

ATTACHED CONVERTED UNCONDITIONED SPACE TO ADU



CLARIFICATION:
(Per [Blueprint 122, 3/29/18](#)):
An addition to the main house



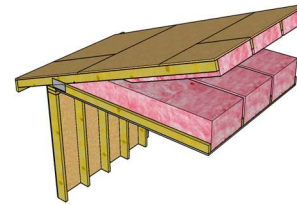
COMPLIANCE DOCUMENTATION:
Prescriptive option:
[CF1R-ADD-01-E](#) (HERS required)
must be registered with a HERS provider website:
<https://www.calcerts.com/>
<https://www.cheers.org/>

[CF1R-ADD-02-E](#) (No HERS)
or
Performance option:
[CF1R-PRF-01-E](#): Addition Alone, E+A or E+A+A

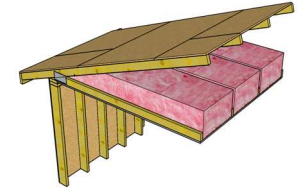
Roof *

≤700 SF:
Insulation to meet Mandatory: R-22

>700 SF:
Prescriptive Package A Option A, B or C



Example of High Performance Attic (HPA) Option B

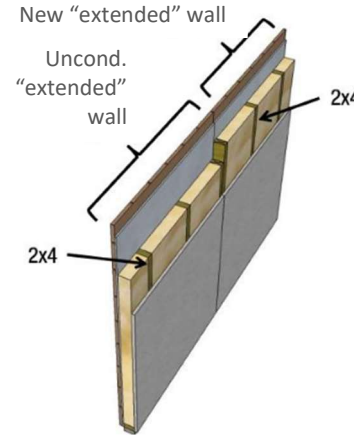


Example of Non HPA (or Option C)

Walls

Extended Walls:
2 x 4: R-15
2 x 6: R-19

New Walls:
Prescriptive Package A



Extended Walls
All walls currently existing as part of the unconditioned space are considered "extended walls" and are exempt from the Package A requirements. New walls extending from these existing unconditioned walls are also considered "extended" walls.

New Walls
Walls added to the existing unconditioned space that are not considered "extended" from the existing walls, must meet Package A requirements.

Floor

Prescriptive Package A

There are no exceptions from Package A for floors of any type.

Fenestration

New Fenestration:
[§150.2\(a\)1](#) (or see Page 5)

Skylights: ≤16 ft²
U-Factor=0.55
SHGC=0.30 **

All glazing in this space are considered "new", even if it already exists as part of the unconditioned space, and must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive or Performance Approach.

Area allowance exceptions are based on square footage of ADU, per the allowances of [§150.2\(a\)1](#).

HVAC ***

HVAC = Prescriptive Package A
IAQ whole building airflow not required if ≤1,000 ft²
HERS measures will apply

Per Mechanical Code, return air cannot be shared with other dwelling units. It is recommended that each dwelling unit have its own thermostat (ability to control their own heating and cooling setpoints) and separate IAQ ventilation system(s).

DHW

A 2nd water heater meeting [§150.1\(c\)8](#), can be installed to serve ADU.

If no natural gas is connected to the existing home, an electric water heater that meets min. requirements can be installed for the ADU ([§150.2\(a\)1D](#)).

* Additions over 300 SF in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.

** Climate zones 1,3,5 have no SHGC requirements, nor west facing limitations on area

*** HERS testing of ducts and/ or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADU's over 1000 ft²

ATTACHED NEWLY CONSTRUCTED ADU



CLARIFICATION:
(Per [Blueprint 122, 3/29/18](#)):
An addition to the main house

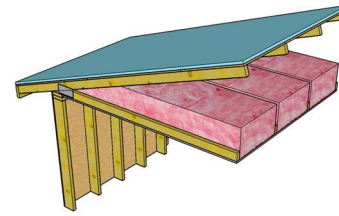


COMPLIANCE DOCUMENTATION:
Prescriptive option:
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[CF1R-ADD-02-E](#) (No HERS)
or
Performance option:
[CF1R-PRF-01-E](#): Addition Alone, E+A or E+A+A

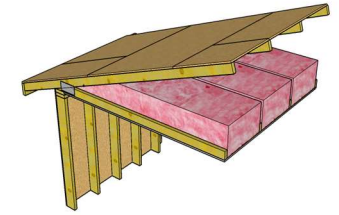
Roof *

≤700 SF:
Insulation to meet Mandatory: R-22

>700 SF:
Prescriptive Package A Option A, B or C



Example of High Performance Attic Option A

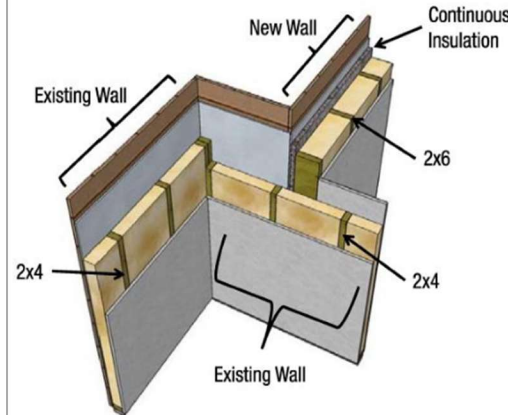


Example of Non HPA (or Option C)

Walls

Extended Walls:
2 x 4: R-15
2 x 6: R-19

New Walls:
Prescriptive Package A



Extended Walls
New walls extending on the same plane from existing walls are considered “extended” walls (can be extended *up* i.e. 2nd floor, *down* i.e. basement, or *out* on the same floor).

New Walls
New walls *not* extended are considered “new” walls and must meet Package A requirements.

Floor

Prescriptive Package A

There are no exceptions from Package A for floors of any type.

Fenestration

New Fenestration:
[§150.2\(a\)1](#) (or see Page 5)

Skylights: ≤16 ft²
U-Factor=0.55
SHGC=0.30 **

Must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive or Performance Approach.

Area allowance exceptions are based on square footage of ADU, per the allowances of [§150.2\(a\)1](#).

HVAC

HVAC = Prescriptive Package A
IAQ whole building airflow not required if ≤1,000 ft²
HERS measures will apply

Per Mechanical Code, return air cannot be shared with other dwelling units It is recommended that each dwelling unit have its own thermostat (ability to control their own heating and cooling setpoints) and separate IAQ ventilation system(s).

DHW

A 2nd water heater meeting [§150.1\(c\)8](#), can be installed to serve ADU.

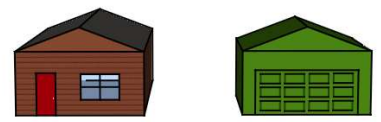
If no natural gas is connected to the existing home, an electric water heater that meets min. requirements can be installed for the ADU ([§150.2\(a\)1D](#)).

* Additions over 300 SF in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.

** Climate zones 1,3,5 have no SHGC requirements, nor west facing limitations on area

*** HERS testing of ducts and/ or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADU's over 1000 ft²

DETACHED CONVERTED UNCONDITIONED SPACE TO ADU



CLARIFICATION:
(Per [Blueprint 122. 3/29/18](#)):
An addition to the main house



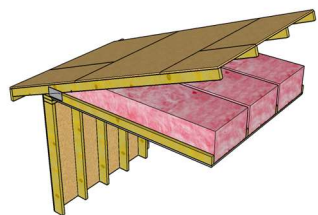
COMPLIANCE DOCUMENTATION:
Prescriptive option:
[CF1R-ADD-01-E](#) (HERS required) must be registered with a HERS provider website:
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[CF1R-ADD-02-E](#) (No HERS)
or
Performance option:
[CF1R-PRF-01-E](#): Addition Alone, E+A or E+A+A

Roof *

≤700 SF:
Insulation to meet Mandatory: R-22

>700 SF:
Prescriptive Package A Option A, B or C



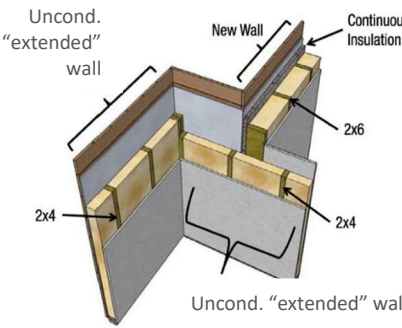
Ceiling insulation, per Prescriptive Package A, with the ducts and air handler located in the conditioned space and confirmed by HERS rater to meet the criterion of Reference Residential Appendix [RA3.1.4.3.8](#).

Example of High Performance Attic: Option C

Walls

Extended Walls:
2 x 4: R-15
2 x 6: R-19

New Walls:
Prescriptive Package A



Extended Walls
All walls currently existing as part of the unconditioned space are considered “extended walls” and are exempt from the Package A requirements. New walls extending on the same plane from these existing unconditioned walls are also considered “extended” walls.

New Walls: Walls added to the existing unconditioned space that are not on the same plane of “extended” walls, must meet Package A requirements (see image above).

Floor
Prescriptive Package A

There are no exceptions from Package A for floors of any type.

Fenestration

New Fenestration:
[§150.2\(a\)1](#) (or see Page 5)

Skylights: ≤16 ft²
U-Factor=0.55
SHGC=0.30 **

All glazing in this space are considered “new”, even if it already exists as part of the unconditioned space, and must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive or Performance Approach.

Area allowance exceptions are based on square footage of ADU, per the allowances of [§150.2\(a\)1](#).

HVAC ***

HVAC = Prescriptive Package A IAQ whole building airflow not required if ≤1,000 ft²
HERS measures will apply

Per Mechanical Code, return air cannot be shared with other dwelling units. It is recommended that each dwelling unit have its own thermostat (ability to control their own heating and cooling setpoints) and separate IAQ ventilation system(s).

DHW

A 2nd water heater meeting [§150.1\(c\)8](#), can be installed to serve ADU.

If no natural gas is connected to the existing home, an electric water heater that meets min. requirements can be installed for the ADU ([§150.2\(a\)1D](#)).

* Additions over 300 SF in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.

** Climate zones 1,3,5 have no SHGC requirements, nor west facing limitations on area

*** HERS testing of ducts and/ or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADU’s over 1000 ft²

DETACHED NEWLY CONSTRUCTED ADU



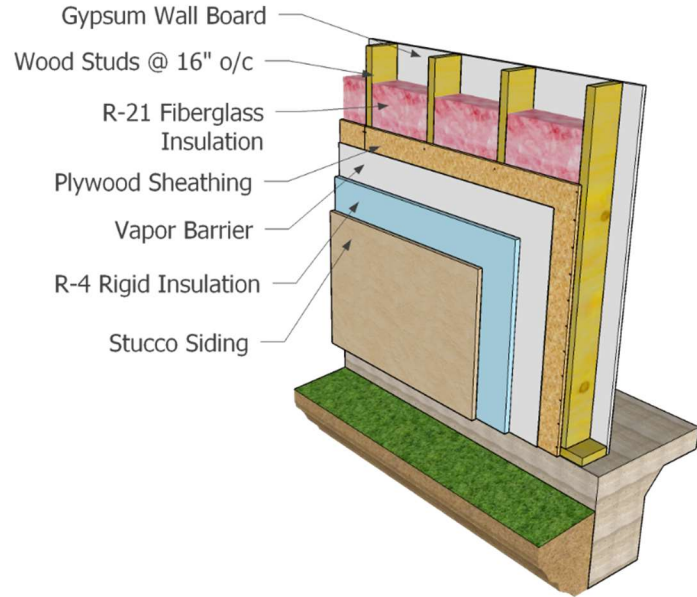
CLARIFICATION:

([Blueprint 122, 3/29/18](#)):
No change, still considered new dwelling unit (single family home)



Roof	Any size ADU is subject to Prescriptive Package A.
Walls	All walls are considered "new" and are subject to Prescriptive Package A. Framed: CZ1-5; 8-16 = U-factor of 0.051 CZ 6-7 = U-factor of 0.065

Prescriptive Option A, B or C including the provision that attics are to be ventilated, or use the Performance Approach.



Example of High Performance Wall = U-factor of 0.051

DOCUMENTATION:
Prescriptive option:
[CF1R-NCB-01-E](#) (HERS required) must be registered with a HERS provider website:
<https://www.calcerts.com/>
<https://www.cheers.org/>
or
Performance option:
[CF1R-PRF-01-E](#) using Energy Commission approved software

Floor	Prescriptive Package A
Fenestration	All Fenestration is "New": Prescriptive Package A Skylights: ≤16 ft² U-Factor=0.55 SHGC=0.30 **
HVAC ***	HVAC = Prescriptive Package A IAQ whole building airflow is required of any size ADU HERS measures will apply
DHW	Prescriptive Package A §150.1(c)8

Raised floor = R-19; Heated Slabs = R-5 slab edge insulation

Must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive (U-factor = 0.32 and SHGC = 0.25**) or use the Performance Approach.
Area allowance 20% of conditioned floor area, 5% west facing limitation ** per [§150.1\(c\)3](#).

All applicable HERS measures will apply: Duct testing; refrigerant charge; airflow and fan watt draw; IAQ.

If recirculation pumps are desired for any type of ADU, Demand Recirculation Systems with manual control pumps per RA4.4 shall be used, or use the Performance Approach for control options.

* Additions over 300 SF in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.

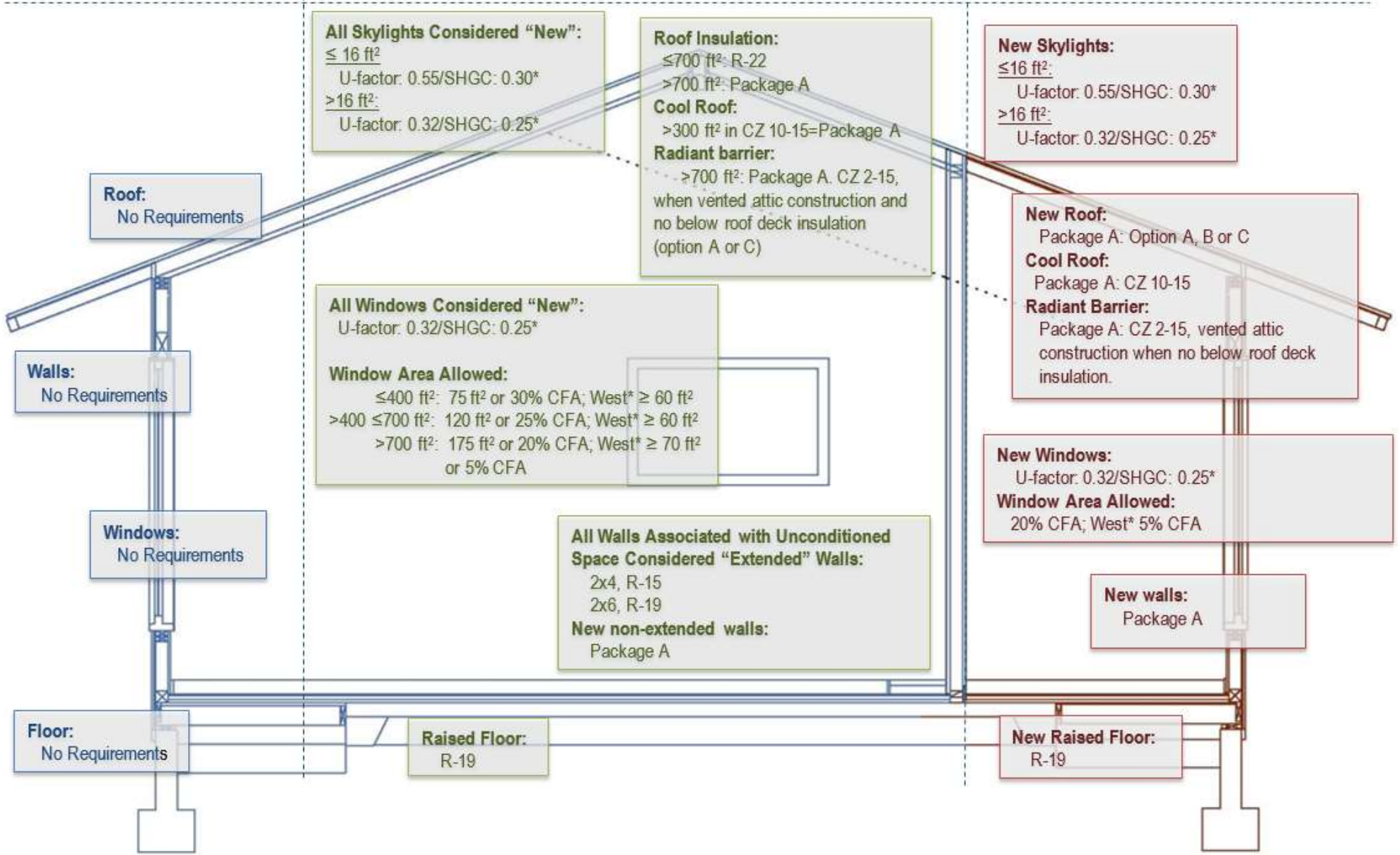
** Climate zones 1,3,5 have no SHGC requirements, nor west facing limitations on area

*** HERS testing of ducts and/ or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADU's over 1000 ft²

Existing Single Family to Remain

Converting Unconditioned Space to an ADU (Section 150.2)

New Construction of an ADU (Section 150.1)



*SHGC and West facing restriction not required in CZ 1, 3, 5

Additional Resources:

Blueprint – Issue 122, 3/29/18

<http://www.energy.ca.gov/2018publications/CEC-400-2018-007/CEC-400-2018-007.pdf>

California Department of Housing and Community Development – Accessory Dwelling Unit Memorandum – December 2016

<http://www.hcd.ca.gov/policy-research/docs/17Jan30-ADU-TA-Memo.pdf>

Check with your local Planning department to see if guidance has been made available:

San Francisco – “sf-ADU: a guide for homeowners, designers, and contractors considering adding an Accessory Dwelling Unit to an existing residence in San Francisco”

http://default.sfplanning.org/plans-and-programs/planning-for-the-city/accessory-dwelling-units/2015_ADU_Handbook_web.pdf

Los Angeles – “Building an ADU guidebook to Accessory Dwelling Units in the city of Los Angeles”

<https://www.ladbs.org/docs/default-source/publications/misc-publications/adu-guidebook.pdf?sfvrsn=12>

ADU Regulations by City:

<https://accessorydwellings.org/adu-regulations-by-city/>

Future Event - CABEC 2018 Brown Bag Webinar Series #6

June 20, 2018: Chris Olvera from Energy Commission on ADU's

<https://register.gotowebinar.com/register/1267149059396628995>

Recorded Event - Coffee & Code with Brian - Residential Modeling: Accessory Dwelling Units (ADU), Part 1: Newly Conditioned Detached ADU

<https://www.youtube.com/watch?v=gOkh4M2XIKU&feature=youtu.be>

FAQ about CBECC-Res 2016

http://www.bwilcox.com/BEES/docs/CBECC-Res_FAQs.pdf



This program is funded by California utility customers and administered by Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E®), Southern California Edison Company (SCE), and Southern California Gas Company (SoCalGas®) under the auspices of the California Public Utilities Commission. © 2018 PG&E, SDG&E, SoCalGas and SCE. All rights reserved, except that this document may be used, copied, and distributed without modification. Neither PG&E, SoCalGas, SDG&E, nor SCE — nor any of their employees makes any warranty, express or implied; or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any data, information, method, product, policy or process disclosed in this document; or represents that its use will not infringe any privately-owned rights including, but not limited to patents, trademarks or copyrights. Images used in this document are intended for illustrative purposes only. Any reference or appearance herein to any specific commercial products, processes or services by trade name, trademark, manufacturer or otherwise does not constitute or imply its endorsement, recommendation or favoring.

