

BayREN Codes & Standards Training

Effects of the 2016 Energy Code Changes on Bay Area Building Departments



INTRODUCTION

BayREN Codes & Standards Trainings

- BayREN Codes & Standards is a joint effort of Bay Area cities and counties to achieve full compliance with provisions of the California Energy Code.
- BayREN trainings seek to provide building department staff and private sector building professionals with tools and strategies for improving energy code compliance.

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Today's Learning Objectives

- Understand how the 2016 version of the Energy Codes (Title-24, Part 6) affects Bay Area building departments.
 - Permit Application
 - Plan Check
 - Field Inspection

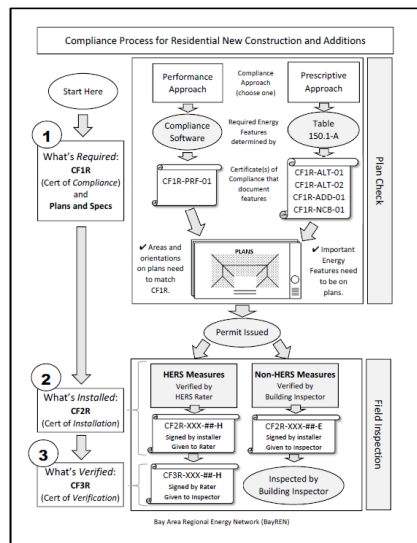
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Residential Changes

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Compliance Process Flow Diagram

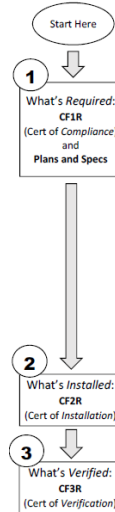
Refer to full-size copy provided with your handouts.



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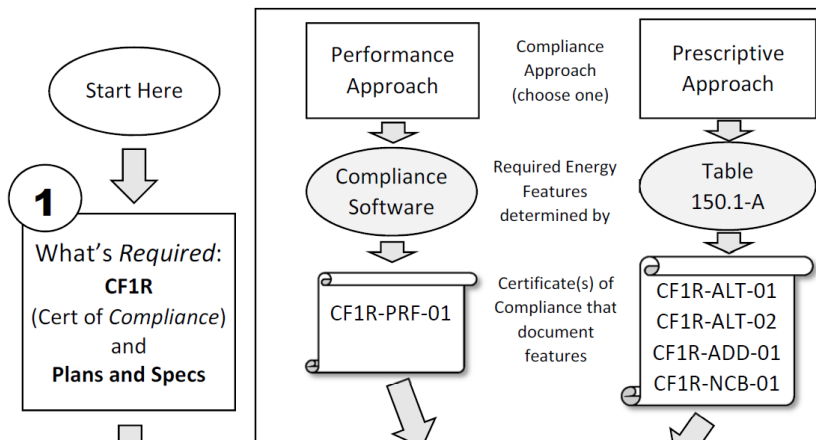
Compliance Process Flow Diagram

- Notice that the forms (CF1R, CF2R, and CF3R) follow a simple 1 - 2- 3 flow.
- Notice that process is divided into Plan Check and Field Inspection sections and that good communication must flow between them.
- The forms are intended to facilitate this.



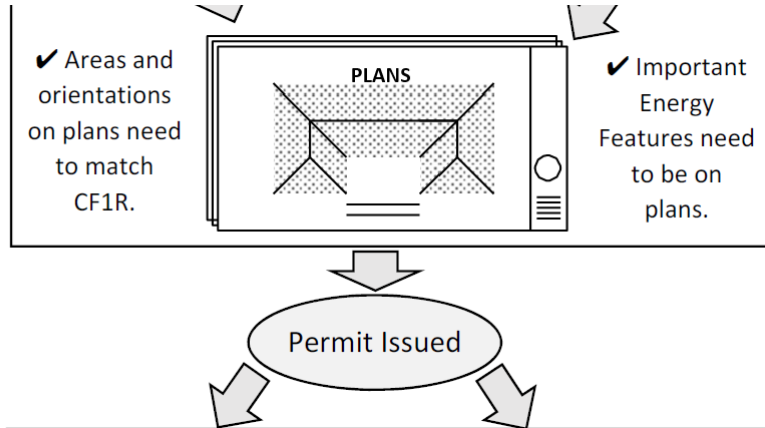
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Compliance Process Flow Diagram



