



Sacramento Valley Association of Building Officials

Minutes of the October 14, 2022 SVABO General Meeting Host City: City of Sacramento

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Jon May, CBO
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County of Nevada
County of Placer
County of Plumas
County of Sacramento
County of Sutter
County of Tehama
County of Yuba
Town of Loomis
Town of Paradise

1. Call meeting to order

Meeting called to order by Board President Henderson (BPH) at 10:05 a.m. with 22 people in attendance and 12 people online.

2. Thank you to host

BPH welcomed the host.

3. Welcome by host

Bridgette Williams (City of Sacramento) welcomed the group.

4. Flag salute

Led by Rick Kelley (City of Citrus Heights).

5. Self-introductions

Self-introductions of Officers, Board members and all in attendance.

6. Review of September 9 Meeting Minutes

Motion to approve meeting minutes by Greg Mahoney. Seconded by Rick Kelley. Approved by unanimous vote.

7. Executive Board Reports:

a. Secretary/Treasurer Report — Roxanna Recinos-Serna

- i. Total liabilities and equities as of September 30, 2022: \$66,515.15.

b. Vice-President's Report – Jon May

- i. Announcements. StarChapter (new membership management software) is not a management company but rather a platform. SVABO will become a self-managed organization.
- ii. Next November meeting will be hosted by the City of Rancho Cordova on November 18, 2022. Group decided to push meeting to the third Friday in November so as not to coincide with Veteran's Day Holiday.
- iii. Tickets available for purchase for 50/50 raffle.

c. President's Report – Nick Henderson

- i. ICC ABM – Chapter Merit Award. BPH thanked Will Foote for attending ICC's conference.
- ii. StarChapter report/SMA. New platform will go live early November. SMA's contract to end the first week of November.

d. Past-President's Report – Michelle Toledo (absent)

BPH announced that in lieu of past president, Greg Mahoney to look into recruiting new board member for new 2023 year.

8. Code Quiz – Bill Rodgers (absent)

9. Committee Chair Reports

a. Code Review and Development – Jay Hyde

Committee's next meeting scheduled for Friday, October 21 at 9:00 a.m. in person and optional virtual platform.

b. Education Committee – Terry Knox

Terry reported on the latest events, see attachment.

c. Outreach Committee – Rick Kelley

Reported on project for elderly couple lead by Greg Anderson. General Services Department coordinating with landscape trimming services and restroom remodel; sandwich shop to donate lunch; coordinating efforts with volunteers.

Greg is making contact with the Overcomer's Program to coordinate on projects and do outreach projects.

d. Scholarship Committee – Don Wilden

Reported committee started the application review process for the Bob Stoddard Memorial Scholarship. Two applicants selected and given \$2,500 scholarship each.

e. Permit Technician Committee – Megan Gideon

Reported committee's next virtual meeting will be mid-November. Will continue the Permit Tech's chat and discuss subjects to provide better consistency.

f. Event Committee – Andrea Coley (absent)

BPH reported the installation dinner is confirmed for December 10, 2022 at Lake Natoma Inn in Folsom. Group was encouraged to start making reservations.

g. Technology Committee – Joe Cuffe

Reported the new "owl 360" features (video conferencing camera) is now working.

10. Agency Reports

a. CALBO – Jay Hyde

No report.

b. California Energy Commission – Erik Jensen (absent)

See attachment.

c. ICC – Susan Dowtey

Reported on latest ICC's events. Also see email below.

Dear California Chapter Officers:

Happy October! I hope everyone is doing well. Please [click here to download your October edition](#) of the ICC Government Relations Monthly Update with some highlights listed below:

- Click [here for election results](#) and [here for award winners](#) at the recent 2022 ICC Annual Conference in Louisville, KY. Congratulations to the Sacramento Valley Association of

Building Officials (SVABO), recipient of the Chapter Merit Award and Geoff Simmons, Chief Building Official for the City of Pleasant Hill, recipient of the Innovation of Code Administration Award!

- Click [here for update](#) on the Group B Public Comment Hearings and online voting dates.
- Oct 4: "[Using Grant Funding to Build Resistance](#)" webinar
- Oct 20: "[Introduction to Laserfiche for Building Officials](#)" webinar
- Oct 24: Application deadline for these [Councils and Committees](#)
 - * BCAC Building Code Action Committee
 - * FCAC Fire Code Action Committee
 - * PMGCAC Plumbing, Mechanical & Fuel Gas Code Action Committee
 - * SEHPCAC Sustainability, Energy & High Performance Building Code Action Committee
 - * Compliance Code Action Committee (ES/IAC/SRCC)
 - * Codes and Standards Council
- Oct 31: Application deadline for [Exam Development Committees](#)

Mike Reach, ICC Region 1 Radio

Reported podcast offers up to 23 episodes available in different platforms - Spotify, YouTube, Apple Podcasts. Region 1 is made up of three states California, Hawaii and Nevada including 32 ICC Chapters. Radio 1 is dedicated to excellence in education and engagement at the Local, Regional, National, and International levels, promoting a safer environment for all by bringing together individuals engaged in the Administration, Enforcement, and Implementation of all codes related to the built environment.

d. HCD – No report

e. DSA – No report

f. CSLB – No report

g. CBOAC – Andrea Coley (absent)

BPH reported next year's Annual Business Meeting (ABM) is scheduled to be in Monterey. No date has been set yet.

h. CBSC – Beth Maynard, Outreach Volunteer (beth.maynard@dgs.ca.gov)

Standards Commission working on intervening 2022 code cycle. Proposing amendment in CalGreen on carbon reduction, PV updates, further design elements. For Plumbing Section Part 5, proposing an all-gender multi-user restroom. Also working on Part 10 items. Education video on ordinance update being shared with her and Stuart Tom.

i. CalFire – No report

11. Old Business – None

12. New Business –

Greg Mahoney is currently drafting a letter opposing embodied decarbonization efforts. SVABO will support his effort in opposition for the following reasons including effort lacks cost benefit analysis, compromises structural components, and how far will this effort take the construction/design communities. Proposes code changes should be directed to an environmental impact report.

