We will be starting soon!

Thanks for joining us

2022 Energy Code: Accessory Dwelling Units (ADUs)

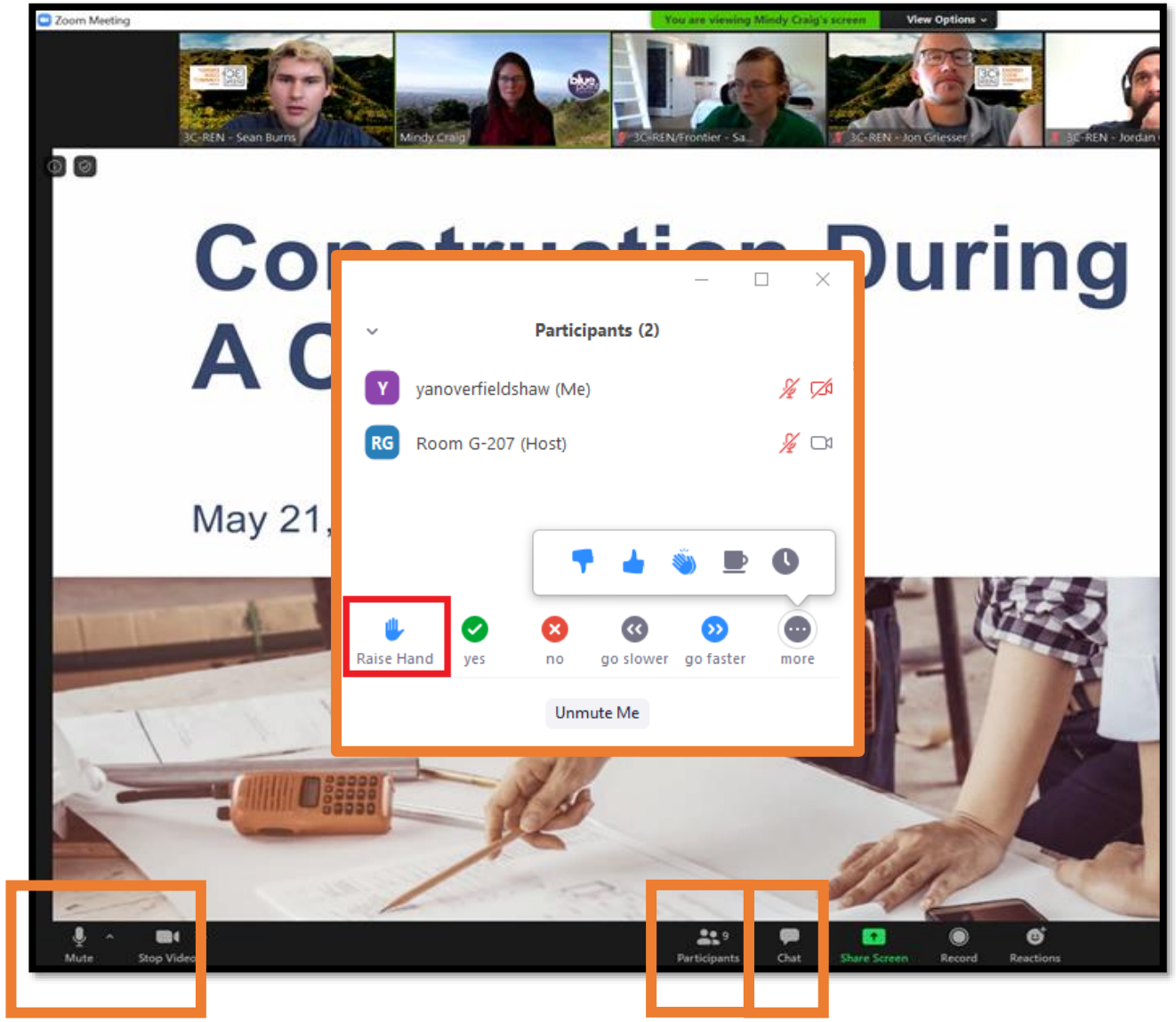
Lauren Bell – Franklin Energy

Jennifer Rennick – In Balance Green Consulting

October 20th, 2022

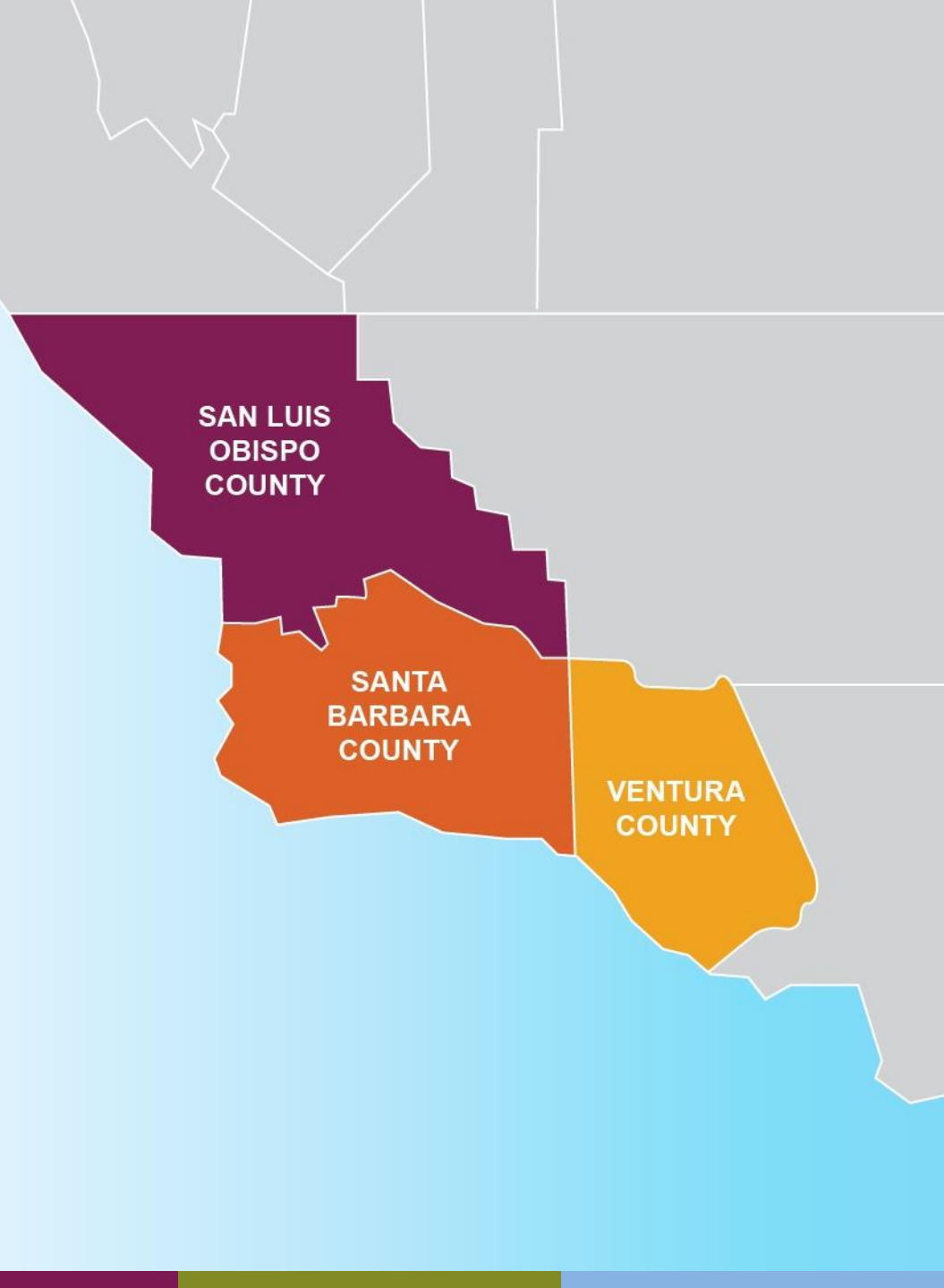
Zoom Orientation

- Please be sure your full name is displayed
- Please mute upon joining
- Use "Chat“ box to share questions or comments
- Under "Participant" select "Raise Hand" to share a question or comment verbally
- The session may be recorded and posted to 3C-REN's on-demand page. Feel free to ask questions via the chat and keep video off if you want to remain anonymous in the recording.



3C-REN: Tri-County Regional Energy Network

- Three counties working together to improve energy efficiency in the region
- Services for –
  - **Building Professionals:** industry events, training, and energy code compliance support
  - **Households:** free and discounted home upgrades
- Funded by ratepayer dollars that 3C-REN returns to the region




3C
REN
ENERGY
CODE
CONNECT


3C
REN
BUILDING
PERFORMANCE
TRAINING


3C
REN
HOME
ENERGY
SAVINGS

3C REN ENERGY CODE CONNECT

- Serves all building professionals
- Three services –
  - **Energy Code Coach**
  - **Training and Support**
  - **Regional Forums**
- Makes the Energy Code easy to follow

Energy Code Coach:
3c-ren.org/codes
805.220.9991

Event Registration:
3c-ren.org/events

BUILDING PERFORMANCE TRAINING

- Serves current and prospective building professionals
- Expert instruction:
  - **Technical skills**
  - **Soft skills**
- Helps workers to thrive in an evolving industry

Event Registration:
3c-ren.org/events

3C REN HOME ENERGY SAVINGS

Multifamily (5+ units)

- No cost technical assistance
- Rebates up to $750/apartment plus additional rebates for specialty measures like heat pumps

Single Family (up to 4 units)

- Sign up to participate!
- Get paid for the metered energy savings of your customers

Enrollment:
3C-REN.org/contractor-participation

3C-REN
Staff Online

2022 Energy Code: Accessory Dwelling Units (ADUs)

Lauren Bell – Franklin Energy

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October 20th, 2022

Today’s Learning Objectives

- Understand what are accessory dwelling units.
- How to build ADUs in compliance with the 2022 Energy Code.
- How to classify the different types of ADUs within the Energy Code.
- Learn about energy and green building code requirements for new and existing conversion ADU’s.
- Clarify when solar is required, maximum and minimum square footage, and HVAC and water heating requirements.

- 1.5 **AIA** LU HSW’s available for this event
- 1.5 **ICC** LU available for this event

2022 Energy Code Training Series

Oct 6 - 2022 ENERGY CODE: EXISTING BUILDINGS, ADDITIONS, AND ALTERNATIONS (SINGLE FAMILY)

Oct 20 - 2022 ENERGY CODE: ACCESSORY DWELLING UNITS (ADUS)

Nov 10 - 2022 ENERGY CODE PREVIEW FOR SINGLE FAMILY PROJECTS

Nov 17 - 2022 ENERGY CODE PREVIEW FOR MULTIFAMILY PROJECTS

Dec 1 - 2022 ENERGY CODE PREVIEW FOR NONRESIDENTIAL PROJECTS

https://www.3c-ren.org/calendar-of-events-and-trainings/

Agenda

1. Energy Code Triennial Cycle
2. Energy Code Re-organization
3. ADUs-Accessory Dwelling Units – Compliance Pathways
4. ADUs –Types and Benefits
5. 2022 Energy Code – Key Code Updates
6. Q&A and Closing

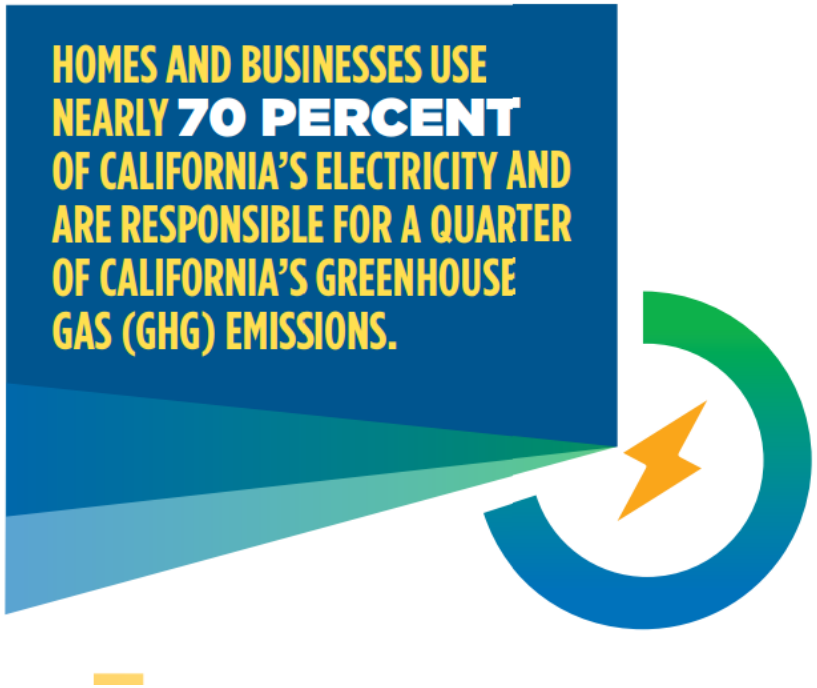
Energy Code Triennial Cycle

California Energy Commission (CEC)

energy.ca.gov

California's Building Energy Efficiency Standards (aka the Energy Code) is updated every three years the by CEC. The process includes engagement with the public, industry experts, in-house expertise, and other stakeholders.

