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Local Governments Empowering Our Communities

# Panel 2: Tools and Resources

Examples for Local Governments

*Karen Kristiansson, BayREN*

August 30, 2022

# Bay Area Regional Energy Network (BayREN)



BayREN is:

- A collaboration of the Association of Bay Area Governments (ABAG) and the nine counties that make up the San Francisco Bay Area
- One of four regional energy networks (RENs) in California
- Funded by the CPUC
- Focus on buildings – saving energy and reducing emissions

# Current BayREN Programs

Home+ Single Family  
Program

Green Labeling  
Program

Water Upgrades \$ave  
Program

Multifamily Program

Business Program

Codes & Standards  
Program

For more information: [www.bayren.org](http://www.bayren.org)



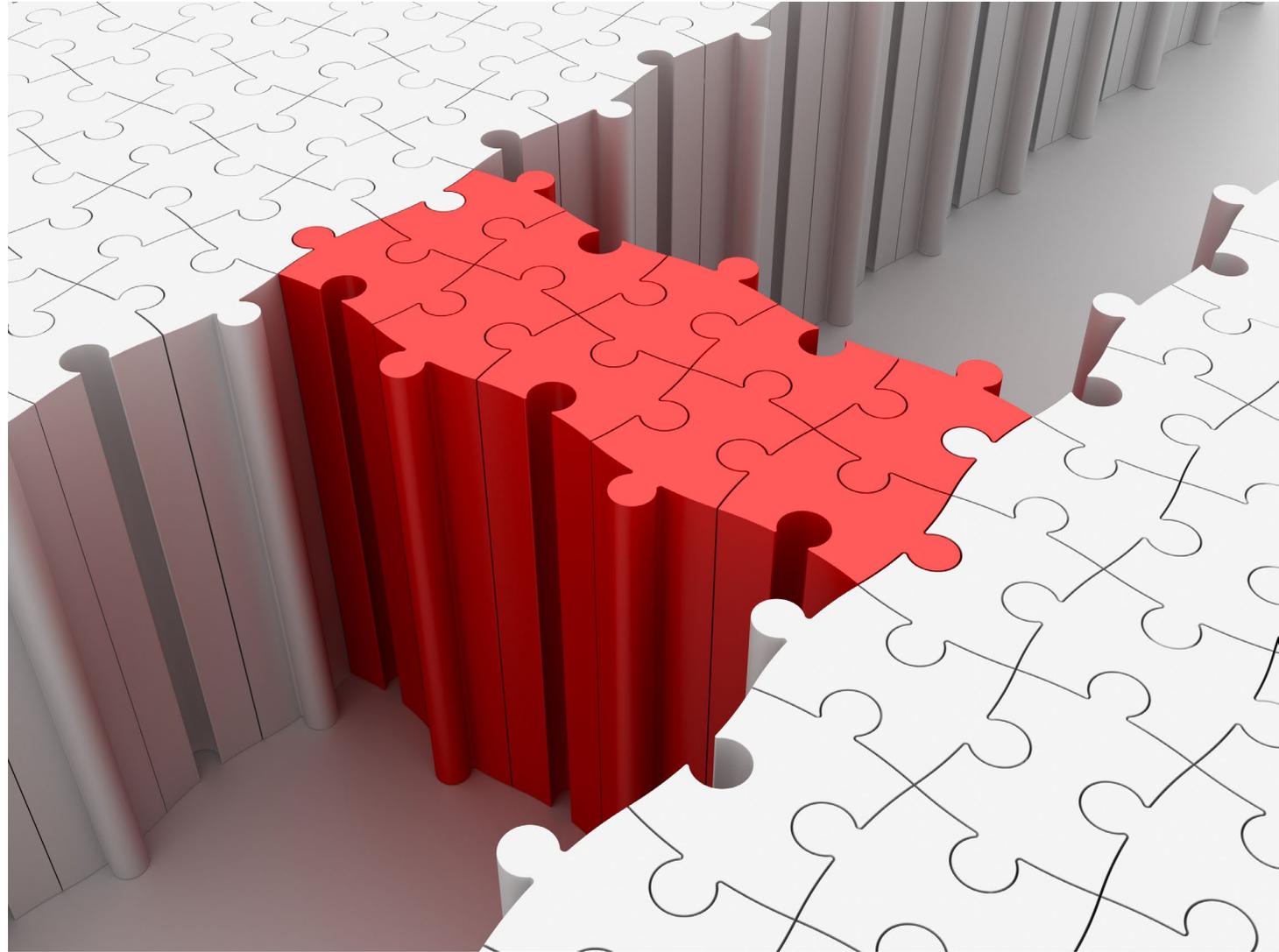
# BayREN's Codes & Standards Program



Three areas of focus:

1. Improving energy code compliance,
2. Increasing adoption of local energy policies, and
3. Connecting local government needs and state policies

Local  
Governments  
Need  
Information  
and Resources



# Examples of existing sources of information

<https://www.bayren.org/local-government-resources>

<https://www.buildingdecarb.org/compass.html>

<https://www.bayren.org/local-government-resources>

<https://energycodeace.com/>

<https://localenergycodes.com/>



# Two examples:

1. Heat Pump Water Heaters
2. Reach Codes

# Example 1: Heat Pump Water Heaters

## Building Department Role

- Permitting & inspecting HPWHs
- Staff need to know:
  - What are HPWHs?
  - What are the relevant code requirements?
  - What do we need to look for on the plans and in the field to ensure HPWHs are installed safely and to code?

# HPWH Building Department Resources

**Residential Dwelling Units and Heat Pump Water Heaters**  
2019 Energy Code (Title 24 Part 6) Assistance Sheet

Requirements of other water heating systems and configurations refer to the 2019 Building Energy Efficiency Standards (Title 24 Part 6), sections 150.20(a) for additions, or 150.1(c) for new construction.

