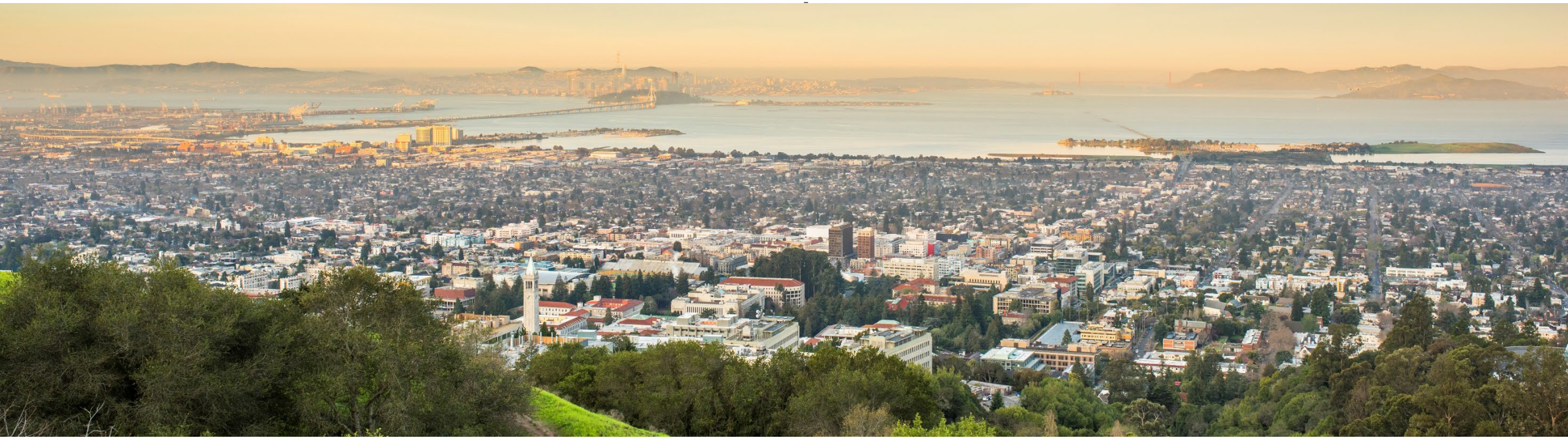


2025 Cost-Effectiveness Study Summaries for New Construction

Environment and Climate Commission

July 22, 2026



Presentation Agenda



- Cost-Effectiveness (CE) Studies
- Metrics
- Single Family results
- Multifamily results
- Nonresidential results*
- Other impacts & next steps

* Nonresidential results are pending publication

CE Study Background

What are Cost Effectiveness (CE) Studies?



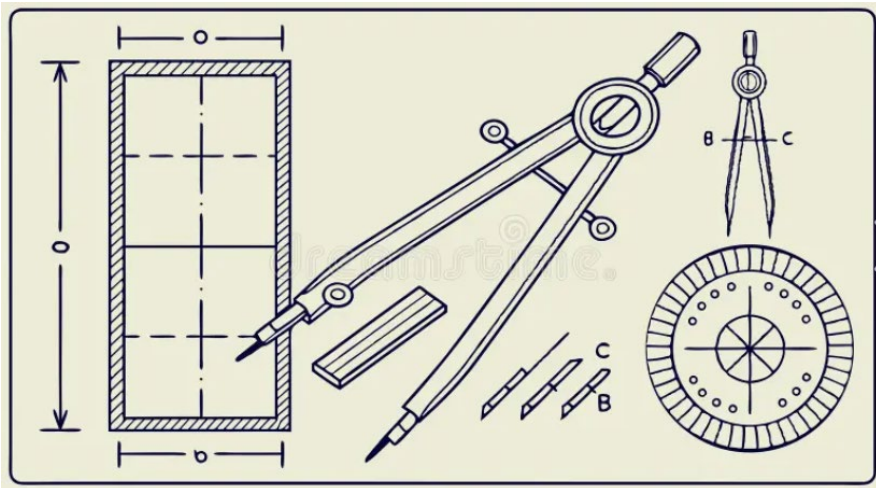
- Demonstrate state-defined 30 yr financial payback for Energy Efficiency (EE) measures exceeding current CA code
- Demonstrate technical and legal feasibility of Reach Code measures
- CA Investor Owned Utilities (IOU) sponsored, prepared each triennial Building Code cycle



