

2022 and 2025 Local Energy Codes: A Selection of Options and Opportunities

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Summary of Revisions

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Acronym List

ADU – Accessory Dwelling Unit

BPS – Building Performance Standards

CEC -- California Energy Commission

EDR – Energy Design Rating

GHG – Greenhouse Gas

GPM – Gallons per Minute

GWP – Global Warming Potential

HERS Rater – Home Energy Rating System
Rater

ISO – International Organization for
Standardization

LEED – Leadership in Energy and
Environmental Design

TDV – Time Dependent Valuation

Title 24 – Title 24, Part 6

ZNE -- Zero Net Energy

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1 Introduction

In California, local jurisdictions have the authority to adopt requirements that exceed the minimum state requirements for energy efficiency in new and existing buildings. Local energy ordinances may accelerate achieving both state and local energy efficiency and greenhouse gas (GHG) emissions reductions policy goals by setting more stringent performance requirements for buildings, water use, electric vehicle charging infrastructure, and other energy-using activities. The Local Energy Codes (aka Reach Codes) program has identified several opportunities for jurisdictions to adopt local energy ordinances (reach codes) that exceed minimum state requirements and accelerate decarbonization.

Requirements are often triggered by activities regulated by the Building Code in California, but may also be triggered by other activities, such as listing a building for sale. This document provides a high-level summary of local energy code opportunities. Energy is at the center of all decarbonization activities, with significant savings potential and GHG reduction impacts throughout the system. Opportunities to adopt local energy codes exist in several areas including:

- **Operational Energy and GHG Emissions Reductions:**
 - [Efficient Design](#): reduce energy and carbon intensity of building operations through efficient design and controls
 - [Information Disclosure and Performance Improvement](#): disclose key energy use information in both residential and nonresidential buildings and/or install upgrades to reduce energy and water use and GHG emissions.
- [Embodied GHG Emissions](#): reduce energy and carbon intensity of material manufacture and transport; increase reuse of existing materials
- [Transportation/Mobility](#): increase infrastructure available to enable transition to electric vehicles
- [Water Efficiency](#): reduce energy used to heat and transport water and for other indoor and outdoor uses

If a local ordinance amends the California Energy Code (Title 24, Part 6), it must be approved by the California Energy Commission. Changes to the energy code must be supported by an analysis documenting the cost-effectiveness of the requirements. For use by jurisdictions, the Local Energy Codes program provides analyses for new and existing single family, multifamily and nonresidential buildings. These analyses and related materials may be found at [LocalEnergyCodes.com](https://www.localenergycodes.com).

This document does not provide legal analysis. Staff should consult with counsel before adopting new regulations.

**Table 1: Operational Energy Savings and GHG Emissions Reductions:
Efficient Design Opportunities**

Policy	Application	Impact	Considerations
<u>Energy Performance Margin</u>	New Construction Single Family Multifamily Nonresidential	<ul style="list-style-type: none"> Encourages efficiency and all-electric designs 	<ul style="list-style-type: none"> Opportunities to specifically encourage all-electric beyond the state code may be limited in the 2025 code cycle Limited potential in moderate climate zones
<u>Prescriptive Requirements</u>	New Construction, Existing Buildings All Occupancies	<ul style="list-style-type: none"> Efficiency improvements Additional renewables and storage 	<ul style="list-style-type: none"> Requires findings of cost-effectiveness Potential impacts on design flexibility
<u>Major Renovations Defined as New Construction</u>	Existing Buildings Primarily Single Family	<ul style="list-style-type: none"> More stringent standards for major renovations that meet the jurisdiction definition of new construction 	<ul style="list-style-type: none"> Must be adopted as part of New Construction local energy code Possible unintended impacts beyond energy, such as increasing the property tax burden or triggering a requirement for fire sprinklers Some additional permitting staff time
<u>FlexPath</u>	Existing Buildings	<ul style="list-style-type: none"> Provides compliance choices, including electrification 	<ul style="list-style-type: none"> Single family analysis available; analyzing multifamily and nonresidential versions Some additional permitting staff time
<u>Equipment Replacements</u>	Existing Buildings	<ul style="list-style-type: none"> Encourages heat pump installation at AC and water heater replacement/addition 	<ul style="list-style-type: none"> Handling exceptions Potential burden to tenants Potential permit avoidance Additional analysis needed Includes a compliance pathway for gas equipment
<u>Air Quality Regulations</u>	New Construction, Existing Buildings	<ul style="list-style-type: none"> Requires compliance with and building department enforcement of air district rules 	<ul style="list-style-type: none"> Some regulations are not final at time of publication. Confirm final regulation and implementation dates

**Table 2: Operational Energy Savings and GHG Emissions Reductions:
Information Disclosure and Performance Improvement Opportunities**