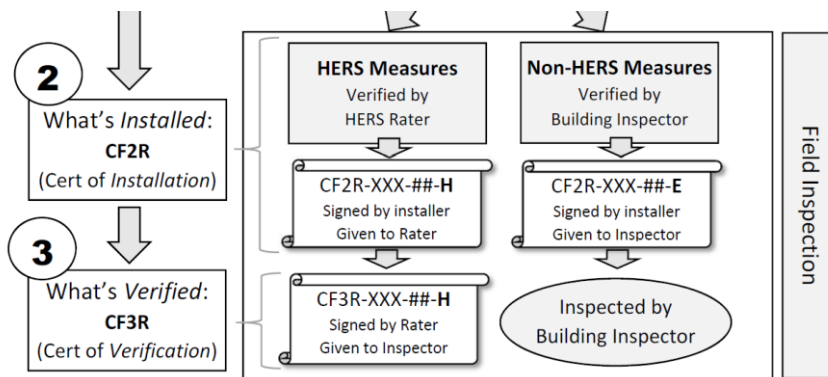
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Compliance Process Flow Diagram



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Compliance Process Flow Diagram



If a project requires HERS verification, **all** forms will be registered.

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Compliance Documents List

Refer to full-size copy provided with your handouts.

BAY AREA Regional Energy Network

Compliance Documents (Forms)

CF1R – Certificates of Compliance

- CF1R-ALL-E: Used to demonstrate compliance for non-HVAC alterations (roof, windows, walls, etc.)
- CF1R-ALL-EI: Used to demonstrate compliance for HVAC alterations (change-outs, cut-ins, re-ducts, etc.)
- CF1R-ADD-01-E: Used when the prescriptive approach is used to demonstrate compliance for additions less than or equal to 3,000 square feet. See example in appendix.
- CF1R-ADD-02-E: Used when the prescriptive approach is used to demonstrate compliance for newly constructed homes and additions over 3,000 square feet.
- CF1R-PRF-01-E: Used when the performance approach is used to demonstrate compliance for any kind of project.

CF2R – Certificates of Installation – Non-HERS Measures (E)

- CF2R-ENV-01-E: Fenestration (windows, skylights, etc.)
- CF2R-ENV-02-E: Air sealing features (weather stripping, caulking, backdraft dampers, etc.)
- CF2R-ENV-03-E: Insulation
- CF2R-ENV-04-E: Roofing products
- CF2R-TX-01-E: Lighting features
- CF2R-RACH-01-E: Mechanical systems (HVAC)
- CF2R-RACH-02-E: Whole house fan
- CF2R-RACH-04-E: Evaporative coolers
- CF2R-PLB-01-E: Multi-family central hot water distribution systems
- CF2R-PLB-02-E: Single-family central hot water distribution systems
- CF2R-PLB-03-E: Pool and spa heating systems

CF2R – Certificates of Installation – HERS Measures (E)

- CF2R-ENV-01-E: Envelope air leakage (blower door test)
- CF2R-ENV-11-E: CI Framing Stage (batt, loose fill, etc.)
- CF2R-ENV-12-E: CI Ceiling Air Barrier
- CF2R-ENV-13-E: CI Insulation Stage
- CF2R-ENV-14-E: CI Framing Stage (SP & ICF)
- CF2R-RACH-10-E: Exhaust ducts*
- CF2R-RACH-11-E: Supply duct location verification
- CF2R-RACH-12-E: HVAC system fan efficiency (fan watt draw)*
- CF2R-RACH-13-E: HVAC system fan airflow*
- CF2R-RACH-14-E: Blower door, when infiltration used to meet whole house ventilation
- CF2R-RACH-15-E: HVAC system refrigerant charge*
- CF2R-RACH-16-E: Raked system verification (high SEER/IEER)
- CF2R-RACH-17-E: Ventilation in the DORMER (e.g. 2 standard)*
- CF2R-RACH-18-E: Return Duct sizing table verification (alternative to airflow/fan watt draw test)
- CF2R-RACH-19-E: Supply duct surface area and bonded ducts verification
- CF2R-PLB-11-E: Multi-family central hot water distribution systems
- CF2R-PLB-12-E: Single-family central hot water distribution systems

