



CITY COUNCIL AGENDA REPORT

DATE: March 8, 2020

AGENDA OF: March 24, 2020

DEPARTMENT: City Manager's Office and Planning and Community Development Department

SUBJECT: Building Electrification through Prohibitions on Use of Natural Gas in Newly Constructed Buildings (CM/PL)

RECOMMENDATION: Introduce for publication an ordinance adding a new Chapter 6.100 to the Santa Cruz Municipal Code Prohibiting Natural Gas Infrastructure in New Buildings.

BACKGROUND: The State of California has set ambitious renewable energy targets for new construction -- it aims to achieve zero-net-energy (ZNE) for all new residential buildings by 2020 and for all nonresidential buildings (including >3 stories residential) by 2030. One of the State's policy mechanisms is to include energy efficiency and renewable energy requirements in the energy code, which is part of the State building code and must be adopted and enforced by local agencies.

While the requirements of the 2019 version of the code (effective on January 1, 2020) move in the direction of ZNE performance, opportunities exist to achieve greater energy savings and accelerate decarbonization which include: prohibiting natural gas and improving building energy efficiency and renewable generation standards.

The term "Building Electrification" refers to the construction of new buildings or retrofit of existing buildings to utilize electric powered building systems and/or appliances and transition away from the use of natural gas powered building systems and/or appliances. Because electricity procured by Monterey Bay Community Power (MBCP) for over 97% of the region and city's customers is considered carbon free (i.e., renewable energy and hydropower), the conversion away from natural gas powered built environment features to electric has the potential to drastically reduce greenhouse gas (GHG) emissions. In its recent Electrification Strategic Plan, MBCP indicates that considering all vehicle and built environment emissions, 18% of those emissions are a result of residential and commercial space conditioning, water heating and food preparation. It is the emissions related to a building's systems that require natural gas combustion as well as leakage occurring during natural gas procurement, transportation, storage, and distribution that this ordinance is addressing.

In addition, advances in electric heat pumps and other electrical equipment are yielding much higher overall efficiencies than their natural gas counterparts. Electric heat pumps, unlike traditional electric resistance heaters, do not generate heat, but concentrate and transfer it for end

uses such as space conditioning and water heating. This process uses less primary energy and emits much less carbon, particularly when it is powered by renewable energy.

Many forms of renewable energy cannot be readily dispatched; that is, they cannot be ramped up to match demand on a real-time basis. However, energy storage and load shifting technologies, combined with dynamic electricity pricing structures are helping overcome these limitations. Batteries, smart buildings and financial incentives enable alignment of the consumer demand and supply from intermittent renewable sources such as solar and wind.

Other co-benefits include potential developer and building occupant cost savings, improvement of indoor air quality due to elimination of chemicals produced through indoor fuel combustion, and a decrease in public safety risks associated with leaking legacy natural gas infrastructure between the point of extraction and entry to homes that has been the source of catastrophic explosions throughout California and the US.

In 2018, former Governor Jerry Brown issued executive order B-55-18, pledging that the California economy will be carbon neutral by 2045. Assembly Bill 3232 also requires the California Energy Commission (CEC) to create a plan by 2021 to reduce building sector emissions by 40 percent below 1990 levels by 2030. These political developments, along with the ever-increasingly present climate emergency, foreshadow the likelihood of future state and federal emissions regulations that will impact the gas sector. It is certainly possible that California's carbon-intensive natural gas system will have to be decommissioned, all new buildings will have to be emissions-free, and existing buildings will need retrofitting.

The City's current Climate Action Plan (2012) sunsets in 2020, and while it did not specifically call out building electrification as a strategy (the Plan predates the building electrification concept and trend), it did recognize that the launch of a community choice energy program, i.e., MBCP, would result in significant GHG emissions reduction related to electricity consumption. According to the 2015 GHG emissions inventory for the community, approximately 224,000 metric tons of carbon dioxide equivalent (MT CO₂e) were emitted to the atmosphere over the course of that year. The Plan's community-wide GHG emissions reduction targets specifies a 30% reduction by 2020 and an 80% reduction by 2050 (as compared to 1990 levels). Through the launch of MBCP in 2018, the City was able to achieve its 2020 target a year early.

Progress in the City towards lowering emissions in new buildings has been encouraging but is still incremental and gains can be largely attributed to the City's Green Building Program. To date, the federal, state and local approach to energy use in new buildings has largely been to mandate greater building efficiency and energy conservation, which indirectly results in lower emissions, but does not directly phase out fossil fuel consumption in new buildings. Santa Cruz will be embarking upon a Climate and Energy Action Plan 2030 process in July, 2020 that will focus on transformational emission reduction strategies to complement those implemented to date.

