CITY OF PALO ALTO

City Council Staff Report

From: City Manager
Report Type: ACTION ITEMS
Lead Department: Planning and Development Services

Meeting Date: June 3, 2024
Report #:2405-3073

TITLE
PUBLIC HEARING: FIRST READING: Ordinance Amending Chapter 16.14 (California Green Building Standards, California Code of Regulations, Title 24, Part 11) of the Palo Alto Municipal Code to Adopt the 2022 Green Building Standards Code, Along With Local Modifications Related to Electrical Vehicle Charging Infrastructure Requirements and Building Electrification Requirements and an Ordinance Amending Chapter 16.17 (California Energy Code, California Code of Regulations, Title 24, Part 6) of the Palo Alto Municipal Code to Adopt the 2022 California Energy Code, Along with Local Modifications to Increase Energy Efficiency Standards for Buildings, Mandate Electric-Ready Requirements and Incentivize All-Electric New Construction. CEQA Status: Exempt under CEQA Guidelines Sections 15308 and 15061(b)(3)

RECOMMENDATION
Staff recommends that the City Council take the following actions:

1. Introduce an ordinance amending Chapter 16.14 (California Green Building Standards, California Code of Regulations, Title 24, Part 11) of the Palo Alto Municipal Code to adopt the 2022 Green Building Standards Code, along with local modifications related to electrical vehicle charging infrastructure requirements and building electrification requirements and finding that such modifications or changes are reasonably necessary because of local climatic, geological or topographical conditions (Attachment A).
2. Introduce an ordinance amending Chapter 16.17 (California Energy Code, California Code of Regulations, Title 24, Part 6) of the Palo Alto Municipal Code to adopt the 2022 California Energy Code, along with local modifications to increase energy efficiency standards for buildings, mandate electric-ready requirements, and incentivize all-electric new construction and finding that such modifications or changes are reasonably necessary because of local climatic, geological or topographical conditions (Attachment B).
3. Provide direction regarding outdoor gas grills, stoves, and barbeques.

EXECUTIVE SUMMARY

Staff recommends local amendments the California Building Efficiency Standards (State Energy Code) and the California Green Building Standards (State Green Building Code). In general, the recommended local amendments to the State Energy Code are intended to implement an Energy Reach Code using the One Margin approach. The local amendments to the State Green Building Code are intended to 1) remove provisions related to the City's previous all-electric code that are inconsistent with the Ninth Circuit's decision, and 2) align the City's local Green Building Code amendments with updates to the State Green Building Code that are taking effect July 1, 2024, especially those related to electric vehicle infrastructure.

This report also highlights a policy consideration for the Council regarding outdoor gas grills/stoves and barbeques, which are not regulated by the Energy Policy and Conservation Act (EPCA). As proposed new plumbing infrastructure for these outdoor appliances would continue to be prohibited, unless Council directs otherwise.

Procedurally, following Council's endorsement of proposed ordinances, the local amendments will require approval from both the CEC and the California Building Standards Commission (CBSC).

Accordingly, staff anticipates the local amendments to the State Energy Code to become effective no sooner than September 1, 2024 and the local amendments to the State Green Building Code to become effective on the thirty-first day following second reading adoption.

BACKGROUND

Palo Alto has a history of leadership in sustainability and energy efficiency. In April 2016, the City Council adopted the Sustainability and Climate Action Plan Framework (S/CAP), which introduced the greenhouse gas (GHG) emissions reduction goal of 80% from the 1990 level by 2030, also known as 80-by-30. In October 2022, the City Council passed an ambitious carbon neutral goal by 2030 to build on the City's existing emissions reduction goals.

Over the past four code cycles for the State Energy Code and State Green Building Code, Palo Alto adopted local amendments establishing requirements that exceeded statewide requirements in support of sustainability and GHG reduction goals. In 2022, the City Council adopted local amendments to the State Green Building Code establishing whole building electrification requirements for new buildings and substantial remodels, as well as a heat pump water heater replacement and installation requirement for existing residential remodel and addition projects.

in light of the decisions in the U.S. Court of Appeals for the Ninth Circuit (Ninth Circuit)[1], City Council adopted a resolution to suspend enforcement of the City's all-electric building

[1] See California Restaurant Association v. City of Berkeley Case 21-16278, January 2, 2024; available at: https://www.publichealthlawcenter.org/sites/default/files/2024-01/CRA-v-Berkeley-Ninth-Circuit-Opinion-Jan2024.pdf. Retrieved March 7, 2024.