Policy	Application	Impact	Considerations
<u>Benchmarking and Building Performance Standards</u>	Existing Buildings Large multifamily and nonresidential buildings	<ul style="list-style-type: none"> Impacts existing buildings of certain size and occupancy 	<ul style="list-style-type: none"> Implementation costs (to building owner and jurisdiction) Complex implementation Tenant protections are advisable Court challenge pending in Colorado
<u>Information Disclosure and Performance Improvements</u>	Existing Single Family Homes	<ul style="list-style-type: none"> Require audits and/or improvements at Time of Sale/Listing, by Date-Certain, or in combination with permitted activities 	<ul style="list-style-type: none"> Implementation Costs / Tracking Compliance Education required for impacted stakeholders, such as realtors

Table 3: Embodied GHG Emissions Reduction Opportunities

Policy	Application	Impact	Considerations
<u>Embodied GHG Emissions Reductions</u>	New and Existing Nonresidential	<ul style="list-style-type: none"> Higher deconstruction and reuse standards Extension of life-cycle performance standards to smaller projects Recycled & low-carbon content Regional sourcing 	<ul style="list-style-type: none"> Implementation challenges and costs Widespread education effort required

**Table 4: Transportation and Mobility:
Electric Vehicle Charging Opportunities**

Policy	Application	Impact	Considerations
<u>Early Adoption of CALGreen 2025</u>	New Construction Multifamily, Hotels/Motels Nonresidential	<ul style="list-style-type: none"> • Requires more installations 	<ul style="list-style-type: none"> • Could require design changes to projects entitlement phase
<u>CALGreen 2025 Tier 1</u>	New Construction Single Family Multifamily, Hotels/Motels, Nonresidential	<ul style="list-style-type: none"> • Single Family EVSE • Low Power Level 2 Receptacles upgradable to full power • Additional EVSEs in common spaces 	<ul style="list-style-type: none"> • Service capacity
<u>Single Family Requirements</u>	New Construction Single Family	<ul style="list-style-type: none"> • Expand requirements to detached private garages • Extend to 2nd space, if applicable 	<ul style="list-style-type: none"> • Limited application depending upon development patterns

Table 5: Water Efficiency Opportunities

Policy	Application	Impact	Considerations
<u>Various Water Conservation Measures</u>	All Indoor and Outdoor Water Use	<ul style="list-style-type: none"> • Water neutrality requirements • Reduced consumption • Alternative sources, graywater, recycled water • Landscaping 	<ul style="list-style-type: none"> • Some measures require considerable investment
<u>Water Demand Calculator (Pipe Sizing)</u>	New Construction Residential	<ul style="list-style-type: none"> • Construction/material cost savings • Operational savings 	<ul style="list-style-type: none"> • May require education to help system designers become familiar with the alternative calculation method.

2 Operational Energy and GHG Emissions Reductions

2.1 Related State and Regional Policies

Local governments in California are empowered to amend the CA Building Standards Code (Building Code) and other state and regional regulations to account for local needs. The Local Energy Codes team has identified different opportunities for local action, but first, it is important to understand policy developments at the State and regional levels that impact the types of opportunities available.

2.1.1 The Energy Code

The Energy Code is updated every three years. The Energy Code, and local amendments to the code, must meet certain State and Federal requirements, notably, the requirements must be cost-effective, the objective must be based on energy or the equivalent energy cost, must result in energy savings, and may not preempt Federal efficiency standards.

For new construction, the 2022 Energy Code prescriptively requires that either space heating or water heating is provided by electric heat pumps (electric resistance is allowed in certain nonresidential applications). Although buildings may be constructed to use gas for both space and water heating, they must install other energy measures to offset the incremental energy (and hence, emissions) impacts of the gas loads. Furthermore, electric circuits must be installed to facilitate the anticipated future installation of electric equipment to make the building “electric-ready”.

The California Energy Commission adopted the 2025 Energy Code on September 11, 2024 (effective January 2026) which prescriptively requires heat pump space and water heating for new construction in most occupancies and prescriptively requires heat pump space conditioning for air conditioner replacements in certain nonresidential situations. It also expands solar and battery storage requirements in nonresidential buildings and extends electric readiness requirements to multifamily buildings with central gas hot water systems and to certain commercial kitchen cookline appliances. While these changes do not prohibit the use of fuel gas in these systems, they further encourage all-electric construction.

2.1.2 Air Quality Regulations

The [California Air Resources Board \(CARB\)](#) is considering a zero emissions standard for new and replacement space heating and water heating appliances, which, if adopted, would effectively eliminate gas as a fuel source for those end uses. As proposed, the requirements would be implemented in phases, beginning in 2027. The [Bay Area Air Quality Management District \(BAAQMD\)](#) has adopted standards which will require that only zero NOx emissions (effectively zero GHG emissions) water and space heating appliances may be sold and installed in the Bay Area. In addition, the [South Coast Air Quality Management District](#)

[\(SCAQMD\)](#) has adopted zero NOx standards for non-industrial-sized water heating equipment in new construction and upon replacement, effective 1/1/2026. These include small ($\leq 400,000$ Btu/hr) boilers and water heaters including individual-dwelling-unit-sized instantaneous (excluding storage) water heaters and excluding pool heaters. The agency has proposed similar standards for residential-sized storage water heaters and for space heating equipment.¹ Each agency is actively working to develop effective dates for the proposed regulations; refer to the respective agency's web site for the current status of each.

