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3CE Reach Codes Program

Advancing safer, healthier and more affordable buildings and vehicles

CentralCoastReachCodes.org

What are Reach Codes?

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Local ordinances adopted by the local government that exceed and enhance the state's green building standards.

Types of Reach Codes:

Building Decarbonization

New & Existing Buildings

Electric Vehicle Infrastructure (EVI)

Introduction to State Codes

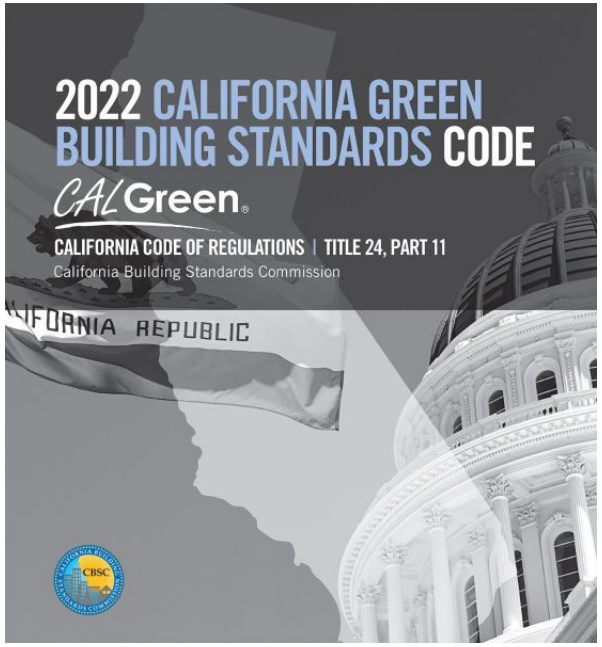
2022 Energy Code

Other names:
- Title 24, Part 6
- Building Energy Efficiency Standards

Scope:
- Energy efficiency
- Load flexibility (PV, battery)
- Single Family, Multifamily, and Nonresidential

Pathways to amend:
- Mandatory
- Prescriptive
- Performance

2022 CALGreen Code



Other names:
- Title 24, Part 11
- Green Building Standards

Scope:
- EVI, water use, waste, pollution, etc.
- Residential and Nonresidential

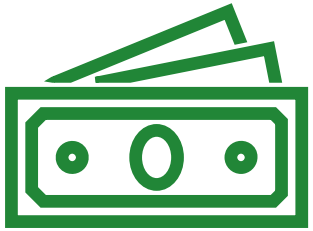
Pathways to amend:
- Mandatory
- Voluntary

Prescriptive: Think “checklist”. Requires specific energy efficiency or renewable energy pathways.

Performance: Think “modeling”. Requires buildings to meet an energy budget/performance score through a custom design, allowing applicants flexibility.

Reach Code Requirements

1. **Must use no more energy than the Energy Code**
2. Energy efficiency/conservation measures **must be cost-effective**
3. Local governments must make findings that the reach code is needed for local climatic, geological, or topographical reasons and must file with the California Building Standards Commission (CBSC)
4. Can't require equipment that exceeds federal standards (federal preemption)



Key Points of Cost-Effectiveness

- Something is cost-effective when the value of benefits exceeds the costs
- Must be approved by the California Energy Commission (CEC) (when cost-effectiveness required)
- Can be cost-effective on-bill or using the CEC's societal metric (TDV or LSC)
- Can be used to assess policy impacts as well as to document legal compliance
- Can mean different things to different stakeholders (developers, building owners, tenants, society)
- Studies available at Local Energy Codes and through the Cost-Effectiveness Explorer

Reach Code Context in 2024

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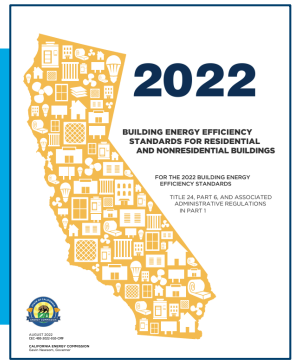
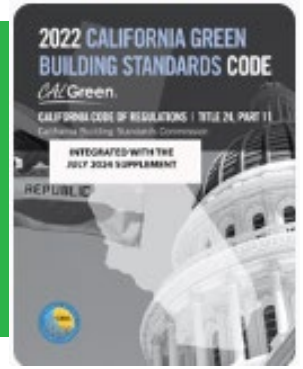
Buildings

Due to the latest decision for the CRA v Berkeley Ruling, some jurisdictions are re-assessing their approach to building electrification reach codes to mitigate the risk of litigation.



Electric Vehicle Infrastructure (EVI)

The CALGreen code goes through triennial updates (2022, 2025, etc.) and intervening updates at the mid point between triennial updates. The CALGreen code has intervening updates to the 2022 code that went into effect on July 1, 2024.



Reach Code Litigation

California Restaurant Association v. City of Berkeley

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July 2019

The City of Berkeley adopts a municipal gas ban/all-electric Ordinance.

The Ordinance prohibits, with some exceptions, natural gas infrastructure in newly constructed buildings.