Big Picture Goals for the 2022 Code Updates

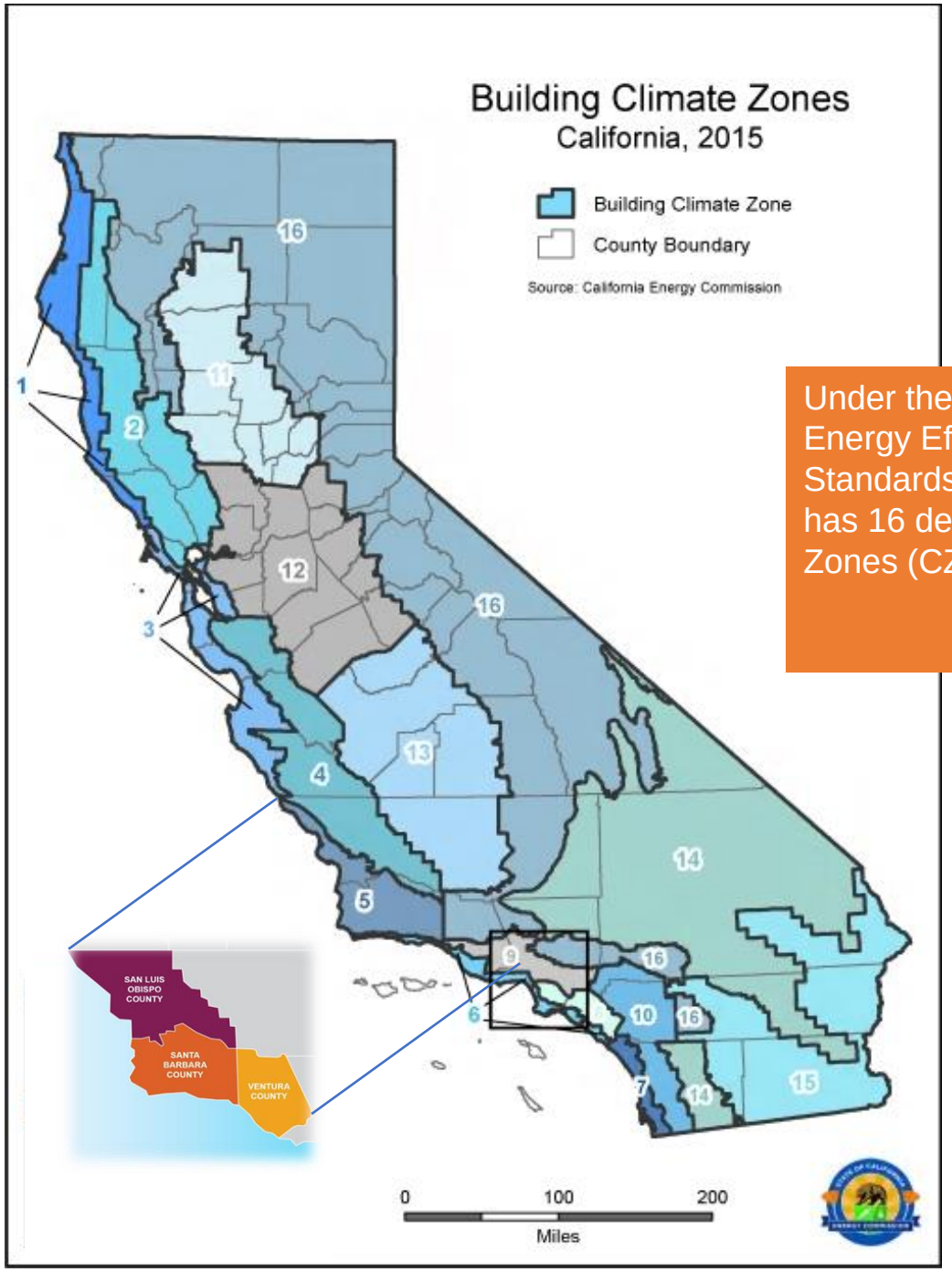


- Encourage heat pump technology for space and water heating
- Establish electric-ready requirements for single family and multifamily projects
- Expand PV systems and battery storage standards
- Strengthen ventilation standards

Focus on 3C-REN Tri-County Region

San Luis Obispo, Santa Barbara, and Ventura

CZ's: 4, 5, 6, 9, and 16



Under the Building Energy Efficiency Standards California has 16 defined Climate Zones (CZ)

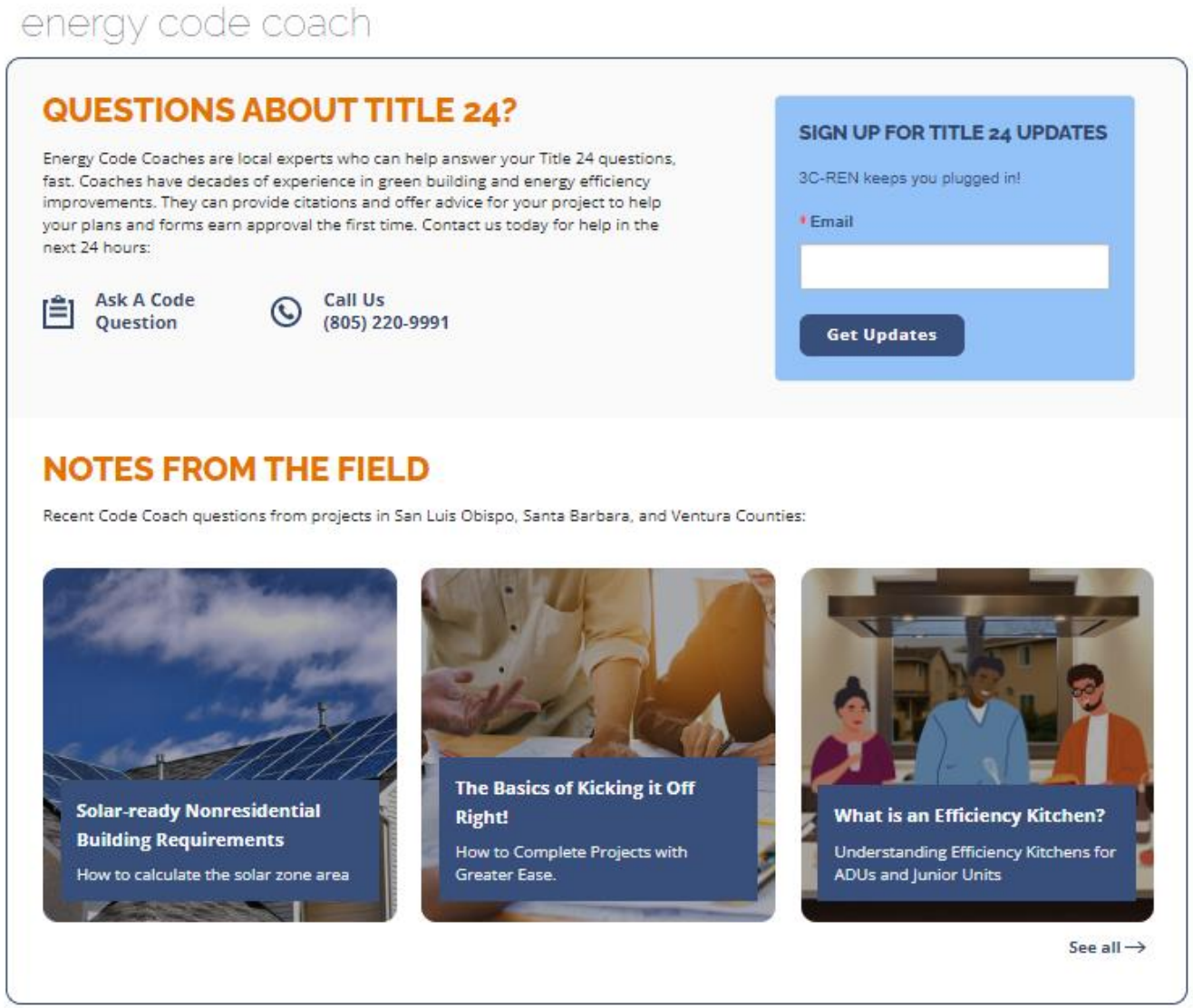
What You Need to Know

2022 Building Code will go into affect January 1, 2023

- Project that **apply for permit** on or after January 1, 2023 will fall under the 2022 Code
- Documents available at: https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency

Have Questions? Contact your local CODE COACH

https://www.3c-ren.org/energy-code-connect



Energy Code Re-organization

Subchapters have been Updated

Subchapter Reorganization

2019 Code

All Buildings -Sections 100 and 110

High-Rise Residential, Nonresidential, Hotel/Motel -Sections 120, 130, 140, and 141

Low-Rise Residential -Section 150.0-150.2

2022 Code

All Buildings -Sections 100 and 110

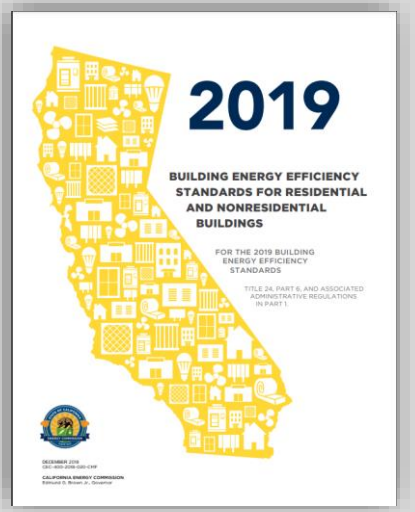
Nonresidential, Hotel/Motel -Sections 120, 130, 140, and 141

Single-Family Residential -Section 150.0-150.2 (includes duplexes and townhouses)

New Sections

Multifamily Buildings -Sections 160, 170, 180 (low and high rise)

T24 Part 6 Energy Code – Subchapter Organization



All [*regulated] Occupancies*

(A, B, E, F, H, I M, R, S, or U, except I-3 and I-4)

Subchapter 1 –All Occupancy –Scope, Definition

Subchapter 2 –All Occupancies – Mandatory Requirements

Sec 100.0-100.3 & Sec 110.0-110.12

Not Low-Rise Res

Subchapter 3 –Nonresidential, High-Rise Res, Hotel/Motel, Covered Process –Mandatory Requirements

[*HVAC and Ventilation*]

Sec 120.0-120.9

Subchapter 4 –Nonresidential, High-Rise Res, Hotel/Motel – Mandatory Requirements

[*Lighting and Power*]

Sec 130.0-130.5

Subchapter 5 –Performance and Prescriptive

[*New Construction*]

Sec 140.0-140.9

Subchapter 6 – Additions and Alterations

Sec 141.0-141.1

Low-Rise Res

Subchapter 7 –Low-Rise Residential Mandatory Measures

Sec 150.0

Subchapter 8 – Performance and Prescriptive

[*New Construction*]

Sec 150.1

Subchapter 9 – Additions and Alterations

Sec 150.2

T24 Part 6 Energy Code – Subchapter Organization

All [*regulated*] Occupancies

(A, B, E, F, H, I M, R, S, or U, except I-3 and I-4)

Subchapter 1 –All Occupancy –Scope, Definitions

Subchapter 2 –All Occupancies – Mandatory Requirements

Sec 100.0-100.3 & Sec 110.0-110.12

Not Residential

Subchapter 3 – Nonresidential, Hotel/Motel, Covered Process –Mandatory Requirements [*HVAC and Ventilation*]

Sec 120.0-120.9

Subchapter 4 – Nonresidential, Hotel/Motel –Mandatory Requirements [*Lighting and Power*]

Sec 130.0-130.5

Subchapter 5 –Performance and Prescriptive [*New Construction*]

Sec 140.0-140.9

Subchapter 6 – Additions and Alterations

Sec 141.0-141.1

Single Family Res

Subchapter 7 –Single Family Residential Mandatory Measures

Sec 150.0

Subchapter 8 – Performance and Prescriptive [*New Construction*]

Sec 150.1

Subchapter 9 – Additions and Alterations

Sec 150.2

Multifamily Res

Subchapter 10 – Multifamily Residential Mandatory Measures

Sec 160.0-160.9

Subchapter 11 – Performance and Prescriptive [*New Construction]*

Sec 170.0-170.2

Subchapter 12 – Additions and Alterations

Sec 180.0-180.4

ADUs – Compliance Pathways

Review High Level Changes
Highlight Key Changes under 2022 Energy Code

High-Level Changes

- Performance method will use two metrics: time dependent valuation (TDV) and source energy
- Dwelling unit ventilation updates
- Domestic hot water requirements
- Space conditioning requirements
- Lighting changes
- Electric ready
- Photovoltaics and Batteries

Electric Heatpumps for space heating and cooling and hot water have become baseline for most climate zones.

The Energy Code –Three Compliance Terms

Mandatory Requirements

Energy efficiency measures that are applicable to all projects.

Prescriptive Component Package	Performance Method
Mandatory Requirements are applicable	Mandatory Requirements are applicable
Follow all the parts of the prescriptive package	Other components or measures can be traded-off as long as the Proposed Design Building can be shown to be more energy efficiency than a similar sized Standard Design Building (baseline building)
Note: used to determine the Standard Design Building	
Essentially a **checklist** approach	**Energy modeling** approach

Performance Method

- **New Construction.** Compliance shown with the Energy Design Ratio (EDR) metric. EDR was introduced as a proxy for carbon emissions at the source level.
- **Additions and Alterations to Existing Buildings.** The Energy Budget for additions and alterations is expressed in terms of **TDV**.
- **Time Dependent Valuation (TDV)** is a metric that considers the *cost* of energy-used.

Note:
The Additions and Alterations Performance Method does **not** use EDR. EDR is only for NEW Construction.