13. Announcements – New positions announced:

Deputy Executive Director for CBSC (see posting under CalCareers)
Sr. Building Inspector, City of West Sacramento
Permit Technician, Wildan

Building Inspector I, City of Auburn

14. 50/50 Raffle – None for today

15. Today's Program – by Christopher Olvera, California Energy Commission
Topic: 2022 Energy Code Update, Single-Family (see attachment)

16. Lunch

16. Adjourn
Meeting adjourned at 12:34 p.m.

Respectively Submitted,
Roxanna Recinos-Serna
SVABO Secretary/Treasurer



Updates

CALIFORNIA ENERGY COMMISSION

SVABO Monthly Meeting

October 2022

Updates

- **Resilient and Efficient Codes Implementation (RECI) Funding Opportunity webinar** on October 14 to solicit input from local authorities having jurisdiction (AHJs) and other interested parties on federal funding proposal ideas.
- **Blueprint #139 July-Sept 2022** now available. Topics include:
 - 2022 Energy Code: Single-Family Summary
 - Q&A
 - ESS Ready for ADUs
 - Single-Family Water Heating Alterations
 - Single-Family Water Heating for ADUs
 - Single-Family Ceiling Insulation Alterations
 - Single-Family Lighting
- Statewide Reach Codes Team has published a new **Single Family New Construction Cost Effectiveness Study** with cost-effectiveness analyses for new detached single family and detached ADUs.
- **CalAPP** application window open until May 1, 2023. Grants between \$40,000 to 100,000 are available. See attached flyer.
- **2025 Energy Code stakeholder workshops** to be held by the Statewide Codes and Standards Enhancement (CASE) team on October 25 and 27
- **Business meeting agendas and recordings.**
 - September 14: Local ordinance approved for City of Los Angeles
 - Next business meeting: October 12
 - Proposed resolution approving National Environmental Management Institution Committee (NEMIC)'s proposed amendments to its ATTCP application in compliance with the 2022 Energy Code
 - Certification of the updated 2022 Single-Family Residential and Nonresidential & Multifamily ACM Reference Manuals, which document the modeling methods used in the 2022 compliance software.
 - Certification of the updated 2022 public domain residential, nonresidential, and multifamily software (CBECC-Res 2022.2.0 and CBECC 2022.2.0)

Energy Code Training and Events

- **Energy Commission training and events**
 - October 10-13: CALBO Education Week (Ontario): Training and Exhibit Booth
 - October 14: CEC Webinar – DOE Resilient and Efficient Codes Implementation (RECI) Funding Opportunity Announcement
 - October 20-22: InterNACHI Professional Inspectors Convention (Ontario) – Training and Exhibit Booth

- October 27: CALBO Disneyland Architects and Engineers (Anaheim): 2022 Energy Code Significant Changes
- **Energy Code Ace training – new 2022 materials**
- **BayREN training**
 - October 13: **2022 Energy Code Changes – Single Family**
 - October 20: **2022 Energy Code Changes – Multifamily**
 - October 26: **Residential Energy Standards - Accessory Dwelling Units (ADU)**
- **3C-REN training - new 2022 materials**
 - pOctober 17: **Carbon Free Homes: Features, Benefits, Valuation**
 - October 20: **2022 Energy Code: Accessory Dwelling Units (ADUs)**
- **PG&E training**
- **Southern California Edison training**
- **Local Energy Code resources - new 2022 materials**

Energy Code Resources

- **Online Resource Center**
- Energy Standards Hotline: **email** or call 800-772-3300.
- **2022 Energy Code Compliance Software**
- **2025 Energy Code**

To receive regular updates, sign up and respond to the confirmation email:

- **Blueprint Newsletter email list**
- **Building Standards email list**
- **Appliance Standards email list**

SACRAMENTO VALLEY ASSOCIATION OF BUILDING OFFICIALS
CODE DEVELOPMENT COMMITTEE

MEETING MINUTES
SEPTEMBER 32, 2022

LOCATION:
ZOOM/MOGAVERO ARCHITECTS
1331 T STREET
SACRAMENTO, CA 95811

Call to Order: 8:32 AM

1. Attendees:

Bill Rodgers, BPR, Co-Chair
Jay Hyde, Mogavero Architects, Co-Chair
Kathleen Holmes, City of West Sacramento, CA
Paul Menard, UCD Healthcare
Steve Stokes, City of Sacramento
Michael Bernino, City of Sacramento
Adam Kingsley, Butte County
Roxanna Recinos-Serna, City of West Sacramento

2. The meeting was a check in on progress toward developing a spreadsheet of significant changes to the California Codes. During the August meeting the following volunteers agreed to review the sections identified:

CBC Chapter 2:	Kathleen Holmes
CBC Chapter 3:	Paul Menard
CBC Chapter 4:	Paul Menard
CBC Chapter 5:	Steve Stokes
CBC Chapter 6:	Steve Stokes
CBC Chapter 7:	Adam Kingsley and Jordan Dbgrunhen
CBC Chapter 8:	Adam Kingsley and Jordan Dbgrunhen
CBC Chapter 9:	Adam Kingsley and Jordan Dbgrunhen
CBC Chapter 10:	Bill Rodgers
CBC Chapter 11A:	Paul Menard
CBC Chapter 11B:	Paul Menard
CBC Chapter 12:	Steve Stokes
CBC Chapter 14:	Will Foote
CBC Chapter 15:	Will Foote
CBC Chapter 17:	Bill Rodgers
CBC Chapter 18:	Bill Rodgers

CBC Chapter 24: Jay Hyde
CBC Chapter 25: Jay Hyde
CBC Chapter 26: Jay Hyde
CBC Chapter 31: Adam Kingsley

IRC: Bill Rodgers has a staff person working on changes to the IRC that he will make available when complete.

CalGREEN CH 4 & 5: Jay Hyde

The work will be done through an on-line spread sheet that Bill Rodgers created and shared. Several individuals had difficulty with accessing the spread sheet. Rodgers volunteered to direct his staff to compile the spread sheet once various volunteers submitted their work.

3. Calendar and other issues:

- a. Will Foote has attended the ICC Group B Code Hearings in Louisville, KY
- b. CalBO ED has concluded with the ICC "Significant Change Monographs" still unavailable.
- c. Jay Hyde to share information about the LA Basin Chapter's spread sheet.
- d. LA Basin ICC (Homer Mail, Ali Hamidzadeh) requested support.
- e. LA Basin ICC Consensus Recommendation spread sheet should be available

4. Next Committee Meeting: October 21, 2022

- i. We will work on virtual and live options.
- ii. The idea is to move the meetings around to allow staff to participate.

END



THE MISSION OF SVABO IS TO PROMOTE EFFECTIVE
BUILDING CODES, ENFORCED UNIFORMLY, TO CREATE A
SAFER BUILT ENVIRONMENT.



SVABO Education Monthly Report for October 2022

Here is what we have been up to:

- **October 19th – 20th, 2022, Two half-Day
Electrical Inspection Four-hour Webinar – 48
attendees**

Future

- **Thursday December 8th Folsom CA, full day in
person class - (Mike Stone) Analysis of Changes
to the 2022 California Electrical Code (based on
2020 NEC)**
- **Wednesday, February 15, 2023 and Thursday,
February 16, 2023 Rancho Cordova City Hall two
back to back full day in person class (Paul
Armstrong) 2022 California Significant Changes**

- **The dates for the 2023 Education Institute will be May 22 through May 25, and we are providing five classes and workshops each day for a total of 20 class-days. As in the past, we hope to start advertising for the 2023 Education Institute in January 2023.**

Should you have concerns, or question please contact us.

