant activities such as Energy Code stakeholder education materials preparation and Energy Code update reviews. If needed, previous versions of a compliance document design file can be recalled for viewing using the version control functionality of the repository.

2.5 Compliance Document XML Schema Definitions (XSD)

Appendix B contains a listing of the XML Schema files used for the 2025 Title 24, Part 6, compliance document development. The CEC manager may grant access privileges for data registry providers, CEC staff, and technical contractors to view the current versions of each file in the relevant code repositories hosted at CEC repository.

The schema files provide the basis for determining whether data submitted to the RG for production of PDF compliance documents are valid. Data registries are expected to configure their user interfaces to receive valid data from authorized users of the registries. Data registries are expected to perform a validation check of the document data before sending a call to the RG for a PDF report for the document. The RG database contains a copy of the current version of the schema for each compliance document and uses the current schema file to check for valid data as a prerequisite to processing requests from data registries for a completed PDF report.

Version control is an essential means of recording the state of a software source code at different times during the development and revision phases. It allows rolling back to previous versions when needed. For example, if a defect is discovered in XML schemas that have been released, it is desirable to be able to return to a previous version that does not have the defect. Section 2.5 describes the inputs, intermediary products, final XML schema files, and how versioning is applied to them.

2.5.1 XML Schemas for SDD Base Set and Compliance Document Schemas

2.5.1.1 Purpose

The SDD base schemas and compliance document schemas provide data specification for the XML files required when a compliance document is registered. The XML schemas are then used to validate XML files sent to the RG and sent to the CEC document repository.

2.5.1.2 XML Schema Version Attribute

Every SDD base set schema and compliance document schema has a version attribute that contains 4 digits that refers to the Title 24 code cycle year, e.g., 2025, followed by a period and a major version number followed by a period separator followed by a three-digit minor version number for releases during a code cycle.

Note that 2025.1.000 will be used in the remainder of this section to represent a major schema version.

Every compliance document schema also has in the payload element an attribute called ComplianceDocumentSchemaVersion. When a compliance document XML file is sent to the RG, it is validated against the latest released version of the schemas. When validation is complete, the RG stores the schema version used to validate the XML in the ComplianceDocumentSchemaVersion attribute.

2.5.1.3 GitHub Version Control

The schemas are stored in GitHub repositories. If needed, previous versions of an XML schema can be recovered.

2.5.2 Policies for Major and Minor Versioning

2.5.2.1 Major Versioning Policy

Assuming there are changes that need to be incorporated into the schemas more frequently than the Energy Code three-year update cycle, major version releases may occur on a regular schedule such as once a year. The CEC staff will determine the schedule and inform stakeholders when versions are scheduled for release.

2.5.2.2 Backward Compatible Minor Version Policy

Revisions that are backward compatible generate a minor version release and can be made at any time as they provide an improvement without disrupting existing processing. Versions containing only backward-compatible changes are assigned the next minor version number. For example, if current version is 2025.1.000 the next minor release would be assigned 2025.1.001.

2.5.2.3 Examples of Backward-Compatible Changes to Existing Schemas

- Adding optional elements to a complex type
- Adding one or more new enumeration constants to a type
- Changing a numeric type from one decimal place to two decimal places
- Any changes to documentation tags such as appinfo display term will always be backward compatible because the schema parsers do not look at documentation tags.

2.5.2.4 Use Case: Backward Compatible Minor Version Release

a. Official versions of all schemas are released with schema version number 2025.1.000.
b. Data registry providers implement changes to support generating XML files compliant with 2025.1.000.
c. Two months later, Data Registry "Provider A" requests one of the following changes:
    - Extend an enumeration with an additional value for a particular compliance document.
    - Add an optional element to a type definition for a particular compliance document.
    - Change decimal type to increase the number of decimal places.
d. Revision is approved because it is backward compatible and released as Version 2025.1.001.
e. The data registry of Provider A implements 2025.1.001 changes and submits a valid XML file that includes the change to the RG, which validates against 2025.1.001. The RG then loads “2025.1.001” into the payload attribute ComplianceDocumentSchemaVersion.

f. The data registry of Provider B does not implement the change because it does not need to exercise the change in 2025.1.001. It submits an XML to the RG, which also validates against 2025.1.001 and the RG loads 2025.1.001 into the payload attribute ComplianceDocumentSchemaVersion.

2.5.2.5 Nonbackward-Compatible Major Version Policy

Nonbackward-compatible changes are disruptive because they break the previous version of the schema, and often the implementer's code. Therefore, requests for revisions that are likely to be nonbackward-compatible will be evaluated to determine severity and disruptiveness as described below.

2.5.2.6 Issue Severity of Nonbackward-Compatible Changes

Nonbackward-compatible change issue severity is based on how serious the problem is that will be corrected with the change. Issue severity ranges from minor non-data changes, such as improved naming or corrected spelling, to major errors in data correctness or completeness. The more severe the data integrity problem that will be fixed by the change, the more likely it will be approved by the CEC project manager.

2.5.2.7 Disruptiveness of the Nonbackward-Compatible Change

Nonbackward-compatible change disruptiveness is based on the number of compliance document schemas that are affected and frequency of use. Changes that affect fewer compliance document schemas are more likely to be approved by the CEC project manager.

If evaluation finds the request for a nonbackward-compatible change to be trivial or too disruptive, it will be added to the list of changes for the next regular major release.

When evaluation finds the request for a nonbackward-compatible change has a high issue severity or a very low disruptiveness or both, the final approval of the nonbackward- compatible change requires input from representatives of all stakeholders using the schemas. If, after reviewing the stakeholder input, the CEC project manager approves the change, it will be implemented, and a major version will be released sooner than the next regularly scheduled major version release according to a schedule determined by the CEC project manager.

Versions containing any non-backward compatible changes are released as the next major version. For example, if the current version is 2025.1.251 the next major release would be 2025.2.000.

2.5.2.8 Examples of Nonbackward-Compatible Changes

Changing a numeric type from decimal to integer. Previous XML with numbers that use decimals will fail validation.

Renaming a type. Previous XML with previous name will fail validation.

Adding a new required element in a type. Previous XML won’t have the new required element and will fail validation.

Removing or changing an existing enumeration value. Previous XML with removed or old spelling will fail validation.

Removal of required elements from a schema. Previous XML with the removed element will fail validation.

2.5.2.9 Use Case: Nonbackward Compatible Major Version Release

a. Official versions of all schemas are released with schema Version 2025.1.000.

b. Data registry providers implement changes to support generating XML files compliant with 2025.1.000.

c. Two months later, a request for one of the following nonbackward-compatible changes is made:
   - Remove or rename an enumeration value.
   - Add a required element to a type definition.
   - Remove a required element.
   - Change a decimal type to an integer.

d. The CEC project manager must evaluate the requested change for issue severity and disruptiveness because it is a nonbackward-compatible change. One of the following actions will be taken depending on the evaluation:
   - Add changes to next regularly scheduled major version release for changes with low severity/highly disruptive combination that does not require immediate attention.
   - CEC project manager reviews input from stakeholders and approves a special major version release if the change is a combination of high severity/low disruptiveness that requires immediate attention.
   - Implement nonbackward-compatible changes planned for the next major version release and assign the next major version number, 2025.2.000.

e. Providers who process the schemas that are changed in this major release implement the changes. Their data registry sends a valid XML file that includes changes in this version to the RG which validates against the new version, 2025.2.000. The RG then loads "V2.000" into the Payload attribute ComplianceDocumentSchemaVersion.
   - For changes that only affect compliance document schemas and not base schemas, any data registry provider that does not process the modified compliance documents does not have to implement the changes in the new version, 2025.2.000. They submit XMLs for other schemas to the RG and the XML files validate successfully against the new version, 2025.2.000 and the RG loads the new version, 2025.2.000 into the Payload attribute ComplianceDocumentSchemaVersion.

2.5.3 Compliance Document XSL Templates

Two complimentary XML technologies are used in the CEC RG software for producing the required PDF format compliance documents: Extensible Stylesheet Language Transformation (XSLT) and Extensible Stylesheet Language Formatting Objects (XSL-FO). These technologies are used in XSL templates created for each of the compliance documents that work directly with the XML data contained in the document registration packages received from the data registries to transform the XML data into the required PDF format reports used for creating registered compliance documents.

XSL templates also draw upon the information contained in the schema (XSD) files when generating the PDF format reports. Thus, design of the XSL templates must be coordinated with the design of the XSD files. And when revisions are needed to a compliance document, the revisions must be incorporated into both the XSD and the XSL files.

XSL templates are not used by data registries, thus a listing of the library of XSL template files has not been included in this *Data Registry Requirements Manual.* A listing of the XSL template files is included with the technical documentation for the CEC RG software. A repository containing the XSL template files is available for use by authorized CEC staff and technical consultants in charge of the RG software development and maintenance.

3 Document Registration Processes

3.1 Overview

Registration is the process applicable to the Energy Code electronic compliance documents that are verified as complete by the data registry and are electronically signed by all required data registry authorized users. Registration is initiated when an authorized registration signer signs the compliance document electronically while logged into the data registry using their username and password. Subsequently the data registry adds an image representing the registration signer's signature to the signature block, appends a unique registration number to each page of the document, applies the data registry provider's digital certificate issued by a compliant certificate authority, and appends the data registry provider's digital signature appearance on the compliance document.

Subject to implementation of a central electronic document repository by the CEC, when registration is complete, the data registry immediately and automatically transmits a copy of the completed registered compliance document to the CEC's *Commission Compliance Document Repository* (CCDR) and retains a copy of the registered compliance document for use by authorized users for submittals.

A registered document is a compliance document that has been submitted to a residential or nonresidential data registry for retention, has been verified as complete by the data registry, and has completed the registration process such that that the document displays all applicable electronic signatures, as well as the provider's digital signature appearance and the document's unique registration number. The PDF image of the registered document is accessible for printing or viewing by authorized users of the registry via the registration provider’s internet website.

3.2 Data Validation Requirements for Data Registries

Data validation rules are specified by the XML schema for the compliance document. Refer to Appendix B for listings of the XML schema files for each of the Title 24, Part 6, compliance documents. Validation criteria include but are not limited to specifications for:

- The required data type.
- Whether data is required or optional.
- Data numeric upper and lower bounds.
- Acceptable enumeration values.
- Calculations that must be performed.

Data registries are expected to configure the user interfaces to receive valid data from authorized users of the registry. Registries are expected to perform a validation check of the document data before sending a call to the RG for a PDF report for the document. The RG database contains a copy of the current version of the schema for each compliance document and checks for valid data as prerequisite to processing a PDF report.

3.3 Document Registration Prerequisite Rules

Completion of registration for certain compliance documents is expected to be contingent upon satisfying prerequisite rules that are in addition to the basic data validation requirements and authorized user signature requirements specified in *Reference Joint Appendix JA7*. Additional descriptions, guidance, and examples for use of these prerequisite rules follow.

3.3.1 Document Configuration Rules

Document configuration rules are presented in Section 6. Listings of the document configuration rules applicable to specific compliance document types are presented in Tables 6-1, 6-2, and 6-3.

A document that reports the results of field verification and diagnostic testing will end with "- H", this includes the certificate of installation and the certificate of verification. All other documents will end with "-E" to indicate that the enforcement agency is expected to inspect the documented features. Applicable measures are listed in Reference Residential Appendix 2.2, Table RA2-1 Summary of Measures Requiring Field Verification and Diagnostic Testing.

Example of configuration rules: For the performance compliance approach for existing buildings, improvements to existing conditions are given credit when the existing condition is verified by a ECC Rater and documented on a CF3R-EXC-20-H. When an applicant claims credit for improvement to an existing condition on the CF1R-PRF-01-E, the data registry is expected to prevent registration of the CF1R-PRF-01-E until a CF3R-EXC-20-H has been registered that confirms the existing conditions verified in the field are the same as the existing conditions modeled by the compliance software and reported on the CF1R-PRF.

Table 3-1: From Table 6-1 Document Configurations Rules

Document Number	Document Type	Document Description	Document Configuration Rules
CF3R-EXC-20-H	Certificate of Verification	ECC Verification for Existing Conditions for performance compliance for alterations.	When credit for existing conditions is used on the CF1R, as condition for CF1R registration, an EXC-20 that verifies the existing condition claimed on the CF1R shall first be registered. Required as prerequisite to registration of a CF1R-PRF for an altered dwelling.

Source: California Energy Commission

3.3.2 Data Field Definition Rules for Single-Family Compliance Documents

Document registration prerequisite rules may be embedded in the data field definition rules for a certain field contained in a compliance document as detailed in the pseudocode in the *Data Field Definitions and Calculations* section of the design files in Appendix A. For example, fields for which the results are calculated utilizing data referenced from another compliance document cannot be completed until the other source/referenced compliance document has been completed and

registered. Alternatively, the rule may require, as a prerequisite to allowing registration, that another compliance document is registered indicating compliance with a certain Energy Code requirement.

Example: For compliance with the refrigerant charge verification requirements in Energy Code Sections 150.1(c)7A, and 150.2(b)1F, verification of minimum space-conditioning system airflow rate according to the field verification and diagnostic testing protocols in Reference Residential Appendix RA3 is required. Otherwise, a verified return duct design according to Energy Code Tables 150.0-B or C is required. The choice of use of airflow rate verification (MCH-23) or return duct design verification (MCH-28) for compliance is made at the installation phase by the installer. Thus, for the procedure for registering a CF2R-MCH-25 compliance document (refrigerant charge verification using the subcooling procedure), the data registry must require registration of a CF2R-MCH-01 that indicates which method of compliance was chosen by the installer for airflow rate compliance (MCH-28 or MCH-23) and must require registration of the applicable CF2R-MCH-23 or CF2R-MCH-28 as prerequisite to allowing the CF2R-MCH-25 to be registered.

Table 3-2: Example Data Field Definition Rules. From data field E03 on the 2025-CF2R-MCH-25-H

Data Field	Display Term	Pseudocode Instructions
E03	System Airflow Rate Verification Status	<<if the CF2R-MCH-01 indicates a MCH-28 is required for alternate minimum airflow rate compliance, then if the system has a registered CF2R- MCH-28 that indicates compliance with Table 150.0-B or C return duct design requirements, then result =**system complies using Table 150.0-B or C alternative return duct design criteria**. else result=**System does not comply. A registered CF2R-MCH- 28 is required** (do not allow this MCH-25 to be registered). elseif the CF2R-MCH-01 indicates a MCH-23 is required for minimum airflow rate compliance, then if this system has a registered CF2R- MCH-23 or CF2R-MCH-23 that meets the compliance criterion in E02, then result = **System complies with minimum airflow rate requirements**; elseif A10=Alteration, then if the system complies with the alternative airflow compliance method on a registered CF2R-MCH23; then result =**system complies using the alternative remedial actions specified in RA3.3.3.1.5**. **This System does not qualify for Group Sampling.** else result=**System does not comply. A registered CF2R-MCH-23 for this system is required**. (do not allow this MCH-25 to be registered)>>

Source: California Energy Commission

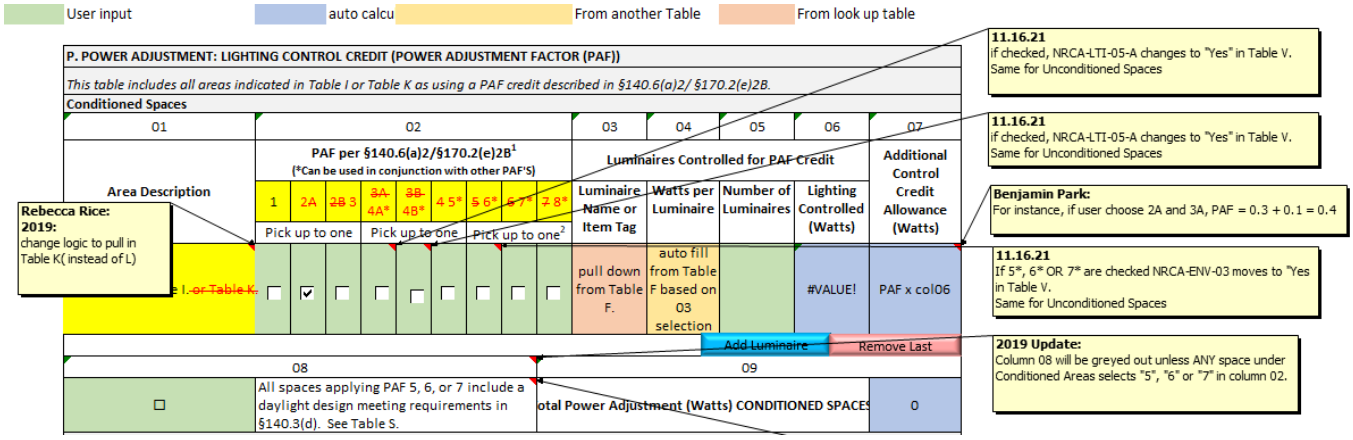
3.3.3 Data Field Definition Rules for Low-Rise Multifamily Certificate of Compliance Documents

For the certificate of compliance and certificate of installation documents not related to ECC measures (indicated by the -E suffix), document registration prerequisite rules may be embedded in the data field definition rules for a certain field contained in a compliance document as detailed in the mockups in Appendix A. For example, fields for which the results are calculated using values referenced from another compliance document or field cannot be completed until the other source has been completed.

The data rules are located within the applicable Excel fields or comments within the mockup or both. The fields are also color coded based on where the information is coming from (calculation, user input, and so forth). Calculations are found within the formula bar in Excel for each field that requires a calculation.

The mockup also shows the table structure and formatting for the compliance documents with each tab containing a single section of the compliance document. The highlighted components are what were changed for the 2025 code cycle. Also, sub tables for each section are triggered based on previously completed tables and fields within the compliance document.

Figure 3-1: From Section P on the 2025-LMCC-LTI-E



Source: California Energy Commission

3.3.4 Data Security and Authentication Rules for the Performance Certificate of Compliance Registration Package

A data registry is expected to implement data security and authentication for processing the performance certificate of compliance registration package (registration package) data exchange among the compliance software, RG, and the data registries, as described in Sections 5.5 and 5.6. These data must traverse an unknown chain of custody after being processed by the RG. Thus, a submission to a data registry will be a persisted data file that possibly could be tampered with, but XML digital signing at the RG would make any such tampering known to the data registry. The RG embeds a PDF-formatted certificate of compliance document into a registration package as Base-64 ASCII data. When a registration package contains encoded PDF data originating from an approved RG that conform to the prerequisite requirements for document registration by a data registry (described below), the registration package will contain an XML digital signature provided

by the RG, otherwise the package will **not** contain an XML digital signature.

To ensure the authenticity of a registration package, the data registries must incorporate processes into the performance certificate of compliance document registration that can verify the XML digital signature of each electronic submission.

The data registries must implement a procedure to verify that a valid XML digital signature is attached to the CBECC data and to the certificate of compliance document PDF image contained in the submitted registration package to ensure there was no change made to the registration package after it was produced by the RG. Verification of the digital signatures of these registration packages should be performed before allowing a registration package to be uploaded to the data registry or used for the certificate of compliance document registration.

The RG uses Public Key Infrastructure (PKI) to sign the registration package and includes the XML digital signature and as a <Signature> element in the XML data. Any alteration to either the CBECC data or the certificate of compliance document PDF image, such as inserting a different encoded PDF, would invalidate the original signature. This signature can be verified using the Public Key available from the RG. (See Section 5.6 for additional details.)

Note: The RG response XML will only apply signing when a CBECC compliance software submission has completed all the checks during processing and generates a non-watermarked PDF. If the RG processing does not complete normally, there will be NO signature element in the registration package.

3.4 Residential Document Registration Numbering Conventions

The registration numbers assigned to 2025 compliance documents by the data registry at the conclusion of registration should conform to the conventions described in this section. Table 3-3 presents compliance documents certificates abbreviations.

Table 3-3: Compliance Document Abbreviations

Form Type	Description
CF1R	Single-Family Certificate of Compliance
CF2R	Single-Family Certificate of Installation
CF3R	Single-Family Certificate of Verification
LMCC	Low-Rise Multifamily Certificate of Compliance
LMCI	Low-Rise Multifamily Certificate of Installation
LMCV	Low-Rise Multifamily Certificate of Verification
NRCV	Nonresidential Certificate of Verification

Source: California Energy Commission

3.4.1 Document Category Designators

The document category designators used in registration numbers are given in the first column of Table 3-4, Table 3-5, and Table 3-6 below. Refer to Columns 5 and 17 in Figure 3-2 and Columns 5, 25, and 33 in Figure 3-3 for the location these digits appear in the registration number. The data registry must determine the correct document category

designator for each document that is registered according to Figure 3-4, Figure 3-5 and Table 3-6 and populate the applicable registration number digits for each document accordingly.

Table 3-4: Document Category Designators for Use with Registration Numbers for Single-Family Compliance Documents

Category Designator for Registration Numbers	Compliance Category	Description	Compliance Document Type Applicability
P	PRF	Performance	CF1R
N	NCB	Prescriptive Newly Constructed Buildings	CF1R
D	ADD	Prescriptive Additions	CF1R
A	ALT	Prescriptive Alterations	CF1R
E	ENV	Envelope	CF1R Worksheet, CF2R, CF3R
R	SRA	Solar Ready Area	CF2R
V	PVB	Solar Photovoltaic and Battery Storage	CF2R
T	STH	Solar Thermal Heating	CF2R
M	MCH	Mechanical	CF2R, CF3R, NRCV

Category Designator for Registration Numbers	Compliance Category	Description	Compliance Document Type Applicability
B	PLB	Plumbing	CF2R, CF3R, NRCV
X	EXC	Existing Conditions	CF3R
L	LTG	Lighting	CF2R
C	ELC	Electric Ready	CF2R

Source: California Energy Commission

Table 3-5: Document Category Designators for Use with Registration Numbers for Low-Rise Multifamily Compliance Documents

Category Designator for Registration Numbers	Compliance Category	Description	Compliance Document Type Applicability
F	PRF	Performance	LMCC
V	ENV	Envelope	LMCC, LMCI, LMCV
S	SAB	Solar and Battery	LMCC
M	MCH	Mechanical	LMCC, LMCI, LMCV
W	PLB	Water Heating	LMCC, LMCI, LMCV
C	ELC	Electrical Power Distribution, Electric Ready	LMCC, LMCI
R	PRC	Process Systems	LMCC
I	LTI	Indoor Lighting	LMCC
O	LTO	Outdoor Lighting	LMCC
G	LTS	Sign Lighting	LMCC
X	CXR	Commissioning	LMCC

Source: California Energy Commission

Table 3-6: Document Category Designators for Use with Registration Numbers for Nonresidential Compliance Documents

Category Designator for Registration Numbers	Compliance Category	Description	Compliance Document Type Applicability
Z	-	Nonresidential Newly Constructed	NRCV
Y	-	Nonresidential Alterations to Existing	NRCV

Source: California Energy Commission

3.4.2 Numbering Convention for CF1R, CF2R, CF3R, LMCC, LMCI, LMCV and NRCV Documents

Detailed guidance for creating registration numbers is given by the following information:

- Figure 3-2 presents the organization for the numbering convention for CF1R worksheets.
- Figure 3-3 presents the organization for the numbering convention for all other CF1R, CF2R, CF3R, and NRCV compliance documents.
- Figure 3-4 presents the organization for the numbering convention for LMCC, LMCI, and LMCV documents.
- Refer to the Figure 3-2 , Figure 3-3, and Figure 3-4 and the notes for Figure 3-2, Figure 3-3, and Figure 3-4 for additional detailed numbering convention guidance.
- Example registration numbers are demonstrated in Figure 3-2, Figure 3-3, Figure 3-4, and Table 3-8, and the interpretation of the significance of the digits used in the example registration numbers are given in Sections 3.4.2.4, 3.4.2.5 ,and 3.4.2.6.