Energy Design Ratings (EDR)

EDR1
Energy Source Design Rating
(New proxy for carbon)

EDR2
Energy Efficiency Design Rating + Solar Electric Generation and Demand Flexibility Design Rating

Source EDR includes energy used by:

- Envelope
- IAQ
- HVAC
- DHW
- Unregulated loads

Efficiency EDR (TDV) includes energy used by:

- Envelope
- IAQ
- HVAC
- DHW
- Unregulated loads

Total EDR (TDV) includes energy used by:

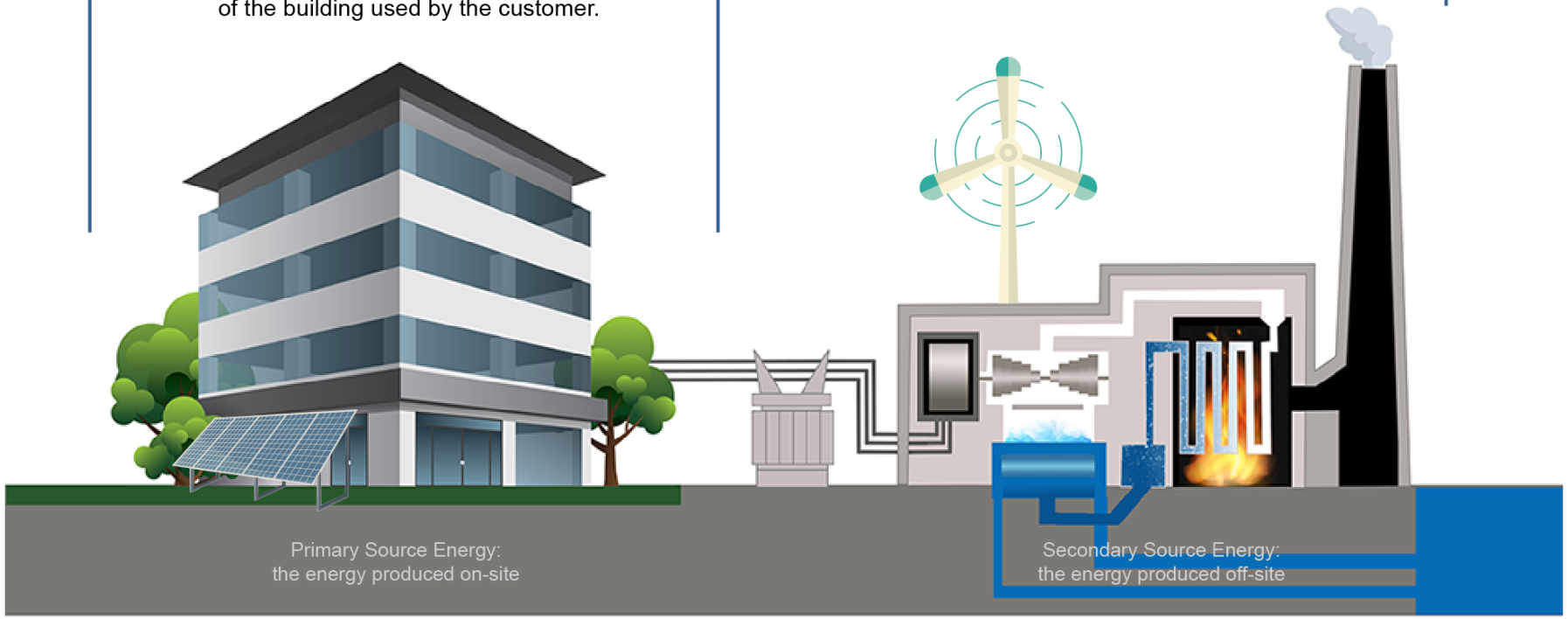
- Efficiency EDR measures **plus**
- Solar PV
- Battery Storage
- Precooling

TDV ENERGY

Time Dependent Valuation (TDV) Energy values energy use differently based on WHEN the savings occur to encourage better performance during periods of high energy cost,

SITE ENERGY

Site Energy is the energy consumed in the operation of the building used by the customer.



SOURCE ENERGY

Source Energy looks at the energy required to produce, procure, and distribute the energy used by the building to understand its total carbon consumption.

The 2022 Energy Code is paving the way for All-Electric construction.

Heat Pumps for Hot Water – Split Systems and Integrated

Heat Pumps for Space Heating and Cooling –Ductless and Ducted

A Path for All-Electric Systems

- Heating and A/C with split system – ducted or ductless
- Heat pump for DHW
- Induction cook tops and clothes driers
- No Combustion
- Eliminate gas line to offset costs

An all electric home reduces the CO_2 footprint by 66% compared to a 2019 Code compliant home with mixed fuel.

ADUs –Accessory Dwelling Units

Types and Benefits

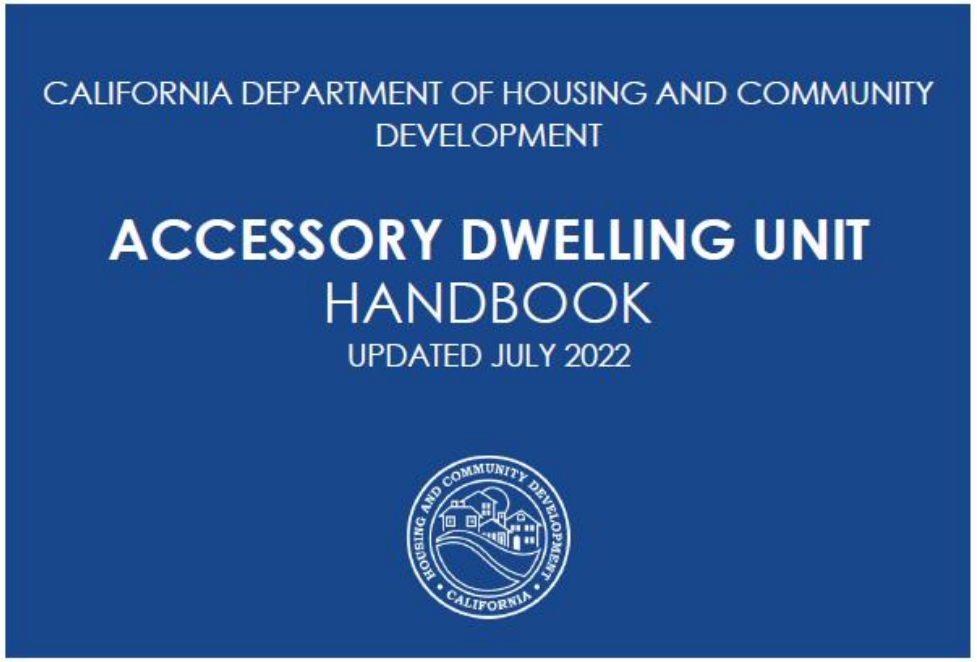
Benefits of ADUs

- Viable affordable housing option
  - Very low, low, mid incomes
  - Assistive living
- Family & community connection
  - Adult children or Aging in Place
  - Essential workers
- Stealth density
- Equitable wealth generation
- Supports RHNA count

ADU– Accessory Dwelling Unit

An ADU is an accessory dwelling unit with **complete independent living facilities** for one or more persons with permanent provisions for living, sleeping, eating, cooking and sanitation.

- **Detached:** The unit is separated from the primary structure.
- **Attached:** The unit is attached to the primary structure.
- **JADU:** Junior ADU is a space already part of the primary residence that is converted into an independent living unit.