CE Study Metrics

Cost-Effectiveness (CE) Study Metrics

- Source Energy
- Net Present Value (NPV)
- Energy Performance Metrics: U-Factor, R-Value, SEER2, ACH50, SSF

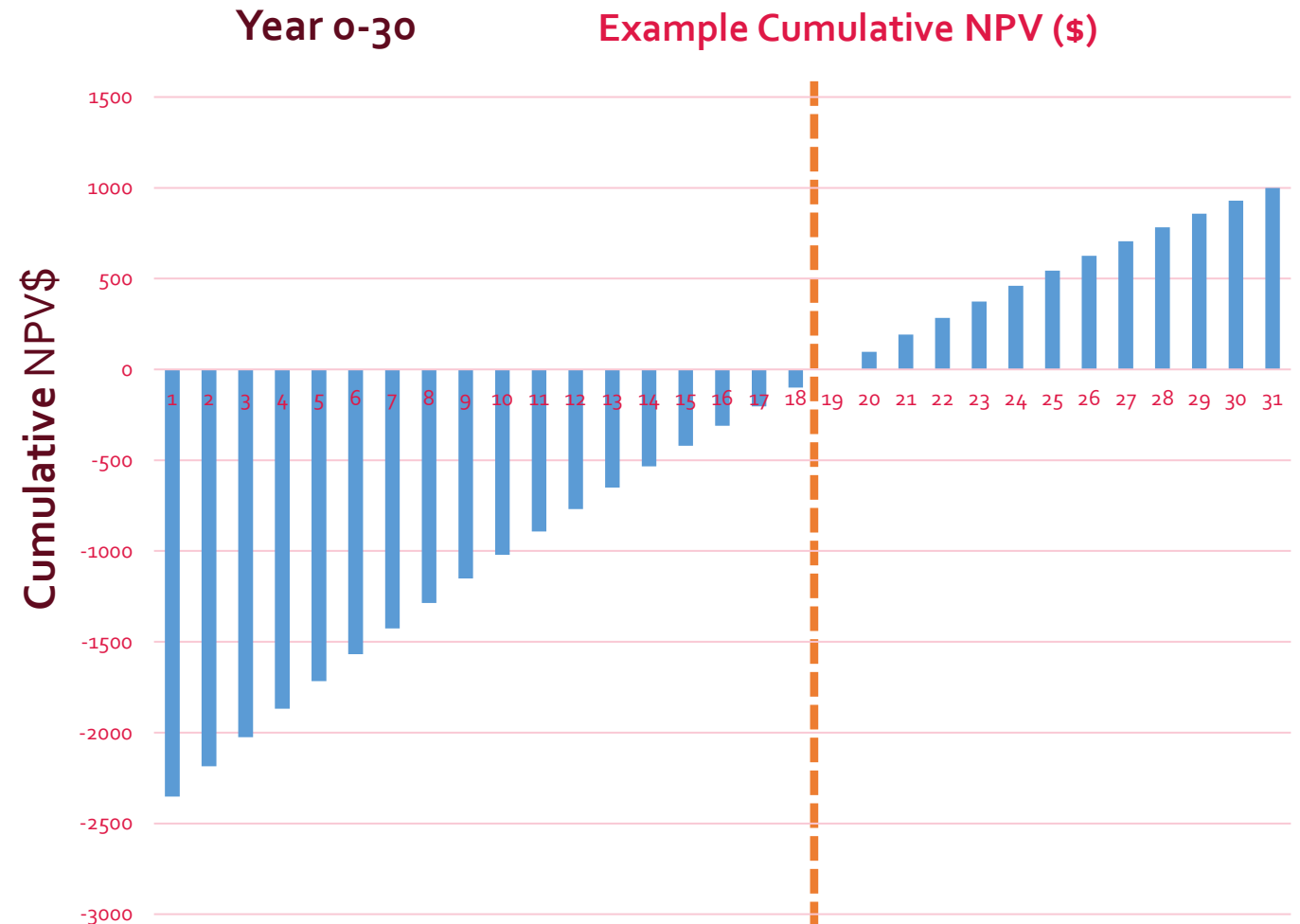


NPV Example for new Single Family



- \$2352 first cost with \$1000 NPV
- 30 yrs, 3% real discount rate
- Break even @ yr 18

Example for new construction, not retrofit



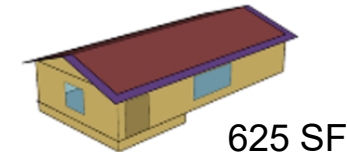
CE Study Single Family Results

2025 CE Single Family Results

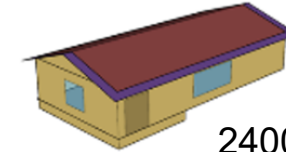


Climate Zone 3 (Berkeley)
2400 SF Standard Design Structure

Single-Family Prototypes



625 SF



2400 SF

- ADU and Single Family
- 16 California Climate Zones

4.7% Reduction (Source)

Reach Code is cost effective up to numbers shown & renders a mixed-fuel design less compelling

2025 CE Single Family Pathway

Three EE measures chosen:

1. R50 Attic Insulation (+\$1227**)
2. Radial* HVAC ducts + R8 insulation (+\$706**)