BLUEPRINT

California Energy Commission
Efficiency Division

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CBECC-Res FAQs Updated

Do you have questions about CBECC-Res, the free residential compliance software from the California Energy Commission (Energy Commission)? The Commission publishes **Frequently Asked Questions (FAQs) about CBECC-Res** that addresses hot topics related to the software. The FAQs were recently updated and include seven new questions and answers.

Fewer and Simpler Nonresidential Forms

One of the Energy Commission's goals is to reduce the number of compliance documents (forms). The 47 prescriptive nonresidential certificates of compliance (NRCC) are being cut to 10 forms. There will be one form for each building component – lighting, envelope, mechanical, etc. This lessens confusion about when to use which form.

These simplified forms incorporate dynamic features. Each form follows a similar format and offers similar features, simplifying completion and review.

Five **dynamic forms** have already been posted for:

- » Electrical Power Distribution
- » Indoor Lighting
- » Outdoor Lighting
- » Sign Lighting
- » Solar Ready

The five forms that will be posted in the future are for:

- » Commissioning
- » Covered Processes
- » Envelope
- » Mechanical
- » Water Heating

These forms are available for use now! Enforcement agencies may continue to use the static forms at their discretion. When the *2019 Building Energy Efficiency Standards* (Energy Code) is implemented, these 10 reformatted NRCC forms will be the only prescriptive nonresidential forms used.

Simplified 2016 Power Distribution and Solar Ready Forms

Two simplified forms are now available to document compliance with the nonresidential electrical power distribution (ELC) and solar ready (SRA) requirements. These forms simplify the compliance process for everyone involved including the contractor, plans examiner, and building department. They are project specific and expand and contract based on the project scope – reducing the total number of pages of forms for most projects.

New features include:

- » One signature block
- » Table C – Compliance Results give a quick check of the inputs on the first page and will indicate if the project “COMPLIES”
- » User selections limit drop-down menus and table options to guide users toward compliant designs
- » Hyperlinks to the Energy Code

The new **NRCC-ELC-E** and **NRCC-SRA-E** are available now.

Enforcement agencies may continue to use the static forms at their discretion.

Thank You, LBO and City of Chico!

The Energy Commission sends a big THANK YOU to the Local Building Officials (LBO) and the City of Chico. LBO worked with the Energy Commission to organize a series of seven classes on the 2016 Energy Code. The classes covered residential envelope, the benefits of modeling, nonresidential lighting, and more.

The City of Chico hosted and promoted these free classes. Attendees included building officials, building department staff, contractors, designers, and energy consultants. Several of these classes provided students with free International Code Council (ICC) Preferred Provider continuing education units.

Is your jurisdiction interested in hosting Energy Code classes? If so, contact the **hotline** for more information.

Covered Processes Quick Reference Guide Available

Do you know when compliance with the Energy Code is triggered for covered processes? The Energy Commission has released the **Covered Processes Quick Reference Guide**. This handy guide tells you when compliance is required, what equipment is covered, and if acceptance testing must be completed.

Rebuilding After Disasters

The Energy Commission gets a lot of questions about which code cycle must be met when rebuilding after a disaster. Per **Section 100.0(a)2**, the code that is in effect on the date you apply for a building permit is the code that must be met. Any building permit application submitted on or after January 1, 2017, must meet the 2016 Energy Code.

For more information, please see Energy Code Ace's **Recover and Rebuild** fact sheet.

Presentations Posted

Seven 2016 Energy Code presentations are available for download from the **Online Resource Center**.

The information in these presentations include:

- » Covered Processes » Lighting
- » Envelope
 - Nonresidential
 - Cool Roofs
 - Residential
- » Water Heating
 - Residential
- » HVAC
 - Nonresidential

Regulatory Advisory

The Energy Commission has issued a **regulatory advisory** regarding manufactured fenestration (windows, skylights, and glass doors) labels. There are only two types of acceptable labels – National Fenestration Rating Council (NFRC) labels, or labels that use default values. The advisory reviews labeling requirements and provides samples of acceptable labels, per the requirements of Sections **10-111** and **110.6**.

Accessory Dwelling Units

Accessory dwelling units (ADUs) are most commonly defined as secondary dwelling units on residential lots. They can be used to house family (also known also as granny or in-law units), visitors, or even as rental properties to supplement income. ADUs, like all other residential structures in California, are subject to the Energy Code.

In most instances, when complying with the 2016 Energy Code, ADUs are considered **additions**. Additions are changes to a building that increase conditioned floor area and conditioned volume. The only scenario where an ADU would be considered a **newly constructed building** is if it was a new structure and shared no common walls with the existing building. This means that for compliance with the Energy Code, attached ADUs, as well as converted existing structures, are considered additions.

This issue of *Blueprint* includes frequently asked questions about ADUs. For more information on ADUs, visit the California Department of Housing and Community Development's **website**.

The graphic features a dark teal background with a light teal arrow pointing right. On the left, an orange box contains the text 'ENERGY STANDARDS' and a dark teal banner below it contains 'HOTLINE'. Below this, white text reads 'Available to help with Energy Standards (Title 24, Part 6) questions.' On the right, there are two contact options: 'EMAIL' with a mouse cursor icon and the address 'title24@energy.ca.gov', and 'CALL' with a telephone handset icon, listing '800-772-3300 Toll free in CA' and '916-654-5106 Outside CA'. At the bottom right, white text specifies 'HOURS 8 a.m.–12 p.m. and 1 p.m.–4:30 p.m.'

Q&A

Accessory Dwelling Units

When an existing attached unconditioned structure (like a garage) is converted to an ADU, is it an addition or a newly constructed building?

This is an addition. See Figure 1 for an illustration of this example.



Figure 1 - Existing house, attached garage being converted to an ADU

When an ADU is built new sharing a common wall with the existing house, is it an addition or a newly constructed building?

This is an addition. See Figure 2 for an illustration of this example.



Figure 2 - Existing house, newly constructed attached ADU

When an existing detached unconditioned structure (like a garage) is converted to an ADU, is it an addition or a newly constructed building?

This is an addition. See Figure 3 for an illustration of this example.



Figure 3 - Existing house, detached garage being converted to an ADU

When an ADU is built new and is detached from the existing house, is it an addition or a newly constructed building?

This is a newly constructed building. This building would need to meet the requirements as a new building. See Figure 4 for an illustration of this example.



Figure 4 - Existing house, newly constructed detached ADU

When an existing unconditioned structure (like a garage) is converted to an ADU, what requirements do the existing walls need to meet?

These walls are treated as “wall extensions,” and can meet the insulation requirements based on their existing dimensions, as described in Sections **150.2(a)1Ai** and **150.2(a)1Bii**. This requires R-15 in 2x4 framing, and R-19 in 2x6 framing.

Do the whole building ventilation requirements apply to ADUs that are additions?

The whole building ventilation requirements apply to additions that are greater than 1,000 square feet. While not required, it is recommended that the whole building ventilation requirements be met for new dwelling units. All other applicable ventilation requirements must be met. For example, if a bathroom or kitchen is part of the addition, the local exhaust requirements for those spaces must be met. More on local exhaust requirements can be found in **Section 4.6.5** of the *2016 Residential Compliance Manual*.

Residential Performance Modeling and HERS Verification

I’m modeling a residential addition. The project includes quality insulation installation (QII), which requires home energy rating system (HERS) verification. Existing heating, ventilation, and air conditioning (HVAC) equipment will be used and less than 40 feet of ducting will be added.

My project only requires HERS verification for QII. Why does the HERS Feature Summary on my certificate of compliance (CF1R) state:

- » **Refrigerant charge verification required if a refrigerant containing component is altered**
- » **Duct sealing required if a duct system component, plenum, or air-handling unit is altered**

These two statements do not indicate that these verifications are required. They are meant to remind the builder that additional HERS verifications may be required depending on the scope of the project.

Some scopes are not covered in the performance report. For example, an air conditioner compressor is moved to a new location to accommodate an addition. This typically requires the replacement of portions of the refrigerant line or the installation of a new section of line. In some cases, an entirely new refrigerant line is installed. Per the requirements of **Section 150.2(b)1Fiib**, the alteration of a refrigerant containing component, in climate zones 2 and 8-15, triggers refrigerant charge verification. The needed verification is identified on the certificate of installation (CF2R-MCH-01-E).

For more information on residential modeling, visit your software vendor’s **FAQ** web page.

LED Trim Kits

Does an LED trim kit, like the one in Figure 5, need to be tested for elevated temperature and marked JA8-2016-E?

No. LED trim kits do not need to be tested for elevated temperature or marked JA8-2016-E. LED trim kits (also called solid state lighting [SSL] downlight retrofit kits) are classified as luminaires, even though they are inserted into existing housing (can). When LEDs are inseparable from the kit, the kit is tested as a luminaire. The elevated temperature test does not apply to luminaires. The Energy Code classifies these kits as luminaires.

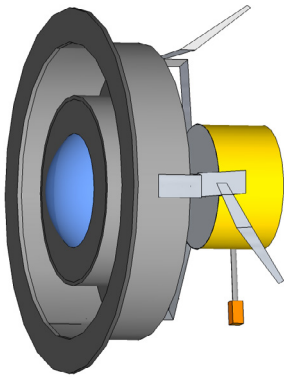


Figure 5 - LED trim kit

For reference, the 2016 Energy Code defines an **inseparable SSL luminaire** as:

“A luminaire featuring solid state lighting components such as LEDs and driver components which cannot be easily removed or replaced by the end user, thus requiring replacement of the entire luminaire. Removal of solid state lighting components may require the cutting of wires, use of a soldering iron, or damage to or destruction of the luminaire.”

Insulating Refrigerant Lines

Do refrigerant lines, also referred to as suction lines, for low-rise residential mini-splits have to meet the ¾” insulation requirement in TABLE 120.3-A?

Yes. Suction line insulation for all residential HVAC systems, including mini-splits, must meet the ¾” thickness requirement.

For More Information

Home Energy Rating System:

<http://www.energy.ca.gov/HERS/>

Acceptance Test Technician

Certification Provider Program:

<http://www.energy.ca.gov/title24/attcp/>

Approved Compliance Software:

http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html

The California Energy Commission welcomes your feedback on Blueprint.

Please contact Andrea Bailey at:

Title24@energy.ca.gov

EDITOR

» Andrea Bailey

SPECIAL THANKS

- | | |
|---------------------|---------------------|
| » Alexis Smith | » Jose Perez |
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Robert B. Weisenmiller, Ph.D.
Chair

Drew Bohan
Executive Director

Need Help? Energy Standards Hotline
(800) 772-3300 (toll-free in CA)
Title24@energy.ca.gov

Commissioners
Karen Douglas
David Hochschild
Andrew McAllister
Janea A. Scott

Appliances and Outreach and Education Office
1516 Ninth St, MS-25
Sacramento, CA 95814-5512
(916) 654-4147



CALIFORNIA ENERGY COMMISSION

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CEC-400-2018-007



Decoding ADUs: *Let's Talk Recent Changes*



HELPING YOU PLAY YOUR CARDS RIGHT



Recording For Future Use

-  *Decoding* * Attics and Walls™
-  *Decoding* * Residential Compliance™
-  *Decoding* * 2016 HERS™
-  *Decoding* * 2016 Envelopes™
-  *Decoding* * 2016 Energy Standards™



This session is being recorded.

Last Decoding Talk...

 *Decoding* * Recovery™
Let's Talk Residential Rebuilding



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California Statewide Codes & Standards



This program is funded by California utility customers under the auspices of the California Public Utilities Commission and in support of the California Energy Commission.

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Who Are We?



Gina Rodda

Principal/Owner

gina@gabelenergy.com

Host: Gina Rodda

Gina Rodda, our host for the Decoding Talk series, is a Certified Energy Analyst (CEA), and LEED Accredited Professional (AP).

She is involved in providing residential and non-residential energy calculations for a variety of building types throughout California; an instructor of full day trainings; and host of various webinars specific to Title 24 (Part 6) Building Energy Efficiency Standards.

Gina has been in the energy modeling field since 1991, starting the ninth California building energy code cycle of her career.



BUILDING ENERGY ANALYSIS +
ENERGY CODE COMPLIANCE

4



Who Are We?



Michelle Austin

Director- Residential Division
Sr. Energy Analyst- CEA

Michelle@gabelenergy.com



BUILDING ENERGY ANALYSIS +
ENERGY CODE COMPLIANCE

Guest Speaker: Michelle Austin

Michelle Austin is a Senior Energy Analyst and the manager of the Residential Division at Gabel Energy.

Over the years, she has worked on a wide array of projects from the simplest of additions to mega- size new home construction. Her work allows her to explore a wide variety of projects in many different climate zones and has helped her develop a realistic plan of attack for getting her projects to comply in the best ways possible. Her goal is to make each project as simple and efficient for all parties involved.

Michelle is a Certified Energy Analyst (CEA), and a member of CABEC.

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Decoding ADUs



- ✦ Explore *how* the clarification provided changes code requirements for ADUs;
- ✦ Review examples of different ADU types and how they may be affected;
- ✦ Determine the modeling/documentation processes that have changed;
- ✦ Understand how the ADU compliance options may impact construction.

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Why?



HELPING YOU PLAY YOUR CARDS RIGHT




Handouts





Decoding + ADUs™
Let's Talk. Recent Changes

CLARIFICATION:
(Per *Blueprint* 122, 3/29/18):
An addition to the main house



COMPLIANCE DOCUMENTATION:
Prescriptive option:
[CFIR-ADD-01-E](#) (HERS required) must be registered with a HERS provider website: <http://www.calcerts.com/> or <http://www.chahers.org/>
[CFIR-ADD-02-E](#) (No HERS)
or
Performance option:
[CFIR-PRF-01-E](#): Addition Alone, E+A or E+A+A

BUILDING FEATURE	PRESCRIPTIVE 2016 TITLE 24 PART 6 PACKAGE A (TABLE 150.1-A)	
Roof *	<p>≤700 SF: Insulation to meet Mandatory: R-22</p> <p>>700 SF: Prescriptive Package A Option A, B or C</p>	 <i>Example of High Perf. Ops</i>
Walls	<p>Extended Walls: 2 x 4: R-15 2 x 6: R-19</p> <p>New Walls: Prescriptive Package A</p>	<p>New "extended" wall</p>  Uncond. "extended" wall 2x4
Floor	Prescriptive Package A	There are no ext
Fenestration	<p>New Fenestration: §150.2(a)11 (or see Page 5)</p> <p>Skylights: ≤16 ft² U-Factor=0.55 SHGC=0.30 **</p>	<p>All glazing in this: as part of the unc weighted of U-fac Prescriptive or Pe Area allowance to the allowances of Per Mechanical C units. It is recom thermostat (ability and separate IAQ</p> <p>If no natural gas it heater that meets (§150.2(a)1D).</p>
HVAC ***	HVAC = Prescriptive Package A IAQ whole building airflow not required if ≤1,000 ft ² HERS measures will apply	
DHW	A 2 nd water heater meeting §150.1(c)8, can be installed to serve ADU.	

