

Building Emissions Saving Ordinance (BESO)

Energy Upgrade Requirements

October 18, 2023



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%
Condominiums (within 2-4 Unit Buildings)	30	3%

Additional Outreach/Engagement



- Berkeley Rent Board – Sustainability Committee
- Real Estate Professionals - Webinar
 - 1,000+ invited
 - ~100 attendees
- Realtor Office Engagements
- City Green Building Coordination Team
- **Upcoming:**
 - Council Policy Committee (FITES) – Nov 1
 - Berkeley Property Owners Association
 - Community and Environmental Organizations



Changes since last meeting



- Berkeley's Residential Conservation Ordinance (RECO) - Background
- Reframing the requirements (Heat pump to flexible BPS)
- 3-4 Unit building phase-in by 2027 **or sooner, when adequate renter protections are in place**

Potential Impacts to Renters

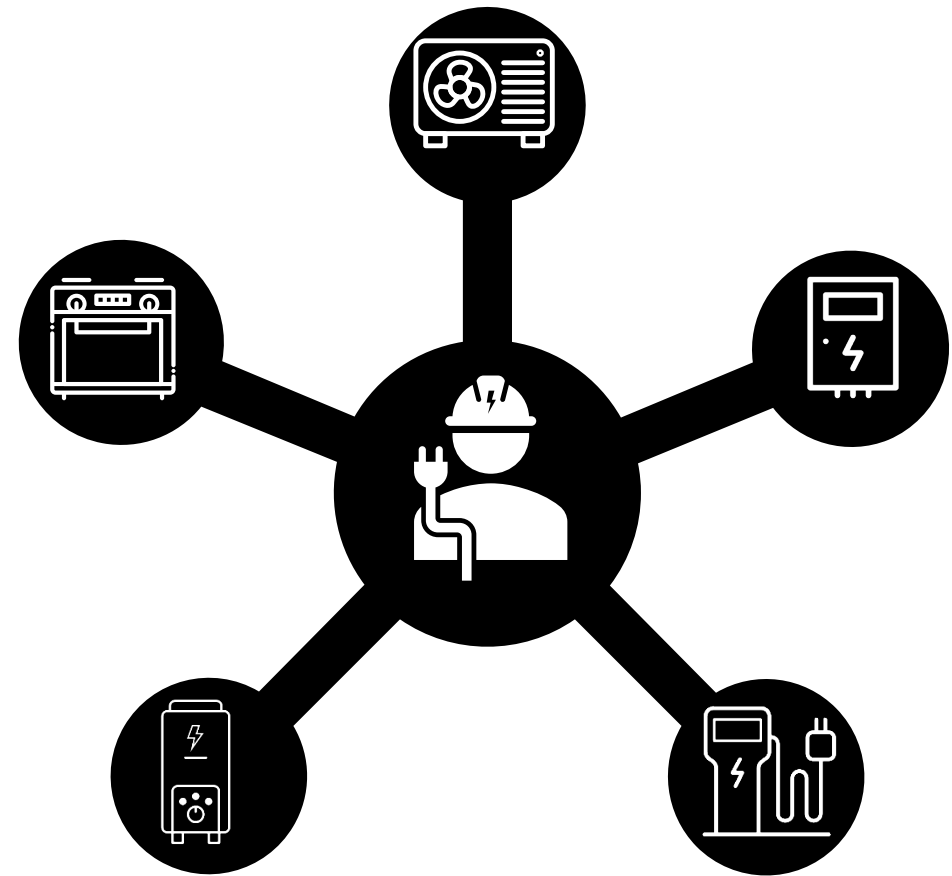


- **Pass through upgrade costs to renters**
 - Upgrade costs could be passed through in non-rent controlled unit
 - When Heat Pump HVAC added, new cooling service would allow property owner to petition for increased rent in rent controlled unit
- **Utility cost shifted/increase**
 - Property owner pays gas then building electrifies = increased electricity bills for tenants
 - Would require tenant approved change to lease
 - Impacts of electric systems during peak hours or additional AC service
- **Displacement/inconvenience during upgrades**