3. Compact Hot Water Distribution System (-\$180**)



* Radial HVAC duct = homerun from HVAC appliance to register, not as shown

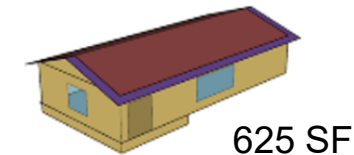
** Costs as determined by the cost effectiveness study.

2025 CE Single Family ADU Results

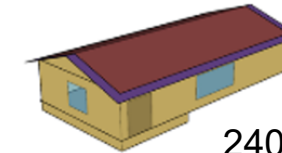


Single-Family Prototypes

Climate Zone 3 (Berkeley)
625 SF Standard Design ADU



625 SF



2400 SF

- ADU and Single Family
- 16 California Climate Zones

1.8% Reduction (Source)

2025 CE Single Family ADU Pathway

One ADU measures chosen for EE:

1. Ductless Variable Capacity Heat Pump (-\$5246)



CE Study Multifamily Results

2025 CE Multifamily Results

Climate Zone 3 (Berkeley)

3-Story Standard Design Structure[‡]

5-Story Standard Design Structure[‡]



13% Reduction* (3-Story)

14% Reduction* (5-Story)

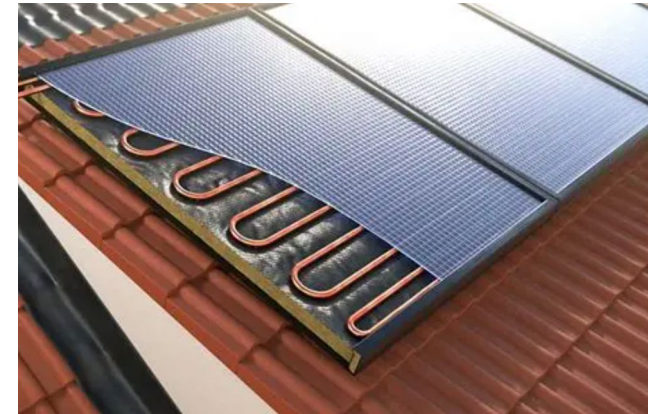
[‡] 3-Story is 36-unit and 5-story 88 unit (mix of studio, 1 bdrm, 2 bdrm, & 3 bdrm)