* Additions over 300 SF in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.
 ** Climate zones 1, 3, 5 have no SHGC requirements, nor west facing limitations on area
 *** HERS testing of ducts and/or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADUs over 1000 ft²

Issue 122 | January - March 2018

BLUEPRINT

California Energy Commission
Efficiency Division



In This Issue

- **CECC-Res FAQs Updated**
- **Fewer and Simpler Nonresidential Forms**
- **Simplified 2016 Power Distribution and Solar Ready Forms**
- **Thank You, LEO and City of Chico**
- **Covered Processors Quick Reference Guide Available**
- **Rebuilding After Quakes**
- **Presentations Posted**
- **Regulatory Advisory**
- **Accessory Dwelling Units**
- **GIA**
- **Accessory Dwelling Units**
- **Residential Performance Modeling and HERS Tools**
- **LED Box Kits**
- **Insulating Refrigerator Lines**
- **Energy Code Class Schedule**

CECC-Res FAQs Updated
Do you have questions about CECC-Res, the non-residential compliance software from the California Energy Commission (Energy Commis...)? The Commission publishes **Frequently Asked Questions (FAQs)** about CECC-Res that addresses hot topics related to the software. The FAQs were recently updated and include seven new questions and answers.

Fewer and Simpler Nonresidential Forms
One of the Energy Commission's goals is to reduce the number of compliance documents (forms). The 47 prescriptive nonresidential compliance documents (NRC) are being cut to 10 forms. There will be one form for each building component - lighting, air, refrigeration, mechanical, etc. This process will not affect other in-use check forms.

These simplified forms incorporate dynamic features. Each form follows a similar format and offers similar features, simplifying compliance and review.

Five **dynamic forms** have already been posted for:

- **Electrical Permit**
- **Outdoor Lighting Distribution**
- **Indoor Lighting**
- **Solar Ready**
- **Water Heating**

The five forms that will be posted in the future are for:

- **Envelope**
- **Mechanical**
- **Water Heating**

These forms are available for use now. Licensed agencies may continue to use the static forms at their discretion.

Simplified 2016 Power Distribution and Solar Ready Forms
Two simplified forms are now available to document compliance with the nonresidential electrical power distribution (EIO) and solar ready (SR) requirements. These forms simplify the compliance process by incorporating and streamlining the electrical plan, notes, and building department. They are project specific and expand and contract based on the project scope - reducing the total number of pages of forms for most projects.

New features include:

- One separate block
- Table C - Compliance Results give a quick check of the inputs on the first page and will indicate if the project "COMPLETES"
- New selection tool drop-down menus and table options to guide users toward compliant design
- Hyperlinks to the Energy Code

The new **NRC-EIO-E** and **NRC-SR-E** are available now.

Licensed agencies may continue to use the static forms at their discretion.



Where to get the Blueprints(s)

Building Energy Efficiency Standards and Forms

- 2016 Energy Standards & Forms
- 2013 Energy Standards & Forms
- Past Energy Standards & Forms

Energy Standards Information and Training Materials

- Overview
- Commissioning
- Covered Processes
- Electrical Power Distribution
- Envelope
- MVAC
- Lighting
- Solar Ready
- Water Heating

Acceptance Testing and Home Energy Rating System

- Acceptance Test Technician Certification Provider (ATTCP)
- Home Energy Rating System (HERS)

Additional Tools and Information

- Approved Compliance Software
- Blueprint Newsletter

External Resources

- Energy Code Ace
- External Educational Resources

Online Resource Center

<http://www.energy.ca.gov/title24/orc/>

CA.GOV | Contact | Newsroom | Quick Links

Home | About Us | Analysis & Stats | Efficiency | Funding | Power Plants | Renewables | Research | Transportation

Home » efficiency » **Blueprint Newsletter**

Controlled Document: [link] Issue date: March 29, 2018 (PDF File, 42 MB)

Issue 122, January - March, 2018

In This Issue

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Helps you navigate the Standards using key word search capabilities, hyperlinked tables and related sections

2016 Building and Appliance Efficiency Regulations - Reference Ace v27

2016 Building Energy Efficiency Standards and Title 20 Appliance Efficiency Regulations Reference Ace Tool

Contents Index Search

- 2016 BUILDING ENERGY EFFICIENCY STANDARDS
- REFERENCE APPENDICES
- RESIDENTIAL COMPLIANCE MANUAL
- RESIDENTIAL ACM REFERENCE MANUAL
- NONRESIDENTIAL COMPLIANCE MANUAL
- NONRESIDENTIAL ACM REFERENCE MANUAL
- TITLE 20 APPLIANCE EFFICIENCY REGULATIONS
- TITLE 20 APPLIANCE EFFICIENCY REGULATIONS (Appliance-Specific Sections Only)

EnergyCodeAce.com/tools

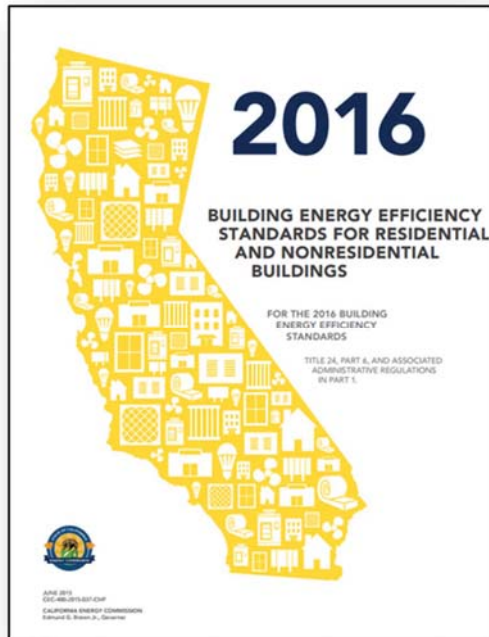
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Which Code Year Applies? Permit pulled....

Jan. 2017- Dec. 2019

Jan. 2020- Dec. 2023



2019 Building Energy Efficiency Standards Page 43

SUBCHAPTER 1 ALL OCCUPANCIES—GENERAL PROVISIONS

SECTION 100.0 – SCOPE

- (a) **Buildings Covered.** The provisions of Part 6 apply to all buildings:
1. That are of Occupancy Group A, B, E, F, H, L, M, R, S, or U; and
 2. For which an application for a building permit or renewal of an existing permit is filed (or is required by law to be filed) on or after the effective date of the provisions, or which are constructed by a governmental agency; and
 3. That are:
 - A. Unconditioned; or
 - B. Indirectly or directly conditioned by mechanical heating or mechanical cooling, or process spaces; or
 - C. Low-rise residential buildings that are heated with a non-mechanical heating system.
- EXCEPTION 1 to Section 100.0(a).** Qualified historic buildings, as regulated by the California Historic Building Code (Title 24, Part 9). Lighting in qualified historic buildings shall comply with the applicable requirements in Section 140.6(a)(3).
- EXCEPTION 2 to Section 100.0(a).** Building departments, at their discretion, may exempt temporary buildings, temporary outdoor lighting or temporary lighting in an unconditioned building, or structures erected in response to a natural disaster. Temporary buildings or structures shall be completely removed upon the expiration of the time limit stated in the permit.
- EXCEPTION 3 to Section 100.0(a).** Buildings in Occupancy Group I-3 and I-4.
- (b) **Parts of Buildings Regulated.** The provisions of Part 6 apply to the building envelope, space-conditioning systems, water heating systems, pool and spa, solar ready buildings, indoor lighting systems of buildings, outdoor lighting systems, electrical power distribution systems, and signs located either indoors or outdoors, in buildings that are:
1. Covered by Section 100.0(a); and
 2. Set forth in TABLE 100.0-A.
- (c) **Habitable Stories.**
1. All conditioned space in a story shall comply with Part 6 whether or not the story is a habitable space.
 2. All unconditioned space in a story shall comply with the lighting requirements of Part 6 whether or not the story is a habitable space.
- (d) **Outdoor Lighting and Indoor and Outdoor Signs.** The provisions of Part 6 apply to outdoor lighting systems and to signs located either indoors or outdoors as set forth in TABLE 100.0-A.
- (e) **Sections Applicable to Particular Buildings.** TABLE 100.0-A and this subsection list the provisions of Part 6 that are applicable to different types of buildings covered by Section 100.0(a).
1. **All buildings.** Sections 100.0 through 110.12444-44 apply to all buildings.

EXCEPTION to Section 100.0(e): Spaces or requirements not listed in TABLE 100.0-A.
 2. **Newly constructed buildings.**
 - A. All newly constructed buildings. Sections 110.0 through 110.12444-44 apply to all newly constructed buildings within the scope of Section 100.0(a). In addition, newly constructed buildings shall meet the requirements of Subsections B, C, D or E, as applicable.

SECTION 100.0 – SCOPE

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COST EFFECTIVE

Mandatory Measures

*Cannot be traded via the Performance Approach.
Not typically documented within Certificate of Compliance (CFIR)*



Two Ways to Comply with the Standards

Prescriptive Approach

- Envelope
- DHW
- HVAC

Each building feature to show compliance independently

Performance Approach

Baseline TDV vs *Proposed TDV*

Proposed TDV equal or better than baseline TDV

Compliance Documentation

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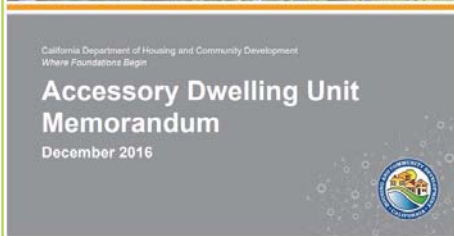
Hot/Cold Climate Zones



Mild Climate Zones



What's an ADU?



- ✦ Often called an “in-law apartment” or “garage flat”, accessory dwelling units are a separate and complete “dwelling unit” (e.g., kitchen, sleeping area and bathrooms) that is either attached or detached from the primary residential unit on a single-family lot.
- ✦ California law has changed to help eliminate barriers to ADU construction that are adopted by EACH local government (or not):

- ✦ SB 1069
- ✦ AB 2299
- ✦ AB 2406

<http://www.hcd.ca.gov/policy-research/docs/17Jan30-ADU-TA-Memo.pdf>



Why Did this Clarification Happen?



✦ From Chris Olvera, Supervisor of Outreach and Education Unit:

✦ *The construction of ADUs have steadily been increasing, and as a result, so have inquiries regarding the application of the Energy Code for these building types.*

✦ *In response, we provided clarifications in Blueprint and the CBECC-Res FAQs on how ADUs are defined as an addition or newly constructed building per the 2016 Energy Code;*

- *comply with the prescriptive requirements; and*
- *are modeled under the performance approach.*



Let's Talk





Challenges



✦ Challenge A:

- ✦ Attached Converted Unconditioned Space to ADU



✦ Challenge B:

- ✦ Attached Newly Constructed ADU



✦ Challenge C:

- ✦ Detached Converted Unconditioned Space to ADU



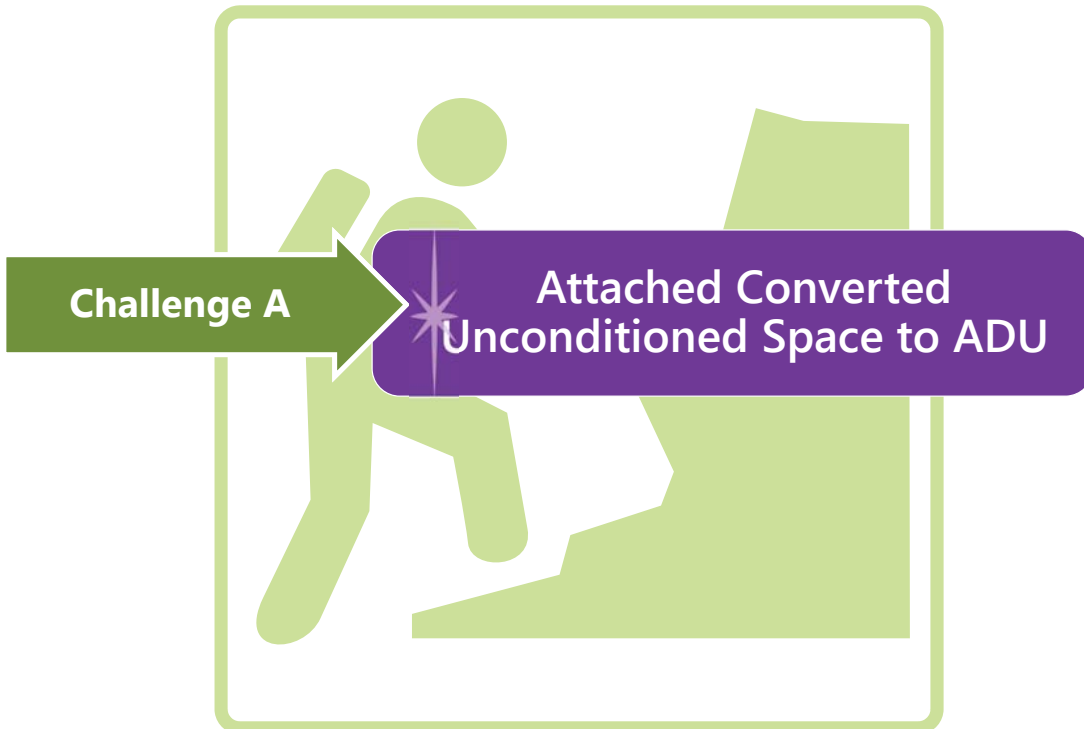
✦ Challenge D:

- ✦ Detached Newly Constructed ADU

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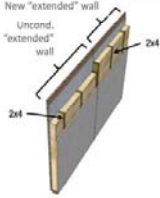
Challenge A



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Attached Converted ADU

BUILDING FEATURE	PREScriptive 2016 TITLE 24 PART 6 PACKAGE A (TABLE 150.1-A)	"AS BUILT"	
	ATTACHED CONVERTED UNCONDITIONED SPACE TO ADU		
 <p>Roof *</p> <p>≤700 SF: Insulation to meet Mandatory: R-22</p> <p>>700 SF: Prescriptive Package A Option A, B or C</p>		 <p>Example of High Performance Attic (HPA) Option B</p>	 <p>Example of Non HPA (or Option C)</p>
<p>CLARIFICATION: (Per Blueprint 122_3(28/18): An addition to the main house</p> 	<p>Walls</p> <p>Extended Walls: 2 x 4: R-15 2 x 6: R-19</p> <p>New Walls: Prescriptive Package A</p>	 <p>New "extended" wall Uncond. "extended" wall 2x4 2x4</p>	<p>Extended Walls All walls currently existing as part of the unconditioned space are considered "extended walls" and are exempt from the Package A requirements. New walls extending from these existing unconditioned walls are also considered "extended" walls.</p> <p>New Walls Walls added to the existing unconditioned space that are not considered "extended" from the existing walls, must meet Package A requirements.</p>
<p>COMPLIANCE DOCUMENTATION: Prescriptive option: CFIR-ADD-01-E (HERS required) must be registered with a HERS provider website: https://www.calcerts.com/ https://www.cheers.org/</p> <p>CFIR-ADD-02-E (No HERS)</p> <p>or</p> <p>Performance option: CFIR-PRF-01-E: Addition Alone, E+A or E+A+A</p>	<p>Floor Prescriptive Package A</p> <p>Fenestration New Fenestration: §150.2(a)1 (or see Page 5)</p> <p>Skylights: ≤16 ft² U-Factor=0.55 SHGC=0.30 **</p> <p>HVAC *** HVAC = Prescriptive Package A IAQ whole building airflow not required if ≤1,000 ft² HERS measures will apply</p> <p>DHW A 2nd water heater meeting §150.1(c)8 can be installed to serve ADU.</p>	<p>There are no exceptions from Package A for floors of any type.</p> <p>All glazing in this space are considered "new", even if it already exists as part of the unconditioned space, and must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive or Performance Approach.</p> <p>Area allowance exceptions are based on square footage of ADU, per the allowances of §150.2(a)1.</p> <p>Per Mechanical Code, return air cannot be shared with other dwelling units. It is recommended that each dwelling unit have its own thermostat (ability to control their own heating and cooling setpoints) and separate IAQ ventilation system(s).</p> <p>If no natural gas is connected to the existing home, an electric water heater that meets min. requirements can be installed for the ADU (§150.2(a)1D).</p>	

* Additions over 300 SF in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.
 ** Climate zones 1,3,5 have no SHGC requirements, nor west facing limitations on area
 *** HERS testing of ducts and/or AC equipment is required for certain mechanical systems; HERS-verified IAQ required for ADUs over 1000 ft²



What IS that?

Attached Converted ADU



✦ Existing unconditioned space associated with single family home, such as:

- ✦ Garage
- ✦ Basement

Clarification?

Scope of Work

✦ This was considered by many, a new dwelling unit just like a new home, and had to meet all of the requirements of a "new home".

✦ Clarified as "addition" and not a new home.