For each CF2R-XXX-###-E there is a corresponding CF2R-XXX-###-H, Certificate of Verification

* These are the most common HERS forms. The HERS website will make sure the correct HERS documents (CF2R and CF2R-V) get used and completed.

bayern.org/verdes
info@bayern.org December 21, 2015

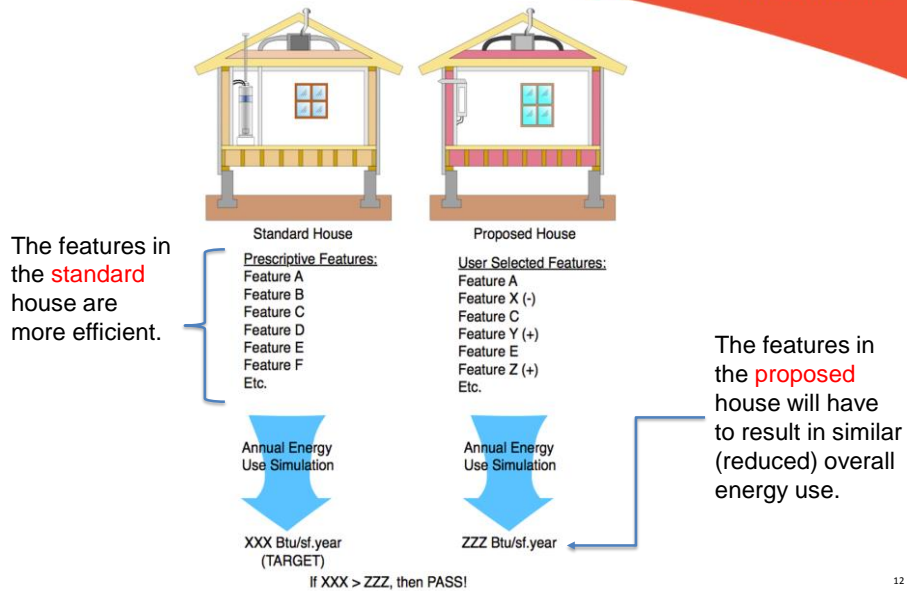
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Residential Changes

- The basic process does not change.
- Most of the changes occur in the prescriptive requirements for new construction.
- The vast majority of new homes comply using the performance approach.
- The prescriptive measures are mainly the features of the *standard house* that the *proposed house* is being compared to.
- The proposed house will be more efficient than 2013 but the exact features will still vary from house to house.
- CF1R-PRF-01 will show required features, as before.

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Residential Changes



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Residential Changes

- Changes to mandatory measures will require a change in what **field inspectors** are looking for.
 - **Solar ready zone** exceptions revised.
 - More alternatives. Will be documented on forms.
 - Only applies to subdivisions of 10 or more.
 - Minimum **ceiling insulation** now R-22 (was R-30!)
 - This is the absolute minimum and is usually exceeded by prescriptive and performance requirements.

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Residential Changes

- Allowed **duct leakage** for new systems dropped from 6% to 5% of system fan flow.
 - Verified by HERS raters.
- **AC and heatpump systems** must have liquid line filter dryers installed per manufacturer's instructions.
 - A new widget to check for.

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Residential Changes

- **Storage water heaters** no longer need external blankets in any efficiency range.
 - One LESS thing to inspect for.
- **Instantaneous water heaters** must have isolation valves.
 - One MORE thing to inspect for.

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Residential Changes

- All **luminaires** must be high efficacy.
 - This is an **overall simplification** of what needs to be inspected.
 - No more 50% in kitchen, etc., etc.
 - Screw based fixtures (not in a recessed can light) can now qualify as long as they have a high efficacy lamp (bulb) installed.

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Administrative Changes (Residential)

- **Delegation of Signature Authority**
 - Applies to Certificate of Installation (CF2R) forms only.
 - Installing contractor/builder can designate someone as an authorized representative to sign forms (likely a HERS Rater).
 - Agreement, signatures, etc. will be facilitated by HERS Providers.
- **What this means**
 - CF2Rs will be signed off more easily.
 - Theoretically, HERS rater will verify before signing off on behalf of installer.
 - Installer is less knowledgeable of what's being signed on their behalf.