2019 Code allow HPWHs?	Performance Path	Prescriptive Path
Construction	Allowed	Allowed (two options)
Existing 2- or 3- water heater conversions	Allowed	Any electric is allowed when no gas service is available
Replace an existing water heater? YES! If:	Allowed	Allowed as described below

1. Natural gas is connected to the existing water heater location, and the installed HPWH is not located outdoors

2. A Tier 3 (§ 150.20(b)(1)(iii)) OR

3. In federal appliance standards with demand responsive controls, and is located on an R-10 rigid surface (§ 150.20(b)(1)(iii)); OR

4. Is connected to the existing water heater location and the HPWH meets minimum federal appliance standards, § 150.20(c)

5. The permit applicant can demonstrate the project complies with Energy Code using the performance method, § 150.20(d)

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✓ Ongoing trainings

✓ Assistance sheets

## Heat Pump Water Heaters for Accessory Dwelling Units (HPWHs for ADUs)

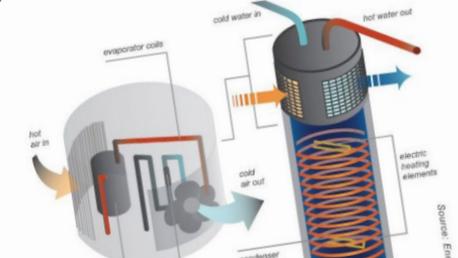
Heat pump water heaters can be a good choice for ADUs, rather than a traditional gas water heater. Heat pump water heaters are highly energy efficient and offer a range of benefits compared to traditional electric and gas water heaters.

Because they are electric, heat pumps don't require extending the gas line to the ADU. Some cities may require newly constructed ADUs to be all electric. Heat pumps also:

- Are extremely efficient and save energy
- Reduce air pollution and carbon emissions that contribute to climate change
- Avoid the health and safety issues of burning natural gas

**What is a heat pump water heater?**

It looks a lot like a conventional gas storage-type water heater—it's a big cylindrical tank with one pipe that brings cold water in and another pipe that sends hot water out. The heat pump unit is typically built into the top of the unit. A heat pump uses electricity, refrigerant and a compressor to move heat from surrounding air and to the water in the tank. The technology is the same used in a refrigerator, only in reverse.