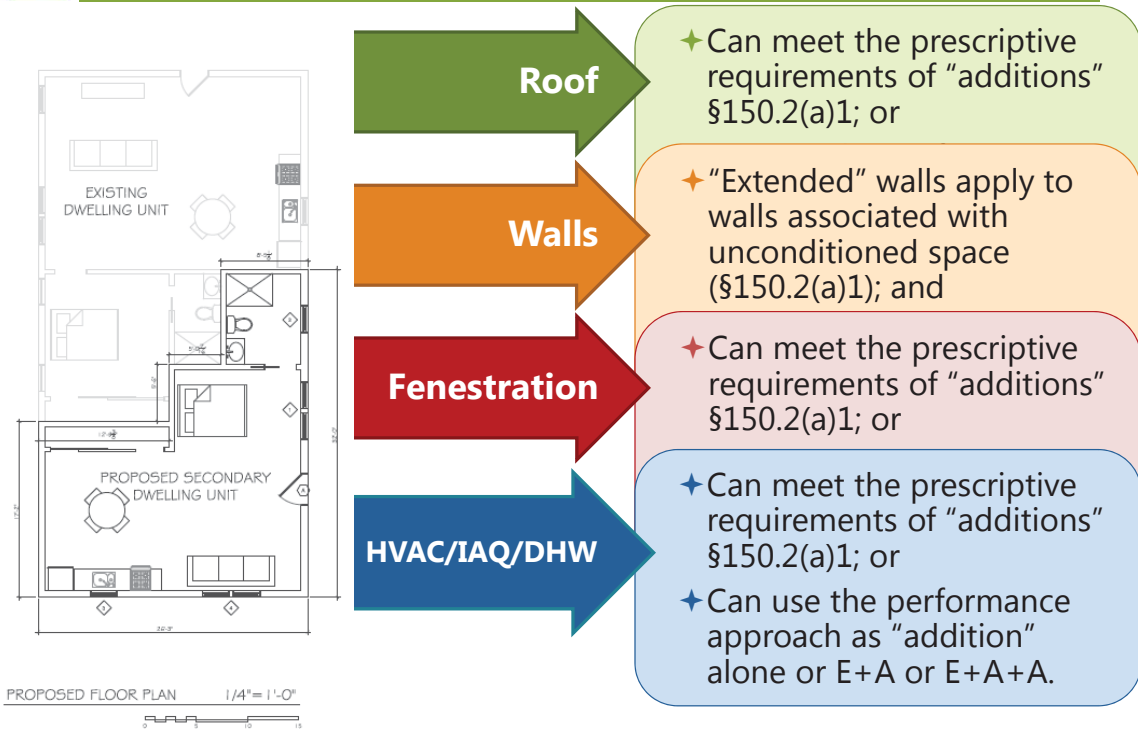
Building Features

✦ This is considered "newly conditioned" under Title 24 Part 6, and historically all "converted" building features had to meet requirements of a newly constructed space.

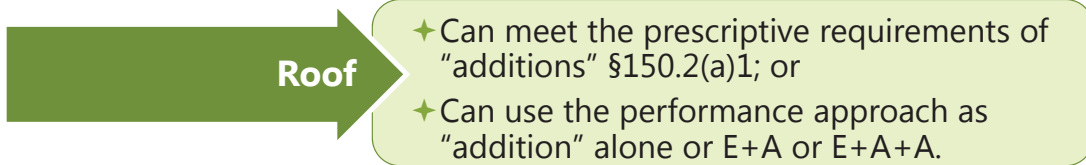
✦ Now walls are considered "extended" not "newly conditioned".



Building Features



Building Features: Roof



Insulation:

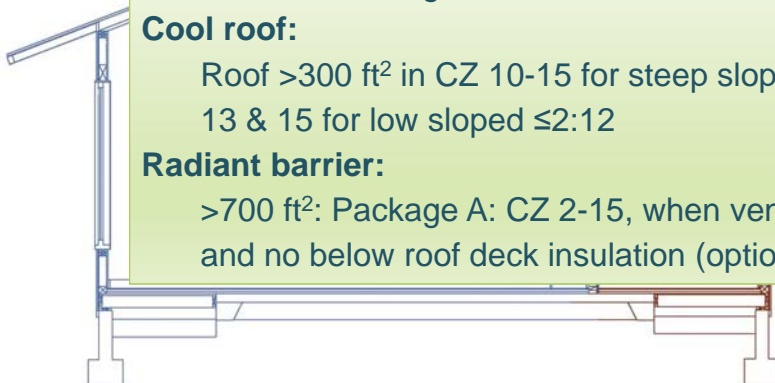
- ≤700 ft²: R-22
- >700 ft²: Package A

Cool roof:

- Roof >300 ft² in CZ 10-15 for steep sloped roofs >2:12 / CZ 13 & 15 for low sloped ≤2:12

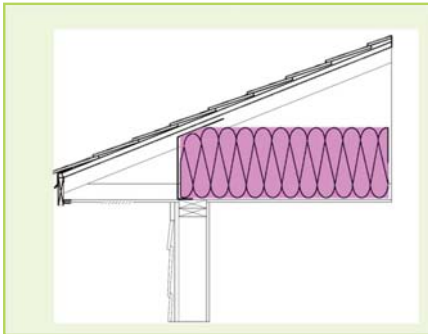
Radiant barrier:

- >700 ft²: Package A: CZ 2-15, when vented attic construction and no below roof deck insulation (option A or C)





≤700 ft²: Mandatory Minimums



✦ U-factor (wood framed attic): 0.043

✦ Example: R-22 (JA4.2.1-1A)

150.0(a) Ceiling and Rafter Roof Insulation.

The opaque portions of ceilings and roofs separating conditioned spaces from unconditioned spaces or ambient air shall meet the requirements of Items 1 through 3 below:

1. Shall be insulated to achieve a weighted average U-factor not exceeding U-0.043 or shall be insulated between wood-framing members with insulation resulting in an installed thermal resistance of R-22 or greater for the insulation alone. For vented attics, the mandatory insulation shall be installed at the ceiling level; for unvented attics, the mandatory insulation shall be placed at either ceiling or roof level; and

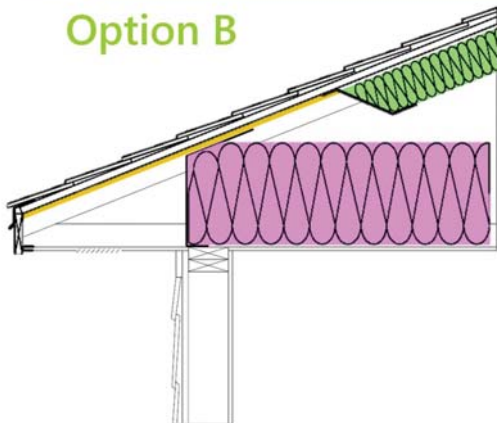
EXCEPTION to Section 150.0(a)1.: Ceilings and rafter roofs in an alteration shall be insulated to achieve a weighted average U-factor not exceeding 0.054 or shall be insulated between wood-framing members with insulation resulting in an installed thermal resistance of R-19 or greater

2. Attic access doors shall have permanently attached insulation using adhesive or mechanical fasteners. The attic access shall be gasketed to prevent air leakage; and
3. Insulation shall be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in Section 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.



>700 ft²: Package A Option B

Option B



Ceiling insulation AND below roof deck insulation



- ✦ Below roof deck. R-value depends on with or without "airspace" above roof deck.
- ✦ Ceiling insulation must also be provided.
- ✦ Radiant Barrier dependent on CZ.
- ✦ Upper insulation dependent upon CZ.

2016 TABLE 150.1-A COMPONENT PACKAGE-A STANDARD BUILDING DESIGN - ROOF

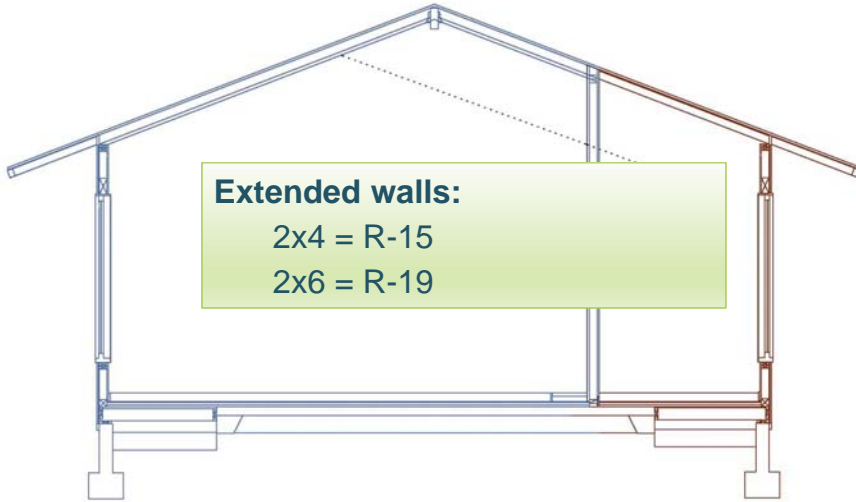
		Mandatory U-factor	Climate Zone															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Roofs/Ceilings	Option B §150.1(C)9A	Below Roof Deck																
		Roofing Type																
	With Air Space	0.043 (R-22)	NR	NR	NR	R 18	NR	NR	NR	R 18	R 18	R 18	R 18	R 18	R 18	R 18	R 18	
	No Air Space		NR	NR	NR	R 13	NR	NR	NR	R 13	R 13	R 13	R 13	R 13	R 13	R 13	R 13	
	Ceiling Insulation		R 38	R 38	R 30	R 38	R 30	R 30	R 30	R 38	R 38	R 38	R 38	R 38	R 38	R 38	R 38	
	Radiant Barrier		NR	REQ	REQ	NR	REQ	REQ	REQ	NR	NR	NR	NR	NR	NR	NR	NR	



Building Features



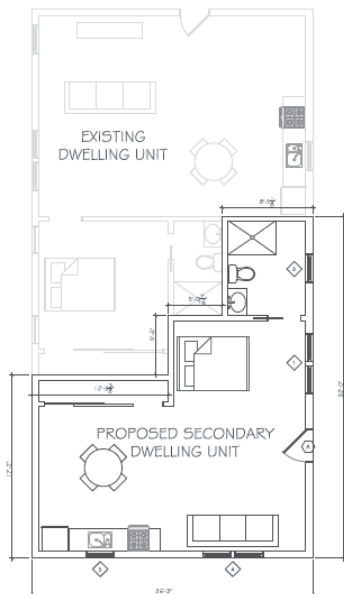
- ✦ "Extended" walls apply to walls associated with unconditioned space (§150.2(a)1); and
- ✦ Any new walls that are "extended" from those unconditioned walls.



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Extended Walls

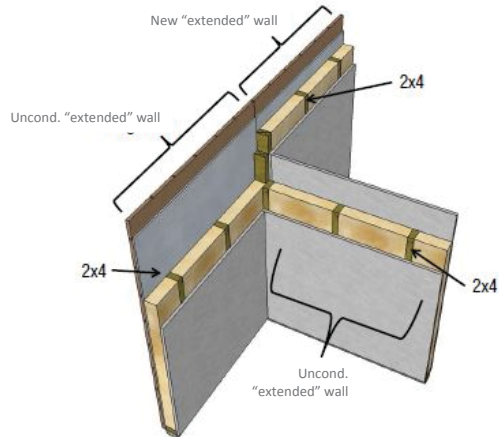


PROPOSED FLOOR PLAN 1/4" = 1'-0"

✦ EXTENDED walls:

 2 x 4 = R-15

 2 x 6 = R-19



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Building Features: Fenestration

Fenestration

- Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- Can use the performance approach as "addition" alone or E+A or E+A+A.

Additions	Mandatory	Additions ≤ 400 ft ²	Additions > 400 ft ² and ≤ 700 ft ²	Additions > 700 ft ² and ≤ 1,000 ft ²	Additions > 1,000 ft ²
Total Glazing Area:	N/A	Up to 75 ft ² or 30% of Conditioned Floor Area, whichever is greater	Up to 120 ft ² or 25%	Up to 175 ft ² or 20%	Same as "new" construction
West-Facing: CZ's 2, 4, 6-16	N/A	Up to 60 ft ²		The greater of 70 ft ² or 5%	
U-Factor & SHGC:	Weighted U-Factor ≤ 0.58	Skylights: ≤16 ft ² U = 0.55 and SHGC = 0.30 >16 ft ² U = 0.32 and SHGC = 0.25 Vertical: U = 0.32 and SHGC = 0.25 (CZ 2, 4 & 6-16)			



But...Its Existing?!? Right?



Old Windows

- Converting unconditioned space **does not allow** the fenestration associated with the space to be considered "existing".
- They must be considered "new" and be shown to meet the mandatory and prescriptive requirements of the Energy Code.

U-Factor & SHGC:	Weighted U-Factor ≤ 0.58	Skylights: ≤16 ft ² U = 0.55 and SHGC = 0.30 >16 ft ² U = 0.32 and SHGC = 0.25 Vertical: U = 0.32 and SHGC = 0.25 (CZ 2, 4 & 6-16)			
------------------	--------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--



Building Features

HVAC/IAQ/DHW

- ✦ Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- ✦ Can use the performance approach as "addition" alone or E+A or E+A+A.

- ✦ HVAC: Cannot share return air with other dwelling units (Mechanical Code requirement 311.4).
 - ✦ It is recommended that each dwelling unit have its own thermostat (ability to control their own heating and cooling setpoints).
- ✦ IAQ: Additions larger than 1,000 square feet shall meet **ALL** of ASHRAE Standard 62.2 (including whole-building ventilation airflow).
 - ✦ Additions less than need to meet local exhaust requirements, and whole-building ventilation airflow is highly recommended.
- ✦ DHW: A 2nd water heater meeting §150.1(c)8, can be installed to serve ADU.

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STATE OF CALIFORNIA
Prescriptive Residential Additions That Do Not Require HERS Field Verification
 CEC-CF1R-ADD-02-E (Revised 07/17)

CALIFORNIA ENERGY COMMISSION
 CF1R-ADD-02-E

CERTIFICATE OF COMPLIANCE
 Prescriptive Residential Additions That Do Not Require HERS Field Verification
 Page 1 of 10

Project Name: Proposed ADU Type 1 Date Prepared: 5/29/18

This compliance document is only applicable to additions less than 1,000 ft² and do not require HERS field verification for compliance. When HERS verification is required, a CF1R-ADD-01 shall first be registered with a HERS Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from HERS verification requirements may use the CF1R-ADD-02 and CF2R-ADD-02 Compliance Documents. Possible exemptions from duct leakage testing include: less than 40 ft of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by a HERS Rater. If space conditioning systems are altered and are not exempt from HERS verification, then a CF1R-ADD-01 must be completed and registered with a HERS Provider Data Registry.

Additions or alterations that utilize close Cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value other than 5.8 per inch, or Open Cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R-ADD-01 with a HERS Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

A. General Information (please complete entire table)					
01	Project Name:	Proposed ADU Type 1	02	Date Prepared:	5/29/18
03	Project Location:	XYZ Beach Court	04	Building Front Orientation (deg):	East
05	CA City:	Righthere	06	Number of Dwelling Units with Additions:	1
07	Zip Code:	12345	08	Fuel Type:	Natural Gas
09	Climate Zone:	4	10	Total Conditioned Floor Area (ft²) (Addition):	596
11	Building Type:	Single family	12	Slab Area (ft²):	596
13	Project Scope:	> 400 ft2 to ≤ 700 ft2	14	Exceptions to Fenestration U-factor and SHGC 150.1(c)3A:	NA
14	Addition Wall Type:	<input checked="" type="checkbox"/> Framed <input type="checkbox"/> Non-framed <input type="checkbox"/> Mass Walls <input type="checkbox"/> None			
15	Roof Type:	<input checked="" type="checkbox"/> Steep slope <input type="checkbox"/> Low slope <input type="checkbox"/> None			
16	Roof/Ceiling insulation:	Must meet minimum mandatory insulation requirements.			
17	Windows being installed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
18	New water heater being installed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
19	Are lighting requirements applicable?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Note: Include mandatory measures?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

CA Building Energy Efficiency Standards - 2016 Residential Compliance July 2017

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Prescriptive Residential Additions That Do Not Require HERS Field Verification

CEC-CF1R-ADD-02-E (Revised 07/17)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE

CF1R-ADD-02-E

Prescriptive Residential Additions That Do Not Require HERS Field Verification

Page 2 of 10

Project Name: Proposed ADU Type 1

Date Prepared: 5/29/18

B. Opaque Surface Details - Framed (Section 150.2(a))

01	02	03	04	05	06	07	08	09	10	11	
Tag/ID	Assembly Type	Frame Type	Frame Depth (in)	Frame Spacing (in)	Proposed			Appendix JA4 Reference		U-Factor or R-value	Comments
					Cavity R-value	Continuous Insulation R-value	U-factor	Table	Cell		
	Ceiling	Wood	2x8	24 inch OC	R-22	NA	0.041	JA4.2.1	A18	0.041	
	Wall	Wood	2x4	16 inch OC	R-15	NA	0.095	JA4.3.1	A4	0.095	Extended walls
Add Row		Delete Row									

E. Slab Insulation (Table 150.1-A)

01	02	03	04	05	06
Floor Type	Proposed		Required		Comments
	Insulation R-value	Insulation U-factor	Insulation R-value	Insulation U-factor	
Slab-on-grade	NA		NA		Unheated Slab
Add Row		Delete Row			

Note: Heated slab floors require mandatory slab insulation (see Table 110.8-A).

Prescriptive Residential Additions That Do Not Require HERS Field Verification

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Prescriptive Residential Additions That Do Not Require HERS Field Verification

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Project Name: Proposed ADU Type 1

Date Prepared: 5/29/18

F. Radiant Barrier (Section 1501.1(c)2)

01	02
Radiant Barrier installed below the roof deck and on all gable end walls	Comments
Yes <input type="radio"/> No <input checked="" type="radio"/>	
Add Row	Delete Row

Notes:

- Radiant barriers shall meet specific eligibility and installation criteria to receive energy credit for compliance with the Building Energy Efficiency Standards for low-rise residential buildings. Refer to RA4.2.1
- The emittance of the radiant barrier shall be less than or equal to 0.05 as tested in accordance with ASTM C1371 or ASTM E408.
- For Prescriptive Compliance the attic shall be ventilated to provide a minimum free ventilation area of not less than one square foot of vent area for each 300 ft² of attic floor area with no less than 30 percent upper vents. Ridge vents or gable end vents are recommended to achieve the best performance. The material should be cut to allow for full airflow to the venting.

H. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.2(a)1)

01	02	03	04	05	06	07	08	09	10
Addition Type (ft ²)	Maximum Allowed Fenestration Area for All Orientations (ft ²)		Maximum Allowed West-Facing Fenestration Area Only (ft ²)		Maximum Allowed U-factor (Windows)	Maximum Allowed U-factor (Skylights)	Maximum Allowed SHGC (Windows)	Maximum Allowed SHGC (Skylights)	Comments
	The Greater		The Greater						
	Maximum Calculated based on Allowed %	Maximum Calculated Allowed ft ²	Maximum Calculated based on Allowed %	Maximum Calculated Allowed ft ²					
>400 to ≤700 ft ²	149	120	29.8	60	0.32	0.32	0.25	0.25	

Auto filled based on size



I. Fenestration Proposed Areas and Efficiencies

Note: If meeting Exception 1 to 150.1(c)3A, installing $\leq 3ft^2$ glass in door or tubular skylight, it is not required to meet the minimum U-factor & SHGC requirements
 Exception 2: For up to 16ft² of new skylight area, the U-factor can be 0.55 or less and the SHGC can be 0.30 or less.
 Exception 3: If using dynamic glazing, use the lowest tested U-factor and SHGC in Columns 9 and 10.

01	02	03	04	05	06	07	08	09	10	11	12	13	14	
Tag/ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation (N,S,W,E)	Number of Panes	Proposed Fenestration Area (ft ²)	Proposed West Facing Fenestration Area (ft ²)	Proposed U-factor	Source	Proposed SHGC	Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03	
1/2	Windows	Non-metal	NA	East	2	36.2	NA	0.32	NFRC	0.25	NFRC	NA	NA	
A	Glass Door	Non-metal	NA	East	2	20	NA	0.32	NFRC	0.25	NFRC	NA	NA	
3/4	Windows	Non-metal	NA	South	2	37.5	NA	0.32	NFRC	0.25	NFRC	NA	NA	
Add Row		Delete Row												
15	Total Proposed Fenestration Area												93.7	
16	Maximum Allowed Fenestration Area												149	
17	Compliance Statement												Total Proposed Fenestration Area \leq Maximum Allowed Fenestration Area	<input checked="" type="radio"/> Yes <input type="radio"/> No
18	Total Proposed West-Facing Fenestration Area												NA	
19	Maximum Allowed West-Facing Fenestration Area												60	
20	Compliance Statement												Total Proposed West-Facing Fenestration Area \leq Maximum Allowed West-Facing Fenestration Area	<input checked="" type="radio"/> Yes <input type="radio"/> No
21	Proposed Fenestration U-factor (Windows)												0.32	
22	Required Fenestration U-factor (Windows)												0.32	
23	Compliance Statement												Proposed Fenestration U-factor \leq Required Fenestration U-factor	<input checked="" type="radio"/> Yes <input type="radio"/> No
24	Proposed Fenestration SHGC (Windows)												0.25	
25	Required Fenestration SHGC (Windows)												0.25	
26	Compliance Statement												Proposed Fenestration SHGC \leq Required Fenestration SHGC	<input checked="" type="radio"/> Yes <input type="radio"/> No
27	Proposed Fenestration U-factor (Skylights)												NA	
28	Required Fenestration U-factor (Skylights)												0.32	



29	Compliance Statement												Proposed Fenestration U-factor \leq Required Fenestration U-factor	<input checked="" type="radio"/> Yes <input type="radio"/> No
30	Proposed Fenestration SHGC (Skylights)												NA	
31	Required Fenestration SHGC (Skylights)												0.25	
32	Compliance Statement												Proposed Fenestration SHGC \leq Required Fenestration SHGC	<input checked="" type="radio"/> Yes <input type="radio"/> No

J. Space Conditioning (SC) Systems - Heating/Cooling (Prescriptive Section 150.2(b))

Alterations to Space Conditioning Systems shall be exempt from HERS verification requirements as prerequisite for use of the CF1R-ADD-02 and CF2R-ADD-02 Compliance Documents. If new space conditioning systems are installed or existing systems are altered and are not exempt from HERS verification, then a CF1R-ADD-01 shall be completed and registered with a HERS Provider Data Registry. In each row below, for a dwelling unit in the building, select one box to indicate exemption from HERS verification compliance:

Why HERS not required

a: (exempt from duct leakage testing) if the existing duct system was previously tested and passed by a HERS Rater.

01	02	03	04
Dwelling Unit Name	SC System Identification or Name	SC System Location or Area Served	Exemption from HERS Verification
Proposed ADU	Gravity Wall Heater- 12,000 BTU- 78% AFUE	ADU	a. <input type="checkbox"/> b. <input checked="" type="checkbox"/> c. <input type="checkbox"/> d. <input type="checkbox"/>
Add Row	Delete Row		

K. Water Heating System (Section 150.2(a)1D)

- List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.
- Electric water heaters can only be used if gas is not connected to the building. For recirculation systems, only demand recirculation system with manual control pumps can be used

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Dwelling Unit Name	Water Heating System ID or Name	Water Heating System Location or Area Served	Water Heating System Type	Water Heater Type	# of Water Heaters in System	Water Heater Storage Volume (gal)	Fuel Type	Rated Input Type	Rated Input Value	Heating Efficiency Type	Heating Efficiency Value	Standby Loss (%)	Exterior Insulation R-Value	Back-Up Solar Savings Fraction
ADU	TBD	ADU	DHW	Sm Instant	1	NA	Gas	Btuh	199000	Energy Factor	0.82	NA	NA	NA
Add Row	Delete Row													

Prescriptive Residential Additions That Do Not Require HERS Field Verification

CEC-CF1R-ADD-02-E (Revised 07/17)

CALIFORNIA ENERGY COMMISSION



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CF1R-ADD-02-E

Prescriptive Residential Additions That Do Not Require HERS Field Verification

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Project Name: Proposed ADU Type 1

Date Prepared: 5/29/18

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Michelle Austin	Documentation Author Signature:
Company: Gabel Energy	Signature Date: 5/29/18
Address: 20825 Nunes Ave, Suite A	CEA/HERS Certification Identification (if applicable): R16-15-20082
City/State/Zip: Castro Valley, CA 94546	Phone: 510-428-0803

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

- The information provided on this Certificate of Compliance is true and correct.
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
- That the energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
- The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
- I will ensure that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: ABC Architects	Responsible Designer Signature:
Company: ABC Architects	Date Signed:
Address: 1234 Sesame Street	License:
City/State/Zip: Nowhere, CA 90001	Phone: 510-555-5555

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300.

Prescriptive Residential Additions That Do Not Require HERS Field Verification

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CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE

CF1R-ADD-02-E

Prescriptive Residential Additions That Do Not Require HERS Field Verification

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Project Name: Proposed ADU Type 1

Date Prepared: 5/29/18

Building Envelope Measures:

§ 110.6(a)1:	Air Leakage. Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 cfm/ft ² or less when tested per NFRC-400 or ASTM E283 or AAMA/WDMA/CSA 101/1.S.2/A440-2011.
§ 110.6(a)5:	Labeling. Fenestration products must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from TABLES 110.6-A and 110.6-B for compliance and must be caulked and/or weatherstripped.
§ 110.7:	Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	Insulation Certification by Manufacturers. Insulation specified or installed must meet Standards for Insulating Material.
§ 110.8(g):	Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	Radiant Barrier. A radiant barrier must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	Ceiling and Rafter Roof Insulation. Minimum R-22 insulation in wood-frame ceiling; or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.
§ 150.0(b):	Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less (R-19 in 2x6 or U-factor of 0.074 or less). Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102, equivalent to an installed value of R-13 in a wood framed assembly.
§ 150.0(d):	Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.
§ 150.0(f):	Slab Edge Insulation. Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3%; have a water vapor permeance no greater than 2.0 perm/inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)1:	Vapor Retarder. In Climate Zones 1-16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d).
§ 150.0(g)2:	Vapor Retarder. In Climate Zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.
§ 150.0(q):	Fenestration Products. Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.

Fireplaces, Decorative Gas Appliances, and Gas Log Measures:



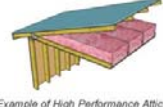

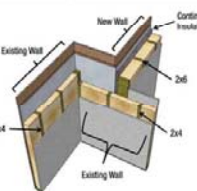
§ 150.0(e)1A:	Closable Doors. Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)1B:	Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.
§ 150.0(e)1C:	Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.
§ 150.0(e)2:	Pilot Light. Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.



Challenge B



Attached Newly Constructed ADU

Decoding + ADUs™ Let's Talk Recent Changes		BUILDING FEATURE	PRESCRIPTIVE 2016 TITLE 24 PART 6 PACKAGE A (TABLE 150.1-A)	"AS BUILT"
ATTACHED NEWLY CONSTRUCTED ADU				
 <p>CLARIFICATION: (Per Blueprint 122_3/28/18) An addition to the main house</p>  <p>COMPLIANCE DOCUMENTATION: Prescriptive option: CF1R-ADD-01-E (HERS required) must be registered with a HERS provider website: https://www.calcerts.com/ https://www.cheers.org/ CF1R-ADD-02-E (No HERS) or Performance option: CF1R-PRF-01-E: Addition Alone, E+A or E+A+A</p>	Roof *	≤700 SF: Insulation to meet Mandatory: R-22 >700 SF: Prescriptive Package A Option A, B or C	 <p>Example of High Performance Attic Option A</p>  <p>Example of Non HPA (or Option C)</p>	
	Walls	Extended Walls: 2 x 4: R-15 2 x 6: R-19 New Walls: Prescriptive Package A	 <p>Extended Walls New walls extending on the same plane from existing walls are considered "extended" walls (can be extended up i.e. 2nd floor, down i.e. basement, or out on the same floor).</p> <p>New Walls New walls <i>not</i> extended are considered "new" walls and must meet Package A requirements.</p>	
	Floor	Prescriptive Package A	There are no exceptions from Package A for floors of any type.	
	Fenestration	New Fenestration: §150.2(a)1 (or see Page 5) Skylights: ≤16 ft ² U-Factor=0.55 SHGC=0.30 **	Must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive or Performance Approach. Area allowance exceptions are based on square footage of ADU, per the allowances of §150.2(a)1 .	
	HVAC	HVAC = Prescriptive Package A IAQ whole building airflow not required if ≤1,000 ft ³ HERS measures will apply	Per Mechanical Code, return air cannot be shared with other dwelling units. It is recommended that each dwelling unit have its own thermostat (ability to control their own heating and cooling setpoints) and separate IAQ ventilation system(s).	
	DHW	A 2 nd water heater meeting §150.1(c)8 , can be installed to serve ADU.	If no natural gas is connected to the existing home, an electric water heater that meets min. requirements can be installed for the ADU (§150.2(a)11D).	

* Additions over 300 SF in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.
 ** Climate zones 1,2,5 have no SHGC requirements, nor west facing limitations on area
 *** HERS testing of ducts and/or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADU's over 1000 SF



What IS that?



Attached Newly Constructed ADU

- ✦ New conditioned space added to an existing home with walls attached for the new dwelling unit, such as:
 - ✧ Adding to the back of a home;
 - ✧ Adding a 2nd floor to a home.

Clarification?

Scope of Work

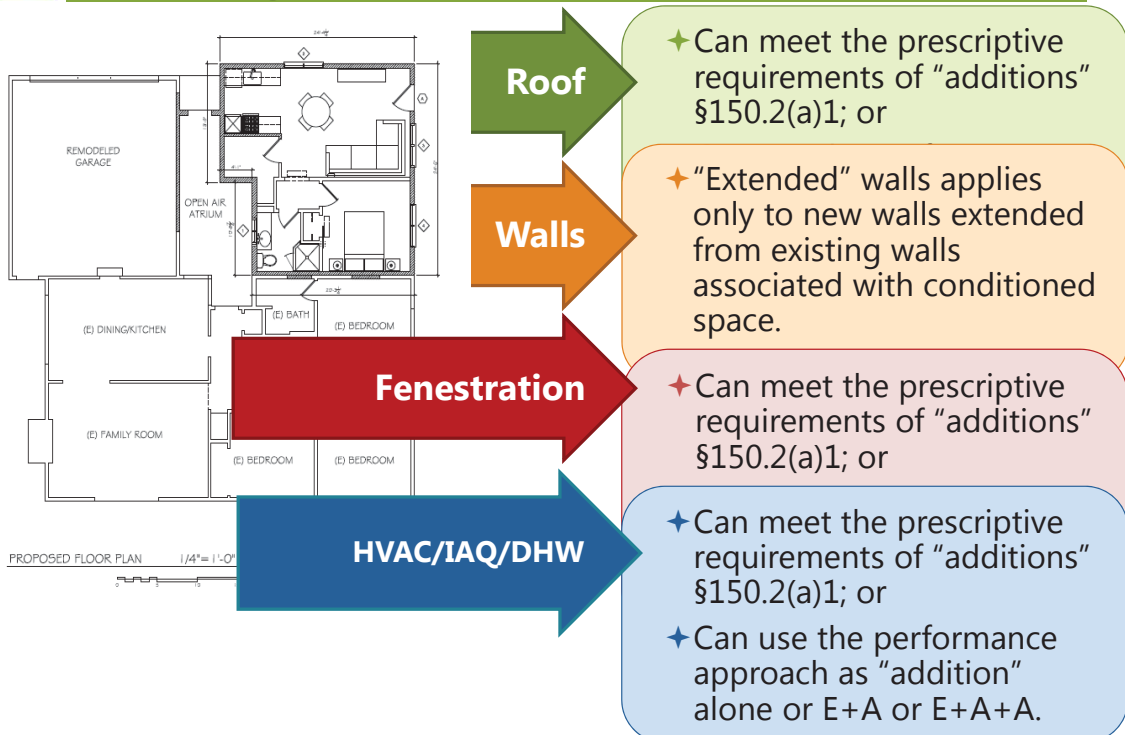
- ✦ This was considered a new dwelling unit, but since it was attached to the existing home, could be considered an "addition":
 - ✧ No change

Building Features

- ✦ This was considered an "addition" and allowed to use "extended walls" when applicable for the prescriptive method only:
 - ✧ Now the performance approach will allow for "extended" walls (CBECC-res version 4)



Building Features





Building Features: Roof



- ✦ Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- ✦ Can use the performance approach as "addition" alone or E+A or E+A+A.

Insulation:

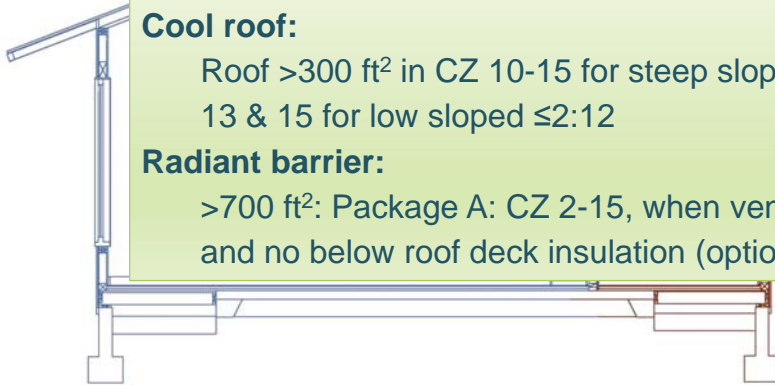
≤700 ft²: R-22
 >700 ft²: Package A

Cool roof:

Roof >300 ft² in CZ 10-15 for steep sloped roofs >2:12 / CZ 13 & 15 for low sloped ≤2:12

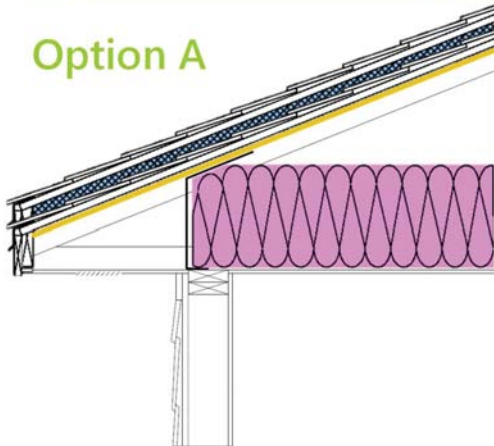
Radiant barrier:

>700 ft²: Package A: CZ 2-15, when vented attic construction and no below roof deck insulation (option A or C)



>700 ft²: Package A Option A

Option A



Ceiling insulation AND at roof deck provide insulation



- ✦ At roof deck, above or below. R-value depends on with or without "airspace".
- ✦ Ceiling insulation must also be provided.
- ✦ Radiant Barrier dependent on CZ.
- ✦ Upper insulation dependent upon CZ.

