

CPA Reach Code Program – Frequently Asked Questions

Updated: July 2024

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Reach Code 101

1. What are Reach Codes and why are they important?

Reach Codes are local ordinances adopted by the local government that exceed and enhance the state’s green building standards. Here are some important facts:

- Improve economic and energy performance of buildings
- Reduce Greenhouse Gas (GHG) emissions, pollutants, and improves indoor air quality
- Help to reduce energy use and improve grid resiliency
- Allow local governments to be leaders in climate solutions
- Help to fulfill local Climate Action Plan, Energy Plan, or other policy goals
- Help to prepare the local market and avoids future stranded gas assets
- Can be adopted at any time

2. What are the types of Reach Codes?

Building Electrification (New Construction & Existing Buildings)

Goal: to reduce the use of methane gas (from natural gas), ensure buildings are operating efficiently and safely, and to prepare the market for statewide electrification goals

Electric Vehicle Infrastructure (EVI)

Goal: to improve market readiness and increase equitable access to clean transportation EV charging stations

3. How are Reach Codes Implemented?

The CA Energy Codes live in two main sections of Title 24 of the California Code of Regulations, also known as the California Building Standards Code. These codes are updated every 3 years on a Triennial cycle, with an Intervening Code Adoption cycle happening after 18 months within that Triennial cycle

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Part 6: The California Building Energy Code

- Regulates the energy efficiency for new residential and nonresidential buildings
- Regulated by the California Energy Commission (CEC)

Part 11: The CA Green Building Standards Code

- Regulates the use of electric vehicle charging, energy, water, and materials during and after construction
- Regulated by several state agencies including California Building Standards Commission (CBSC) and Housing and Community Development (HCD)
- Includes both Mandatory and Voluntary requirements

There are two reach codes pathways when amending the energy code:

Prescriptive Codes: Require one or more specific energy efficiency or renewable energy measures

Performance Codes: Require buildings to meet an energy budget/performance score through a custom design, allowing applicants flexibility

4. How does the program support local governments with developing a Reach Code ordinance?

The program offers support to member agencies that have signed the program's Participation Agreement. Once signed, the program team provides support by offering reach code development guidance, on-call technical assistance, and educational resources to support with stakeholder engagement.

Reach Code Development Support

- Regionally specific reach codes that promote electrification and decarbonization
- Compliance pathways included for both all-electric and mixed fuel buildings to avoid legal risk while increasing electric equipment readiness
- Can include EV Infrastructure

Technical Assistance and Resources

- On-Call Technical Assistance
- Educational Resources (PPT slides and FAQs)
- Adoption Templates (Checklists and Submittal Forms)

Adoption Support

- Present at City Council meetings
- Facilitate and support public workshops

Financial support

- Financial support for member agencies that get council directives for existing building reach codes and/or that take a new construction code to Council for consideration

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California Restaurant Association (CRA) v. City of Berkeley

5. Are Reach Code's still viable with the current lawsuit against Berkeley for their all electric/gas ban Reach Code?

The program has developed alternative reach codes that are designed to be legally defensible and mitigate the risk of litigation by allowing for the development of mixed-fuel buildings.

Several jurisdictions such as San Jose, San Luis Obispo, Santa Cruz, and Los Altos Hills have already passed these new ordinances. While these solutions are designed to be less risky, all city staff should seek legal advice from their jurisdiction's legal counsel.

Moving forward with reach codes helps jurisdictions decarbonize their buildings and prepare local stakeholders for future all electric state codes. One of the alternative code options, the Energy Performance Approach, can provide anywhere between 17% - 49% in estimated CO2 savings when compared to the state's 2022 energy code mixed fuel baseline. These savings are dependent on the building type, climate zone, and compliance margin set by the jurisdiction.

Why should your jurisdiction should pursue reach codes?

