



EAST PALO ALTO CITY COUNCIL STAFF REPORT

DATE: June 4, 2024

TO: Honorable Mayor and Members of the City Council

VIA: Melvin E. Gaines, City Manager

BY: Donald Zhao, Interim Chief Building Official
Amy Chen, Community & Economic Development Director

SUBJECT: Introduction of Municipal Code Amendments to Chapter 15.11 - Reach Codes

Recommendation

Waive the first reading and introduce an ordinance amending:

1. Chapter 15.11 (California Green Building Standards, California Code of Regulations, Title 24, Part 11) of the East Palo Alto Municipal Code (EPAMC), with local amendments related to building electrification;
2. Chapter 15.25 (California Energy Code, California Code of Regulations, Title 24, Part 6) of the EPAMC, with local amendments to mandate cost-effective building requirements, including increasing building efficiency and requiring electric readiness; and
3. Make any necessary conforming amendments, as the Council deems necessary.

Alignment with City Council Strategic Plan

This recommendation is primarily aligned with:

Priority: Promote Health & Public Safety

Background

The City of East Palo Alto (City) has demonstrated leadership in sustainability when adopting reach codes during the 2019 and 2022 code cycles and has updated its Community Climate Action Plan and Adaptation Strategies 2030 (CAP). The CAP describes the process the City will embark on to both reduce our impact on the environment and increase our resilience against the impacts of the climate crisis. The CAP was adopted on September 5, 2023 and establishes guidelines for reaching the stated goal of reducing per person (or per capita)



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carbon emissions 55 percent below 2005 levels by 2030 and aspires to reach carbon neutrality by 2045. Please see the 2030 Climate Action Plan webpage for more details:

<https://www.cityofepa.org/publicworks/page/2030-climate-action-plan>

Consistent with the City's climate goals, on March 21, 2023, the City Council unanimously adopted an ordinance amending Chapter 15.11 of the East Palo Alto Municipal Code to adopt local amendments to the 2022 edition of the California Green Building Code to adopt a "Reach" Code. This Reach Code was tied to the 2022 California Building Standards Code that was adopted on December 6, 2022 by the City Council. The City Council had previously adopted Reach Codes on October 20, 2020 that were tied to the 2019 California Building Standards Code.

California Restaurant Association (CRA) v. City of Berkeley

Since the adoption of this amending ordinance, recent case law has emerged relevant to enforceability of the City's Reach Code, California Restaurant Association (CRA) v. City of Berkeley. On April 17, 2023, the California Ninth Circuit Court of Appeals struck down the City of Berkeley's natural gas prohibition as part of the ruling in CRA v. City of Berkeley. The Ninth Circuit Opinion holds that the Energy Policy and Conservation Act (EPCA) preempts the City of Berkeley's ordinance as the EPCA does not allow State and local governments to prohibit an end-user's ability to use natural gas products. To be sure, preemption is a judicial determination reserved for a court of law, and while the City's ordinance has not been challenged, this ruling calls into question the City's ability to enforce its Reach Code. The City of Berkeley was unable to obtain further judicial review. As such, the CRA opinion remains binding legal precedent, even though no court has opined on the City's Reach Code directly. The City of East Palo Alto would therefore incur legal risk if it continued to enforce its current Reach Code, given the similarities between the City's Reach Code and the Berkeley ordinance.

Additionally, to ensure the City will be able to reach its legal GHG emissions reduction target, under the City's Community Climate Action Plan and Adaptation Strategies 2030 (CAP). staff is therefore recommending introduction of a new ordinance, consistent with state and federal law, which regulates whole building efficiency for new buildings, including the regulation of its water heater, heating, ventilation, and air conditioning (HVAC) system, solar generating system, and insulation, among other things. The proposed Reach Code would not regulate cooking equipment, laundry dryers, or other unregulated energy uses. Importantly, the proposed Reach Code would provide developers with a range of options with regard to the type of equipment and energy source that will be supplied to new buildings. The purpose of the proposed amended Reach Code is to help the City meet the CAP 2030 GHG emissions target by reducing carbon emissions associated with new construction while ensuring cost-effective options per building type.

So far, five cities have amended their building Reach Codes, including San Jose, Santa Cruz, San Luis Obispo, Los Altos Hills, and Encinitas. Others have paused or suspended enforcement including the County of San Mateo, Menlo Park and Mountain View. The most recent jurisdiction, the City of Palo Alto, is scheduled to introduce their ordinance on June 3, 2024.



