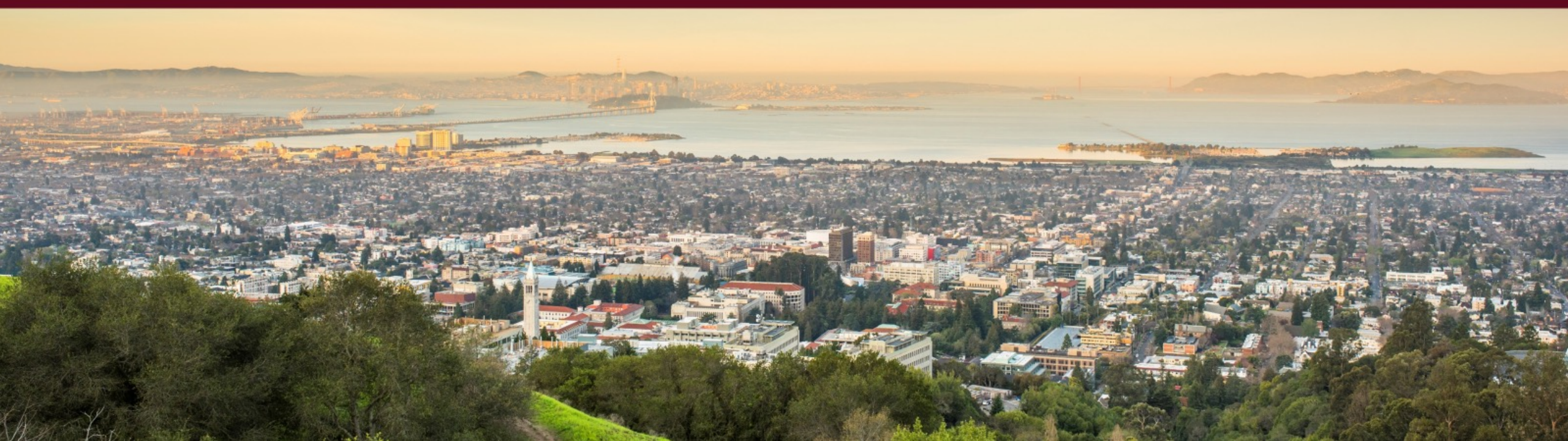




Upgrades at Sale: Building Resilience, Cutting Emissions

Berkeley's Time of Sale Upgrade Requirements

BayREN Regional Forum - November 19, 2025



Background and Current Requirements

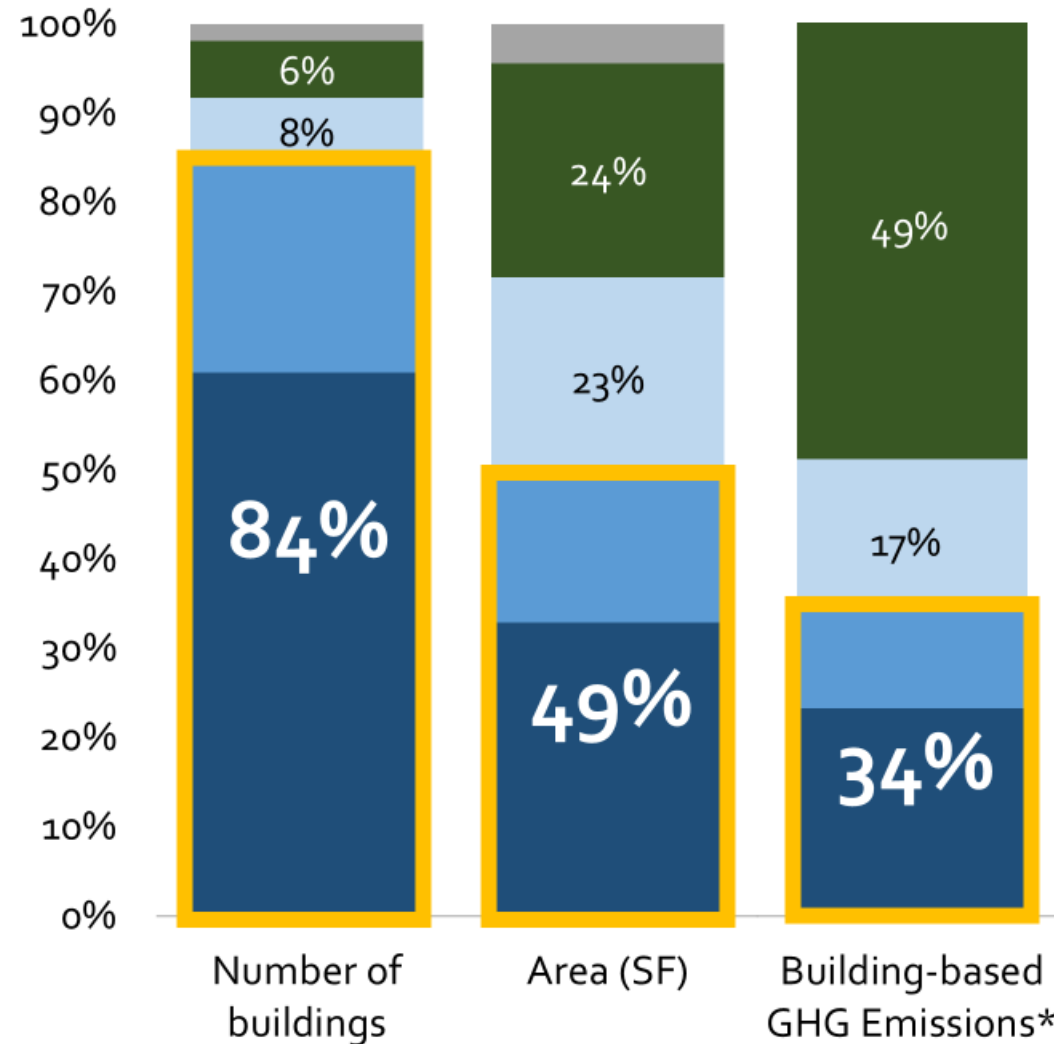
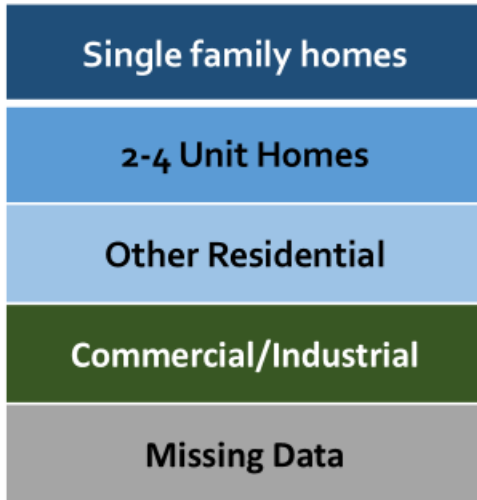
Berkeley's Ambitious Climate Action Goals



Photo from www.theclimatemobilization.org

Emissions from 1-4 Units

Buildings by Count, Area, and GHG Emissions



Building Emissions Saving Ordinance (BESO)



Time of Sale Program



Buildings **less** than
25,000 sqft

Large Building Program



Buildings **greater** than
25,000 sqft

Current Time of Sale Program



- Requires an **energy/electrification assessment** prior to listing a building for sale
 - Home Energy Score for Single family homes
 - Provides information to potential buyers
- Refers building owners into local incentive programs to complete voluntary upgrades



Home Energy Score Assessment



Home Energy Score Energy Savings Pathway Report



U.S. DEPARTMENT OF ENERGY
Home Energy Score™

LOCATION: 1837 Berryman St, Berkeley, CA, 94703

BEDROOMS: 3

HEATED FLOOR AREA: 1,672 sq.ft.

