

Statewide Codes and Standards

Cost-effectiveness Explorer
August 30, 2022



Agenda

- Welcome and Introductions
- Local Ordinances Overview
 - Cost-effectiveness
 - Optional Policy Structures
- Cost-Effectiveness Explorer
 - Explorer Introduction
 - New Features
 - Creating New Construction Policies
- Local Energy Codes Resources
- Questions



What is a Reach Code?

A reach code is an ordinance adopted by a local government that requires something in addition to the requirements of the state's building code.



Newly Constructed Building Ordinances - Considerations

Require all-electric?

- All occupancy types?
- Outdoor gas equipment (pools, barbeques, firepits, etc.)?
- Readiness?
- Exemptions?

Include efficiency above code?

- Mixed fuel and all-electric?
- Single family study supports additional efficiency
- Nonresidential and multifamily TBD
- Must be cost-effective

Include substantial remodels in new construction?

- Common definition for threshold?

New Construction Ordinance Approaches

	Efficiency	Electric-Preferred	Electric Only		High Efficiency Electric Only
			Natural Gas Moratorium	Electric Only	
Mechanism	Energy Code	Energy Code	Jurisdictional authority (e.g., Health and Safety)	CALGreen	(Jurisdictional authority or CALGreen) plus Energy Code
Requirements	All new construction exceeds minimum energy code	Only mixed fuel buildings exceed minimum energy code	No new gas infrastructure (Hookups or Piping)	All new construction is electric only	All new construction is electric only AND exceeds minimum
Considerations	Simplicity Preserves choice Specific measures	Preserves Choice Lower GHG Savings	Longest Lasting	Must be renewed	Biggest impact Must be renewed

Cost-effectiveness: Why and How?

Why is a Cost-effectiveness Study Necessary?

- Define range of feasible improvements within which one may craft policy
- Demonstrate available compliance pathways
- Document that proposed policy meets legal requirements
- Understand policy impacts to support informed decisions.

How is Cost-effectiveness Measured?

- Simple Payback
 - How long will it take to recoup incremental costs?
- Benefit- to-Cost Ratio
 - Benefits divided by Costs (≥ 1.0)
- Net Present Value
 - Benefits minus Costs (positive)