CPA's model reach codes help to significantly reduce GHG emissions, pollutants, and improve indoor air quality. They also have several additional benefits such as:

- Improving economic and energy performance of buildings
- Preparing the market and local stakeholders for upcoming electrification codes
- Allowing local governments to be leaders in climate solutions
- Helping to fulfill local Climate Action Plan, Energy Plan, or other policy goals

6. Why did Berkely get sued?

In 2019, the City of Berkeley adopted a municipal gas ban/all-electric Ordinance which prohibited natural gas infrastructure in all newly constructed buildings (with some exceptions).

CRA sued on the grounds that the Ordinance was preempted by the federal Energy Policy and Conservation Act (EPCA). EPCA is a federal statute that regulates the use of and sets energy conservation standards for certain consumer products.

Result: Berkeley has repealed its gas ban ordinance. All gas ban/all-electric ordinances can be subject to litigation- especially those that focus on prohibiting natural gas piping in new construction buildings.

Additional Resources:

- [*Gloom Not Doom: The Latest in the Berkeley Decarbonization Case | Public Health Law Center*](#)
- [*Editorial: Berkeley's backtrack on gas ban won't slow electrification - Los Angeles Times*](#)

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- [California Restaurant Association \(CRA\) v. City of Berkeley](#)

Buildings Covered Through Reach Codes

7. What building types are covered under the reach code?

The California Energy Codes and Standards team performs cost-effectiveness studies on single family, low-rise multifamily, hotel, office, and retail prototypes. At a minimum, most buildings that fall under these size ranges comply with buildings addressed through reach codes.

8. Will implementation of reach codes be affected if my city changes policy to allow different housing types?

Reach codes are specific to individual building types, which means that they will apply to any building of that type, even if the code's adoption predates the policy change that allows for their construction. In other words, if a city votes to allow the construction of multifamily buildings, their reach code will not apply to those buildings unless it specifically addresses that building type.

9. How will accessory dwelling unit's (ADUs) be addressed?

Inclusion of ADUs is at the discretion of cities. [This 2019 study](#) found that new detached ADUs can be constructed all-electric cost-effectively when combined with efficiency and/or solar PV.

Reach Code Staff Impacts, Public Process, Affordable Housing

10. What is the impact to staff? Do electrification Reach Codes add staffing burden?

While reach codes can be adopted at any time, it is easiest to adopt and implement in line with the triennial code cycle by adopting the higher tiers of CALGreen. A reach code requirement is typically very easy to permit and inspect. If the code includes exceptions, the level of effort is likely to be a minor increase. For EV charging, the level of effort is likely equivalent to California state code.

The CPA Reach Code program also offers a generous incentive in addition to the free technical assistance provided by the program's technical team.

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Award Type	Award Value	Requirements
New Construction: Early Adopter*	\$2,500	<ul style="list-style-type: none"> Applicant adopted a New Construction reach code prior to April 2023. Commitment of 2 -6 hours of staff time to share experiences and challenges from reach code adoption process in Reach Code Program workshops and/or in conversations with applicants over the Reach Code Program term Required attendance at one kick -off and one model code workshop Program Award Application
New Construction: Prospective Adopter**	\$12,500	<ul style="list-style-type: none"> Executed Program Participation Agreement Applicant must commit to develop a New Construction reach code with the intent to present findings to City Council or Board of Supervisors ("BOS") for consideration of adoption during Reach Code Program term. Updated New Construction reach codes are not eligible for this award. Program Award Application after submittal of code to City Council or BOS for approval
Existing Building Pilot	\$25,000 total	
	Milestone 1: \$12,500	<ul style="list-style-type: none"> Executed Program Participation Agreement Applicant must obtain a directive from City Council or BOS committing Applicant to investigate Existing Building reach codes. Directives include: <ul style="list-style-type: none"> Letter of Intent approved by City Council or BOS - or - Resolution passed by City Council or BOS to evaluate Existing Building reach codes - or - Adopted Climate Action Plan*** Program Award Application
	Milestone 2: \$12,500	<ul style="list-style-type: none"> Executed Program Participation Agreement Program Award Application Applicant must submit an Existing Building reach code to City Council or BOS for consideration of adoption during Reach Code Program term