* Source Energy Reduction

Two Multifamily design paths:

Electric Space and Water Heating

- w/central 3-story or 5-story Heat-Pump Water Heater
(**-\$440*** per unit)



Mixed Fuel (Central gas-fired Water Heating)

- 0.3 SSF Solar Thermal (+\$541/+\$1125 per unit)
- Verified Low Leakage Ducts (+\$140 per unit)*

* Same costs for 3-story and 5-story units

Other Impacts

New Construction Service Panel Upsizing

- **New Construction Single Family** requires 200A electric service panel, busbar, compatible breakers, etc
- **Multifamily service panel upgrades** at time of new construction involve project specific criteria, making generalized costs challenging



Next Steps

Berkeley Single Margin Reach Code Recommendation

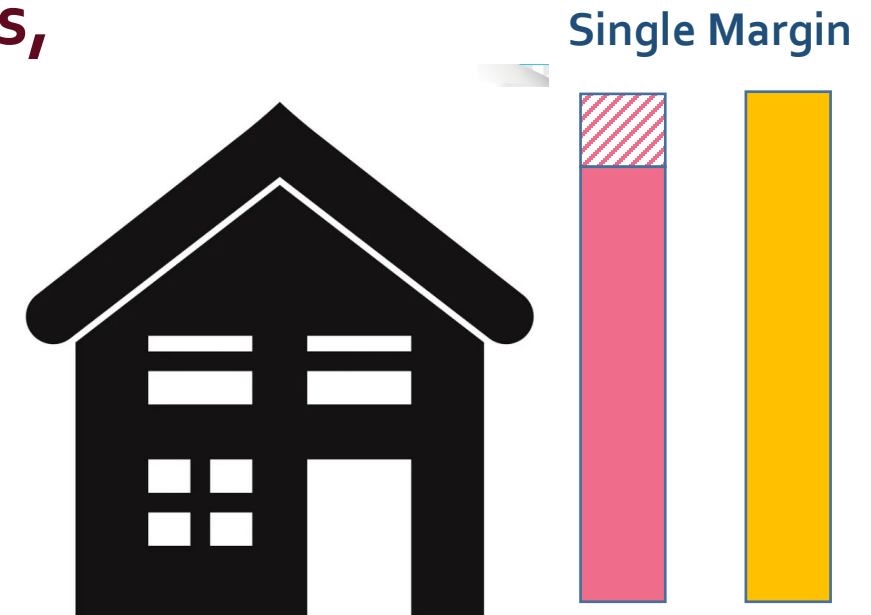


<u>Occupancy</u>	<u>Source Margin</u>
SF	$\leq 4.7\%$
ADU	$\leq 1.8\%$
Multifamily	$\leq 13\%^*$ ← Greatest GHG reduction
NR	TBD

* Lesser 3-Story Source margin result for mixed-fuel design chosen to ensure all projects can comply with studied EE feature suite

Single Margin Reach Code

1. State code allows a baseline energy use
2. Single Margin requires less energy use than State by margin shown
3. Project compliance with Solar Thermal panels, Low Leakage ducts, Compact Hot Water Distribution System, Radial ducts, Attic insulation, Ductless Variable Capacity Heat Pump ; other costs vary



Recommended Reach Code



Staff anticipates advancing the Multifamily Single Margin Reach Code.

- Waiting on the templates in order to proceed with the code amendments.
- Will need to consult with experts on a multi-tiered margin for smaller multifamily structures. (State modeled larger structures)

Your Feedback is appreciated



- **Questions**
- **Suggestions**

Thank You!



Kurt Hurley

Green Building Program Manager
Building and Safety Division
khurley@berkeleyca.gov

David Lopez

Chief Building Official
Building and Safety Division
dlopez@berkeleyca.gov

Sarah Moore

Manager
Office of Energy and Sustainable Development
smoore@berkeleyca.gov

Jeff Jensen

Deputy Building Official
Building and Safety Division
jjensen@berkeleyca.gov