3.4.2.1 Model Plan and Multifamily — CF1R, CF2R, CF3R, LMCC, LMCI, LMCV, and NRCV Configurations

For volume-builder subdivision or tract development projects, when a certificate of compliance for a performance analysis model plan is registered with a data registry then submitted to an enforcement agency for plan check and approval, the approved certificate is generally not required to go through plan check every time that model plan is used to build a home in the subdivision. Thus, the same building design plan and certificate of compliance approved by the enforcement agency may be used for each build-out of that approved model plan as long as the building design is not revised for subsequent build-outs of the model plan. The certificate of compliance registration number for the approved single-family model plan uses a unique number and revision identifier for this "parent" CF1R. This parent CF1R is subsequently referenced by the many site-specific certificate of installation (CF2R) and certificate of verification (CF3R) "children" documents.

A similar "one parent" to "many children" document configuration is used for multifamily buildings. For this case, the LMCC may be created using the whole-building compliance approach, thus the documentation for each dwelling unit in the multifamily building will consist of one copy of the "parent" LMCC and the applicable dwelling unit-specific LMCI and LMCV "children" compliance documents required for each dwelling unit.

3.4.2.2 CF1R Worksheet Configurations

CF1R worksheets are documents that provide supplemental information needed to complete the certificate of compliance. For instance, an ENV-04 determines the cool roof information that is subsequently entered on the CF1R to complete it. Thus conceptually, these worksheets should be considered additional CF1R document pages and should use the same registration number as the approved CF1R document, regardless of whether the CF1R is a performance or prescriptive document type.

The registration numbering convention for the CF1R worksheets uses the same first 16 digits that

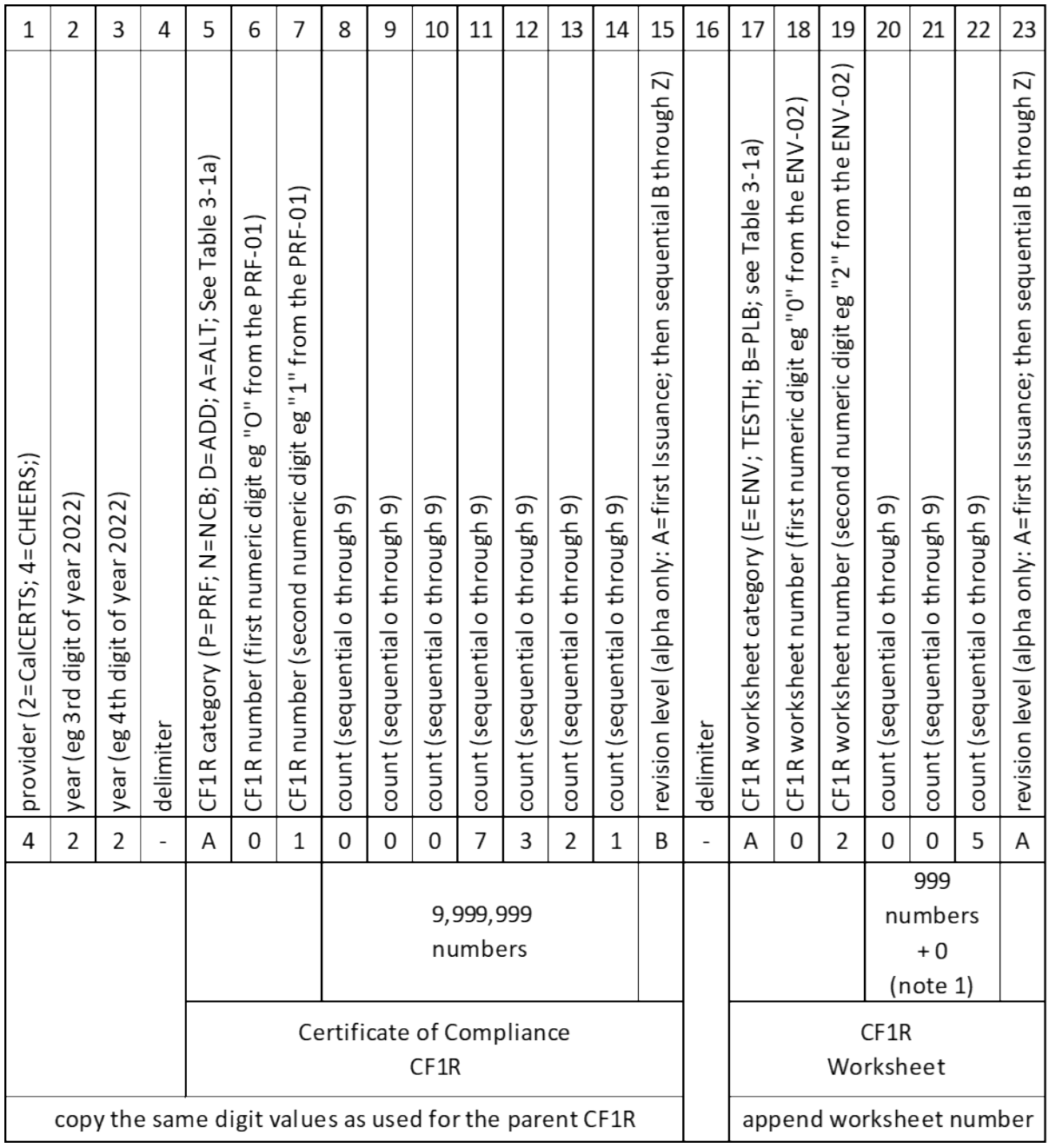
are used in the parent CF1R registration number convention (14 letter or number digits plus 2 delimiter digits). Furthermore, for the worksheet documents the convention appends digits that describe each specific worksheet. There are no digits for CF2R or CF3R documents represented in a worksheet document registration number. Since the first 16 digits of the registration number will be the same on CF1R worksheet documents as well as the CF2R and CF3R documents, one unique "parent" CF1R revision level and registration number will thus be common to all compliance documents for the approved plan.

3.4.2.3 Prescriptive Additions and Alterations — CF1R, CF2R, CF3R, and NRCV Configurations

When the project is a prescriptive addition to an existing building that uses a CF1R-ADD-01, or a prescriptive alteration to an existing building that uses a CF1R-ALT-01, space- conditioning system(s) compliance in the building is documented using the CF1R-ALT-02. The CF1R-ALT-01, CF1R-ADD-01, and CF1R-ALT-02 will be used for single-family dwellings.

The relationship between the "parent" CF1R-ALT-01 and "child" CF1R-ALT-02 (or the "parent" CF1R-ADD-01 and "child" CF1R-ALT-02) is represented by using the same numbering convention layout for the CF1R-ALT-02 as is used for CF1R worksheet documents (shown in Figure 3-2), but with the further requirement that a unique dwelling unit identification number must be constrained to be the same on the "parent" CF1R (see fields 21, 22, 23 in Figure 3-3), the "child" dwelling unit CF1R-ALT-02 (see fields 20, 21, 22 in Figure 3-2), and on the CF2R and CF3R "children" of each dwelling unit CF1R-ALT-02. Refer to Note 1 (Figure 3-2) and Note 4 (Figure 3-2) below for additional explanation of this numbering convention.

Figure 3-2: Numbering Convention for CF1R Worksheets



Source: California Energy Commission

Table 3-7: Numbering Convention for CF1R Worksheets

Digit	Definition	Examples	Note
1	Registration Provider	2 for CalCERTS (inactive) 4 for CHEERS	CEC will designate other providers
2	Calendar Year, tens	1 for 2016 or 2019 2 for 2022 or 2026	Based on date at time of registration
3	Calendar Year, ones	9 for 2019 2 for 2022 6 for 2026	Based on date at time of registration
4	Delimiter 1	- (short hyphen)	Static character
5	Parent CF1R category	A, D, N	See Table 3-4 for all designators.
6	Parent CF1R number, first	0 (ADD-01)	Parent CF1R, not worksheet CF1R
7	Parent CF1R number, second	1 (ALT-01)	Parent CF1R, not worksheet CF1R
8	CF1R count, millions	0-9	Serialized using digits 8 through 14
9	CF1R count, hundreds of thousands	0-9	Serialized using digits 8 through 14
10	CF1R count, tens of thousands	0-9	Serialized using digits 8 through 14
11	CF1R count, thousands	0-9	Serialized using digits 8 through 14
12	CF1R count, hundreds	0-9	Serialized using digits 8 through 14
13	CF1R count, tens	0-9	Serialized using digits 8 through 14

Digit	Definition	Examples	Note
14	CF1R count, ones	0-9	Serialized using digits 8 through 14
15	CF1R revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero.
16	Delimiter 2	- (short hyphen)	Static character
17	Worksheet CF1R category	B, E, T	See Table 3-4 for all designators.
18	Worksheet CF1R number, first	0 (for 02, 03, 04)	See Table 6-1 for worksheet numbers.
19	Worksheet CF1R number, second	1, 2, 6	See Table 6-1 for worksheet numbers.
20	Worksheet CF1R count, hundreds	0-9	Serialized using digits 20-22; see note 1
21	Worksheet CF1R count, tens	0-9	Serialized using digits 20-22; see note 1
22	Worksheet CF1R count, ones	0-9	Serialized using digits 20-22; see note 1
23	Worksheet CF1R revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero.

Source: California Energy Commission

Note 1 – CF1R worksheet count

- Reset to 001 for the first worksheet (or ALT-02) created for a new CF1R.
- Increment sequentially by 1 for each additional worksheet (or ALT-02) created for the CF1R.
- If the parent CF1R document type is a CF1R-ADD-01 or CF1R-ALT-01, for each required ALT-02 child document, use the numbering convention layout described in Figure 3-2 with digits 17, 18, 19 = A02 and designate (Figure 3-2) digits 20, 21, 22 as the unique identification number for the dwelling unit. For CF2R and CF3R child documents associated with the CF1R-ALT-02 for a dwelling unit, ensure that the parent CF1R-ADD-01 or CF1

- R-ALT-01 (Figure 3-3 numbering convention) dwelling unit digits 21, 22, 23 are constrained to be the same as the CF1R-ALT-01 (Figure 3-2 numbering convention) unique dwelling unit identification number digits 20, 21, 22.

Table 3-8: Example of Worksheet Registration Number (RN) by Digit

Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
RN	**4**	**2**	**0**	-	**A**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	**4**	**4**	**C**	-	**B**	**0**	**1**	**0**	**0**	**1**	**A**

Source: California Energy Commission

The number "4" identifies CHEERS as the registration provider. The number "20" identifies the parent CF1R registration year as 2020. "A01" indicates that the parent CF1R is a CF1R- ALT-01-E. The number "0000944" identifies the unique ALT-01 family of documents. The letter "C" indicates two revisions since the original ALT-01 was registered. "B01" identifies the worksheet category of PLB. The number "001" indicates this is the first PLB worksheet for the project. The letter "A" is the default revision character for the worksheet.

Figure 3-3: Numbering Convention for CF1R, CF2R, CF3R, and NRCV Documents

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
provider (2=CalCERTS; 4=CHEERS;)	year (eg 3rd digit of year 2022)	year (eg 4th digit of year 2022)	delimiter	CF1R category (P=PRF; N=NCB; D=ADD; A=ALT; See Table 3-1a)	CF1R number (first numeric digit eg "0" from the PRF-01)	CF1R number (second numeric digit eg "1" from the PRF-01)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	revision level (alpha only: A=first issuance; then sequential B through Z)	delimiter	building count (sequential 0 through 9)	building count (sequential 0 through 9)	building count (sequential 0 through 9)	delimiter	dwelling unit count (sequential 0 through 9)	dwelling unit count (sequential 0 through 9)	dwelling unit count (sequential 0 through 9)	delimiter	CF2R category (E=ENV, L=LTG, M=MCH, B=PLB; see Table 3-1a)	CF2R number (first numeric digit eg "2" from the MCH-21)	CF2R number (second numeric digit eg "1" from the MCH-21)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	revision level (alpha only: A=first issuance; then sequential B through Z)	delimiter	CF3R / NRCV category (E=ENV, L=LTG, M=MCH, B=PLB; see Table 3-1a)	CF3R / NRCV number (first numeric digit eg "2" from the MCH-21)	CF3R/ NRCV number (second numeric digit eg "1" from the MCH-21)	revision level (alpha only: A=first issuance; then sequential B through Z)
4	2	2	-	A	0	1	0	0	0	7	3	2	1	B	-	0	0	0	-	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0
					9,999,999 numbers (note 2)											999 numbers + 0 (note 3)				999 numbers + 0 (note 4)							999 numbers + 0 (note 5)										
				Certificate of Compliance CF1R (note 6)												Building Count				Dwelling Unit Count				Certificate of Compliance CF2R (note 7)								Certificate of Compliance CF3R			
																use 000-000 for CF1R								use 000-000 for CF1R								use 000-000 for CF1R and CF2R			

Source: California Energy Commission

Table 3-9: Numbering Convention for CF1R, CF2R, CF3R and NRCV Documents

Digit	Definition	Examples	Note
1	Registration Provider	2 for CalCERTS (inactive) 4 for CHEERS	CEC will designate other providers
2	Calendar Year, tens	1 for 2016 or 2019 2 for 2022 or 2026	Based on date at time of registration
3	Calendar Year, ones	9 for 2019 2 for 2022 6 for 2026	Based on date at time of registration
4	Delimiter 1	- (short hyphen)	Static character
5	Parent CF1R category	A, D, N	See Table 3-4 for all designators; see note 6
6	Parent CF1R number, first	0 (ADD-01)	Parent CF1R, not worksheet CF1R; see note 6
7	Parent CF1R number, second	1 (ALT-01)	Parent CF1R, not worksheet CF1R; see note 6
8	CF1R count, millions	0-9	Serialized using digits 8 through 14; see note 2; see note 6
9	CF1R count, hundreds of thousands	0-9	Serialized using digits 8 through 14; see note 2; see note 6
10	CF1R count, tens of thousands	0-9	Serialized using digits 8 through 14; see note 2; see note 6
11	CF1R count, thousands	0-9	Serialized using digits 8 through 14; see note 2; see note 6
12	CF1R count, hundreds	0-9	Serialized using digits 8 through 14; see note 2; see note 6
9	CF1R count, hundreds of thousands	0-9	Serialized using digits 8 through 14; see note 2; see note 6
10	CF1R count, tens of thousands	0-9	Serialized using digits 8 through 14; see note 2; see note 6
11	CF1R count, thousands	0-9	Serialized using digits 8 through 14; see note 2; see note 6
12	CF1R count, hundreds	0-9	Serialized using digits 8 through 14; see note 2; see note 6

Digit	Definition	Examples	Note
13	CF1R count, tens	0-9	Serialized using digits 8 through 14; see note 2; see note 6
14	CF1R count, ones	0-9	Serialized using digits 8 through 14; see note 2; see note 6
15	CF1R revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero.
16	Delimiter 2	- (short hyphen)	Static character
17	Building count, hundreds	0-9	Serialized using digits 8 through 14; see note 3
18	Building count, tens	0-9	Serialized using digits 8 through 14; see note 3
19	Building count, ones	0-9	Serialized using digits 8 through 14; see note 3
20	Delimiter 3	- (short hyphen)	Static character
21	Dwelling Unit count, hundreds	0-9	Serialized using digits 8 through 14; see note 4
22	Dwelling Unit count, tens	0-9	Serialized using digits 8 through 14; see note 4
23	Dwelling Unit count, ones	0-9	Serialized using digits 8 through 14; see note 4
24	Delimiter 4	- (short hyphen)	Static character
25	Parent CF2R category	B, E, M	See Table 3-4 for all designators; see note 7
26	Parent CF2R number, first	2 (MCH-21)	Parent CF2R; see note 7
27	Parent CF2R number, second	1 (MCH-21)	Parent CF2R; see note 7
28	CF2R count, hundreds	0-9	Serialized using digits 8 through 14; see note 5; see note 7
29	CF2R count, tens	0-9	Serialized using digits 8 through 14; see note 5; see note 7

Digit	Definition	Examples	Note
30	CF2R count, ones	0-9	Serialized using digits 8 through 14; see note 5; see note 7
31	CF2R revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero; see note 7
32	Delimiter 5	- (short hyphen)	Static character
33	Parent CF3R category	B, E, M	See Table 3-4 for all designators.
34	Parent CF3R number, first	2 (MCH-21)	Parent CF3R
35	Parent CF3R number, second	1 (MCH-21)	Parent CF3R
36	CF3R revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero.

Source: California Energy Commission

Note 2 – CF1R Count

- Reset to 0000001 for the first new CF1R registered beginning on January 1 of each calendar year.
- Increment sequentially by 1 for each additional new CF1R registered during the calendar year.

Note 3 – building count

- Reset to 000 when the CF1R number increments (i.e., reset to 000 for a building that uses a new CF1R number).
- For single-family dwellings (buildings), use 000 for all dwelling units that use the CF1R.
- For nonresidential buildings (NRCV document type):
    - Reset to 000 when the "CF1R" number increments (that is, reset to 000 for a nonresidential project that uses a new "CF1R" number).
    - Use 001 for the first building in the project and increment sequentially by 1 for each additional building in the project that uses the "CF1R" number.

Note 4 – dwelling unit count

- Reset to 000 when the CF1R number increments (that is, reset to 000 for a building that uses a new CF1R number).
- For single-family dwellings, use 001 for the first dwelling unit and increment sequentially by 1 for each additional single-family dwelling that uses the CF1R.
- If the parent CF1R document type is a CF1R-ADD-01 or CF1R-ALT-01, for each required CF1R-ALT-02 child document, use the numbering convention layout described in Figure 3-2 with digits 17, 18, 19 = A02, and designate (Figure 3-2) digits 20, 21, 22 as the unique identification number for the dwelling unit. For CF2R and CF3R child documents associated with a dwelling unit's CF1R-ALT-02, ensure that the parent CF1R-ADD-01 or CF1R-ALT-01 (Figure 3-3 numbering convention) unique dwelling unit identification number digits 21, 21, 22.
- For nonresidential buildings (NRCV document types):
    - Reset to 000 when the "CF1R" number increments (that is, reset to 000 for a nonresidential project that uses a new "CF1R" number).
    - Reset to 000 when the building count increments (that is, reset to 000 for each additional nonresidential building that uses the same "CF1R" number).
    - Use 001 for the first tenant unit in the building and increment sequentially by 1 for each additional tenant unit in the building that uses the "CF1R" number.

Note 5 – CF2R count

- Reset to 000 when the CF1R number increments (that is, reset to 000 for a building that uses a new CF1R).
- Reset to 000 when the dwelling unit count increments (that is, reset to 000 for a new

dwelling unit in the building).

- Use 001 for the first CF2R in a dwelling unit and increment sequentially by 1 for each additional CF2R in the dwelling unit.
- For nonresidential buildings (NRCV document type):
    - Reset to 000 when the tenant unit count increments (i.e., reset to 000 for a new tenant unit in the building).
    - Use 001 for the first system in the tenant unit and increment sequentially by 1 for each additional system in the tenant unit.

Note 6 – "CF1R" numbering for nonresidential building projects (NRCV document type)

- For newly constructed buildings, digits 5-6-7 = Z00.
- For alterations to existing buildings, digits 5-6-7 = Y00.
- For all NRCV documents, digits 15 = 0.

Note 7 – "CF2R" numbering for nonresidential building projects (NRCV document type)

- For all NRCV documents, digits 25-26-27 = 0.
- For all NRCV documents, digit 31 = 0.

Figure 3-4: Numbering Convention for LMCC, LMCI, and LMCV Documents

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
provider (2=CalCERTS; 4=CHEERS;)	year (eg 3rd digit of year 2022)	year (eg 4th digit of year 2022)	delimiter	LMCC Category (F=PRF; V=ENV;M=MCH; See Table 3-1b)	LMCC number (first numeric digit eg "0" from the PRF-01)	LMCC number (second numeric digit eg "1" from the PRF-01)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	revision level (alpha only: A=first Issuance; then sequential B through Z)	delimiter	building count (sequential 0 through 9)	building count (sequential 0 through 9)	building count (sequential 0 through 9)	delimiter	dwelling unit count (sequential 0 through 9)	dwelling unit count (sequential 0 through 9)	dwelling unit count (sequential 0 through 9)	delimiter	LMCI category (C=ELC, L=LTG, R=PRC, W=PLB; see Table 3-1b)	LMCI number (first numeric digit eg "2" from the MCH-21)	LMCI number (second numeric digit eg "1" from the MCH-21)	count (sequential 0 through 9)	count (sequential 0 through 9)	count (sequential 0 through 9)	revision level (alpha only: A=first Issuance; then sequential B through Z)	delimiter	LMCV category (M=MCH, V=ENV, W=PLB; see Table 3-1b)	LMCV number (first numeric digit eg "2" from the MCH-21)	LMCV number (second numeric digit eg "1" from the MCH-21)	revision level (alpha only: A=first Issuance; then sequential B through Z)
4	2	2	-	M	0	1	0	0	0	7	3	2	1	B	-	0	0	0	-	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0
							9,999,999 numbers (note 2)									999 numbers + 0 (note 3)				999 numbers + 0 (note 4)							999 numbers + 0 (note 5)									
				Certificate of Compliance LMCC												Building Count				Dwelling Unit Count				Certificate of Compliance LMCI								Certificate of Compliance LMCV			
																use 000-000 for LMCC								use 000-000 for LMCC								use 000-000 for LMCC and LMCI			

Source: California Energy Commission

Table 3-10: Numbering Convention for LMCC, LMCI, and LMCV Documents

Digit	Definition	Examples	Note
1	Registration Provider	2 for CalCERTS (inactive) 4 for CHEERS	CEC will designate other providers
2	Calendar Year, tens	1 for 2016 or 2019 2 for 2022 or 2026	Based on date at time of registration
3	Calendar Year, ones	9 for 2019 2 for 2022 6 for 2026	Based on date at time of registration
4	Delimiter 1	- (short hyphen)	Static character
5	Parent LMCC category	M, V, W	See Table 3-5 for all designators
6	Parent LMCC number, first	0 (ENV-01)	Parent LMCC
7	Parent CF1R number, second	1 (MCH-01)	Parent LMCC
8	LMCC count, millions	0-9	Serialized using digits 8 through 14; see note 2
9	LMCC count, hundreds of thousands	0-9	Serialized using digits 8 through 14; see note 2
10	LMCC count, tens of thousands	0-9	Serialized using digits 8 through 14; see note 2
11	LMCC count, thousands	0-9	Serialized using digits 8 through 14; see note 2
12	LMCC count, hundreds	0-9	Serialized using digits 8 through 14; see note 2
13	LMCC count, tens	0-9	Serialized using digits 8 through 14; see note 2
14	LMCC count, ones	0-9	Serialized using digits 8 through 14; see note 2
15	LMCC revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero;
16	Delimiter 2	- (short hyphen)	Static character
17	Building count, hundreds	0-9	Serialized using digits 8 through 14; see note 3
8	Building count, tens	0-9	Serialized using digits 8 through

Digit	Definition	Examples	Note
			14; see note 3
19	Building count, ones	0-9	Serialized using digits 8 through 14. Building numbers start at 000 for each new parent LMCC; see note 3
20	Delimiter 3	- (short hyphen)	Static character
21	Dwelling Unit count, hundreds	0-9	Serialized using digits 8 through 14; see note 4
22	Dwelling Unit count, tens	0-9	Serialized using digits 8 through 14; see note 4
23	Dwelling Unit count, ones	0-9	Serialized using digits 8 through 14; see note 4
24	Delimiter 4	- (short hyphen)	Static character
25	Parent LMCI category	C, R, S	See Table 3-4 for all designators
26	Parent LMCI number, first	2 (MCH-21)	Parent CF2R
27	Parent LMCI number, second	1 (MCH-21)	Parent CF2R
28	LMCI count, hundreds	0-9	Serialized using digits 8 through 14; see note 5
29	LMCI count, tens	0-9	Serialized using digits 8 through 14; see note 5
30	LMCI count, ones	0-9	Serialized using digits 8 through 14; see note 5
31	LMCI revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero,
32	Delimiter 5	- (short hyphen)	Static character
33	Parent LMCV category	M, V, W	See Table 3-4 for all designators.
34	Parent LMCV number, first	2 (MCH-21)	Parent LMCV
35	Parent CF3R number, second	1 (MCH-21)	Parent LMCV
36	LMCV revision	A for first version, B for second, etc.	Skip I and O to avoid confusion with one and zero.