requirement and directed staff to return with amendments to the California Energy Code using a "One Margin" approach, which refers to a code that uses a metric defined by the California Energy Commission (CEC) called Hourly Source Energy[2]. The One Margin approach allows for the installation of both mixed fuel and all-electric construction while imposing requirements that consider the emissions of both types of construction. Mixed-fuel construction would generally require significant investments in energy efficiency, solar, and storage to offset the emissions of natural gas appliances in order to meet these requirements. These requirements would support Palo Alto's carbon neutrality goal, 80-by-30 while still applying identical requirements to all-electric and mixed-fuel construction consistent with the Ninth Circuit's ruling.

On February 26, 2024,[3] in response to the decision of the U.S. Court of Appeals for the Ninth Circuit (Ninth Circuit)[4] invalidating the City of Berkeley's natural gas prohibition ordinance, the City Council adopted a resolution suspending enforcement of the electrification requirements and directed staff to return with an alternative using a "One Margin" approach to enforce during the remainder of the 2022 code cycle (until December 31, 2025). The One Margin approach refers to a code that uses a metric defined by the California Energy Commission (CEC) called Hourly Source Energy[5]. The proposed local amendments to the State Energy Code leverages the Hourly Source Energy metric established by the CEC in the State Energy Code. This metric serves as a proxy for carbon emissions and is used to regulate energy performance in the same manner for both all-electric and mixed-fuel buildings. The One Margin approach allows for the installation of both mixed fuel and all-electric construction while imposing requirements that consider the emissions of both types of construction. Mixed-fuel construction would generally require significant investments in energy efficiency, solar, and storage to offset the emissions of natural gas appliances in order to meet these requirements. These requirements would support Palo Alto's carbon neutrality goal, 80-by-30 while still applying identical requirements to all-electric and mixed-fuel construction consistent with the Ninth Circuit's ruling.

Since the moratorium went into effect staff have tracked applications for gas appliances in all permits that would have been subject to the all-electric Reach Code before the moratorium

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[2] "One Margin" is a term used by some in the California building regulatory community to refer to an Energy Reach Code that uses the "Hourly Source Energy" metric defined by the California Energy Commission in the statewide Energy Code. A One Margin code sets a high standard for Hourly Source Energy that buildings must meet (the "Hourly Source Energy Margin") and applies a single Hourly Source Energy Margin to each building type regardless of whether that building is a mixed-fuel building or an all-electric building.

[3] February 24, 2024 Agenda with access to the City Council Staff Report and Minutes (Item 14): https://cityofpaloalto.primegov.com/Portal/Meeting?meetingTemplateId=13357.

[4] See California Restaurant Association v. City of Berkeley Case 21-16278, January 2, 2024; available at: https://www.publichealthlawcenter.org/sites/default/files/2024-01/CRA-v-Berkeley-Ninth-Circuit-Opinion-Jan2024.pdf. Retrieved March 7, 2024.

[5] "One Margin" is a term used by some in the California building regulatory community to refer to an Energy Reach Code that uses the "Hourly Source Energy" metric defined by the California Energy Commission in the statewide Energy Code. A One Margin code sets a high standard for Hourly Source Energy that buildings must meet (the "Hourly Source Energy Margin") and applies a single Hourly Source Energy Margin to each building type regardless of whether that building is a mixed-fuel building or an all-electric building.

went into effect. While staff is likely not tracking 100% of application requests, tracking efforts show 23% (41/180) of applications affected by the moratorium were submitted as a mixed fuel design. The most common gas appliances requested were tankless water heaters (25), cooking ranges (17), and tank water heaters (9).

ANALYSIS

There are two codes used by the State and local jurisdictions to achieve efficiency and lower carbon emissions in buildings:

- 2022 California Green Building Standards (State Green Building Code)

The State Green Building Code was the first-in-the-nation green building standards code and developed to support AB 32 (Global Warming Solutions Act of 2006), which established a comprehensive, long-term approach to addressing climate change and required California to reduce its GHG emissions to 1990 levels by 2020. The State Green Building Code aims to improve public health, safety, and general welfare through enhanced design and construction techniques that emphasize positive environmental impact and sustainable construction practices.

The City's current all-electric requirements are codified as local amendments in the State Green Building Code but are not being enforced due to the aforementioned moratorium.