City Council adopted a Climate Emergency Resolution in 2018 and a Green New Deal Resolution in 2019 aiming to accelerate action on aggressive carbon drawdown in the City of Santa Cruz. In support of these resolutions, in the fall of 2019, City Council directed staff to explore options for Building Electrification policies and bring back options for City Council to consider. A second part of the direction was to align the timeline of adoption of Building Electrification Reach Codes with MBCP's rollout of city and developer support incentives to ease regional transition to an electrified built environment. It is expected those incentives will

be available in the second quarter of calendar year 2020.

City staff brought two options to City Council for consideration at a City Council Building Electrification Study Session on February 18, 2020. City Council directed staff to proceed with Option A: A Natural Gas Prohibition (with limited exemptions). Staff invited members of the Planning Commission and other stakeholders to attend the study session. Staff also brought the Building Electrification item to the Planning Commission at its March 5, 2020 meeting for a courtesy referral. The Planning Commission was generally supportive of the proposed ordinance and provided valuable feedback on a draft of the ordinance. In accordance with City Council's direction and incorporating Planning Commission's feedback, staff prepared a new Chapter 6.100 of the Santa Cruz Municipal Code prohibiting natural gas infrastructure in new buildings effective July 1, 2020. Attachment 1 to this report is the clean version of the proposed ordinance, while Attachment 2 shows the changes that have been made by staff following the publication of the working draft ordinance that was considered by the Planning Commission.

DISCUSSION: Every three years, cities and counties across the state can adopt local reach codes in line with the new Building Standards Code (Standards) or Title 24 of the California Code of Regulations. Cities and counties may adopt building codes more advanced than those required by the state, which are known as reach codes. This ordinance differs from the “reach code” approach in that it leverages the City’s authority under the California Constitution to prohibit installation of hazardous internal gas piping infrastructure when granting permits for new buildings and, as a result, avoids regulations requiring a cost effectiveness study and California Energy Commission (CEC) approval to amend energy efficiency standards (i.e., via “reach codes”). It also does so without impinging on the California Public Utility Commission’s (CPUC’s) jurisdiction, whose gas regulatory authority ends at the building’s gas meter, or point of delivery from within any given property.¹

The effect of this legislation will be that builders will be prohibited from applying for permits for land uses that include gas infrastructure—gas piping to heat water, space, food, etc. with limited exemptions. Exemptions to the ordinance include the allowable use of natural gas only for food preparation (but not space conditioning or water heating) in restaurants and for space conditioning and water heating (but not food preparation) in accessory dwelling units (ADUs) ≤ 750 square feet in area, for industrial process heat applications, and where the project without natural gas is not in the public interest or is not feasible.

The basic scope of the ordinance is similar to the approach other local governments have adopted, e.g., the Cities of Berkeley, Alameda, Carlsbad, Morgan Hill, San Francisco and San Jose. The following outreach has been conducted in support of the building electrification policy exploration and adoption efforts:

- Developer’s Roundtable 1 (September 25, 2019)
- Community Workshop 1: Building Electrification 101 (February 4, 2020)

¹ Although the legislature empowered the Commission to “require each gas corporation to provide bundled basic gas service to all core customers in its service territory,” it did not require customers to install fuel gas piping in or in connection with a building, structure or within the property lines of premises behind the gas meter. *See* California Code, Public Utilities Code - PUC § 963, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=4.5.&article=2.

- City Council Study Session (February 18, 2020)
- Developer's Roundtable 2 (February 26, 2020)
- Community Workshop 2: Policies (February 27, 2020)
- Electrification Coffee Talks with Trades, Vendors, Designer and Builders (Tuesdays between Feb. 11 – March 10 from 8:30 – 9:30 am)
- Upcoming: Electrification Expo at Earth Day (April 18, 2020)
- Upcoming: Local Celebrity Chef Induction Cooktop Cookoff (August, 2020)

Ordinance Language

Full text of the draft ordinance is available in attached document titled Chapter 6.100 Prohibition of Natural Gas Infrastructure in Newly Constructed Buildings (Chapter). The requirements apply to Design Permit and Planning Development Permit applications submitted on or after the effective date of the Chapter for all Newly Constructed Buildings, as defined in the ordinance, proposed to be located in whole or in part within the City. The requirements of the Chapter apply to all Building Permit applications for Newly Constructed Buildings not requiring any of the planning applications cited above.