CPA REACH CODE PROGRAM FINANCIAL OFFERINGS

11. Should code requirements be consistent across jurisdictions in the same geographic area?

Uniformity across jurisdictions is desirable because it reduces burden on designers and contractors working regionally across jurisdictions. However, to accommodate differences in new and existing buildings across jurisdictions (e.g. a city with heavy industry versus a jurisdiction that is primarily residential) may result in some variation across jurisdictions. Generally, minor variation is preferable to inaction, which locks in future cost for retrofit projects.

12. What kind of public process is held to develop the model codes?

Community workshops and focus groups are held with stakeholders such as city employees, building officials, developers, the general public, and advocates. Feedback collected on local issues and barriers to adoption are closely examined to help shape the reach code and verify it can work for the community. The program also helps to provide guidance and technical assistance to member agencies with their stakeholder engagement process. For existing building pilots, stakeholder stipends are available to help compensate contributions from important Community Based Organizations.

13. Is California Energy Commission (CEC) approval needed for the adoption of reach codes?

CEC approval is needed as they will review the reach codes for cost effectiveness. This is because they contain energy conservation requirements, such as efficiency, photovoltaics (PV), and storage. The CPA Reach Code program offers assistance and templates to support jurisdictions in the process.

14. What are the deadlines for filing for CEC approval for each of the electrification adoption approaches?

Reach Codes can be adopted and submitted for approval at any time. However, the reach code initiative team recommends reach code adoption by September or October before the new code

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cycle takes effect to leave ample time for CEC approval processes so that reach codes can become effective in January, in alignment with the new statewide code cycle.

15. If my city has already passed an all-electric building ordinance with EV charging requirements, is there a need to move forward with a new round of local adoption for the upcoming 2025 CALGreen Code set to go into effect on January 1, 2025?

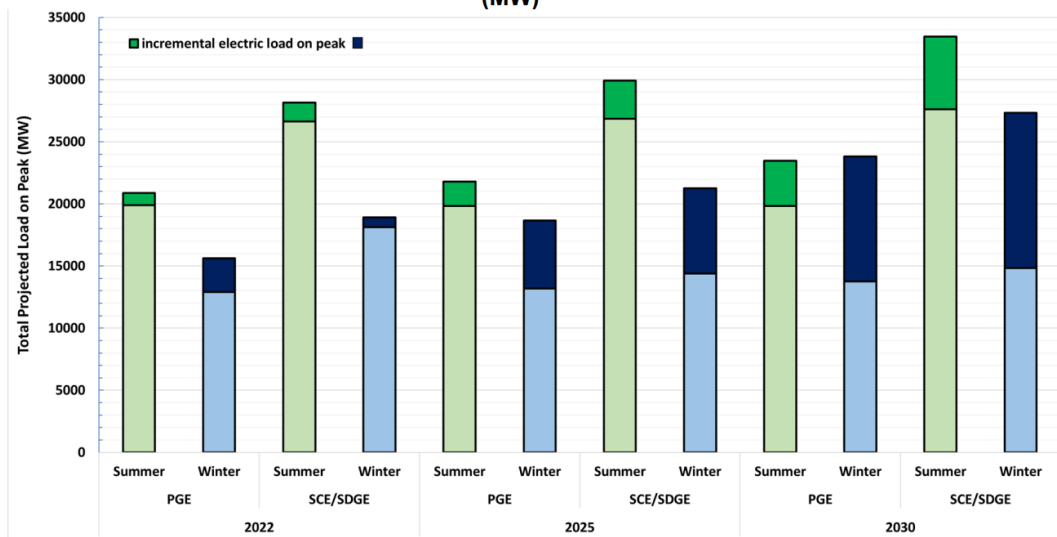
If your city’s EV charging reach code was adopted through a building code amendment, and you wish to maintain higher levels than CALGreen, yes. If your city has an EV reach code in your zoning code, then all that is needed is a review to ensure it is still more stringent in comparison to the CALGreen requirements.