Respectfully submitted,

Terry Knox, MBA, CBO

Steve Burger, CBO, LEED AP

2022 Energy Code Update

Single-Family



California Energy Commission
Christopher Olvera
SVABO Chapter ICC
October 14, 2022



Agenda

- 2022 Energy Code basics
- All buildings overview
- Single-family updates – mandatory
- Single-family updates – prescriptive
- Single-family – additions and alterations
- Resources



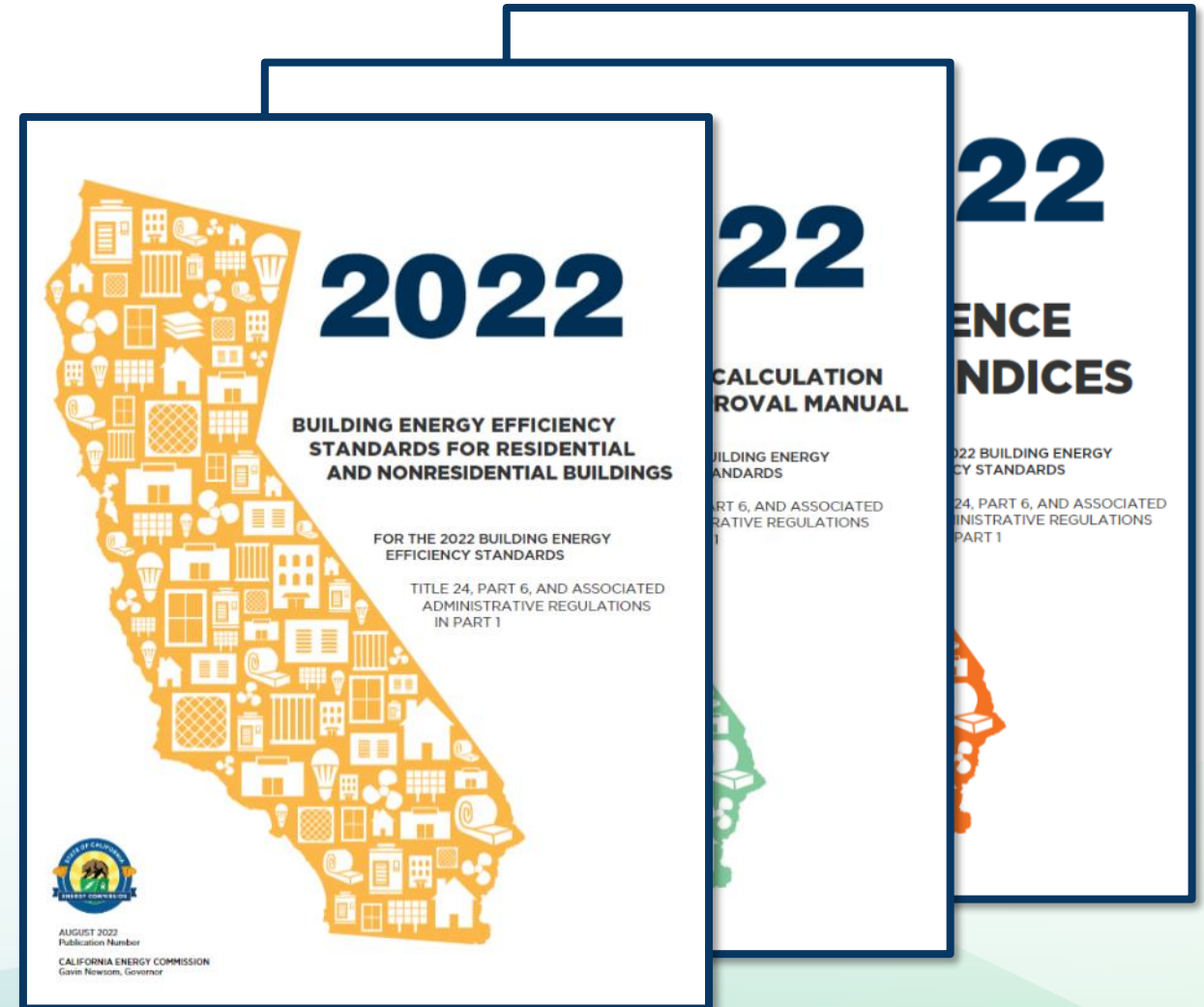
2022 Energy Code Basics



2022 Energy Code

Effective January 1, 2023

- Building permit applications submitted on or after effective date
- Must use 2022 software and forms





2022 Documents Online

2022 Building Energy Efficiency Standards

The Building Energy Efficiency Standards (Energy Code) apply to newly constructed buildings, additions, and alterations. They are a vital pillar of California's climate action plan. The 2022 Energy Code will produce benefits to support the state's public health, climate, and clean energy goals.

The California Energy Commission (CEC) updates the Energy Code every three years. On August 11, 2021, the CEC adopted the 2022 Energy Code. In December, it was approved by the California Building Standards Commission for inclusion into the California Building Standards Code. The 2022 Energy Code encourages efficient electric heat pumps, establishes electric-ready requirements for new homes, expands solar photovoltaic and battery storage standards, strengthens ventilation standards, and more. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.



[2022 ENERGY CODE >](#)

Expand All

Supporting Documents - Appendices, Compliance Manuals, and Forms

Software - Compliance Software, Manuals, and Tools

BUILDING ENERGY EFFICIENCY STANDARDS - TITLE 24

- 2022 Building Energy Efficiency Standards
- 2022 Building Energy Efficiency Standards
— Workshops, Notices, and Documents
- 2020 Building Energy Efficiency Standards
- 2016 Building Energy Efficiency Standards
- Past Building Energy Efficiency Standards
- Climate Zone tool, maps, and information supporting the California Energy Code
- Online Resource Center
- Solar Assessment Tools

RELATED LINKS

Workshops, Notices, and Documents

CONTACT

[Building Energy Efficiency Standards - Title 24](#)

Toll-Free in California: 800-772-3000
Outside California: 916-654-5496

SUBSCRIBE

Building Energy Efficiency Standards

Email *

SUBSCRIBE

- Energy Code
- Reference Appendices
- Compliance Manuals
- Software
- Forms



Energy Design Rating Performance Requirements

Single-family § 150.1(b)1

Updated energy design ratings (EDR)

- EDR1 is based on source energy
 - Source EDR
- EDR2 is based on TDV energy
 - Efficiency EDR
 - Solar electric generation and demand flexibility EDR
 - Total EDR2 accounts for both efficiency EDR and solar electric generation demand flexibility EDR
- Proposed building shall comply separately with EDR1, EDR2 and total EDR



Demonstrating Compliance

Compliance forms confirm Energy Code is met

- Completed by designers, consultants, builders, contractors, technicians, HERS raters, etc.
- Submitted to enforcement agencies for verification

Type of form	Single-family	Multifamily 3 or less habitable stories	Nonresidential Multifamily 4 or more habitable stories
Certificate of compliance	CF1R	LMCC	NRCC
Certificate of installation	CF2R	LMCI	NRCI
Certificate of verification	CF3R	LMCV	NRCV
Certificate of acceptance	-	-	NRCA



2022 Compliance Software

Performance approach compliance use approved versions

- Residential
 - CBECC-Res 2022 v 2.0
 - Feedback and support
 - cbecc.res@energy.ca.gov



All Buildings Overview

Administrative § 10-115

Mandatory § 110.2



Community Shared Solar Administrative Requirements

All Buildings § 10-115

- Updated to enhance community-scale projects as alternative to on-site installation of PV and energy storage systems
- New requirements
 - Participation period
 - CC&Rs
 - Ability to opt-out
 - Size no larger than 20 megawatts
 - Reporting