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TRAINING

SEP 28

## BayREN C&S Training: Heat Pump Water Heaters for Building Department Staff

Wednesday, September 28, 2022  
9 a.m. - 10:30 a.m.

Online

Heat pump water heaters (HPWHs) are an increasingly popular technology that are a highly efficient means of providing hot water to houses. This training will describe HPWHs, code requirements for HPWHs, resources for permitting and compliance, and best practices for enforcement.

ICC CEUs: 0.1  
Target Audience: Permit technicians, plan checkers, and field inspectors.

Register

Field inspectors  
Permit technicians  
Plan checkers

TOPICS  
[Energy Code](#), [Heat Pump Water Heater](#)

<sup>1</sup> Similar to CF1R-ALT-01 (altering other parts of the house) and CF1R-ADD-01 (prescriptive) developed in partnership with the BayREN Codes & Standards Program  
bayrencodes.org | codes@bayren.org  
Page 1 of 2 | Last Updated 08/12/2020

# HPWH Building Department Resources

## TECH Permitting Pilot Resources

- ✓ Building Code Assistance Sheet
- ✓ Permit Supplement Template
- ✓ Electrical Load Estimator

Resources:

<https://www.bayren.org/building-dept-tools-guides/heat-pump-water-heaters>

The image displays three overlapping documents related to Heat Pump Water Heater (HPWH) permits:

- HPWH Permit Supplement:** A diagram showing a tank with various components labeled: Flexible Conduit, Condensate drain (clean water) Line 1/4" to Drain any pipe material, Appropriate drain or outside 1 pint/day, T&P Relief 1/4" copper or ABS tube to between 24" & 6" above floor, Strapping at least 4" away from controls, and Strapping at 1/3 and 2/3 of tank height. It also notes "Tank can be set on floor Or if < Tier 3, set on R-10".
- 2019 Building Code Compliance Checklist:** A checklist with a key: "User inputs" (yellow) and "User input if applicable" (green). It includes sections for "Applicable Equipment", "Instruction below" (with a dropdown menu for Yes/No), "General Water Heater Requirements", "HPWH Issues Specific to Tank Size and Installation Location", "Electric Circuit", "Electric Service Panel", and "Jurisdictions May Require".
- STATEMENT OF COMPLIANCE:** A section for the applicant to sign, including fields for Project Address, Scope, Controlling Codes, Make & Model #, Tank Size, Volts x Amps, Efficiency Energy Factor, and NEEA Tier.

## Example 2: Reach Codes

### Building Department Role

- Enforcing reach codes as part of permitting process
- Staff need to know:
  - What are my jurisdiction's reach code requirements?
  - How do those relate to the base code requirements?
  - What do we need to look for on the plans and in the field to ensure our reach code is implemented?

# Reach Code Resources for Building Departments

- Customized trainings
- Open training curriculum
- Checklists & summary



Local Governments Empowering Our Communities

## Reach Code Training – City of Milpitas

BayREN Codes & Standards

Amy Dryden  
www.BayREncodes.org

**LOCAL BUILDING ENERGY STANDARDS SUMMARY OF [JURISDICTION NAME] NEW CONSTRUCTION REQUIREMENTS**  
Version 2.0, 4/21/2020

*This document is intended as a companion to the Electric-Preferred Reach Code application checklists. It should be modified to suit local requirements (especially blue italicized text).*

**DELETE ALL BLUE TEXT BEFORE PUBLISHING**

The [Jurisdiction Name] has adopted the following local building energy standards. These standards apply to all newly constructed buildings with Land Use Permit applications submitted on or after [date] and newly constructed buildings with Building Permit applications submitted on or after [date].

