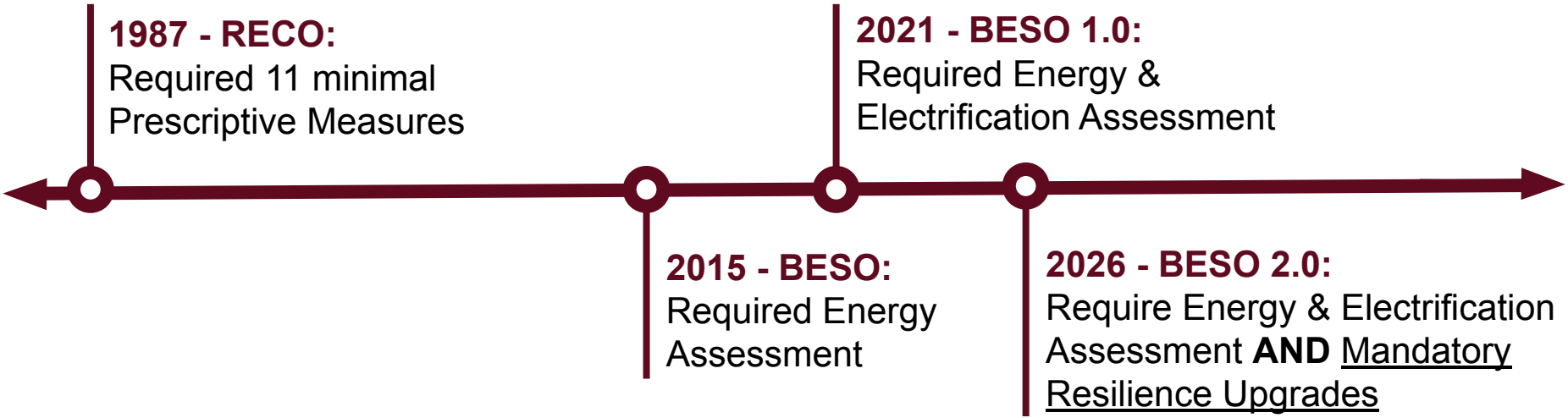
BESO Time of Sale
Resilience Measures & Credits

Environment and Climate Commission

June 25, 2025

Background and Previous BESO Requirements

Berkeley's History with Small Residential Requirements

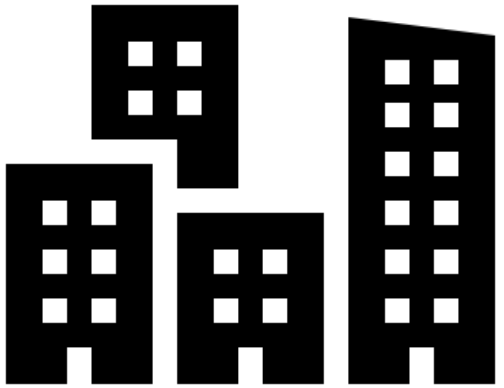


Building Emissions Saving Ordinance (BESO)

Time of Sale Program

Buildings **less** than
25,000 sqft

Large Building Program



Buildings **greater** than
25,000 sqft

Current Time of Sale Program (through 2025)

- 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

BAYREN

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]	Estimate of Energy Costs with Shell Improvements	Estimate of Energy Costs with Electrification
$3,899	$3,561	$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.

Current Estimated Energy Use By Fuel Type[3]

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 Footprint[4]

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	Find A Contractor	US Rebates & Tax Credits	AVA
SCAN ME	SCAN ME	SCAN ME	SCAN ME
bayren.org	switchison.org	energy.gov/save	avaenergy.org

Energy Improvements Customized for Your Home

SHELL IMPROVEMENTS[1]

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 IMPROVEMENTS[2]