Resilience and Grid Readiness

16. Can the grid handle the load increase?

In most of California, grid reliability is primarily a concern during summer peak cooling months as our cooling equipment is already electric. Increases in cooling demand are primarily due to climate change increasing summer temperatures. Building electrification to heat our water and spaces will not add demand or strain to the grid during these peak cooling periods. Analysis by the [California Energy Commission under AB3232](#) indicates that the winter heating load will effectively match the summer peak cooling load by 2030 in SCE/SDG&E territory under a highly aggressive existing building electrification scenario (see figure below). It is important to note that this study does not include EV charging.

Figure 25: Aggressive Electrification Scenario Winter and Summer Peak Load Impacts (MW)



Source: CEC staff

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Also, all-electric technologies can draw power flexibly. Electric vehicles can charge during off-peak periods, water heating tanks can increase temperature ahead of peak periods, thermostat setbacks can reduce space conditioning demand, and several other demand flexibility approaches such as battery systems and energy efficiency strategies can help avoid power outages.

During heatwaves from August 2022, load flexibility approaches helped to prevent blackouts and brownouts. In addition, utility-scale battery power output increased 27-fold between August 2020 and August 2022, further reducing reliance on generator capacity. The grid is evolving rapidly and many state agencies are collaborating on a future of electrification and climate resiliency.

Finally, electricity suppliers have a service obligation to meet demand. California Community Choice Aggregators (CCAs) are [continuously acquiring long -term clean energy resources](#) demonstrating their commitment to providing clean, affordable and reliability energy.

17. Do gas appliances offer more resilience?

In emergencies, gas is also shut-off to prevent accidental combustion. If there is a power outage and you do not have a backup generator, battery, or an electric vehicle that can power your home, you will not be able to use your electrical appliances. But since all modern gas appliances use an electric ignition for fire safety, they won't be able to ignite during a power outage either. You still could light your gas stove manually but would not be able to turn on the vent over it to get all of the pollutants from the stove out of your kitchen. Learn more at [Electrify Your Home FAQs - Switch Is On](#)

18. Does the model code prohibit propane, diesel generators or methane gas pipe fed generators?

The Energy Performance Approach code does not prohibit propane or diesel generators. Battery storage is recommended as backup power.

19. How reliable is the electric grid as compared to methane gas?

The methane gas grid and electric grid both go offline on occasion. In fact, during California's primary natural disaster events, wildfires and earthquakes, utilities are required to temporarily suspend gas service. In the 2019 Kincadee fire, homes in Sonoma County went without gas service for four days, whereas the electric service was restored after two days ([Link to article](#)). The reach code initiative team encourages solar and battery backup via microgrids for 100% reliability.

The California Independent System Operator (CAISO) has performed a [20-year study](#) and has recommended over \$30B in transmission investments to account for increased demand, increased renewables and decommissioned gas power plants.

20. Is the electricity on the grid clean?

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CPA offers [100% Green Power](#) which provides 100% renewable content. Much of [the rest of the United States have long-term goals for 100% renewable portfolios](#).

21. Will electrification require expensive transformers and distribution grid upgrades?

Depending on the building size and the amount of EV charging, additional transformers may be necessary. Even when considering the cost of this additional electrical infrastructure, all-electric building design is still cost-effective. EV charging infrastructure also represents an added cost, but those costs are small relative to the overall construction, and they are approximately 4x less costly compared to the retrofit scenario.