These building standards have been established to ensure that new construction in [Jurisdiction Name] is healthier for occupants, has limited impact on the environment, reduces demand for energy, and results in cost savings from building operation over the life of the building.

This summary is intended to highlight the requirements, but each building type has an accompanying checklist detailing the standards. Please include the appropriate checklist with your submittal package.

Occupancy Type	Requirements	Exceptions
Residential Projects (3 stories or less)	<b>All-Electric Projects</b> <ul style="list-style-type: none"> <li>Meet or exceed 2019 Building Energy Efficiency Standards</li> </ul>	
	<b>Mixed-Fuel Projects</b> <ul style="list-style-type: none"> <li>Exceed the 2019 Building Energy Efficiency Standards Total Energy Design Rating<sup>2</sup> by a margin of [X] EDR points</li> <li>[For CalGREEN Tier 1 - Achieve a Total Energy Design Rating of no more than X]</li> <li>Install circuits and drains to enable future conversion of all gas appliances to electricity<sup>3</sup></li> </ul>	[Qualified Mixed-Fuel ADUs may comply as All-Electric Buildings]  Circuit for space heater is not required if AC circuit is present.
	<b>Single Family EV Chargers</b> [modify as needed] <ul style="list-style-type: none"> <li>1 EV Ready Level 2 space per unit</li> <li>1 space with an EV Level 1 circuit installed</li> </ul>	Requirements are modified if there is no or limited solar access.
Residential Projects (4 stories or more)	<b>Multifamily EV Chargers</b> [modify as needed] <ul style="list-style-type: none"> <li>[X]% Level 1 EV Capable Spaces</li> <li>[X]% Level 2 EV Capable Spaces</li> <li>[X]% Level 1 EV Ready Spaces</li> <li>[X]% Level 2 EV Ready Spaces</li> <li>[X]% spaces with Level 2 EV Charging Stations installed</li> </ul>	Not applicable if there is no on-site parking
	<b>All-Electric Projects</b> <ul style="list-style-type: none"> <li>Meet or exceed 2019 Building Energy Efficiency Standards</li> <li>Install a solar PV system on entire Solar Zone [modify as needed]</li> </ul>	Requirements are modified if there is no or limited solar access.

**APPLICANT NAME:** \_\_\_\_\_

**0 ELECTRIFICATION**  
 [Mandatory elements of the 2019 Building Energy Efficiency Standards as well as [cite municipal/county code reference(s)]]

liances  
 tructure  
 iency standards required by the State (no additional local energy efficiency

ose either performance or prescriptive)

ter than or equal to [X], [CalGREEN - "Total EDR no greater than X for single ifamily"] as demonstrated on the 2019 Building Energy Efficiency Standards 3 of Compliance form

ompliance prepared by Certified Energy Analyst (1-point EDR credit)

ified in [reference prescriptive section of local code]

box for each appliance that uses natural gas or propane and verify additional

it and receptacle within 3 feet

1240V, 40A circuit and 50A receptacle within 3 feet

ated 240V, 20A receptacle within 3 feet

240V, 30A electrical receptacle located within 3 feet

ical circuit within 3 feet of designated location

ectrical panel and raceway capacity for equivalent electrical appliances

Electrical panel and raceway capacity for equivalent

nd CALGreen checklist



# Key Points

## Common goals of resources:

- ✓ Provide information about code requirements
- ✓ Encourage consistency between local jurisdictions
- ✓ Help building departments and applicants get on the same page

# Key Points

- Resources need to:
  - ✓ Address the right questions
  - ✓ Be reliable and accurate
  - ✓ Reduce confusion
- Information is especially needed for new technologies and new policies

# Key Points

Collaboration is important when developing and promoting resources

For example:

**This document is the product of a collaborative effort:**

Building Decarbonization Coalition

BayREN

Peninsula Clean Energy

Silicon Valley Clean Energy

East Bay Clean Energy

New Buildings Institute

Statewide Utility Codes and Standards Program: Reach Codes  
& Staff from Multiple California Jurisdictions

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