Proposed Upgrade Requirements

Flexible Building Performance Standard

- Buildings need to achieve minimum number of credits through upgrades
- **Rationale:**
 - Addresses range of building conditions
 - Owner can prioritize
- **Potential point criteria:**
 - Energy savings (emissions)
 - Cost
 - Health, safety, resilience bonus



Potential energy upgrade measures



Electrification

- Heat Pump Water Heater
- Heat Pump HVAC
- EV Charging Station (New! including Bi-Directional Charger)
- Induction Range

Electric Ready

- Replace knob and tube
- Panel upgrade (if below 100 amps)
- Pre-wiring & 240v outlets
- Smart Panel

Energy Efficiency

- Duct Sealing/Replacement (Verified)
- Attic Insulation
- Wall Insulation
- Window replacements
- Air Sealing (Verified)
- Floor Insulation/Crawlspace Improvement

Resilience

- Solar PV Installation
- Battery storage installation
- Greywater system

Potential measures & credits



Electrification

Measure	Credits	Criteria
Heat pump water heater	6 (<i>full</i>)	Energy
Heat Pump HVAC	6 (<i>full</i>)	Energy
EV Charging Station	2	Cost
Bi-Directional EV Charger	--	TBD
Induction Range	--	TBD

Electric Ready

Measure	Credits	Criteria
Knob + Tube Replacement	6	Cost
Panel Upgrade	4	Cost
Prewiring & 240v Outlets	1/2 (per outlet)	Cost
Smart Panel	--	TBD

Energy Efficiency

Measure	Credits	Criteria
Duct Sealing/Replacement	3	Energy
High Home Energy Score (<i>Bonus</i>)	2	Energy
Attic Insulation	2	Energy
Wall Insulation	2	Energy
Window Replacements	2	Energy
Air Sealing	1	Energy
Floor Insulation	--	TBD

Resilience

Measure	Credits	Criteria
Solar PV + Storage	4	Energy
Solar PV	1	Energy

Cost Effectiveness Explorer



Cost Effectiveness Explorer

Home

EXPLORE DATA

- Summary
- Building Estimates
- Study Results

POLICY DESIGN

- My Policies
- Policy Options
- Policy Comparison

Results for [City of Berkeley](#)



Existing Buildings New Buildings

Climate Zone **3**

Single Family 33,103 Total Units

Study Source: Existing Single Family Building Upgrades (2021) | Release Date: August 27, 2021 **NEWEST VERSION**

Built before 1978 89.6% 29,648 Units

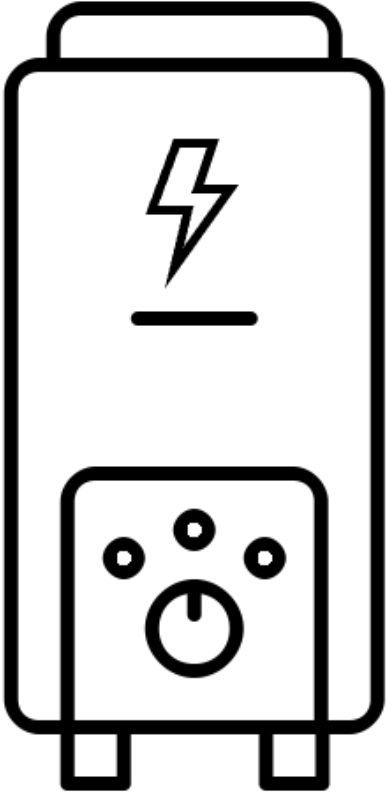
Measure & Packages

Select the measures you want to combine to create your policy.