Nov 2019

The California Restaurant Association sued the City of Berkeley…

…on the grounds that the Ordinance was preempted by the federal Energy Policy and Conservation Act (EPCA).

July 2021

The District Court originally rejected the CRA challenge…

…because the ordinance does not directly regulate either energy use or energy efficiency of covered appliances.

The CRA appealed that decision.

April 2023

The Ninth Circuit reversed the District Court decision, concluding that EPCA preempted Berkeley's ban…

…because it prohibited the onsite installation of natural gas infrastructure necessary to support covered natural gas appliances.

May 2023

The City of Berkeley filed a petition for an En Banc rehearing.

January 2024

The Ninth Circuit denied an En Banc rehearing.

Berkeley has decided to repealed their natural gas ban.

Some jurisdictions are evaluating new building reach code approaches.

Ruling Takeaway: Natural gas appliances can't be directly prohibited from use based on the Energy Policy and Conservation Act (EPCA).

Source: Climate Case Charts, Columbia Law blog and Earthjustice blog; "Gloom Not Doom: The Latest in the Berkeley Decarbonization Case."

New Construction Reach Code Options

- What are the choices for new construction?
- What are the pros and cons?
- What is the Energy Performance approach?

New Construction Approaches

Approach	Description	Advantages	Challenges	Who's done it?
Energy Performance 	Requires a higher *Source Energy* compliance margin than what the state requires through the performance path of the Energy Code, Part 6.	• Mitigates legal risk by allowing methane gas pathways • Can provide an all-electric cost-effective pathway • Enforcement process is already in place, the compliance margin is increased	• Limited to regulating space heating/cooling and water heating • Likely lower carbon savings compared to all-electric only pathways	East Palo Alto Encinitas Palo Alto Santa Cruz San Jose San Luis Obispo
Other Strategies				
Air Quality 	Regulates building or appliance emissions through CALGreen, Part 11. Typically applies to areas that are in non-attainment for criteria air pollutants.	• Uses Clean Air Act authority rather than Energy Policy and Conservation Act • Regulates all emitting equipment (cooking, fireplaces, dryers, etc.) • Likely to result in all-electric construction, which includes construction cost savings • Direct benefit to air quality / health • High impact on emissions reduction	• Legally untested • Potentially new enforcement approach • Concerns adopting this approach could negatively impact the on-going work with the AQMDs and CARB	Los Altos Hills New York City

How Does an Energy Performance Approach Work?

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What is it?

A stricter regulation of Source Energy which is a proxy for carbon emissions.

Source Energy is regulated in the current Energy Code through the performance path.

The goal is to reduce new building emissions and prepare buildings for future electrification.

How does it work?

Typically takes effect through amendments to the Energy Code, Title 24, Part 6.

Building applicants who use the performance path need to meet a stricter Source Energy target.

Enforcement is the same, except instead of meeting a value of “0 or greater”, the reach code target or greater is met.

What support is available?

Technical Assistance

Model Code Language

Staff Report Templates

Council Meeting Support

What is Source Energy?

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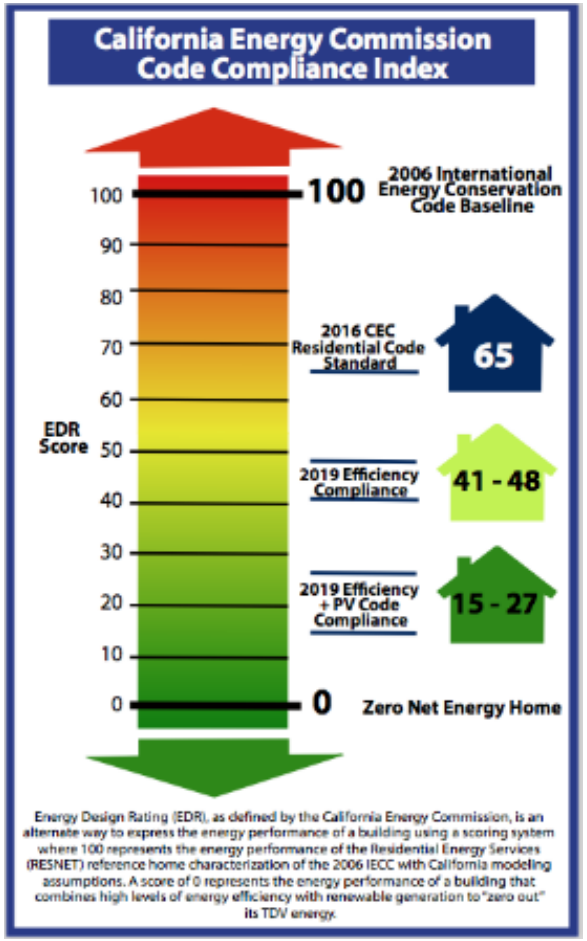
- A rating system within the performance path that is used to regulate energy performance.
- Based on hourly source energy which establishes a carbon-based performance metric.
- For single family homes, Source Energy is 1 of 3 Energy Design Rating (EDR) metrics.