There are three categories of exemptions to Chapter proposed:

(1) Prohibited Natural Gas Infrastructure in Newly Constructed Buildings - Natural Gas Infrastructure may be permitted in a Newly Constructed Building if the Applicant establishes that it is not physically feasible to construct the building without Natural Gas Infrastructure.

(2) Public Interest Exemption - Minimally necessary and specifically tailored natural gas infrastructure may be allowed in a Newly Constructed Building provided that the use serves the public interest. However, Newly Constructed Buildings under this exemption will be required at the minimum to have sufficient electric capacity, wiring and conduit to facilitate future full building electrification.

(3) Revocable Building and Infrastructure Exemptions - Minimally necessary and specifically tailored Natural Gas Infrastructure may be allowed in the following Newly Constructed Buildings on a revocable basis:

- (a) Restaurant - The scope of the exemption extends to the preparation of food only, not HVAC, or water heating appliances.
- (b) Facility Employing Industrial Process Heat - The scope of the exemption extends to process equipment only, not HVAC or water heating appliances.
- (c) Facility Infeasible Due to Site Conditions - The scope of the exemption extends to HVAC and water heating appliances. Under the condition of this exemption manufactured liquid petroleum is allowed in compliance with all applicable state and local building and fire codes.
- (d) New Construction Accessory Dwelling Unit \leq 750 Square Feet - The scope of the exemption extends to HVAC and water heating appliances. The scope of the exemption does not extend to indoor cooking appliances. Several considerations were made in developing the ADU exemption @ \leq 750 square feet. They include:

- ADUs are challenged to comply with basic requirements of 2019 Energy Code. A 700-square-foot (SF) ADU which one of our local energy analysts modeled under 2019 Energy Code was unable to comply with basic requirements without incorporating either Quality Insulation Installation or a Heat Recover Ventilator.
- The 2019 CECS Low Rise Residential Cost Effectiveness Study demonstrated that a suite of envelope and appliance incremental costs saved more money on utility bills than their installation and maintenance costs over a 30 year period for the 2100 SF/2700 SF CEC prototype structures. Those incremental costs would not scale lower for the smaller conditioned floor area of a typical ADU, e.g. of 400 SF. This would increase the payback period required to demonstrate ADU cost effectiveness.
- In the case of an ADU, it is the only type of Newly Constructed Buildings where another structure already exists on the parcel which is highly likely to have Natural Gas service, thus the avoided costs for a new gas lateral and meter (~\$16K) is likely reduced to the amount required only for extension of existing Natural Gas service (~\$6-8K).
- ADUs incur impact fees including school fees beginning at ≤ 750 SF, so the ADU exemption correlates with that.

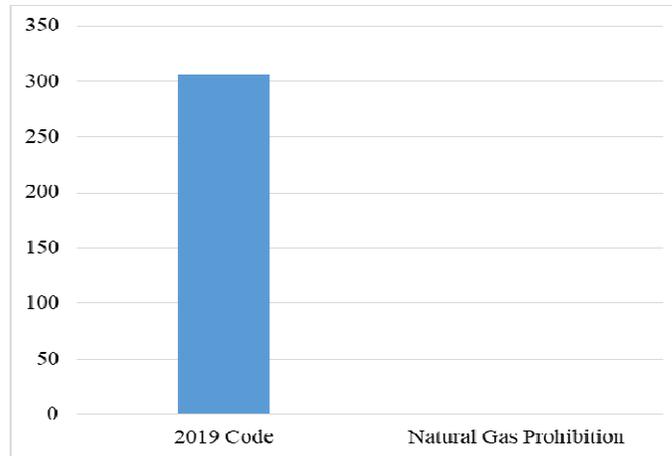
The decision on whether a building is exempt from the provisions of this Chapter based on the *use* of the building is made by the Zoning Administrator and the decision is appealable to the Planning Commission. The decision on whether a building is exempt from the provisions of this Chapter based on feasibility is made by the Building Official and the decision is appealable to the Building Board of Appeals.

Environmental Impacts

Gas-related emissions have increased because of population and job growth as well as the multi-decade useful life of natural gas appliances. Based on estimates from the Planning and Community Development Department, approximately 600 dwelling units could be built between 2020 and 2024. Without the proposed ordinance prohibiting natural gas in new construction, these 600 units, along with any other future units utilizing natural gas, will be “locked into” decades of additional carbon pollution and stands to continue doing so with each new building permit approval.