Additional distribution grid transformers are rare, and costs are typically the responsibility of the local IOU. Under [Rule 29](#), SoCal Edison (SCE) will coordinate and pay for the design and deployment of eligible electrical service extension work from SCE's electrical distribution line facilities to the customer installed meter panel or meter pedestal on the utility side of the meter for separately metered EV charging station projects. If there are costs to the customer, these costs are usually more than offset by the savings of all-electric construction.

The model code for EVs allows for significant use of Level 1 and low-power Level 2 charging and load management to minimize service size requirements and transformer costs.

Building Technologies

22. Is all-electric equipment available?

Yes – heat pumps and induction stoves have a long-established history and are widely adopted in other states. Also, numerous California institutions and agencies have committed to all-electric buildings, which will help drive awareness and adoption of all-electric equipment in California.

23. Central water heating: Are central heat pump water heaters infeasible/unavailable?

There are several design options for multi-family buildings including central heat-pump water heaters (HPWH) with larger tanks, central HPWHs in parallel, distributed HPWHs within each unit, or distributed HPWHs serving multiple units. Central HPWH it is absolutely an option with dozens of case studies and several practitioners available, particularly in affordable housing. [This guide](#) by Redwood Energy provides case studies, design insights, and products.

24. Can a Heat Pump Water Heater match the performance of a gas system?

Yes, a heat pump water heater (HPWH) can equal the performance of a gas equivalent. For example, Rheem's 55-gallon HPWH unit can deliver 70 gallons of hot water in the first hour, enough for about four showers. For comparison, Rheem's gas equivalent delivers 79 gallons in the first hour. When selecting any hot water heater, no matter the fuel, make sure it is the right size for your use type. A

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home with a big family, or a small home that wants extra insurance to never run out of hot water, might need a larger 80-gallon tank.

25. Will the HPWH need to be supplemented by electric resistance?

Manufacturers design HPHWs with hybrid heating capability, including a backup electric resistance coil. This enables the heat pump to work when it is bitterly cold, and it also helps the heat pump replenish its hot water supply more quickly. In most cases, particularly in mild California climates, the electric resistance coil is idle.

26. Can the central heat pump water heater distribute adequate water supply at high temperature to multiple units simultaneously?

Yes, when designed appropriately. Here are some design guides that will outline typical implementation:

- [Building Decarbonization Practice Guide](#) - Guides architects and engineers towards best practices during design development
- [Ecosizer](#) - Guides engineers and energy consultants for proper design of central heat pump water heating systems
- [Zero Emissions All-Electric Multifamily Construction Guide](#) outlines demonstration projects and common implementation.

27. With the rapid change in technologies, how soon will these all-electric technologies become irrelevant?

Most electrification technologies have been available for over a century. They will likely become slightly more efficient over time, but the current options available will be relevant for the life of the system.

28. How do the costs for electric space heating and water heating compare to that of methane gas-based options?

The answer largely depends on the product chosen, climate, and occupant behavior. Generally, energy costs can be treated as similar. This is because while electricity is more expensive than gas per Btu, heat pumps are more efficient. Capital costs for new construction are lower because a building owner can avoid the high cost of a new gas meter.

29. Are methane gas systems more efficient than all-electric?

In every case, all-electric systems operate more efficiently than methane gas systems.

30. Are there any other requirements to later convert from a gas heater to electric heat pump?

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The model codes includes requiring electrical capacity minimums (“electric readiness”) for any exempted appliances to reduce future retrofitting costs.

31. Are there requirements for buildings to have solar PV or battery storage?

Title 24-2022, which went into effect on January 1, 2023, requires new nonresidential and multifamily buildings to have onsite solar PV and battery storage.

32. How do I convince the community to electrify if people prefer gas stoves?

Yes, many people prefer gas stoves. However, most people are unfamiliar with induction stoves, which offer superior heating speed, cool and safe surfaces while cooking, precise temperature control, and better indoor air quality from avoided GHG and particulate emissions. Consumer Reports’ top cooktops are regularly electric. Induction is also more efficient, as demonstrated by this study on [Residential Cooktop Performance and Energy Comparison](#).