Source: California Energy Commission

Note 2 – LMCC Count

- Reset to 0000001 for the first new CF1R registered beginning on January 01 of each calendar year.
- Increment sequentially by 1 for each additional new CF1R registered during the calendar year.

Note 3 – building count

- Reset to 000 when the LMCC number increments (that is, reset to 000 for a building that uses a new LMCC number).
- For multifamily buildings, use 001 for the first multifamily building that uses the LMCC, and increment sequentially by 1 for each additional multifamily building that uses the LMCC.

Note 4 – dwelling unit count

- Reset to 000 when the LMCC number increments (that is, reset to 000 for a building that uses a new LMCC number).
- Reset to 000 when the building count increments (that is, reset to 000 for each additional multifamily building that uses the same LMCC.

Note 5 – LMCI count

- Reset to 000 when the LMCI number increments (that is, reset to 000 for a building that uses a new LMCI).
- Reset to 000 when the dwelling unit count increments (that is, reset to 000 for a new dwelling unit in the building).
- Use 001 for the first LMCI in a dwelling unit and increment sequentially by 1 for each additional LMCI in the dwelling unit.

3.4.2.4 Example Registration Numbers — CF1R, CF2R, CF3R, NRCV, and CF1R Worksheet Documents

The following provides example registration numbers and the interpretation of the significance of the digits used in the numbers as consistent with the conventions given in Table 3-4, Figure 3-2, Table 3-7*: Numbering Convention for CF1R Worksheets*, and the notes for Figure 2-1 above.

426-P010007321B-000-000-0000000-0000:

- Parent CF1R document
- CHEERS Provider
- Year 2026
- Performance CF1R document (PRF-01)
- sequential number 7321
- Revision B

426-P010007321B-R01005A:

- CF1R worksheet document

- SRA-01 document associated with the parent CF1R document above
- Sequential number 005
- Revision A

426-P010007321B-000-001-M21005A-0000:

- CF2R document associated with the parent CF1R above
- Single-family dwelling unit
- Dwelling unit number 1 for this CF1R parent
- CF2R-MCH-21 document
- CF2R sequential number 005 contained in dwelling unit 1
- Revision A

426-P010007321B-000-001-M21005A-M21C:

- CF3R document type associated with the CF2R document above
- MCH-21 document type
- Revision C

426-Z0000073220-002-004-0000020-M20B:

- CHEERS Provider
- Year 2026
- Nonresidential building (NRCV document type)
- Newly constructed building
- "CF1R" sequential number 7322 for this project
- Building number 2 in project 7322
- Tenant unit number 4 in building number 2
- System number 2 in tenant unit number 4
- MCH-20 document
- Revision B

3.4.2.5 Example Registration Numbers — Prescriptive Alterations and Additions — CF1R-ALT-01, CF1R-ADD-01, CF1R-ALT-02

The examples given in Subsections A, B, and C below describe registration numbers and the interpretation of the significance of the digits used in the numbers as consistent with the conventions given in Table 3-4, Figure 3-3, and Table 3-9, highlighting the various application of the numbering conventions to the CF1R-ADD-01, CF1R-ALT-01, and CF1R-ALT- 02 given in Notes 1 and 4 above.

a. If a CF1R-ALT-02 is created for use as a stand-alone CF1R document, as is the case for an HVAC-only alteration project that does not require use of a CF1R-ALT-01 or a CF1R-ADD-01, then the CF1R-ALT-02 should be treated as a "base" CF1R and use the registration numbering convention shown in Figure 3-2. All CF2R/CF3R documents that are children of that base CF1R should use that base registration

number as described in the following example.

426-A020007321B-000-000-0000000-0000:

- Parent CF1R document
- CHEERS Provider
- Year 2026
- Stand-alone HVAC Alteration CF1R document (CF1R-ALT-02)
- Sequential number 7321
- Revision B

426-A020007321B-000-001-M20001A-0000:

- CF2R document associated with the parent CF1R-ALT-02 above
- Single family dwelling unit
- Dwelling unit number 001 for this CF1R parent
- CF2R-MCH-20 document
- CF2R sequential number 001
- Revision A

426-A020007321B-000-001-M20001A-M20B:

- CF3R document associated with the parent CF2R document above
- CF3R-MCH-20 document
- Revision B

b. If the CF1R-ALT-02 is required as a child of a CF1R-ADD-01, then the CF1R-ALT-02 registration number must use the CF1R worksheet numbering layout shown in Figure 3-2 and any CF2R/CF3R documents that are children of the CF1R-ADD-01/CF1R-ALT- 02 must use the CF1R-ADD-01 "base" numbering layout shown in Figure 3-2. A unique dwelling unit identification number must be constrained to be the same on both the CF1R-ALT-02 parent and the CF2R/CF3R children documents for each dwelling.

A single-family example follows.

426-D010007322B-000-000-0000000-0000:

- Parent CF1R document
- CHEERS Provider
- Year 2026
- Prescriptive CF1R document (CF1R-ADD-01)
- Sequential number 7322
- Revision B

426-D010007322B-A02001A

- Child CF1R document (CF1R-ALT-02) associated with parent CF1R-ADD-01 above

- Dwelling unit identification number 001
- Revision A

426-D010007322B-000-001-M20001A-0000

- CF2R document associated with the parent CF1R-ALT-02 above
- Single-family dwelling unit
- Dwelling unit identification number 001 (constrained to be the same as parent ALT-02)
- CF2R-MCH-20 document
- CF2R sequential number 001
- Revision A

426-D020007322B-000-001-M20001A-M20B:

- CF3R document associated with the parent CF2R document above
- CF3R-MCH-20 document
- Revision B

c. If the CF1R-ALT-02 is required as a child of a CF1R-ALT-01, then the CF1R-ALT-02 registration number must use the CF1R worksheet numbering layout shown in Figure 3-2 and any CF2R/CF3R documents that are children of the CF1R-ALT-01/CF1R-ALT-02 must use the CF1R-ALT-01 "base" numbering layout shown in Figure 3-2. A designated dwelling unit identification number must be constrained to be the same on both the CF2R-ALT-02 parent and the CF2R/CF3R children documents for the dwelling.

3.4.2.6 Example Registration Numbers — LMCC, LMCI, LMCV

The following provides example registration numbers and the interpretation of the significance of the digits used in the numbers as consistent with the conventions given in Table 3-5, Figure 3-4, and Table 3-10 the notes for Figure 3-4 above.

426-F010007322B-000-000-0000000-0000:

- Parent LMCC document
- CHEERS Provider
- Year 2026
- Performance LMCC document (PRF-01)
- Sequential number 7322
- Revision B

For Dwelling Unit 001:

426-M010007322B-001-001-M20001A-0000

- LMCI document associated with the parent LMCC-MCH-01 above
- Multifamily family building number 001
- Dwelling unit identification number 001 (constrained to be the same as parent MCH-

01)

- LMCI-MCH-20 document
- LMCI sequential number 001
- Revision A

426-M010007322B-001-001-M20001A-M20B:

- LMCV document associated with the parent LMCI document above
- LMCV-MCH-20 document
- Revision B

For Dwelling Unit **002**:

426-M010007322B-A02**002**A
426-M010007322B-001-**002**-M20001A-0000
426-M010007322B-001-**002**-M20001A-M20B

For Dwelling Unit 003:
426-M010007322B-A02**003**A
426-M010007322B-001-**003**-M20001A-0000
426-M010007322B-001-**003**-M20001A-M20B

For a second use of the base LMCC for Multifamily Building 002:

For Multifamily Building 002 Dwelling Unit 001:

426-M010007322B-000-000-0000000-0000
426-M010007322B-A02001A
426-M010007322B-002-**001**-M20001A-0000
426-M010007322B-002-**001**-M20001A-M20B:

For Multifamily Building 002 Dwelling Unit 002:

426-M010007322B-000-000-0000000-0000
426-M010007322B-A02002A
426-M010007322B-002-**002**-M20001A-0000
426-M010007322B-002-**002**-M20001A-M20B

For Multifamily Building 002 Dwelling Unit 003:

426-M010007322B-000-000-0000000-0000
426-M010007322B-A02003A
426-M010007322B-002-**003**-M20001A-0000
426-M010007322B-002-**003**-M20001A-M20B

3.4.3 Residential Certificate of Verification Group Numbering Conventions

Residential data registries are required to manage the group sampling procedures. The procedures

and requirements for managing sample groups are given in Reference Residential Appendix RA2 and in Reference Nonresidential Appendix NA1.

The group number is a residential data registry-designated identification number unique to the sample group to which a dwelling has been assigned. The group numbers assigned to residential compliance documents by the data registry during the certificate of verification registration process should use the standardized numbering convention shown in Figure 3-1 below. The group number should be reported on all certificate of verification documents that use group sampling for compliance.

Figure 3-5: Group Numbering Convention for CF3R and NRCV Documents

provider (2=CalCERTS; 4=CHEERS;)	year (eg 3rd digit of year 2022)	year (eg 4th digit of year 2022)	delimiter	count (sequential o through 9)	count (sequential o through 9)	count (sequential o through 9)	count (sequential o through 9)
4	2	2	-	0	7	3	1
				9,999 numbers +0			

Source: California Energy Commission

Table 3-11: Group Numbering Convention for CF3R and NRCV Documents

Digit	Definition	Examples	Note
1	Registration Provider	2 for CalCERTS(inactive) 4 for CHEERS	CEC will designate other providers
2	Calendar Year, tens	1 for 2016 or 2019 2 for 2022 or 2026	Based on date at time of registration
3	Calendar Year, ones	9 for 2019 2 for 2022 6 for 2026	Based on date at time of registration
4	Delimiter 1	- (short hyphen)	Static character
5	Sample Group count, thousands	0-9	Serialized using digits 5 through 8

Digit	Definition	Examples	Note
6	Sample Group count, hundreds	0-9	Serialized using digits 5 through 8
7	Sample Group count, tens	0-9	Serialized using digits 5 through 8
8	Sample Group count, ones	0-9	Serialized using digits 5 through 8

Source: California Energy Commission

4 Electronic Signatures

4.1 Overview

Reference Joint Appendix JA7.6 describes the distinction between electronic and digital signature requirements. Digital signatures and digital certificate authorities are described in Section 5 below. From Section JA7.2 definitions: electronic signature is a "computer data compilation of any symbol or series of symbols executed, adopted, or authorized by an individual to be the legally binding equivalent of the individual's handwritten signature" (U.S. 21 Code of Federal Regulations Section 11.3). The electronic signature process for Energy Code compliance documents is described in *Reference Joint Appendix JA7.6.3.2.1* (Electronic Signature Capability) and *JA7.6.3.2.3* (Signer Review and Signature Actions). Additional guidance for use of electronic signatures for registering Energy Code compliance documents follows.

4.2 Establishing a User Account and Signature Authority

Anyone who wishes to sign Energy Code compliance documents electronically using an ECC-Provider's data registry will be required to establish a user account secured by a unique username and password. Creating a user account requires the applicant to provide sufficient information to establish their identity with the registration provider. Users who wish to sign compliance documents electronically must provide, at a minimum, the data that would have to be entered into each of the fields on the signature block for the compliance document. To be granted signature authority for certain document types, the applicant must also provide proof of possession of all requisite professional qualifications applicable to the scope contained on the compliance document to be signed. For example, if an HVAC contractor wants to register refrigerant charge verification documents, the HVAC contractor's C-20 license number would be required to be disclosed to the data registry, and this license number will be reported in the signature block when the contractor signs the document as the responsible person. The applicant may also provide a wet signature on the user account application that may be scanned electronically by the data registry provider and added to the user's profile. The scanned image of the wet signature may be overlaid on the completed electronic compliance document in the signature field after the user performs a signing action while logged into the data registry to generate an electronic signature for the document.

Once the user has established a username and password to access a personal account with a data registry, signing actions will be attributed to the user's account

When an authorized user elects to sign a document, a signing action should be required, such as clicking on a control (such as a button or check box icon) in the data registry user interface, which then results in the data registry populating the signature block with the user's professional information and an image or other approved representation of the user's signature.

4.3 Data Field Definitions for Signature Blocks

4.3.1 Electronic Images and Fonts Used for Electronic Signatures

Reference Joint Appendix JA7.6.3.2.1.3 requires authorized users to provide an electronic image of their handwritten signature to the data registry for use in displaying their electronic signature and allows the registration provider to make available alternative methods for creating an electronic image for displaying electronic signatures. At a minimum, the data registry must make available functionality for use of an electronic (scanned) image of the user's wet signature. Other methods are allowed to be used if the data registry user interface provides the alternative signature creation functionality. Such alternative methods may allow use of a mouse or other pointing device to draw an electronic signature, or the data registry may make available the option for a user to select a font representation of their handwritten signature.

4.3.2 Signature Block Data Validation

Data fields in signature blocks are not required to have values assigned to them when submitting XML to the RG for publishing a PDF compliance document. However, including data values in signature block fields in the XML is allowable. Therefore, if values are assigned to the signature block data fields in the XML transmitted to the RG, the data must be valid in accordance with the schema for that signature block. Otherwise, the XML for that compliance document submitted to the RG will fail validation.

4.3.3 Appending the Signature Block Data

The requirements for a data registry provider to verify the unique professional information submitted by a user when applying for a signature authority is specified in JA7.6.3.2.1.2; additional guidance is described in Section 4.2 (above). Populating the signature block with a user's unique professional information is described in JA7.6.3.2.3; additional guidance for appending the signature block data is given in Sections 4.4 and 4.5 below.

4.4 Electronic Signature Process Flow

The process for electronically signing an Energy Code compliance document should include attention to the following guidance points for the process flow:

a. When data entry into the data registry has been completed for a compliance document, and the documentation author wishes to sign the document, the data registry must first call for and receive from the RG a file report (PDF image) of the completed compliance document. This request makes available to the document signer the ability to review the completed document before signing. As a prerequisite to making signing controls available to the documentation author signer, the data registry transmits a call to the RG that includes all required XML data to complete the document. The RG validates that data against the schema for that document and returns a PDF to the data registry.

b. The RG does not register the document. The Data Registry conducts

registration procedures by incorporating or appending signatures, registration numbers, date/time stamps, and so forth to the completed and validated PDF received from the RG.

c. The signing actions of responsible persons, documentation authors, or field technicians are not required to occur at the same time as the data input.

d. The identity of a responsible person signer is not required to be known to the documentation author.

e. As required by JA7.6.3.2.3.4 when an authorized user signs a document, the registry must provide a display of the compliance document that allows the user to access any part of the compliance document information for review, including a display of the document declaration statement.

f. The documentation author must review the PDF file received from the RG and then, by performing a signing action, certify compliance with the declaration statements on the document.

g. When the documentation author signs the document, the data registry automatically appends the documentation author's signature block information into the document XML data portion of the registration package received from the RG. Then the data registry overlays the documentation author's signature image and the documentation author's signature block information onto the documentation author portion of the signature block in the PDF.

h. The data registry makes available to the responsible person the ability to view, before signing, a copy of the completed PDF that was signed by the documentation author.

i. The responsible person must review the PDF file received from the RG. By signing, the responsible person certifies compliance with the declaration statements on the document.

j. When the responsible person (or authorized representative) signs the document, the data registry appends the responsible person's signature block information into the document XML data portion of the registration package received from the RG. Then the data registry overlays the responsible person's signature image, and signature block information onto the responsible person's portion of the signature block in the PDF. (See Section 4.5.2 for additional information on signatures given by authorized representatives of the responsible person on certificates of installation).

k. The responsible person's signing should also trigger the digital signing (by the data registry) of the completed document PDF file and the digital signing of the XML data as described in Section 5 to complete the registration. The completed registration package should be a single file containing an embedded digitally signed PDF document file and digitally signed XML data.

This process flow for electronically signing compliance documents is recommended to avoid sending XML data to the RG multiple times for each document to populate the signature

block fields for each signing.

Transporting bitmap or images of signatures to and from the RG is not supported. The user's signature image in the signature block on completed compliance documents is expected to be overlaid on the PDF document signature block by the data registry when the user provides the signing during PDF document registration.

4.5 Delegated Signatures and Authorized Representatives

4.5.1 Delegation of Signature Authority for Certificates of Installation

Section RA 2.5.1 of the Reference Residential Appendices states:

- The builder or subcontractor who is eligible under Division 3 of the Business and Professions Code to take responsibility for the construction or installation, or their authorized representative as specified in Standards Section 10-103(a)3A, shall provide an electronic signature to register the Certificate of Installation, to certify the information provided on the Certificate is true and correct, and confirm that the construction or installation complies with the requirements shown on the dwelling unit's Certificate of Compliance that was approved by the enforcement agency.

The phrase "builder or subcontractor" in this context means contractors and subcontractors that hold general or specialty classification licenses. Specialty classifications that typically install or alter ECC-verified measures include C-20 (Warm-Air Heating, Ventilating, and Air-Conditioning), C-2 (Insulation), and C-36 (Plumbing).

Section 10-103(a)3A of the 2025 Energy Code states:

- **Delegation of Signature Authority.** Except where prohibited by law, including but not limited to any requirements under Division 3 of the Business and Professions Code, the *Responsible Person* may delegate signature authority to third parties (*Authorized Representatives*) provided that there is a written agreement:
  - i. Between the Responsible Person and the person to be designated as the Authorized Representative.
  - ii. Specifying that the Authorized Representative may sign Certificates of Installation on behalf of the Responsible Person.
  - iii. Specifying that the legal responsibility for construction or installation in the applicable classification for the scope of work specified on the Certificate of Installation document(s) remains with the Responsible Person.
  - iv. That is signed by both the Responsible Person and the Authorized Representative.
  - v. That is retained by the ECC-Provider to which all compliance documents are submitted for the building to which the Certificate of Installation documentation pertains.

vi. That is maintained in the ECC-Provider Data Registry such that it is accessible for verification by, including but not limited to, the CEC and enforcement agencies.

When the Energy Code requires the certificate of installation to be registered, the responsible person must become an authorized user of the applicable data registry and must establish the applicable required signature authority with the data registry. For a responsible person to delegate signature authority to another person, in accordance with Section 10-103(a)3A, a document that that identifies the responsible person's designated authorized representative(s) must be submitted to the data registry provider as prerequisite to granting authorized representatives signature authority. Authorized representatives must also be authorized users of the data registry.

Data registries must provide CEC staff and enforcement agencies a user interface capability to generate reports that disclose the status of authorized representatives of responsible person users as required by Energy Code Section 10-103(a)3Avi.

4.5.2 Signature Block Data for Delegated Signatures

When a responsible person's signing action on a certificate of installation is performed by an authorized representative of the responsible person, the information appended to the signature block XML data portion of the registration package and overlaid on the responsible person's signature block on the PDF (Section 4.4) must be the responsible person's professional information — not the authorized representative's professional information.

Furthermore, the electronic signature appearance on the document must include a statement to the effect that the authorized representative's signature is provided on behalf of the responsible person.

The data registry must limit the availability of delegated signature functionality to only those users who have been designated as authorized representatives as described in Section 4.5.1.

5 Digital Signatures and Acceptable Technologies

5.1 Overview

Digital signatures are used to certify the authenticity of a document and to verify the authenticity and identity of document signers. Digital signatures also establish the state of the document at the time it was signed and make it possible to provide alerts to document recipients indicating whether the document has been changed since being signed. A digital signature is an electronic signature that incorporates cryptographic methods of originator authentication, allowing the identity of the signer and the integrity of the data to be verified. The regulations, adopted by the Secretary of State, that govern the use of digital signatures for use by public entities in California are found in the California Code of Regulations, Title 2, Division 7, Chapter 10 Digital Signatures, accessible on the Secretary of State website.

As required by *Reference Joint Appendix* JA7.6.2.2.4, JA7.6.3.2.4, and JA7.7.1.4, when concluding the document registration procedure, the data registry must apply a digital signature to the electronically signed compliance document (PDF from the RG).

The registration package for the registered compliance document that contains the XML data corresponding to the information reported on the compliance document PDF must also be digitally signed. Use of a certificate authority is not required for digitally signing the registration package data.

Digital signatures for Energy Code compliance documents and data should conform to the applicable conventions described in Sections 5.2 and following.

5.2 Digital Signature Certificates and Certificate Authorities

The California Secretary of State repealed the requirement to list its authorized certificate authorities. Reference Joint Appendix JA7.6.2.2.4 was revised to reflect this rulemaking change, which now gives the following, "The Registration Provider's digital signature shall be created by a technology acceptable by the California Secretary of State." Definitions, criteria for acceptability, and additional requirements for Digital Signatures are available at the Secretary of State website.

Digital certificates protect against impersonation, certifying that a public key belongs to a specified entity. They are issued by a certificate authority (CA). A digital certificate binds a public key to the associated owner, whether that owner is an individual, a software application, or some other entity. Digital certificates are also known as "public key certificates" because they give assurances about the ownership of a public key when an asymmetric key scheme is used. A digital certificate contains the public key for an entity and is a statement that the public key belongs to that entity.