COMPANY: DMP East Bay Inspections LLC

EMAIL: dave@dmpinspections.com

YEAR BUILT: 1909

ASSESSMENT DATE: 02/19/2025

ASSESSOR: Dave Pagano

PHONE: (925) 222-2023

Current Score	Recommended Shell Improvements ¹	Full Home Electrification ²
4 OUT OF 10	6 OUT OF 10	9 OUT OF 10
Estimate of Current Yearly Energy Costs ³ \$3,899	Estimate of Energy Costs with Shell Improvements ⁴ \$3,561	Estimate of Energy Costs with Electrification ⁵ \$4,067

Home Energy Score Details



Official Assessment: ID# 572560

Average U.S. Home's Score = 5

The U.S. Department of Energy's Home Energy Score assesses the energy efficiency of a home based on its structure and heating, cooling and hot water systems. Learn more at [HomeEnergyScore.gov](https://www.HomeEnergyScore.gov).

Current Estimated Energy Use By Fuel Type⁶

Fuel Type	Estimated Current Use	After Shell Improvements	After Full Electrification
Electric: 6,399 kWh/yr (\$0.43/kWh)	\$2,752	\$2,713	\$4,067
Natural Gas: 484 therms/yr (\$2.37/therm)	\$1,147	\$848	\$0
Other:	\$0	\$0	\$0
Renewable Generation: (\$0.43/kWh)	N/A	N/A	N/A
TOTAL ESTIMATED YEARLY ENERGY COSTS	\$3,899	\$3,561	\$4,067

This Home's Carbon Footprint⁴

Carbon footprint by fuel type (measured in Metric tons of CO₂): Electric: 0.1 Natural Gas: 2.6



Learn how to improve this score and electrify your home to use less energy on the next page.

Tackle energy waste today!

- Get your home energy assessment. Done!
- Choose energy improvements from the list of recommendations below.
- Select a contractor (or two, for comparison) and obtain bids.
- Perform upgrades and enjoy a more comfortable and energy efficient home.

Current Score

4

OUT OF 10

For More Information Visit the Websites Below

Find Incentives



SCAN ME

bayren.org

Find A Contractor



SCAN ME

switchison.org

US Rebates & Tax Credits



SCAN ME

energy.gov/save

AVA



SCAN ME

avaenergy.org

Energy Improvements Customized for Your Home

SHELL IMPROVEMENTS¹

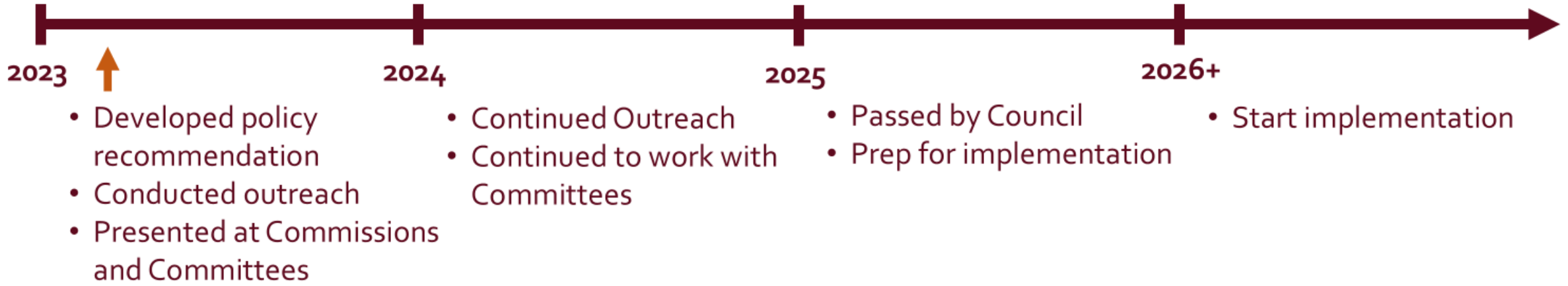
FEATURE	TODAY'S CONDITION	RECOMMENDED IMPROVEMENTS
Envelope/Air sealing	Not professionally air sealed	Professionally air seal
Attic insulation	Ceiling insulated to R-9	Insulate to R-38 or higher
Duct insulation	Insulated	No recommendation
Duct sealing	Un-sealed	Reduce leakage to a maximum of 5% of total airflow
Wall insulation	Insulated to R-0	Insulate to R-13 or higher
Floor insulation	Insulated to R-0	Insulate to R-30 or fill floor cavity
Knee Wall insulation	Knee wall insulated to R-11	No recommendation
Skylights	Double-pane	No recommendation
Windows	Multiple types	Upgrade to double-pane or other high-efficiency windows