With the adoption of the proposed ordinance prohibiting natural gas in new construction, GHG emissions related to energy consumption in these new buildings will be zero. Table 1 compares GHG emissions projected for these 600 dwelling units under the current 2019 California Energy Code and under a new natural gas prohibition. There is an annual reduction of over 300 metric tons of carbon dioxide equivalent (MT CO₂e). With annual turnover of building stock at about 1%, the emissions avoided will compound annually over time.

Table 1: Projected GHG emissions from 2024 onward of 600 dwelling units built between 2020 and 2024 (MTCO₂e)



This ordinance recognizes that all-electric heating technologies are cost-competitive substitutes to their natural gas counterparts especially when installed during new construction. If adopted, the natural gas prohibition new construction will usher in all-electric new buildings, avoiding significant new GHG emissions and allowing the City to focus its climate action efforts and resources on other critical sources of emissions such as existing buildings and transportation.

Economic Impacts

All-electric buildings are generally cheaper to build due to the elimination of running expensive gas plumbing to the building. These lower first costs generally make all-electric construction more cost-effective on a life-cycle basis. This is particularly true for low-rise residential buildings, where it is also often increasingly more cost-effective for the owner to exceed the code by improving efficiency and adding solar. In fact, if one invests the savings from the gas infrastructure in additional PV capacity to offset more of the electricity load, in many cases the building is cost-effective for the owner and society from day one, meaning the building is both less expensive to build and cheaper to operate.

Building electrification is a key part of MBCP’s Electrification Strategy. MBCP will soon be offering all-electric building grants to incentivize developers to build new, all-electric multi-unit dwellings and electrification rebates to upgrade homes with electric water heating, home electric vehicle chargers and electrical panel upgrades. While the amounts and bases for these incentives are unknown, MBCP indicates these incentives will be available in the second quarter of calendar year 2020.

As new, all-electric buildings come online as a result of this ordinance and broader trends in the economy, new jobs specializing in green building will continue emerge. In 2017, nationwide jobs in the clean energy sector eclipsed the fossil fuel industry, despite record fossil fuel exploration and recovery.² While certain trades such as electricians will see an expansion in demand for services as a result of prohibiting natural gas infrastructure in new buildings, other trades may see a decrease in work as gas infrastructure is phased out.

Legal Case for Natural Gas Prohibition

Under the California Constitution, cities retain police powers to adopt building standards

² Lara Ettenson, “U.S. Clean Energy Jobs Surpass Fossil Fuel Employment,” NRDC, February 01, 2017, <https://www.nrdc.org/experts/lara-ettenson/us-clean-energy-jobs-surpass-fossil-fuel-employment>.

that provide for their community's health, safety and welfare.³ This ordinance makes a series of climatic, geologic and health and safety findings. The City Attorney's office has reviewed the ordinance for legality. In addition, the City Attorney's office has reviewed the City's franchise agreements with the Pacific Gas & Electric Company.

ENVIRONMENTAL DETERMINATION: In accordance with California Environmental Quality Act (CEQA) Guidelines section 15061(b)(3), the Council's ultimate action on this item is covered by the common sense exemption that CEQA applies only to projects that have the potential to create a significant effect on the environment. As detailed in this report, the ordinance would require installation of less infrastructure and would reduce GHG emissions. Thus, it would not have a significant effect on the environment. The Council's ultimate action is also exempt from CEQA under the categorical exemption in Section 15308 of the CEQA Guidelines in that the proposed ordinance would institute regulatory requirements intended to protect the environment.

FISCAL IMPACT: The ordinance would not directly affect the fiscal conditions of the City; however, it would have some implications for staff review time. It is anticipated there will be a modest decrease in Planning and Community Development Department staff time related to plan check review, inspection and permitting. It is anticipated that the Current Planning division will experience a slight increase in staff time on some applications due to the need to discuss the requirements and review the location and screening of electric transformers, some of which may be larger than they otherwise would without the natural gas ban. It is anticipated that there will be a moderate decrease in staff time related to building field inspections as the gas piping field inspection will be eliminated. It is anticipated that there will be no net new staff time related to building plan check as the time eliminated from plan check of gas piping sizing is offset by an increase in electric service and distribution plan check.

The City will also likely be eligible for an incentive for adopting the natural gas prohibition ordinance from MBCP. While the amount and basis for this incentive is unknown, MBCP indicates it will be available in the second quarter of calendar year 2020.

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³ Article XI, Sec. 7. of the CA Constitution reads: "A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws."

ATTACHMENTS:

Ordinance (clean version)

Ordinance (redline version)

Public Correspondence