If public keys are sent directly by the owner to another entity, there is a risk that the message could be intercepted, and the public key substituted with a different key. This action is known as a "Man in the Middle Attack." The solution to this vulnerability is to exchange public keys through a trusted third party; thus, the user has a strong assurance that the public key is authentic. The certificate authority incorporates the key into a digital certificate.

5.3 Document Components That Must Be Digitally Signed

At the conclusion of document registration, the compliance document PDF and the XML data corresponding to the information reported on the PDF are expected to be contained in a registration package as described in Section 4.4. At such time as the CEC may approve a document repository, then a copy of the completed registration package is expected to be exported to the CEC Document Repository as described in Section 3.1 and *Reference Joint Appendix JA7.7.1.4.*

The data registry is expected to retain a copy of the completed registration/transmission package, in accordance with Title 24, Part 1, section 10-103.3.

When exporting the registered compliance document PDF or data, there are two digital signature use cases to consider.

Use Case 1: An authorized user of the data registry downloads a copy of a registered compliance document PDF and must verify the provider's digital signature once the PDF is downloaded to the authorized user's computer. The user may also transmit the PDF file to others who will need to verify the data registry provider's digital signature. These users do not want or need the XML data corresponding to the information reported for that compliance document.

Use Case 2: The Data registry provider exports a completed transmission package to a document repository or to someone who requested both the registered compliance document PDF and the XML data corresponding to the information reported on the PDF. Once received, the requestor will need to verify the authenticity of both the registered compliance document PDF and the XML data contained in the completed transmission package.

5.3.1 Digital Signing Requirements for the Registered Compliance Document PDF

a. The registered compliance document PDF must be digitally signed at the time the document is registered using the data registry provider's digital certificate.
b. Data registries should extract the digitally signed compliance document PDF from the transmission package for export to a user when only the PDF is required by the user. It must be possible for the user to verify the PDF digital signature by opening it with freeware such as Adobe Acrobat Reader. To ensure that PDF reader freeware can verify the authenticity of the registered PDF, data registries must provide a secure method for users to acquire the certificate issued by the approved CA of the data registry that will add the certificate to the user's local root certificate store, if necessary, as described in Section 5.5.
c. If an export to a user of the registered compliance document PDF is contained in a transmission package, it must be possible for the user to extract the digitally signed PDF and verify the digital signature of the PDF by opening it with freeware such as Adobe Acrobat Reader.

5.3.2 Digital Signing Requirements for the Transmission Package

a. The transmission package must contain the compliance document PDF file that was digitally signed at the time the document was registered. If the transmission package

is exported to a user, it must be possible for the user to extract the digitally signed PDF from the transmission package and verify the PDF digital signature by opening it with freeware such as Adobe Acrobat Reader. To ensure that PDF reader freeware can verify the authenticity of the registered PDF, data registries must provide a secure method for users to acquire the certificate issued by the approved CA of the data registry that will add the certificate to the user's local root certificate store, if necessary, as described in Section 5.5.

b. The transmission package must contain the XML data corresponding to the information reported on the registered compliance document PDF.
c. For performance certificate of compliance documents, the transmission package must contain the data used to provide the input to the Title 24, Part 6 compliance software tool used to generate the registered performance certificate of compliance PDF contained in the transmission package.
d. The entire contents of the registration/transmission package must be digitally signed at the conclusion of registration and signed independently of the digital signing of the compliance document PDF. The digital signing of the registration/transmission package is not required to use a digital certificate.
e. To keep the XML data and the PDF report linked, the data registries must retain the entire digitally signed registration/transmission package.

5.3.3 Digital Signature Appearance

The signature appearance is how the signature is displayed to the user on the completed compliance document PDF. When the compliance document PDF is signed, the signature appearance becomes part of the signed document. It is not part of the signature.

5.3.3.1 The Content of the Digital Signature Appearance

Provide the following text in the digital signature appearance:

"Digitally signed by [data registry provider's name]. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information."[1]

Do not include any other information such as graphic(s), watermark(s), date, or time stamps with the digital signature appearance.

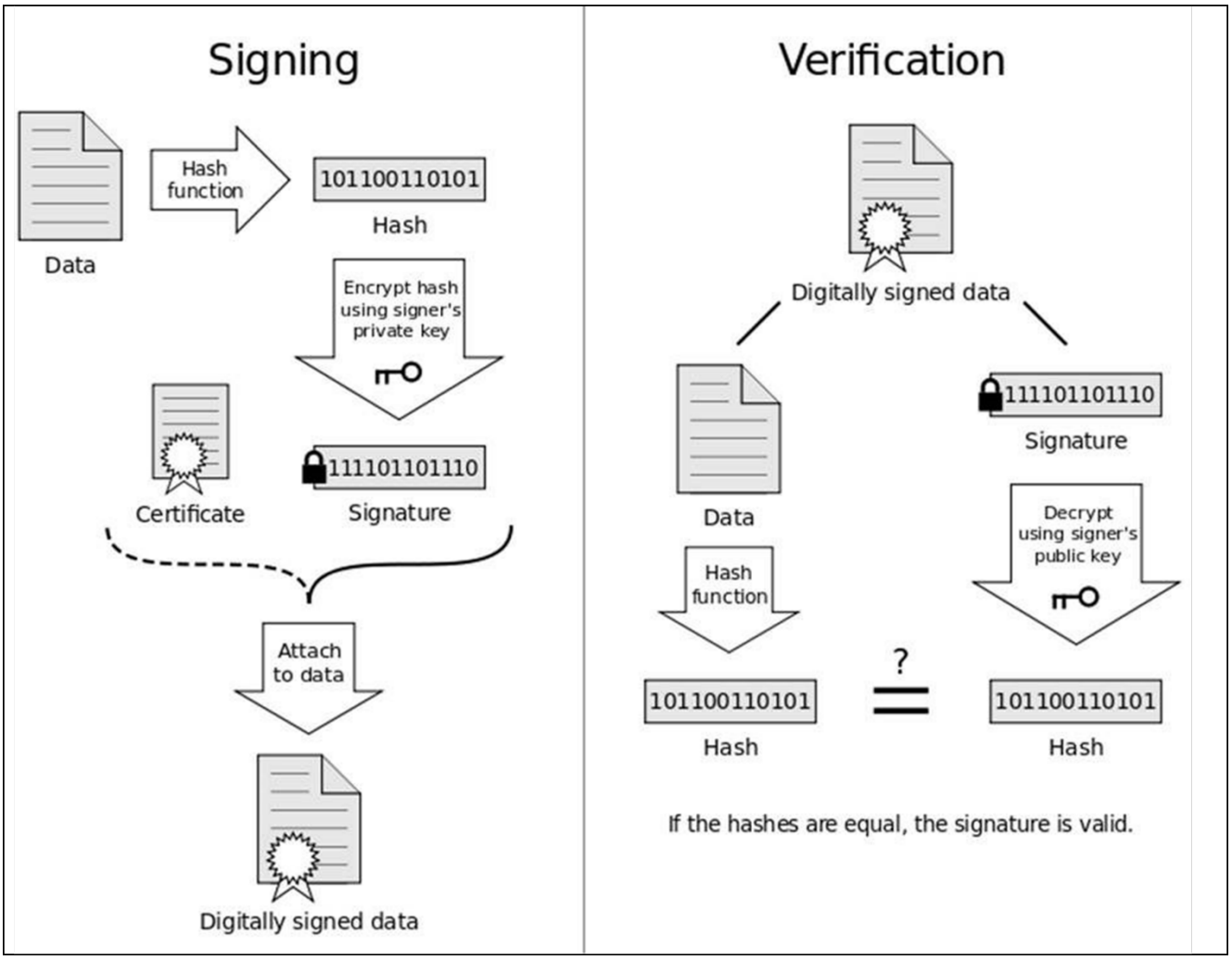
5.3.3.2 Placement of Digital Signature Appearance

Place the digital signature appearance once at the end of the compliance document, in a location that follows the responsible person's signature block.

Figure 5-1 describes the steps in the digital signing process and the digital verification process, which involves generating a hash and then applying the encryption key.

[1] JA7.6.3.2.4.1

Figure 5-1: Process Flow Diagram for Digitally Signing a Document and Verifying the Digital Signature



Source: California Energy Commission

Data registry providers are required to assign their digital signature to registered compliance documents (PDF format documents) using a digital certificate. The digital certificate must be issued to the data registry organization, not to an individual. Digital signatures for registered compliance documents must clearly identify the data registry provider as the owner of the digital signature certificate.

5.3.4 Digital Certificate Use Types

There are three types of digital certificates that the provider may use.

5.3.4.1 Digital Certificates for Document Signing

- Advantages
  - Certificate satisfies the requirement to validate that the document hasn't changed since signing.
  - User does not have to perform additional actions to have the capability to verify authenticity of signed documents because the approved CA certificate

comes with the operating system of their computer.
    - There are some automated solutions for organizations with high volume.
- Disadvantages
    - The organization is not listed as the owner in most offerings. The identity on the certificate is an employee name or a department in the organization.
    - Cost for high-volume solutions that require a hardware security module (HSM) is expensive compared to all other solutions.
    - Not offered by largest CAs.

5.3.4.2 Digital Certificates for Code Signing

- Advantages
    - Digital certificate authenticates the data registry provider as the owner and validates that the document had not changed since signing.
    - Timestamping avoids errors when a digital certificate expires after the document was signed by indicating the PDF was signed while the certificate was valid.
    - Price is reasonable. This solution must be incorporated into the data registry software development, which makes it automatic and not manual.
- Disadvantages
    - The CA digital certificate for this type is not automatically provided with the operating system of the computer, so the user has to perform actions to get the CA certificate added to their root certificates.

5.3.4.3 SSL Certificates With Digital Signing of Documents

- Advantages
    - An SSL certificate provides validation of the data registry provider and its data registry website.
    - User rarely has to do anything because the root certificate of the CA is usually shipped with the user's operating system.
- Disadvantages
    - Might not be available with SSL certificates.

5.3.5 Digital Certificate Solution Options

Digital certificate solution options vary with the volume of digital signatures assigned annually. The following are examples of different digital certificate products, as surveyed in 2014.

5.3.5.1 Manual Signing

Most CAs offer solutions that require manual signing of digital certificates. Some have limits on the number of signatures (up to 5,000 annually. These systems come with a hardware key that contains the digital certificate and processing software that time stamps every digital signature, so it will be valid even after the digital certificate expires. Companies with a limited number of

signatures per year may sign each certificate manually. However, for data registry providers with 20,000 or more signatures per year, manual signing is impractical.

5.3.5.2 Automatic Signing

CAs offer automated solutions, usually with unlimited signatures, for an annual fee plus the purchase of computer hardware that contains the digital certificate and processes digital signature requests, including the time stamping. CAs that are partners of Adobe's Certified Document Services (CDS) program are required to use hardware that complies with the National Institute of Standards and Technology (NIST) Federal Information Processing Standard, (FIPS) Publication 140-2 Security Requirements for Cryptographic Modules. This is usually referred to as the *hardware security module* (HSM) and comes in two forms. For systems that have a single server, an internal Peripheral Component Interconnect (PCI) card is the hardware solution. For systems that have multiple application servers, the HSM is an external appliance.

5.4 Root Certificates for Validation of Document Authenticity

To ensure that PDF reader freeware can verify the authenticity of the registered PDF documents, data registries must provide a method for users to acquire the certificate issued by the approved CA of the data registry, which will add the certificate to the user's local root certificate store, if necessary. The suggested method is described in Subsection 5.5.1 below.

5.4.1 Data Registry Trusted-Source PDF Method

a. Each data registry must provide a link on one of the SSL-secured web pages that makes available a PDF file digitally signed by the data registry that the user can open (trusted-source PDF). It should not be necessary to log in to the data registry to navigate to this secure web page.
b. The data registry must provide user instructions for viewing the status of the digital signature in this trusted-source PDF file.
c. The data registry must provide user instructions to "trust" this trusted-source PDF file, which should result in the digital certificate of the data registry being added to the certificate store of the operating system of the user's local personal computing device.
d. The data registry must provide user instructions to review the status of the digital signature in this trusted-source PDF file to confirm the status of the digital signature.

The status should indicate the signature is valid after adding the digital certificate of the registry to the certificate store of the operating system of the user's local personal computing device.

e. If the digital signature in the trusted-source PDF file is not displayed as valid after performing the actions above, the data registry should provide further instructions for acquiring the certificate issued by the approved CA of the data registry that will add the certificate to the user's local root certificate store, if necessary.
f. It may be necessary for the data registry to make available more than one version of a trusted-source PDF file type to make it possible for various types of PDF reader freeware applications to be used to validate registered compliance documents. The

data registry must provide user instructions for selecting the correct trusted-source file for use with their PDF reader.

5.5 CBECC Software Output Data Security and Authentication for the Performance Certificate of Compliance

The Residential and Nonresidential CBECC compliance manager-based software (compliance software) uses digital signing when generating analysis data for submission to the RG for creating the unregistered certificate of compliance. Each version of the compliance software employs a unique Rivest–Shamir–Adleman (RSA) algorithm-based public/private key pair to sign the data before sending it to the RG.

When transmitting data to the RG, the compliance software communicates using Secure Sockets Layer (SSL)-HTTPS security technology to encrypt the communication. The RG will accept only HTTPS requests.

In addition to this basic authentication, the signed data are used to determine a watermarking status for compliance documents. Thus, in addition to the signed analysis output data, the compliance software sends parameters that the RG uses to determine how to process a request. These parameters include a "hash digest" or fixed length of arbitrary data that is based on the specific content of the analysis data, the public key for the signature, plus additional tokens. The RG reads the public key and compares the additional tokens to authenticate the connection made by the software. Once authenticated, the RG verifies the signature, processes the data, and may apply a watermark to the PDF report output, depending on the results of the verification.

5.6 RG Output Data Security and Authentication for the Performance Certificate of Compliance

The RG employs XML digital signatures so that the certificate of compliance registration package produced by the RG can be verified by an approved data registry. Thus, the data registries must ensure that both the data and PDF documents used for registration have not been tampered with before submission to the Data Registry. This verification is accomplished using public key infrastructure (PKI) that employs a pair of public and private keys.

The RG, using a secure private key, creates a hash, or fixed length of arbitrary data, that is based on the specific content of the data that has been processed. Any change made to the data being signed would result in a different hash value if that changed data were to be signed again using the same private key. This hash is the signature for that data.

The signed data can be verified by using the public key associated with the signature. Because the private key used to sign the data is secret, PKI uses the public key to verify that the data matches the signature provided. Data registry providers are given the public key that can be used to verify signed data.

The XML signing uses an "enveloped" signature, meaning that the signature is included in an XML element inside the data itself.

5.7 Data Exchange Between External Digital Data Source (EDDS) and Data Registry

As an alternative to keyed-in data input for use in compliance document registration processes, the data registry may receive data transfers directly from external digital data sources as specified in Joint Appendix Section JA7.7.1.2. This receiving of data transfers may occur only if the working relationship between the data registry and the EDDS has been approved in accordance with the requirements in Joint Appendix Section JA7.8.

Section 5.8.1, 5.8.2, 5.8.3, and 5.8.4 below summarize the requirements for use of EDDS given in Joint Appendix JA7. Refer to JA7 for additional detail.

5.7.1 EDDS Types

As specified in JA7.7.1.2.2, EDDS types could include:

a. Diagnostic instrument manufacturer services that incorporate wireless or web-based data-logging capabilities into the associated products, capture and store relevant information from field diagnostic testing procedures, and provide digital access to the stored data to the diagnostic tool owners and other parties to the field verification procedure.
b. Third-party quality-control programs (TPQCP) that verify the work of participating installers, collect, and evaluate more detailed data than necessary for compliance, identify in real-time during the installation invalid and inaccurate installer testing and noncompliant installations, and enable corrected testing with the goal of bringing installations into compliance before the installer leaves the job site. TPQCP descriptions and requirements are specified in Appendix RA2.7.
c. Internet-based datastore services that are administered by an EDDS provider who ensures the security and integrity of data input to the datastore service. Authorized users of Title 24, Part 6 Data Registries may elect to use EDDS datastore services for data input and subsequently transmit the stored data to a Title 24, Part 6 Data Registry while logged into the data registry during Title 24, Part 6 document registration.

5.7.2 EDDS Requirements

As specified in JA7.7.1.2, the data upload to an EDDS. The data exchange between a data registry and an EDDS, including data upload and data exchange that is facilitated by an *application programming* interface (API), shall conform to the following:

a. The data exchange from an EDDS to a data registry shall be initiated only by an authorized user of the data registry; only while the user is logged into his Title 24, Part 6 data registry user account; and only by use of a data exchange feature managed and made available to the user by the data registry user interface.
b. The data exchange from an EDDS to a data registry shall not be an unattended automatic electronic data exchange transaction.
c. The registration provider shall ensure the authorized user has the opportunity to

review and revise the information transmitted to the data registry by use of an EDDS before making electronic signature controls available to the user.

d. The registration provider shall be responsible for managing the security and integrity of the data exchange with the EDDS.
e. The registration provider shall ensure that user data uploads to the EDDS and subsequent storage and maintenance of compliance data in the EDDS are done using best practices for secure data exchange and secure data storage.
f. The registration provider shall ensure that the data exchange processes that import data into the data registry from the EDDS are performed using best practices for secure data exchange.
g. The user's compliance data may be uploaded automatically to an EDDS datastore, such as by network-connected diagnostic field verification instruments, or it may be keyed in by the user using an EDDS services software user interface.
h. The data transmitted from an EDDS to a data registry shall conform to the XML schema for each respective Title 24, Part 6 compliance document for which the data are to be used. All data provided to complete compliance documents shall be subjected to validation by the data registry software after the data is transmitted to the data registry.
i. The current compliance document schemas approved by the CEC shall be made available to the EDDS services providers as needed to clarify the Title 24, Part 6 compliance document data requirements.

5.7.3 EDDS Approval

5.7.3.1 EDDS Application

JA7.8 outlines the minimum content required for a registration provider EDDS application. The application must include detailed descriptions and specifications of the proposed EDDS. These descriptions and specifications will provide the CEC with the means to evaluate the EDDS application and the ability of the registration provider to show compliance with the regulatory requirements. The CEC will evaluate the applications based on the requirements in JA7.7.

To simplify the CEC review, the following four sections are recommended to be included in the application:

1. Introduction
2. Detailed description of the EDDS specifications and functionality. This description includes the full procedure for data collection, storage, maintenance, and data exchange and how requirements in JA7.7.1.2.1 will be met.
3. Demonstration of the EDDS service successfully and securely gather, storing, and transferring compliance data to the data registry.
4. Appendices, such as:
    a. Self-test results (by the registration provider) of the transmission of compliance data between the EDDS and the data registry (JA7.8.2).

b. Details of contractual agreements with the EDDS service provider (JA7.8.2.6).
c. User manuals for the data registry and for the EDDS service software, features, and data registry process (JA7.8).
d. Application checklist of requirements from JA7.8.2 and the ECC Regulations.
e. Other information at the discretion of the registration provider, such as a list of the compliance documents and data fields for which the EDDS will exchange compliance data.

Additional guidance on the application and approval process has been published by the CEC with respect to the 2022 Energy Code and the legacy HERS Program.[2]

5.7.3.2 EDDS Acceptance Testing

Joint Appendix Section JA7.8 requires that when an application for a data registry approval includes use of EDDS, the CEC shall perform acceptance testing of the EDDS proposed to be used for data input by authorized users of the data registry.

Acceptance testing is necessary to verify that the proposed EDDS and data registry meet the requirements of JA7.7, conform to the specifications and features identified in the application, and are suitable for use for providing compliance document registration functionality required by the Energy Code. The recommended approach to satisfying the acceptance testing requirements is for the registration provider to perform a live demonstration of the EDDS. The demonstration includes use of the EDDS and data registry to securely gather, store, and transfer compliance data to the data registry and produce a valid compliance document using the transferred compliance data. Each compliance document that receives data from the EDDS will be included in the demonstration. The CEC will observe the demonstration and evaluate EDDS and data registry functionality for conformance to the requirements of JA7.7 and specifications identified in the application.

5.7.3.3 Contractual Agreements Between Registry Provider and EDDS Services Provider

JA7.8.2.6 requires applications for approval of data registry use of EDDS services to include documentation to disclose the details of the working agreement(s) or contract(s) between the registration provider and EDDS services entity. This documentation must include descriptions of the parties involved and the technologies used for the data exchanges between the EDDS and the data registry.

The contract executed between a registration provider and an EDDS services provider is a prerequisite to approval of the EDDS for transmitting data to the data registry for Energy Code document registration. The agreement is required to describe the specifications of any internet-based EDDS services or EDDS software used to store the compliance document data on behalf of authorized users of the data registry, including description of any internet-based data gateway interfaces used for sharing the compliance data with third parties.

2 Staff Paper: Approval Process for Use of an External Digital Data Source

A separate agreement is required for each working relationship between a data registry and an EDDS. EDDS services providers may be approved to provide services to any number of approved registration providers. Registration providers may be approved for use of any number of EDDS services providers.

5.7.3.4 EDDS Evaluation Criteria

The CEC will evaluate any application or amendment submitted using the evaluation criteria included in the EDDS Service Application Checklist.[3] This checklist is published by the CEC, provides the specific evaluation criteria for each requirement, and includes suggestions of where in the application they should be addressed. The evaluation criteria are guided by the wording and intent of JA7 and Title 24, Parts 1 and 6. Any application for an EDDS to operate with a 2025 Energy Code Residential Data Registry must show how the EDDS will comply with the 2025 Energy Code and the ECC Program requirements of Title 24, Part 1, Section 10-103.3.

5.7.4 EDDS User Instructions

JA7.8.5.5 requires that when a data registry is approved to make available use of EDDS features to authorized users of the data registry for data input during document registration procedures, the data registry user manual shall include instructions for use of those features. The instructions shall describe use of the data registry user interface for EDDS data input procedures. Moreover, if the EDDS services provider has a user interface or software application that the user is expected to access and operate that is independent of the data registry user interface, a copy of the EDDS service or software user instructions shall be included in the Data Registry User Manual. If the EDDS service or software user instructions contain proprietary information or intellectual property, the EDDS service or software user instructions do not need to be included in the Data Registry User Manual. However, the EDDS service or software user instructions must be made available to all authorized users that use the EDDS service or software.

3 Checklist for 2022 EDDS Applicants

6 Document Configuration Rules

6.1 Overview

High-level document configuration requirements are specified in *2025 Reference Joint Appendix JA7*. Section JA7.5.6 requires that data registries shall be capable of tracking all compliance documentation and maintaining the correct associations between related documents, including revisions and completion statuses for all documents within a building project. Section JA7.5.6.1 from *2025 Reference Joint Appendix JA7* is copied into Section

6.2.1 below. Additional guidance for completion of the project status report is given in Section 6.2.2.

6.2 Project Status Reports (PSR)

The PSR is a dynamic compliance document that is generated each time it is accessed so that it represents the latest status of a project's registration state and to display notes that could have been generated based on user input overrides on some document types. Prior versions of the PSR are not required to be retained.

6.2.1 Project Status Report Requirements Specified in Reference Joint Appendix JA7

6.2.1.1 Project Status Reports (quoted from JA7.5.6.1)

The status of completion of a project shall be reported by the data registry.