HVAC Efficiency Mandatory Requirements

All Buildings § 110.2

Minimum efficiency increased

- Various cooling systems
- Cooling towers
- Furnaces
- Boilers

New tables added

- Heat pumps
- DOAS
- Computer room units
- Recovery chillers

TABLE 110.2-B HEAT PUMPS, MINIMUM EFFICIENCY REQUIREMENTS

Equipment Type	Size Category	Rating Condition	Efficiency ^a	Test Procedure ^b
Air Cooled (Cooling Mode), both split system and single package	≥ 65,000 Btu/h and < 135,000 Btu/h		11.0 EER 14.1 IEER	AHRI 340/360
Air Cooled (Cooling Mode), both split system and single package	≥ 135,000 Btu/h and < 240,000 Btu/h		10.6 EER 13.5 IEER	AHRI 340/360
Air Cooled (Cooling Mode), both split system and single package	≥ 240,000 Btu/h		9.5 EER 12.5 IEER	AHRI 340/360
Water source (cooling mode)	≥ 65,000 Btu/h and < 135,000 Btu/h	86°F entering water	13.0 EER	ISO-13256-1
Groundwater source (cooling mode)	< 135,000 Btu/h	59°F entering water	18.0 EER	ISO-13256-1
Ground source (cooling mode)	< 135,000 Btu/h	77°F entering water	14.1 EER	ISO-13256-1
Water source water-to- water (cooling mode)	< 135,000 Btu/h	86°F entering water	10.6 EER	ISO-13256-2
Groundwater source water-to-water (cooling mode)	< 135,000 Btu/h	59°F entering water	16.3 EER	ISO-13256-2 1



HVAC Efficiency Mandatory Requirements *cont.*

All occupancies § 110.2(a)



DOE Requirements

- SEER2/EER2/HSPF2 requirements effective January 1, 2023.

System Type		New SEER	New SEER2	NEW SEER/HSPF	NEW SEER2/HSPF2
Split System AC	AC < 45K Btu/h	14.0 SEER 12.2 EER*	14.3 SEER2 11.7 EER2**	-	-
	AC ≥ 45K Btu/h	14.0 SEER 11.7 EER*	13.8 SEER2 11.2 EER2**	-	-
Split System Heat Pump	-	-	-	14.0 SEER 8.2 HSPF	14.3 SEER2 7.5 HSPF2
Single Packaged Unit	-	-	-	14.0 SEER 8.0 HSPF	13.4 SEER2 6.7 HSPF2

- * 10.2 EER if SEER > 16.0 SEER
- ** 9.8 EER if SEER2 > 15.2 SEER



Single-family Updates

Mandatory §150.0



Single-family Defined

All Buildings § 100.1



Single-family building

- Occupancy group R-3
 - Two or less dwelling units
 - Not multifamily, hotel or motel
- Townhouse
- Occupancy group R-3.1
- Occupancy group U on residential site



Insulation Mandatory Requirements

Single-family § 150.0(a)1

Roof deck, ceiling and rafter roof insulation

- Added roof deck insulation to mandatory requirement
- For climate zones 4 and 8-16
- Maximum U-factor 0.184
- Exception:
 - Ducts and air handler located entirely in conditioned space
 - Air handler in unconditioned space with 12 feet or less of supply duct in unconditioned space



Air-Distribution and Ventilation System Ducts Mandatory Requirements

Single-family § 150.0(m)1B

Duct insulation

- Ducts insulated to R-6.0
- Exception: portions of duct system located in conditioned space below ceiling separating occupiable space from attic
 - Non-insulated portion of duct system located entirely inside thermal envelope
 - Locations that penetrate unconditioned space, draft stopped and air-sealed, connections in unconditioned space insulated to R-6.0
- No duct insulation when duct system is located entirely in conditioned space with HERS verification per Reference Residential Appendix RA3.1.4.3.8



Air-Distribution and Ventilation System Ducts Mandatory Requirements

Single-family § 150.0(m)11-12

Duct system sealing and leakage testing

- Clarify terminology used for air handler airflow
- Updated to reference RA3.1.4.2

Air filtration

- Clarifies make-up air systems must comply same as other supply ventilation systems
- Added air filter racks or grilles be gasketed or sealed to prevent air from bypassing filter



Ventilation and IAQ Mandatory Requirements

Single-family § 150.0(o)1G

Local mechanical exhaust

- Kitchen and bathroom exhaust requirements incorporate ASHRAE 62.2
- Adds Table 150.0-E, Table 150.0-F, Table 150.0-G for ventilation rates and capture efficiency

Airflow rate measurement for local exhaust by the installer

- Clarifies only measurement methods in RA3.7
 - Airflow rate when capture efficiency is used for compliance
 - Table 150.0-H prescriptive duct sizing table may be used for capture efficiency compliance

Sound ratings for local exhaust

- Sound rating to use minimum airflow rates required per § 150.0(o)1G



Ventilation and IAQ Mandatory Requirements

Single-family Tables 150.0-E, 150.0-F

Table 150.0-E Demand-Controlled Local Ventilation Exhaust Airflow Rates and Capture Efficiency

Application	Compliance Criteria
Enclosed Kitchen or Nonenclosed Kitchen	Vented range hood, including appliance-range hood combinations shall meet either the capture efficiency (CE) or the airflow rate specified in Table 150.0-G as applicable.
Enclosed Kitchen	Other kitchen exhaust fans, including downdraft: 300 cfm (150 L/s) or a capacity of 5 ACH
Nonenclosed Kitchen	Other kitchen exhaust fans, including downdraft: 300 cfm (150 L/s)
Bathroom	50 cfm (25 L/s)

Table 150.0-F Continuous Local Ventilation Exhaust Airflow Rates

Application	Airflow
Enclosed kitchen	5 ach, based on kitchen volume
Bathroom	20 cfm (10 L/s)



Ventilation and IAQ Mandatory Requirements

Single-family Table 150.0-G

*Table 150.0-G Kitchen Range Hood Airflow Rates (cfm) and ASTM E3087 Capture Efficiency (CE) Ratings
According to Dwelling Unit Floor Area and Kitchen Range Fuel Type*

Dwelling Unit Floor Area (ft ²)	Hood Over Electric Range	Hood Over Natural Gas Range
>1500	50% CE or 110 cfm	70% CE or 180 cfm
>1000 - 1500	50% CE or 110 cfm	80% CE or 250 cfm
750 - 1000	55% CE or 130 cfm	85% CE or 280 cfm
<750	65% CE or 160 cfm	85% CE or 280 cfm



Ventilation and IAQ Mandatory Requirements

Single-family Table 150.0-H

Table 150.0-H Prescriptive Ventilation System Duct Sizing [ASHRAE 62.2:Table 5-3]