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Peninsula Clean Energy (PCE)

The City of East Palo Alto has reengaged with Peninsula Clean Energy (PCE) to explore this update to the Reach Codes. PCE is a not-for-profit and community-owned energy provider based in San Mateo County that provides expert technical assistance to cities like the City to develop and implement building reach codes. PCE has several incentive programs supporting electrification regardless of what reach codes the City adopts, including electric appliances, zero-interest loans, and EV Infrastructure rebates. The programs have enhanced offerings for income-qualified households. PCE assisted the City in 2020 with the initial adoption of the Reach Codes as well as in 2023 with the amendment to the ordinance to align with the 2022 Building Codes.

In alignment with the above, staff recommends modifying EPA's Reach Code. This report provides an overview of the Source Energy Margin References prepared by PCE for the City, detailed findings, and provides model code language for the associated Reach Code being proposed.

Analysis

The CRA v. City of Berkeley ruling limits how the City can reduce GHG emissions from new buildings. Staff have identified increased building energy performance requirements via local amendments to the California Energy Code (also known as a "reach code") as the preferred alternative approach. The California Energy Code establishes whole-building efficiency requirements, which account for a building's water heater, HVAC (heating, ventilation, and air conditioning) system, solar generating system, and insulation, among other things. The California Energy Code includes both a prescriptive option and performance option per building type. Through the performance path, it does not account for cooking equipment, laundry dryers, or other unregulated energy uses. The proposed reach code primarily amends the performance pathways and therefore does not regulate cooking equipment, laundry dryers, or other energy uses not addressed by the performance path of the California Energy Code.

California Energy Code Energy Evaluation Metrics

The 2022 Energy Code contains energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The California Energy Code provides different metrics for different types of buildings and is organized into three categories:

1. **Single-Family Residential:** A new single-family residential building must meet or exceed all "Energy Design Ratings" (EDR). There are three EDR categories:
 - EDR1 (Source Energy) – EDR1 is a score representing a building's energy efficiency expressed in terms that serve as a proxy for greenhouse gas emissions.
 - EDR2 (Efficiency) – EDR2 is a score representing a building's energy efficiency



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expressed in terms of the value and cost of energy consumed at different times of the day and year.

- EDR Total (Total Energy Design Rating) is a score representing the building's total energy expressed in terms of the value and cost of energy consumed at different times of the day and year while also factoring in solar and energy demand flexibility.
2. **Multi-Family Residential:** A new multi-family residential building must meet or exceed a standard that combines the value and cost of energy consumed at different times of the day and year (referred to as Time Dependent Valuation of energy, or TDV), and the emissions from the building's energy source. The 2022 Source Energy metric is new for all multifamily buildings, and it was added to support decarbonization and electrification policy goals.
 3. **Non-Residential:** A new non-residential building must also meet or exceed a standard that uses TDV energy and Source Energy emissions scores.

Proposed Energy Performance Enhancements

Public Resources Code Section 25402.1(h)(2) and Section 10-106 of the Building Energy Efficiency Standards establish a process that allows local adoption of energy standards that are more stringent than the statewide standards. Under this process, the California Energy Commission requires any local amendments to the California Energy Code that affect energy use in regulated buildings to be cost effective and use less energy than the standard requirements contained in Title 24, Part 6.

The proposed Reach Code would increase the required EDR1 score for single family residential buildings and the required Source Energy scores for all other buildings. The compliance margins were established based on staff analysis of the data provided in the cost effectiveness studies per building type. As noted in Table 1, below, new single-family residential buildings would be required to exceed the standard design Total Source Energy Design Rating (EDR1) by at least 9 points. Table 1 also identifies Source Energy performance requirements for new multi-family residential buildings (exceed the standard Source Energy requirement by at least 10% for three stories or fewer, exceed the standard Source Energy requirement by at least 4% for four stories or more), and new non-residential buildings, which must exceed the standard Source Energy requirement by at least 7%.

Because of how the EDR1 and Source Energy scores are calculated in the 2022 California Energy Code, the higher standards proposed in the Reach Code would incentivize new buildings to include electric appliances and/or mechanical systems, while also allowing mixed-fuel appliances and/or systems which would that include additional energy efficiency measures, PV systems, and/or a battery. There are two main pathways when amending the energy code:

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



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measures, or

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

EPA is proposing a performance code where the enhanced performance requirements would apply equally to mixed-fuel and all-electric buildings and are cost-effectively achievable through the energy code’s performance pathway without requiring appliances that exceed federal efficiency standards. There would also be additions to the mandatory requirements of the energy code related to electric readiness.