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

BESO's Upgrade Requirements

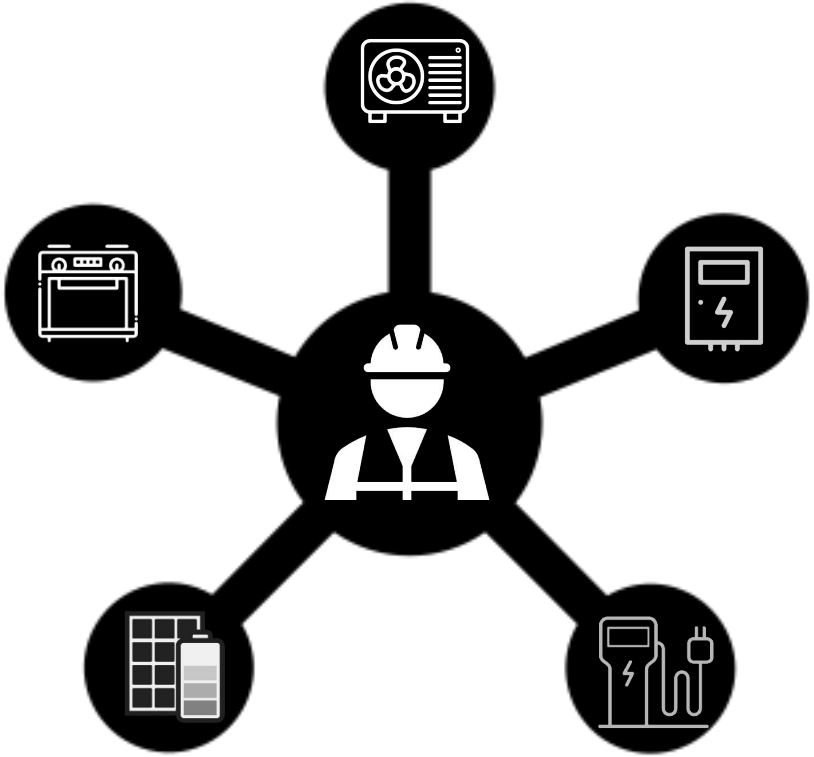
Upcoming of BESO Requirements

Beginning Jan 1, 2026:

- Seller completes the Home Energy Score assessment
- Buyer completes the upgrade(s) within 3 years of the sale if compliance has not been met

Flexible Resilience Standard

- List of possible upgrades
- Each upgrade has a corresponding credit value
- Buildings need to achieve minimum number of credits through upgrades



Phase-in by Building Type

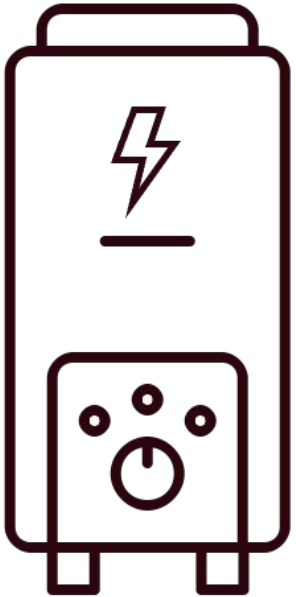
- **Phase I (January 1, 2026):**
  - Single-family & Duplexes

- **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%

Exemption Pathway: Heat Pump System



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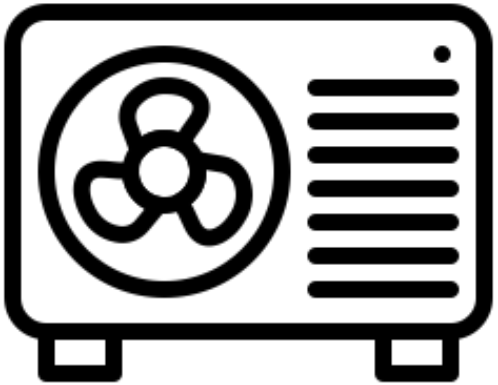
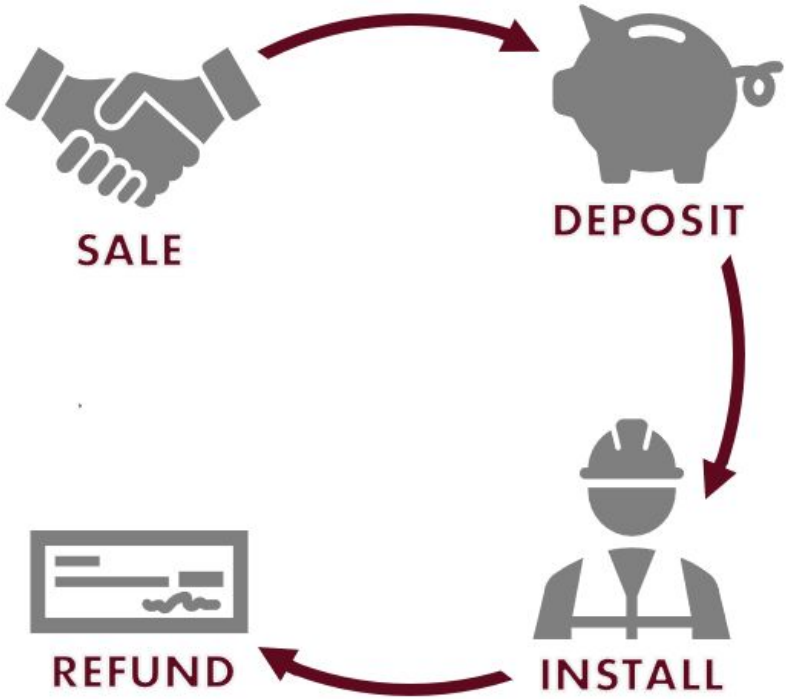