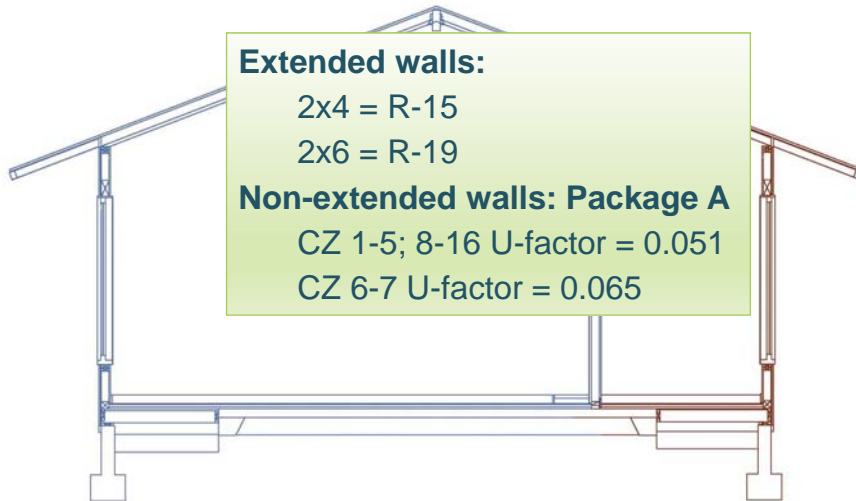
		2016 TABLE 150.1-A COMPONENT PACKAGE-A STANDARD BUILDING DESIGN - ROOF																	
		Mandatory U-factor	Climate Zone																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Roofs/Ceilings	Option A §150.1(c)9A	Continuous Insulation Above Roof/Rafters	NR	NR	NR	R 8	NR	NR	NR	R 8	R 8	R 8	R 8	R 8	R 8	R 8	R 8	R 8	R 8
		Roofing Type With Air Space	NR	NR	NR	R 6	NR	NR	NR	R 6	R 6	R 6	R 6	R 6	R 6	R 6	R 6	R 6	R 6
		0.043 (R-22)																	
		Ceiling Insulation	R 38	R 38	R 30	R 38	R 30	R 30	R 30	R 38	R 38	R 38	R 38	R 38	R 38	R 38	R 38	R 38	R 38
	Radiant Barrier	NR	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	NR



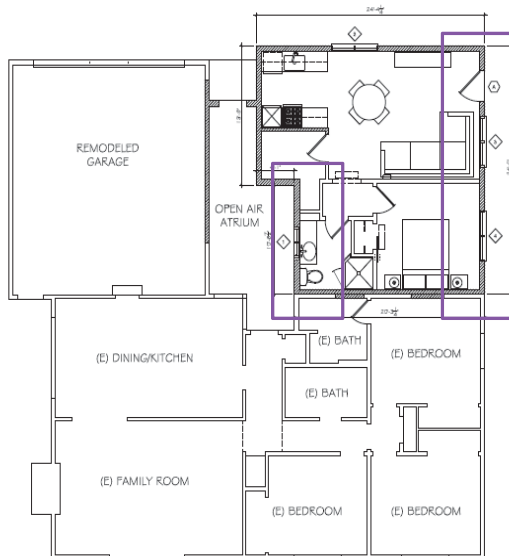
Building Features



✦ "Extended" walls applies only to new walls extended from existing walls associated with conditioned space.





Extended Walls

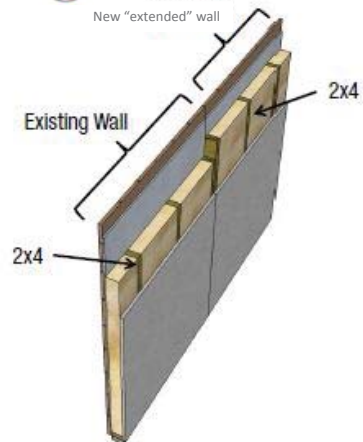


PROPOSED FLOOR PLAN 1/4" = 1'-0"

✦ EXTENDED walls:

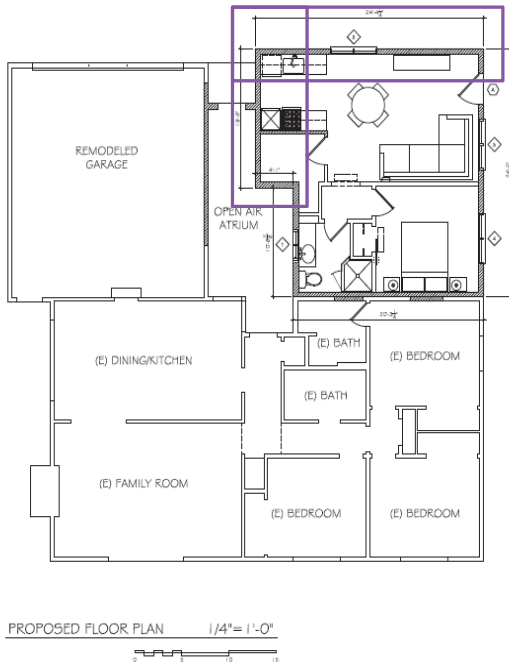
 2 x 4 = R-15

 2 x 6 = R-19



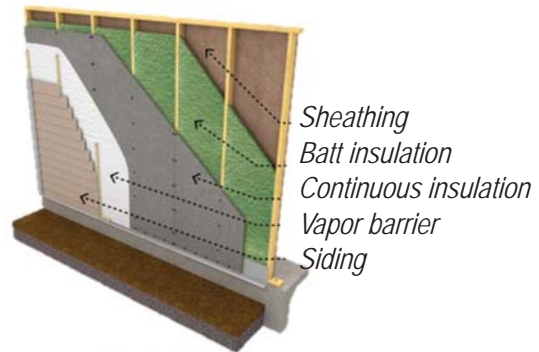


New Walls



New walls:

- ✦ CZ 1-5, 8-16
 - U-factor = 0.051
- ✦ CZ 6-7
 - U-factor = 0.065



Building Features: Fenestration



- ✦ Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- ✦ Can use the performance approach as "addition" alone or E+A or E+A+A.

SHGC:
Ability of the window to prevent solar heat gain when sun hitting window

U-Factor:
Ability of the window to prevent heat transfer

SHGC = 0.25*
NFR Rated Low-e³ product



U-factor = 0.32
NFR Rated dual paned nonmetal product

*excluding CZ 1,3,5



Building Features

HVAC/IAQ/DHW



- ✦ Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- ✦ Can use the performance approach as "addition" alone or E+A or E+A+A.

- ✦ Required verification of:
 - ✦ Duct Leakage
 - ✦ AC equipment:
 - Cooling Airflow
 - Fan watt draw
 - Refrigerant charge
 - ✦ Ventilation if ADU greater than 1,000 ft² BUT strongly recommended

- ✦ Extra Credit
 - ✦ Ducts in conditioned space
 - ✦ Verification of high efficiency HVAC equipment
 - ✦ Quality Insulation Installation (QII)

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CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Jones Residence ADU Addition Type 2
 Calculation Description: Addition ADU

Calculation Date/Time: 08:22, Fri, May 25, 2018
 Input File Name: WallExtensions.rbd16

CF1R-PRF-01
 Page 3 of 8

OPAQUE SURFACES										
01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft ²)	Window & Door Area (ft ²)	Tilt (deg)	Wall Exception	Status	Verified Existing Condition
Ex Wall Front	House	Wall R0	180	Front	320	76	90	n/a	Existing	No
Ex Wall Left	House	Wall R0	270	Left	288	40	90	n/a	Existing	No
Ex Wall Back	House	Wall R0	0	Back	200	59	90	n/a	Existing	No
Ex Wall Right	House	Wall R0	90	Right	288	36	90	n/a	Existing	No
Wall to Addition	House>>Addition	Interior R0			120	0		n/a	New	n/a
Ceiling (below attic)	House	Ceiling R11			1440			n/a	Existing	No
Floor Over Crawspace	House	Raised Crawl R0			1440			n/a	Existing	No
Add Wall Left	Addition	Wall R-15	270	Left	120	16	90	Extension	New	n/a
Add Back Wall	Addition	Wall R-15	0	Back	120	33.35	90	none	New	n/a
Add Wall Right	Addition	Wall R-15	90	Right	120	6	90	Extension	New	n/a
Addition Ceiling	Addition	R-38 Ceiling			225			n/a	New	n/a

ATTIC										
01	02	03	04	05	06	07	08	09	10	
Name	Construction	Type	Roof Rise	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition	
Attic	Asphalt Shingle Roof	Ventilated	5	0.1	0.85	No	No	Existing	No	
Addn Attic	Asphalt RB	Ventilated	5	0.1	0.85	Yes	No	New	No	

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Jones Residence ADU Addition Type 2
 Calculation Description: Addition ADU

Calculation Date/Time: 08:22, Fri, May 25, 2018
 Input File Name: WallExtensions.nbd16

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OPAQUE SURFACE CONSTRUCTIONS						
01	02	03	04	05	06	07
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Winter Design U-factor	Assembly Layers
Asphalt Shingle Roof	Attic Roofs	Wood Framed Ceiling	2x4 Top Chord of Roof Truss @ 24 in. O.C.	none	0.644	<ul style="list-style-type: none"> Cavity / Frame: no Insul. / 2x4 Top Chrd Roof Deck: Wood Siding/sheathing/decking Roofing: Light Roof (Asphalt Shingle)
Ceiling R11	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 11	0.081	<ul style="list-style-type: none"> Inside Finish: Gypsum Board Cavity / Frame: R-9.1 / 2x4 Btm Chrd Over Ceiling Joists: R-1.9 Insul.
Wall R0	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	<ul style="list-style-type: none"> Inside Finish: Gypsum Board Cavity / Frame: no Insul. / 2x4 Exterior Finish: 3 Coat Stucco
Raised Crawl R0	Floors Over Crawlspace	Wood Framed Floor	2x6 @ 16 in. O.C.	none	0.220	<ul style="list-style-type: none"> Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: no Insul. / 2x6
Interior R0	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.277	<ul style="list-style-type: none"> Inside Finish: Gypsum Board Cavity / Frame: no Insul. / 2x4 Other Side Finish: Gypsum Board
R-38 Ceiling	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	<ul style="list-style-type: none"> Inside Finish: Gypsum Board Cavity / Frame: R-9.1 / 2x4 Btm Chrd Over Ceiling Joists: R-28.9 Insul.
Asphalt RB	Attic Roofs	Wood Framed Ceiling	2x4 Top Chord of Roof Truss @ 24 in. O.C.	none	0.644	<ul style="list-style-type: none"> Cavity / Frame: no Insul. / 2x4 Top Chrd Roof Deck: Wood Siding/sheathing/decking Roofing: Light Roof (Asphalt Shingle)
Wall R-15	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 15	0.095	<ul style="list-style-type: none"> Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: 3 Coat Stucco

SLAB FLOORS									
01	02	03	04	05	06	07	08	09	
Name	Zone	Area (ft ²)	Perimeter (ft)	Edge Insul. R-value	Carpeted Fraction	Heated	Status	Verified Existing Condition	
Slab On Grade	Addition	545	120	None	0.8	No	New	No	

BUILDING ENVELOPE - HERS VERIFICATION			
01	02	03	04
Quality Insulation Installation (QII)	Quality Installation of Spray Foam Insulation	Building Envelope Air Leakage	CFM50
Not Required	Not Required	Not Required	n/a

Registration Number:
 CA Building Energy Efficiency Standards - 2016 Residential Compliance

Registration Date/Time:
 Report Version - CF1R-Invalid Version-1133

HERS Provider:
 Report Generated at: 2018-05-25 08:23:13

3

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Jones Residence ADU Addition Type 2
 Calculation Description: Addition ADU

Calculation Date/Time: 08:22, Fri, May 25, 2018
 Input File Name: WallExtensions.nbd16

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HVAC COOLING - HERS VERIFICATION					
01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Ex Cooling-hers-cool	Not Required	n/a	Not Required	Not Required	Not Required

HVAC - DISTRIBUTION SYSTEMS									
01	02	03	04	05	06	07	08	09	10
Name	Type	Duct Leakage	Insulation R-value	Supply Duct Location	Return Duct Location	Bypass Duct	Status	Verified Existing Condition	HERS Verification
Ducts	Ducts located in attic (Ventilated and Unventilated)	Existing (not specified)	6.0	Attic	Attic	None	Existing + New	No	n/a

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
SFam IAQVentRpt	0	0.25	Default	0	Not Required

Registration Number:
 CA Building Energy Efficiency Standards - 2016 Residential Compliance

Registration Date/Time:
 Report Version - CF1R-Invalid Version-1133

HERS Provider:
 Report Generated at: 2018-05-25 08:23:13

4



Challenge C



Detached Converted Unconditioned Space to ADU

 <small>Let's Talk Recent Changes</small>	BUILDING FEATURE	PRESCRIPTIVE <small>2016 TITLE 24 PART 6 PACKAGE A (TABLE 150.1-A)</small>	"AS BUILT"
DETACHED CONVERTED UNCONDITIONED SPACE TO ADU			
 CLARIFICATION: <small>(Per Blueprint 122_3/29/18): An addition to the main house</small> COMPLIANCE DOCUMENTATION: Prescriptive option: <small>CF1R-ADD-01-E (HERS required) must be registered with a HERS provider website: https://www.calcerts.com/ or https://www.cheers.org/</small> or Performance option: <small>CF1R-PRF-01-E: Addition Alone, E+A or E+A+A</small>	Roof * ≤700 SF: Insulation to meet Mandatory, R-22 >700 SF: Prescriptive Package A Option A, B or C	 <small>Example of High Performance Attic - Option C</small>	Ceiling insulation, per Prescriptive Package A, with the ducts and air handler located in the conditioned space and confirmed by HERS rater to meet the criterion of Reference Residential Appendix RA3.1.4.3.8 .
	Walls Extended Walls: 2 x 4: R-15 2 x 6: R-19 New Walls: Prescriptive Package A	 <small>Uncond. "extended" wall, New Wall, Continuous Insulation, Uncond. "extended" wall</small>	Extended Walls All walls currently existing as part of the unconditioned space are considered "extended walls" and are exempt from the Package A requirements. New walls extending on the same plane from these existing unconditioned walls are also considered "extended" walls. New Walls: Walls added to the existing unconditioned space that are not on the same plane of "extended" walls, must meet Package A requirements (see image above).
	Floor Prescriptive Package A Fenestration New Fenestration: <small>§150.2(a)1 (or see Page 5)</small> Skylights: ≤16 ft ² U-Factor=0.55 SHGC=0.30 **		There are no exceptions from Package A for floors of any type. All glazing in this space are considered "new", even if it already exists as part of the unconditioned space, and must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive or Performance Approach. Area allowance exceptions are based on square footage of ADU, per the allowances of §150.2(a)1.
	HVAC *** HVAC = Prescriptive Package A IAQ whole building airflow not required if ≤1,000 ft ² HERS measures will apply		Per Mechanical Code, return air cannot be shared with other dwelling units. It is recommended that each dwelling unit have its own thermostat (ability to control their own heating and cooling setpoints) and separate IAQ ventilation system(s).
	DHW A 2 nd water heater meeting §150.1(c)8, can be installed to serve ADU.		If no natural gas is connected to the existing home, an electric water heater that meets min. requirements can be installed for the ADU (§150.2(a)1D).

* Additions over 300 SF in Climate Zones 10-15 to meet Package A roof insulation requirements, dependent upon roof slope.
 ** Climate zones 1,3,5 have no SHGC requirements, nor wind facing limitations on area.
 *** HERS testing of ducts and/or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADU's over 1000 ft².



What IS that?



Detached Converted Unconditioned Space to ADU

- ✦ Existing unconditioned space not connected to existing single family home, such as:
 - ✧ Detached Garage;
 - ✧ Illegal Unit.

Clarification?

Scope of Work

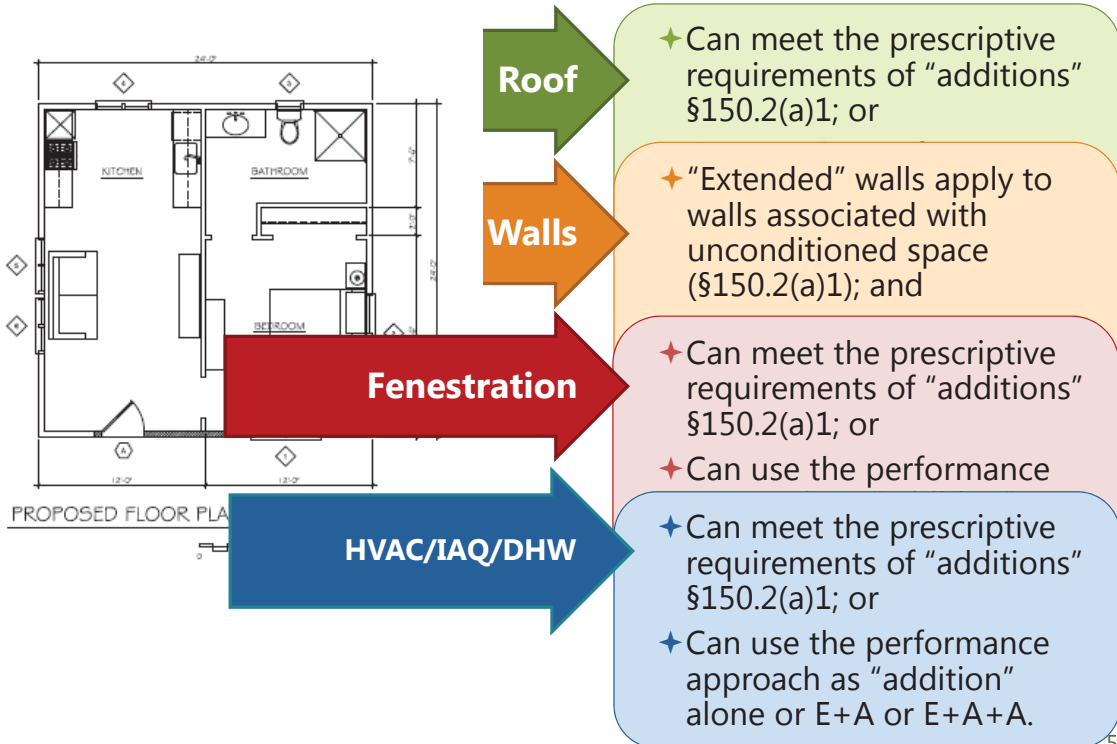
- ✦ This was typically considered a new dwelling unit, just like a new home, and had to meet all of the requirements of a "new home".
- ✧ Clarified as an "addition" and no longer has to meet the requirements of a new home.

