



SAN RAFAEL CITY COUNCIL AGENDA REPORT

Department: Community Development

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Chief Building Official
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Sustainability Program Manager

City Manager Approval: _____

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TOPIC: ORDINANCE AMENDING GREEN BUILDING CODES

SUBJECT: AN ORDINANCE OF THE SAN RAFAEL CITY COUNCIL AMENDING TITLE 12 (BUILDING REGULATIONS) OF THE MUNICIPAL CODE OF THE CITY OF SAN RAFAEL, BY AMENDING THE 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE FOR ELECTRIC VEHICLE CHARGERS; AMENDING THE 2022 CALIFORNIA MECHANICAL CODE AND THE 2022 CALIFORNIA PLUMBING CODE TO LIMIT FUEL GAS IN EXISTING SINGLE FAMILY HOMES AND DUPLEXES, AND PROHIBIT FUEL GAS IN NEW CONSTRUCTION WITH LIMITED EXCEPTIONS; AND ADOPTING FINDINGS OF FACT SUPPORTING THE AMENDMENTS TO THE CODES.

RECOMMENDATION:

Waive further reading of the Ordinance and refer to it by title only, introduce the Ordinance.

BACKGROUND:

The State of California Code of Regulations Title 24 construction codes are updated and published on a three-year cycle. The California Building Standards Commission publishes the triennial codes and State law mandates that these codes become effective throughout California 180 days after the publication date. For this latest cycle, the publication date was July 1, 2022, meaning that the current cycle of State construction codes becomes effective on January 1, 2023. Local jurisdictions are permitted to further amend the published codes based on and to suit local climatic, geological, or topographical conditions. On November 7, 2022, the City Council introduced an item to adopt the new Title 24 State Building Code in its entirety with minor amendments. At this November 21, 2022 meeting, Council will hold a separate public meeting to adopt those construction codes.

Each three-year code cycle, the State updates the Green Building section of the Title 24 codes as well and provides potential Green Building “reach” codes to local jurisdictions that go above the State code. These reach codes are encouraged to adopt more stringent local amendments to help drive greenhouse gas (GHG) reductions and inform future State code updates. Often these more stringent reach codes include stronger energy and water efficiency requirements, among other things. In the past the City has

FOR CITY CLERK ONLY

Council Meeting:

Disposition:

adopted one of the two added “tiers” that generally set a percentage higher than State codes for a variety of building choices. This year the State is also providing guidance and support for all-electric construction, which tends to be more efficient and reduces GHG emissions while providing a healthier environment for inhabitants.

The proposed ordinance would amend Title 12 of our local Building Standards codes to include these reach codes. These amendments would prohibit natural gas in all new construction in San Rafael, effectively requiring them to be all-electric construction with some exemptions and exceptions. In addition, the code amendments would prohibit the extension of current gas infrastructure to single family homes and duplexes beyond what is already installed. Finally, the amendments would require minimum levels of electric vehicle charging infrastructure for all new construction as well.

State law authorizes local agencies to enact local amendments to the State Building Code that go beyond state standards if reasonably necessary because of local climatic, geological, or topographical conditions (Health and Safety Code sections 18941.5 and 17958.7). To date, over 60 California jurisdictions (including the cities of Fairfax, San Anselmo, Petaluma, Contra Costa County, Santa Clara County, Oakland, San Jose, and San Francisco) have adopted ordinances enacting local amendments to the State Building Code by requiring all-electric buildings for new construction.

Attachment 3 is a Policy Summary Chart, and below is a brief summary of each of these code areas to be amended:

2022 Green Building Standards Code for Electric Vehicle Chargers: The provisions of this code shall apply to the installation of electric vehicle charging infrastructure, including equipment, fixtures, and fittings, including receptacles, charging equipment, software, and load management.

2022 California Plumbing and Mechanical Codes: The provisions of this code shall apply to the installation of plumbing and mechanical systems, including equipment, appliances, fixtures, fittings, and appurtenances, including ventilating, heating, cooling, air conditioning and refrigeration systems, incinerators, and other energy related systems.

After introduction of this ordinance and public hearing, the ordinance would return to Council for final adoption at the next regularly scheduled meeting of December 5, 2022. After final adoption, the ordinance with these code amendments would be effective on January 4, 2023. Building permit applications filed with the City prior to January 4, 2023 would not be subject to these amendments.

ANALYSIS:

Attachment 2 contains a Policy Snapshot that discusses the merits, challenges, financial and equity considerations of the proposed ordinance and code amendments in greater detail.

The purpose of the changes to the Plumbing and Mechanical Codes is to reduce the greenhouse gas (GHG) emissions associated with the installation of gas appliances such as space heating and water heating and to require the use of more efficient heat-pump appliances. Generally, these appliances use between 20-25% of the energy of similar gas and older electric equipment. These code changes would apply to all new construction, including residential and non-residential buildings, including detached ADUs and JADUs. It is estimated that enacting these reach codes would contribute between 2.9 – 10.7% of GHG reductions toward our 2030 goal set out in our most recent [Climate Change Action Plan](#).

The one provision in the code amendments for existing buildings relates to the expansion of gas infrastructure to single-family homes and duplexes. This amendment would preclude any expansion of

gas service lines or meter service to existing properties. This is to preclude dramatic increases in gas to current properties where the owner wants to add more natural gas-fired appliances such as saunas, hot tubs, and outdoor fireplaces or to replace current electric appliances with gas. It would not preclude anyone from adding those features or from replacing current gas appliances with new gas appliances, rather it would simply preclude allowing for new, expanded piping to increase the amount of gas going to the property. Owners could use electric appliances or swap out other gas-fired appliances to stay within their overall gas use.