Water Heating

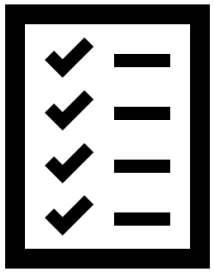
Space Heating/HVAC

Utilizes an Escrow Deposit

- $5,000 deposit sent from escrow to City split between buyer and seller
- Buyer has up to 3 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



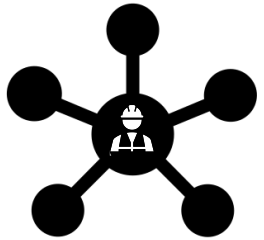
Example: Home *doesn't* have a heat pump system



Seller completes assessment (Home Energy Score)

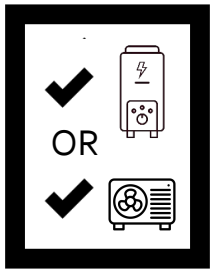
Home listed for sale

$5,000 deposit to cover upgrades sent at closing



Buyer completes upgrades to meet target credit requirement and receives deposit refund

Example: Home *has* a heat pump system



Seller completes assessment (Home Energy Score)

Home listed for sale

Fully Compliant, no upgrade needed

Exemptions/Support

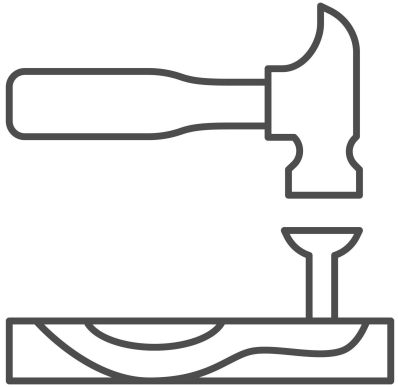
- **BESO Exemptions:**
  - **All-electric homes** with permits showing capped gas line
  - **Refinances**, **partial** and **inheritance transfers**
  - Income qualified **First Time Home Buyers**

- **Support:**
  - Credit for **High Home Energy Score**
  - Option to obtain **early refund**
  - **Hardship** extensions and deferrals