EVs, Charging, and Parking

33. Why should I ensure there is more EV charging at my site?

The model EV reach code intends to ensure that buildings constructed today are ready for EV adoption to occur within the 40+ year life of the building, and builders incorporate that readiness at construction to avoid the substantially greater cost of retrofits.

Every major automaker has announced major expansions of EVs (ex: General Motors: 20 new electric vehicles by 2023; Volkswagen: 50 fully electric models by 2025; Ford: 40 electrified models by the end of 2022). Global purchases of vehicles should be over 50% EV by 2040, but in [California it will be much faster](#).

34. Why should I consider using low-power Level 1 charging?

Level 1 charging uses a standard 110/120 volt plug. This is lower power than Level 2 charging, which is the equivalent of a dryer outlet (or DC fast charging, which is a very high-power charging station, such as a Tesla Supercharger® or EVgo® station). Most installed EV charging stations are Level 2; however, in practice, many (possibly even a majority) EV drivers charge at home using Level 1.

Level 1 provides 30-40 miles of charge overnight. Level 1 is sufficient for plug-in hybrids—which make up 40% of the market—and it is also sufficient for average daily driving, which is under 30 miles a day. It is also substantially less expensive to deploy, and especially at large scales, minimizes the number of transformers and size of service panels to support. Finally, Level 1 outlets provide a

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practical option for people who may wish to own electric bikes, scooters, or motorcycles. Level 2 charging should be considered for faster charging for longer range driving.

35. What are the typical costs of electric vehicle supply equipment?

Below are the average costs for new construction EVI installations. Costs include circuits, conduits, breakers, and outlets (for EV Capable and Ready) and chargers (EVCS).

Equipment Type	Power Level	Cost
L2 EV Capable	240V/40A	\$1,800
L1 EV Ready	120V/20A	\$1,500
L2 EV Ready - LPL2	240V/20A	\$1,700
L2 EV Ready	240V/40A	\$2,200
L2 EVCS - networked ALMS, single port	240V/40A	\$5,100

36. Can a very aggressive deployment of EV readiness put a sudden load to the electric grid?

Utilities are planning and preparing for increased levels of EV deployment. Smart charging capability at the EV charging station helps ensure this is not an issue. CPA's [Power Response Program](#) was designed specifically to help all CPA customers receive financial incentives for responding to Energy Savings Events by reducing their energy use during peak periods of energy use.

37. Do EV charging stations also count as parking spaces? If not, are cities required to separately meet minimum parking space requirements as well as minimum number of EV charging stations?

This initiative's intent is that an EV charging station would replace a parking space—i.e., the total number of parking spaces would remain the same even with EV reach code requirements. The reach code initiative team's understanding is that the municipalities determine if an EV charging station is equivalent to a parking space. Local ordinance adoption processes should ensure that local planning and zoning interpretations do not inadvertently result in an increase in the total number of parking spaces required as a result of EV reach code adoption.

38. If my building is required to provide EV charging access to 100% of dwelling units, my building will have a very large electrical service. Considering that EV ownership is still in the minority, will the utility charge me more for underutilized electrical infrastructure?

Utilities have previously charged for underutilized electrical infrastructure, such as over-sized transformers, also known as deficit billing. AB841 required better rates and rules for EV infrastructure. Rules 15 and 16 are related to single and multifamily buildings, and Rule 29 applies to all properties other than single family. In short, the significant rule changes are:

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- The utilities waive deficit billing unless the customer does not install the planned EV chargers.
- Utilities must rate-base costs associated with EV charging electric meters, service and their accompanying infrastructure upgrades. This is also known as the common treatment policy.

Where possible, the reach code initiative team encourages using [Rule 29](#), but if adding an EV-specific meter is infeasible, you may want to consider complying under Rule 15/16.

You can find further information in PG&E Advice Letter [6423-E](#) and [6424-E](#).