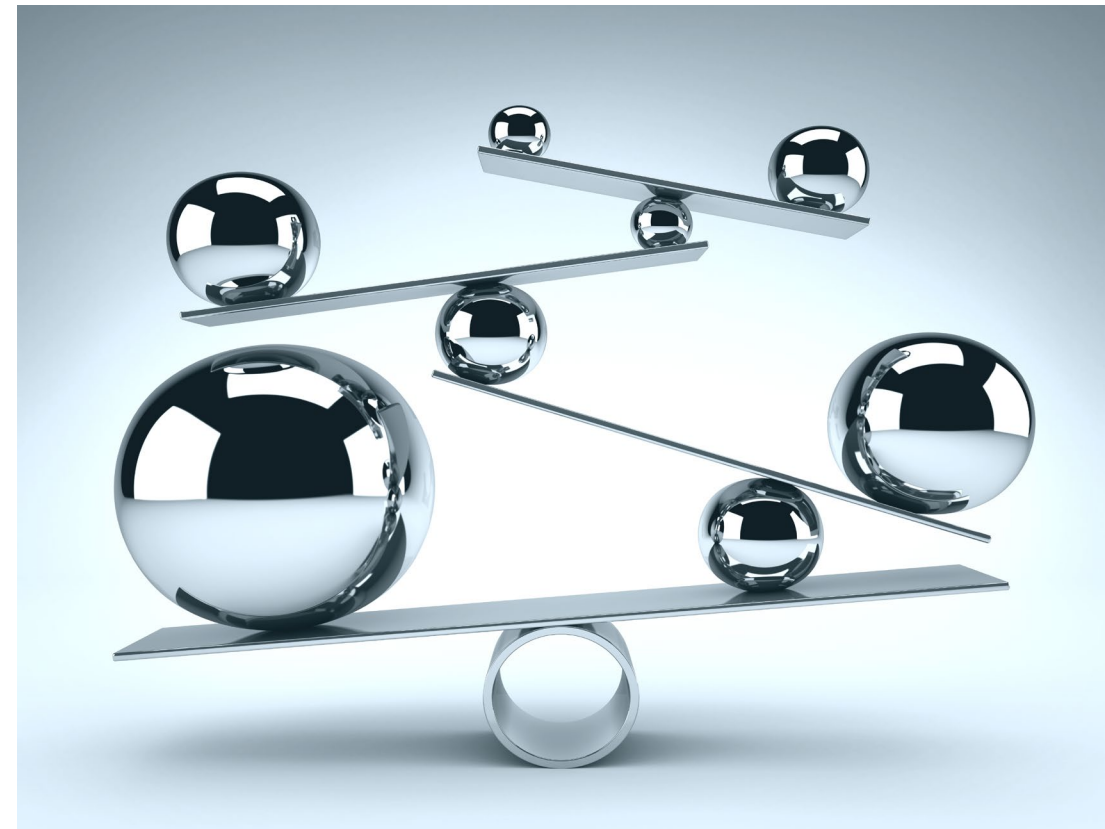


Table 14: Single Family Electrification Results

Climate Zone	Utility	Average Annual Utility Bill Savings		Net Utility Savings	2019 Code Compliant Home		Equipment Cost Savings	On-Bill B/C Ratio
		Electricity	Natural Gas		Utility Bill Savings	Lifetime NPV		
CZ	PG&E	-\$1,194	+\$712	-\$482	-\$14,464	+\$5,349		
01	PG&E	-\$825	+\$486	-\$340	-\$10,194	+\$5,349		
02	PG&E	-\$717	+\$391	-\$326	-\$9,779	+\$5,349		
03	PG&E	-\$710	+\$387	-\$322	-\$9,671	+\$5,349		
04	PG&E	-\$738	+\$367	-\$371	-\$11,128	+\$5,349		
05	PG&E/SoCalGas	-\$738	+\$370	-\$368	-\$11,034	+\$5,349		
06	SCE/SoCalGas	-\$439	+\$289	-\$149	-\$4,476	+\$5,349		
07	SDG&E	-\$414	+\$243	-\$171	-\$5,134	+\$5,349		
08	SDG&E	-\$347	+\$249	-\$97	-\$2,921	+\$5,349		
09	SDG&E	-\$377	+\$271	-\$107	-\$3,199	+\$5,349		
10	SDG&E	-\$403	+\$280	-\$123	-\$3,684	+\$5,349		
11	SDG&E	-\$403	+\$280	-\$123	-\$3,684	+\$5,349		
12	SDG&E	-\$403	+\$280	-\$123	-\$3,684	+\$5,349		
13	SDG&E	-\$403	+\$280	-\$123	-\$3,684	+\$5,349		
14	SDG&E	-\$403	+\$280	-\$123	-\$3,684	+\$5,349		
15	SDG&E	-\$403	+\$280	-\$123	-\$3,684	+\$5,349		
16	SDG&E	-\$403	+\$280	-\$123	-\$3,684	+\$5,349		

Table 1: Prototype Characteristics

Characteristic	Single Family One-Story	Single Family Two-Story	Multifamily
Conditioned Floor Area	2,100 ft ²	2,700 ft ²	6,960 ft ² :
Num. of Stories	1	2	(4) 780 ft ² & (4) 960 ft ²
Num. of Bedrooms	3	2	
Window-to-Floor Area Ratio			

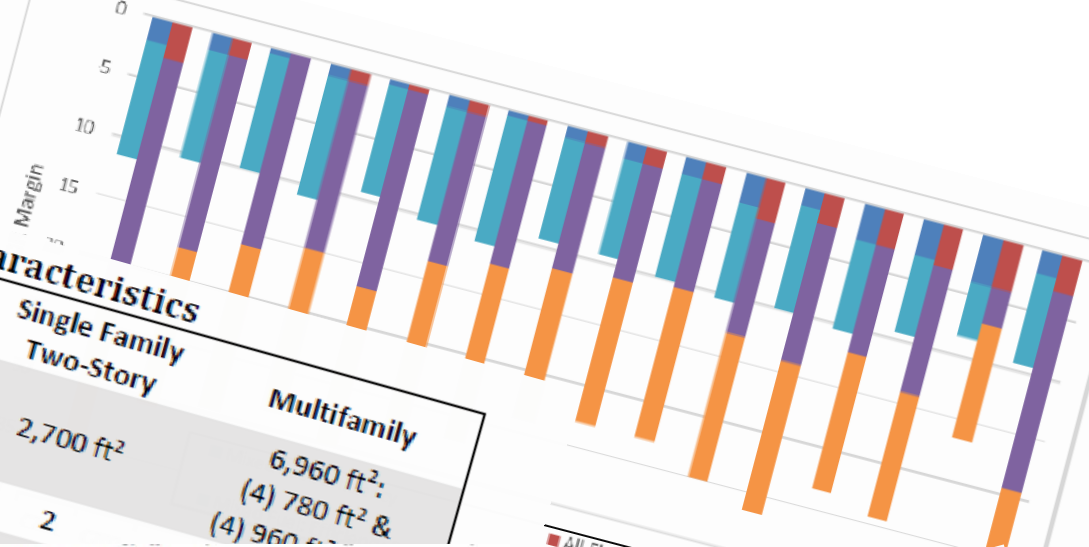


Table 13: Multifamily Package Cost-effectiveness Results for the All-Electric Case^{1,2}