FULL HOME ELECTRIFICATION IMPROVEMENTS²

FEATURE	TODAY'S CONDITION	RECOMMENDED IMPROVEMENTS
Appliances: Heat Pump Dryer	Gas Dryer	Heat pump clothes dryer 4.5 Combined Energy Factor (CEF) replacing a natural gas clothes dryer
Appliances: Induction Cooking	Gas Range/Cooktop	Induction electric range/cooktop replacing a natural gas range/cooktop
Electrical Panel	100Amps	Discuss potential need for a panel upgrade with an electrician.
Air Conditioner	None installed	Upgrade to Electric Heat Pump, minimum 15 SEER
Heating equipment	Natural gas furnace 80% AFUE	Upgrade to Electric Heat Pump, minimum 8.6 HSPF
Solar PV	None installed	Consider solar PV
Water Heater	Natural gas EF 0.67	Replace with heat pump hot water heater

Next page provides additional notes from your Home Energy Score Assessor

Developing Requirements



Zero NOx Appliance Rules Adopted (March 2023)

Outreach and Engagement



Time of Sale Upgrade Requirements

Overview of BESO Requirements

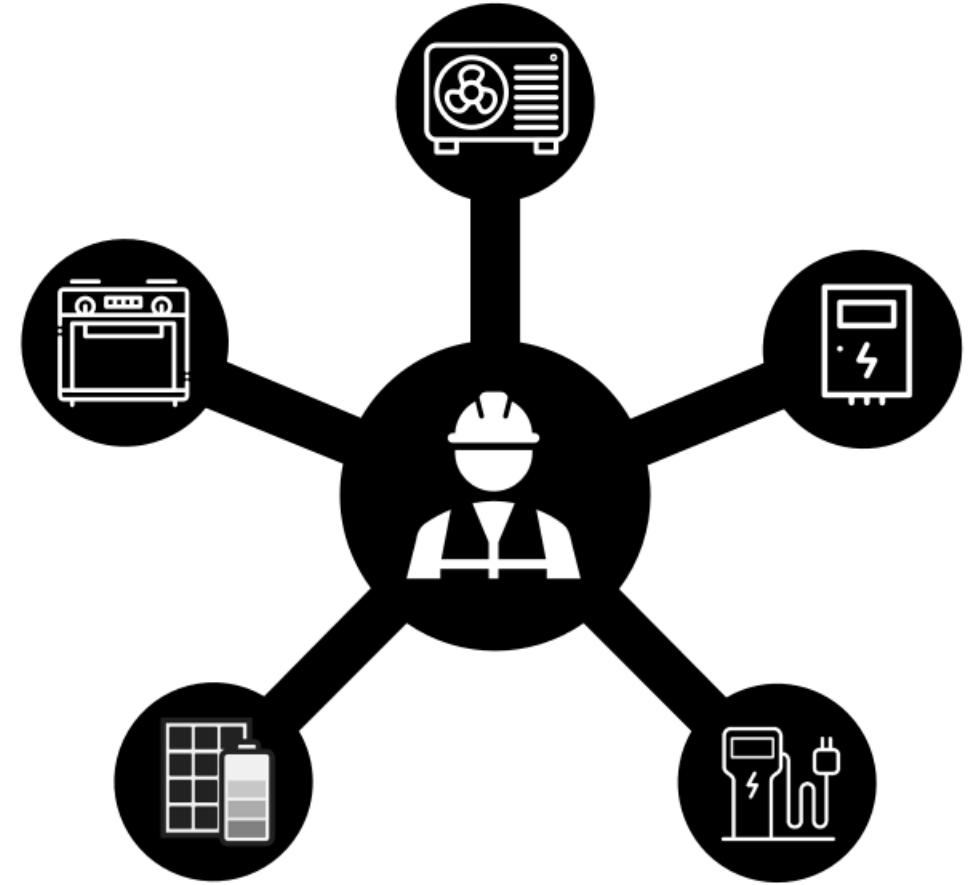


- Seller completes the BESO assessment
- Buyer completes the upgrade(s) within 2 years of the sale if compliance has not been met