Fan Airflow Rating, cfm at minimum static pressure^f 0.25 in. water (L/s at minimum 62.5 Pa)	≤50 (25)	≤80 (40)	≤100 (50)	≤125 (60)	≤150 (70)	≤175 (85)	≤200 (95)	≤250 (120)	≤350 (165)	≤400 (190)	≤450 (210)	≤700 (330)	≤800 (380)
Minimum Duct Diameter, in. (mm) ^{a,b} For Rigid duct	4 ^e (100)	5 (125)	5 (125)	6 (150)	6 (150)	7 (180)	7 (180)	8 (205)	9 (230)	10 (255)	10 (255)	12 (305)	12 ^d (305)
Minimum Duct Diameter, in. (mm) ^{a,b} For Flex duct ^c	4 (100)	5 (125)	6 (150)	6 (150)	7 (150)	7 (180)	8 (205)	8 (205)	9 (230)	10 (255)	NP	NP	NP

Footnotes for Table 150.0-H:

- For noncircular ducts, calculate the diameter as four times the cross-sectional area divided by the perimeter.
- NP = application of the prescriptive table is not permitted for this scenario.
- Use of this table for verification of flex duct systems requires flex duct to be fully extended and any flex duct elbows to have a minimum bend radius to duct diameter ratio of 1.0.
- For this scenario, use of elbows is not permitted.
- For this scenario, 4 in. (100 mm) oval duct shall be permitted, provided the minor axis of the oval is greater than or equal to 3 in. (75 mm)
- When a vented range hood utilizes a capture efficiency rating to demonstrate compliance with 150.0(o)1Giib, a static pressure greater than or equal to 0.25 in. of water at the rating point shall not be required, and the airflow listed in the approved directory corresponding to the compliant capture efficiency rating point shall be applied to Table 150.0-H for determining compliance.



Ventilation and IAQ Mandatory Requirements

Single-family § 150.0(o)2A-C

HERS verifications

- Whole-dwelling unit ventilation
 - Airflow measurement includes ASHRAE 62.2 specification for balanced airflow rate determination and measurement of systems with multiple operating modes
- Kitchen local exhaust
 - Vented range hoods installed to meet IAQ
 - Adds use of capture efficiency ratings for compliance
- Heat recovery ventilation and energy recovery ventilation
 - Requires verification of HRV or ERV fan efficacy ≤ 1.0 W per cfm



Electric Ready Mandatory Requirements

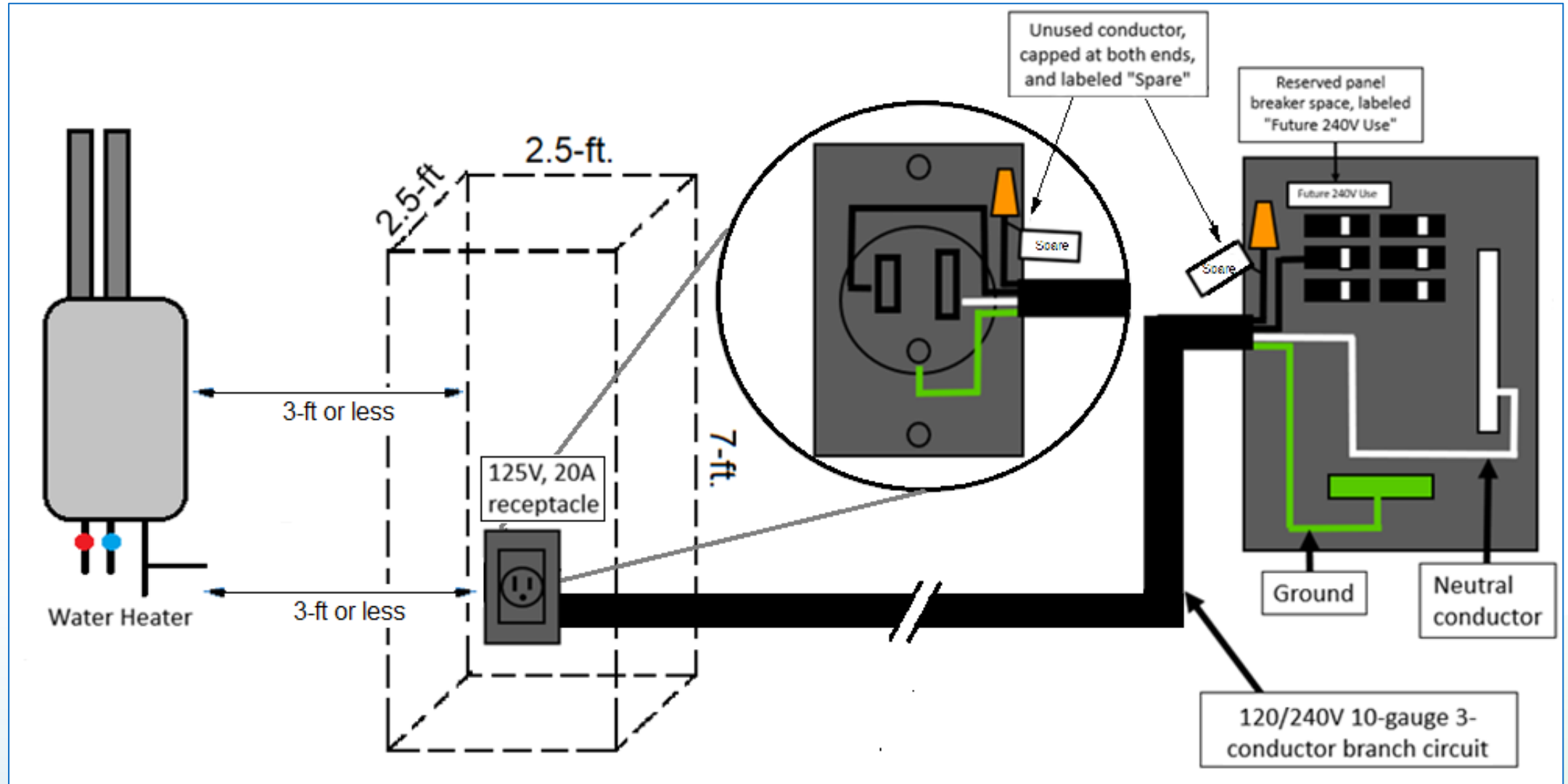
Single-family § 150.0(n)

Water heating system

- If using gas or propane provide designated space for future heat pump water heater at least 2.5 feet by 2.5 feet and 7 feet tall
 - If within 3 feet of water heater
 - 125V, 20A circuit with 120/240V 3 conductor
 - Reserve and label single pole breaker in main panel
 - If more than 3 feet from water heater
 - 240V, 30A circuit with termination 3 feet from designated space
 - Reserve and label double pole breaker in main panel
 - Water lines, both hot and cold, route through designated space before reaching gas or propane water heater
 - Condensate drain