Climate Zone	Utility	Efficiency						Efficiency & PV				Efficiency & PV/Battery					
		Non-Preempted		Equipment - Preempted		Target Efficiency	Efficiency & PV		Efficiency & PV/Battery		Target Total EDR	Efficiency & PV/Battery		Target Total EDR			
		Efficiency EDR	On-Bill B/C	TDV B/C	Efficiency EDR		On-Bill B/C	TDV B/C	Total EDR	On-Bill B/C		TDV B/C	Total EDR		On-Bill B/C	TDV B/C	
CZ	Utility	Margin	Ratio	Ratio	Margin	B/C Ratio	B/C Ratio	Margin	Ratio	Ratio	Margin	Ratio	Ratio	Margin	Ratio	Ratio	Margin
01	PG&E	3.6	1.6	1.4	3.3	2.4	2.3	3.0	22.5	2.0	1.5	22.5	34.5	1.3	1.4	34.5	34.5
02	PG&E	1.9	1.7	2.1	3.2	1.6	1.6	1.5	17.5	2.4	1.8	17.5	30.9	1.4	1.7	30.5	30.5
03	PG&E	0.0	-	-	2.7	1.7	1.6	0.0	16.1	2.4	1.7	16.0	29.5	1.3	1.6	29.5	29.5
04	PG&E	1.4	1.4	1.5	2.2	1.2	1.1	1.0	15.0	2.4	1.8	15.0	28.9	1.3	1.8	28.5	28.5
05	PG&E	0.6	1.1	0.9	3.6	2.1	2.0	0.5	17.1	2.5	1.8	17.0	30.3	1.4	1.7	30.0	30.0
05	PG&E/SoCalGas	0.6	1.1	0.9	3.6	2.1	2.0	0.5	17.1	2.5	1.8	17.0	30.3	1.4	1.7	30.0	30.0
06	SCE/SoCalGas	1.0	0.7	1.3	2.2	1.6	1.9	1.0	13.8	1.2	1.7	13.5	27.5	1.2	1.6	27.5	27.5
07	SDG&E	0.6	0.6	1.0	1.9	1.6	1.7	0.5	12.8	2.1	1.8	12.5	27.1	1.2	1.6	27.0	27.0
08	SCE/SoCalGas	1.2	0.9	1.7	1.9	1.6	1.8	1.0	11.6	1.3	1.8	11.5	24.2	1.2	1.6	24.0	24.0
09	SCE/SoCalGas	1.6	1.3	2.7	1.5	1.6	1.6	1.5	11.3	1.3	1.9	11.0	23.3	1.3	1.7	23.0	23.0
10	SCE/SoCalGas	1.8	1.2	2.0	1.8	1.7	2.0	1.5	10.8	1.3	1.8	10.5	23.3	1.3	1.7	23.0	23.0
10	SDG&E	1.8	1.5	2.0	1.8	2.0	2.0	1.5	10.8	2.1	1.8	10.5	23.3	1.4	1.7	23.0	23.0
11	PG&E	3.5	1.4	1.6	3.9	2.0	2.3	3.5	13.4	2.2	1.8	13.0	25.3	1.4	1.8	25.0	25.0
12	PG&E	2.6	0.9	1.1	2.9	1.6	1.6	2.5	14.4	2.1	1.6	14.0	26.6	1.3	1.7	26.5	26.5
13	PG&E	3.3	1.3	1.6	3.8	2.0	2.3	3.0	12.2	2.1	1.7	12.0	23.9	1.4	1.7	23.5	23.5
14	SCE/SoCalGas	3.7	1.2	1.6	3.8	1.6	2.2	3.5	14.0	1.4	1.9	14.0	24.8	1.4	1.8	24.5	24.5
14	SDG&E	3.7	1.5	1.6	3.8	2.0	2.2	3.5	14.0	2.2	1.9	14.0	24.8	1.7	1.8	24.5	24.5
15	SCE/SoCalGas	4.4	1.5	2.3	6.4	1.2	1.7	4.0	7.1	1.4	2.1	7.0	16.9	1.3	1.8	16.5	16.5
16	PG&E	4.1	2.1	2.1	3.2	1.6	1.7	3.0	19.6	2.6	1.9	19.5	29.9	1.6	1.7	29.5	29.5

¹>1* indicates cases where there are both first cost savings and annual utility bill savings.
²Information about the measures included for each climate zone are described in Appendix F – Multifamily Measure Summary.