The electric vehicle infrastructure amendments would require an amount greater than the new State code in some instances. For single-family homes and duplexes it would require new construction to have the capacity, wiring, and equipment so that it would be easy for a homeowner to install the charger of their choice. For multifamily dwellings it would require 100% of parking spaces attributed to tenants to be equipped with low-power level 2 charger infrastructure with receptacles for charging at lower speeds, providing the flexibility to more easily add the charging equipment in the future. For 15% of those spaces it would be required to have a level 2 charger installed. The locations and configurations would be up to the owner and builder. For non-residential new construction, the proposal is to match the State's Tier 1 requirements, which require 35% of parking spaces to be EV Ready with low-level 2 infrastructure, 10% EV Capable (meaning only the conduit installed), and 10% installed fully with level 2 chargers. This matches the County of Marin and the codes being adopted in many other jurisdictions, modeled after an extensive effort conducted in the South and East Bay by Peninsula Clean Energy and East Bay Clean Energy that staff and the County participated in.

Some exemptions and exceptions would apply, mainly to account for the rare situations where installations of electric appliances incur significant cost or are not feasible due to specifics of a situation. The burden of proof would be on the applicant to show they modeled different appliances and sought incentives and technical assistance from the numerous offerings through the State, utilities and soon-to-be-available Federal Inflation Reduction Act.

The State provides cost-effectiveness studies for cities to use based on the specific climate zone or zones the city resides in. San Rafael is in Climate Zone 2 and electrification is generally shown to be cost-effective for most building types. These studies helped develop the rationale for exemptions and exceptions. For example, one building type that does not show as cost-effective is restaurants, and significantly so. Therefore, this reach code proposal exempts restaurants. Also, certain industrial processes and commercial laundry facilities don't currently have electric equipment that can accommodate their needs or can be extremely costly. The City rarely sees this type of new construction, but the proposed ordinance allows the Building Official to make exemptions where it is demonstrated that replacing with electric is technically infeasible or has a disproportionate cost to the project causing an insurmountable hardship.

Finally, in certain situations, to accommodate affordable housing, there may be instances where it is necessary for the developer to use natural gas appliances or risk cost increases that make it too burdensome to build. The incentives for multifamily affordable housing are significant though, and staff believes it will be rare for this sort of exception to be necessary.

One further commitment is to work regionally with our partners to develop a learning "hub" that helps builders, developers, and homeowners find and access the incentives and technical assistance available to them. Recently Peninsula Clean Energy and Silicon Valley Clean Energy launched such a hub in the South Bay. This is something builders felt strongly about during the public engagements convened over the past year. Should these proposed reach codes be adopted, staff is proposing to begin work on an analysis of options for existing building renovations and to convene stakeholders to develop a learning hub, which would ideally be a regional offering much like the one in the South Bay.

COMMUNITY ENGAGEMENT:

The City participated on a Steering Committee for a County of Marin-led “model reach code” development process, which resulted in the current reach code proposal. From September 2021 to September 2022, the Steering Committee implemented a comprehensive community engagement strategy. The Committee engaged and garnered feedback from City, Town, and County staff; community-based organizations including environmental, affordable housing, senior/aging-in-place, and equity priority advocates; building community members including developers, architects, realtors, contractors and Marin Builders Association; utilities including MCE and PG&E; and Town and City commission, subcommittee, and City Council members.

The year was highlighted by formal engagements with key stakeholders including five monthly technical working meetings consisting of City and Town building officials and planners, one public community workshop, and three focus group workshops co-hosted by the Marin Builders Association. The County also administered a public survey with draft model reach code language in September. These engagements informed the reach code proposal.

FISCAL IMPACT:

There is no fiscal impact associated with this action.

ENVIRONMENTAL REVIEW:

The proposed ordinance has been determined to be exempt from the California Environmental Quality Act (CEQA), pursuant to 14 CCR Section 15061(b)(3), since it can be seen with certainty that the adoption of this Ordinance would not have potential for causing a significant effect on the environment. (14 Cal. Code Regs. Section 15061(b)(3), ‘general rule’ provision). The Ordinance is also exempt from the requirements of CEQA pursuant to CEQA Guidelines sections 15307 and 15308 as an action by a regulatory agency taken to protect the environment and natural resources.

OPTIONS:

The City Council has the following options to consider on this matter:

1. Consider public comment/testimony and introduce the Ordinance for adoption as proposed
2. Consider public comment/testimony and introduce the Ordinance with amendments as directed by the Council
3. Do not introduce the ordinance and provide alternative direction to staff

RECOMMENDED ACTION:

Waive further reading of the ordinance and refer to it by title only, introduce the Ordinance.

ATTACHMENTS:

1. Ordinance
2. Policy Snapshot
3. Policy Summary Chart
4. PG&E and MCE Support Letters

ORDINANCE NO.