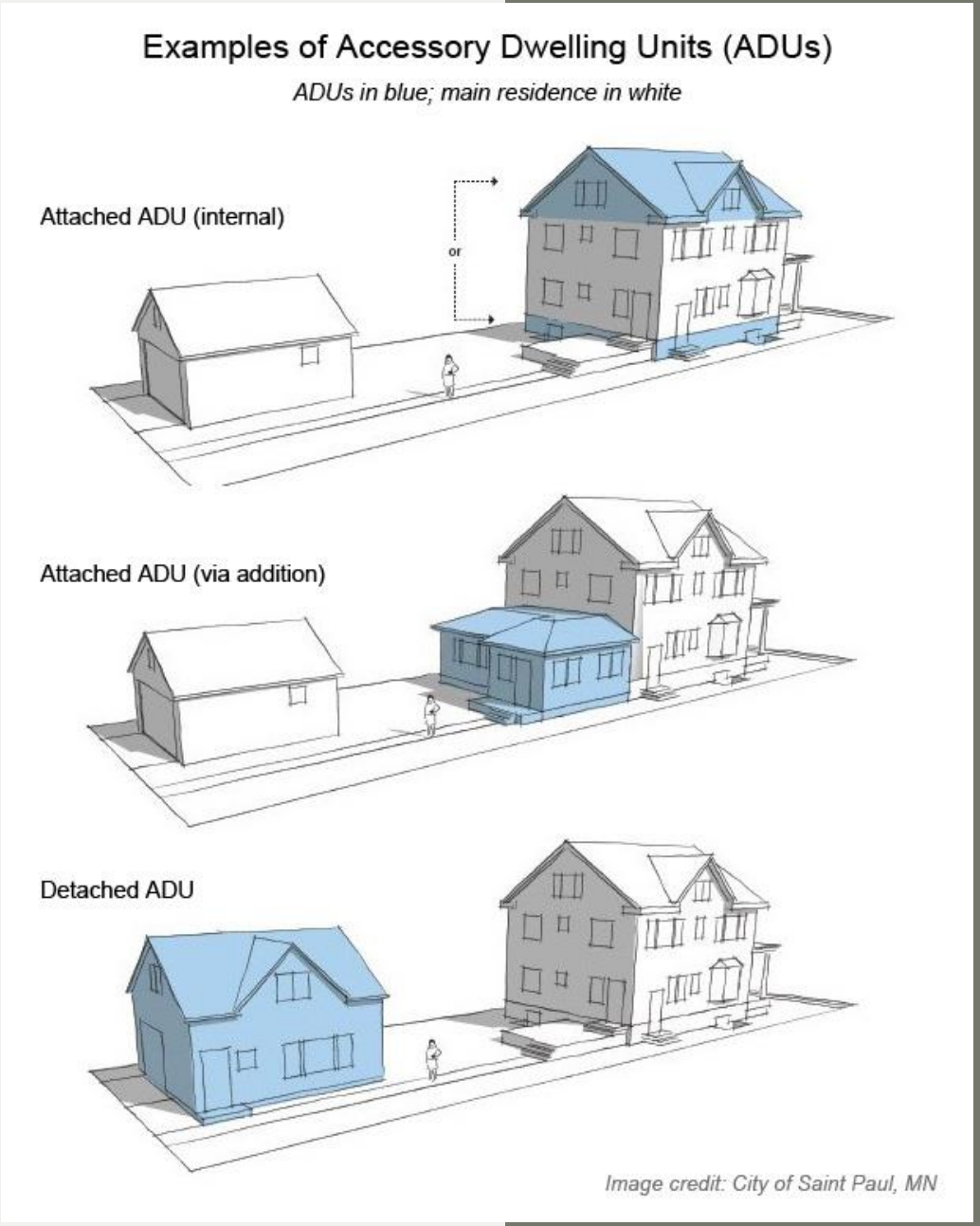


Types of ADUs

Junior Units $

Attached ADUs $$$

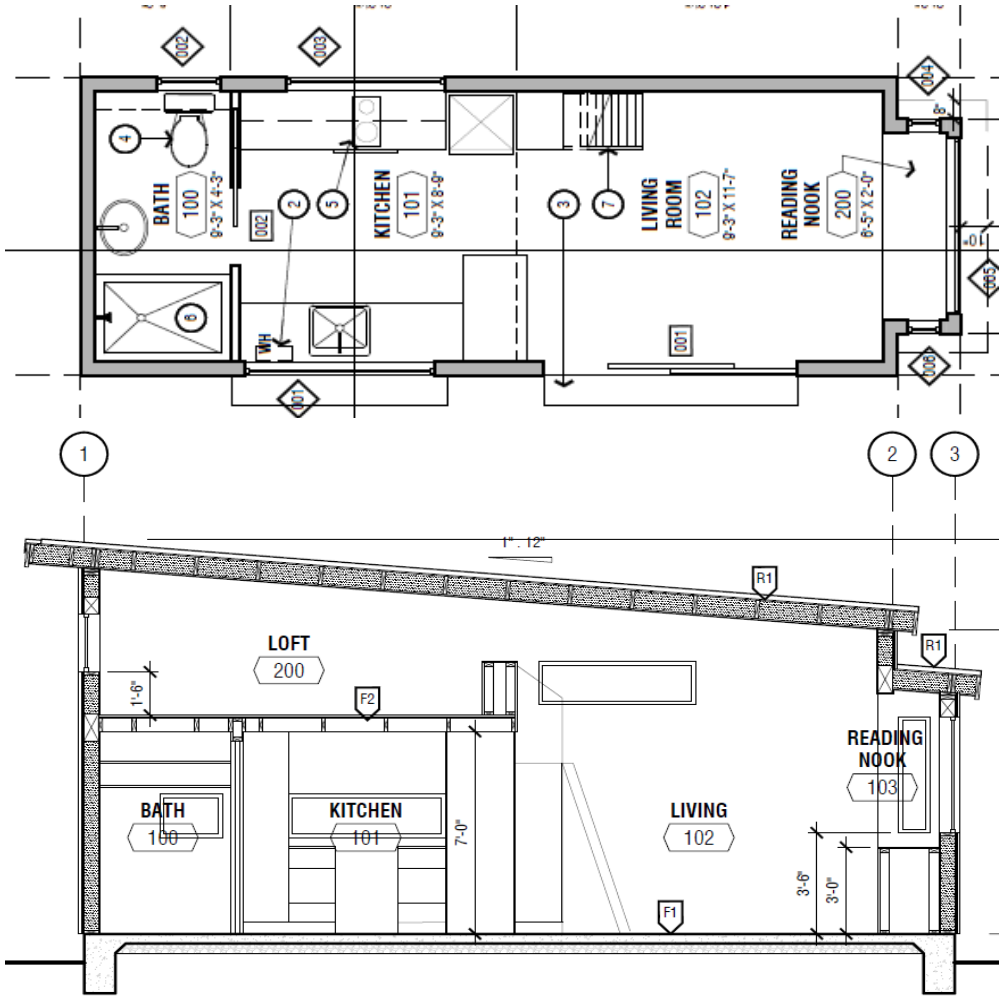
Detached ADUs $$ - $$$



FRANKLIN ENERGY

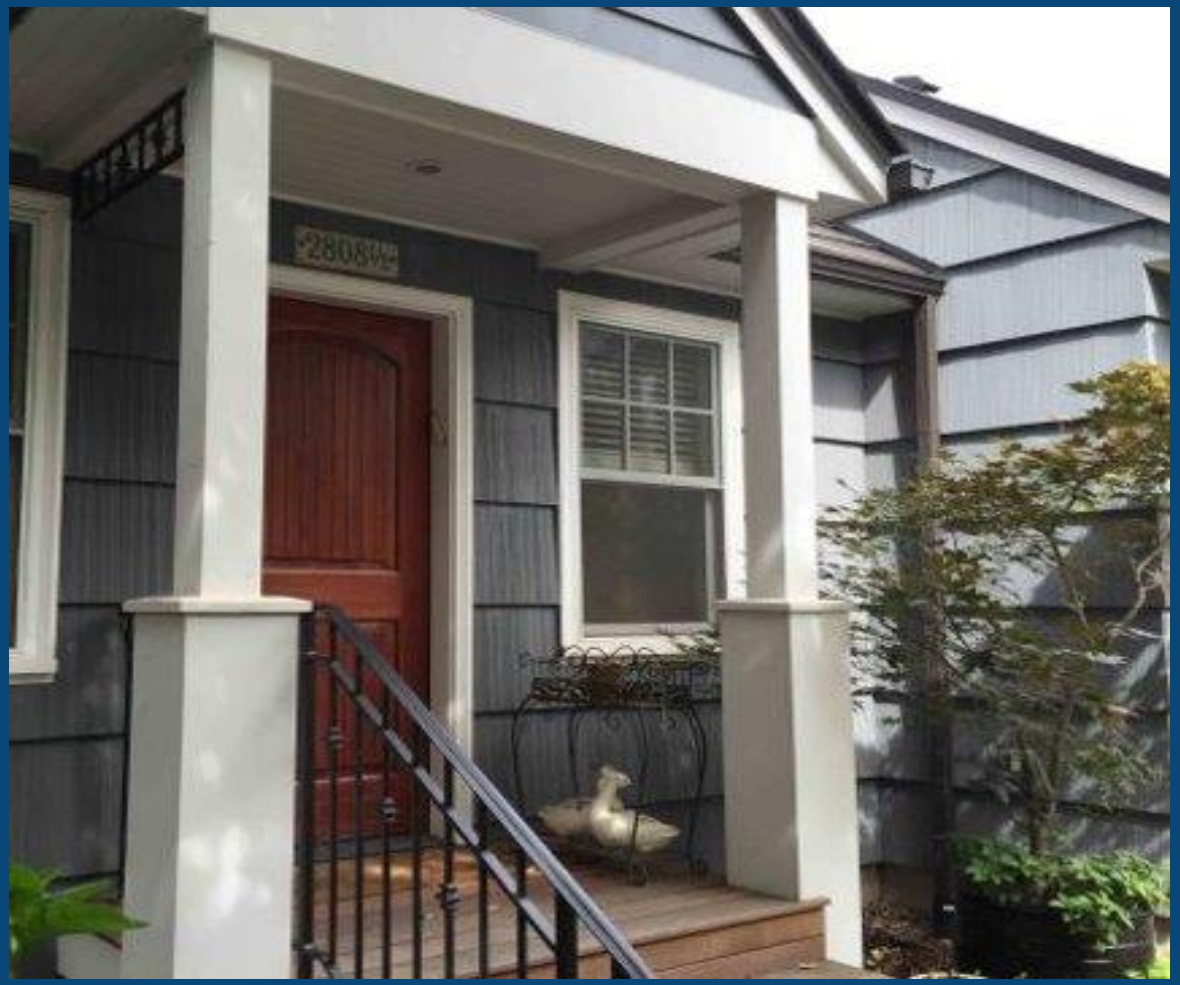
San Luis Obispo – Tiny Home Ordinance 17.86.210

- THOW or concrete foundation
- Less than 400 sq. ft.
- Lofts are permitted, may be accessed by ladder
- R13 wall + R19 floor & ceiling
- Roof access window for egress reqs



Detached New Construction ADU

Addition-to-ADU (Bump-out Conversion)



Garage Conversion

New Construction ADU above garage

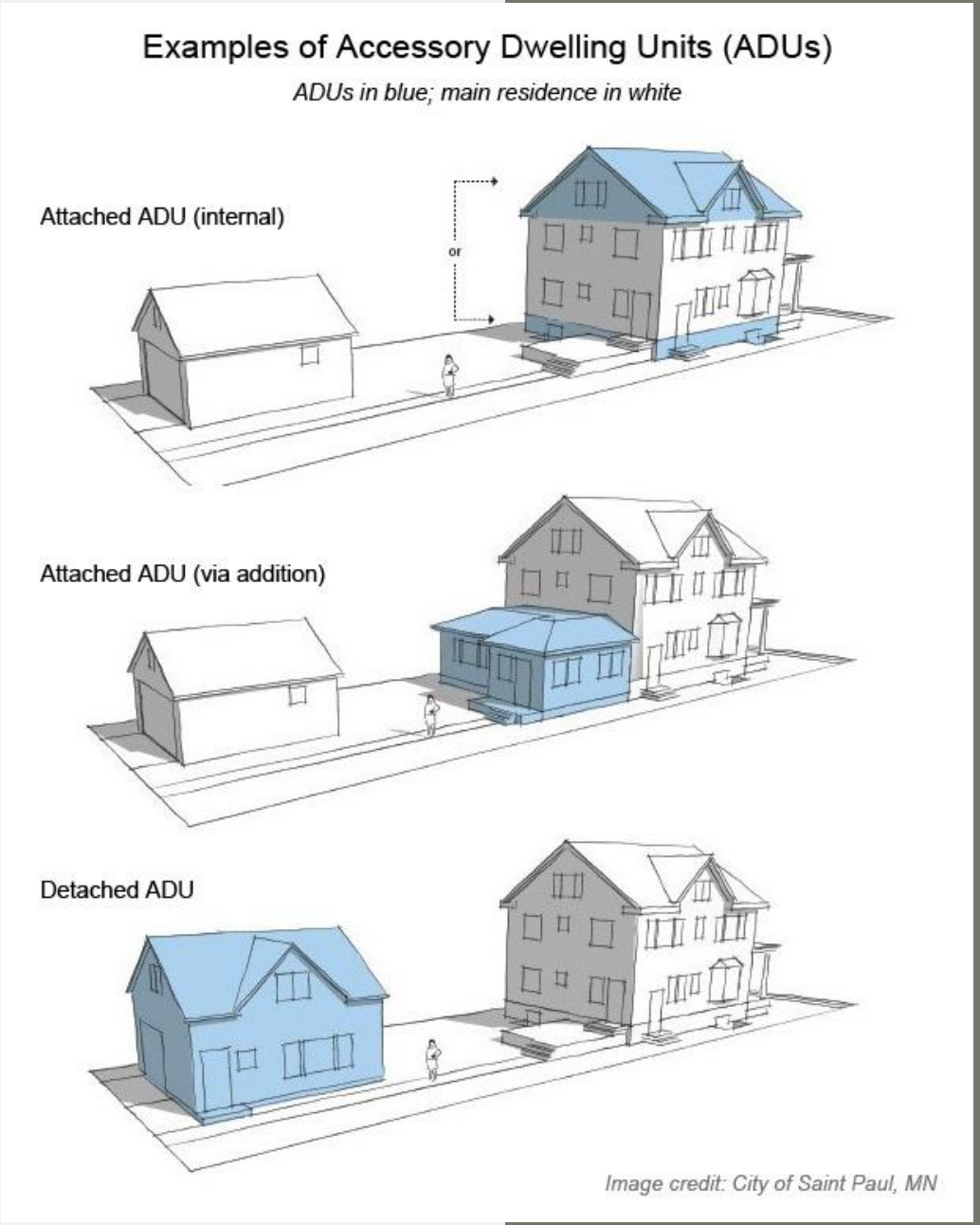
Prescriptive All-Electric ADU

Types of ADUs

Junior Units $

Attached ADUs $$$

Detached ADUs $$ - $$$



Junior ADUs

Conversion of existing space that is no more than 500 sq. ft. and is **contained entirely within an existing or proposed single-family residence**.

Attached garage conversion = JADUs
Detached garage conversion = ADUs

- May include separate or shared sanitation facilities
- May share central HVAC systems
- Contain an “efficiency” kitchen
- Can also have an ADU on property
- Need to have at least a door to the exterior
- May have an interior access door

Photo: ADU Resource Center

Energy Code 2022 for ADUs

Key Applicable Energy Codes:

Section 150.0 Mandatory Measures –All project types

New Construction –ADUs (new stand-alone detached construction or a new single family home with a JADU)

Section 150.1 New construction single family

All subsections apply, including:

- Envelope (Walls, Roof, Floor, and Fenestration)
- Ventilation (IAQ –Indoor Air Quality)
- Mechanical Heating and Cooling
- DHW
- **Electric Ready**
- **Battery Storage Ready**, and
- **PV's (Solar Panels)**

Additions –ADUs (conversions can be attached or detached construction) **Additions** –Junior ADU's as an *attached* conversion less than 500sf

Section 150.2(a) Additions

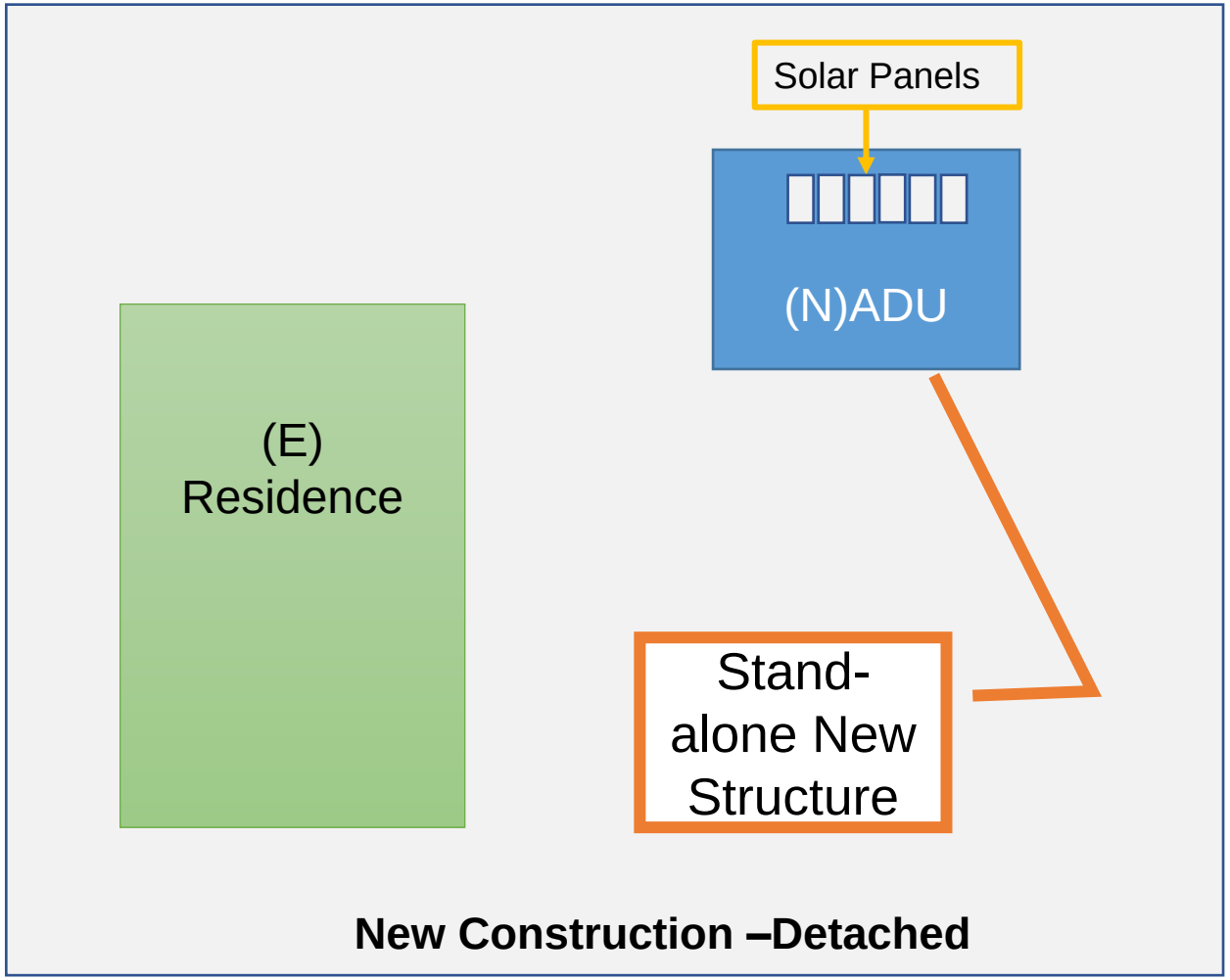
- Envelope
  - Wall Extension/Exemptions and Mandatory Min Insulation might apply
- Ventilation (IAQ –Indoor Air Quality)
  - New dwelling units that are additions to an existing building shall have mechanical ventilation
- Mechanical Heating and Cooling
  - ADU may ***not share return air with the primary dwelling*** through the heating or cooling system.
  - Separate thermostats
- Domestic Hot Water
  - Electric and gas options

Alterations –ADUs and Junior ADUs (JADUs: not more than 500 sf and within the *existing conditioned* residence)

Section 150.2 (b) Alterations

- Wall Exemption to Mandatory Measure (Sec 150.0) Insulation for a 2x4 framed wall might apply
  - **EXCEPTION to Section 150.0(c)1:** Existing walls already insulated to a U-factor not exceeding U-0.110 or already insulated between framing members with insulation having an installed thermal resistance of R-11 or greater.