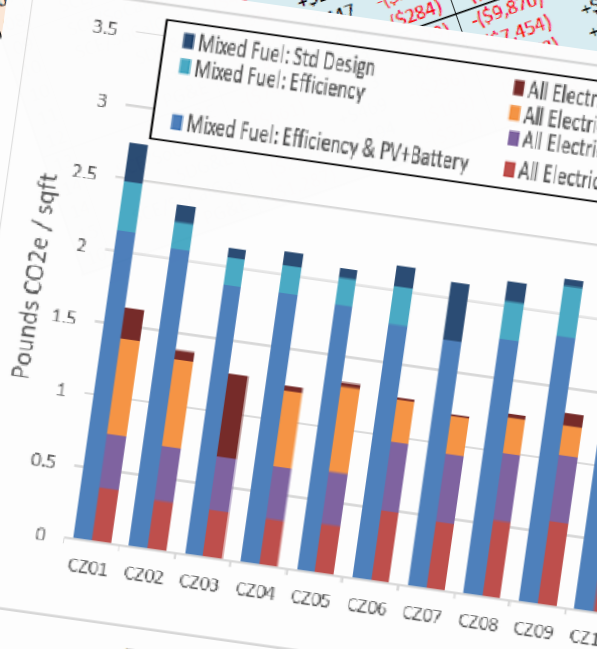
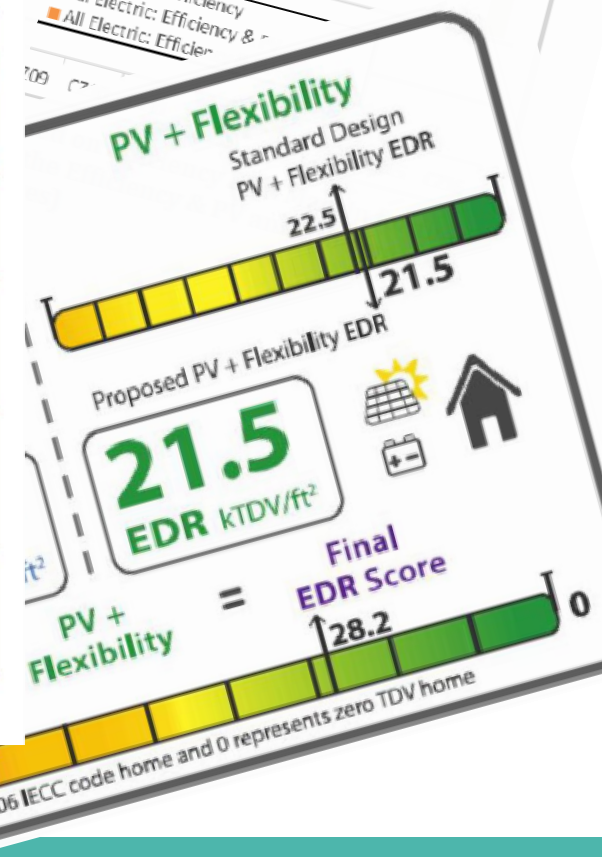


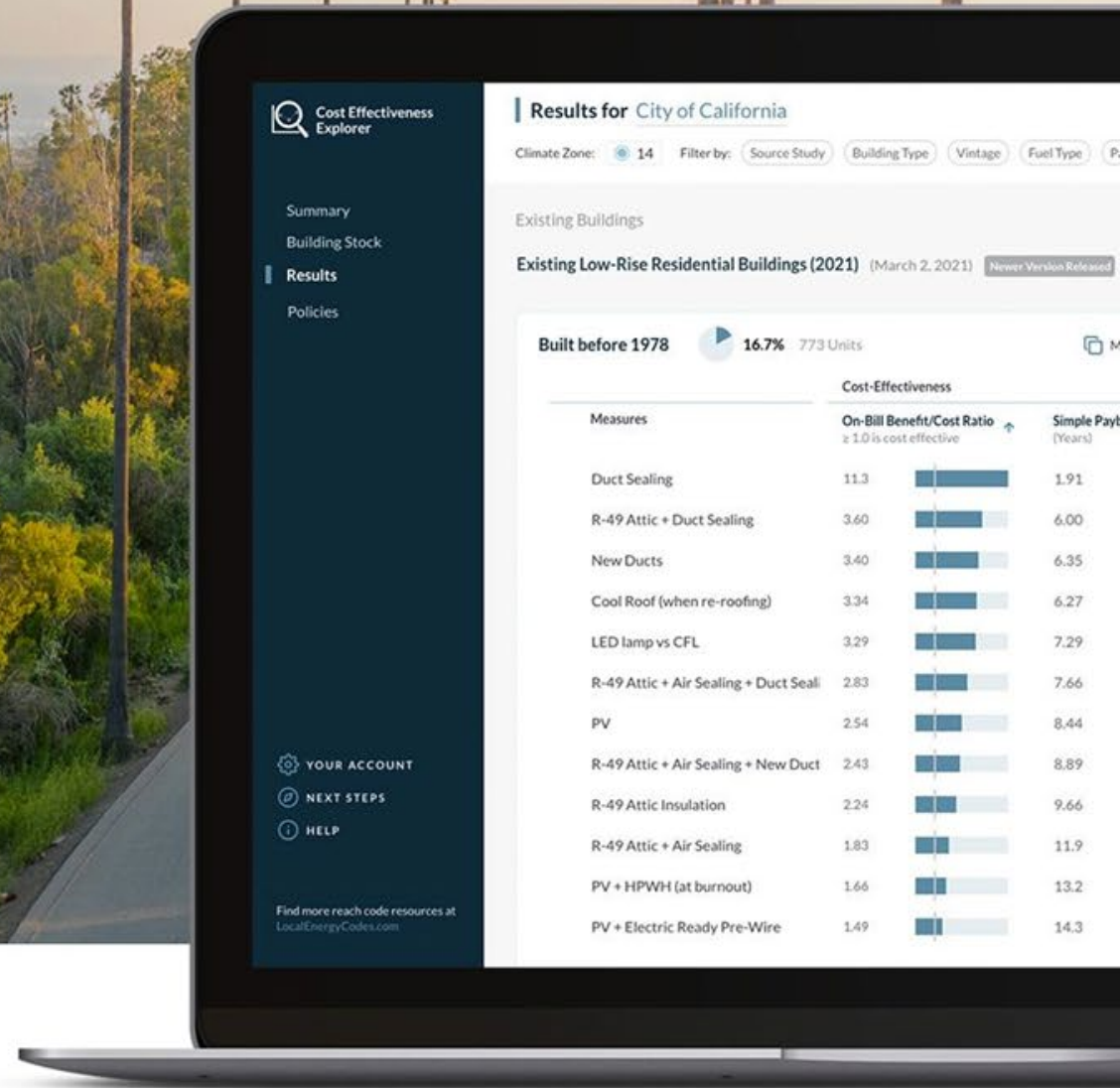
Figure 8: Multifamily greenhouse gas emissions comparison