AN ORDINANCE OF THE SAN RAFAEL CITY COUNCIL AMENDING TITLE 12 (BUILDING REGULATIONS) OF THE MUNICIPAL CODE OF THE CITY OF SAN RAFAEL, BY AMENDING THE 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE FOR ELECTRIC VEHICLE CHARGERS; AMENDING THE 2022 CALIFORNIA MECHANICAL CODE AND THE 2022 CALIFORNIA PLUMBING CODE TO LIMIT FUEL GAS IN EXISTING SINGLE FAMILY HOMES AND DUPLEXES, AND PROHIBIT FUEL GAS IN NEW CONSTRUCTION WITH LIMITED EXCEPTIONS; AND ADOPTING FINDINGS OF FACT SUPPORTING THE AMENDMENTS TO THE CODES.

THE CITY COUNCIL OF THE CITY OF SAN RAFAEL DOES ORDAIN AS FOLLOWS:

DIVISION 1. AMENDMENTS TO MUNICIPAL CODE.

Chapter 12.235 of the Municipal Code of the City of San Rafael is hereby amended to read as follows:

CHAPTER 12.235 - CALIFORNIA GREEN BUILDING ~~CONSTRUCTION~~ STANDARDS CODE AMENDMENTS

12.235.010 General. For purpose of this Chapter:

Deleted language from the base code has been ~~stricken through~~.
Replacement language to the base code has been underlined.

12.235.020 Amendments. The 2022 California Green Building Standards Code is amended or modified as follows:

Delete Section 4.106.4.1 and replace in its entirety to read as follows:

4.106.4.1 New One- And Two-Family Dwellings and Town-Houses. For each dwelling unit, install a 40 ampere 208/240 volt dedicated EV branch circuit, capable of supporting Level 2 EVSE, terminating with a receptacle or an EV charger in close proximity to the vehicle charging area.

Delete Subsection 4.106.4.1.1 in its entirety.

Subsection 4.106.4.2 [unchanged].

Delete Subsection 4.106.4.2.1 and replace in its entirety to read as follows:

4.106.4.2.1 New Hotels and Motels. The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1. **EV Capable.** Ten (10) percent of total number of parking spaces on the building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at a minimum of 40 amperes.

The service or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the California Electrical Code.

Exceptions: When EV chargers (Level 2 EVSE) or EV Ready are installed in a number greater than the minimum required, the EV capable spaces may be reduced by the same number.

2. **EV Ready.** Thirty-five (35) percent of total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. Conduit size and junction boxes for EV ready must be sized for Level 2 EVSE as in accordance with the California Electrical Code.

Exceptions:

1. Areas of parking facilities served by parking lifts.
2. When EV chargers (Level 2 EVSE) are installed in a number greater than the required, the EV ready spaces may be reduced by the same number.

3. **EV Chargers.** Ten (10) percent of total number of parking spaces shall be equipped with Level 2 EVSE.

When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EVSE shall have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical capacity to the required EV capable spaces.

Delete Subsection 4.106.4.2.2 and replace in its entirety to read as follows (subsection 4.106.4.2.2.1 remains unchanged):

4.106.4.2.2 New Multifamily Dwellings and New Residential Parking Facilities. The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1. **EV Ready.** Eighty-five (85) percent of total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit. Conduit size and junction boxes for EV ready must be sized for Level 2 EVSE as in accordance with the California Electrical Code.

Exceptions:

1. Areas of parking facilities served by parking lifts.
2. When EV chargers (Level 2 EVSE) are installed in a number greater than the required, the EV ready spaces may be reduced by the same number.

2. **EV Chargers.** Fifteen (15) percent of total number of parking spaces shall be equipped with Level 2 EVSE. Where common use parking is provided, at least one EV charger shall be located in the common use parking area and shall be available for use by all residents or guests.

When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station

(EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EVSE shall have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical capacity to the required EV capable spaces.

Subsection 4.106.4.2.2.1 [unchanged].

CHAPTER 12.245 - CALIFORNIA MECHANICAL CODE AMENDMENTS

12.245.010 General. For purpose of this Chapter:

Deleted language from the base code has been ~~stricken through~~.
Added language to the base code has been underlined.

12.245.020 Amendments. The 2022 California Mechanical Code is amended or modified as follows:

Amend Section 1301.1 to read as follows:

1301.1 Applicability. The regulations of this chapter shall govern the installation of fuel gas piping in or in connection with a building, structure or within the property lines of premises up to 5 pounds-force per square inch (psi) (34 kPa) for natural gas and 10 psi (69 kPa) for undiluted propane, other than service pipe. Fuel oil piping systems shall be installed in accordance with NFPA 31.

Exceptions:

1. Fuel gas and oil piping is prohibited in new construction unless for use in emergency electrical generation when required by the code, commercial kitchen for preparing food, commercial laundry for laundry, or in an approved industrial process.
2. Existing fuel gas and oil piping in one- and two-family dwellings may not be expanded unless overall gas use is reduced, unchanged, or is for additional attached housing.
3. Existing gas meter service size in one- and two-family dwellings may not be increased unless the increase is required for additional attached housing.

At the discretion of the building official, the building official may approve fuel gas in new construction or expand fuel gas in existing construction when replacing with electric has been demonstrated to be technically infeasible or has a disproportionate cost to the project causing an insurmountable hardship.

CHAPTER 12.250 - CALIFORNIA PLUMBING CODE AMENDMENTS

12.250.010 General. For purpose of this Chapter:

Deleted language from the base code has been ~~stricken through~~.
Added language to the base code has been underlined.