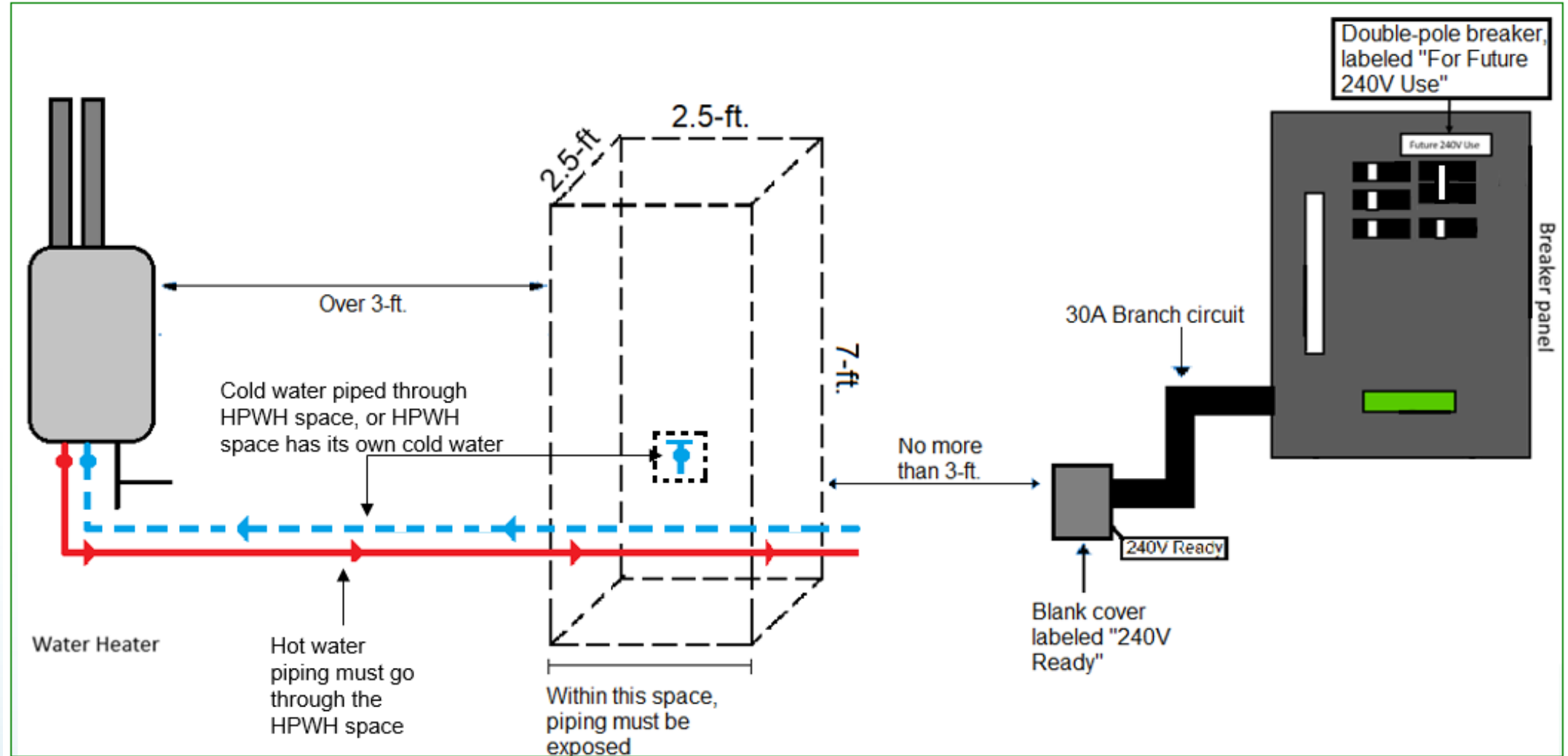


§150.0(n)1A Diagram





§150.0(n)1B Diagram





Energy Storage Systems Ready Mandatory Requirements

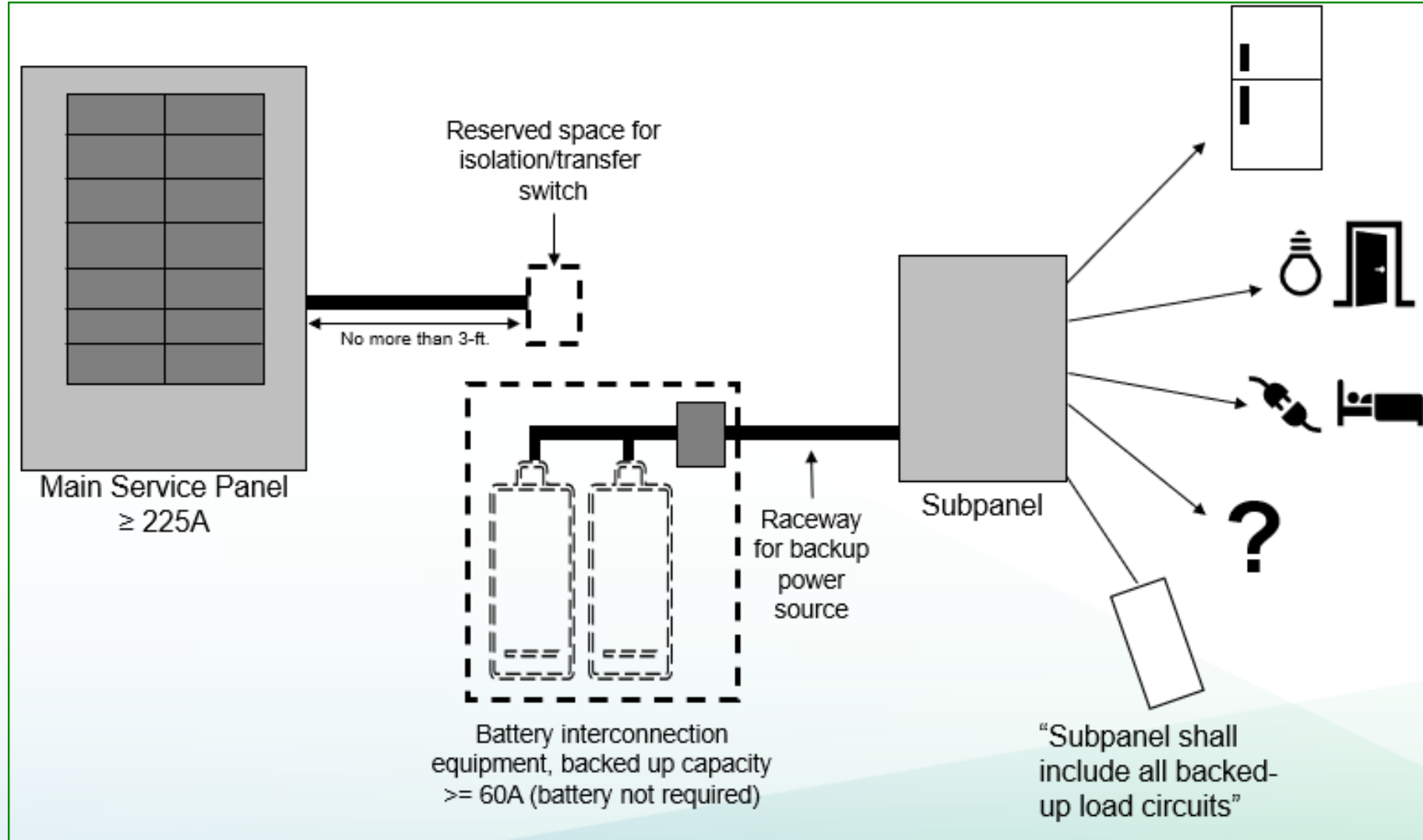
Single-family § 150.0(s)