100 represents 2006 IECC code home and 0 represents zero TDV home

The Cost-Effectiveness Explorer

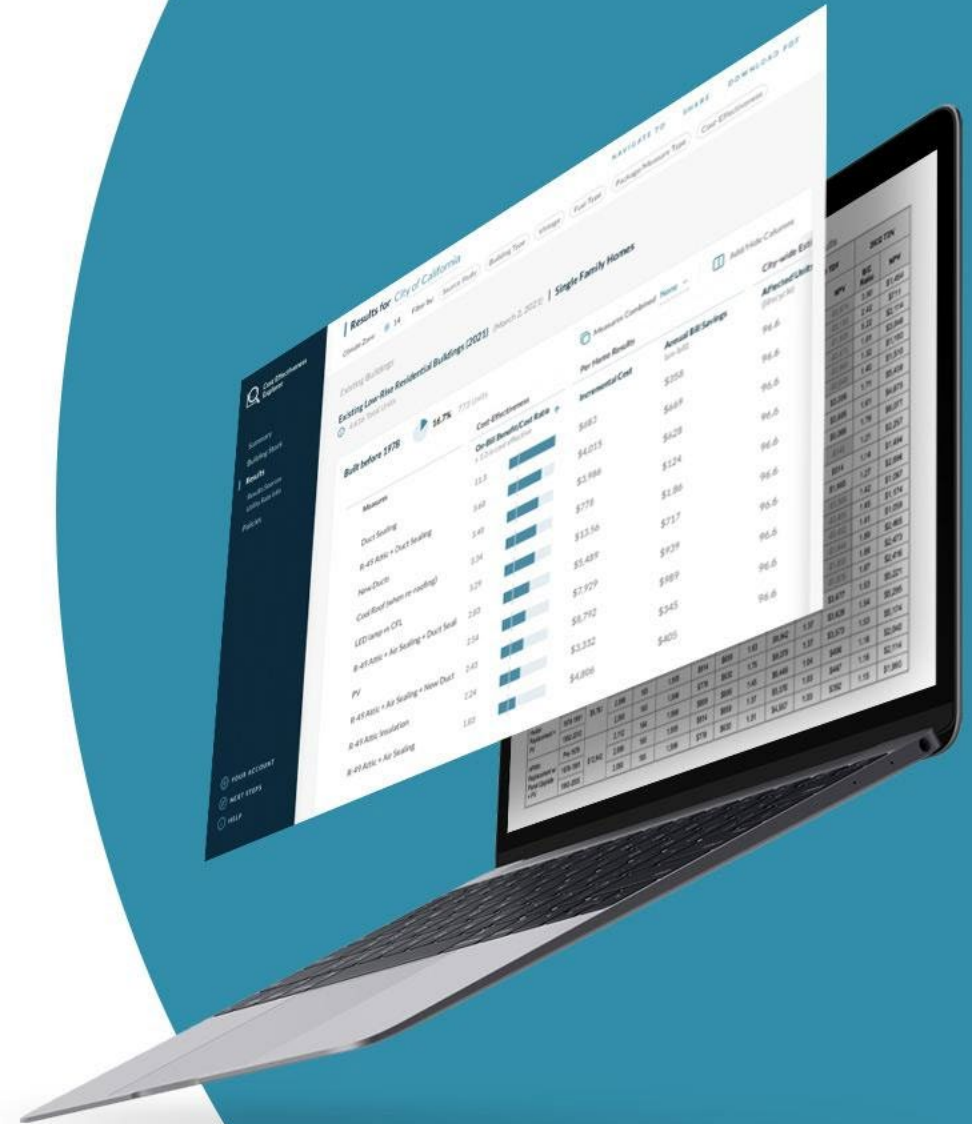
explorer.localenergycodes.com



Cost-Effectiveness Explorer

explorer.localenergycodes.com

- ✓ Free web-based software for California local government energy policy makers
- ✓ Designed to help accelerate reach code adoption and support data-driven decision making
- ✓ Launched in late 2020
- ✓ Aggregates findings from 6 statewide cost-effectiveness studies
- ✓ Estimates residential building stock for each of 500+ California cities and counties
- ✓ Helps users evaluate and develop cost-effective policy options