Table 1. Proposed Improved Energy Performance Standards

Building Type	Performance Requirement
Single Family Residential Buildings	Exceed the standard EDR1 requirement by at least 9 points
Multi-Family Residential (Low-rise, ≤ 3 stories)	Exceed the standard Source Energy requirement by 10%
Multi-Family Residential (High-rise, ≥ 4 stories)	Exceed the standard Source Energy requirement by 4%
Non-Residential	Exceed the standard Source Energy requirement by 7%

Electric Ready Requirements

The 2022 California Energy Code requires certain mixed-fuel buildings to include “electric ready” components including electric outlets near natural gas appliances, appropriate ventilation for future heat pump appliances, and reserved and labelled breakers in the electrical panel for future electric appliances as follows:

- Single-Family Residential – heat pump hot water heaters are a prescriptive (or optional) pathway to compliance, and “electric ready” infrastructure is required for any new building that installs a gas-fueled furnace, clothes dryer, and/or cooktop.
- Multi-Family Residential – “electric ready” infrastructure is required in a newly constructed multi-family residential unit that installs a gas fueled space heater, water heater, clothes dryer, and/or cooktop. This includes water-heating systems for multifamily buildings, considering both individual heating systems and central water heating systems.
- Nonresidential - “electric ready” infrastructure is required for newly constructed nonresidential buildings that use systems using gas or propane. Additionally, a required control is added for HVAC hot water temperatures, setting the design temperature for a hot water supply temperature to be no greater than 130F. Commercial kitchens also have electric-readiness requirements.



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Practical Effect of the Reach Code

Because the City is working within the confines of the California Energy Code, the description of the proposed approach above is inherently technical. This section illustrates the practical effect of the proposed approach by providing a simplified example of how a single-family home designer would comply with the proposed Reach Code.

Under the current California Energy Code, a building designer working on a single-family home built to the code minimum; with current incentives and rebates available, the design is likely to include high efficiency LED lighting, rooftop solar, an electric heat pump hot water heater, a natural gas furnace, insulated walls, an insulated attic, and efficient windows, among other things. The designer would load the proposed building design into a computer model and estimate its energy performance. The energy modeling software would provide standard reporting metrics, including an EDR1. The designer would then compare the EDR1 to a standard design building. In this case, the proposed designed building's EDR1 score would be equal to the standard design building's EDR1 score. To calculate the compliance margin, the designer would subtract the standard design building's EDR1 rating from the proposed designed building's EDR1. In this example, which results in a compliance margin of 0, which meets the compliance requirement for that part of the California Energy Code.

With the proposed reach code in place, the designer would now need to achieve a compliance margin of 9 points. That means that the EDR1 of the proposed designed building needs to be 9 points better than the standard design building (i.e., an EDR1 compliance margin of 6 or greater). If this building designer replaced the natural gas furnace with a commonly available heat pump HVAC system, the building would achieve a score that is 9 EDR1 points better than the code minimum standard design and would be consistent with the proposed Reach Code requirements. Alternatively, the building designer could keep the gas furnace and install a battery storage system, which would also result in an increase of more than 9 EDR1 points. The building designer also has the option to develop a package of efficiency and solar measures; so long as the measures lead to an increase of 9 or more EDR1 points better than the code minimum standard design, it is consistent with the reach code.

This example for single family homes is similar for the other building types where the compliance margins could be achieved by either installing electric heat pump HVAC equipment or installing some package of additional solar capacity, battery storage systems, and efficiency measures.

Cost Effectiveness

The California Energy Commission requires any local amendments to the California Energy Code that affect energy use in regulated buildings (e.g., reach codes) to be cost effective and to use less energy than the standard requirements. The California Energy Commission (CEC) requires the local agency to adopt a determination that the energy standards are cost effective at a public meeting. The determination must subsequently be filed with the CEC.

One way to illustrate cost effectiveness is through the "Time Dependent Valuation" or "TDV" metric. The TDV metric is what the CEC uses in evaluating cost effectiveness for efficiency



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measures in the California Energy Code and includes the onsite costs and savings of the proposed energy measures, as well as the energy system costs and benefits of the energy measures. The metric is “time dependent” because energy use has different costs and impacts depending on the time of day and season. For example, electricity saved during peak periods has a much higher value than electricity saved during off-peak periods.

In support of reach code development, the California Energy Codes and Standards Statewide Utility Program, which includes the State's Investor-Owned Utilities (PG& E, SDG&E, and SCE, under the auspices of the California Public Utilities Commission) developed and published the:

- 2022 Cost-Effectiveness Study: [Single Family New Construction Study](#) and the [associated cost-effectiveness data](#);
- 2022 Cost-Effectiveness Study: [Multifamily New Construction Study](#) and the [associated cost-effectiveness data](#); and
- 2022 Code: [Non-residential New Construction Reach Code Cost-effectiveness Study](#) and the [associated cost-effectiveness data](#).