New Detached ADU's are considered "New Construction" under the Energy Code



Section 150.1 –New Construction – Low Rise Residential

All subsections apply, including:

- Envelope (Walls, Roof, Floor, and Fenestration)
- **Ventilation (IAQ –Indoor Air Quality**),
- Mechanical Heating and Cooling
- DHW,
- **Electric Ready**
- **Batter Storage Ready**
- **PV's (Solar Panels)**

Requirements for Ventilation and Indoor Air Quality (IAQ)

ASHRAE 62.2 *continues* to be the ***basis*** for section 150.0(o)

- Quantity of outside air (OA) ventilation,
- Allowable methods of meeting the OA ventilation; and
- Field verification of IAQ system(s)

Updated or Added Language:

- Central Fan Integrated (CFI) Ventilation Systems
- Kitchen and Bathroom Exhaust
- Prescriptive Ventilation Duct Sizing
- Balanced Ventilation with Heat/Energy Recovery
- Required Testing of Ventilation System Air Flow

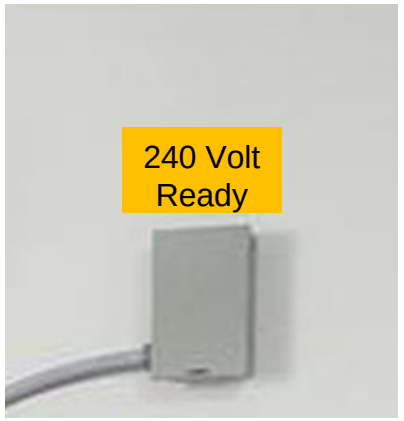
Note:
Kitchen and Bathroom Exhaust applicable to all New Construction and Additions

Electric Ready
–update to Water Heater (n)
–new subsections (t), (u), and (v)

For all propane/natural gas installed appliances:

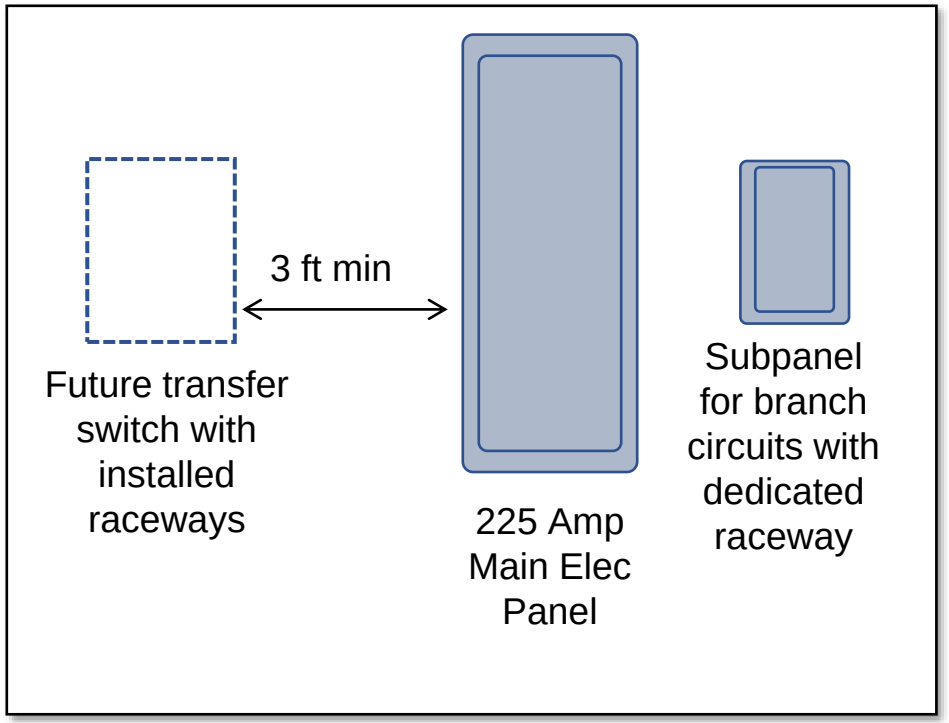
- Water heaters: gas or propane water heaters must be installed in or adjacent to a space large enough for a heat pump water heater HPWH. (2.5’ x 2.5’ x 7’) Must install 240v/20amp or 240v/30amp circuit depending on location - **150.0(n)**
- Furnaces: provide conductors rated at 240 volt/ 30 amp to the furnace for future heat pump installation- **150.0(t)**
- Cooktops: provide conductors rated at 240 volt/ 50 amp for future cooktop- **150.0(u)**
- Dryers: provide conductors rated at 240 volt/ 30 amp feed dryer - **150.0(v)**

Electric ready items require breaker space and labeling in panel
AND
Electrical feed within 3 ft of non-electric appliance location



Energy Storage System (ESS) aka Battery Ready:

- At least one of the following required:
  - Interconnection equipment with minimum backed up capacity of 60 amps
  - Dedicated raceway (min 1”) from the main service to subpanel that supplies the branch circuits
- A minimum of 4 branch circuits shall be identified feeding:
  - Refrigerator
  - One lighting circuit near the primary egress
  - A sleeping room receptacle outlet
- Main panel must have busbar rating of 225 amps minimum
- Sufficient space shall be reserved to allow future installation of a system isolation equipment or transfer switch within 3 feet of the main panelboard
- Raceways shall be installed between the panelboard and the system isolation equipment or transfer switch location to allow the connection of backup power source



Solar Photovoltaic (PV) –New Construction

Prescriptive PV Sizing:

Equation 150.1-C Annual Photovoltaic Electrical Output

System Size kWPV = (CFA x A)/1000 + (N_{dwell} x B)

Where:

kW_{PV} = kW DC size of PV system

CFA = Conditioned Floor Area

A = CFA adjustment factor

N_{dwell} = Number of dwelling units (1 single, 2 duplex)

B = Dwelling adjustment factor

CZ	A	B
4	0.586	1.21
5	0.585	1.06
6	**0.594**	**1.23**
9	0.613	1.36

Example: 1000 sf ADU in CZ 6

kWpv = (1000 sf x 0.594)/1000 + 1(1.23) = 1.82 kW system

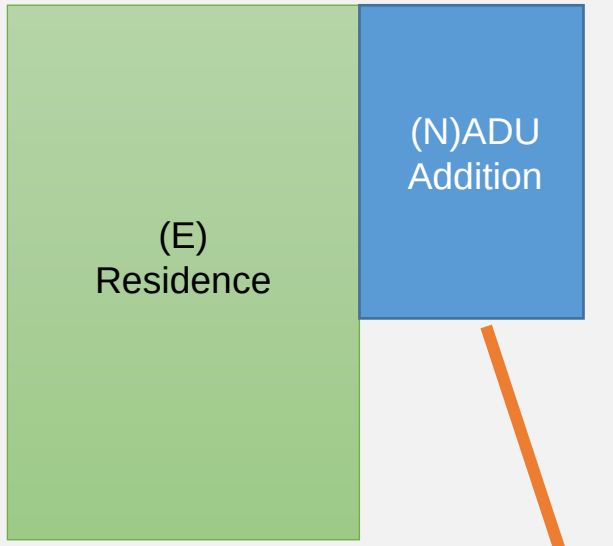
1.82 kW / 300 W panel = 6 panels

[each panel approx. 40”x67”]

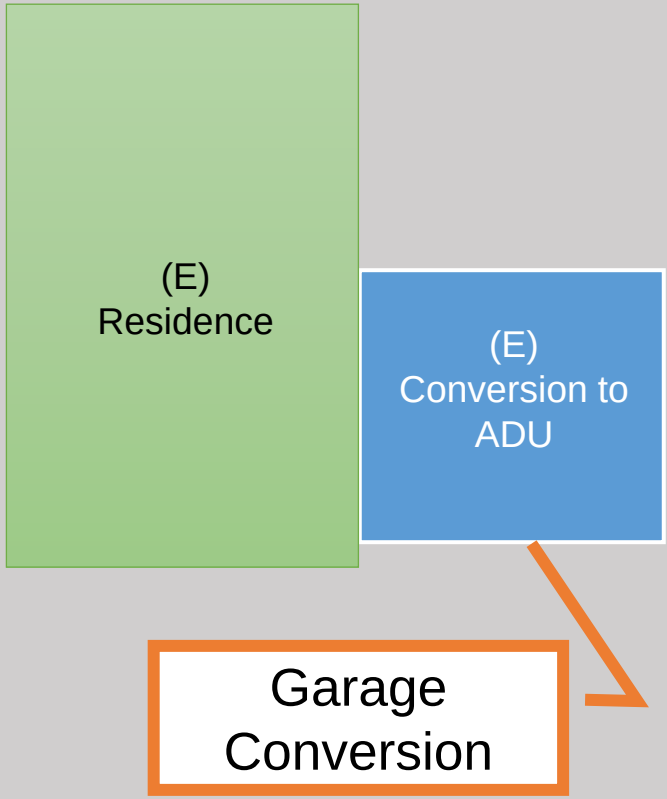
Exemptions:

- **PV not required, when kW_{PV} is less than 1.8 kW**
- **PV not required, when SARA is less than 80 sf**
- **PV size may be reduced by 25% if a usable battery capacity of 7.5 kWh is installed**

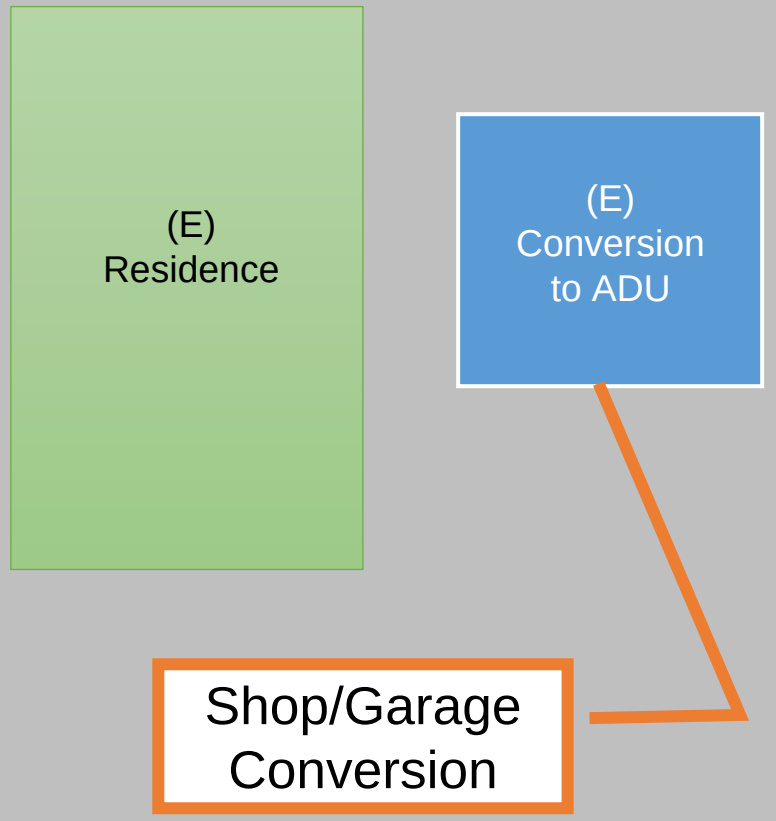
Conversions and Additions are considered “Additions” under the Energy Code