Summary for City of Yucca Valley

City of Yucca Valley has 1 climate zone 14

EXPLORE DATA

- Summary
- Building Estimates
- Results

POLICY DESIGN

- My Policies
- Compare Policies

MY ACCOUNT

INFO

HELP

NEXT STEPS



Forecast the impact of reach codes in City of Yucca Valley using the resources available:

Existing Buildings

Start a policy for existing single family homes and multifamily dwelling units based on the latest study data using a prescriptive or flexible compliance path. We will guide you step-by-step.

[Create a policy](#)

2 building types available ⓘ

[Explore study results](#)

New Construction

Pssst! We now have limited preliminary results for 2022 new single family homes, and a model to forecast policy impacts. Additional results and policy creation features will be available soon.

[Create a policy](#)

1 building type available ⓘ

[Download impact model](#)

[Key Concepts for the 2022 Code Cycle](#)

[Explore study results](#)

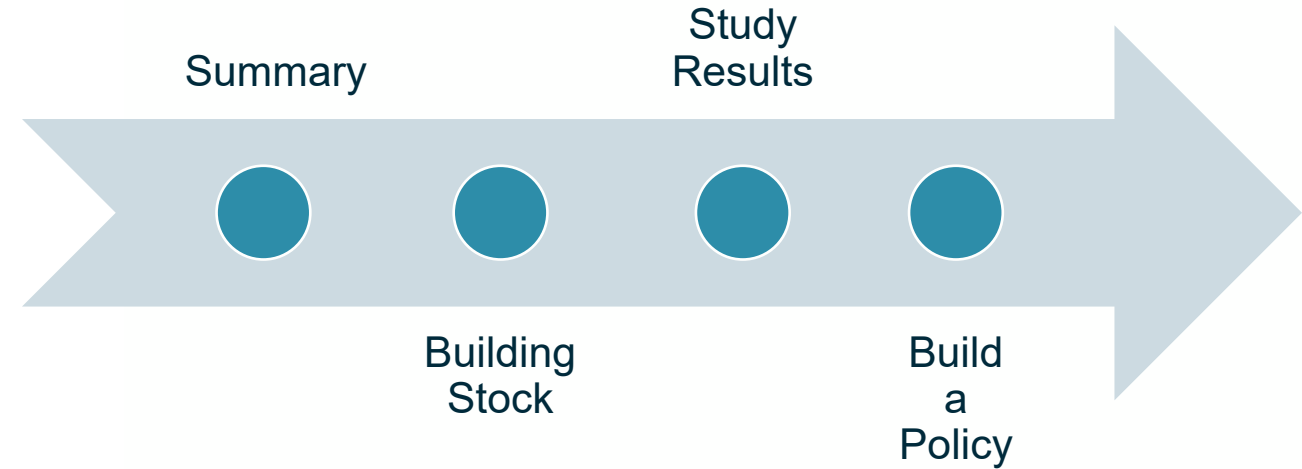
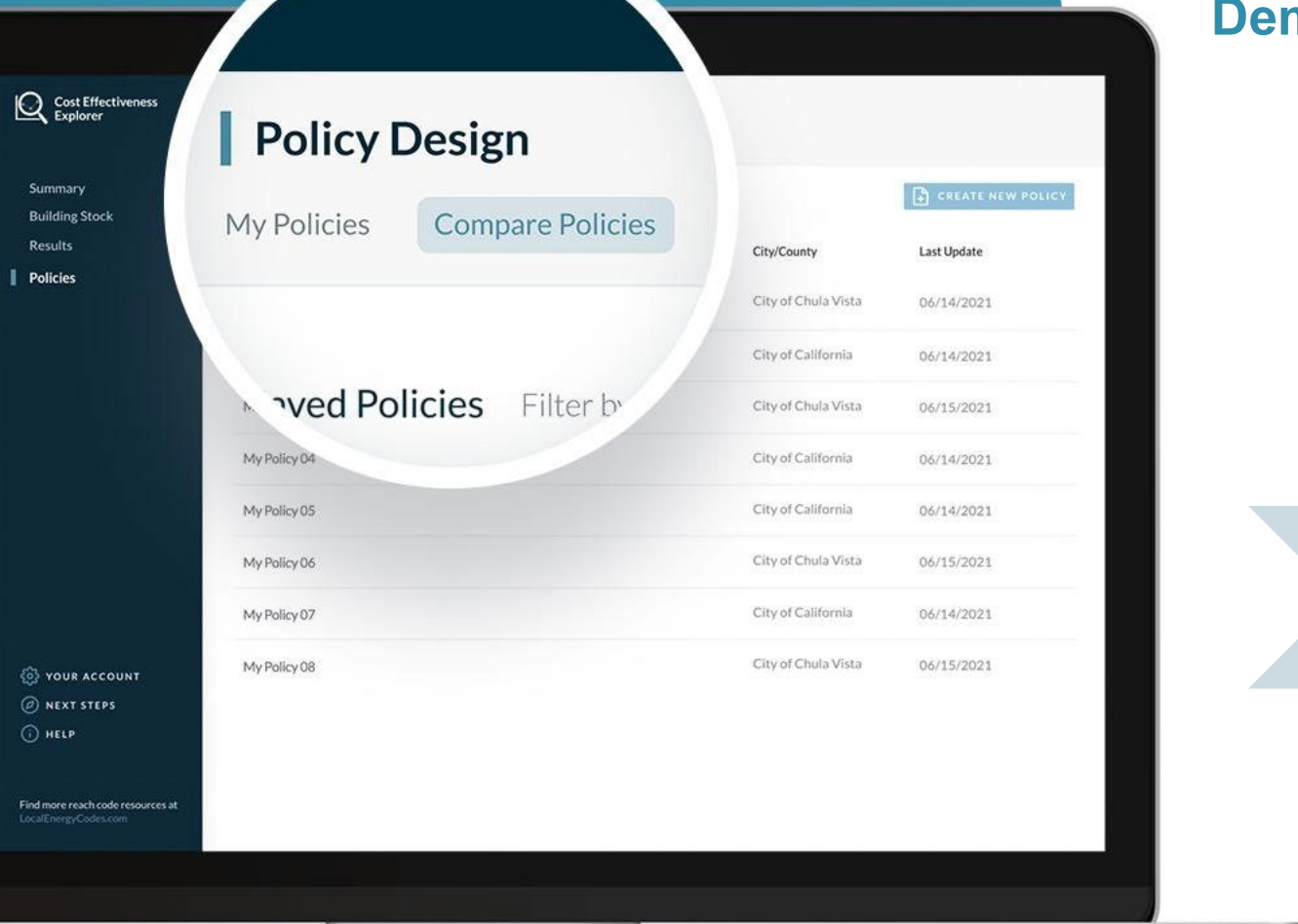