- 2022 California Building Efficiency Standards (State Energy Code)

The State Energy Code sets energy efficiency standards for residential and nonresidential buildings throughout California such as a building's heating, ventilation, and air conditioning system, water heater, solar PV systems, thermal envelope, and nonresidential lighting. In 2022 the State Energy Code was updated to include metrics to demonstrate a building's compliance with these efficiency standards. One such metric included Hourly Source Energy, which represents the energy consumption of a building including losses incurred during production and delivery on an hourly basis to the meter located at the building. It is a metric for both electricity and natural gas. The CEC found that Hourly Source Energy values are proportional to the GHG emissions for each hour of the year and can be considered a good proxy for GHG emissions, encouraging fuel switching, decarbonization, and reducing natural gas use.

Given the proxy analysis available in the State Energy Code, staff proposes to rescind local electrification amendments to the State Green Building Code that may conflict with federal law and advance the City's carbon reduction goals using the Hourly Source Margin set forth in the State Energy Code.

Proposed Local Amendments to the State Green Building Code (Attachment A)

Attachment A repeals the local amendments to the State Green Building Code, including the all-electric requirement for new construction and replacement of gas water heaters with a heat

pump water heater for residential remodels and additions. These standards appear to conflict with the Ninth Circuit ruling.

New State Green Building Code requirements related to EVs will become effective statewide in July 1, 2024 as a result of a state-initiated mid-code cycle update. The new state requirements will include changes related to specifications for chargers and cables, requirements for EV chargers at certain types of commercial buildings for medium- and heavy-duty vehicles, as well as minor administrative changes and updated definitions. In addition, the State updated two electric vehicle charging requirements for new construction as shown in Table 1. Staff recommends updating the relevant sections of PAMC 16.14 to align with the State Green Building Code requirements.

Table 1. Proposed EV Charger Requirements for New Construction

Building occupancy type	2022 PAMC 16.14 (local amendments to State Green Building Code) (Effective 1/1/23)	2022 State Green Building Code (Effective 7/1/24)	Staff Recommendation for updated local amendments to State Green Building Code, PAMC 16.14
New Multifamily guest parking spaces	EV Chargers: 5% of guest parking spaces	EV Chargers: 10% of guest parking spaces	EV Chargers: 10% of guest parking spaces
New Hotel/Motel	30% of spaces must be EV Ready[6] (with 10% EVSE installed)	40% of spaces must be EV Ready[5] (with 10% EVSE installed)	40% of spaces must be EV Ready[5] (with 10% EVSE installed)

Proposed Local Amendments to the State Energy Code (Attachment B)

Attachment B repeals the locally adopted State Energy Code and establishes new local amendments using a One Margin approach.

The proposed local amendments use the Hourly Source Energy metric established by the CEC. This metric acts as a proxy for carbon emissions. The proposed local amendments set an Hourly Source Energy Margin for each building occupancy type. The Hourly Source Energy Margin states how far below the "standard" energy budget set by the State Energy Code a proposed building's energy budget must be, using the Hourly Source Energy metric. The developer must demonstrate this to comply with the code.

Because natural (methane) gas space and water heating has such high carbon emissions compared to electric gas and water heating, buildings using natural (methane) gas for these appliances will need to install significant energy efficiency measures and large amounts of PV and

[6] EV Ready means all electrical equipment is installed to support an EV charging port but the port itself has not yet been installed.

batteries to offset those emissions at significant cost. Newly constructed all-electric buildings will achieve up-front cost savings compared to code-compliant newly constructed mixed-fuel buildings by avoiding the need for additional efficiency, PV, and battery installations to meet the Hourly Source Energy Margin requirements. The proposed energy reach code ordinance adopts cost-effective compliance margins and would be triggered on permit applications for project types indicated in Table 2.

Additionally, the proposed ordinance extends the Hourly Source Energy Margins and electric readiness requirements to all substantial remodel projects. During the 2022 code cycle, several jurisdictions, including Palo Alto, extended new construction requirements to substantial remodels; this provision has been included in the attached ordinance.