Addition –Attached

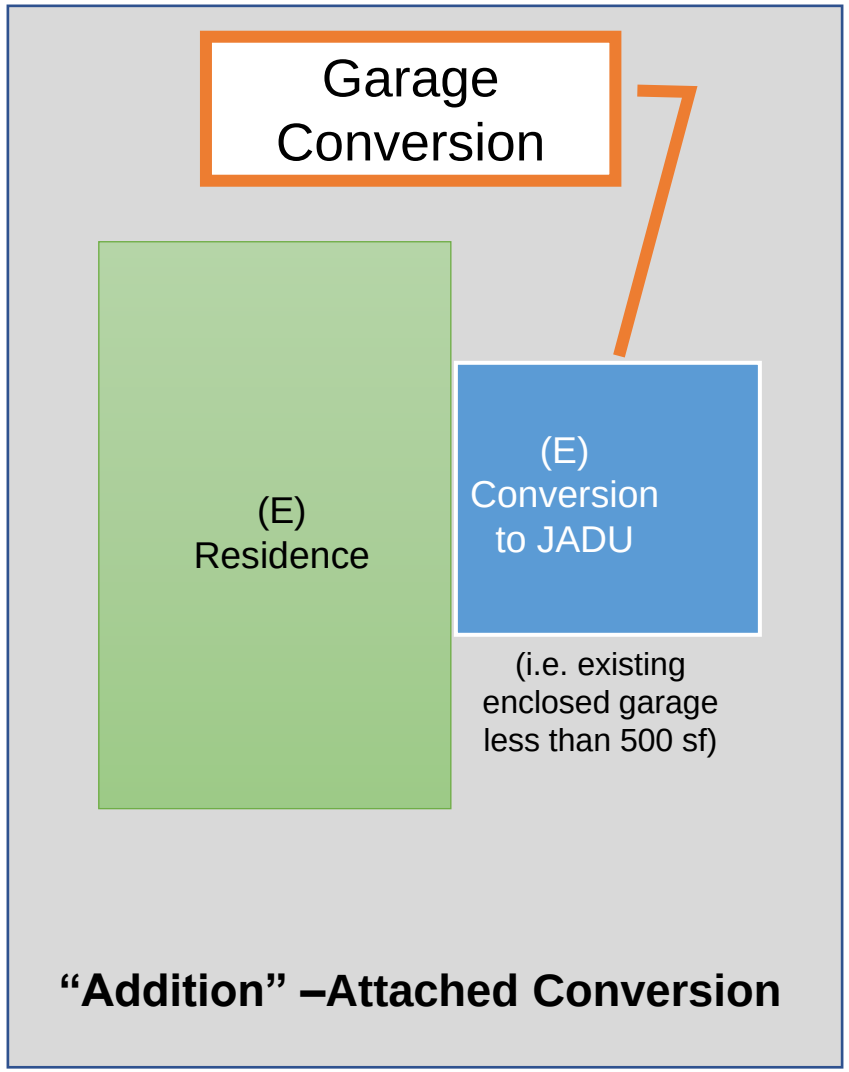


“Addition” –Attached Conversion



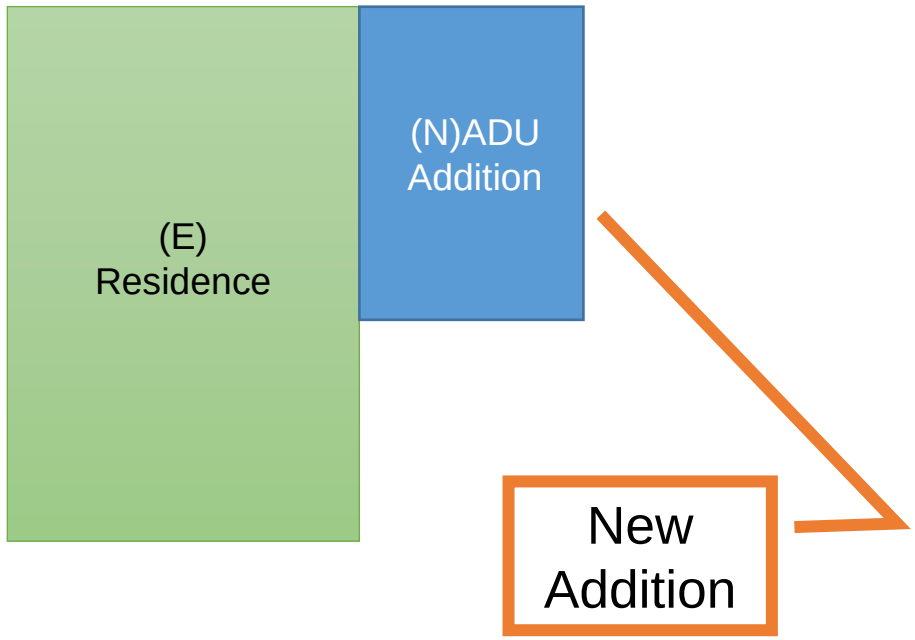
“Addition” –Detached Conversion

Conversions are considered “Additions” under the Energy Code



Junior ADU (JADU) – Conversion of attached garage

ADU Additions under the Energy Code



New Addition –Attached

Section 150.2(a) Additions

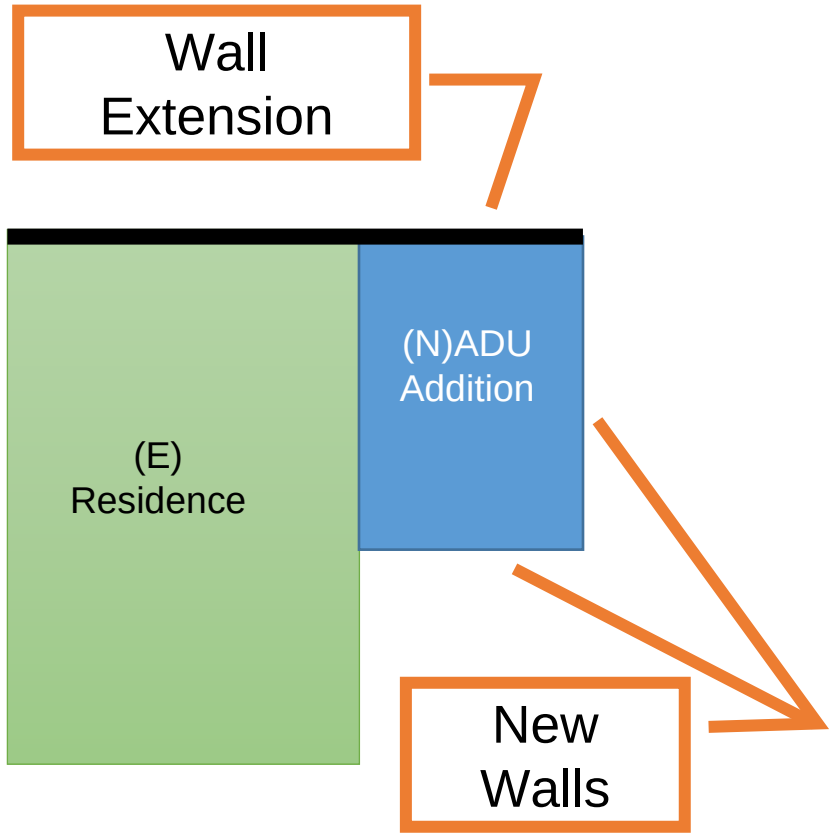
Envelope
- Wall Extension/Exemptions and Mandatory Min Insulation might apply

Ventilation (IAQ –Indoor Air Quality)
- New dwelling units that are additions to an existing building shall have mechanical ventilation

Mechanical Heating and Cooling
- ADU may ***not share return air with the primary dwelling*** through the heating or cooling system.
- Separate thermostats

Domestic Hot Water
- Electric and gas options

Envelope:
ADU Additions –some (N) walls might qualify as a Wall Extension



New Addition Attached

Sec 150.2(a)1 Prescriptive Additions
Must follow Section 150.1(c), with *modifications*:

Under Section 150.2(a)Ai or Biii:
Extensions of existing wood-framed walls may retain the dimensions of the existing walls and shall install cavity insulation of R-15 in a 2x4 framing and R-21 in a 2x6 framing.

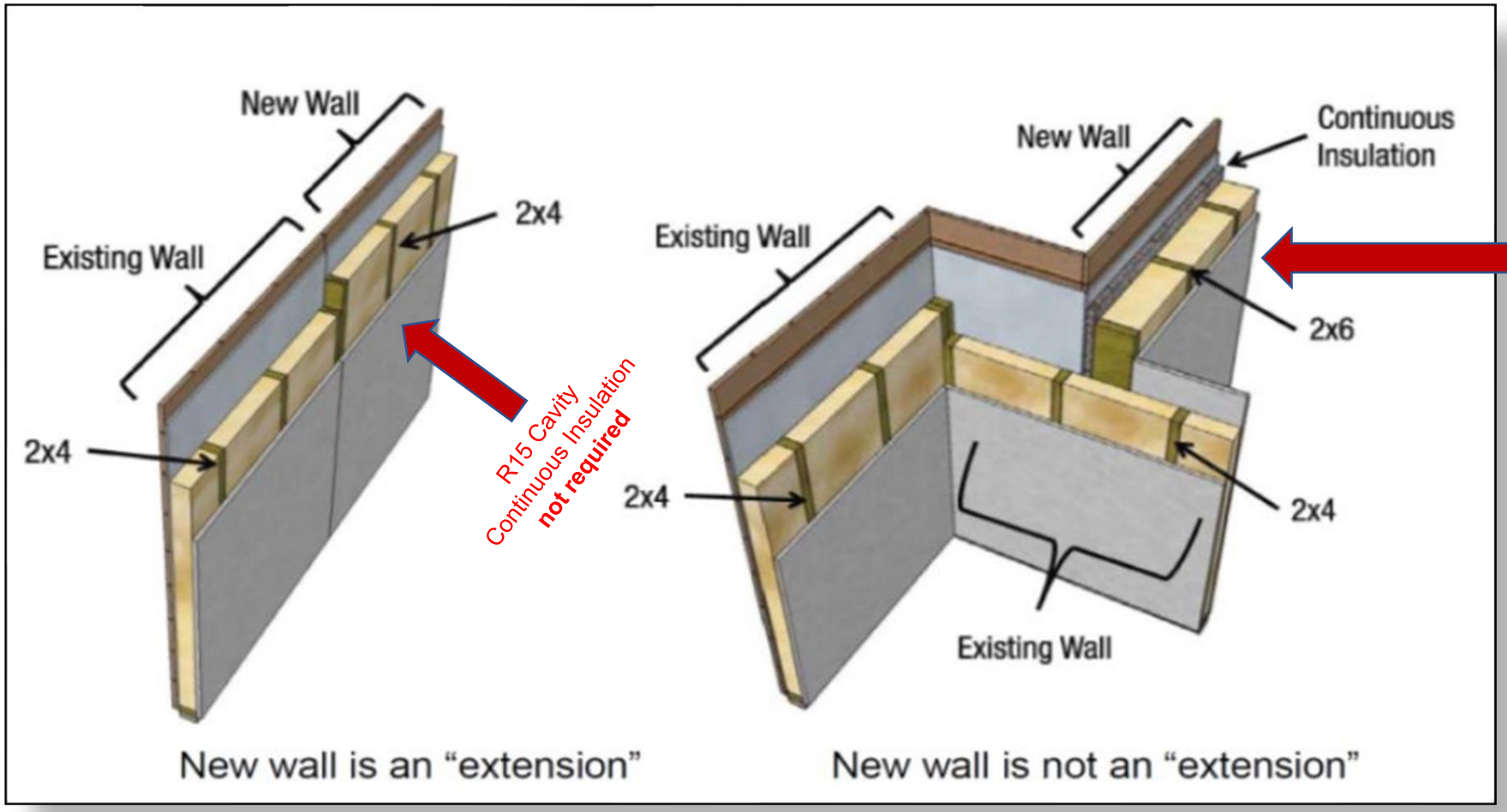
Otherwise...

Sec 150.1(c) Prescriptive Component –Walls:

Framed exterior walls shall be insulated such that the exterior wall has an assembly U-factor equal to or less than that shown in TABLE 150.1-A or B...

See next slide...

Wall Extension –Where a (N) Wall *aligns* with an (E) Wall



Continuous Insulation is required Prescriptively.

This could be a cavity filled R-21 batt with R-5 continuous. (U- 0.048)

Image from CEC's BluePrint

Wall Extension: R-15 for 2x4 walls and R-21 for 2x6 walls

Prescriptive Envelope (Baseline for Performance Method)

TABLE 150.1-A COMPONENT PACKAGE – Single-Family Standard Building Design

Single-Family				Climate Zone														
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Building Envelope Insulation																			
Building Envelope	Roofs/Ceilings	Option B (meets 150.1(c)9A)	Below Roof Deck Insulation1,2 (With Air Space)	NR	NR	NR	R 19	NR	NR	NR	R 19	R 19	R 19	R 19	R 19	R 19	R 19	R 19	19
			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				8
			Radiant Barrier	NR	REQ	REQ	NR	REQ	REQ	REQ	NR	NR	NR						
		Option C (meets 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						
			Radiant Barrier	NR	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	R		REQ	REQ	REQ	NR
	Walls	Above Grade	Framed3	U 0.048	U 0.048	U 0.048	U 0.048	U 0.048	U 0.065	U 0.065	U 0.048	U 0.048	U 0.048	U 0.048	U 0.048	U 0.048	U 0.048	U 0.048	U 0.048
			Mass Wall Interior4,5	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.059 R 17
			Mass Wall Exterior4,5	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.125 R 8.0	U 0.077 R 13
		Below Grade	Below Grade Interior6	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.077 R 13	U 0.067 R 15
			Below Grade Exterior6	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.200 R 5.0	U 0.100 R 10	U 0.100 R 10	U 0.053 R 19

So… Remind me…
What does U 0.048 and U 0.065 look like?

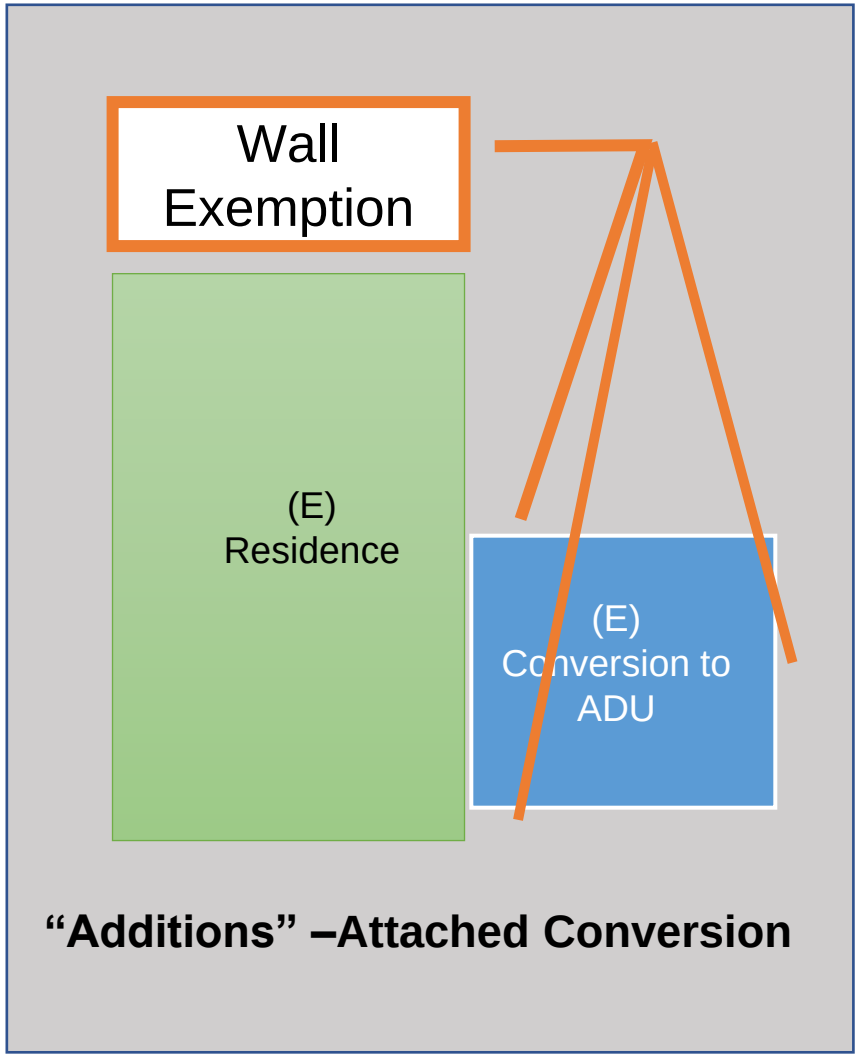
Translation...
Walls Assemblies Meeting Prescriptive U-0.065 and U-0.048

Table 3-10: Examples of Wood-Framed Wall Assemblies and U-Factors, Assuming Gypsum Board Interior