2.1.3 Benchmarking and Building Performance

[The California Building Energy Benchmarking Program](#) requires owners of large commercial ($>50,000$ square feet) and multifamily buildings (17 units or more and $>50,000$ square feet) to report energy use to the California Energy Commission annually. The ENERGY STAR[®] score is publicly available so that tenants and prospective buyers may assess opportunities for improvements. It is important to note that benchmarking is not an audit nor is it a requirement to achieve higher performance; it is simply a metric that assesses total energy use relative to floor space, occupancy, and climate zone. Nevertheless, it can be an important indicator of opportunities for improvement.

¹ The [City of Los Altos Hills](#) has adopted an amendment to CALGreen that requires zero emissions for space heating and water heating equipment in new single family homes. This is a new and untested approach and may be beyond the risk tolerance of some jurisdictions. Jurisdictions that wish to consider this option should consult with their attorney and the regional air district.

2.2 Efficient Design

There are opportunities for local energy codes to amend the 2022 Energy Code to encourage all-electric construction and higher levels of efficiency. Adoption in the current cycle could have an important impact on any projects that are permitted prior to 2026. Although these mechanisms may in principle be applicable under the 2025 Code, they require substantial updates as the 2025 Code assumes heat pumps are the base case in more situations than in the 2022 cycle. For example, in new single-family homes, the Code assumes heat pumps are installed for both electric space and water heating. Otherwise, the project will require additional measures to compensate for the lower efficiency of gas equipment. Nevertheless, there may still be some room under the 2025 Code to further encourage all-electric construction and efficiency.

The California Local Energy Codes Program plans to conduct analyses to identify cost-effective compliance margins shortly after the 2025 code compliance software is updated and anticipates publishing results mid-2025.

2.2.1 Energy Performance Margins in New Construction

The California Energy Code provides a performance compliance pathway, under which a proposed design must demonstrate that it exceeds various metrics. A local energy code could require that newly constructed buildings exceed one or more of the State energy performance standards, providing encouragement to build all-electric and incorporate additional efficiency measures.

Several cities have adopted local amendments to the 2022 State Energy Code to specify higher performance requirements for new construction projects to encourage all-electric construction. This approach uses source energy as the performance metric, which represents energy used at the site, plus energy that is used in its generation and any energy lost during transmission, distribution, and storage. Source energy is closely correlated to GHG emissions. For single family homes (which include duplexes and townhomes), the source energy margin is expressed as the Energy Design Rating – 1, or EDR1.² For multifamily and nonresidential buildings the metric is referred to as Total Source Energy. The appropriate performance margin varies by climate zone. Values that have been determined to be cost-effective are available for the 2022 Code Cycle and published with model code language and supporting materials, which are available at [LocalEnergyCodes.com](https://www.localenergycodes.com).

CALGreen also includes Tier 1 or Tier 2 voluntary performance margin requirements. The Tiers set performance requirements and identify specific prescriptive measures for inclusion. An amendment can directly reference the CALGreen requirements or alter them to align with cost-effectiveness study results or other jurisdiction priorities. All CALGreen performance requirements that amend the Energy Code must be supported by a cost-effectiveness analysis.

² The 2025 Code replaces EDR1 with Total Source Energy, the same metric but on a different scale.

Alternatively, a local energy code could use one or more of the other performance metrics, including Time Dependent Value (TDV) energy.³ The analysis results indicate which metric may be the most effective to meet specific jurisdiction objectives. Again, the requirements must be supported by a cost-effectiveness analysis.

Considerations

- Multifamily and some nonresidential building types assume heat pumps are the base case for space heating, limiting the opportunities in those areas, especially in mild climates.
- Central water heating remains a potentially significant opportunity for savings.
- This option may be less relevant under the 2025 Energy Code, but opportunities remain.

2.2.2 Prescriptive Requirements

Local energy codes could specify additional prescriptive measures, provided they have been found to be cost-effective. Prescriptive requirements are applicable to both new construction and existing buildings.

For example, additional solar PV and storage could be required through an amendment to the Energy Code, however, exceptions may be necessary to address capacity limitations (i.e., shading, roof space, or typical snow coverage) or buildings for which the minimum state requirement is sufficient to offset annual site electricity consumption. A jurisdiction may also consider requiring an increase in efficiency beyond the minimum requirements, such as the cool roof requirements adopted by Los Angeles County and several other jurisdictions.

In addition, the voluntary sections of CALGreen include a variety of measures that could potentially be required in newly constructed buildings. As each of the potential measures amends the Energy Code, a cost-effectiveness analysis is required to support adoption. Measures in the proposed 2025 CALGreen are listed below.