Per Home Results

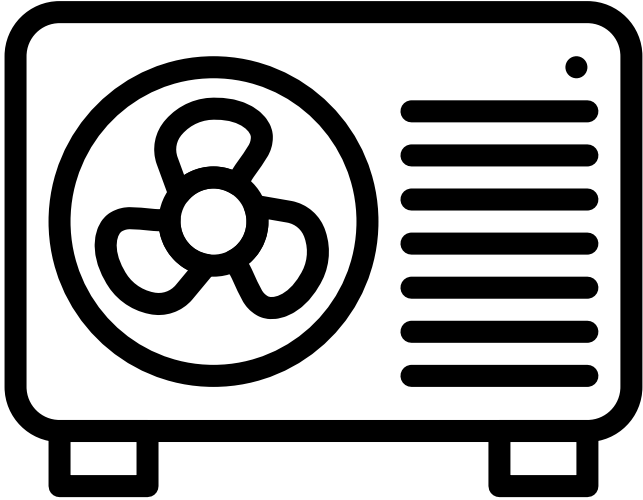
	Incremental Cost	Annual Bill Savings (on-bill)	Emissions Reductions (MTCO ₂ e/year)	Energy Savings site MMBtu/year	Flex annual en
<input type="checkbox"/> Cool Roof (when re-roofing)	\$778	-\$5	-0.031 (-1.1%)	-0.69	
<input type="checkbox"/> PV + Battery	\$18,258	\$885	0.397 (14.4%)	11.18	
<input type="checkbox"/> HVAC Heat Pump (at burnout)	\$501	-\$238	0.553 (21.1%)	15.63	
<input type="checkbox"/> High Eff HVAC Heat Pump (at burnout)	\$3,749	-\$106	0.643 (24.5%)	17.11	
<input type="checkbox"/> HPWH (at burnout)	\$2,594	-\$148	0.584 (21.5%)	11.93	
<input type="checkbox"/> High Eff HPWH (at burnout)	\$2,775	-\$45	0.634 (23.3%)	12.94	
<input type="checkbox"/> Attic + Air + Duct Seal + Wall + Windows	\$18,659	\$359	0.658 (23.8%)	14.62	

Exemption Pathway: Heat pump



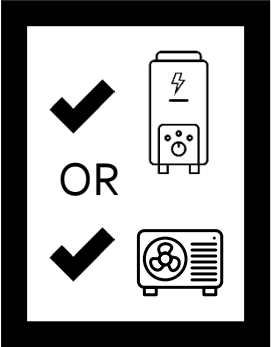
Water Heating

OR



Space Heating/HVAC

Example: Home *has* a heat pump

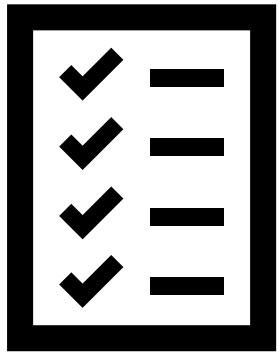


Seller completes assessment
(Home Energy Score)

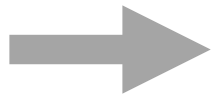
Home listed for
sale

Fully Compliant, no
upgrade needed

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



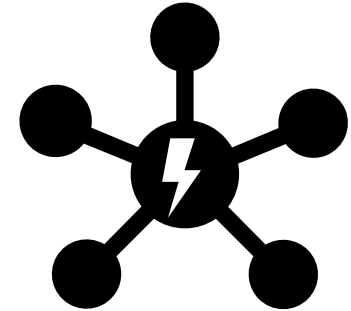
Seller completes assessment
(Home Energy Score)



Home listed for sale



Funds to cover upgrades negotiated at closing through escrow deposit



Buyer completes Energy Upgrade(s) to meet target credit requirement and utilizes escrow deposit