Questions

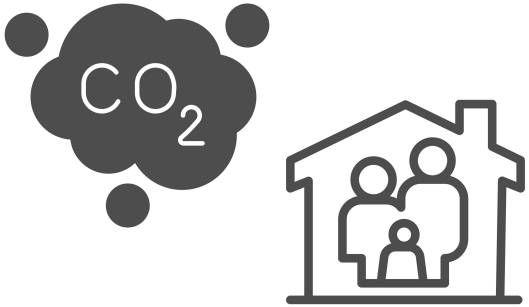
Measures & Credits

Selection of Measures



Permanent

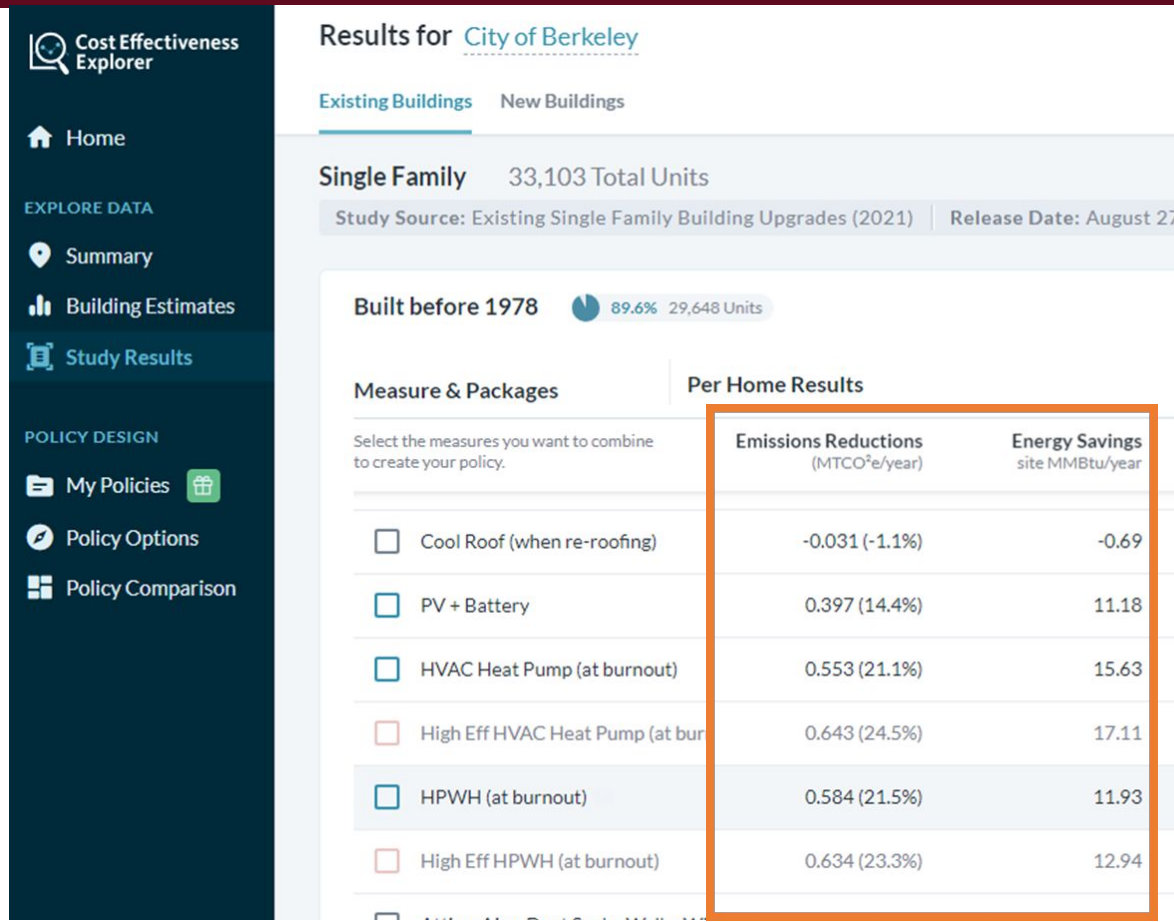
Verifiable



Contributes to Energy/ Emissions Reduction or Increases Resilience

Initial Determination of Credits

- **Emissions/Energy Savings:**
  - Cost Effectiveness Explorer
- **Measure Cost:**
  - TECH Clean CA
  - BayREN Project Data
  - Consultant Estimate
- **Bonus credits:**
  - Added bonus credit to some measures for added health, safety, resilience or efficiency benefits



Upgrade Measures & Credits

Credits Needed: 6

Measure	Credits*	Criteria
Heat Pump Water Heater	6	Emissions
Heat Pump HVAC	6	Emissions
Knob + Tube Replacement	6	Cost
Smart Panel	6	Cost
Solar PV + Storage	6	Cost
Panel/Service Upgrade	6	Cost
Duct Replacement	3	Emissions
Bi-Directional EV Charger	3	Cost
EV Charger	2	Cost

Measure	Credits*	Criteria
Induction Range	2	Emissions
Window Replacements	2-4	Emissions
Attic Insulation	2	Emissions
Wall Insulation	2-4	Emissions
Floor Insulation	1	Emissions
Electric Clothes Dryer	1-2	Cost
Greywater System	1	Cost
Air Sealing	1	Emissions
Prewiring & 240v receptacles	½ per receptacle	Cost

*These are the initial credit values previewed by Council. To be finalized.

Electrification Measures

Measure	Credits	Criteria
Heat Pump Water Heater	6	Emissions
Heat Pump HVAC	6	Emissions
Bi-Directional EV Charger	3	Cost (EV Charger) + Bonus
EV Charger	2	Cost
Induction Range *(switching from gas)*	2	Emissions + Bonus
Electric Clothes Dryer *(switching from gas)*	Heat Pump:2 Electric Resistance: 1	Emissions + Bonus Emissions

Electric-Ready Measures

Measure	Credits	Criteria
Electrical Service Panel Upgrade	6*	Cost + Council Bonus
Smart Panel	6	Cost
Prewiring & 240v receptacles	½ per receptacle (2 Credits Max)	Cost

*City Council directed staff to set any panel upgrade to 6 points.

Energy Efficiency Measures

Measure	Credits	Criteria
Window Replacements	100%: **4** | 75%: **3** | 50%: **2**	Emissions
Wall Insulation	100%: **4** | 75%: **3** | 50%: **2**	Emissions
HVAC Duct Replacement	3	Emissions
Attic Insulation	2	Emissions
Floor/Crawl Space Insulation	1	Emissions
Air Sealing	1	Emissions

Resilience, Health & Safety Measures

Measure	Credits	Criteria
Knob & Tube Replacement with Pre-Wiring of 240v receptacles	6	Cost
Solar PV + Battery Storage	6	Cost
Battery Storage (Only)	4	Credits Split + Bonus
Solar (Only)	3	Credits Split
Greywater System	1	Cost

Next Steps

Thank You!

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