- Voluntary CALGreen Low-Rise Residential Prescriptive Energy Measures – Section [A4.203.1.2](#)
 - Roof deck insulation, or ducts in conditioned space
 - High performance walls
 - Compact hot water distribution
 - Drain water heat recovery
 - High performance windows
 - Heat pump water heater demand management
 - Battery storage system and controls
 - Outdoor lighting

³ TDV, which factors in supply constraints, among other items, has been replaced in the 2025 code by Long-term System Cost (LSC), a similar metric.

- Voluntary CALGreen Nonresidential, High-Rise Residential and Hotel/Motel Prescriptive Energy Measures – Sections [A5.203.1](#), [A5.212](#) and [A5.213](#)
 - Outdoor lighting
 - Service water heating in restaurants
 - Warehouse dock seal doors
 - Daylight design power adjustments
 - Exhaust air heat recovery
 - Elevator light and fan controls
 - Regenerative drive systems for elevators and escalators
 - Energy efficient steel framing

Considerations

- All energy measures must be supported by findings of cost-effectiveness
- Some measures could have significant design and cost impacts

2.2.3 Major Renovations Defined as New Construction

Certain major remodels that meet the jurisdiction definition could be treated as new construction. The Energy Code as it applies to newly constructed buildings is stricter than the requirements for additions and alterations. Major renovations that meet certain thresholds may be considered new construction subject to the same requirements as newly constructed buildings. The definition of this threshold varies across jurisdictions, and sometimes within a jurisdiction, depending on the project scope. Some jurisdictions have amended the Energy Code or the Building Code to make those requirements for new buildings also apply to these substantial remodels. See the [Substantial Remodels and New Construction Definitions](#) document for a list of definitions for substantial remodels/substantial improvements and examples of triggers when a substantial improvement becomes classified as new construction

Considerations

- Must be part of new construction ordinance, in combination with Source Energy (or Energy Efficiency) Performance Margin (see New Construction section).
- Altering the definition could have unintended consequences. Confirm with your building official that the definition proposed for the ordinance is consistent with the existing definition. Be sure to understand where else the term is used within the local code and the potential impacts.
- This change will require some additional project review by permitting and inspection staff.

2.2.4 Requirements for Additions and Alterations

The Energy Code requires certain improvements for additions and alterations, which are generally limited to the systems and spaces being modified. Amendments to the Energy Code could require more extensive improvements for projects meeting a certain threshold.

Studies documenting cost-effective measures and packages of measures that exceed the 2022 Code have been completed for existing [single family buildings](#), [low-rise multifamily buildings](#) (3 stories or less), and [nonresidential/high-rise residential buildings](#) as well as [residential pool heating](#). New studies exploring opportunities in existing multifamily and nonresidential buildings are in process; results are expected in early 2025.

The Energy Code could be amended to require that some or all cost-effective measures be installed for projects that meet a certain threshold (based on project scope, valuation, or a combination of these).

Alternatively, applicants could be required to install measures that save an equivalent amount of energy (or fraction thereof) as the set of measures that has been found to be cost-effective. Under this approach, commonly known as the Flexible Compliance Approach, or [FlexPath](#), applicants could choose from a broad set of measures, including electric appliances, solar PV and cool roofs, to satisfy the requirements. For example, a cost-effective set of measures might include attic insulation, air sealing and duct sealing, but a homeowner could elect to install a heat pump water heater or PV instead, achieving similar energy savings. Visit the [Cost-Effectiveness Explorer](#) to see what the FlexPath could look like in your jurisdiction. Note, this mechanism is most appropriate for single family buildings; the team is developing similar structures in multifamily and nonresidential buildings.

Considerations

- The potential list of measures under the prescriptive approach is limited based on cost-effectiveness.
- The FlexPath approach may require additional review by permitting staff.
- Additional analysis of multifamily and nonresidential opportunities is under development.
- Implementation in multifamily and nonresidential buildings requires careful consideration due to the complexity of common building elements/systems, ownership structures and potential tenant burdens.

2.2.5 Electric Appliance Replacements/Readiness

The 2025 Energy Code prescriptively requires heat pump space conditioning upon air conditioner replacement for certain nonresidential applications, unless the gas replacement includes an economizer and/or variable speed fans.

The voluntary 2025 CALGreen standards for single family homes (A4.204.1.1) include a similar requirement for air conditioner replacements to upgrade to heat pump space conditioning or install a series of efficiency measures. A similar measure for pool heater replacements in all residential buildings (A4.204.1.2) and nonresidential buildings

(A5.204.1.1). These measures could potentially be adopted as a local energy code in certain climate zones; additional research to support implementation is underway. Similarly, there may be an opportunity for a local energy code to prescriptively require heat pump water heater replacements if there is an alternative compliance pathway for gas water heaters (the addition of solar thermal technology might provide such a pathway).

Jurisdictions could also require electric readiness in existing buildings. Because this is not an energy measure, it does not need to be supported by findings of cost-effectiveness. The [City of San Mateo](#), [Marin County](#), [San Rafael](#), and [Corte Madera](#) adopted ordinances that require electric readiness during kitchen and laundry room additions, alterations, and electrical panel upgrades.