Energy storage systems (ESS) ready

- At least one shall be provided
 - ESS ready interconnection equipment with minimum backed up capacity of 60A and 4 ESS supplied branch circuits
 - Dedicated raceway from main service to subpanel that supplies branch circuits
- Identify at least 4 branch circuits for emergency use
 - Supply refrigerator, lighting near front door, one outlet in bedroom
- Main panel minimum busbar rating of 225A
- Space for future system isolation equipment or transfer switch within 3 feet of main panel
 - Raceways installed between panel and system isolation equipment or transfer switch location to allow the connection of backup power source

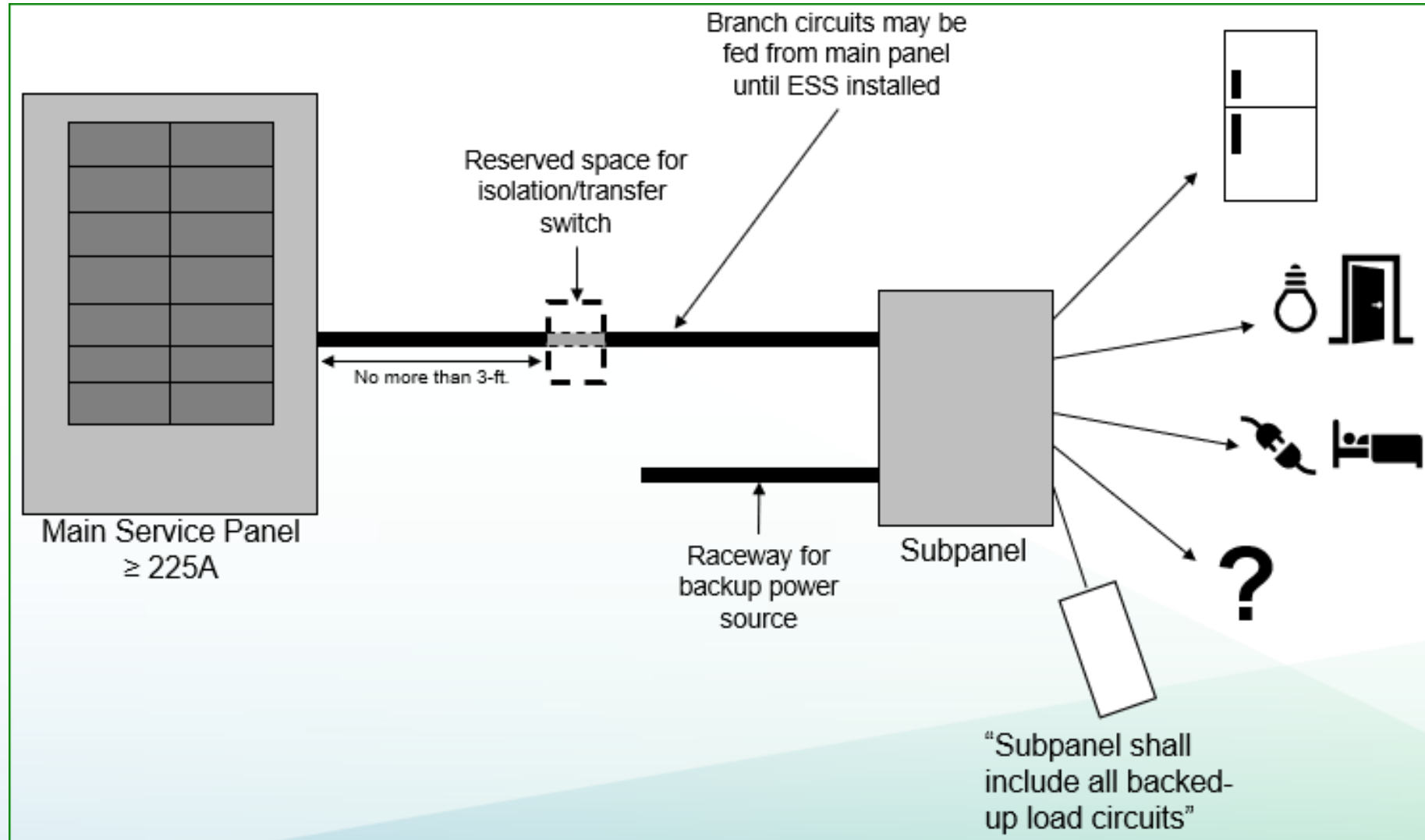


§150.0(s)1A Example





§150.0(s)1B Example





Electric Ready Mandatory Requirements

Single-family §§ 150.0(t, u, v)

Heat pump space heater ready

- 240V, 30A circuit with termination 3 feet from furnace
- Reserve and label double pole breaker in main panel

Electric cooktop ready

- 240V, 50A circuit with termination 3 feet from cooktop
- Reserve and label double pole breaker in main panel

Electric clothes dryer ready

- 240V, 30A circuit with termination 3 feet from clothes dryer location
- Reserve and label double pole breaker in main panel



Single-family Updates

Prescriptive: § 150.1



HVAC

Prescriptive Requirements

Single-family § 150.1(c)6

Heating system type

- Heating system types installed per TABLE 150.1-A
- Climate zones 3, 4, 13, 14 use heat pump space conditioning
- May use performance compliance approach for other types

[illegible]



HVAC

Prescriptive Requirements

Single-family § 150.1(c)12

Ventilation cooling

- Whole house fans revised to reference use of the Home Ventilating Institute (HVI) certified products directory
- Exception: new dwelling units with 500 square feet or less exempt



Water Heating Prescriptive Requirements

Single-family § 150.1(c)8

Domestic water-heating systems

- Heat pump water heater (HPWH) in climate zones 1, 2, 5-12, 15, 16
 - Other types may comply using performance compliance
- Solar water-heating system with electric backup
- Exceptions
 - Climate zones 3, 4, 13, 14 may install instantaneous gas water heater and must use heat pump for space conditioning system
 - New dwelling unit with 500 square feet or less may install instantaneous electric water heater with point of use distribution per RA4.4.5
 - New dwelling unit with 1 bedroom or less may install 120V HPWH in place of 240V HPWH





Photovoltaic Systems Prescriptive Requirements

Single-family § 150.1(c)14

Photovoltaic (PV) systems

- No larger than what can be installed in available solar access roof area (SARA)
- SARA includes area of building's roof space, area of roof space on covered parking areas, carports, and other newly constructed structures on site that can structurally support PV system
- SARA does not include any roof area with less than 70% annual solar access
 - Annual solar access - divide total annual solar insolation with shading, by total annual solar insolation without shading



Photovoltaic Systems Prescriptive Requirements

Single-family § 150.1(c)14

Updated for 2022

PV system exceptions

- Steep slope roofs areas with azimuth between 300 degrees and 90 degrees not included in SARA, no PV if SARA is less than 80 square feet
- No PV systems required when PV size is less than 1.8 kWdc
- Areas with high snow loads where PV is not possible
- Buildings approved by AHJ prior to January 1, 2020
 - Shading from roof designs and configurations for steep-sloped roofs included in SARA
 - Roof areas that are not allowed to have PV, not considered in SARA
- PV system size reduced by 25% if battery storage system minimum 7.5 kWh installed per Reference Joint Appendix JA12