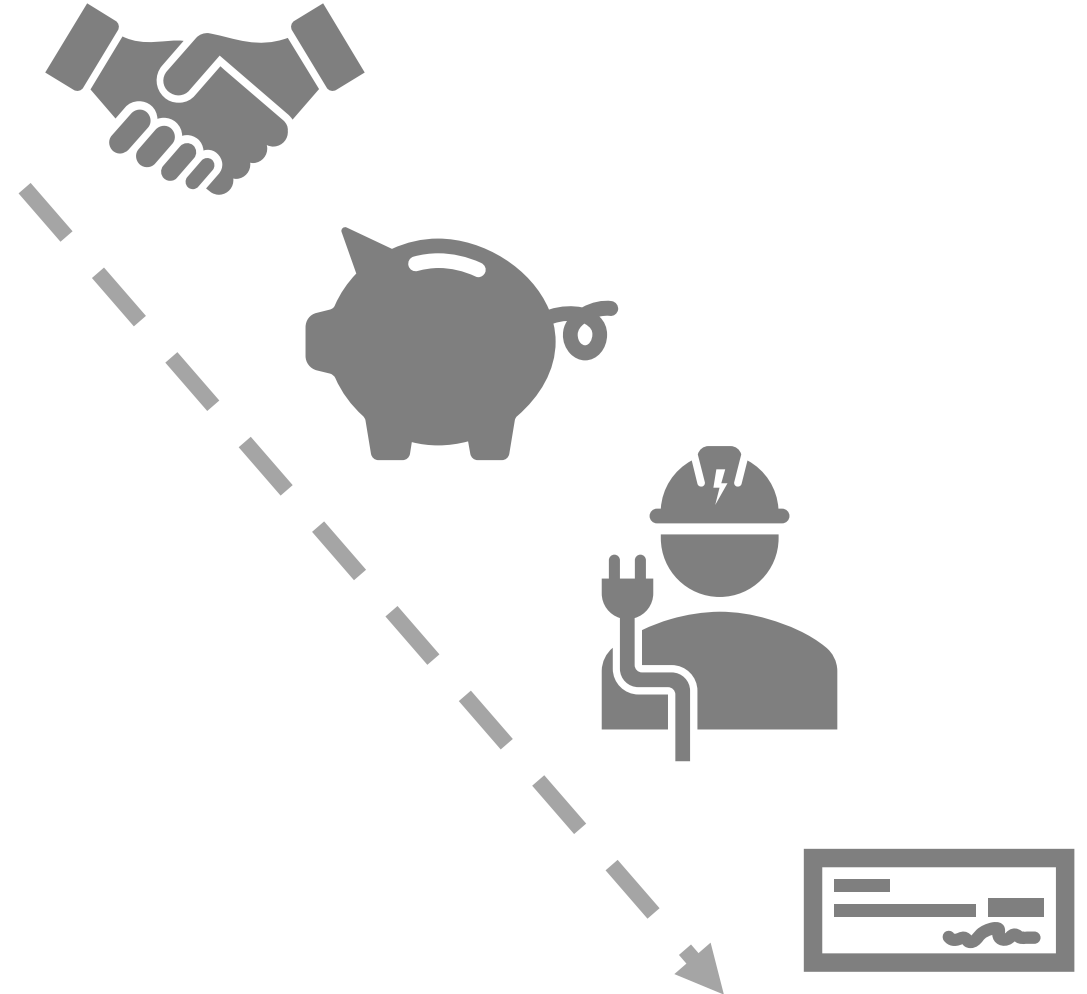
Covered Building Phase-in

- **Phase I: Single-family, ADUs, Duplexes, Condos within 1-4 unit buildings**
 - Expected implementation 2025
 - Likely to be owner-occupied
 - Bulk of sales
- **Phase II: 3-4 Units**
 - Expected implementation by 2027
 - Use lessons learned from Phase 1
 - Likely to be rental properties
 - Complex/shared systems
 - Need to develop additional support systems



Escrow Deposit

- Buyer/Seller negotiated
- If compliance requirements not met, 1-year extension can be requested
- Deposit sent from escrow to City
- Refunded once property is compliant
- Operate similar to Private Sewer Lateral
- After 2-years the funds are forfeited to the City and could be used to help fund low-income electrification programs



Proposed Exemptions/Support



- **BESO Exemptions:**
 - **All-electric homes** with permits showing capped gas line
 - **Refinances** and **partial transfers**
- **Support:**
 - **Assessment support** for income qualified sellers
 - Credit for **High Home Energy Score**
 - **Hardship** extensions and deferrals



Clarifying Questions



Proposed Policy Components



- **Covered Buildings:**

- Phase I: Single family homes, Duplexes, ADUs, condos
- Phase II: 3-4 Units

- **Requirement:**

- Flexible (credit based) Building Performance Standard **OR**
- One heat pump system

- **Buyer vs Seller Responsibilities:**

- Seller: Assessment
- Buyer: Complete upgrades (*if no heat pump*)

- **Implementation:**

- Utilize escrow bond/deposit process

- **Exemptions:**

- All-electric homes
- Refinances and partial transfers

Thank You!



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