12.250.020 Amendments. The 2022 California Plumbing Code is amended or modified as follows:

Amend Section 1201.1 to read as follows:

1201.1 Applicability. The regulations of this chapter shall govern the installation of fuel gas piping in or in connection with a building, structure or within the property lines of premises up to 5 pounds-force per square inch (psi) (34 kPa) for natural gas and 10 psi (69 kPa) for undiluted propane, other than service pipe. Fuel oil piping systems shall be installed in accordance with NFPA 31.

Exceptions:

1. Fuel gas and oil piping is prohibited in new construction unless for use in emergency electrical generation, commercial kitchen for preparing food, commercial laundry for laundry, or in an approved industrial process.
2. Existing fuel gas and oil piping in one- and two-family dwellings may not be expanded unless overall gas use is reduced, unchanged, or is for additional attached housing.
3. Existing gas meter service size in one- and two-family dwellings may not be increased unless the increase is required for additional attached housing.

At the discretion of the building official, the building official may approve fuel gas in new construction or expand fuel gas in existing construction when replacing with electric has been demonstrated to be technically infeasible or has a disproportionate cost to the project causing an insurmountable hardship.

DIVISION 2 FINDINGS.

The San Rafael City Council finds that the scientific evidence has established that natural gas combustion as well as leakage occurring during natural gas procurement, transportation, storage, and distribution produce significant greenhouse gas emissions that contribute to global warming, climate change and sea level rise.

California Health and Safety Code Sections 17958.5, 17958.7, and 18941.5 require that findings be made in order to change or modify building standards found in the California Building Standards Code based on local climatic, geologic, or topographic conditions. Therefore, the San Rafael City Council hereby finds that these changes or modifications to the California Green Building Standards Code, the California Plumbing Code and the California Mechanical Code as adopted in Chapter 12.200 of the San Rafael Municipal Code are reasonably necessary because of the following local climatic, geological and topographical conditions:

I. Climatic conditions:

- a) Most of the annual rainfall in San Rafael occurs during the winter, it receives no measurable precipitation between May and October. During this time, temperatures average between 70 and 90 degrees. These conditions eliminate most of the moisture in the natural vegetation and heavily wooded hillsides. The area also suffers periodic droughts that can extend the dry periods to other months of the year. These conditions can be further exacerbated by occasional off-shore hot, dry, Santa-Ana winds; all of which contribute to an elevated fire hazard.
- b) Most of the annual rainfall in San Rafael occurs during the winter, and some portions of San Rafael are subject to tidal influences, there are times that flooding conditions occur in low-lying areas

II. Geologic conditions:

- a) San Rafael lies near several earthquake faults, including the very active San Andreas Fault, there are significant potential hazards such as road closures, fires, collapsed buildings, and isolation of residents requiring assistance.
- b) Many areas of the city, including some highly developed industrial and commercial areas, are located on bay alluvial soils which are subject to liquefaction in the event of an earthquake.

III. Topographic conditions:

- a) Much of San Rafael is located in hilly areas, and many of the residential areas are heavily landscaped, and many exist adjacent to hilly open space areas which are characterized by dry vegetation and have limited access. In addition, the steepness of grades located in the hills and canyons results in narrow and winding roads, and limited water supply, making timely access, rescue and firefighting activities by emergency providers difficult.
- b) The major arterial route between San Francisco and Marin and Sonoma county areas, Highway 101, bisects the City of San Rafael; should that highway become impassable, alternative routes via surface streets in San Rafael may cause heavy traffic congestion, limiting emergency access.

More specifically, the above modified building standards are listed below with the corresponding climatic, geological or topographical condition which necessitates the modification.

Cal Green Section Numbers	Climatic, geological and topographical condition
4.106.4.1.	<i>1a, 1b, 11a, 111a, 111b</i>
4.106.4.2.1	<i>1a, 1b, 11a, 111a, 111b</i>
4.106.4.2.2.	<i>1a, 1b, 11a, 111a, 111b</i>
CMC Section Numbers	
1301.1	<i>1a, 1b, 11a, 111a, 111b</i>
CPC Section Numbers	
1201.1	<i>1a, 1b, 11a, 111a, 111b</i>

DIVISION 3. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

This Ordinance is exempt from the California Environmental Quality Act (CEQA), pursuant to 14 CCR Section 15061(b)(3), since it can be seen with certainty that the adoption of this Ordinance would not have potential for causing a significant effect on the environment. (14 Cal. Code Regs. Section 15061(b)(3), 'general rule' provision). The Ordinance is also exempt from the requirements of CEQA pursuant to CEQA Guidelines sections 15307 and 15308 as an action by a regulatory agency taken to protect the environment and natural resources.

DIVISION 4 SEVERABILITY.

If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be invalid, such decision shall not affect the validity of the remaining portion of this Ordinance. The City Council of the City of San Rafael hereby declares that it would have adopted the Ordinance and each section, subsection, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases shall be declared invalid.

DIVISION 5. EFFECTIVE DATE OF ORDINANCE.

This Ordinance shall be published once, in full or in summary form, before its final passage, in a newspaper of general circulation, published and circulated in the City of San Rafael and shall be in full force and effective thirty (30) days after its adoption. If published in summary form, the summary shall also be published within fifteen (15) days after the adoption, together with the names of those Council members voting for or against

same, in a newspaper of general circulation published and circulated in the City of San Rafael, County of Marin, State of California.