Let Us Build a Policy For You

Type "Yes" in the chat box

Cost-Effectiveness Explorer

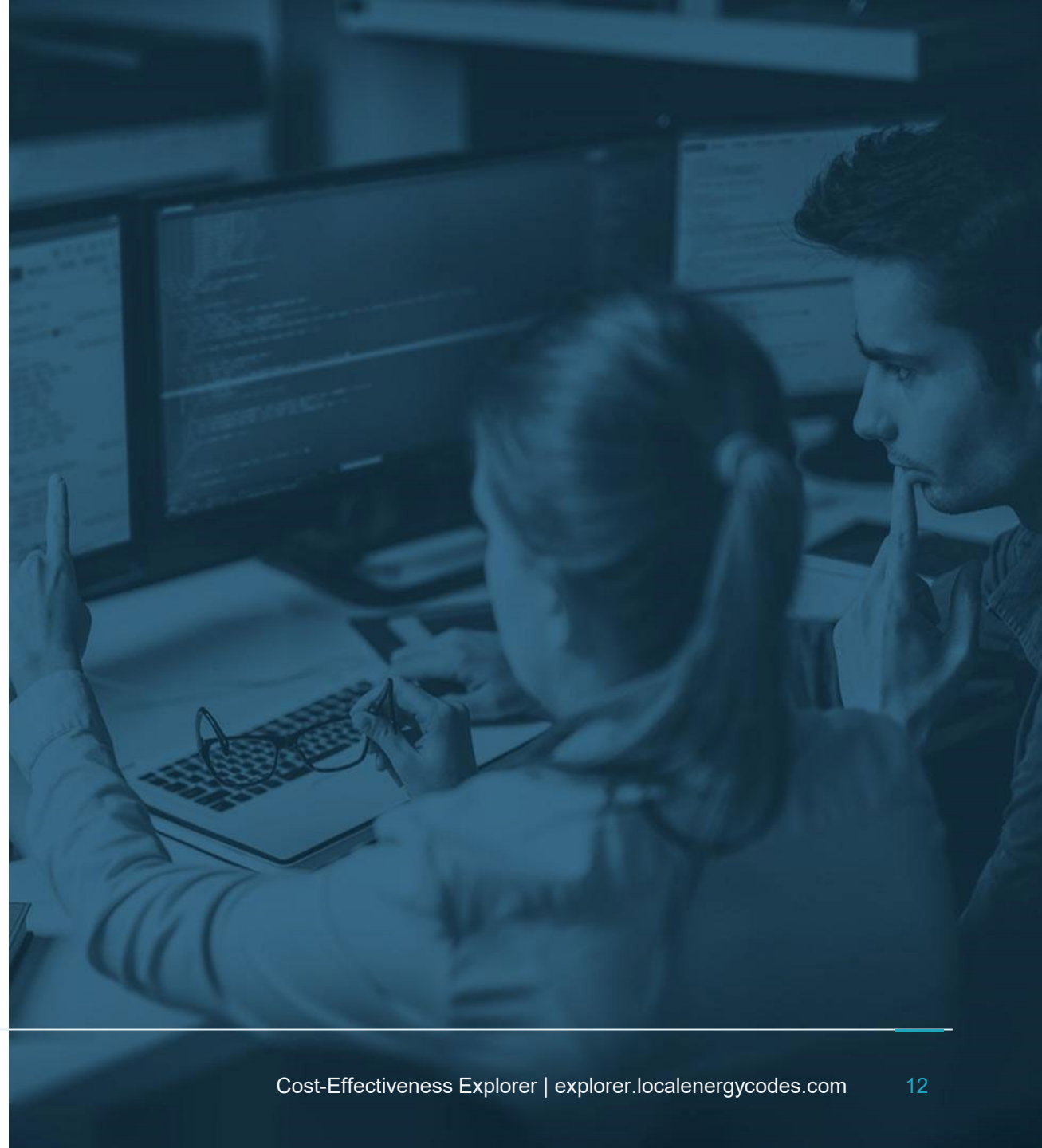
Demonstration



Cost-Effectiveness Explorer

Upcoming Features For New Buildings

- Template Policies
- Impact Tab
- Compare Policies
- Additional Studies
- Requirements Tables



Thank you.



Try the Cost-effectiveness Explorer as explorer.localenergycodes.com and share your feedback



Get in touch touch with us at explorer@localenergycodes.com with feedback, questions, ideas



Contact info@localenergycodes.com for no-charge assistance from expert Reach Code advisors



Additional Reach Codes Program Resources

Program Objective: Facilitate Adoption of Reach Codes

Prepare	Prepare cost-effectiveness analyses
Draft	Draft model language
Develop	Develop adoption and implementation resources and tools
Provide	Provide technical support to staff
Communicate	Communicate study results to stakeholders
Publish	Publish reach codes newsletter

Studies Underway for 2022 Code Cycle

Newly Constructed Buildings

- Single Family & ADUs
- Multifamily (three-story and five-story prototypes)
- Non-Residential (office, retail, hotel, restaurant)

Existing Buildings (renovation/additions)

- Single Family
- Low-Rise Multifamily

Electric Pool Heating (residential and commercial)



Additional 2022 Code Cycle Resources

- Ordinance Tracking
- Interactive Map
- Model Ordinance Language
- Fact Sheets
- C/E Study Executive Summary
- Implementation materials

- [Webinars and Training](#)
- Local Energy Codes [YouTube Channel](#)

NEW CONSTRUCTION MODEL REACH CODE, ELECTRIC-PREFERRED VERSION 3.0

ORDINANCE AMENDING THE (City/County of Berkeley) BUILDING CODE TO REQUIRE SOLAR POWER AND HIGHER ENERGY PERFORMANCE FOR NEW CONSTRUCTION

DELETE ALL BLUE TEXT AND FOOTNOTES