Considerations

- There will be a need to accommodate exceptions where existing conditions make a retrofit impractical
- There is a risk of permit avoidance
- Amendments to the Energy Code must also provide a compliance pathway for gas equipment
- Local council members or members of the public may ask for cost justification, even though it is not required for review by the Energy Commission
- Additional analysis is underway; check LocalEnergyCodes.com for updates

2.3 Information Disclosure and Performance Improvement

2.3.1 Benchmarking and Building Performance Standards

As noted [above](#), the State requires owners of certain large buildings to benchmark and disclose building energy performance. Local governments may extend the requirements to smaller buildings, such as [Berkeley](#), which requires benchmarking of buildings over 15,000 square feet. Developing local infrastructure to support benchmarking can be complex and is an important first step to prepare for adopting a building performance standard.

Building Performance Standards (BPS) build upon benchmarking requirements by mandating buildings to satisfy certain performance objectives within a specified timeframe or be subject to some corrective action.

Some performance objectives may include:

- an EPA Portfolio Manager score
- an energy use intensity (EUI) threshold
- a Greenhouse Gas (GHG) threshold
- LEED Existing Buildings certification
- Green Point Rated score

Corrective actions may include:

- a percentage improvement from past performance scores
- retro-commissioning
- an audit
- installation of prescriptive measures

[Chula Vista](#) requires that buildings which have not achieved Energy Star objectives or LEED certification by certain future dates must meet certain performance improvements, perform retro-commissioning and install certain prescriptive measures. [San Jose](#), [Brisbane](#), and [San Francisco](#) have similar requirements.

A new project funded by the US Department of Energy, just getting underway in California, aims to facilitate collaboration among participants to make progress toward the development and implementation of successful and equitable BPS programs. The [National BPS Coalition](#) provides funding support for eight regional cohorts located across the country.

In addition, the [California Building Performance Peer Learning Collaborative](#) provides an opportunity for jurisdictions the share ideas and create alignment to accelerate and streamline the path to building decarbonization.

Considerations

- There are considerable information systems and ongoing staff resource requirements and administrative complexity involved in implementing a local benchmarking and/or BPS ordinance.
- Building owner costs could be significant.
- Significant education and support for developing additional workforce and enforcement resources are required for impacted stakeholders.
- This approach is being challenged in lawsuits against multiple jurisdictions across the country. The [Public Health Law Center at Mitchell Hamline School of Law](#) maintains a site that tracks the status of related lawsuits.

2.3.2 Information Disclosure and Performance Improvements

2.3.2.1 Point of Sale/Point of Listing

Jurisdictions may adopt ordinances requiring energy audits at the time of listing for sale, lease, or upon additions and alterations. These audits can inform current and prospective owners of opportunities for energy and water savings and can create incentives for landlords to upgrade rental properties. Energy audit requirements can also be used to qualify for Energy Efficient Mortgages, leveraging financing for energy efficiency housing by factoring in utility costs to the traditional “PITI” (principal, interest, taxes and insurance) formula.

The most common residential audits in California are the [California Home Energy Rating System \(HERS\)](#) system, which uses diagnostic testing to determine performance, and the [Federal Home Energy Score \(HES\)](#), a more generic rating process. The [Bay Area Regional Energy Network](#) uses the Home Energy Score to qualify homes for whole home upgrade

rebates and is collaborating with the cities of [Piedmont](#) and [Carlsbad](#) to use the Home Energy Score as an alternative compliance pathway for compliance with prescriptive requirements for additions and alterations. [Berkeley](#) requires that 1-4 unit residential buildings complete and disclose Home Energy Score audit results upon listing for sale. [Ann Arbor \(MI\)](#) requires homes to conduct a Home Energy Score audit prior to listing for sale.

2.3.2.2 Residential Rental Properties

Reach codes have been implemented in jurisdictions such as [Boulder \(CO\)](#) and [Burlington \(VT\)](#) to require existing rental housing be upgraded to improve energy performance by certain time-based deadlines. Time-based triggers ensure an ordinance will eventually impact all rental housing, rather than triggering requirements only upon renovation or title transfer. Such an ordinance can be designed to enhance tenant comfort, support Climate Action Plans, and energy savings goals.

Tenant protections may be needed as a companion to rental mandates to address issues of displacement and pass-through costs. See the [ACEEE Energy Equity for Renters Toolkit](#) for suggestions.

Considerations

- There are considerable information systems requirements and administrative complexity involved in implementing a local benchmarking and/or BPS ordinance.
- Tenant protections are a critical component of the ordinance.
- Education required for impacted stakeholders, such as realtors.

3 Embodied GHG Emissions

Emissions from the manufacture, transportation and installation of building materials as well as demolition and disposal at the end of the building's life are a significant portion of a building's life-cycle emissions.