THE FOREGOING ORDINANCE was first read and introduced at a regular meeting of the San Rafael City Council on the 21st day of November 2022, and was passed and adopted at a regular meeting of the San Rafael City Council on the 5th day of December 2022 by the following vote, to wit:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:

Kate Colin, Mayor

Attest:

LINDSAY LARA, City Clerk



Building Electrification Proposal for New Construction Policy Snapshot

November 8, 2022

Reach Code Proposal

Every three years the Green Building codes are updated at the State level and local jurisdictions are allowed and encouraged to adopt more stringent “reach codes” to help drive future State code updates. Attached is the Policy Summary Chart. Staff are proposing to adopt reach codes for new construction this year along with one measure for existing buildings, and to otherwise address remodels of existing buildings in 2023. For new construction it is being proposed to disallow natural gas in new residential or commercial buildings. Exceptions or exemptions would be made in certain situations where it may be necessary for emergency power generation or cause extraordinary hardship due to infeasibility or costs. The requirements would apply to multifamily development and detached accessory dwelling units (ADUs) as well as single family homes. Restaurants would be exempt. Included in the reach codes would be an increase in electric vehicle charging infrastructure to ensure that multifamily buildings have the wiring and outlets necessary to install chargers with the least barriers and costs possible to meet future demand.

The one code change for existing buildings being proposed would prohibit any increase of existing gas lines and capacity unless for emergency backup power. This is because the Building Division is seeing installations of luxury appliances such as outdoor fireplaces and hot tubs that are dramatically increasing natural gas use in single family homes, requiring pipe and meter increases. Finally, the proposal is to continue the analysis into 2023 for other code changes for existing buildings and to put together an “implementation plan” with our partnering jurisdictions. The plan would include a regional resource hub of incentives and technical assistance as well as a proactive outreach strategy to support residents and contractors in electrification and energy efficiency work. There is a statewide web resource called The Switch Is On being updated with all incentives in one place and there is a new technical assistance program for contractors in the South Bay that is a good example to build from.

Rationale

In 2019 the City Council adopted the 2030 Climate Change Action Plan which set a goal to reduce greenhouse gas emissions 40% by 2030. 30% of San Rafael’s community greenhouse gas emissions are in the building sector; 6% from electricity consumption and 24% from the consumption of natural (methane) gas. Methane gas has significant greenhouse gas (GHG) emissions associated with its generation, transmission, and end-use. It also has health consequences, including increased asthma, illness, and death. Building electrification allows for reductions in emissions as the California electrical grid becomes greener and includes more renewable sources such as wind, solar, and biomass. This is even more so for buildings that include solar and battery storage on site and rely less on the grid for energy. Installing electric appliances and infrastructure is much cheaper during the new construction

phase rather than retrofitting later. Over the last decade, in-state renewable energy generation, such as solar, wind, biomass, and geothermal, increased from 29 percent in 2010 to 43 percent in 2020. Natural gas used to produce electricity has dropped 9% over the past two decades. California is investing over \$3 billion to boost grid reliability and facilitate more renewable energy over the next several years, and hundreds of millions more to increase long-duration storage systems to serve the grid. With the State moving to an all-electric future, requiring new construction to be all-electric removes the challenges and expense of retrofitting later when appliances get to end-of-life. Further, there are a plethora of incentives existing and impending in 2023 and 2024 that builders can access. Pairing an all-electric mandate with the timing of these incentives telegraphs the transition to the building community and relieves the up-front cost burden, while ensuring polluting gas-fired amenities and appliances are not installed.

Climate Change Action Plan (CCAP) Measures addressed by this proposal

- 1. Green Building Reach Code (EE-C4)**
- 2. Building and Appliance Electrification (RE-C3)**
- 3. Energy Efficiency Programs (EE-C1)**

The Green Building Reach Code represents the potential to contribute between 2.9 – 10.7% of the City's total 2030 greenhouse gas (GHG) reduction goal. Combined, these three programs represent a potential to contribute up to 18,990 MTCO_{2e}, comprising up to 20% of the City's total 2030 GHG reduction goal.

Challenges and Opportunities

Rapid decarbonization will not always be easy to do in all cases. One of the main questions posed at the outset of this project was how to best meet our GHG reduction goals while also meeting our housing production and economic development goals, especially as it relates to cost. Exemptions and exceptions have been built into the proposal to accommodate those occasional cases where it would be infeasible or prohibitively costly to meet the code. In addition, some building and use-cases can be extremely difficult to electrify such as certain industrial processes, restaurants, and other operations that require large amounts of water heating. These have been exempted for now, with the option to scale back or remove exemptions as the industry matures and solutions become more readily available in these situations. However, these hard use-cases are very rarely built in San Rafael.

Another question posed had to do with resiliency: How does an all-electric building fare during a power outage, and can the electrical grid handle the increase in demand? Currently many gas appliances require electricity to operate, meaning in many cases space heating and hot water impacts will be felt by those in mixed-fuel homes as well. Exceptions for backup power generation were included for multifamily properties that might require it to have lighting and elevator function during power outages. However, local power distribution has been hardened and most of San Rafael is no longer at threat for a PG&E Public Safety Power Shutoff event. Common power outages are lasting shorter amounts of time. California is investing over \$3 billion in grid reliability and backup power in the next several years to reduce these impacts even further. New State codes are requiring most new construction to have battery backup power and solar, adding resilience on-site. If demand for

electrification of buildings and vehicles outpaces utility upgrades and increases in clean energy production, the grid could face challenges in the future. However, utilities believe the grid will not be compromised with the investments the State and utilities are making to ensure reliability, especially since new building is a small percentage of the demand on the grid.