Flexible Resilience Standard

- **Upgrade requirements:**
 - List of possible upgrades
 - Each upgrade has a corresponding credit value
 - Buildings need to achieve minimum number of credits through upgrades
- **Credit value criteria:**
 - Emissions savings
 - Cost
 - Health, safety, resilience bonus



Upgrade Measures & Credits



Credits Needed: 6

Measure	Credits
Heat Pump Water Heater	6
Heat Pump HVAC	6
Knob + Tube Replacement	6
Smart Service Panel	6
Electrical Service Panel Upgrade	6
Solar PV	3
Battery Energy Storage System	3
EV Charger	2
Electric or Induction Range	2
Window Replacements	2 or 4

Measure	Credits
Wall Insulation	2 or 4
Attic Insulation	2
HVAC Duct Improvements	2
Whole-house Fan	2
Electric Clothes Dryer	1 or 2
Prewiring & 240v receptacles	1 or 2
Floor/Crawlspace Insulation	1
Greywater System	1
Air Sealing	1

Example Upgrade Paths



6 credits

**Heat Pump
Water Heater**



2 credits

**Energy Efficiency &
Envelope
Improvements**



4 credits



6 credits

**Electric Ready –
Panel upgrade**

Example Upgrade Paths



6 credits

Heat Pump
Water Heater



2 credits



4 credits

Energy Efficiency &
Envelope
Improvements



6 credits

Electric Ready –
Panel upgrade

Example Upgrade Paths



6 credits

Heat Pump
Water Heater



2 credits

Energy Efficiency &
Envelope
Improvements



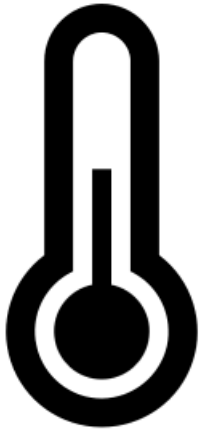