The 2022 Intervening Cycle CALGreen ([Division 5.4](#)) adopted mandatory requirements for lifecycle assessments and deconstruction and materials reuse for nonresidential buildings. Newly constructed buildings greater than 100,000 square feet are required to demonstrate a 10% reduction in Global Warming Potential (GWP) using an ISO methodology or install only products that meet prescriptive GWP standards. Additions and alterations of greater than 100,000 square feet are required to do the same or maintain 45% of primary structural elements or demonstrate a 10% reduction in GWP. All additions and alteration projects are required to recycle or salvage 65% of construction and demolition waste.

Jurisdictions may adopt voluntary CALGreen tiers with more stringent requirements, including:

- Higher deconstruction and reuse requirements ([A5.105](#) and [A5.408](#))
- Regional sourcing of materials, use of bio-based materials, sustainably produced wood products, recycled content, low-carbon concrete ([A5.405](#))
- A lower threshold (50,000 square feet) for life cycle assessments ([A5.409](#))

[Marin County](#) and [Santa Monica](#) have adopted specific amendments to the building code to require low-carbon concrete for all concrete installations.

The Reach Codes team has developed [several resources](#) to support compliance with the new [Embodied Carbon \(GHG Emissions\) requirements](#). [Contact](#) the Local Energy Codes team for help developing requirements and preparing ordinance language

Considerations

- The lifecycle analysis requirements of CALGreen are new and training will be needed across the industry, as well as for applicants and permitting staff.
- Restrictions on material use could impact project costs.
- The use of low-carbon concrete may require changes to construction practices; training for applicants and inspection staff should be considered.

4 Transportation and Mobility

4.1 Electric Vehicle Charging

4.1.1 Early 2025 CALGreen Adoption

The EV charging requirements of CALGreen have been changing rapidly. There were major midcycle revisions in the 2022 Code and another set of substantial changes were adopted in the 2025 Code. Opportunities for local energy codes include early adoption of the 2025 standards, adoption of the 2025 voluntary tiers, and adoption of customized standards⁴. The Local Energy Codes team has developed [several resources](#) to support compliance with the new EV requirements. [Contact](#) the Local Energy Codes team for help developing requirements and preparing ordinance language.

4.1.2 Single Family Requirements

CALGreen (both the 2022 Code and the 2025 Code) requires that attached private garages in new single-family homes, duplexes, and townhomes are EV Capable, that is, have

⁴ CALGreen defines different levels of EV charging capability and readiness.

- EV Capable is a space that has a raceway and service panel capacity for a future charging circuit (208/240 volt/40 amp).
- Low Power Level 2 Receptacle is a receptacle on a 208/240 volt 20 amp circuit.
- EV Ready is a space with a receptacle or charger on a 208/240 volt, 40 amp circuit for single family buildings or a 208/240 volt, 20 amp circuit for multifamily, hotel and motel developments.
- Electric Vehicle Service Equipment (EVSE) is Level 2 charger installed on a 208/240 volt, 40 amp circuit.

Medium-Heavy Duty Vehicle Ready is a loading space with raceway and service panel capacity for a future high-capacity charger (200-400 kVa).

208/240 volt, 40 amp electrical capacity and raceway and/or conductors in place for a future EV charger. There are no EV-related changes proposed for the 2025 Code cycle.

Adoption of the voluntary CALGreen Tier 1 would upgrade the requirement to EV Ready, i.e., circuitry with either a receptacle or charger.

A local energy code could also extend the requirement to any parking space, rather than just attached private garages, or require more than one space to be EV Capable or EV Ready.

EV Capable or EV Ready could be a requirement for existing buildings under certain project scopes, such as panel upgrades.

4.1.3 Multifamily Residential

For new projects, the 2022 Code requires that 40% of spaces have Low Power Level 2 Receptacles and an additional 10% of the spaces have Level 2 chargers (EVSE). The requirements under voluntary Tiers 1 and 2 are, respectively, 50%/55% Low Power Level 2 Receptacles and 15%/20% EVSE. When spaces are added or there are alterations to the electrical system, 10% of the spaces must be EV Capable.

The 2025 CALGreen standards require that EV charging equipment is installed in 100% of the spaces or in at least one space per dwelling unit for new projects. Assigned spaces must have Low Power Level 2 Receptacles and 25% of common spaces must have EVSE. Spaces served by lifts are exempt from the requirements. Certain additions and alterations are required to have access to a Low Power Level 2 Receptacle or EVSE.

Jurisdictions could adopt the proposed 2025 CALGreen Tier 1 (there is no Tier 2) which requires that Low Power Level 2 Receptacles are upgradable to full power (i.e. 208/240 volt, 40 amp circuits), requires 40% of all common spaces to have EVSE, and eliminates the exception for receptacles in spaces served by lifts.

CALGreen could also be amended to specify customized requirements, including requirements for certain project scopes in existing buildings and potentially eliminating the exception for receptacles and EVSEs at lifts.

4.1.4 Hotels/Motels

Under the 2022 Code the required number of EV spaces for new projects is the same as multifamily, that is 40% Low Power Level 2 Receptacles and 10% EVSE. Tiers 1 and 2 are also the same as multifamily. There are no requirements for additions and alterations.