Economy and Social Equity

For single family homes and ADUs electrification will be relatively straightforward and, in many instances, will save owners money when building. Slight utility bill cost increases may occur at current energy prices though the California Public Utilities Commission projects the price of natural gas will increase at almost double the rate of electricity in the coming decade. Multifamily housing and certain commercial applications can often be harder and more expensive to build but show utility bill savings for tenants. However, builders can also save costs by not having to install gas lines and meters. The State and utilities are providing numerous incentives to help offset initial costs of build, and soon the Federal government will be providing additional incentives through the Inflation Reduction Act. Locally, the reach code proposal includes certain exceptions and exemptions to allow for those specific cases where the cost burden may be too great, especially in the case of affordable multifamily housing. The State also provides technical assistance to multifamily and affordable housing developers to achieve its electrification goals, including help in applying for the incentives.

With projected increases in extreme heat events, building electrification can provide residents with highly efficient air conditioning at about ¼ the energy use of typical air conditioners. This is because heat pump space heaters can reverse the flow of air and provide cool air as well as heat, offering tenants air conditioning options that were previously out of reach. Also, currently there is very little opportunity for apartment dwellers to charge electric vehicles (EV) at home. Having more EV charger availability in apartment complexes, public parking lots, and workplace settings will enable renters to acquire EVs and plug-in hybrids. There are currently several programs and incentives for multifamily and affordable housing developers to offset costs of chargers and electrical infrastructure with more in the works. New State legislation will remove long-standing subsidies for gas line installations for new buildings, and a new ruling will require that utilities cover the cost of additional electrical infrastructure for EV charging in multifamily housing and commercial properties.

Co-Benefits & Potential Unintended Consequences

Two potential unintended consequences of adopting a reach code are additional costs and confusion for contractors due to hard-to-understand code language and burdensome Building Division implementation. However, the City of San Rafael's Building Division demonstrates collaboration and simplification and was consistently referenced as the easiest to work with in Marin during engagements with builders and the Marin Builders Association. Other potential unintended consequences may include the challenges of installing and using new technologies, added time and associated costs for permitting transformers for larger projects, and the ability to find contractors that can do the work. An added element to this proposal is the City's commitment to work with our regional partners to compile and promote all the technical assistance and incentives available to owners and contractors for ease of implementation in the coming year. Electrify Marin and Bay Area



Regional Energy Network have been training contractors and providing incentives to build the capacity necessary to transition to an electric future and have seen a thousand-fold increase in qualified contractors since 2019. Supply chain issues and availability of materials is another concern for builders but is not specific to electrification materials and appliances.

Co-benefits include resident health and workforce development. Over 40 studies have documented the negative health effects of having gas (methane) in the home, including asthma, increased deaths and illness. Local workforce programs include MCE's Workforce, Education and Training program in conjunction with Strategic Energy Innovations focused on building electrification and energy efficiency. More workforce programs are being funded and developed across the region and the City will be exploring opportunities to enhance them for local residents through our upcoming Economic Inclusion in Climate Action project. The EV requirements in this proposal will provide EV chargers on-site for a small percentage of parking spaces, as well as the infrastructure to easily install more based on demand, providing renters with a much-needed resource to be able to own an electric vehicle.

Engagement

This proposal and analysis were guided by multiple meetings with our ad-hoc subcommittee comprised of Councilmembers Bushey and Llorens Gulati. In addition, staff sought input from the Mayor and other Councilmembers throughout the year. City staff participated in the countywide building decarbonization steering committee, which convened dozens of engagements with a wide array of stakeholders over the last 10 months. These engagements included builders, developers, appliance installers, other jurisdictions' planning and building staff, nonprofit partners, and affordable housing entities. Engagements included focus groups, presentations to community groups, public meetings, individual meetings with key stakeholders, and a public survey. This proposal is based on the County's Model Reach Codes and incorporates feedback received during these public engagements.

See pages 5 & 6 below for sources and references.



Sources & References

Climate Change Action Plan Measures

- [San Rafael Climate Action Plan Energy Efficiency Measures](#)
- [San Rafael Climate Action Plan Renewable Energy Measures](#)

Reach Code Proposal

- [Policy Summary Chart Draft](#)
- [Statewide Reach Codes Website](#)
- [Building Standards Codes and Green Building Website](#)
- [Equitable Building Decarbonization: Implementation Approaches](#)
- [Marin County Model Reach Code Development](#)
- [South and East Bay Reach Code Initiative](#)
- [All-electric Reach Code Listing, California](#)
- [California Energy Commission Building Decarb and EV Resources](#)
- [Switch is On Electrification Resources for Owners and Contractors](#)

Rationale

- [California Energy Policy Report 2021 Data and Studies](#)
- [2021 Total System Generation Report](#)
- [PG&E Energy Mix 2021](#)
- [PG&E System Battery Storage Projects](#)
- [Electric Water Heating GHG Study](#)
- [Marin Climate GHG Inventories](#)
- [Health Impacts of Natural Gas Stanford Study](#)
- [Health Impacts of Natural Gas Meta Analysis](#)
- [Assessment of Impacts of Electrifying Residential Buildings in California](#)
- [UCLA Report Residential Gas Appliances](#)

Challenges and Opportunities

- [BUILD Program for Technical Assistance and Incentives Multifamily](#)
- [CPUC Utility Costs and Affordability Evaluation](#)
- [Building Decarbonization Practice Guide](#)
- [PG&E Public Safety Power Shutoff Map](#)
- [Article: California Electric Grid and EVs](#)