Sample Amendments

Section 1.1
The California
jurisdiction
entirely, in
Purpose

Section 1.1

2022 CALGREEN ELECTRIC VEHICLE CHARGING REQUIREMENTS



Introduction

As California moves forward with newly-adopted statewide Building Energy Efficiency Standards, it also looks forward to a new version of the statewide Green Buildings Standard.

Adopted Ordinances

Approved by the California Standards Commission, the 2022 CALGreen will be adopted on January 1, 2023.

Some of 2022 CALGreen provisions focus on infrastructure as a state's strategic goal. A primary driver to these changes was Executive Order N-100% in-state sale

2022 CODE CYCLE LOCALLY ADOPTED ENERGY ORDINANCES

Download 2022 PDF Download 2019 PDF

2022 CODE CYCLE - ALL-ELECTRIC ONLY ORDINANCES							
JURISDICTION	ORD. TYPE	ADOPTED DATE	SINGLE FAMILY	MULTIFAMILY	NONRESIDENTIAL	EXCEPTIONS	ORDINANCE
Sacramento	All-Electric	6/22/2021	After January 1, 2023, all newly constructed buildings that are three stories or less shall be All-Electric buildings. After January 1, 2026, all newly constructed buildings that are four stories or more shall be All-Electric buildings.	After January 1, 2023, all newly constructed buildings that are three stories or less shall be All-Electric buildings. After January 1, 2026, all newly constructed buildings that are four stories or more shall be All-Electric buildings.	After January 1, 2023, all newly constructed buildings that are three stories or less shall be All-Electric buildings. After January 1, 2026, all newly constructed buildings that are four stories or more shall be All-Electric buildings.		download ordinance Chapter 15.30.030

Natural gas

Questions?



Thank You!



We Appreciate your time!

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