The 2025 CALGreen standards require that 40% of the spaces have Low Power Level 2 Receptacles and an additional 25% of the spaces have EVSE. Spaces served by parking lifts are exempt from the requirements. Additions and alterations would be subject to the same requirements as multifamily, that is, access to a Low Power Level 2 Receptacle or EVSE.

Jurisdictions could adopt the 2025 Tier 1 (there is no Tier 2), which would require 60% Low Power Level 2 Receptacles and 40% EVSE, and would eliminate the exception for receptacles for spaces served by lifts.

CALGreen could also be amended to specify customized requirements, including requirements for certain project scopes in existing buildings and potentially eliminating the exception for EVSEs at lifts.

4.1.5 Nonresidential

For new projects, the 2022 CALGreen mandates that 15% of the spaces are EV Capable and 5% have EVSE. Spaces served by lifts are exempt. The requirements under the voluntary Tiers 1 and 2 are, respectively, 20%/30% EV Capable and 10%/15% EVSE. Off-street truck loading spaces in certain occupancies must be Medium-Heavy Duty Vehicle Ready. Certain additions and alterations must meet the mandatory requirements (15% EV Capable and 5% EVSE).

The 2025 CALGreen standards have separate requirements by occupancy. Office and retail projects must have 5% EV Capable spaces and 15% EVSE. All other projects must have 10% EV Capable and 10% EVSE. Spaces served by lifts are exempt. Tiers 1 and 2 for office and retail are, respectively, 7%/11% EV Capable and 23%/34% EVSE and for all other occupancies the requirements are 15%/22% EV Capable and 15%/23% EVSE. Certain additions and alterations require compliance with the mandatory requirements except that any preexisting EV Capable spaces must have EVSE before new EV Capable spaces are added.

CALGreen could also be amended to specify customized requirements, including requirements for certain project scopes in existing buildings and potentially eliminating the exception for lifts.

Considerations

- Early adoption could require changes to projects that are already in the design and/or entitlement phase.

Table 67: Single Family, Duplex and Townhome EV Charging Requirements

Code Cycle	Type	EV Capable	EV Ready	Other
Both	Mandatory	Attached single family garage (1)		
Both	Tier 1		Attached single family garage (1)	
Both	Other possibilities	Any parking space. 2 nd parking space.	Any parking space. 2 nd parking space.	Adds & Alts

Table 8: Multifamily EV Charging Requirements

Code Cycle	Type	EV Capable	EV Ready	Other
2022	Mandatory	40%	10%	Adds & Alts – 10% EV Capable
2022	Tier 1	50%	15%	
2022	Tier 2	55%	20%	
2022	Other possibilities	Early adoption of 2025	Early adoption of 2025	
2025	Mandatory	100% or 1 per unit	25% (counts towards receptacles)	Adds & Alts - Provide access to receptacle or EVSE
2025	Tier 1	Circuits to be full power Level 2 EV Ready	40% of common spaces	No lift exception for receptacles
2025	Other possibilities			No lift exception for EVSE Extend Adds & Alts

Table 9: Hotel/Motel EV Charging Requirements

Code Cycle	Type	EV Capable	EV Ready	Other
2022	Mandatory	40%	10%	Add & Alts
2022	Tier 1	50%	15%	
2022	Tier 2	55%	20%	
2022	Other possibilities	Early adoption of 2025	Early adoption of 2025	
2025	Mandatory	40%	25%	Adds & Alts - Provide access to receptacle or EVSE
2025	Tier 1	60% and circuits to be full power Level 2 EV Ready	40%	No lift exception for receptacles
2025	Other possibilities			No lift exception for EVSE Extend Adds & Alts

Table 10: Nonresidential EV Charging Requirements

Code Cycle	Type	EV Capable	EV Ready	Other
2022	Mandatory	15%	5%	Adds and Alts – Same as new Trucks EV Capable, certain occupancies
2022	Tier 1	20%	10%	
2022	Tier 2	30%	15%	
2022	Other possibilities	Early adoption of 2025	Early adoption of 2025	
2025	Mandatory	5% Office/retail 10% All Other	15% Office/retail 10% All Other	Adds and Alts – Same as new but first convert preexisting EV Capable to EVSE before adding new EV Capable Trucks EV Capable, expanded occ. types
2025	Tier 1	7% Office/retail 15% All Other	23% Office/retail 15% All Other	
2025	Tier 2	11% Office/retail 22% All Other	34% Office/retail 23% All Other	
2025	Other possibilities			No lift exception Extend Adds & Alts

5 Energy Plus Water Efficiency

Water consumption directly and indirectly impacts energy use, either for water heating or for pumping and treatment. The California Energy Code already includes a variety of measures to conserve hot water. Jurisdictions may consider adopting other measures, such as those listed below. Benchmarking and BPS can also target water conservation.

5.1 Drought Ready Model Ordinance

Jurisdictions may consider adopting all or part of the [Drought-Ready Construction Model Ordinance](#), a product of a collaborative effort amongst Valley Water, the Statewide Reach Codes Program, the Central Coast Greywater Alliance and the Santa Clara County Water Efficient New Development Task Force. The model ordinance includes a range of measures.