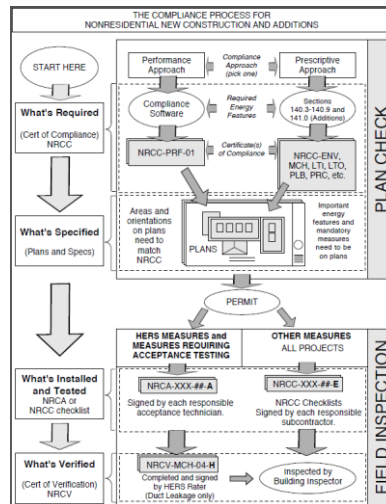
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Nonresidential Changes

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Nonresidential Energy Code Compliance – The Process

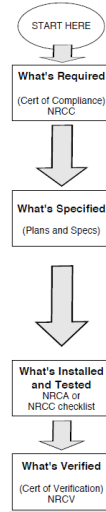
See handout.



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Nonresidential Energy Code Compliance – The Process

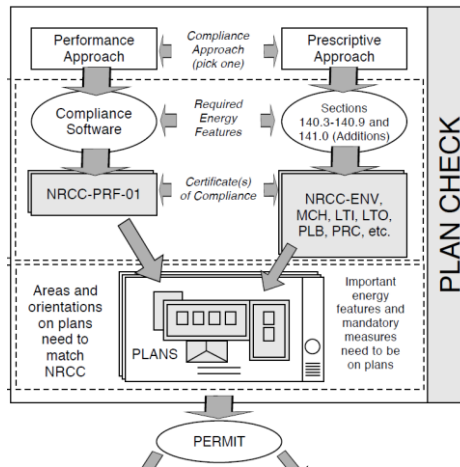
See handout.



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Nonresidential Energy Code Compliance – The Process

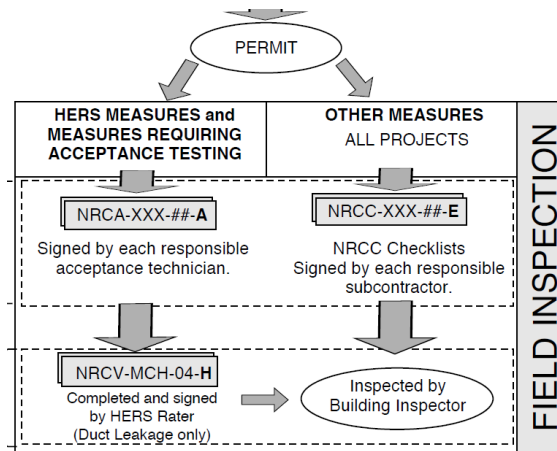
See handout.



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Nonresidential Energy Code Compliance – The Process

See handout.



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Nonresidential Changes

- The basic process does not change.
- Most of the changes occur in the prescriptive requirements for new construction.
- The prescriptive approach is far more common than in residential construction, but the required energy features are documented similarly to the performance approach.

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Nonresidential Changes

- As with residential, the trick is knowing what should be on the plans (plan check) and what should be installed (field inspection).
- The plan checker will either refer to the same prescriptive tables as before (but with stricter features) or the NRCC forms as before.
- The field inspector will refer to the plans and the same compliance documents as before, primarily the NRCC forms for what is required and the NRCA (Acceptance Test Certificates) for what was installed.

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Nonresidential Changes

- There are some new mandatory requirements for *new elevators* that have not had to be checked before.
 - Lighting watts per square feet
 - Ventilation cfm/square feet
 - Controls for both
- Plan checker needs to make sure these are on the plans.
- Acceptance testing is required. Inspector should ask for NRCA forms.

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Nonresidential Changes

- There are some new mandatory requirements for *new escalators and moving walkways* that have not had to be checked before.
- Plan checker needs to make sure these are on the plans.
- Acceptance testing is required. Inspector should ask for NRCA forms.

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Nonresidential Changes

- The requirements for lighting alterations have been simplified.
 - This should reduce some griping by permit applicants.

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Resources

- BayREN provides training and tools for building departments to help them prioritize and streamline energy plan check efforts.
 - Training is on a variety of topics. Short 90 min. versions and some have long 4-hour versions.
 - Tools include checklists, permit guides, quick guides, etc.
- Developing automated E-tools for permit applicants, as well as building department personnel.

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Resources

Contact information:

- BayREN Codes & Standards Program
 - www.bayren.org/codes
 - codes@bayren.org

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