The data registry shall determine the documents required for a project based on the certificate of compliance and maintain a summary that reflects the current status of completion of the required documents and shall be readily accessible to authorized users of the data registry. Access to the report shall be facilitated by use of search parameters relevant to the project as listed in Sections JA7.5.6.1.1 and JA7.5.6.1.2.

Enforcement agencies may be authorized to enter notations into project records in data registries to communicate plan check and field inspection information to builders, designers, installers, and raters.

The project status report shall be made available in a printable format.

Minimum information requirements for the project status report shall include the following:

6.2.1.2 Project Status Report Information for Low-Rise Multifamily and Single- Family Residential Projects (From JA7.5.6.1.1)

a. Project name.

b. Project location (or address).

c. Listing of the certificate of compliance documents required, date registered (or indicate not complete if the document record has been started but is not yet registered), and registration number.

d. Listing of the certificate of installation documents required, date registered (or indicate not complete if the document record has been started but is not yet registered), and registration number.

e. Listing of the certificate of acceptance documents is not required, which must be communicated on the PSR.

f. Listing of the certificate of verification documents required, date registered or indicate not complete if the document record has been started but is not yet registered, and registration number.

g. Listing of the mandatory measure options required; options selected (refers to the certificate of installation and certificate of verification documentation).

6.2.1.3 Project Status Report Information for High-Rise Multifamily and Nonresidential Projects (From JA7.5.6.1.2)

Note: Nonresidential document registration is contingent upon approval of a nonresidential data registry by the Commission.

a. Project name.

b. Project location (or address).

c. Listing of the certificate of compliance documents required, date registered (or indicate not complete if the document record has been started but is not yet registered), and registration number.

d. Listing of the certificate of installation documents required, date registered (or indicate not complete if the document record has been started but is not yet registered), and registration number.

e. Listing of the certificate of acceptance documents required, date registered (or indicate not complete if the document record has been started but is not yet registered), and registration number.

f. Listing of the certificate of verification documents required, date registered (or indicate not complete if the document record has been started but is not yet registered), and registration number.

6.2.2 Additional Guidance for Producing Residential Project Status Reports

6.2.2.1 Mandatory Measure Compliance Alternatives Determined at Installation Phase

This section provides additional guidance for the topic identified in Section 6.2.1.2 above.

When a mandatory requirement allows for compliance alternatives to be determined at the time of installation by the installing contractor, the project status report cannot determine which compliance documents will be required for those features, if based only on the information given on the certificate of compliance.

Example Use Case — Compliance with Energy Code Section 150.0(m)13:

The mandatory requirements in Section 150.0(m)13 for verification of ducted cooling system airflow rate and fan efficacy provides an exception which allows for use of an alternative compliance method when installation of a duct design that conforms to Table 150.0-B or Table 150.0-C was used. Thus, at the time of installation of the space conditioning system, the installer must select one of these options for compliance. Until the installing contractor selects an option for compliance and registers the applicable Installation Certificate (CF2R-MCH-01), the Data Registry will be unable to determine whether a MCH-22 and MCH-23 will be required to document the airflow rate and fan efficacy measurements, or otherwise whether a MCH-28 will be required to document the alternative duct design compliance option specified by Table 150.0-B or C.

Generally: When a certificate of compliance is registered for a project and the subsequent certificate of installation and certificate of verification compliance documents for a feature cannot be determined until after installation of the feature, the project status report should disclose the optional compliance choice(s) that must be determined by the installer at installation. After the installer determines the method of compliance and registers the applicable certificate of installation, the project status report should be updated to report the full set of compliance document requirements of the project consistent with the installer's compliance option choice.

Continuation of the 150.0(m)13 Example Use Case:

a. After a Certificate of Compliance for the project is registered, but prior to registration of a CF2R-MCH-01 Certificate of Installation, the Project Status Report should indicate two options are available for compliance for the system; either a MCH-22 and MCH-23 will be required or, alternatively, a MCH-28 will be required.

b. After a CF2R-MCH-01 for the dwelling is registered, if the MCH-01 determines airflow rate and fan efficacy verification will be documented for the system, the Project Status Report should indicate a MCH-22 and MCH-23 will be required. Otherwise, if the MCH- 01 determines that the alternative compliance method using the Table 150.0-B or Table 150.0-C duct design was used, then the Project Status Report should indicate a MCH-28 will be required.

6.2.2.2 Reporting Non-default Data Inputs

To streamline data entry for project compliance documents, many data fields have specified a default value that is expected to be correct for most project documentation situations. The user may leave the default value unchanged if it is correct, thus the user should not have to perform any data entry actions for these fields if the default value is correct.

When Compliance Document data field rules allow overriding a default value, and when the user elects to override that default value, the Project Status Report should include an advisory message describing the:

- Data field name/identification for the overridden data.
- Default value for the data field.
- New value that was input as an alternative to the default value for the data field.

Allowing a user to override a default value may simplify the completion of project compliance

documents by allowing the users the flexibility to avoid having to make revisions to parent documents when reporting features that are inconsistent with specifications on parent documents but are nonetheless still in compliance with the Energy Code.

Data Registry staff should not be required to determine whether the overridden input value complies with the Energy Code as part of the document registration process. The enforcement agency review of the project documentation at final inspection, or ECC quality assurance procedures, may result in determinations to revise one or more of the affected compliance documents or make changes to the feature(s) that were installed.

Example Use Case:

a. The CF1R-PRF-01 specifies a single-zone ducted space cooling system with a single-speed condensing unit; the builder upgrades the dwelling to install a multi-zone ducted space cooling system with no bypass duct and a multi-speed compressor.
b. On the CF2R-MCH-01 for the dwelling, the values in D09 and D10 must be overridden to accurately report the space conditioning system installed is Zonally Controlled and the Condenser is Multi-Speed.
c. On the project Summary Report for the CF2R-MCH-01 the following messages must be reported:

Section D Field 09 Default Value Overridden:

- Default Value = Not Zonal
- Entered Value = Zonally Controlled

Section D Field 10 Default Value Overridden:

- Default Value = Single-Speed
- Entered Value = Multi-Speed

d. An enforcement agency or ECC rater review of the overridden data finds that the compliance requirements for the Zonally Controlled system are the same as the requirements for the Not Zonal system. Since the compliance requirements are the same for the substitution, there is no need to revise the CF1R-PRF-01.

6.2.2.3 Delayed ECC Verification of Refrigerant Charge

a. Excerpt from RA2.4.4:

"If necessary to avoid delay of approval of dwelling units completed when outside temperatures are below 55°F, the enforcement agency may approve compliance with the refrigerant charge verification requirements when installers have used the Weigh-in Charging Method described in Reference Residential Appendix RA3, Section RA3.2.3.1 and have not used the Section RA3.2.3.2 option for ECC verification compliance. This approval will be on the condition that installers submit to the enforcement agency a registered Certificate of Installation that includes a signed declaration indicating agreement to return to correct refrigerant charge if a ECC Rater determines at a later time when the outside temperature is 55°F or above, that correction is necessary. Installers must also notify homeowners that their systems have not had their charge verified. The ECC Provider

shall track these projects to ensure a ECC Rater conducts the required refrigerant charge verification for all such systems."

b. Excerpt from Certificate of Installation CF2R-MCH-25c for the Weigh-in Charging Procedure; Reference: Section F - Additional Requirements; field 04:

"When applicable and if necessary to avoid delay of approval of dwelling units completed when outside temperatures are below 55°F, the enforcement agency may approve compliance with the refrigerant charge verification requirements based on registration of this CF2R-MCH-25, documenting use of the RA3.2.3.1 HVAC Installer Weigh-In Charging Procedure when the optional Section RA3.2.3.2 ECC Rater Observation of Weigh-In Charging Procedure is not used. As condition for such enforcement agency approval, the responsible person's signature on this compliance document affirms the installer agrees to return to correct refrigerant charge if a ECC Rater determines at a later time, when the outside temperature is 55°F or greater, that refrigerant charge correction is necessary."

c. Additional guidance for ECC Provider tracking and follow-up communications:

In order for the ECC Provider Data Registry to track these conditionally approved cold weather refrigerant charge verifications, and to ensure a ECC Rater conducts the required refrigerant charge verification when the outdoor air temperature is warmer, the Provider must be informed that the dwelling was approved at final inspection based on registration of only a CF2R-MCH-25, documenting use of the RA3.2.3.1 installer weigh-in charging procedure as allowed by RA2.4.4.

Note: There are no explicit requirements in the Energy Code or in the Reference Appendices that direct the enforcement agency to disclose to the ECC Provider Data Registry any information about a project's building permit status, or the status of a required refrigerant charge verification. Therefore if the enforcement agency does not notify the Data Registry that a building was approved based on registration of only the CF2R-MCH-25, and if the required CF3R-MCH-25 has not been registered to complete the full set of required project documentation, it may be necessary for the Data Registry staff to follow up with the enforcement agency to determine the status of the building permit, and the status of the refrigerant charge verification for the building to determine whether refrigerant charge verification tracking is needed.

d. Additional guidance for Data Registry Project Status Reporting for the necessary RA2.4.4 follow-up:

The Data Registry requirements in *Reference Joint Appendix* JA7.5.6.1 state: "enforcement agencies may be authorized to enter notations into project records in data registries to communicate plan check and field inspection information to builders, designers, installers, and raters."

Thus, the Data Registry should make available data fields in the Project Status Report that enable enforcement agency persons, or ECC Raters, or Data Registry staff to flag a CF2R-MCH-25c for the project as requiring field verification at a later time when the weather is warmer, when the enforcement agency has approved the dwelling based on registration of only a CF2R-MCH-25. The Data Registry should also make available the capability for users to enter notes that provide additional information useful for determining how and when the needed follow-up field verification

should be conducted, and if applicable, who should be contacted to perform the follow-up field verification.

e. Additional Guidance for Data Registry follow-up communications for prompting for field verification according to RA2.4.4:

Once the Data Registry has set a flag to indicate that a follow-up field verification is required, the Data Registry can be configured to automatically distribute reminder communications to the appropriate persons at predetermined time(s) or when predetermined conditions, such as warmer weather, are met.

Table 6-1 illustrates how the PSR could evolve during a compliance documentation workflow.

Table 6-1: Contents of the Project Status Report per Project State

Project State	**PSR Contents (incremental)**	**References**	**Notes**
Compliance (no documents registered)	Optional at this stage. Project site identification. May allow AHJ user notations.	JA7.5.6.1, 10-103(a)	If used, no documents are listed. PSR status is incomplete.
Installation	Project site identification. Registered certificates of compliance (CoC). Mandatory features based on CoC data.	JA7.5.6.1, 10-103(a)	PSR status is incomplete. CoC status is green/checked. Other documents will be identified and given incomplete statuses.
Installation	Some certificates of installation (CoI) are ready for authoring.	JA7.5.6.1, 10-103(a)	The registry will enable additional forms. These forms will be listed though the variants might not be known. Also, registration of something like the CF2RMCH01bE will enable additional forms.
Installation	Registered and enabled CoI forms. Mandatory measures (updated). Content should be organized hierarchically by CoC, building, dwelling unit, system. Registry notes about changes to inputs that were defaulted based on CoC values. Indications of signature agreements (delegated signature authority).	JA7.5.6.1, 10-103(a) DRRM section 6.2.2.2 covers "non-default" value overrides. 10-103(a) item 3Avi	The registry should offer options like MCH-22, MCH-23, and MCH-28 then take away the mutually excluded option. Forms like the MCH-25 have a registration prerequisite, but the registry could allow both to be authored and should list both on the PSR (-25 and -23). If the author cannot override any default inputs, then the CoC must be revised to reflect these changes, subject to 10-103(d)2. The use of delegated signature authority should be apparent for each

Project State	PSR Contents (incremental)	References	Notes
			document on the PSR. On the project page or elsewhere on the registry, the signature agreements must be accessible by AHJ and CEC users.
Installation and Verification	At least one certificate of verification (CoV) is enabled for authoring. Potentially all required forms are listed and have varying states of being required or registered.	DRRM Table 6-1	As CoI forms are registered, the CoV counterparts should be made available on the registry and appear on the PSR. Registered forms are shown as complete; triggered forms are incomplete; overall project status is incomplete.
Completed	All required forms are listed and registered.	10-103(d)2	Project Status is complete when all listed forms have a complete status. All documents listed have registration numbers. AHJ must inspect the completed project to verify that indicated features are installed and that the required certificates were submitted. The PSR has an implied role at this stage.

Source: California Energy Commission

6.2.2.4 Photographic Documentation

Requirements for associated photographic documentation were added to the 2025 Energy Code update. JA7.5.6.3 states the conditions for these requirements. "If a registered document is associated with photographic evidence, it shall be stored [by the ECC-Provider] as a Joint Photographic Experts Group (JPEG) file." Per JA7.5.6.3(b), the ECC-Provider must make the files available to the CEC upon request. In practice, the photos may be linked from a project or site management page or elsewhere in the registry user environment normally accessible to CEC users to reduce manual requests for access.

6.3 General Configuration Rules

Table 6-2: Document Configuration Rules Applicable to 2025 Single-Family Compliance Documents

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
CF1R-ADD-01-E	Prescriptive Certificate of Compliance	Residential Building Additions Less Than or Equal To 1,000 ft^2 (Prescriptive)	Prompt user to select compliance method and project scope. If compliance method is prescriptive and project scope is newly constructed addition less than or equal to 1,000 ft^2 (including ADUs), then require one CF1R-ADD-01 for the building.
CF1R-ALT-01-E	Prescriptive Certificate of Compliance	Residential Building Alterations (Prescriptive)	Prompt user to select compliance method and project scope. If compliance method is prescriptive and project scope is alteration to one or more building components, including an alteration to a space conditioning system, then require one CF1R-ALT-01 for the building. If the alteration is limited to only space conditioning system(s), then instead require use of the CF1R-ALT-02, which is applicable to only space conditioning system alterations.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
CF1R-ALT-02-E	Prescriptive Certificate of Compliance	Space Conditioning System Alterations (Prescriptive)	Prompt user to select compliance method and project scope. If compliance method is prescriptive and project scope is limited to alterations to space conditioning systems contained in a single family dwelling unit (heating systems, cooling systems, duct systems), then require one CF1R-ALT-02 for the single family dwelling unit. Else if compliance method is prescriptive, and a CF1R-ALT-01 or CF1R-ADD-01 are used for the project, and the building type is single family, then require one CF1R- ALT-02 for the single family dwelling unit identified on the CF1R that requires installation or alteration of a space conditioning system.
CF1R-ENV-02-E	Prescriptive Certificate of Compliance	Area Weighted Average Calculation Worksheet	Prompt user to declare whether they need to use an area weighted average to meet any of the prescriptive U-values or SHGC values. User elects to register a

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			CF1R-ENV-02 when an area weighted average value is required to be calculated to demonstrate overall envelope compliance when a non-compliant value for an envelope feature is entered on the CF1R for the project. Require one CF1R-ENV-02 for each feature being area- weighted. When a CF1R-ENV-02 is required for compliance, registration of the CF1R-ENV-02 is a prerequisite to allowing registration of the parent CF1R (ALT-01, ADD-01, NCB-01). This worksheet is used to calculate the area-weighted average U-factors for building envelope features such as opaque exterior doors, walls, roofs, ceilings, floors, mass, and fenestration/glazing U-factors or Solar Heat Gain Coefficient (SHGC) values for prescriptive compliance.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
CF1R-ENV-03-E	Prescriptive Certificate of Compliance	Solar Heat Gain Coefficient (SHGC) Worksheet (Prescriptive)	If the CF1R for the project is one of the following CF1R types: CF1R-NCB-01, CF1R-ALT-01, or CF1R-ADD-01, and the value for Exterior Shading Device does not equal "None", then require one CF1R-ENV-03 for the project. When a CF1R-ENV-03 is required for compliance, registration of the CF1R-ENV03 document is a prerequisite to allowing registration of the parent CF1R.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
CF1R-ENV-04-E	Prescriptive Certificate of Compliance	Cool Roof and Solar Reflectance Index (SRI) Worksheet (Prescriptive)	If the CF1R for the project is one of the following prescriptive CF1R types: CF1R-NCB-01, CF1R-ALT-01, or CF1R-ADD-01, require one CF1R-ENV-04 for each roofing feature listed on the C1R that lists a value for Proposed SRI. When a CF1R-ENV-04 is required for compliance, registration of all applicable CF1R-ENV-04 documents is a prerequisite to allowing registration of the parent CF1R (ALT-01, ADD-01, NCB-01).
CF1R-ENV-05-E	Certificate of Compliance	Alternative Default Fenestration Procedure (NA6) Worksheet	If the CF1R for the project is one of the following types: CF1R-PRF-01, CF1R-NCB-01, CF1R-ALT-01, or CF1R-ADD-01, and the value for Fenestration U-factor and/or SHGC Source is "ADFP" or "NA6 Equations," then require one CF1R-ENV-05 for the project. When a CF1R-ENV-05 is required for compliance, registration of the CF1R-ENV-05 document is a

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			prerequisite to allowing registration of the parent CF1R (ALT-01, ADD-01, NCB-01, PRF-01).
CF1R-ENV-06-E	Prescriptive Certificate of Compliance	Interior and Exterior Insulation Layers Worksheet (Prescriptive)	If the CF1R for the project is one of the following prescriptive CF1R types: CF1R-NCB-01, CF1R-ALT-01, or CF1R-ADD-01, require one CF1R-ENV-06 for each mass wall listed on the CF1R that has a value for Interior and/or Exterior Insulation. When a CF1R-ENV-06 is required for compliance, registration of the CF1R-ENV-06 document is a prerequisite to allowing registration of the parent CF1R (ALT-01, ADD-01, NCB-01).
CF1R-NCB-01-E	Prescriptive Certificate of Compliance	Residential Newly Constructed Buildings, and Additions Greater Than 1,000 ft^2 (Prescriptive)	Prompt user to select compliance method and project scope. If compliance method is prescriptive and project scope if newly constructed building, or prescriptive newly constructed addition greater than 1,000 ft^2, then require one CF1R-

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			NCB-01 for the building.
CF2R-ELC-01-E	Certificate of Installation	Electric Ready Requirements	If the Project Scope is a Newly Constructed Building, require one CF2R-ELC-01 per dwelling unit.
CF2R-ENV-01-E	Certificate of Installation	Fenestration Installation	If the CF1R specifies fenestration features, require one CF2R-ENV-01 for each CF1R.
CF2R-ENV-03-E	Certificate of Installation	Insulation Installation	If the CF1R specifies insulation features, require one CF2R-ENV-03 for each CF1R.
CF2R-ENV-04-E	Certificate of Installation	Roofing; Ventilation; Cool Roofs	If the CF1R specifies Radiant Barrier or Cool Roof features, require one CF2R-ENV-04 for each CF1R.
CF2R/CF3R-ENV-20-H	Certificate of Installation/ Verification	Enclosure Air Leakage Diagnostic Test – Single Point Air Tightness Test with Manual Meter or Automatic Meter, – or Multipoint Airtightness Test	When the CF1R indicates requirement for Envelope Leakage field verification for the dwelling, require one ENV-20 per building.
CF2R/CF3R-ENV-21-H	Certificate of Installation/ Verification	Quality Insulation Installation (QII) – Air Infiltration Sealing (Framing Stage)	When the CF1R indicates requirement for QII field verification for the dwelling, compliance shall be demonstrated using all the QII field

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			verification compliance documents (ENV- 21 & ENV-22). Require one ENV- 21 per building.
CF2R/CF3R-ENV-22-H	Certificate of Installation/ Verification	Quality Insulation Installation (QII) – (Insulating Stage)	If the CF1R-PRF-01 indicates compliance credit for Nondefault SPF R-value, then require one ENV-22 per building. Else, if the ENV-21 is required, require one ENV-22 per building.
CF3R-EXC-20-H	Certificate of Verification	ECC-Rater Verification of Existing Conditions for Performance Compliance for Alterations	When credit for verified existing conditions is used on the CF1R, as a condition for CF1R registration, an EXC-20 that certifies the existing conditions claimed on the CF1R shall first be registered. Required as a prerequisite to registration of a CF1R-PRF for an altered dwelling.
CF2R-LTG-01-E	Certificate of Installation	Lighting – Single Family Dwellings	If the building type on the CF1R is single family and the scope of the project is a Newly Constructed Building, then require one CF2R-LTG-01 per dwelling unit. Else prompt the user to declare whether the scope of the project

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			includes lighting. If the scope includes lighting, then require one CF2R-LTG-01 per dwelling unit. Else CF2R-LTG-01 is not required.
CF2R-MCH-01a-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Performance Compliance for Newly Constructed Buildings	If the CF1R type is a CF1R-PRF-01 and the project scope is Newly Constructed Building, then require one CF2R-MCH-01a for each dwelling unit for which there are HVAC system compliance requirements given on the CF1R.
CF2R-MCH-01b-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Prescriptive Alterations	If the CF1R type is a CF1R-ALT-02, then require one CF2R-MCH-01b for each dwelling unit for which there are HVAC system compliance requirements given on the CF1R-ALT- 02. Note: Refer also to the rules for configuration of the CF1R-ALT-02 above.
CF2R-MCH-01c-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Prescriptive Newly Constructed Buildings	If the CF1R type is a CF1R-NCB-01, then require one CF2R-MCH-01c for each dwelling unit for which there are HVAC system compliance requirements given on

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			the CF1R.
CF2R-MCH-01d-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Performance Compliance for Additions and Alterations, or Addition Alone	If the CF1R type is a CF1R-PRF-01 and the project scope is one of the following two types: (1) Addition and/or alteration or (2) Newly Constructed – Addition Alone, then require one CF2R-MCH-01d for each dwelling unit for which there are HVAC compliance requirements given on the CF1R.
CF2R-MCH-02-E	Certificate of Installation	Whole House Fan	For single family projects in climate zones 8-14; if certificate of compliance type is prescriptive new construction (NCB), then require one CF2R-MCH-02 for the dwelling. Else, if the certificate of compliance type is prescriptive addition or alteration, then prompt user to declare whether a MCH-02 is needed. If the certificate of compliance type is performance (PRF), then if ventilation cooling system type from the CF1R is whole house fan and the field verification status is