- [Grid Impacts Study California EVs](#)
- [MCE Electric Load Planning](#)

Economy and Social Equity

- [Cost Effectiveness Studies](#)
- [Prioritizing California's Affordable Housing in the Transition Towards Equitable Building Decarbonization](#)
- [Low-Rise Residential Cost-Effectiveness Study](#)
- [MCE Workforce Program](#)
- [County of Marin Model EV Reach Code Policy Brief](#)
- [Inflation Reduction Act Fact Sheet](#)
- [Inflation Reduction Act Incentives Calculator](#)
- [California Eliminates Natural Gas Subsidies](#)
- [EV Rule 29 Providing for EV charging infrastructure for multifamily and non-residential installations](#)

Co-benefits & Potential Unintended Consequences

- [Electrify Marin Rebate Program](#)
- [Bay Area Regional Energy Network Resources for Public, Government, and Contractors](#)
- [Heat Pump Systems](#)
- [Heat Pumps and Heat Waves, Rocky Mountain Institute*](#)

Engagement

- [Model Reach Code Development Engagements](#)
- [Letter of Support from MCE](#)
- [Letter of Support from PG&E for Marin County Model Reach Code](#)

NEW CONSTRUCTION

Reach Code Policy Summary

DRAFT 11/8/22

All-Electric for All Residential and Nonresidential Buildings

Proposed Policy Description	Proposed Qualified/Covered Project	Notes
Key Policy Components		
<p><u>Require all-electric for newly constructed buildings</u> As per “Newly Constructed Building” and “All-electric Building” definitions below</p>	<p>All building types (residential and commercial) whole or partly in jurisdictional boundaries</p>	
<p><i>Definition: Newly Constructed Building</i></p>	<p><i>Building that has never before been used or occupied for any purpose</i></p>	
<p><i>Definition: All-electric Building or Design definition</i></p>	<p><i>A building that uses a permanent supply of electricity as the source of energy for all space heating, water heating (including pools and spas), cooking appliances, and clothes drying appliances, and has no natural gas or propane plumbing installed in the building. An all-electric building also includes solar thermal collectors.</i></p>	
<p><u>Accessory Dwelling Units (ADU)</u> New ADUs and Junior ADUs (JADUs) built on existing property is considered newly constructed building</p>	<p>Detached only</p>	
<p><u>Prohibits Conversion from Electric to Gas</u> For applications submitted on or after effective date of the chapter goes into effect</p>	<p>Applicants are ineligible to apply for and the building official may not grant permits that would convert an all-electric building to a mixed-fuel building</p>	
<p><u>Electric Readiness/Future Proofing if Gas Permitted as per exceptions allowed</u> Electric capacity for future electrification. Panel/Subpanel installed to accommodate future electrification of all appliances in the building</p>	<p>All - State minimum standards already make everything electric ready</p>	<p>Load determined by installation of planned heat pumps, induction stoves, and/or EV Infrastructure</p>

Exception/Exemptions		
<p><u>Hardship/Infeasibility Exemption or Waiver</u> Burden of Proof is on project applicant. Building Official & Planning Staff make the determination.</p>	<ol style="list-style-type: none"> 1. Compliance disproportionate to overall project cost, OR 2. Lack of commercially available technologies, OR 3. Physical conditions make installing measures impractical 	<p>Would apply only to Affordable Housing or MF Housing.</p>
<p><u>Permits prior to effective date</u></p>	<p>Development projects for which all building and related permits have been applied for or issued and remain valid prior to January 1, 2023 exempted</p>	<p>Based on application date</p>
<p><u>Emergency Back-up power and industrial process</u></p>	<p>Emergency electrical generation only for essential services, multifamily developments, and/or an approved industrial process for essential services buildings (ostensibly means gas fuel can be used)</p>	
<p><u>Portable propane Appliances</u> For use outside of the building envelope</p>	<p>Outdoor cooking, refrigeration, and outdoor heating appliances</p>	<p>HVAC or water heating appliances are not exempt</p>
<p><u>Attached ADUs and JADUs</u> Creating a new unit of housing for independent living</p>	<p>All attached ADUs</p>	
<p><u>Food Service Establishments</u></p>	<p>Commercial Kitchens and cooking equipment serving food on or off-site Can be revoked or natural gas infrastructure capped if use changes (e.g. changes from restaurant to retail)</p>	
<p><u>Approved industrial</u> Building Official makes the determination.</p>		
<p><u>Commercial Laundry Facilities</u></p>		
Option – Existing Buildings		
<p><u>Prohibit Gas Line Extensions</u></p>	<p>For remodels of single-family homes and ADU's. Prohibits adding gas capacity to what is already there. Requires new gas appliance installations to reduce BTU's through some other measure (e.g., replace an existing gas appliance with an electric one or remove it)</p>	<p>Addresses an important element of existing buildings</p>