Building Features

- ✦ This is considered "newly conditioned" under Title 24 Part 6, and historically all "converted" building features had to meet requirements of a newly constructed space.
- ✧ Now walls are considered "extended" not "newly conditioned".



Building Features





Building Features: Roof



- ✦ Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- ✦ Can use the performance approach as "addition" alone or E+A or E+A+A.

Insulation:
 ≤700 ft²: R-22
 >700 ft²: Package A

Cool roof:
 Roof >300 ft² in CZ 10-15 for steep sloped roofs >2:12 / CZ 13 & 15 for low sloped ≤2:12

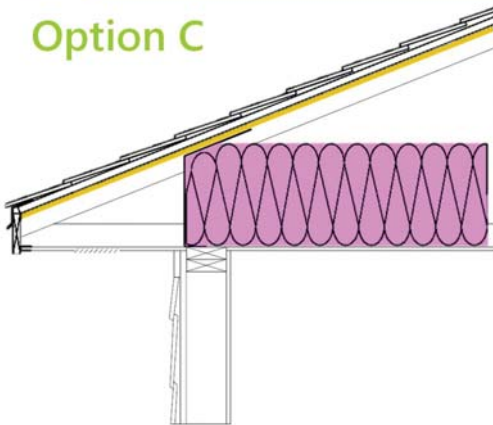
Radiant barrier:
 >700 ft²: Package A: CZ 2-15, when vented attic construction and no below roof deck insulation (option A or C)

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>700 ft²: Package A Option C

Option C



Ducts and air handler in conditioned space



- ✦ Conditioned space = habitable space!
- ✦ Ceiling insulation only.
 - ✧ **Must be a vented attic**
- ✦ Radiant Barrier dependent on CZ.

2016 TABLE 150.1-A COMPONENT PACKAGE-A STANDARD BUILDING DESIGN - ROOF

			Climate Zone															
		Mandatory U-factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Roofs/Ceilings	Option C §150.1(c)9B	Ceiling Insulation	R 38	R 30	R 30	R 30	R 30	R 30	R 30	R 30	R 30	R 30	R 30	R 38	R 38	R 38	R 38	R 38
		Radiant Barrier	0.043 (R-22)	NR	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ

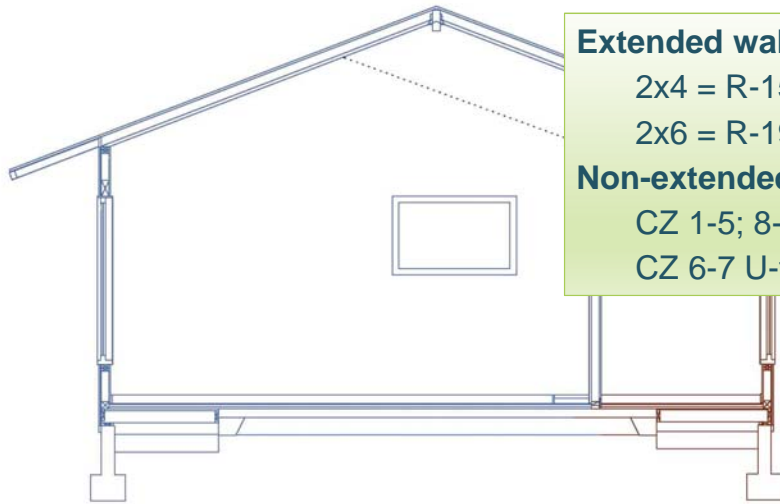
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Building Features



- ✦ "Extended" walls apply to walls associated with unconditioned space (§150.2(a)1); and
- ✦ Any new walls that are "extended" from those unconditioned walls.



Extended walls:
 2x4 = R-15
 2x6 = R-19

Non-extended walls: Package A
 CZ 1-5; 8-16 U-factor = 0.051
 CZ 6-7 U-factor = 0.065

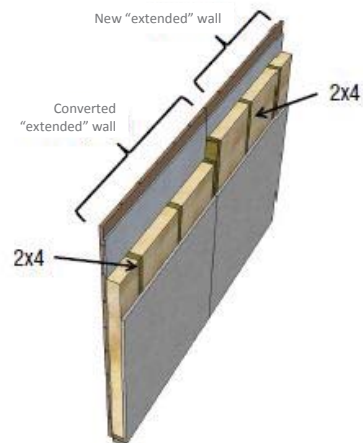
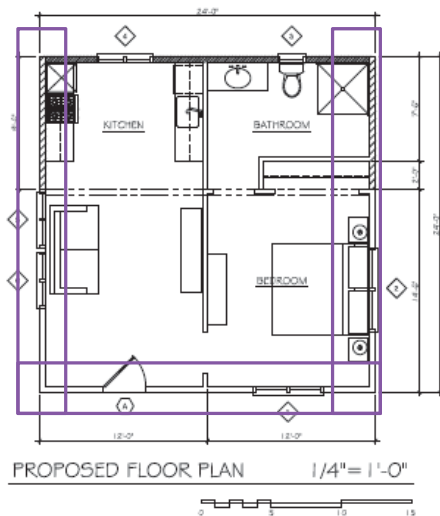


Extended Walls

✦ EXTENDED walls:

2 x 4 = R-15

2 x 6 = R-19





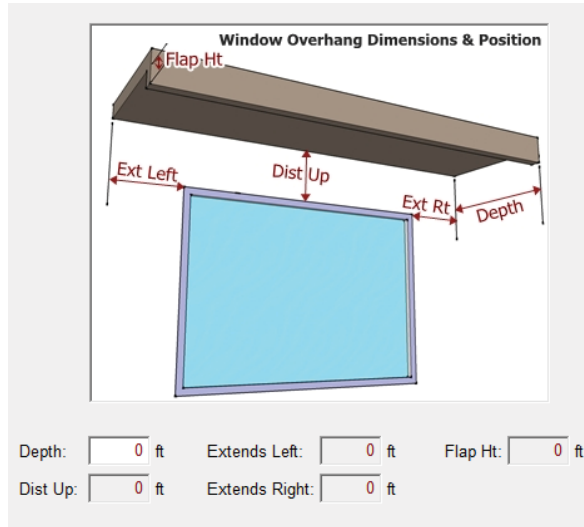
Building Features: Fenestration

Fenestration

- Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- Can use the performance approach as "addition" alone or E+A or E+A+A.

Overhang and Fins

- Compliance credit can be taken for fenestration shading to lower the fenestration SHGC
 - Applicable to prescriptive and performance approach
- Modeling shading features is optional



Building Features

HVAC/IAQ/DHW

- Can meet the prescriptive requirements of "additions" §150.2(a)1; or
- Can use the performance approach as "addition" alone or E+A or E+A+A.

2016 ENERGY CODE

(Smaller) Central Air Conditioners and Heat Pumps — Minimum Cooling Efficiencies

Appliance	Type	Size (Btuh)	SEER Effective 1/1/2015	EER Effective 1/1/2015
Central Air Conditioners ^A	Split System	<45,000	14.0	12.2
		≥45,000 and <65,000	14.0	11.7
Central Air Source Heat Pumps	Single Package	<65,000	14.0	11.0
	Split System	<65,000	14.0	NR
Space Constrained Air Conditioner	Single Package	<65,000	12.0	NR
	Split System	<65,000	12.0	NR
Space Constrained Heat Pump	Single Package	<65,000	12.0	NR
	Split System	<65,000	12.0	NR
Small Duct, High Velocity Air Conditioner	All	<65,000	12.0	NR
Small Duct, High Velocity Heat Pump	All	<65,000	12.0	NR

Adapted from Table 4-6 from 2016 Residential Compliance Manual (based on Title 20 Table C-2 and Federal Appliance Standards)

A. Central split system air conditioners and central single package air conditioners installed on or after January 1, 2015 must comply with the minimum SEER and EER requirements of Table 4-6 in the Residential Compliance Manual regardless of date of manufacturer.

OPAQUE SURFACES										
01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft ²)	Window & Door Area (ft ²)	Tilt (deg)	Wall Exception	Status	Verified Existing Condition
Ex Wall Front	House	Wall R0	180	Front	320	76	90	n/a	Existing	No
Ex Wall Left	House	Wall R0	270	Left	288	40	90	n/a	Existing	No
Ex Wall Back	House	Wall R0	0	Back	200	59	90	n/a	Existing	No
Ex Wall Right	House	Wall R0	90	Right	288	36	90	n/a	Existing	No
Wall to Addition	House>>Addition	Interior R0			120	0		n/a	New	n/a
Ceiling (below attic)	House	Ceiling R11			1440			n/a	Existing	No
Floor Over Crawlspace	House	Raised Crawl R0			1440			n/a	Existing	No
Add Wall Left	Addition	Wall R-15	270	Left	160	25	90	Ex. w/ Siding	New	n/a
Add Back Wall	Addition	Wall R-15	0	Back	200	40.02	90	Ex. w/ Siding	New	n/a
Add Wall Right	Addition	Wall R-15	90	Right	160	25	90	Ex. w/ Siding	New	n/a
Addition Ceiling	Addition	R-38 Ceiling			500			n/a	New	n/a

ATTIC										
01	02	03	04	05	06	07	08	09	10	
Name	Construction	Type	Roof Rise	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition	
Attic	Asphalt Shingle Roof	Ventilated	5	0.1	0.85	No	No	Existing	No	
Addtn Attic	Asphalt RB	Ventilated	5	0.1	0.85	Yes	No	New	No	

Registration Number:
CA Building Energy Efficiency Standards - 2016 Residential Compliance

Registration Date/Time:
Report Version - CF1R-Invalid Version-1133

HERS Provider:
Report Generated at: 2018-05-25 08:18:51



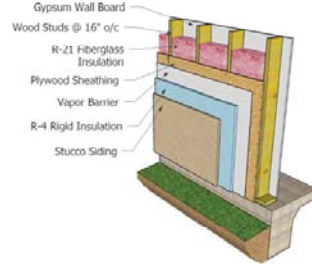


Challenge D

Challenge D → **Detached Newly Constructed ADU**



Detached Newly Constructed ADU

Decoding + ADUs™ Let's Talk Recent Changes		BUILDING FEATURE	PRESCRIPTIVE 2016 TITLE 24 PART 6 PACKAGE A (TABLE 150.1-A)	"AS BUILT"
DETACHED NEWLY CONSTRUCTED ADU				
 CLARIFICATION: (Blueprint 122_3/29/18) No change, still considered new dwelling unit (single family home) 	Roof	Any size ADU is subject to Prescriptive Package A.	Prescriptive Option A, B or C including the provision that attics are to be ventilated, or use the Performance Approach.	
	Walls	All walls are considered "new" and are subject to Prescriptive Package A. Framed: CZ1-5, 8-16 = U-factor of 0.051 CZ 6-7 = U-factor of 0.065	 <i>Example of High Performance Wall = U-factor of 0.051</i>	
DOCUMENTATION: Prescriptive option: CF1R-NCB-01-E (HERS required) must be registered with a HERS provider website: https://www.calcerts.com/ https://www.cheers.org/ or Performance option: CF1R-PRF-01-E using Energy Commission approved software	Floor	Prescriptive Package A	Raised floor = R-19; Heated Slabs = R-5 slab edge insulation	
	Fenestration	All Fenestration is "New"; Prescriptive Package A Skylights: ≤16 ft² U-Factor=0.55 SHGC=0.30 **	Must meet mandatory weighted of U-factor = 0.58, in addition to using either the Prescriptive (U-factor = 0.32 and SHGC = 0.25**) or use the Performance Approach. Area allowance 20% of conditioned floor area, 5% west facing limitation ** per §150.1(c)3.	
	HVAC ***	HVAC = Prescriptive Package A IAQ whole building airflow is required of any size ADU HERS measures will apply	All applicable HERS measures will apply; Duct testing; refrigerant charge; airflow and fan watt draw; IAQ.	
	DHW	Prescriptive Package A §150.1(c)8	If recirculation pumps are desired for any type of ADU, Demand Recirculation Systems with manual control pumps per RA4.4 shall be used, or use the Performance Approach for control options.	

* Additions over 300 sf in Climate Zones 10-15 to meet Package A cool roof installation requirements, dependent upon roof slope.
 ** Climate zones 3,3.5 have no SHGC requirements, nor west facing limitations on area.
 *** HERS testing of ducts and/or AC equipment is required for certain mechanical systems; HERS verified IAQ required for ADU's over 1000 ft²



What IS that?



Detached Newly Constructed ADU

- ✦ Building a new building detached from the existing home for an ADU.
- ✦ This is treated like a new single family home by the Energy Code.

Clarification?

Scope of Work

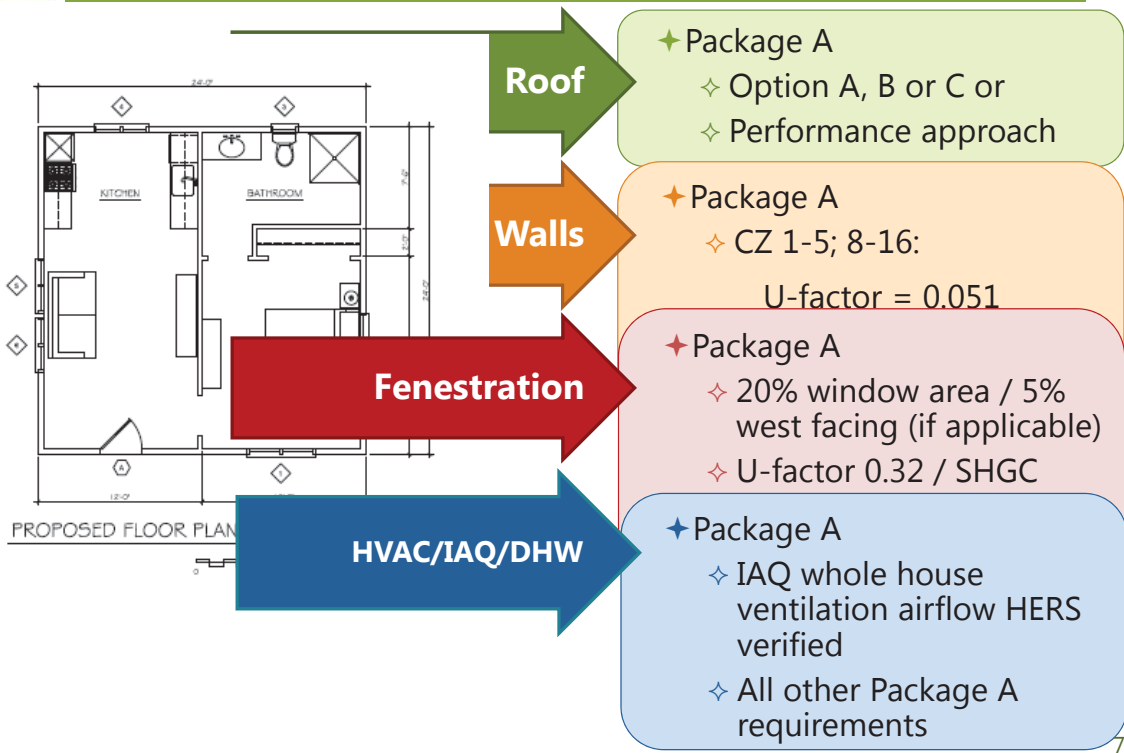
- ✦ This is considered a new dwelling unit, just like a new home, and has to meet all of the requirements of a "new home".
- ✦ No change

Building Features

- ✦ Must meet requirements of a newly constructed home.
 - ✦ Package A for all building features.
 - ✦ IAQ whole home ventilation airflow.
 - ✦ Ability to use PV tradeoff via performance approach if desired (and applicable).