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			no, then require one CF2R-MCH-02for the dwelling. Else, CF2R-MCH-02is not required for the dwelling.
CF2R-MCH-04-E	Certificate of Installation	Evaporative Coolers	Require one CF2R- MCH-04 for each evaporative cooling system installed in a dwelling unit when the cooling system type given on the CF2R-MCH-01 is one of the following types: *evaporative –direct, *evaporative –indirect *evaporative –indirect-direct
CF2R/CF3R-MCH-20-H	Certificate of Installation/ Verification	Duct Leakage Measurement – Completely New Duct System – Low Leakage Ducts in Conditioned Space – Low Leakage Air Handling Unit – Complete Replacement – Altered Duct System and Sealing of All Accessible Leaks Using Smoke Test	If the MCH-01 specifies a MCH-20 is required for a ducted indoor unit, then provide one MCH-20 for the ducted indoor unit. Each ducted indoor unit that requires verification must have its own MCH-20.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
CF2R/CF3R-MCH-21-H	Certificate of Installation/ Verification	Duct Location Verification	If the MCH-01 specifies a MCH-21 is required for a ducted indoor unit, then provide one CF2R-MCH-21 for the ducted indoor unit. Each ducted indoor unit that requires verification must have its own MCH- 21.
CF2R/CF3R-MCH-22-H	Certificate of Installation/ Verification	Forced Air System Fan Efficacy (Watts/cfm) – Newly Installed Non-Zoned Systems or Zoned Multi-Speed Compressor Systems, – Newly Installed Zoned Single Speed Compressor System, – Newly Installed Non-Zoned or Zoned Multi-Speed Compressor Systems with Central Fan Ventilation Cooling, – Newly Installed Zoned Single Speed Compressor Systems with	If the MCH-01 specifies a MCH-22 is required for a ducted indoor unit, then provide one MCH-22 for each ducted indoor unit. Note: Each ducted indoor unit that requires verification must have its own MCH-22.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
		Central Fan Ventilation Cooling	
CF2R/CF3R-MCH-23-H	Certificate of Installation/ Verification	Forced Air System Airflow Rate (cfm/ton) – Newly Installed non- Zoned Systems or Zoned Multi-Speed Compressor Systems, – Newly Installed Zoned Single Speed Compressor Systems, – Alternative to Compliance with Minimum System Airflow Requirement for Altered Systems (Best That I Can Do), – Newly Installed Heating Only Non-Zoned Systems (Measurement Only), – Newly Installed Non- Zoned Systems or Zoned Multi-Speed Compressor with Central Fan	If the MCH-01 specifies a MCH-23 is required for a ducted indoor unit, then provide one MCH-23 for each ducted indoor unit. Note: Each ducted indoor unit that requires verification must have its own MCH-23.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
		Ventilation Cooling, – Newly Installed Zoned Single Speed Compressor Systems with Central Fan Ventilation Cooling	
CF2R/CF3R-MCH-24-H	Certificate of Installation/ Verification	Enclosure Air Leakage Diagnostic Test Worksheet – Single Point Air Tightness Test with Manual Meter or Automatic Meter, –Multipoint Airtightness Test	MCH-24 doc only used if called for by MCH-27 docs. Require registration of the MCH-24 before registering the related MCH-27.
CF2R/CF3R-MCH-25-H	Certificate of Installation/ Verification	Refrigerant Charge Verification – Superheat Method (Standard Charge Procedure), – Sub- cooling Method (Standard Charge Procedure), – Weigh-in Charging Procedure, – Packaged System Manufacturer Refrigerant Charge	If the MCH-01 specifies a MCH-25 is required, then provide one MCH-25 for each space conditioning system.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
		Certification (does not require CF3R verification)	
CF2R/CF3R-MCH-26-H	Certificate of Installation/ Verification	Rated Space Conditioning System Equipment Verification	When MCH-26 is required by the MCH-01, provide one MCH-26 for each space conditioning system according to the MCH-01.
CF2R/CF3R-MCH-27-H	Certificate of Installation/ Verification	IAQ and Mechanical Ventilation – Single Family Attached/Detached Ventilation – HRV or ERV Fan Efficacy Performance Rating (W/CFM), – Non- Dwelling Unit	If the CF1R type is a CF1R-NCB-01,then require one MCH-27 for each dwelling unit. If the CF1R type is a CF1R-ADD-01, and the project scope is one of the following: *ADU Addition ≤ 300 ft^2, *ADU Addition > 300 to ≤ 400 ft^2, *ADU Addition > 400 to ≤ 700 ft^2, or *ADU Addition > 700 to ≤ 1,000 ft^2, then require one MCH-27 for each dwelling unit. If the CF1R type is a CF1R-PRF-01 and indicates requirement for IAQ field Verification, then require one MCH- 27 for each dwelling unit. Else, the MCH-27 is not required for the dwelling.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			Note: Non-dwelling units are exempt from the indoor air quality ventilation requirements and shall use the MCH-27d to document.
CF2R/CF3R-MCH-28-H	Certificate of Installation/ Verification	Return Duct and Filter Grille Design According to Tables 150.0-B or C	When MCH-28 is required by MCH-01, provide one MCH-28 for each space conditioning system according to the MCH-01.
CF2R/CF3R-MCH-29-H	Certificate of Installation/ Verification	Supply Duct Surface Area and R-value; Buried Ducts; Deeply Buried Ducts	When MCH-29 is required by MCH-01, provide one MCH-29 for each space conditioning system according to the MCH-01.
CF2R/CF3R-MCH-30-H	Certificate of Installation/ Verification	Central Fan Ventilation Cooling Systems (CFVCS)	When the CF1R- PRF-01 indicates Central Fan Ventilation Cooling System (VCS) was used, require one MCH-30 for each Central Fan VCS installed in the dwelling.
CF2R/CF3R-MCH-31-H	Certificate of Installation/ Verification	Whole House Fan Airflow and Fan Efficacy – Individual CFM and Watts Collection, – Whole House Fan Airflow and Fan Efficacy – Individual CFM and Total Watts	When the CF1R- PRF-01 indicates compliance credit for field Cool Vent Verification, then require one MCH- 31 for each dwelling unit.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
		Collection	
CF2R/CF3R-MCH-32-H	Certificate of Installation/ Verification	Local Mechanical Exhaust – Kitchen Range Hood or Other Vented Fan – Airflow Rate or Capture Efficiency	When the CF1R indicates requirement for Kitchen Ventilation field verification for the dwelling, require one MCH- 32 per kitchen. Note: CBECC currently does not have the ability to model kitchens therefore ECC registry should query the user as to how many kitchens are contained within the dwelling. Value must be greater than or equal to 1.
CF2R/CF3R-MCH-33-H	Certificate of Installation/ Verification	VCHP Compliance Credit	When the MCH-33 is required by the MCH-01, provide one MCH-33 for each VCHP system installed.
CF2R-MCH-34-E	Certificate of Installation	Pre-Cooling Compliance Credit	When the CF1R-PRF indicates compliance credit for Pre-Cooling, require one MCH-34 per dwelling unit.
CF2R-PLB-02-E	Certificate of Installation	Single Dwelling Unit Hot Water Distribution and Heat Pump Water Heater	Require one CF2R- PLB-02 for the dwelling unit if the dwelling unit contains installed water heating system distribution, and the installed heat pump water heater.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			Else, if the dwelling unit does not have a water heating system, then a CF2R-PLB-02 is not required.
CF2R-PLB-03-E	Certificate of Installation	Pool and Spa Systems	Prompt the user to declare whether the scope of the project includes installation of a new pool or spa, or installation of a replacement pool or spa component. If the response is yes, then require one CF2R-PLB-03. Else, if the response is no, then the CF2R-PLB-03 is not required.
CF2R/CF3R-PLB-22-H	Certificate of Installation/ Verification	Single Dwelling Unit Hot Water System Distribution	Require one PLB-22 for the dwelling unit if the dwelling unit contains one or more water heating systems with a verified distribution type, drain water heat recovery, or expanded-credit compact design, and the installed heat pump water heater. Else, if the dwelling does not have a water heating system, then a PLB-22 is not required.
CF2R-PVB-01-E	Certificate of Installation	Photovoltaic (PV) Systems	If the CF1R project scope is Newly Constructed Building,

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
			only if a PV system is in the proposed design or CF1R indicates a PV Exceptions require one PVB-01 per building. If the CF2R-PVB-01-E values for "Qualifying Exceptions" does not match certain exceptions reported by the CF1R-PRF-01, do not proceed with registration. The exceptions include Battery Storage and Community Solar. Other non-default exceptions should be flagged and noted on the PSR.
CF2R-PVB-02-E	Certificate of Installation	Battery Storage Systems	If the CF1R-PRF-01 indicates compliance credit for "Battery Storage System," require one PVB-02 per building. If the CF2R-PVB-01-E exceptions does not state "Battery Storage," do not proceed with registration.
CF2R-SRA-01-E	Certificate of Installation	Solar Ready Buildings	When the CF2R-PVB-01 indicates exception "No PV – limited solar access," require one SRA-01 per building.
CF2R-SRA-02-E	Certificate of Installation	Minimum Solar Zone Area Worksheet	When CF2R-SRA-02 is required by CF2R-SRA-01, require one CF2R-SRA-02 per building.

Document Number	Document Type	Document Description	Single-Family Document Configuration Rules
CF2R-STH-01-E	Certificate of Installation	Solar Water Heating Systems	When the CF1R indicates use of a solar water system, for compliance, require one CF2R-STH-01 for each solar DHW system installed in the building.

Source: California Energy Commission

Table 6-3: Document Configuration Rules Applicable to 2025 Low-Rise Multifamily Compliance Documents

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
LMCC-ELC-01-E	Certificate of Compliance	Low Rise Multifamily Electrical Power Distribution and Electric Ready	If the project includes electrical power distribution, then require completion of the LMCC- ELC. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-ENV-01-E	Certificate of Compliance	Low Rise Multifamily Envelope	If the project includes prescriptive compliance for envelope components, then require completion of the LMCC-ENV. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-LTI-01-E	Certificate of Compliance	Low Rise Multifamily Indoor Lighting	If the project includes prescriptive compliance for indoor lighting, then require completion of the

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
			LMCC-LTI. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-LTO-01-E	Certificate of Compliance	Low Rise Multifamily Outdoor Lighting	If the project includes outdoor lighting, then require completion of the LMCC-LTO. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-LTS-01-E	Certificate of Compliance	Low Rise Multifamily Sign Lighting	If the project includes sign lighting, then require completion of the LMCC-LTS. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-MCH-01-E	Certificate of Compliance	Low Rise Multifamily Mechanical Systems	If the project includes prescriptive compliance for mechanical systems, then require completion of the LMCC-MCH. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-MCH-02-E	Certificate of Compliance	Low Rise Multifamily Mechanical Systems	If the project includes prescriptive Alteration compliance for mechanical systems, then require completion of the LMCC-MCH-02. If the LMCC was

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
			completed through an EDDS, then require an upload of the XML.
LMCC-PLB-01-E	Certificate of Compliance	Low Rise Multifamily Water Heating	If the project includes prescriptive compliance for water heating, then require completion of the LMCC-PLB. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-PRC-01-E	Certificate of Compliance	Low Rise Multifamily Process Systems	If the project includes covered processes, then require completion of the LMCC-PRC. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-SAB-01-E	Certificate of Compliance	Low Rise Multifamily Solar Ready, Photovoltaic, and Battery Storage	If the project includes solar ready, PV, and/or batter storage, then require completion of the LMCC-SAB. If the LMCC was completed through an EDDS, then require an upload of the XML.
LMCC-CXR-01-E	Certificate of Compliance	Nonresidential Building Commissioning	If the project is low-rise mixed-use and therefore contains nonresidential spaces, then require completion of LMCC-CXR.
LMCI-ELC-01-E	Certificate of Installation	Electric Ready	If the LMCC project scope is New Construction, then

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
			require one LMCI-ELC-01 per building.
LMCI/LMCV-ENV-21-H	Certificate of Installation/ Verification	ECC Quality Insulation Installation (QII) – Air Infiltration Sealing (Framing Stage)	When the LMCC indicates requirement for QII ECC verification for the dwelling, compliance shall be demonstrated using all the QII field verification compliance documents (ENV-21 & ENV-22). Require one ENV-21 per building.
LMCI/LMCV-ENV-22-H	Certificate of Installation/ Verification	ECC Quality Insulation Installation (QII) – Insulation Installation	When the LMCC indicates requirement for QII field verification for the dwelling, compliance shall be demonstrated using all the QII field verification compliance documents (ENV-21 & ENV-22). Require one ENV-22 per building.
LMCV-EXC-20-H	Certificate of Verification	field Verification for Existing Conditions for Performance Compliance for Alterations	When credit for existing conditions is used on the LMCC, as a condition for LMCC registration, an EXC-20 that verifies the existing condition claimed on the LMCC shall first be registered. Required as a prerequisite to

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
			registration of a LMCC-PRF for an alteration.
LMCI-MCH-01a-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Performance Compliance for Newly Constructed Buildings	If the LMCC-PRF is completed, and the project scope is a Newly Constructed Building, then require one LMCI-MCH- 01a for the building.
LMCI-MCH-01b-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Prescriptive Alterations	If the LMCC-MCH is completed, and the project scope is an Alteration, then require one LMCI-MCH-01b for the building.
LMCI-MCH-01c-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Prescriptive Newly Constructed Buildings	If the LMCC-MCH-01-E is completed, and the project scope is a Newly Constructed Building, then require one LMCI-MCH- 01c for the building.
LMCI-MCH-01d-E	Certificate of Installation	Space Conditioning Systems, Ducts and Fans – for Performance Compliance for Additions and Alterations, or Addition Alone	If the LMCC-PRF is completed, and the project scope is an Alteration, then require one LMCI-MCH-01d for the building.
LMCI/LMCV-MCH-20-H	Certificate of Installation/ Verification	Duct Leakage Measurement – Completely	If the LMCI-MCH-01 specifies a LMCI-MCH-20 is required, then provide one MCH-20 per

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
		New Duct System, – Low Leakage Ducts in Conditioned Space, – Low Leakage Air Handling Unit, – Complete Replacement or Altered Duct System, or – Sealing of All Accessible Leaks Using Smoke Test	ducted unit.
LMCI/LMCV-MCH-21-H	Certificate of Installation/ Verification	Duct Location	If the LMCI-MCH-01 specifies a LMCI-MCH-21 is required, then provide one MCH-21 per ducted unit.
LMCI/LMCV-MCH-22-H	Certificate of Installation/ Verification	Forced Air System Fan Efficacy (Watts/cfm) – Newly Installed Non-Zoned Systems or Zoned Multi-Speed Compressor Systems, – Newly Installed Zoned Single Speed Compressor System	If the LMCI-MCH-01 specifies a LMCI-MCH-22 is required, then provide one MCH-22 per ducted unit.

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
LMCI/LMCV-MCH-23-H	Certificate of Installation/ Verification	Forced Air System Airflow Rate (cfm/ton) – Newly Installed non- Zoned Systems or Zoned Multi-Speed Compressor Systems, – Newly Installed Zoned Single Speed Compressor Systems, – Alternative to Compliance with Minimum System Airflow Requirement for Altered Systems (Best That I Can Do), – Newly Installed Heating Only Non-Zoned Systems (Measurement Only), – Newly Installed Non- Zoned Systems or Zoned Multi-Speed Compressor with Central Fan	If the LMCI-MCH-01 specifies a LMCI-MCH-23 is required, then provide one MCH-23 per ducted unit.

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
		Ventilation Cooling	
LMCI/LMCV-MCH-24-H	Certificate of Installation/ Verification	Enclosure Air Leakage Test – Single Point Air Tightness Test with Manual Meter or Automatic Meter, – Multipoint Air Tightness Test	If the LMCI-MCH-01 specifies a LMCI-MCH-24 is required, then provide one MCH-24 per dwelling unit.
LMCI/LMCV-MCH-25-H	Certificate of Installation/ Verification	ECC Refrigerant Charge Verification – Superheat Method (Standard Charge Procedure), – Sub- cooling Method (Standard Charge Procedure), – Weigh-in Charging Procedure, – Packaged System Manufacturer Refrigerant Charge Certification	If the LMCI-MCH-01 specifies a LMCI-MCH-25 is required, then provide one MCH-25 per space conditioning system.

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
		(does not require CF3R verification)	
LMCI/LMCV-MCH-26-H	Certificate of Installation/ Verification	Rated System Verification	If the LMCI-MCH-01 specifies a LMCI-MCH-26 is required, then provide one MCH-26 per space conditioning system.
LMCI/LMCV-MCH-27-H	Certificate of Installation/ Verification	IAQ and Mechanical Ventilation Heat Recovery Ventilation (HRV) or Energy Recovery Ventilation (ERV) Rated Performance Verification	If the LMCC-MCH or LMCC-PRF specifies a LMCI-MCH-27 is required, then provide one MCH- 27 per dwelling unit.
LMCI/LMCV-MCH-28-H	Certificate of Installation/ Verification	Return Duct and Filter Grille Design	If the LMCC-MCH-01 or LMCC-PRF specifies a LMCI-MCH-28 is required, then provide one MCH-28 per space conditioning system.
LMCI/LMCV-MCH-29-H	Certificate of Installation/ Verification	Supply Duct Surface Area and R- value; Buried Ducts; Deeply Buried Ducts	If the LMCC-MCH-01 specifies a LMCI-MCH-29 is required, then provide one MCH-29 per space conditioning system.
LMCI/LMCV-MCH-32-H	Certificate of Installation/ Verification	Local Mechanical Exhaust	If the LMCC-MCH or LMCC-PRF specifies a LMCI-MCH-32 is required, then provide

Document Number	Document Type	Document Description	Low-Rise Multifamily Document Configuration Rules
			one MCH-32 per kitchen.
LMCI/LMCV-MCH-33-H	Certificate of Installation/ Verification	VCHP Compliance Credit	If the LMCC-PRF specifies a LMCI-MCH-33 is required, then provide one MCH-33 per VCHP system installed.
LMCI-PLB-01-E	Certificate of Installation	Multifamily Central Hot Water System Distribution	If the LMCC-PRF is completed, then require one LMCI-PLB-01 for the building.
LMCI-PLB-02-E	Certificate of Installation	Single Individual Dwelling Unit Hot Water Distribution and Heat Pump Water Heater	If the LMCC-PRF is completed, then require one LMCI-PLB-02 per dwelling unit.
LMCI/LMCV-PLB-21-H	Certificate of Installation/ Verification	Central Hot Water System Distribution	If the LMCC-PRF specifies a LMCI-PLB-21 is required, then provide one PLB-21 for the building.
LMCI/LMCV-PLB-22-H	Certificate of Installation/ Verification	Individual Dwelling Unit Hot Water System Distribution	If the LMCC-PRF specifies a LMCI-PLB-22 is required, then provide one PLB-22 per dwelling unit.

Source: California Energy Commission

Table 6-4: Document Configuration Rules Applicable to 2025 Nonresidential (Including High-Rise Multifamily) Compliance Documents

Document Number	Document Type	Document Description	Nonresidential Document Configuration Rules
NRCV-MCH-24-H	Certificate of Verification	Enclosure Air leakage Test – Single Point Air Tightness Test with Manual Meter or Automatic Meter, – Multipoint Air Tightness Test	MCH-24 doc only used if called for by NRCV-MCH-27 docs.
NRCV-MCH-27-H	Certificate of Verification	IAQ and Mechanical Ventilation – High- Rise Residential Multifamily Ventilation	When building type is high-rise residential, prompt the user to declare whether a MCH-27 is needed. Require one NRCV-MCH-27 per dwelling unit.
NRCV-MCH-32-H	Certificate of Verification	Verification of vented range hood airflow rate or capture efficiency	If the building type specified on the NRCC is high-rise residential, and if the dwelling unit has a kitchen, then require one MCH-32 for the dwelling unit.
NRCV-PLB-21-H	Certificate of Verification	Nonresidential High-Rise Multifamily Central Hot Water System Distribution (ECC)	If the NRCC-PRF specifies a NRCV-PLB-21 is required, then provide one PLB-21 for the building.

Document Number	Document Type	Document Description	Nonresidential Document Configuration Rules
NRCV-PLB-22-H	Certificate of Verification	Nonresidential High- Rise Individual Dwelling Unit Hot Water System Distribution	If the NRCC-PRF specifies a NRCV-PLB-21 is required, then provide one PLB-21 for the building.

Source: California Energy Commission

7 Group Sampling Rules for ECC Verification Compliance

7.1 Overview

Residential field Verification, Testing, and Documentation Procedures are given in *2025 Reference Residential Appendix* sections RA2 and RA3.

For newly constructed buildings, at the builder's option, compliance with field verification and diagnostic testing (FV&DT) requirements may be demonstrated for a group of dwelling units by performing at least one ECC-Rater verification for every measure within a designated group of dwelling units in which the same measures requiring ECC verification have been installed in each dwelling unit in the group. If the builder elects to demonstrate compliance utilizing group sampling for single-family construction, all applicable procedures described in Reference Residential Appendix Sections RA2.6.2, RA2.6.3, and RA2.6.4 must be followed. If the builder elects to demonstrate compliance utilizing group sampling for high-rise multifamily construction (greater than three habitable stories), all applicable procedures described in Reference Nonresidential Appendix Sections NA1.6 must be followed.

For alterations to existing buildings, group sampling is no longer an option. Section RA2.8 was revised to require ECC-Rater verification of all measures under alterations. The group sampling rules tables in this section should reflect this update but is not always stated explicitly.

When a Third Party Quality Control Program is used, the sampling procedure utilized is limited to sampling of a "closed" group as described in Section RA2.6.3. However, the sample tested may be selected and field verified from within a group of up to thirty dwelling units. Refer to Reference Residential Appendix Section RA2.7 for Third Party Quality Control Program requirements.

7.2 General Group Sampling Rules

Group sampling rules are specified in *2025 Reference Residential Appendix RA2*. Relevant sections from RA2.6 are copied into Section 7.2.1 below for convenience. Additional guidance for administering group sampling processes and registering Certificate of Verification documentation is given in Section 7.2.2.

7.2.1 Group Sampling Rules Specified in 2025 Residential Appendix RA2

7.2.1.1 Designation of Groups (From RA2.6.3.1)

After the initial model field verification and diagnostic testing is completed as specified in RA2.6.2, the builder or the builder's authorized representative shall determine a sampling procedure to be used and shall designate the dwelling units to include in the group of dwellings that require field verification. The maximum number of dwelling units allowed in a sample group may range from five, to seven, to thirty as described in Sections RA2.6.3.3, RA2.6.3.4, and RA2.7 respectively.

If multiple measures requiring field verification are installed, each dwelling unit in a designated group shall have the same measures requiring field verification as the other dwelling units in the

designated group. If some dwelling units have installed a different set of measures requiring field verification, those dwelling units shall be in a separate group.

If the dwelling units in a designated group have multiple measures that require field verification, sample testing for individual measures may be conducted in any of the dwelling units in the group - it is not required that all of the sample tests for all of the individual measures be completed in the same dwelling unit. Individual measures shall be allowed to be included in a group regardless of whether compliance requires one sample test, or if compliance requires more than one sample test (up to 100 percent sample test rate) be reported for such individual measures.

Dwelling units in a designated group shall all be located within the same enforcement agency jurisdiction and subdivision or multifamily housing development.

If dwelling units have central forced-air space conditioning equipment that introduces outside air into the conditioned space utilizing means that connect outside air ventilation ducts directly to the dwelling unit's central forced air duct system (Central Fan-Integrated Ventilation System or CFI Ventilation System), the CFI ventilation technology shall be considered a separate measure for field verification sampling purposes, and dwellings with CFI ventilation systems shall be placed in separate groups from other dwelling units that do not utilize CFI ventilation technology.