The proposed local amendments to the State Energy Code primarily impact space heating and water heating, which represent as much as 90% of a home's emissions. The local amendments do not include any stricter requirements for cooking, clothes drying, or other appliances than the State Energy Code. So, while these local amendments are likely to drive deep reductions in emissions in new construction, they are unlikely to eliminate them entirely. Many homes may choose electric space heating and water heating, but include a gas stove, for example. However, under the previous electric-preferred ordinance in Palo Alto, as many as 50% of homeowners built all-electric despite not being required to. And a high percentage of homeowners (as high as 75%) are continuing to opt for all-electric new construction since the moratorium went into effect. Based on that, staff anticipates the majority of homeowners will opt for all-electric construction under these local amendments even if not required to.

A summary of the proposed standards is provided in the following table. Note that requirements for single-family homes use a metric based on source energy called Energy Design Rating 1 (EDR1), while requirements for other building occupancy types are expressed in terms of Hourly Source Energy Margin. This is consistent with way the State Energy Code expresses the compliance factors.

Table 2. Proposed Hourly Source Energy Margins		
Building occupancy type	**Source Energy Margin**	**Electric-Readiness Requirements**
Single-family Residential Buildings (including detached Accessory Dwelling Units)[7]	Exceed standard EDR1 by at least 8 points ADUs:[7] Exceed standard EDR1 by at least 2 points	2022 California Energy Code electric-ready requirements for space heating, water heating, cooking/ovens, and clothes dryers.
Low-Rise Multifamily Residential Buildings (3 habitable stories or less)	Exceed the standard Hourly Source Energy Margin requirement by 9%	2022 California Energy Code electric-ready requirements for space heating, cooking/ovens, and clothes dryers serving individual dwelling units and common areas when gas equipment is installed. Proposed electric-ready requirements for water heating.
High-Rise Multifamily Residential Buildings (4 habitable stories or more)	Exceed the standard Hourly Source Energy Margin requirement by 1%	2022 California Energy Code electric-ready requirements for space heating, cooking/ovens, and clothes dryers serving individual dwelling units and common areas when gas equipment is installed. Proposed electric-ready requirements for water heating.
Office/Mercantile	Exceed the standard Hourly Source Energy Margin requirement by 10%	Proposed electric-readiness requirements for systems using gas or propane to accommodate the future installation of an electric heating appliance.
Hotel/Motel Buildings	Exceed the standard So Hourly Source Energy Margin requirement by 7%	
Restaurants	Exceed the standard Hourly Source Energy Margin requirement by 12%	
Industrial/Manufacturing Buildings	Exceed the standard Hourly Source Energy Margin requirement by 0%	
All other Nonresidential Occupancies	Exceed the standard Hourly Source Energy Margin requirement by 9%	

The margins listed in Table 2 are based on the 2022 Cost-Effectiveness studies published by the California Energy Codes and Standards Statewide Utility Program (Attachments C, D, and E), which is comprised of the State's Investor-Owned Utilities (PG&E, SCE, and SDG&E, under the auspices of the California Public Utilities Commission). The studies include robust data sets to support the findings required for CEC approval. To demonstrate cost-effectiveness, all applicable source energy compliance margins must show a calculated benefit-to-cost ratio for a variety of measures, building occupancy types, and climate zones. A benefit-cost ratio value of "1" or more demonstrates that the efficiency measures analyzed result in higher savings than they cost and are considered "cost-effective".

As a part of the development of the local amendments to the State Energy Code staff engaged with an engineering and construction management consultant firm (TRC) to perform additional analyses based on real construction projects that were submitted to the City over the last year. The analysis confirmed the feasibility of reaching the proposed source energy margins that were found to be cost-effective in the published 2022 Cost-Effectiveness Studies using examples of Palo-Alto-specific construction.

Proposed Amendments – Exceptions

The proposed local amendments to the State Energy Code includes exceptions for specific building occupancy types and an infeasibility exemption procedure for projects with unique circumstances that cannot meet the local reach code requirements. One exception extends to small-to-medium retail, grocery, schools, and banks because the 2022 California Energy Code strongly encourages these buildings to install heat pump systems. A second exception is for new buildings that are exempt from the California Energy Code's solar PV installation requirement. This exception typically applies to smaller ADUs that may have challenges meeting a higher EDR1 requirement. In this circumstance, the new detached ADU would need to meet an EDR1 requirement of 2 points. Lastly, this ordinance also includes limited exceptions to the higher Hourly Energy Source Margin requirements, including an exemption for industrial/manufacturing buildings due to the high variation in building equipment and challenges in finding equipment to meet the enhanced compliance standards.