4 credits



6 credits

Electric Ready –
Panel upgrade

Benefits to Homeowners



**Improve Comfort
and Indoor Air
Quality**



Increase Safety



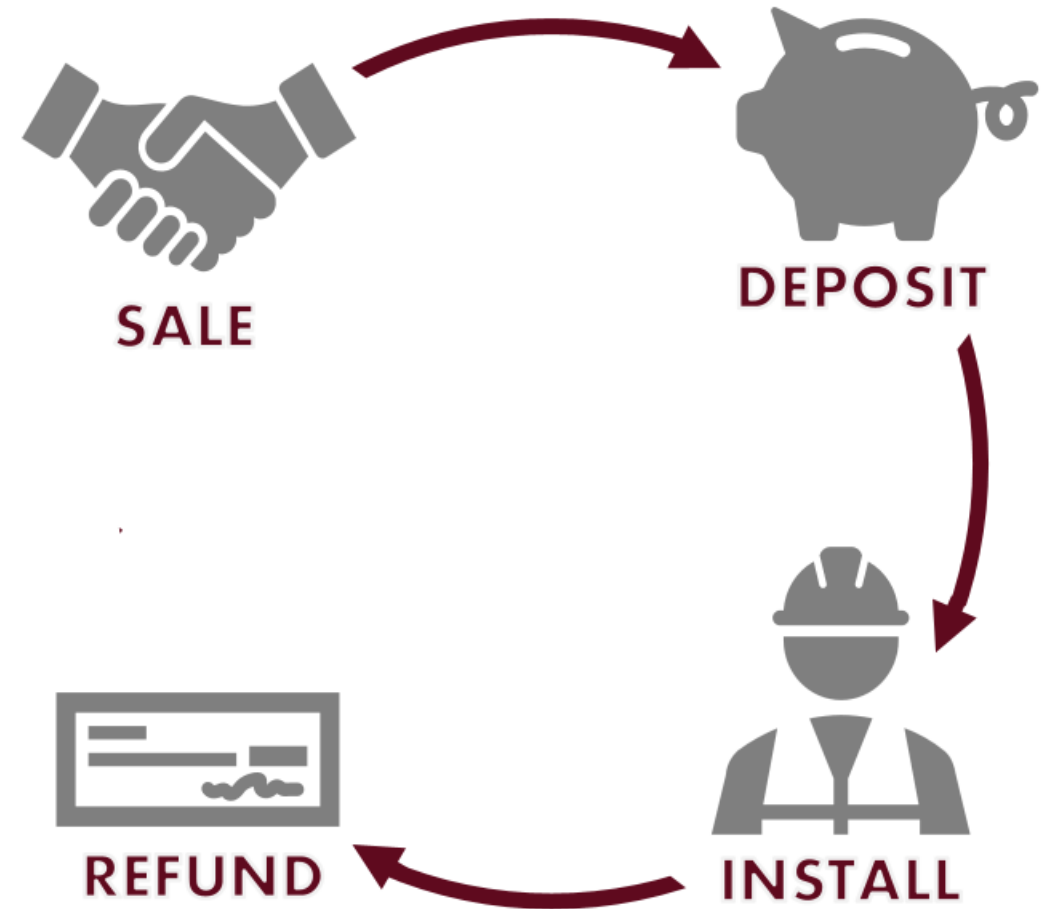
**Decrease utility
costs**



**Prepare for electric
appliances**

Utilizing an Escrow Deposit

- \$5,000 deposit sent from escrow to City split between buyer and seller
- Buyer has up to 2 years to complete upgrades, additional extensions may be granted
- Refunded once property is compliant
 - Ability to refund early if work is underway
- Forfeited escrow deposits will be used for low-income electrification programs



Alternative Compliance - Heat Pump Exemption



HVAC/Space Heating

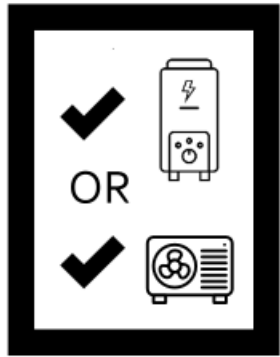
OR



Water Heating

Example Compliance Path

Scenario 1: Seller completed upgrades prior to sale OR the home *has* a heat pump system



Seller completes assessment
(Home Energy Score)



Home listed for
sale



Fully Compliant, no
upgrade needed

Example Compliance Path

Scenario 2: Upgrades not completed before sale and the home doesn't have a heat pump system



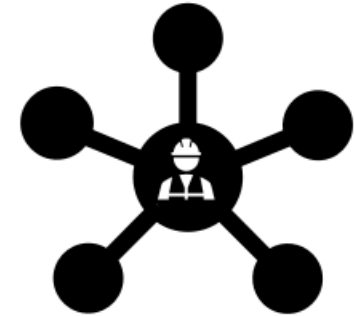
Seller completes assessment
(Home Energy Score)



Home listed for sale



Funds to cover upgrades sent at closing through escrow deposit



Buyer completes upgrades to meet target credit requirement and utilizes escrow deposit