7.2.1.2 Group Status — "Open" Groups and "Closed" Groups (From RA2.6.3.2)

Registration of the first Certificate of Installation, for the first dwelling in a sample group shall be required to "open" a new group. The date of the responsible person's registration signature for the first Certificate of Installation for the group shall establish the start date forthe group. Additional dwellings may be entered into the registry and included in an "open" group over a period of time subject to registration of the Certificate of Installation documents to the registry for each additional dwelling. However, the group shall not remain "open" to receive additional dwellings for a period longer than six months after the start date of the group. A group may be "closed" at any time after the group has been "opened" at the option of the builder or builder's authorized representative, thus the size of a "closed" group may range from a minimum of one dwelling to a maximum of seven dwellings. When a group becomes classified as "closed", no additional dwellings shall be added to the group.

7.2.1.3 Sampling of a "Closed" Group of Up to Seven Dwellings (From RA2.6.3.3)

The following criteria shall be met as prerequisite to attaining field verification compliance for the group:

a. All of the dwelling units contained in the sample group have been identified. A maximum of seven dwellings are allowed to be included in a "closed" sample group for ECC compliance.
b. Installation of all the measures that require field verification has been completed in all the dwellings that are entered in the group, and registration of the Certificates of Installation for all the dwellings entered in the group has been completed.
c. The group has been classified as a "closed" group in the Provider Data Registry

d. At the request of the builder or the builder's authorized representative, an ECC-Rater shall randomly select one dwelling unit from the "closed" sample group for field verification and diagnostic testing. If the dwelling unit meets the compliance requirements, this "tested" dwelling and each of the other "not-tested" dwellings in the group shall receive a registered Certificate of Verification.

7.2.1.4 Sampling of an "Open" Group of Up to Five Dwellings (from RA2.6.3.4)

The following criteria shall be met as prerequisite to attaining field verification compliance for the group:

a. At least one dwelling unit from the sample group has been identified. A maximum of five dwellings are allowed to be included in an "open" sample group for ECC compliance.

b. Installation of all the measures that require field verification shall be completed in all the dwellings that are entered in the group, and registration of the Certificates of Installation for all the dwellings entered in the group has been completed.

c. At the request of the builder or the builder's authorized representative, an ECC-Rater shall randomly select one dwelling unit from those currently entered into the "open" sample group for field verification and diagnostic testing. If the dwelling unit meets the compliance requirements, the "tested" dwelling and each of the other "not tested" dwellings currently entered into the group shall receive a registered Certificate of Verification. If less than five dwelling units have been entered into the group, the group shall be allowed to remain "open" and eligible to receive additional dwelling units. Dwelling units entered into the "open" group subsequent to the compliant field verification of the "tested" dwelling shall also receive a registered Certificate of Verification as a "not tested" dwelling subject to receipt of the registered Certificate of Installation by the data registry for the dwelling. The group shall be "closed" when it reaches the limit of five dwellings or when the six-month limit for "open" groups has been exceeded, or when the builder requests that the group be closed.

7.2.1.5 Additional Requirements Applicable to Group Sampling Procedures (From RA2.6.3.5)

The builder or the ECC-Rater may request removal of untested dwelling units from a group by notifying the ECC-Provider prior to selection of the dwelling sample that will be tested from an "open" or "closed" group and shall provide justification for the change. Removed dwelling units shall be field verified and diagnostically tested individually or shall be included in a subsequent group for sampling.

There are exceptions to the requirement to have completed Certificate of Installation data entered into the data registry prior to selection of the dwelling unit to be tested in a group. Some ECC measures require multiple verifications during the construction process. A sample group is not required to be closed before ECC field verification and diagnostic testing can begin for the following measures. For these measures, the ECC-Rater is allowed to randomly select the dwelling

unit to be field verified from those that are at the proper stage of construction to enable the first of the multiple verifications to be completed.

a. **Quality Installation of Insulation** measure requires inspection of the air barrier and inspection of the insulation behind tubs and showers at framing rough-in. Verification of the wall, floor, and ceiling insulation must be completed prior to drywall installation. Attic insulation installation may require follow-up verification.

b. **Buried Ducts measure requires verification of the duct design prior to verification of the attic insulation.**

c. **Duct Surface Area requires** verification of the duct design prior to installation of the attic insulation.

The ECC-Rater, with no direction from the installer or builder, shall randomly select one dwelling unit from a "closed" sample group for field verification and diagnostic testing upon receiving the builder's, or builder representative's, request for field verification of that group. Alternatively, the ECC-Rater shall randomly select one dwelling unit from the dwellings currently entered into an "open" sample group upon receiving the builder's, or builder representative's, request for verification of that group. The ECC-Rater shall verify the selected dwelling unit. The ECC-Rater shall enter the results into the data registry regardless of whether the results indicate a pass or fail. If the test fails, then the failure must be entered into the Provider's Data Registry even if the installer immediately corrects the problem. In addition, the procedures in Section RA2.6.4 shall be followed.

If field verification and diagnostic testing determines that the requirements for compliance are met, the ECC-Rater shall enter the test results into the data registry. Whereupon the Provider shall make available to the ECC-Rater, the builder, the enforcement agency, and other approved users of the data registry, a registered copy of the Certificate of Verification for the "tested" dwelling, and for all other "not tested" dwelling units entered in the group at the time of the sample test. The registered Certificate of Verification shall report the successful diagnostic testing results and conclusions regarding compliance for the tested dwelling unit. The registered Certificate of Verification shall also provide:

1. Building permit number for the dwelling unit.
2. Registration Number that conforms to the numbering convention specified in Reference Joint Appendix JA7.
3. Group Number that conforms to the numbering convention specified in Reference Joint Appendix JA7.
4. Time and date stamp of the Provider's issuance of the registered Certificate of Verification.
5. Provider's logo, water mark, or official seal.
6. Indication that the dwelling was a "tested" dwelling or was a "not-tested" dwelling in a sample group.

Whenever the builder changes subcontractors who are responsible for a feature that is being

diagnostically field verified and tested, the builder shall notify the ECC-Rater of the subcontractor change and terminate sampling for any affected groups. All dwelling units utilizing features that require verification for compliance that were installed by previous subcontractors or were subject to verification and testing under the supervision of a previous ECC Provider or ECC-Provider, for which the builder does not have a completed Certificate of Verification, shall be individually tested or included in a separate group for sampling. Dwelling units with installations completed by new subcontractors shall be individually tested or shall be included in a new sampling group.

The ECC-Rater shall not notify the builder when sample testing will occur prior to the completion of the work that is to be tested, or prior to registration of the Certificate of Installation.

The data registry shall "close" any "open" group within six months after the earliest signature date shown on any Certificate of Installation for a dwelling entered in the group. When such group closure occurs, the ECC-Provider shall notify the builder that the group has been "closed", then require that a sample dwelling shall be selected for field verification and diagnostic testing by an ECC-Rater if field verification has not yet been conducted on a sample dwelling entered in the group.

7.2.2 Additional Guidance for Group Sampling Procedures and Documentation

7.2.2.1 Certificate of Verification Documentation for Not-Tested Measures in a Sample Group

When a measure complies with a field verification as one of the "not-tested" measures in a sample group, a Certificate of Verification document for that feature for that measure should be created that does not include actual verification results data, but only includes the following items:

a. **Certificate of Verification Header** for the applicable compliance document for the field verification protocol for the ECC feature that was verified in the "tested" measure by the ECC-Rater.
b. Certificate of Verification Footer for the applicable compliance document for the field verification protocol for the ECC feature that was verified in the "tested" measure by the ECC-Rater.
c. **Certificate of Verification Signature block** for the applicable compliance document for the field verification protocol for the field feature that was verified in the "tested" measure by the ECC-Rater.
d. **Watermark** that indicates the measure passed as a "not-tested" measure in the sample group.

The process used by the Data Registry for generating the Certificate of Verification document for not-tested dwellings in a sample group should include the following:

a. Use the same URI call to the RG that is used for the tested version of the CF3R compliance document for that feature in the sample group. The RG uses the docToken (e.g., CF3RMCH20H) to pick the document header info.
b. Send XML to the RG that includes a value = "NotTested" in the signature block field

named "SampleGroupTestStatus". The RG reads the value of <comp:responsiblePerson5_SampleGroupTestStatus>NotTested</comp:responsiblePerson5_SampleGroupTestStatus> and validates using the CF3RFeatureNotTested schema (CF3RNoTestH.xsd). There is no need to include in the XML, any data other than that needed for the specific project or dwelling unit name, location, enforcement agency, and permit information that should be displayed in the header of the completed compliance document. The remainder of the signature block and footer data is expected to be appended/overlaid after the PDF format document has been produced by the RG and transmitted to the Data Registry as described in Section 4.4, with the exception that the signatures provided for the "tested" dwelling may be automatically used for the "not-tested" dwelling(s) as well. Registration of not-tested dwelling documents may be performed automatically in conjunction with the registration of the tested dwelling document for the group. The documentation author and responsible person are not required to provide additional signing actions for the not-tested dwelling unit documents. Additionally, the Data Registry should ensure that each dwelling document in the sample group is given a unique registration number.

7.2.2.2 Group Sampling Rules Applicable to Specific 2025 Compliance Document Types

Additional guidance for specific compliance documentation for group sampling, and guidance for specific verification features for single-family group sampling is provided in Table 7-1. Guidance for group sampling in low-rise multifamily dwellings is provided in Table 7-2. Guidance for group sampling in nonresidential buildings is provided in Table 7-3.

Some documents have been excluded from the group sampling tables for brevity. Certificates of compliance do not represent testing or verification of energy features, and so are not applicable to group sampling. Certificates of installation verified by the enforcement agency are also not applicable.

Table 7-1: Group Sampling Rules Applicable to 2025 Single-Family Compliance Documents

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
CF2R/CF3R-ENV-20-H	Certificate of Installation/ Verification	Enclosure Air Leakage Single -Point Test with Manual Meter or Automatic Meter, - or Multipoint Airtightness Test	**Envelope Leakage Feature** When the CF1R-PRF indicates requirement for Envelope Leakage field verification for the dwelling, then compliance may be demonstrated using one of ENV-20. The same "Enclosure Air Leakage test" verification protocol does not need to be used in all dwellings in a sample group, thus any combination of ENV-20 verification can be used to qualify to be in the same sample group for envelope leakage credit features.

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
C2R/CF3R-ENV-21-H	Certificate of Installation/ Verification	Quality Insulation Installation (QII) Air Infiltration Sealing Framing Stage	**QII Feature** When the CF1R indicates requirement for field verification of QII, then compliance shall be demonstrated using one field "Tested" ENV-21 in one of the dwellings in the group, and one field "Tested" ENV-22 either in the same dwelling or otherwise in another dwelling in same sample group. Refer to group sampling procedures in RA2.6.3.5 that allow field verification "testing" of QII features prior to closing the sample group.
CF2R/CF3R-ENV-22-H	Certificate of Installation/ Verification	Quality Insulation Installation (QII) Insulation Stage	See rules for the ENV-21.
CF3R-EXC-20-H	Certificate of Verification	ECC Verification for Existing Conditions for performance compliance for alterations. Required as prerequisite to registration of a CF1R-PRF for an	sampling n/a

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
		altered dwelling.	
CF2R/CF3R-MCH-20-H	Certificate of Installation/ Verification	Duct Leakage Measurement - New System - Low Leakage Ducts in Conditioned Space (LLDCS) Compliance Credit - Low Leakage Air-Handling Units	**Duct Leakage Feature** When the MCH-01 indicates a MCH-20 is required for field verification of duct leakage for a ducted indoor unit in the dwelling, inclusion in a sample group depends on the measurement protocol indicated on the certificate of compliance.
CF2R/CF3R-MCH-21-H	Certificate of Installation/ Verification	Duct Location Verification	**Duct Location, Surface Area, and R-value Features** When the MCH-01 indicates requirement for MCH-21 for field verification for duct location in the dwelling, qualification for inclusion in a sample group may be demonstrated using MCH-21 regardless of which duct location verification protocol is reported on the MCH-21. The same duct location

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-21 verifications given by RA3.1.4.1 can be used to qualify to be in the same sample group, unless the verification is part of the LLDCS testing (RA3.1.4.3.8).
CF2R/CF3R-MCH-22-H	Certificate of Installation/ Verification	Forced Air System Fan Efficacy (Watt/cfm) - Newly Installed Non-Zoned or Zoned Multi-Speed Compressor Systems - Newly Installed Zoned Single Speed Compressor Systems Newly - Installed Non-Zoned or Zoned Multi-Speed Compressor Systems with CFVCS - Newly Installed Zoned Single Speed Compressor Systems	**Fan Efficacy Feature** When the MCH-01 indicates requirement for MCH-22 for field verification for fan efficacy in the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-22, or by use of a MCH- 28 when indicated on the MCH-01. The same "Forced Air System Fan Efficacy (Watt/cfm)" verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
		with CFVCS	22 or MCH-28 alternatives can be used to qualify to be in the same sample group for the fan efficacy feature.
CF2R/CF3R-MCH-23-H	Certificate of Installation/ Verification	Forced Air System Airflow Rate (cfm/ton) - Single Zone Systems or Zonally Controlled Systems with All Zones Calling - Zonally Controlled Systems in Every Zonal Control Mode - Measurement Only (CFM) Single Zone Systems or Zonally Controlled Systems with All Zones Calling - Newly Installed Non- Zoned or Zoned Multi-Speed Compressor with CFVCS - Newly Installed Zoned Single Speed Compressor Systems with CFVCS	**Airflow Rate Feature** When the MCH-01 indicates requirement for MCH-23 for field verification for system airflow rate in the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-23, or by use of a MCH-28 when indicated on the MCH-01. The same "Forced Air System Airflow Rate (cfm/ton)" verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-23 or MCH-28 alternatives can be used to qualify to be in the same sample group for the airflow rate verification feature.

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			Sampling is not allowed for altered systems. Furthermore, a "Measurement Only (CFM) Single Zone Systems or Zonally Controlled Systems with All Zones Calling" shall not be used for determining dwelling qualification for field Sample groups.
CF2R/CF3R-MCH-24-H	Certificate of Installation/ Verification	Enclosure Air Leakage Worksheet - Single-Point Test with Manual Meter or Automatic Meter, – Multipoint Test	MCH-24 does not document an applicable sampling feature by itself (MCH-24 is used for completing some MCH-27 docs). A MCH-24 doc shall not be used for determining dwelling qualification for ECC Sample groups. If a grouped dwelling unit complies using a sampled MCH-27 that necessitated a MCH-24, the sampled dwelling unit does not

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			require a MCH-24.
CF2R/CF3R-MCH-25-H	Certificate of Installation/ Verification	Refrigerant Charge Verification - Superheat Method (Standard Charge Procedure) - Subcooling Method (Standard Charge Procedure) - Weigh-in Charging Procedure - Packaged System Manufacturer Refrigerant Charge Certification	**Refrigerant Charge Feature** When the MCH-01 indicates requirement for MCH-25 for field verification for Refrigerant Charge verification for the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-25. The same "Refrigerant Charge Verification" protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-25 can be used to qualify to be in the same sample group. When the Weigh-in Charging Procedure is used for installation compliance, the MCH-25-documented system shall be verified by an ECC-Rater (cannot comply as "not tested" dwelling in a sample group). Additionally, when the

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			installer's MCH-25 (Packaged System Manufacturer Refrigerant Charge Certification) is used by the installer, there is no required ECC-Rater verification for the system. These systems are eligible to be included in a sample group for Refrigerant Charge verification features, but these systems cannot be used to represent the "tested" system for Refrigerant Charge compliance for the sample group.

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
CF2R/CF3R-MCH-26-H	Certificate of Installation/ Verification	Rated Space Conditioning System Equipment Verification	**Rated Space Conditioning System Feature** When the MCH-01 indicates requirement for MCH-26 for field verification of space conditioning systems in the dwelling, qualification for inclusion in a sample group may be demonstrated using MCH-26 regardless of which rating verification protocol is reported on the MCH-26. The same space conditioning system equipment verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-26 verifications can be used to qualify to be in the same sample group.

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
CF2R/CF3R-MCH-27-H	Certificate of Installation/ Verification	IAQ and Mechanical Ventilation Attached/Detached Ventilation Non-Dwelling Unit	**IAQ Mechanical Ventilation Features** When MCH-27 for field verification for Mechanical Ventilation Airflow Rate is required for the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-27. The same "IAQ and Mechanical Ventilation" verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-27 variants can be used to qualify to be in the same sample group.
CF2R/CF3R-MCH-28-H	Certificate of Installation/ Verification	Return Duct and Filter Grille Design According to Tables 150.0-B or C	**Return Duct Design Alternative to Airflow Rate and Fan Efficacy Verification** If specified on MCH-01, a MCH-28 shall be used as an alternative to compliance with airflow rate (MCH-23) and fan efficacy (MCH-22) ECC

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			features, thus the system qualifies for inclusion in a sample group for airflow rate and Fan Efficacy Features.
CF2R/CF3R-MCH-29-H	Certificate of Installation/ Verification	Supply Duct Surface Area and R-Value; Buried Ducts; Deeply Buried Ducts	**Duct Design Features** If the MCH-01 specifies requirement for MCH-29 for field verification for Duct Surface Area and R- Value and Buried or Deeply Buried Ducts Features in the dwelling, then qualification for inclusion in a sample group may be demonstrated using MCH-29 regardless of which verification protocol is reported on the MCH-29. The same duct verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-29 verifications can be used to qualify to be in the same sample group.
CF2R/CF3R-MCH-30-H	Certificate of Installation/ Verification	Central Fan Ventilation Cooling Systems (CFVCS) compliance credit	**CFVCS Feature** If the MCH-01 specifies requirement for MCH-30 for

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			verification of central fan ventilation cooling systems (CFVCS) in the dwelling, then qualification for inclusion in a sample group may be demonstrated using MCH-30 regardless of which type of CFVCS is documented on the MCH-30. The same CFVCS verification protocol does not need to be used on all systems in all dwellings in a sample group, thus any combination of MCH-30 verifications can be used to qualify to be in the same sample group.
CF2R/CF3R-MCH-31-H	Certificate of Installation/ Verification	ECC verified WHF - with individual CFM and Watts collection - with total CFM and individual Watts collection	**Whole House Fan (WHF) Airflow and Fan Efficacy** If MCH-31 for field verification for WHF verification is required for the dwelling, then qualification for inclusion in a sample group may be demonstrated using one of MCH-31. The same "ECC verified WHF" verification protocol does not need to be used in all

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			dwellings in a sample group, thus any combination of MCH-31 can be used to qualify to be in the same sample group.
CF2R/CF3R-MCH-32-H	Certificate of Installation/ Verification	Local Mechanical Exhaust	**Kitchen Range Hood Verification** If field verification of the kitchen range hood is required for the dwelling, then the MCH-32 may be used as qualification for inclusion in a sample group.
CF2R/CF3R-MCH-33-H	Certificate of Installation/ Verification	VCHP Compliance Credit	**VCHP Qualification** If the MCH-01 indicates requirement for MCH-33 for field verification of variable capacity heat pump (VCHP) system in the dwelling, then qualification for inclusion in a sample group may be demonstrated using a MCH-33 regardless of which VCHP system type (ducted, ductless, ducted + ductless, non-continuous fan, continuous fan) is documented on the MCH-33. The same combination of MCH-33 compliance

Document Number	Document Type	Document Description	Single Family Group Sampling Rules
			protocols does not need to be used for all MCH-33- documented systems in all dwelling units in a sample group, thus any combination of MCH-33 verifications can be used to qualify to be in the same sample group with other MCH-33- documented systems.
CF2R/CF3R-PLB-22-H	Certificate of Installation/ Verification	Dwelling Unit Domestic Hot Water (DHW) System Distribution	When the CF1R indicates field verification for a single-family dwelling DHW feature, qualification for inclusion in a sample group may be demonstrated using PLB-22 regardless of which verification protocol is reported on the PLB-22. The same DHW verification protocol does not need to be used in all dwellings in a sample group, thus any combination of PLB-22 verifications can be used to qualify to be in the same sample group.

Source: California Energy Commission

Table 7-2: Group Sampling Rules Applicable to 2025 Low-Rise Multifamily Compliance Documents

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
LMCI/LMCV-ENV-21-H	Certificate of Installation/ Verification	QII Framing Stage	When the CF1R indicates requirement for field verification of QII, then compliance shall be demonstrated using one ECC "Tested" ENV-21 in one of the dwellings in the group, and one ECC "Tested" ENV- 22 either in the same dwelling or otherwise in another dwelling in same sample group. Refer to group sampling procedures in RA2.6.3.5 that allow field verification "testing" of QII features prior to closing the sample group.
LMCI/LMCV-ENV-22-H	Certificate of Installation/ Verification	QII Insulation Stage	See rules for the ENV-21.
LMCI/LMCV-MCH-20-H	Certificate of Installation/ Verification	Duct Leakage Measurement - New System - Low Leakage Ducts in Conditioned Space Compliance Credit - Low Leakage Air-Handling Units	**Duct Leakage Feature** When the MCH-01 indicates a MCH-20 is required for field verification of duct leakage for a ducted indoor unit in the dwelling, inclusion in a sample group depends on the measurement protocol indicated on the

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			certificate of compliance.
LMCI/LMCV-MCH-21-H	Certificate of Installation/ Verification	Duct Location Verification	**Duct Location, Surface Area, and R-value Features** When the MCH-01 indicates requirement for MCH-21 for field verification for duct location in the dwelling, qualification for inclusion in a sample group may be demonstrated using MCH-21 regardless of which duct location verification protocol is reported on the MCH-21. The same duct location verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-21 verifications given by RA3.1.4.1 can be used to qualify to be in the same sample group, unless the verification is part of the LLDCS testing (RA3.1.4.3.8).

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
LMCI/LMCV-MCH-22-H	Certificate of Installation/ Verification	Forced Air System Fan Efficacy (Watt/cfm) - Newly Installed Non-Zoned or Zoned Multi-Speed Compressor Systems - Newly Installed Zoned Single Speed Compressor Systems Newly	**Fan Efficacy Feature** When the MCH-01 indicates requirement for MCH-22 for field verification for fan efficacy in the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-22, or by use of a MCH-28 when indicated on the MCH-01. The same "Forced Air System Fan Efficacy (Watt/cfm)" verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-22 or MCH-28 alternatives can be used to qualify to be in the same sample group for the fan efficacy feature.