Electric Vehicle Charging Requirements

<p>Be EV Ready</p> <ol style="list-style-type: none"> 1. Raceway with 208/240-volt branch circuit 2. Service Panel and/or Subpanel 40 amp Capacity and Space(s) 3. Electrical conforms to CA electrical code incl. a receptacle or blank cover 	<p>Single Family Homes: One- and Two-Family Homes, Townhomes with Private Garages, ADU's with dedicated parking</p>	
<ol style="list-style-type: none"> 1. EV Ready 85% of parking spaces w/Low Power Level 2 Receptacles 2. EV Chargers 15% of parking spaces require level 2 EVSE 	<p>Multifamily Dwellings</p>	<p>Based on # units with associated parking spaces</p>
<ol style="list-style-type: none"> 1. EV Capable 10% of parking spaces 2. EV Ready 35% of parking spaces w/Low Power Level 2 Receptacles 3. EV Chargers 10% of parking spaces require level 2 EVSE 	<p>All Non-Residential, including Hotels and Motels</p>	



Chris Benjamin
Director
Corporate Sustainability

77 Beale Street
San Francisco, CA 94105
christopher.benjamin@pge.com

November 9, 2022

VIA EMAIL TO: Mayor Kate Colin
kate.colin@cityofsanrafael.org

Mayor Kate Colin
San Rafael City Council
1400 5th Avenue
San Rafael, CA 94901

Dear Mayor Colin:

Pacific Gas and Electric Company (PG&E) is proud to provide electric and natural gas service to the City of San Rafael. As the state's largest energy provider, PG&E embraces our foundational role in transitioning California to a decarbonized and more climate-resilient economy. PG&E's *Climate Strategy Report* (available at www.pge.com/climate) shares our goals to achieve significant emissions reductions by 2030, reach net zero greenhouse gas emissions by 2040, and become "climate positive" by 2050, or actively removing more carbon from the environment than we emit as a company.

PG&E recognizes the value of building decarbonization as an important tool in meeting both PG&E's and the state's climate goals, and we welcome the opportunity to support the City of San Rafael's efforts to promote efficient, all-electric new construction. PG&E also appreciates the opportunity to avoid investments in new natural gas assets that might later prove underutilized as local governments and the state work together to realize long-term decarbonization objectives.

Beyond new construction, PG&E believes a multi-faceted approach is needed to cost-effectively achieve California's economy-wide greenhouse gas reduction objectives, including both strategic electrification and an orderly transition for the natural gas delivery system. In support of the transition, our climate goals include pursuing zonal electrification strategies and providing our hard-to-electrify customers with "greener" gas supplies, including renewable natural gas and potentially hydrogen over the longer-term. As California's decarbonization policies evolve, PG&E will continue to prioritize the safe and reliable operation of our electric and natural gas systems to continue supporting the customers that depend on us.

PG&E appreciates the partnership with the City of San Rafael during its policy development process, which allows us to prepare for the future and continue providing the best service possible to our customers. PG&E regularly forecasts electric load growth in our service area to assess the needs on the electric system and create plans and projects to address them and plan for the needs that all-electric buildings will require.

PG&E looks forward to continuing to work with the City of San Rafael to accomplish its policy goals and remains ready to engage with our customers, local governments, businesses, and community members to meet their needs safely, reliably, affordably, and with clean energy.

Thank you for your engagement with PG&E.

Sincerely,

A handwritten signature in black ink that reads "Chris Benjamin". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Chris Benjamin
Director

cc:

- Don Jeppson, Chief Building Official, City of San Rafael [don.jeppson@cityofsanrafael.org]
- Cory Bytof, Sustainability Program Manager, City of San Rafael [cory.bytof@cityofsanrafael.org]
- Alicia Giudice, Community Development Director, City of San Rafael [alicia.giudice@cityofsanrafael.org]
- Anna Brooks, Director, Local Government Affairs, PG&E [anna.brooks@pge.com]
- Kelly Cunningham, Codes, Standards & Cross-Cutting, PG&E [kelly.cunningham@pge.com]



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PINOLE | PITTSBURG | PLEASANT HILL | RICHMOND | SAN PABLO | SAN RAMON | VALLEJO | WALNUT CREEK

November 8, 2022

San Rafael City Council
1400 Fifth Avenue, Room 203
San Rafael CA 94901

Dear Mayor Kate Colin and Members of the San Rafael City Council,

I am writing to express MCE's support for the City of San Rafael's proposed Green Building Reach Code Ordinance which seeks to implement all-electric requirements for new construction. Electrifying the building sector will significantly reduce local greenhouse gas (GHG) emissions, supporting MCE's mission to confront the climate crisis.

As we embark on a gradual transition to an all-electric building stock, MCE is planning for the increased electricity demand in our long-term power procurement practices. MCE works with our locally-elected Board of Directors and state regulatory agencies - including the California Energy Commission, the California Public Utility Commission, and the California Independent System Operator - to ensure that our customer's energy needs are met. We forecast electricity demand years in advance; our Operational Integrated Resource Plan is updated annually to reflect needs for the next decade. This includes resource adequacy requirements to procure enough energy to meet at least 115% of expected peak demand, ensuring electricity is available during hours of high consumption to mitigate the risk of outages.

As MCE continues to plan for increased electrical load, we are investing in battery storage both locally and on a utility-scale. These projects allow us to store solar energy produced during the day for use during peak hours of 4 - 9 p.m. and increases access to renewable energy while improving grid reliability. Projects such as MCE's Daggett, Golden Fields, Humidor, and Ranch Sereno will collectively supply over 325 MW of utility scale solar + storage, enough to power approximately 133,000 homes.

MCE supports the City of San Rafael's Green Building Reach Code Ordinance, and we appreciate the opportunity to provide this letter.

Sincerely,

Jamie Tuckey
Chief of Staff, MCE
(415) 688-1054