Phase-in by Building Type

- **Phase I (January 1, 2026):**
 - Single-family & Duplexes

- **Phase II (January 1, 2028):**
 - 3-4 Unit Residential Buildings



Berkeley Sales Analysis



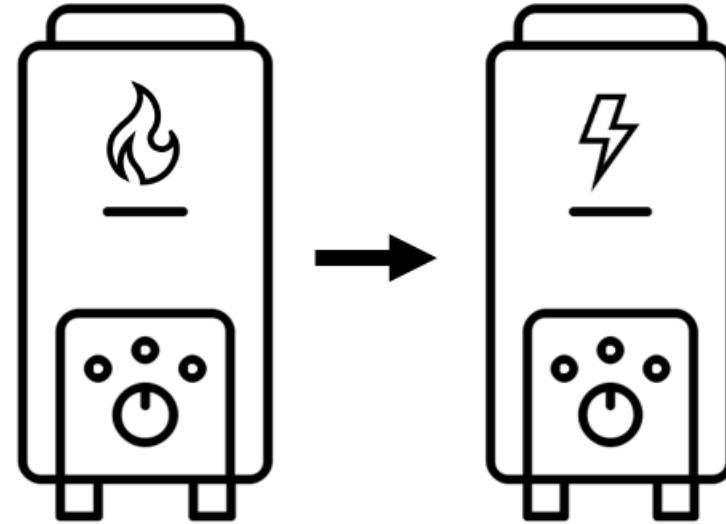
Building Type	Avg. # of Buildings Sold per Year	% of Sales
Single Family	600	61%
Duplex	60	6%
3-4 Units	50	5%
Not subject buildings (Condominiums, Commercial, larger Multifamily, industrial)	290	28%

BESO vs Zero NOx Appliance Standards



Time of Sale

VS



Time of Replacement

Incorporating Zero NOx Rules in Outreach



PLANNING AND DEVELOPMENT DEPARTMENT
Office of Energy and Sustainable Development



HEAT PUMP WATER HEATER

BESO Resilience Upgrade Measure

MEASURE INFORMATION

Credits: 6

Description:

A heat pump water heater is a highly efficient way to heat water. It works by pulling warmth from the surrounding air instead of generating heat directly. It can significantly lower energy use compared to standard gas or electric models. These systems are best located in garages, basements, or utility rooms with good airflow and mild temperatures because they rely on a steady supply of temperate, ambient air to extract heat. Adequate space and ventilation help the unit operate effectively and prevent the surrounding area from getting too cool. Like a traditional water heater, heat pump water heaters come in a variety of tank sizes depending on the home's hot water needs. Some heat pump water heaters can be programmed to preheat water during off-peak hours to help save money on electricity bills. Heat pump water heaters can produce some noise so consider placement or adding soundproofing.



Installation Criteria:

Install an electric heat pump water heater that supplies hot water to the entire building or unit.

Required Verification Documentation:

- Permit + approved final inspection

Equipment Options:

- **120v Models** – Most heat pump water heaters run on 240 volts, which typically requires a dedicated circuit and may need an electrical panel upgrade if your home doesn't already have capacity. However, 120-volt models are now available and can plug into a standard household outlet, making installation easier and often avoiding the need for electrical upgrades.

PLANNING AND DEVELOPMENT DEPARTMENT
Office of Energy and Sustainable Development



Benefits:



Reduce Emissions



Improve Air Quality



Increase Health & Safety

ADDITIONAL RESOURCES

Bay Area Air District Zero NOx Appliance Rules:

To improve regional air quality and reduce the amount of NOx and particulate matter emissions, the Bay Area Air District has adopted zero NOx emissions standards for natural gas fired furnaces and water heaters. When your gas water heater reaches the end of its life, you'll need to replace it with a zero NOx alternative, such as an electric heat pump water heater.

For more information, see the Air District's [Fact Sheet](#) and [Frequently Asked Questions](#) on the zero NOx appliance rules. Completing this measure helps you comply with BESO and gets you ready for the new Bay Area District Zero NOx Appliance requirements.