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
LMCI/LMCV-MCH-23-H	Certificate of Installation/ Verification	Forced Air System Airflow Rate (cfm/ton) - Single Zone Systems or Zonally Controlled Systems with All Zones Calling - Zonally Controlled Systems in Every Zonal Control Mode - Alternative Compliance (best-that-I-can-do) - Measurement Only (CFM) Single Zone Systems or Zonally Controlled Systems with All Zones Calling	**Airflow Rate Feature** When the MCH-01 indicates requirement for MCH-23 for field verification for system airflow rate in the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-23, or by use of a MCH-28 when indicated on the MCH-01. The same MCH-23 "Forced Air System Airflow Rate (cfm/ton)" verification protocol) does not need to be used in all dwellings in a sample group, thus any combination of MCH-23 or MCH-28 alternatives can be used to qualify to be in

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			the same sample group for the airflow rate verification feature. Sampling is not allowed for altered systems. Additionally, when "Alternative Compliance" is used for compliance, the MCH-23 documented dwelling shall be verified by a ECC Rater (cannot comply as "not tested" dwelling in a sample group), additionally the MCH-23c documented dwelling cannot be used to represent the "tested" dwelling for airflow rate compliance for the sample group. Furthermore, "Measurement Only (CFM) Single Zone Systems or Zonally Controlled Systems with All Zones Calling" shall not be used for determining dwelling qualification for field Sample

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			groups.
LMCI/LMCV-MCH-24-H	Certificate of Installation/ Verification	Enclosure Air Leakage Test - Single Point Test- Manual Meter or Automatic Meter, – Multipoint Test	Compartment leakage testing compliance may be demonstrated using any valid testing protocol.
LMCI/LMCV-MCH-25-H	Certificate of Installation/ Verification	Refrigerant Charge Verification - Superheat Method (Standard Charge Procedure) - Subcooling Method (Standard Charge Procedure) - Weigh-in Charging Procedure - Packaged System Manufacturer Refrigerant Charge Certification	**Refrigerant Charge Feature** Sampling is only allowed for newly constructed buildings. When the MCH-01 indicates requirement for MCH-25 for field verification for Refrigerant Charge verification for the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-25. The same "Refrigerant Charge "Verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-25 variants can be used to qualify to be in the same sample group. When MCH-25 (Weigh-

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			in Charging Procedure) is used for installation compliance, the MCH-25-documented dwelling shall be verified by an ECC-Rater (cannot comply as "not tested" dwelling in a sample group). Additionally, when installer's MCH-25 (Packaged System Manufacturer Refrigerant Charge Certification) is used by the installer, there is no required ECC-Rater verification for the system. These systems are eligible to be included in a sample group for Refrigerant Charge verification features, but these systems cannot be used to represent the "tested" dwelling for Refrigerant Charge compliance for the sample group.
LMCI/LMCV-MCH-26-H	Certificate of Installation/ Verification	Rated System Verification	**Rated Space Conditioning System Feature** When the MCH-01 indicates

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			requirement for MCH-26 for field verification of space conditioning systems in the dwelling, qualification for inclusion in a sample group may be demonstrated using MCH-26 regardless of which rating verification protocol is reported on the MCH-26. The same space conditioning system equipment verification protocol does not need to be used in all dwellings in a sample group, thus any combination of MCH-26 verifications can be used to qualify to be in the same sample group.
LMCI/LMCV-MCH-27-H	Certificate of Installation/ Verification	Dwelling Unit Mechanical Ventilation	When the MCH-01 requires verification of the dwelling unit ventilation, the MCH-27 may be used to sample in groups having the same features. Dwellings with HRVs may be grouped with dwellings having ERVs or HRVs, for example. However, a dwelling having balanced

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			ventilation without recovery may not be grouped with a dwelling that features recovery. Additionally, dwellings having CFI and CFVS systems cannot be grouped with dwellings without these systems.
LMCI/LMCV-MCH-28-H	Certificate of Installation/ Verification	Return Duct and Filter Grille Design- Table 150.0B or C	**Return Duct Design Alternative to Airflow Rate and Fan Efficacy Verification** If specified on MCH-01, a MCH-28 shall be used as an alternative to compliance with airflow rate (MCH- 23) and fan efficacy (MCH-22) ECC features, thus the system qualifies for inclusion in a sample group for airflow rate and Fan Efficacy Features.
LMCI/LMCV-MCH-29-H	Certificate of Installation/ Verification	Supply Duct Surface Area/Buried Ducts	Sampling n/a
LMCI/LMCV-MCH-32-H	Certificate of Installation/ Verification	Local Mechanical Exhaust	**Kitchen Range Hood Verification** If field verification of the kitchen range hood is required for

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			the dwelling, then the MCH-32 may be used as qualification for inclusion in a sample group.
LMCI/LMCV-MCH-33-H	Certificate of Installation/ Verification	VCHP Compliance Credit	**VCHP Feature** If the MCH-01 indicates requirement for MCH-33 for field verification of variable capacity heat pump (VCHP) system in the dwelling, then qualification for inclusion in a sample group may be demonstrated using a MCH-33 regardless of which VCHP system type (ducted, ductless, ducted + ductless, non- continuous fan, continuous fan) is documented on the MCH-33. The same combination of MCH-33 compliance protocols do not need to be used for all MCH-33- documented systems in all dwelling units in a sample group, thus any combination of MCH-33 verifications can be used to qualify to be in the same sample group with other

Document Number	Document Type	Document Description	Low-rise Multifamily Group Sampling Rules
			MCH-33- documented systems.
LMCI/LMCV-PLB-21-H	Certificate of Installation/ Verification	Multifamily Central Hot Water System Distribution	**Multifamily DHW Feature** If field verification for multifamily central DHW is required, then the PLB-21 may be used as qualification for inclusion in a sample group.
LMCI/LMCV-PLB-22-H	Certificate of Installation/ Verification	Single Dwelling Unit Hot Water System Distribution	**Multifamily DHW Feature** If field verification for multifamily central DHW is required, then the PLB-22 may be used as qualification for inclusion in a sample group.

Source: California Energy Commission

Table 7-3: Group Sampling Rules Applicable to 2025 Nonresidential (Including High-Rise Multifamily) Compliance Documents and ECC Features

Document Number	Document Type	Document Description	Nonresidential Group Sampling Rules
NRCV-MCH-24-H	Certificate of Verification	Enclosure Air Leakage Test – Single Point Test with Manual Meter or Automatic Meter, – Multipoint Test	Compartment leakage testing compliance may be demonstrated using any valid testing protocol.
NRCV-MCH-27-H	Certificate of Verification	IAQ and Mechanical Ventilation – High Rise Residential	**IAQ Mechanical Ventilation Feature** When MCH-27 for field verification for Mechanical Ventilation Airflow Rate is required for the dwelling, qualification for inclusion in a sample group may be demonstrated using one of MCH-27. The same "IAQ and Mechanical Ventilation – High Rise Residential" does not need to be used in all dwellings in a sample group, thus any combination of MCH-27 can be used to qualify to be in the same sample group.

Document Number	Document Type	Document Description	Nonresidential Group Sampling Rules
NRCV-MCH-32-H	Certificate of Verification	Local Mechanical Exhaust	**Kitchen Range Hood Verification** If field verification of the kitchen range hood is required for the dwelling, then the MCH-32 may be used as qualification for inclusion in a sample group.
NRCV-PLB-21-H	Certificate of Verification	Nonresidential ECC - High Rise Multifamily Central Hot Water System Distribution Multiple Recirculation Loop Design for DHW Systems Serving Multiple Dwelling Units	**Nonresidential Multifamily Central DHW Feature** When the NRCC indicates requirement for field verification for multifamily central DHW is required, then the PLB-21 may be used as qualification for inclusion in a sample group.
NRCV-PLB-22-H	Certificate of Verification	Nonresidential ECC - High Rise Single Dwelling Unit Hot Water System Distribution	**Nonresidential Multifamily Dwelling DHW Feature** When the NRCC indicates requirement for field verification for multifamily DHW in the dwelling, then the PLB-22 may be sed as qualification for inclusion in a sample group.

Source: California Energy Commission

Appendix A:

Compliance Document Design Files: Graphical Layouts, User Instructions, Data Field Definitions, and Calculations

For information regarding implementation of the compliance document designs, refer to the current version of the files maintained in the applicable CEC document design file repository.

Single Family

CF1R

2025-CF1R-ADD-01-E-PrescriptiveAdditionsBuilding.docx
2025-CF1R-ALT-01-E-PrescriptiveAlterationsBuilding.docx
2025-CF1R-ALT-02-E-PrescriptiveAlterationsHVAC.docx
2025-CF1R-ENV-02-E-AreaWeightedAverageWorkSheet.docx
2025-CF1R-ENV-03-E-ShgcWorkSheet.docx
2025-CF1R-ENV-04-E-CoolRoofAndSRIWorksheet.docx
2025-CF1R-ENV-05-E-AlternativeDefaultFenestrationProcedure.docx
2025-CF1R-ENV-06-E-InteriorExteriorInsulationWorksheet.docx
2025-CF1R-NCB-01-E-PrescriptiveNewlyConstructedBuilding.docx

CF2R

2025-CF2R-ELC-01-E-ElectricReady
2025-CF2R-ENV-01-E-FenestrationInstallation.docx
2025-CF2R-ENV-03-E-InsulationInstallation.docx
2025-CF2R-ENV-04-E-Roofing-RadiantBarrier.docx
2025-CF2R-ENV-20-E-EnclosueAirLeakageTest.docx
2025-CF2R-ENV-21-H-QII-FramingStage.docx
2025-CF2R-ENV-22-H-QII-InsulationStage.docx
2025-CF2R-LTG-01-E-Lighting-SingleFamilyDwellings.docx
2025-CF2R-MCH-01a-E-SpaceConditioningSystem-Performance.docx
2025-CF2R-MCH-01b-E-SpaceConditioningSystem-PrescriptiveAlterations.docx
2025-CF2R-MCH-01c-E-SpaceConditioningSystem-PrescriptiveNCB.docx
2025-CF2R-MCH-01d-E-SpaceConditioningSystem-Performance-E+A+A.docx
2025-CF2R-MCH-02-E-WholeHouseFan.docx
2025-CF2R-MCH-04-E-EvaporativeCoolers.docx
2025-CF2R-MCH-20-H-DuctLeakageTest.docx
2025-CF2R-MCH-21-H-DuctLocation.docx
2025-CF2R-MCH-22-H-FanEfficacy.docx
2025-CF2R-MCH-23-H-AirflowRate.docx
2025-CF2R-MCH-24-H-EnclosureAirLeakageTest.docx
2025-CF2R-MCH-25-H-RefrigerantCharge.docx
2025-CF2R-MCH-26-H-RatedSystemVerification.docx
2025-CF3R-MCH-27-H-IndoorAirQualityandMechanicalVentilation.docx

2025-CF2R-MCH-28-H-ReturnDuctAndFilterGrilleDesign-Table150.0-BorC.docx
2025-CF2R-MCH-29-H-SupplyDuctSurfaceAreaBuriedDucts.docx
2025-CF2R-MCH-30-H-VentilationCooling.docx
2025-CF2R-MCH-31-H-WholeHouseFan-.docx
2025-CF2R-MCH-32-H-LocalMechanicalExhaust.docx
2025-CF2R-MCH-33-H-VchpComplianceCredit.docx
2025-CF2R-MCH-34-E-Pre-Cooling.docx
2025-CF2R-PLB-02-E-SingleDwellingUnitHotWaterSystemDistribution
2025-CF2R-PLB-03-E-PoolAndSpaHeatingSystems.docx
2025-CF2R-PLB-22-H-SingleDwellingUnitHotWaterSystemDistribution.docx
2025-CF2R-PVB-01-E-PV Systems.docx
2025-CF2R-PVB-02-E-BatteryStorageSystems.docx
2025-CF2R-SRA-01-E-SolarReadiness-NewConstruction.docx
2025-CF2R-SRA-02-E-MinimumSolarZoneAreaWorksheet.docx
2025-CF2R-STH-01-SolarWaterHeatingSystems.docx

CF3R

2025-CF3R-ENV-20-H-EnclosureAirLeakageTest.docx
2025-CF3R-ENV-21-H-QII-FramingStage.docx
2025-CF3R-ENV-22-H-QII-InsulationStage.docx
2025-CF3R-EXC-20-H-VerificationOfExistingConditionsForAlterations.docx
2025-CF3R-MCH-20-H-DuctLeakageTest.docx
2025-CF3R-MCH-21-H-DuctLocation.docx
2025-CF3R-MCH-22-H-FanEfficacy.docx
2025-CF3R-MCH-23-H-AirflowRate.docx
2025-CF3R-MCH-24-EnclosureAirLeakageWorksheet.docx
2025-CF3R-MCH-25-H-RefrigerantCharge.docx
2025-CF3R-MCH-26-H-RatedSystemVerification.docx
2025-CF3R-MCH-27-H-IndoorAirQualityandMechanicalVentilation.docx
2025-CF3R-MCH-28-H-ReturnDuctAndFilterGrilleDesign-Table150.0-BorC.docx
2025-CF3R-MCH-29-H-SupplyDuctSurfaceAreaBuriedDucts.docx
2025-CF3R-MCH-30-H-VentilationCooling.docx
2025-CF3R-MCH-31-H-WholeHouseFan.docx
2025-CF3R-MCH-32-H-LocalMechanicalExhaust.docx
2025-CF3R-MCH-33-H-VchpComplianceCredit.docx
2025-CF3R-PLB-22-H-SingleDwellingUnitHotWaterSystemDistribution.docx

Low-Rise Multifamily

LMCC

2025-LMCC-CXR-01-E-Commissioning.xlsx
2025-LMCC-ELC-01-E-ElectricalPowerDistributionandElectricReady.xlsx
2025-LMCC-ENV-01-E-Envelope.xlsx
2025-LMCC-LTI-01-E-Indoor Lighting.xlsx
2025-LMCC-LTO-01-E-Outdoor Lighting.xlsx
2025-LMCC-LTS-01-E-Sign Lighting.xlsx
2025-LMCC-MCH-01-E-Mechanical.xlsx

2025-LMCC-MCH-02-E-PrescriptiveAlterationsHVAC.xlsx
2025-LMCC-PLB-01-E-Water Heating.xlsx
2025-LMCC-PRC-01-E-Process Systems.xlsx
2025-LMCC-SAB-01-E-SolarandBattery.xlsx

LMCI

2025-LMCI-ELC-01-E-ElectricReady
2025-LMCI-ENV-21-H-QII Framing Stage.docx
2025-LMCI-ENV-22-H-QII Insulation Stage.docx
2025-LMCI-MCH-01a-E-SpaceConditioningSystem-Performance.docx
2025-LMCI-MCH-01b-E-SpaceConditioningSystem-PrescriptiveAlterations.docx
2025-LMCI-MCH-01c-E-SpaceConditioningSystem-PrescriptiveNCB.docx
2025-LMCI-MCH-01d-E-SpaceConditioningSystem-Performance-E+A+A.docx
2025-LMCI-MCH-20-H-DuctLeakageTest.docx
2025-LMCI-MCH-21-H-Duct Location.docx
2025-LMCI-MCH-22-H-FanEfficacy.docx
2025-LMCI-MCH-23-H-AirflowRate.docx
2025-LMCI-MCH-24-H-EnclosureAirLeakageTest.docx
2025-LMCI-MCH-25-H-RefrigerantCharge-Superheat.docx
2025-LMCI-MCH-26-H-RatedSystemVerification.docx
2025-LMCI-MCH-27-H-IndoorAirQualityandMechanicalVentilation.docx
2025-LMCI-MCH-28-H-ReturnDuctAndFilterGrilleDesign-Table150.0-BorC.docx
2025-LMCI-MCH-29-H-SupplyDuctSurfaceAreaBuriedDucts.docx
2025-LMCI-MCH-32-H-LocalMechanicalExhaust.docx
2025-LMCI-MCH-33-H-VchpComplianceCredit.docx
2025-LMCI-PLB-01-E-MultifamilyCentralHotWaterSystemDistribution.docx
2025-LMCI-PLB-02-E-SingleDwellingUnitHotWaterSystemDistribution.docx
2025-LMCI-PLB-03-E-PoolAndSpaHeatingSystems.docx
2025-LMCI-PLB-21-H-MultifamilyCentralHotWaterSystemDistribution.docx
2025-LMCI-PLB-22-H-SingleDwellingUnitHotWaterSystemDistribution.docx

LMCV

2025-LMCV-ENV-21-H-QII Framing Stage.docx
2025-LMCV-ENV-22-H-QII Insulation Stage.docx
2025-LMCV-EXC-20-H-VerificationOfExistingConditionsForAlterations.docx
2025-LMCV-MCH-20-H-DuctLeakageTest.docx
2025-LMCV-MCH-21-H-DuctLocation.docx
2025-LMCV-MCH-22-H-FanEfficacy.docx
2025-LMCV-MCH-23-H-AirflowRate.docx
2025-LMCV-MCH-24-H-EnclosureAirLeakageWorksheet.docx
2025-LMCV-MCH-25-H-RefrigerantCharge.docx
2025-LMCV-MCH-26-H-RatedSystemVerification.docx
2025-LMCV-MCH-27-H-IndoorAirQualityandMechanicalVentilation.docx
2025-LMCV-MCH-28-H-ReturnDuctAndFilterGrilleDesign-Table150.0-BorC.docx
2025-LMCV-MCH-29-H-SupplyDuctSurfaceAreaBuriedDucts.docx
2025-LMCV-MCH-32-H-LocalMechanicalExhaust.docx

2025-LMCV-MCH-33-H-VchpComplianceCredit.docx
2025-LMCV-PLB-21-H-MultifamilyCentralHotWaterSystemDistribution.docx
2025-LMCV-PLB-22-H-SingleDwellingUnitHotWaterSystemDistribution.docx

Nonresidential and High-Rise Multifamily

NRCV

2025-NRCV-MCH-24-H-EnclosureAirLeakageWorksheet.docx
2025-NRCV-MCH-27-H- IndoorAirQualityandMechanicalVentilation-HighriseResidential.docx
2025-NRCV-MCH-32-H-LocalMechanicalExhaust.docx
2025-NRCV-PLB-21-H-MultifamilyCentralHotWaterSystemDistribution.docx
2025-NRCV-PLB-22-H-IndividualDwellingUnitHotWaterSystemDistribution.docx

Examples:

Here is an example layout of a single-family compliance document: 2025-CF2R-MCH-01b-E SpaceConditioningSystem-PrescriptiveAlterations.docx.

Here is an example layout of a low-rise multifamily compliance document: 2025-LMCC-ENV-E-Envelope.xlsx-EnvelopeComponentApproach.

Here is an example of the nonresidential compliance document: 2025-NRCV-MCH-32-H-LocalMechanicalExhaust.

Appendix B

Compliance Document XML Schema Files (XSD)

Note: For information for implementation of the compliance document schemas, refer to the current version of the files maintained in the applicable CEC XSD repository.

Single Family

CF1RADD01E.xsd
CF1RALT01E.xsd
CF1RALT02E.xsd
CF1RENV02E.xsd
CF1RENV03E.xsd
CF1RENV04E.xsd
CF1RENV05E.xsd
CF1RENV06E.xsd
CF1RNCB01E.xsd
CF2RELC01E.xsd
CF2RENV01E.xsd
CF2RENV03E.xsd
CF2RENV04E.xsd
CF2RENV20H.xsd
CF2RENV21H.xsd
CF2RENV22H.xsd
CF2RLTG01E.xsd
CF2RMCH01aE.xsd
CF2RMCH01bE.xsd
CF2RMCH01cE.xsd
CF2RMCH01dE.xsd
CF2RMCH02E.xsd
CF2RMCH04E.xsd
CF2RMCH20H.xsd
CF2RMCH21H.xsd
CF2RMCH22H.xsd
CF2RMCH23H.xsd
CF2RMCH24H.xsd
CF2RMCH25H.xsd
CF2RMCH26H.xsd
CF2RMCH27H.xsd
CF2RMCH28H.xsd
CF2RMCH29H.xsd
CF2RMCH30H.xsd
CF2RMCH31H.xsd
CF2RMCH32H.xsd
CF2RMCH33H.xsd
CF2RMCH34E.xsd
CF2RPLB02E.xsd
CF2RPLB03E.xsd
CF2RPLB22H.xsd
CF2RPVB01E.xsd
CF2RPVB02E.xsd
CF2RSRA01E.xsd
CF2RSRA02E.xsd
CF2RSTH01E.xsd
CF3RENV20H.xsd
CF3RENV21H.xsd
CF3RENV22H.xsd
CF3REXC20H.xsd
CF3RMCH20H.xsd
CF3RMCH21H.xsd
CF3RMCH22H.xsd
CF3RMCH23H.xsd
CF3RMCH24H.xsd
CF3RMCH25H.xsd
CF3RMCH26H.xsd
CF3RMCH27H.xsd
CF3RMCH28H.xsd
CF3RMCH29H.xsd
CF3RMCH30H.xsd
CF3RMCH31H.xsd
CF3RMCH32H.xsd
CF3RMCH33H.xsd
CF3RPLB22H.xsd
CF3RNoTest.xsd
DataTypes.xsd
ResBuilding.xsd
ResCommon.xsd
ResCompliance.xsd
ResEnvelope.xsd
ResHvac.xsd
ResLighting.xsd

Low-Rise Multifamily

LMCCCXR01E.xsd
LMCCELC01E.xsd
LMCCENV01E.xsd
LMCCLTI01E.xsd
LMCCLTO01E.xsd
LMCCLTS01E.xsd
LMCCMCH01E.xsd
LMCCMCH02E.xsd
LMCCPLB01E.xsd
LMCCSAB01E.xsd
LMCCPRC01E.xsd
LMCIELC01E.xsd
LMCIENV21H.xsd
LMCIENV22H.xsd
LMCIMCH01aE.xsd
LMCIMCH01bE.xsd
LMCIMCH01cE.xsd
LMCIMCH01dE.xsd
LMCIMCH20H.xsd
LMCIMCH21H.xsd
LMCIMCH22H.xsd
LMCIMCH23H.xsd
LMCIMCH24H.xsd
LMCIMCH25H.xsd

LMCIMCH26H.xsd
LMCIMCH27H.xsd
LMCIMCH28H.xsd
LMCIMCH29H.xsd
LMCIMCH32.Hxsd
LMCIMCH33H.xsd
LMCIPLB01E.xsd
LMCIPLB02E.xsd
LMCIPLB03E.xsd
LMCIPLB21E.xsd
LMCIPLB22H.xsd
LMCVENV21H.xsd
LMCVENV22H.xsd
LMCVEXC20H.xsd
LMCVMCH20H.xsd
LMCVMCH21H.xsd
LMCVMCH22H.xsd
LMCVMCH23H.xsd
LMCVMCH24H.xsd
LMCVMCH25H.xsd
LMCVMCH26H.xsd
LMCVMCH27H.xsd
LMCVMCH28H.xsd
LMCVMCH29H.xsd
LMCVMCH32H.xsd
LMCVMCH33H.xsd
LMCVPLB21H.xsd
LMCVPLB22H.xsd
DataTypes.xsd
ResBuilding.xsd
ResCommon.xsd
ResCompliance.xsd
ResEnvelope.xsd
ResHvac.xsd
ResLighting.xsd

Nonresidential and High-Rise MultifamilyNRCVMCH24H.xsd

NRCVMCH27H.xsd
NRCVMCH32H.xsd
NRCVPLB21H.xsd
NRCVPLB22H.xsd
DataTypes.xsd
ResBuilding.xsd
ResCommon.xsd
ResCompliance.xsd
ResEnvelope.xsd
ResHvac.xsd
ResLighting.xsd

Examples:

- Here is an example schema of the Single-Family compliance document: CF2RMCH01bE.xsd.
- Here is an example schema of the Low-Rise multifamily compliance document: LMCCENVE.xsd.
- Here is an example schema of the Nonresidential compliance document: NRCVMCH32H.xsd.