These studies and the associated cost-effectiveness data are highly detailed and are included in the record to support the findings required for CEC approval. The studies and the associated cost-effectiveness data include a calculated benefit-to-cost ratio for a wide variety of measures, building types, and climate zones. A benefit-cost value of “1” or greater illustrates that the measures save more than they cost and are therefore “cost effective.” These studies and the associated cost-effectiveness data are the basis for staff’s cost effectiveness findings and are sufficient to illustrate compliance with the requirements set forth under California Administrative Regulations Section 10-106.

Based on these studies, staff finds the proposed local amendments to the 2022 California Energy Code to be cost-effective and consume less energy than otherwise permitted by Title 24, Part 6. In short, using either the California Energy Commission’s on-bill metric and/or TDV metric, the proposed amendments save more than they cost to implement. The following additional detail is included for transparency and to facilitate the California Energy Commission’s review of the City’s cost effectiveness findings:

1. Requiring new single-family residential buildings to achieve an EDR1 margin over the standard building by 9 or more points. As illustrated in the study data, an all-electric single-family home with additional efficiency measures would save energy relative to the base code and would achieve an EDR1 margin of 11 and a benefit to cost ratio of greater than 1 on a TDV basis. The study data also shows that a mixed-fuel building with additional efficiency measures, additional rooftop solar, and a battery storage system would save energy relative to the base code and would achieve an EDR1 margin of 12.8 and a benefit to cost ratio of 1.1 on a TDV basis.
2. Requiring low rise multi-family buildings to achieve a Source Energy savings 10% or more. As illustrated in the study data, an all-electric low rise multi-family building built to



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minimum code standards would achieve a Source Energy margin of 10% and a benefit to cost ratio of 9.8 on a TDV basis. The study data also shows that a mixed-fuel building with additional efficiency measures, additional rooftop solar, and a battery storage system would save energy relative to the base code, would achieve a Source Energy margin of 17% and would achieve a benefit to cost ratio of 1.5 on a TDV basis.

3. Requiring high-rise multi-family buildings to achieve a Source Energy savings of 4% or more. As illustrated in the study data, an all-electric high rise multi-family building built to minimum code standards would achieve a Source Energy margin of 7% and a benefit to cost ratio of 2.4 on a TDV basis. The study data also shows that a mixed-fuel building with additional efficiency measures, and additional rooftop solar would save energy relative to the base code, would achieve a Source Energy margin of 4%, and would achieve a benefit to cost score of 3.5 on a TDV basis.
4. Requiring non-residential buildings to achieve a Source Energy budget savings of 7%. The Non-Residential New Construction Reach Code Cost-effectiveness Study provides analysis for several non-residential building prototypes. One of the prototypes is a retail building, which prescriptively requires electric heat pump space conditioning and along with other similar small-to-medium non-residential buildings that prescriptively require electric space conditioning, would be exempt from the reach code. As illustrated in the study data for the remaining non-residential building prototypes, all-electric new non-residential buildings built with additional efficiencies meet or exceed the 7% compliance margin. Mixed-fuel non-residential buildings with various additional energy efficiency measures and rooftop solar, would meet or exceed the 7% compliance margin, save energy relative to the base code, and are cost effective on a TDV basis.

Applicability

The ordinance applies to various building types, including single family, multifamily (low-rise and high-rise), nonresidential (commercial), and hotels/motels. Its effective date is 30 days after its adoption, as with all other ordinances. However, local amendments to efficiency or conservation standards require approval by the CEC, which is not expected until September 1, 2024.

Fiscal Impact

There is no fiscal impact with the items described in this staff report.

Public Notice

Notice of the public hearing was published in the local newspaper: San Mateo Daily Journal on May 24, 2024. Additionally, the public was provided notice by making the agenda and report available on the City's website and on a bulletin board located at City Hall: 2415 University Avenue, East Palo Alto.



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Environmental

This action is exempt from CEQA pursuant to CEQA Guidelines section 15061(b)(3) in that the standards set forth in the ordinance are more protective of the environment than the California Energy Code standards, and there is no possibility that the activity in question may have a significant effect on the environment. As a separate and independent basis, this action is exempt from CEQA pursuant to CEQA Guidelines section 15308 in that the standards set forth in the ordinance assure the maintenance, restoration, enhancement or protection of natural resources and the environment. In addition, CEQA Guidelines section 15183 (Projects Consistent with a Community Plan, General Plan, or Zoning) applies to the project in that the standards set forth in the Ordinance are consistent with the General Plan and the Climate Action Plan.

Government Code § 84308

Applicability of Levine Act: No.

Analysis of Levine Act Compliance: Not applicable.

Attachments

1. Ordinance
2. 2022 Cost-Effectiveness Study: Single Family New Construction Study
3. 2022 Cost-Effectiveness Study: Multifamily New Construction Study
4. 2022 Code: Non-Residential New Construction Reach Code Cost-Effectiveness Study