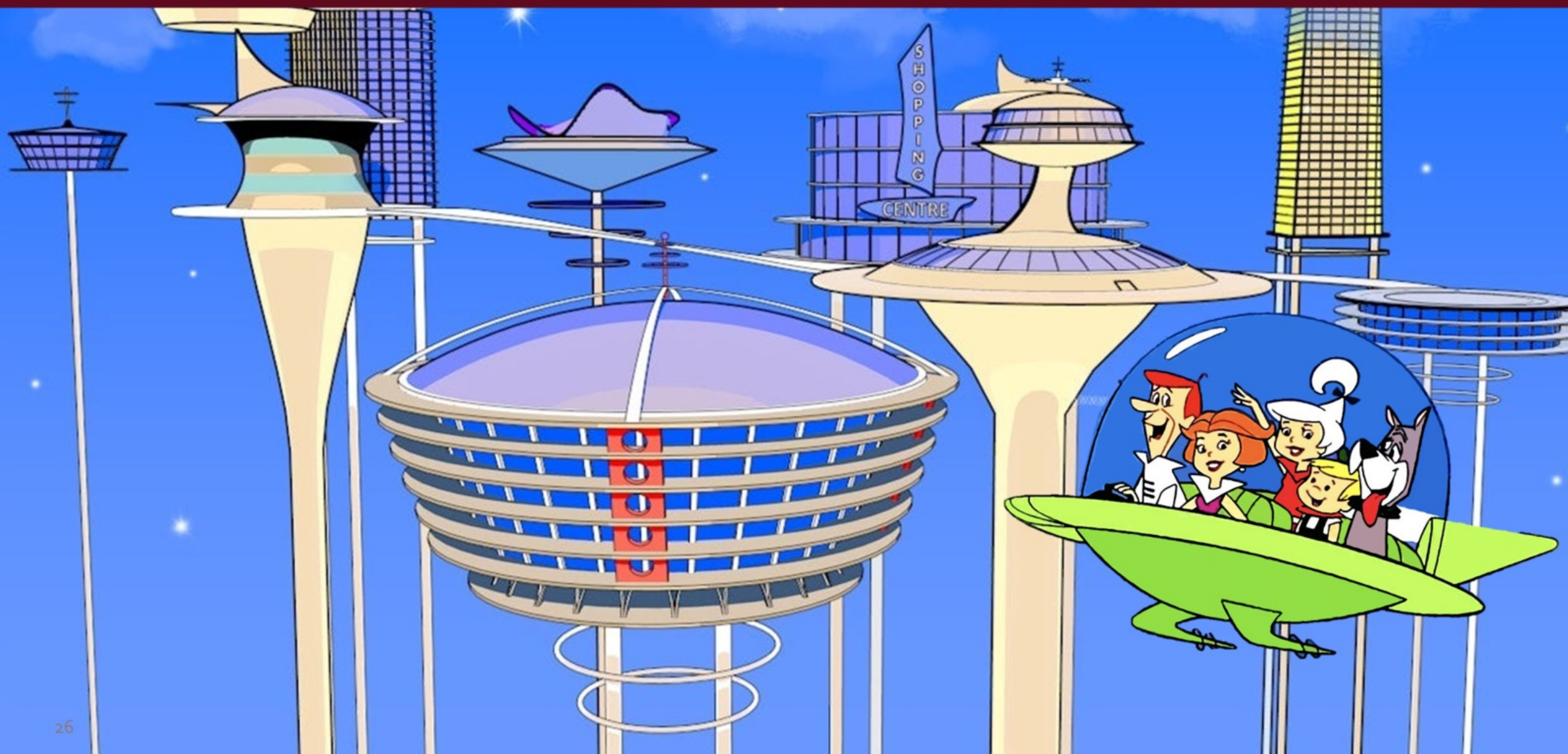
Permitting Resources:

- [Water Heater Earthquake Bracing](#)
- For information about the permit process, including permit types and requirements, visit the [City's permitting webpage](#). If you're new to the process or have questions, you can also [schedule an appointment with a permit specialist](#) for personalized guidance.

Rebates and Incentives:

- Check the [Switch Is On](#) for available incentives and rebates.
- Thinking of going all-electric? You could be eligible for more than \$4,000 in incentives are currently available through the [California Energy-Smart Homes program](#) by replacing all gas appliances—such as the water heater, HVAC, stove/oven, and dryer—with electric alternatives.

Preparing Our Homes for the Future



Thank You!



Ammon Reagan

Sustainability Program Coordinator

City of Berkeley

AREagan@BerkeleyCA.gov