ENERGY DESIGN RATINGS						
	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)
Standard Design	35.6	45.8	31.3			
Proposed Design	26.5	39.6	28.4	9.1	6.2	2.9
RESULT[3]: PASS						

[1]Efficiency EDR includes improvements like a better building envelope and more efficient equipment
[2]Total EDR includes efficiency and demand response measures such as photovoltaic (PV) system and batteries
[3]Building complies when source energy, efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded

- Standard Design PV Capacity: 3.46 kWdc
- PV System resized to 3.46 kWdc (a factor of 3.459) to achieve 'Standard Design PV' PV scaling



Source: [EnergyCodeAce]

How does this approach meet the Energy Policy and Conservation Act?

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EPCA Exemption and the 7-Factor Test

- Permit a builder to […] select items whose combined energy efficiency meet an overall building energy target.
- Not specifically require any EPCA-covered appliance to exceed federal standards.
- Offer options for compliance, on a 1-for-1 equivalent energy use or equivalent cost basis.

Energy Performance Approach Technical Considerations

- Instead of regulating appliance fuel infrastructure, the Energy Performance Approach sets a target energy score using the EDR1/Source Energy margin (used in modeling software for CA building permits).
- This approach sets the target energy score assuming federally required minimum equipment efficiencies.
- This approach sets a common target energy margin for both mixed-fuel and all-electric buildings.

What is the Energy Performance Approach?

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Homeowner/Developer (New construction)

All-Electric	Mixed-Fuel (Gas and Electric)	Mixed-Fuel (Gas and Electric)
• Electric space heating • Electric water heating	• Gas space heating • Electric water heating	• Gas space heating • Gas water heating **AND** • Increased efficiencies & solar **OR** • Add battery storage
EDR = 5	EDR = 0	EDR = 5+

Climate Zone 6, single family example displayed

Which Appliances are Relevant?

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What's included?

- Space heating/cooling
- Water heating

What's not included?

- Stoves
- Laundry
- Pools
- Fireplace/pit

How Does Compliance Work?

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A compliance margin of "x" or higher is required for Single Family, Multifamily (low & high rise) and Nonresidential buildings.

Single Family Example:

ENERGY DESIGN RATINGS						
	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)
Standard Design	35.6	45.8	31.3			
Proposed Design	26.5	39.6	28.4	x	6.2	2.9
RESULT[3]: PASS						

[1]Efficiency EDR includes improvements like a better building envelope and more efficient equipment
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[3]Building complies when source energy, efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded

- EDR2efficiency & EDR2total must achieve a score of "0" or higher to pass (per 2022 Title 24, Part 6).

Is Electric Readiness Included?

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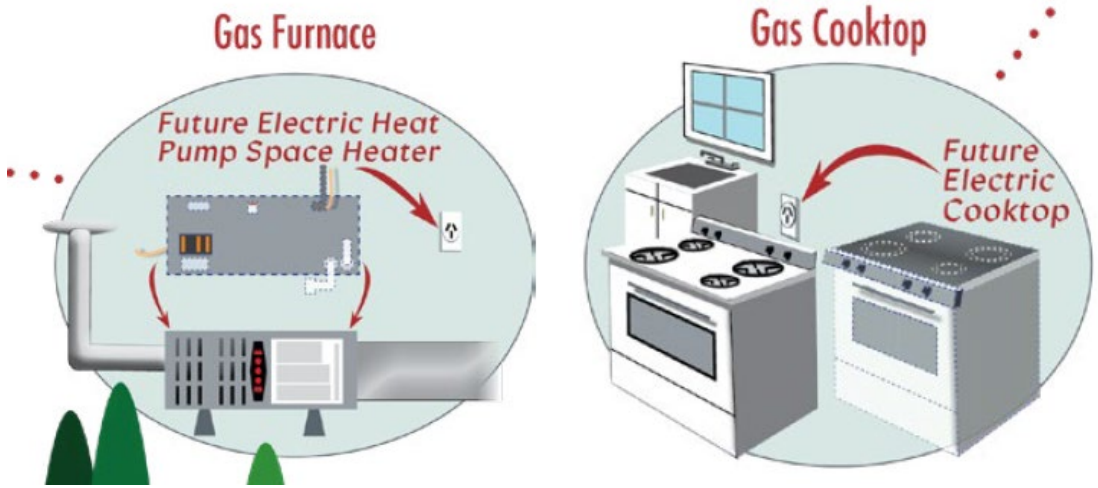
In addition to the state code, the following electric readiness requirements are added through this reach code:

Multifamily Residential:

- Centralized water-heating systems
- Individual dwelling unit water-heating systems

Nonresidential:

- Systems using gas or propane
- HVAC hot water temperature design temperature
- Commercial kitchens



Typical requirements:

- **Dedicated wiring** installed within 3 ft of the gas-fired appliance.
- **Reserved electrical breaker space** provided for the future installation of these systems and appliances.
- A heat pump water heater also requires:
  - **Space** large enough to install it
  - **Plumbing** for a condensate drain and hot and cold water.

Source: Energy Code Ace

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