- Single family hot water distribution systems must be compact systems or low volume systems. Applies to new buildings.
- Kitchen faucet flow rates are reduced from 1.8 to 1.5 gpm. Applies to new and replacement fixtures.
- Swimming pools and spas (including unheated pools) must have covers. Applies to new pools and spas and additions or alterations to pools and spas.
- Hose bib locks are required on multifamily and nonresidential buildings. Applies to new construction, additions, or any plumbing project where a permit is required.
- Dual plumbing is required for multifamily and non-residential buildings, where alternative water supplies exist, or will exist. Applies to new construction.
- Graywater systems for irrigation are required in single family buildings. Applies to new construction and shower or laundry additions or alterations.
- Automatic flush valves are prohibited in nonresidential toilets and urinals. The full flush on dual flush toilets may not exceed 1.28 gallons per flush. Applies to new construction and new fixtures in additions and alterations.
- Establishes standards for new food waste pulping systems, steamers, combination ovens, dipper well faucets, commercial woks and commercial dishwashers. Applies to new construction and new fixtures in additions and alterations.
- Installation of non-functional turf is prohibited in new and existing nonresidential and multifamily projects.
- Specific exceptions are provided for a few of the requirements. Jurisdictions may wish to consider including broader exceptions for infeasibility.
- As an option, ADUs may be exempted from the requirements.

5.2 CALGreen

CALGreen includes several voluntary measures that could be adopted as mandatory to save both energy and water.

Residential

- Landscape design for native and drought tolerant species ([A4.106.3](#))
- Lower flow kitchen faucets ([A4.303.1](#))

- Alternative water sources for nonpotable indoor uses ([A4.303.2](#))
- Waterless urinals and composting toilets ([A4.303.4](#))
- On-demand hot water circulation ([A4.303.5](#))
- Rainwater catchment ([A4.304.1](#))
- Prohibition of potable water use for irrigation ([A4.304.2](#))
- Graywater for irrigation ([A4.305.1](#))
- Recycled water piping ([A4.305.2](#))
- Recycled water for landscaping ([A4.305.3](#))

Nonresidential

- Higher performance standards for indoor water use ([A5.303.2.1-3](#))
- Nonpotable water systems for indoor water use ([A5.303.2.3.4](#))
- Water efficiency standards for non-federally regulated appliances ([A5.303.3](#))
- Waterless urinals ([A5.303.4.1](#))
- Dual plumbing for recycled water ([A5.303.5](#))
- Separate meters for indoor and outdoor water use ([A5.304.2](#))
- Restoration of local adaptive species ([A5.304.6-7v](#))
- Graywater irrigation system ([A5.304.8](#))
- Recycled water for irrigation ([A5.305.2](#))

5.3 Water Demand Calculator for Residential New Construction

The Building Standards Commission adopted language in 2023 that allows designers to calculate the peak water demand in new residential buildings, using an alternative methodology that references current plumbing fixture and fitting flows. Referencing current equipment results in smaller pipe diameters, yielding both material and operational savings. Smaller pipe sizes may also result in faster hot water delivery for residents. You may obtain additional information regarding the Peak Water Demand Calculator [here](#).

5.4 Other Examples

[Santa Monica's Water Neutrality Ordinance](#) sets water consumption limits for new construction and major renovations that caps water use at the historic baseline level for the site (the cap is doubled for affordable housing projects). Applicants may pay a mitigation fee in lieu of meeting the requirement.

[San Francisco's health code](#) requires that large projects (100,000 square feet or more) employ alternative water sources for non-potable water. Sources specifically include graywater, on-site treated non-potable water, rainwater, stormwater, foundation drainage, and blackwater.

Considerations

- Water conservation measures that alter requirements under the energy code, such as recirculation pumps, must be cost-effective.
- Alternative water sources and water reuse may have considerable infrastructure costs.
- Widespread education effort required

Get In Touch

The adoption of local energy codes can differentiate jurisdictions as efficiency leaders and help accelerate the adoption of new equipment, technologies, code compliance, and energy savings strategies.

As part of the Statewide Codes & Standards Program, the Reach Codes Subprogram is a resource available to any local jurisdiction located throughout the state of California.

Our experts develop robust toolkits as well as provide specific technical assistance to local jurisdictions (cities and counties) considering adopting energy local energy codes. These include cost-effectiveness research and analysis, model ordinance language and other code development and implementation tools, and specific technical assistance throughout the code adoption process.

If you are interested in finding out more about local energy local energy codes, the Reach Codes Team stands ready to assist jurisdictions at any stage of a local energy code project.



Visit

[LocalEnergyCodes.com](https://www.localenergycodes.com) to access our resources and sign up for newsletters.

[CALGreenInfo.com](https://www.calgreeninfo.com) to access resources on Title 24, Part 11.



Contact

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Explore

The [Cost-Effectiveness Explorer](#) is a free resource to help California local governments and stakeholders develop energy policies for buildings.



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