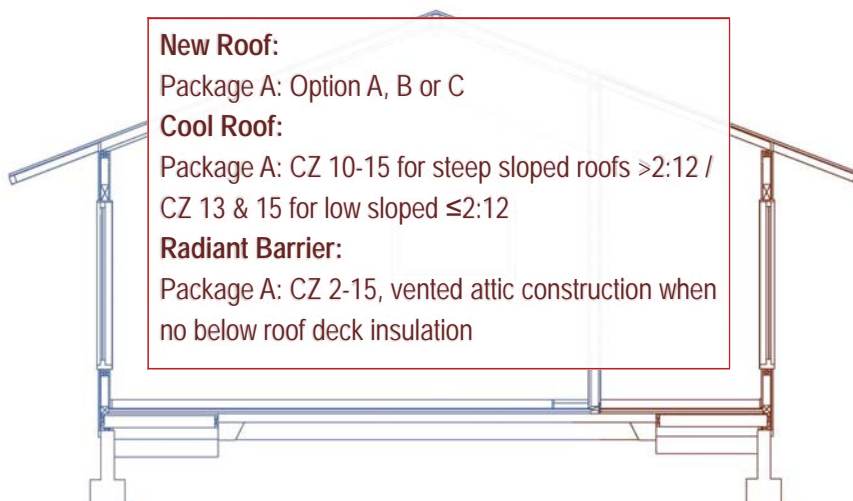
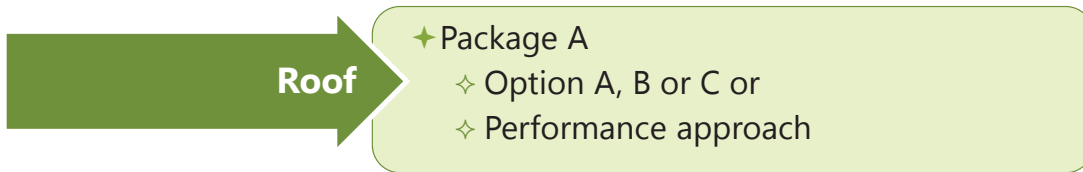
Building Features



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Building Features: Roof



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Building Features



✦ Package A

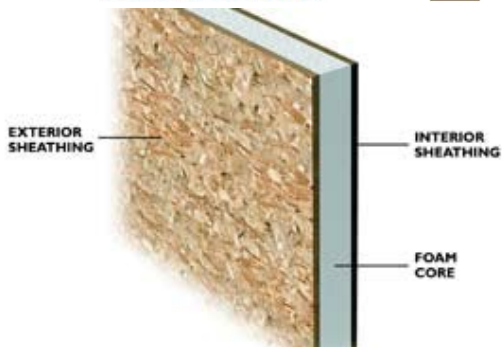
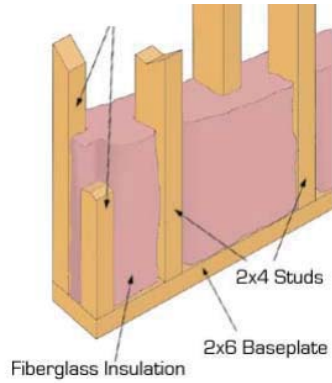
- ✦ CZ 1-5 and 8-16: U-factor = 0.051
- ✦ CZ 6-7: U-factor = 0.065



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Many Ways to Get U-factor...



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Building Features: Fenestration

Fenestration

✦ Package A

- ✦ 20% window area / 5% west facing (if applicable)
- ✦ U-factor 0.32 / SHGC 0.25

		World's Best Window Co. Millennium 2000+ Vinyl-Clad Wood Frame Double Glazing - Argon Fill - Low E Product Type: Vertical Slider	
ENERGY PERFORMANCE RATINGS			
U-Factor (U.S./I-P)	Solar Heat Gain Coefficient		
0.32	0.25		
ADDITIONAL PERFORMANCE RATINGS			
Visible Transmittance	Air Leakage (U.S./I-P)		
0.51	0.2		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>			

Default Table 110.6-B

- ✦ Worst values available, used for non NFRC tested products
- ✦ Can only be used in performance approach.

NA6 COG formula

- ✦ **Less than 250 ft² or 5% of CFA** for site built fenestration.
- ✦ Can only be used in performance approach.

NFRC Tested and Labeled

- ✦ **Traditional is required for residential windows, NOT simulated**

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Fenestration Area



How Much?

- ✦ We look at energy use as a "TDV" evaluation:
 - ✦ What **T**ime is the energy being used,
 - ✦ **D**ependent on where the building is located,
 - ✦ And looking at the **V**alue of the energy source required.

✦ **20% vertical fenestration** area to conditioned floor area

- ✦ 2,000 sq. ft. home = 400 sq. ft. of glass window and/or glass doors

✦ **5% West* facing** fenestration area to conditioned floor area

- ✦ 2,000 sq. ft. home = 100 sq. ft. of facing west

*excluding CZ 1,3,5

75

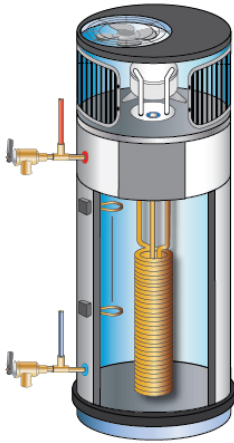


Building Features

HVAC/IAQ/DHW

✦ Package A

- ✧ IAQ whole house ventilation airflow HERS verified
- ✧ All other Package A requirements



But..I don't want gas

- ✦ High Efficiency heat pump water heater
 - ✧ Will need to make improvements to design to allow for this type of water heater such as (but not limited to) using the Performance Approach:
 - PV system or Solar hot water system or
 - Higher efficiency HVAC or ??

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Residential PV Systems



PV Credit

- ✦ The PV System Credit is available only if:
 - ✧ The Performance Approach is used
 - ✧ The project is in:
 - Climate Zones 1-5, 8-16
 - ✧ The system is:
 - ≥ 2 kWdc* for Single Family
 - ≥ 1 kWdc* for Multi Family
 - The amount of credit will depend upon the Climate Zone and the Conditioned Floor Area of the dwelling.

* kilowatts direct current

A typical 1kWdc system often has approximately four PV panels



Ace Resources

Title 24, Part 6 Climate Zone Quick Reference

2016 ENERGY CODE		2016 ENERGY CODE		2016 ENERGY CODE		2016 ENERGY CODE	
Ace Resources		Ace Resources		Ace Resources		Ace Resources	
Climate Zone Quick Reference		Climate Zone Quick Reference		Climate Zone Quick Reference		Climate Zone Quick Reference	
Climate Zones 2, 3 & 4		Climate Zones 1 & 16		Climate Zones 5, 6, 7, 8, 9 & 10		Climate Zones 11, 12, 13 & 16	
Compliance Baseline (Package A) Low-Rise Residential - 1501		Compliance Baseline (Package A) Low-Rise Residential - 1501		Compliance Baseline (Package A) Low-Rise Residential - 1501		Compliance Baseline (Package A) Low-Rise Residential - 1501	
CZ 2		CZ 1		CZ 5		CZ 11	
Insulation	Roofs	Roofs	Roofs	Roofs	Roofs	Roofs	Roofs
Roofing Products	Roofs	Roofs	Roofs	Roofs	Roofs	Roofs	Roofs
Fenestration	Walls	Walls	Walls	Walls	Walls	Walls	Walls
Space Heating	Floors	Floors	Floors	Floors	Floors	Floors	Floors
Space Cooling	Fenestration	Fenestration	Fenestration	Fenestration	Fenestration	Fenestration	Fenestration
Central System Air Handlers	Space Heating	Space Heating	Space Heating	Space Heating	Space Heating	Space Heating	Space Heating
Ducts	Space Cooling	Space Cooling	Space Cooling	Space Cooling	Space Cooling	Space Cooling	Space Cooling
Water Heating	Ducts	Ducts	Ducts	Ducts	Ducts	Ducts	Ducts
	Water Heating	Water Heating	Water Heating	Water Heating	Water Heating	Water Heating	Water Heating

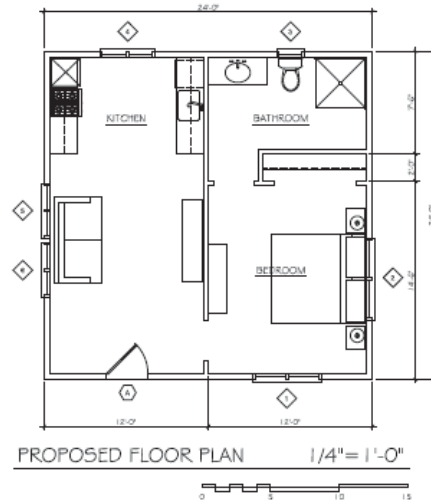


What Does the CF1R Say?

CF1R-PRF-01-E

CZ 2

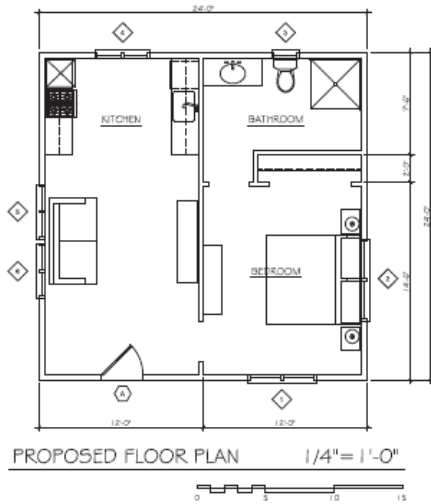
- ✦ Walls: 2 x 6 R-21
- ✦ Roof:
 - ✧ Vented Attic
 - ✧ R-30 at ceiling
 - ✧ Radiant Barrier
- ✦ Fenestration: Package A
- ✦ HVAC: Ducted Split DX
 - ✧ FAU: 92% AFUE
 - ✧ AC: 14.5 SEER/12 EER
- ✦ DHW: Gas Tankless
 - ✧ 0.90 Energy Factor





What Does the CF1R Say?

CF1R-PRF-01-E



CZ 12

- ✦ Walls: 2 x 6
 - ◇ Closed cell spray foam = R-27
 - R-5 per inch
- ✦ Roof:
 - ◇ Vented Attic
 - ◇ R-38 at ceiling/R-18 below roof
- ✦ Fenestration: Package A
- ✦ HVAC: Ducted Split DX
 - ◇ FAU: 92% AFUE
 - ◇ AC: 14.5 SEER/12 EER
- ✦ DHW: Gas Tankless
 - ◇ 0.90 Energy Factor

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Next Steps



HELPING YOU PLAY YOUR CARDS RIGHT





Handout

Additional Resources:

Blueprint – Issue 122, 3/29/18

<http://www.energy.ca.gov/2018publications/CEC-400-2018-007/CEC-400-2018-007.pdf>

California Department of Housing and Community Development – Accessory Dwelling Unit Memorandum – December 2016

<http://www.hcd.ca.gov/policy-research/docs/17Jan30-ADU-JA-Memo.pdf>

Check with your local Planning department to see if guidance has been made available:

San Francisco – "sf-ADU: a guide for homeowners, designers, and contractors considering adding an Accessory Dwelling Unit to an existing residence in San Francisco"

http://default.sfpplanning.org/plans-and-programs/planning-for-the-city/accessory-dwelling-units2015-ADU-Handbook_web.pdf

Los Angeles – "Building an ADU guidebook to Accessory Dwelling Units in the city of Los Angeles"

<https://www.ladbs.org/docs/default-source/publications/misc-publications/adu-guidebook.pdf?sfvrsn=12>

ADU Regulations by City:

<https://accessorydwellings.org/adu-regulations-by-city/>

Future Event – CABEC 2018 Brown Bag Webinar Series #6

June 20, 2018: Chris Oliveira from Energy Commission on ADU's

<https://cabec.org/learning/>

Recorded Event – Coffee & Code with Brian – Residential Modeling: Accessory Dwelling Units (ADU), Part 1: Newly Conditioned Detached ADU

<https://www.youtube.com/watch?v=gQk4M2XKU8&feature=youtu.be>

FAQ about CBECC-Res 2016

http://www.bwllcw.com/BFEES/docs/CBECC-Res_FAQs.pdf

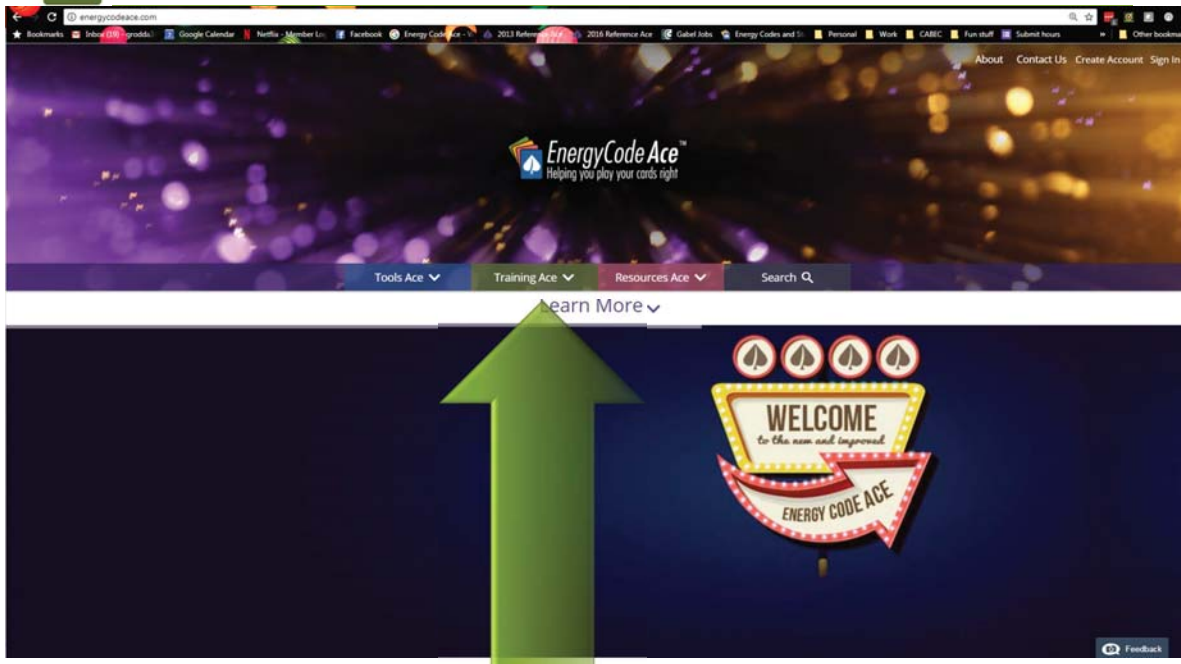


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Other ECA Resources





A one-hour live stream YouTube show designed to present "how-tos" for industry professionals working with California's building and appliance energy efficiency standards.

Coffee & Code with Brian — Residential Modeling: Accessory Dwelling Units (ADU), Part 1: Newly Conditioned Detached ADU

Join host Brian Selby for our next Code & Coffee event — a one-hour live stream YouTube show designed to present "how-tos" for industry professionals working with California's building and appliance energy efficiency standards.

There are currently no classes scheduled for this topic. But you can click on the link below to view a recording of a previous session.

View Recording

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EnergyCodeAce.com/training

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https://cabec.org/learning/



Let's build a more energy efficient California together!

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CABEC 2018 Brown Bag Webinar Series #6, June 20, 2018: Chris Olvera from Energy Commission on ADU's

BROWN BAG WEBINARS, BUILDING SCIENCE, CA ENERGY EFFICIENCY PROGRAMS, ENERGY MODELING, RENEWABLES, TITLE 24 - PART 6



Frequently Asked Questions (FAQ) about CBECC-Res

Updated April 10, 2018

1. A recent *Blueprint* (Issue 122, <http://www.energy.ca.gov/efficiency/blueprint/>) said that when an existing attached or detached space (such as an existing garage) is converted to an accessory dwelling unit (ADU), all of the existing walls can be considered “wall extensions” meaning they only require R-15 (in 2x4 framing) or R-19 (in 2x6 framing) cavity and no continuous insulation. How can I model these walls in performance to take advantage of this new allowance? Is it allowed for addition alone compliance or only “existing + addition?”

Until a new version of software is released that can identify wall extensions, we recommend first determining the prescriptive exterior wall U-factor required for the applicable climate zone (e.g., U-0.051 in climate zones 1-5 and 8-16, or U-0.065 in climate zones 6-7). Create a wall construction and name it “Prescriptive Wall” (so it is not confused for actual construction assemblies). Use this wall construction for all of the ADU’s exterior walls. The construction details to achieve exactly these U-factors are:

- U-0.051 = R-19 in 5-1/2 in. cavity (2x6 @ 16 in. O.C.), R-5 sheathing, synthetic stucco
- U-0.065 = R-15 (2x4 @ 16 in. O.C.), specify R-3.8 sheathing, synthetic stucco

This provision is allowed for all compliance approaches (existing + addition and addition alone), as well as non-ADU projects. NOTE: if the project is not converting an existing space, there was some useful information for how to identify when a wall is an extension in Issue 118 of *Blueprint* (page 5). Typically, for such cases it is only one wall, not all of the walls.

To help avoid plan check comments, be sure to document your modeling assumption using either the language from the *Blueprint* or this FAQ. During construction, only R-15 or R-19 cavity insulation is required.



ADU Requirements

- ✦ Depend on what the local building department has adopted.
- ✦ Make sure to see if guidance has been made available.
 - ✦ City of San Francisco
 - Images used for “Check your Understandings” are courtesy of San Francisco Planning and Open Scope Studios. THANK YOU!
 - ✦ City of LA
 - ✦ City of Berkeley



Accessory Dwellings

A one-stop source about accessory dwelling units, multigenerational homes, laneway houses, ADUs, granny flats, in-law units...



- Home
- What are ADUs?
- See real ADUs
- Build your own
- What are the rules?
- ADU Professionals
- Research & Policy
- Events
- Contribute
- Copyright & permissions
- About us

What are the rules where I live?

Rules for creating ADUs vary from place to place. Check the table below for links to your area.

Please remember this is a volunteer-driven site! If you don't see your city, or the link for your city is wrong, please consider helping out by doing a simple internet search (for example, "accessory dwelling unit Anytown California"). In the comments, give us a link to what you found — or let us know if there was nothing to be found. With your help, we can build an up-to-date list for the entire continent.

State/Province	City/County
Alabama	Opelika (Lee County) - see this comment
Alaska	Anchorage
Arizona	Phoenix (called a 'guesthouse')
Arkansas	Fayetteville
California	Alameda (City) Anaheim Bakersfield Berkeley Burbank Burlingame Carlsbad Chula Vista Concord Corona Costa Mesa Daly City Downey El Cerrito

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