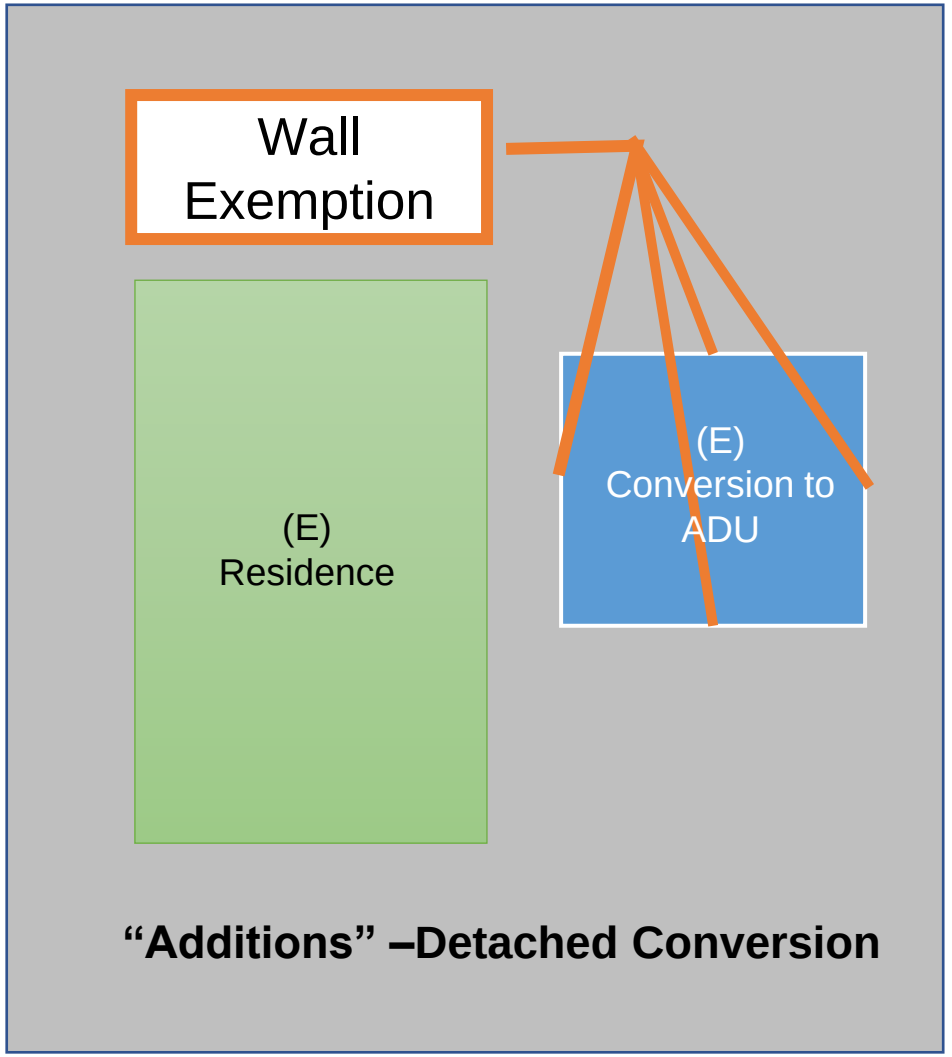
Stud (16" oc)	Cavity Insulation	Cavity Insulation Type	Exterior Insulation	U-Factor	
2x4	R15	High density batt	R4	0.065	← CZ 6,7
2x4	R13	Open-cell spray foam (ocSPF)	R5	0.064	
2x4	R15	High density batt	R8	0.050	
2x6	R21	Loose-fill cellulose or high density batt	R4	0.051	
2x6	R19	Low density batt	R5	0.051	
2x6	R31	Closed-cell spray foam (ccSPF)	R2	0.049	
2x6	R23	High density batt or mineral wool	R4	0.049	
2x6	R21	Loose-fill cellulose or high density batt	R5	0.048	← CZ 1-5 CZ 8-16
2x6	R19	Low density batt	R6	0.048	
2x6	R23	High density bat or mineral wool	R5	0.047	

Note: Under the Performance Method projects will have to find trade-off credit to remove the CI.

Envelope:
Additions –Conversions (E) walls *may* qualify for an Exemption



“Additions” –Attached Conversion



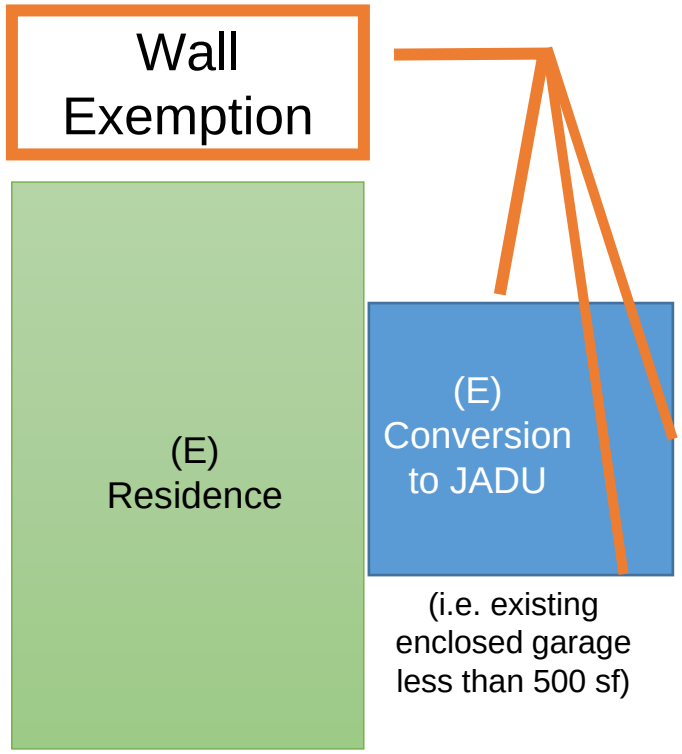
“Additions” –Detached Conversion

Under Section 150.2(a)Aiii or Bvi:

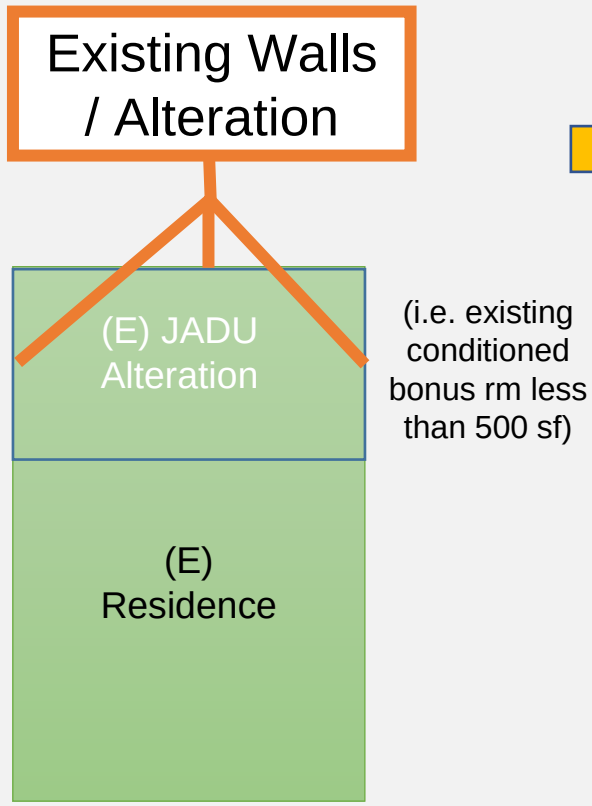
When **existing siding** of a wood-framed wall is **not being removed** or replaced, cavity insulation of R-15 in a 2x4 framing and R-21 in a 2x6 framing shall be installed and continuous insulation is ***not*** required.

Junior ADU (JADU) –within the 'walls' of an Existing Residence

...same as previous slides, Section 150.2(a)



"Addition" –Attached Conversion



Alteration

Section 150.2 (b) Alterations

Wall Exemption to Mandatory Measure (Sec 150.0) Insulation for a 2x4 framed wall might apply

- **EXCEPTION to Section 150.0(c)1:** Existing walls already insulated to a U-factor not exceeding U-0.110 or already insulated between framing members with insulation having an installed thermal resistance of R-11 or greater.

Indoor Air Quality (IAQ) Ventilation

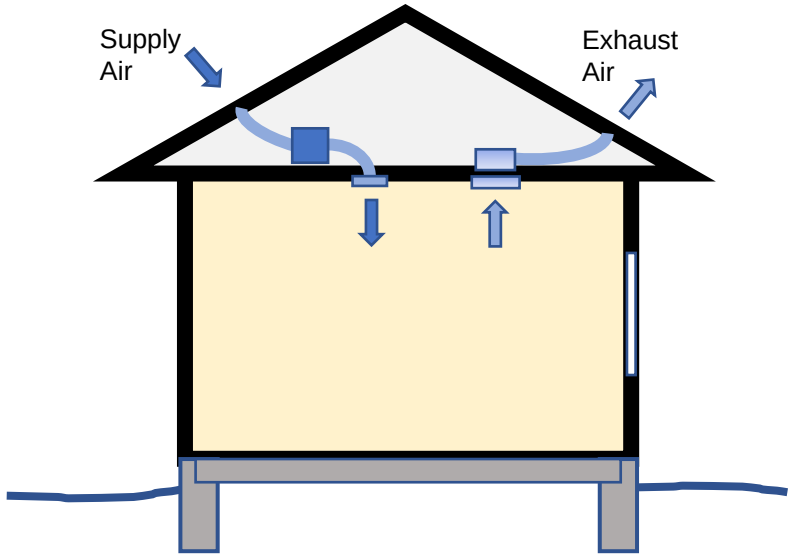
Energy Code Says:
New dwelling units that are additions to an existing building shall have mechanical ventilation airflow provided in accordance with Sections 150.0(o)1C, 150.0(o)1E or 150.0(o)1F as applicable. The mechanical ventilation airflow rate shall be based on the conditioned floor area of the new dwelling unit.

Translation...

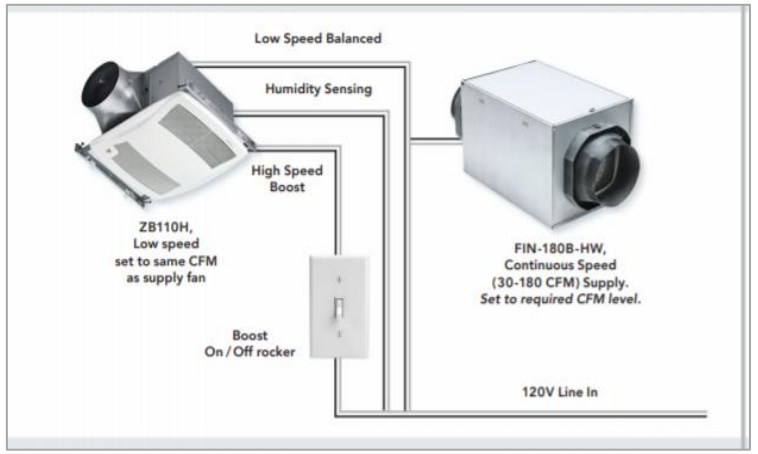
Follow ASHRAE 62.2

Single Family and Detached use supply, exhaust or balanced ventilation

Multi-Family and Attached use balanced ventilation **OR** comply with dwelling unit air-pressure **boundary sealing and acceptance testing**



Balanced Ventilation



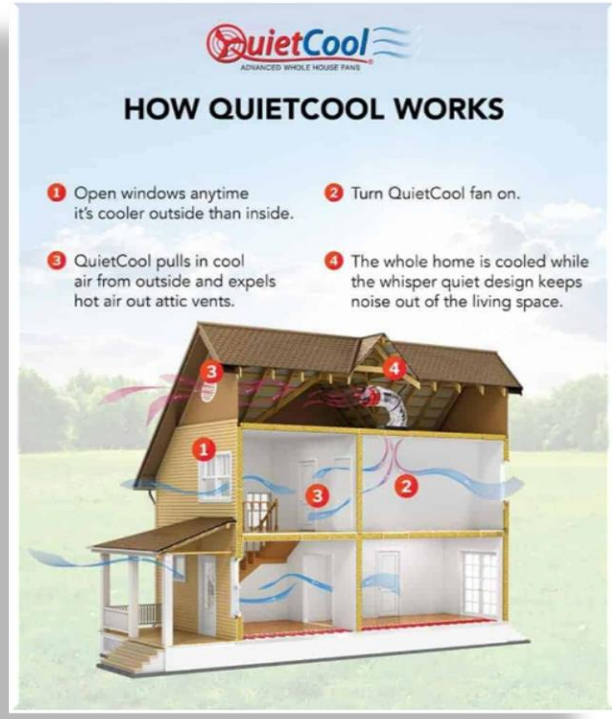
https://www.broan-nutone.com/

Balanced Ventilation with Heat Recovery

Panasonic ERV

Ventilation Cooling with a Whole House Fan (WHF)
CZ's 8-14 Prescriptive Requirement (or Performance Baseline)

Exception to section 150.1(c)12: New dwelling units with a conditioned floor area of **500 square feet or less** shall **not** be required to comply with the WHF requirements.



Quiet Cool


Quiet Air Deluxe

Additions –both JADU's and Attached ADU's

Space heating system: New or replacement space heating system serving an addition may be a **heat pump** or **gas heating** system.