Single-family Updates

Additions and Alterations: § 150.2



Additions

Mandatory Requirements

Single-family § 150.2(a)

Additions to existing single-family buildings

- Meet mandatory §§ 110.0-110.9, §§ 150.0(a-n, p, q)
- Meet either § 150.2(a)1 or 2
- Exception 4: Space conditioning system ducts
 - Any length of ducts extended from existing duct system to serve the addition to meet duct sealing and duct insulation requirements per Section 150.2(b)1Di and 150.2(b)1Dii
- Exception 7: Space heating system
 - New or replacement space heating systems serving addition may be heat pump or gas



Additions Prescriptive Requirements

Single-family § 150.2(a)1B

Roof and ceiling insulation

- Revised attic insulation for additions 700 square feet or less
 - Climate zones 1, 2, 4, 8-16 overall assembly U-factor 0.025
 - Wood framed: R-38
 - Climate zones 3, 5-7 overall assembly U-factor 0.031
 - Wood framed: R-30



Additions Prescriptive and Performance Requirements

Single-family §§ 150.2(a)1C, 150.2(a)2C

Whole-dwelling unit mechanical ventilation

- Exempts whole building ventilation for additions 1,000 square feet or less
- Exempts whole building ventilation for junior accessory dwelling units that are additions to an existing building
- Note: New ADUs still need to comply with IAQ regardless of size

Local mechanical exhaust

- Additions to existing buildings shall comply with all applicable requirements specified in 150.0(o)1G and 150.0(o)2



Additions Prescriptive Requirements

§ 150.2(a)1D

Water heating

- Heat pump water heater - either
 - Not located outdoor, on R10 surface, demand responsive
 - High efficiency NEEA Tier 3
- Gas or propane instantaneous water heater
 - 200,000 BTU or less
 - No storage tank
- Additions less than 500 square feet
 - Instantaneous electric allowed
 - Meet RA4.4.5



Alterations Prescriptive Requirements

Single-family § 150.2(b)1D, Table 150.2-A

Altered duct systems - sealing and insulation

- More than 25 feet of new or replacement ducts are installed
 - Duct sealing required
 - Duct insulation per Table 150.2-A
- Entirely new ducts and air handler in vented attic
 - Meet attic insulation requirements of § 150.2(b)1J

TABLE 150.2-A DUCT INSULATION R-VALUE

Climate Zone	3, 5 through 7	1, 2, 4, 8 through 16
Duct R-Value	R-6	R-8



Alterations Prescriptive Requirements

Single-family § 150.2(b)1E

Duct sealing leakage target

- Reduces duct leakage to 10% or less of system air handler airflow per RA3.1.4.3.1
- Reduces duct leakage to outside option to 7% or less of system air handler airflow per RA3.1.4.3.4



Alterations Prescriptive Requirements

Single-family § 150.2(b)1

Roof replacements

- Updated aged solar reflectance (SR)
 - Steep-sloped climate zones 4, 8-15: minimum SR 0.20
 - Low-sloped climate zones 4, 6-15: minimum SR 0.63
 - Revised exceptions
- Above deck roof insulation requirement for low-sloped roofs

TABLE 150.2-C INSULATION REQUIREMENTS FOR ROOF ALTERATIONS

Climate Zone	Continuous Insulation R-value	Roof Assembly U-factor
3, 5-7	NR	NR
1, 2, 4, 8-16	R-14	0.039



Alterations Prescriptive Requirements

Single-family § 150.2(b)1J

Attic insulation

- Entirely new ducts in vented attic trigger insulation requirements
- Climate zones 1-4, 6, 8-16 assembly U-factor 0.020 or R-49
 - Exception: climate zones 1, 3, 6 with existing R-19
- Air seal all accessible areas of ceiling in climate zones 2, 4, 8-16
 - Exception: existing R-19
- Recessed luminaires must be insulated in climate zones 1-4, 8-16
 - Exception: existing R-19
- Attic ventilation comply per CBC requirements with exceptions



Resources

Online Resource Center

www.energy.ca.gov/orc



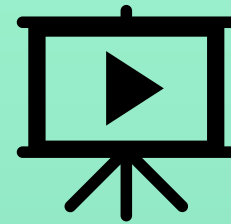
Handouts

- Fact sheets
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Tools

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Links

- Internal resources
- External resources



HERS Program

HERS Program information

- 2022 Energy Code approvals in process
- Providers for 2019 Energy Code

CalCERTS



- Newly constructed buildings
- Additions
- Alterations of residential and nonresidential buildings
- California whole-house home energy ratings
- HERS building performance contractors

CHEERS



- Newly constructed buildings
- Additions
- Alterations of residential and nonresidential buildings



Blueprint Newsletter

- Energy Code quarterly newsletter
- Updates
- Clarifications
- Frequently asked questions

Issue 138 | April - June 2022

BLUEPRINT

CALIFORNIA ENERGY COMMISSION
EFFICIENCY DIVISION

IN THIS ISSUE

- 2022 Energy Code: Multifamily Summary
- 2022 Energy Code: Compliance Software
- 2019 Energy Code: HERS Verifications
- Q&A
 - Solar PV for Multifamily Buildings
 - Multifamily Water Heating
 - Multifamily Common Use Areas

2022 Energy Code: Multifamily Summary

The 2022 Building Energy Efficiency Standards (Energy Code) reorganizes low-rise (three or fewer habitable stories) and high-rise (four or more habitable stories) multifamily buildings into one building type, updates the multifamily buildings definition in § 100.1, and moves all requirements for multifamily buildings to §§ 160.0-180.4. This and other significant changes include:

Mandatory Requirements

- Updates minimum efficiencies for HVAC equipment; adds minimum efficiency requirements for dedicated outdoor air systems (DOAS), heat pump, and heat recovery chiller packages. § 110.2
- Changes demand responsive lighting controls trigger to 4,000 watts or more; adds requirements for controlled receptacles. §§ 110.12, 160.5(b)4E

- Unifies envelope insulation, vapor retarder, and fenestration requirements. § 160.1
- For dwelling units
 - Adds requirements for central fan integrated ventilation systems requiring a motorized controlled damper, damper controls, and variable ventilation. § 160.2(b)2Aii
 - Requires vented kitchen range hoods ventilation rates or capture efficiencies based on conditioned floor area and fuel type per Tables 160.2-E, F, G. § 160.2(b)2Aiv2
 - Requires a HERS-verified maximum fan efficacy of 1.0 Watts per cfm for heat recovery ventilation (HRV) and energy recovery ventilation (ERV) systems. § 160.2(b)2Biii
 - Adds mechanical acceptance testing requirements. § 160.3(d)2
 - Adds electric-ready requirements when gas equipment is installed for space heating, cooking, and clothes dryers. § 160.9(a-c)

For additional help with the Energy Code see Energy Code Ace's **online offerings** of trainings, tools, and resources.

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Thank you