Direction on Gas Appliances Not Covered by EPCA

The Ninth Circuit issued a decision holding the City of Berkeley's all-electric requirements invalid because it is preempted by EPCA, which sets forth federally mandated appliance and equipment efficiency standards. In amending the Green Building Code, staff identified one area of regulation that is not covered by EPCA: such as outdoor cooking appliances such as grills/stoves and

[7] The code exception addressing ADUs actually references buildings that do not require PV under the Energy Reach Code. In practice this will almost exclusively apply to ADUs, but some very small homes might meet this exception, and some very large ADUs may not meet it and may be required to meet the higher EDR requirement.

barbeques. The City previously prohibited the installation of plumbing for outdoor combustion-based appliances and can continue to do so. The proposed local amendments to the State Green Building Code (Attachment A) in fact retain this prohibition as a reflection of previously expressed Council direction. However, as other outdoor equipment, such as swimming pool and spa heaters are regulated by EPCA, it is anticipated new gas lines may be installed for these other types of outdoor appliances. And, since outdoor grills/stoves and barbeques are not among the higher sources of GHG emissions, the Council may want to consider, in light of the Ninth Circuit decision, whether it still wants to regulate this equipment. If the Council does not want to regulate plumbing to outdoor grills/stoves and barbeques, specific direction to staff is needed before adopting the proposed ordinance.

Next Steps

If approved, staff will place the ordinances on the Council's June 17, 2024 meeting agenda for adoption. If adopted, staff will submit the ordinance amending Chapter 16.17 (California Energy Code) to the CEC for approval as required for enforcement of local amendments to the California Energy Code. Upon CEC acceptance, the ordinance will be posted for public review and undergo a 15-day public comment period. Towards the end of the public comment period, the CEC will consider the local ordinance at an upcoming regularly scheduled business meeting. If the local amendments are approved, it can then be filed with the CBSC. Based on these processes the estimated earliest possible effective date for this ordinance is September 1, 2024, but the actual timeline is dependent on the CEC and CBSC.

Staff will separately file both ordinances, along with associated findings regarding local climatic, geological or topographical conditions, with the California Building Standards Commission. Based on staff's experience adopting reach codes for previous cycles, the Building Standards Commission accepts the filing within three to four

FISCAL/RESOURCE IMPACT

Resource impacts from the adoption of the new local energy reach code ordinance are limited to staff training costs, updating and creating new handouts for new proposed amendments, and implementation of public outreach efforts. These can be absorbed from existing budgets.

Adoption of this ordinance required a new consulting contract in the amount of $132,200 (contract S24190818 with Integrated Design 360, approved by the City Council April 1, 2024),[8] absorbed from existing FY 2024 budgets, as well as approximately 0.5 FTE of staff time spread among several Departments from February through June, also absorbed from existing full-time and hourly (retiree) staff resources.

[8] April 1, 2024 Agenda with access to the City Council Staff Report and Minutes (Item 5): https://cityofpaloalto.primegov.com/meetings/ItemWithTemplateType?id=4492&meetingTemplateType=2&compiledMeetingDocumentId=9485

STAKEHOLDER ENGAGEMENT

Given Council's direction from February 26, 2024 to return before the summer break, there has been no stakeholder meetings. The subject noticed public hearing will be the first opportunity for the public comment on the staff recommendations. The agenda posting for this ordinance was published on May 23, 2024.

ENVIRONMENTAL REVIEW

The recommended policy is exempt from the California Environmental Quality Act (CEQA) in accordance with CEQA Guidelines section 15308 as an action by the City for the protection of the environment, and under section 15061(b)(3) on the grounds that the proposed standards are more stringent than the State energy standards, there are no reasonably foreseeable adverse environmental impacts and there is no possibility that the activity in question may have a significant adverse effect on the environment.

ATTACHMENTS

Attachment A: Ordinance Amending Ch. 16.14 California Green Building Standards Code
Attachment B: Ordinance Amending Ch. 16.17 California Energy Code
Attachment C: 2022 Single Family New Construction Cost-Effectiveness Study and SFNC Data
Attachment D: 2022 Multifamily New Construction Cost-Effectiveness Study and MFNC Study Data
Attachment E: 2022 Nonresidential New Construction Cost-Effectiveness Study and NRNC Study Data
Attachment F: Supplemental Modeling and Reality Testing Analysis

APPROVED BY:

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