Indoor Unit Wall Mount

One to one heat pump with programable thermostat

Outdoor Unit / Condenser

Important Reminders –Heating and Cooling for ADU's

- ADU's may ***not share return air with the primary dwelling*** through the heating or cooling system.
- **Separate thermostats** are required

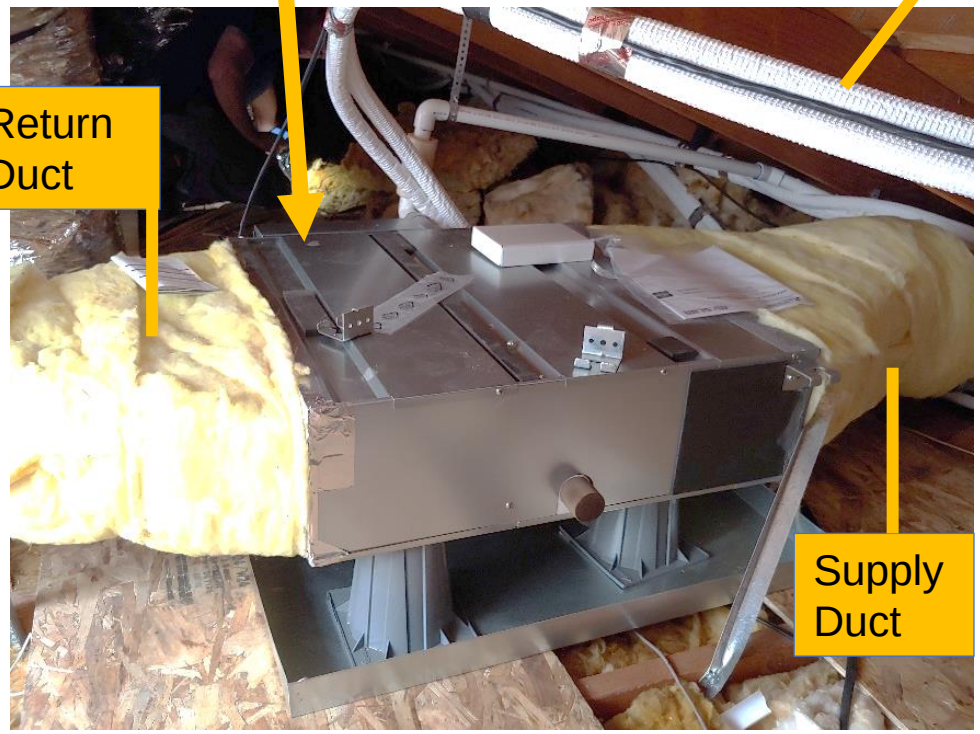
Mini-Split Raised Floor Example

- Mini-Split system heat pumps can offer a straight forward solution
- Condenser can be ground or wall mounted
- One condenser can be shared by the main dwelling and the ADU
- Each dwelling has its own indoor unit and thermostat

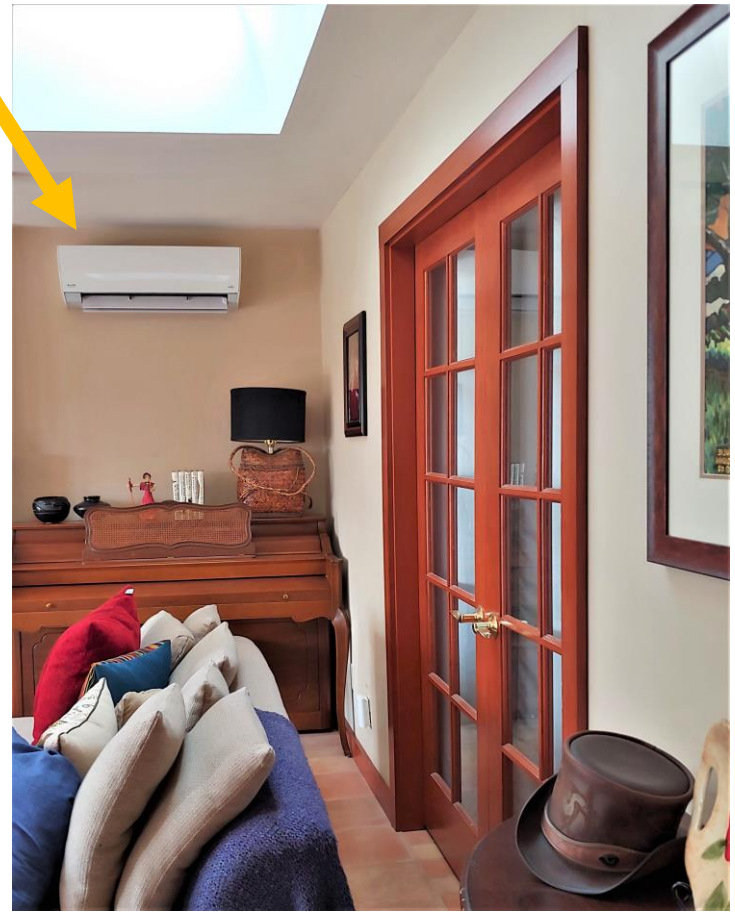
Line Set

Indoor Options: Each indoor unit has its own thermostat and return/supply air systems

Compact Ducted Fan Coil



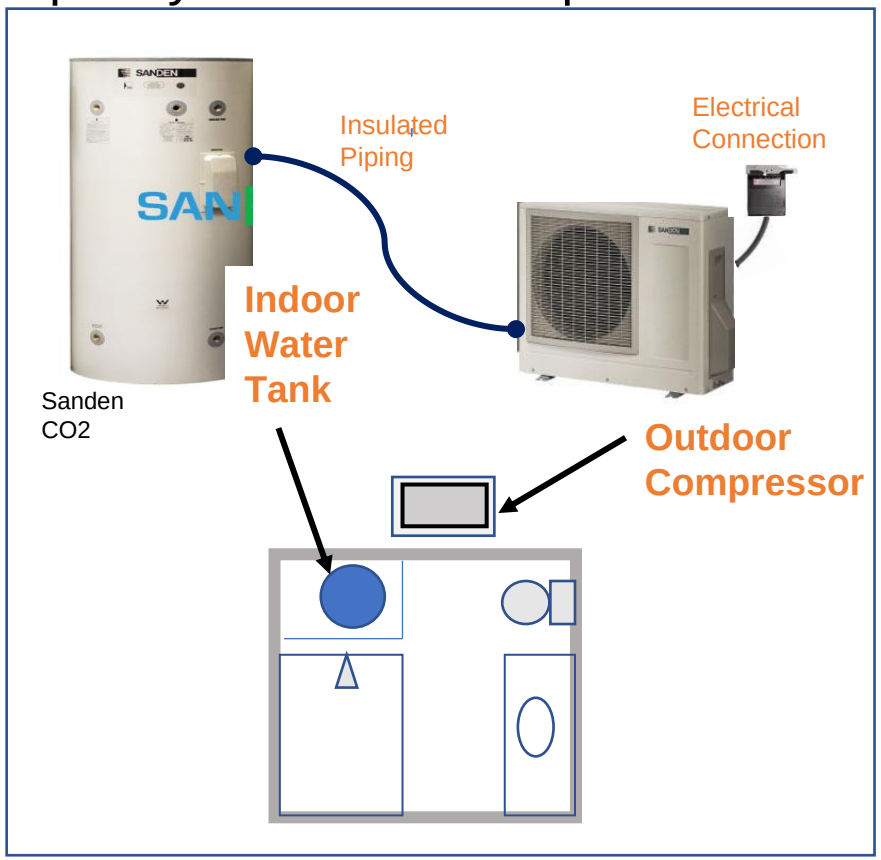
Ductless Wall Mount



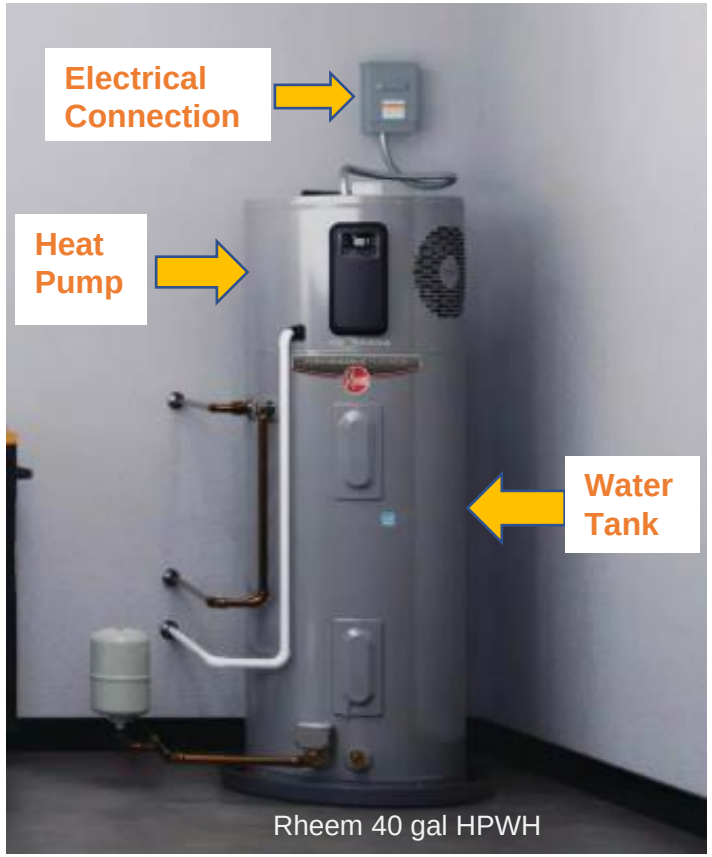
New Construction or Additions with Second Water Heater

- 240V **heat pump water heater HPWH** NEEA Tier 3 or higher
- A **gas or propane instantaneous water** heater with an input of 200 kBtu/h or smaller –no tank

Split System Heat Pump



Integrated Heat Pump



Gas On-Demand

Reminder: A gas/propane tankless unit is allowable under the **Performance Method** for **new construction**.

New Construction and Additions with Second Water Heater

New:

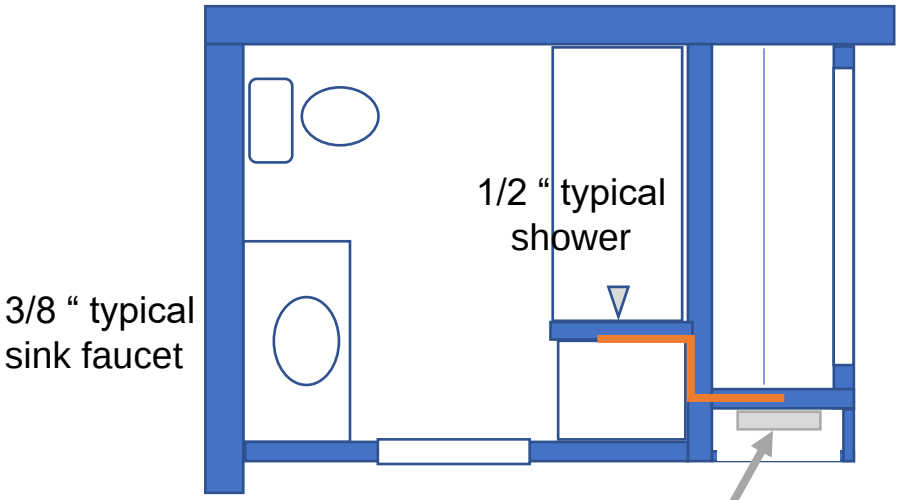
- A **120V HPWH** may be installed in place of a 240V HPWH for **new dwelling unit with 1 bedroom or less.**

New:

- For additions and dwelling units that are **500** sq ft or less, an **instantaneous electric water heater** with ***point of use distribution*** as specified in RA4.4.5 is allowable

Major Change from 2019 Code: **POU** Electric tankless for **500 sf** or less

Point of Use (POU) -Second Water Heater, Addition < 500sf



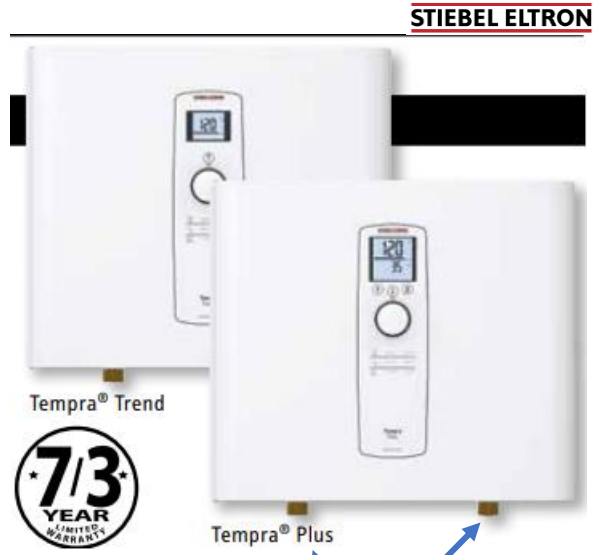
Instantaneous electric water heater with ***point of use distribution***

Table 4.4.5

Size Nominal (Inch)	Length of Pipe (feet)
3/8”	15
1/2”	10
3/4”	5

Line size vs Length for each run

Other considerations: electric panel size and breaker(s); flush out /filter cleaning



¾” lines connection typical

HER Verification required for pipe insulation.

Summary

ADU are viable affordable housing option. The Energy Code has been updated to remove barriers to building ADUs.

- HCD Handbook “mainstream” definitions vs. the Energy Code definitions by project scope.
- ADUs per the Energy Code will fall under new construction, addition, or alteration project scopes.
- Compliance Pathways are either Prescriptive or Performance.
- ADUs are especially suited for an all-electric compliance pathway.
- Special considerations:
- IAQ – Ventilation
- Electric-Ready
- Heat pump water heaters
- Mini-splits
- Solar PVs

Closing

- Continuing Education Units Available
  - Contact shuskey@co.slo.ca.us for AIA HSW and ICC LUs
- Coming to Your Inbox Soon!
  - Slides, Recording, & Survey – Please Take It and Help Us Out!
- Upcoming Courses:
  - HRVs and ERVs for Passive House Applications (10/25)
  - Shifts in Power: Ensuring the IRA, 2022 Energy Code, and California's Climate Policies Benefit the Tri-County Region! (11/9)
  - 2022 Energy Code Preview for Single Family Projects (11/10)
  - How to Assess a Home for Electrification (11/15)
  - 2022 Energy Code Preview for Multifamily Projects (11/17)
  - 2022 Energy Code Preview for Nonresidential Projects (12/1)
  - Communicating the Value of High Performance (Ongoing Invitation)
  - Become a HERS Rater (Ongoing Invitation)

Thank you!

For more info:
3c-ren.org

For questions:
info@3c-ren.org

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