

Agenda Report

April 4, 2022

TO: Honorable Mayor and City Council

THROUGH: Municipal Services Committee (November 9, 2021)

FROM: Department of Planning & Community Development Department

SUBJECT: PREPARATION OF AN ORDINANCE AMENDING CHAPTER 8 OF THE PASADENA MUNICIPAL CODE REQUIRING THE ELECTRIFICATION OF BUILDINGS IN CERTAIN SPECIFIC CATEGORIES

RECOMMENDATION:

It is recommended that the City Council:

1. Adopt the Environmental Determination that the proposed project is exempt from environmental review pursuant to the guidelines of the California Environmental Quality Act (Public Resources Code §21080(b)(9); Administrative Code, Title 14, Chapter 3, §15308, Class 8, Actions by Regulations for the Protection of the Environment); and,
2. Direct the City Attorney to prepare an ordinance and return within 60 days amending the Pasadena Municipal Code by amending Title 8, Health and Safety Code requiring the electrification of buildings in certain specific categories.

PROPOSED ELECTRIFICATION REQUIREMENTS:

The City proposes to exercise its police powers to amend Title 8, Health and Safety Code of the Pasadena Municipal Code with a proposed ordinance that would require electrification in lieu of natural gas in certain specific categories of new construction.

Specifically the following:

- New multi-family residential buildings greater than 3 units;
- New mixed-use buildings;
- New non-restaurant commercial buildings; and
- Additions to existing commercial buildings where the addition adds 50 percent or more to the existing floor area. In such cases, the entire building must convert to electrification.

The proposed amendments and exemptions are fully outlined in Attachment A. Staff proposes an implementation date of July 1, 2022 to allow the public time to anticipate a project that must incorporate an all-electric design. Staff recommends requiring electrification for new buildings based on a planning entitlement deemed completed before July 1, 2022 or if no entitlement is required that a building permit application is received before July 1, 2022.

BACKGROUND:

In November 2021, staff presented information on a potential electrification ordinance to the Municipal Services Committee (MSC). Staff presented information on a potential ordinance to achieve carbon neutrality by underscoring the role buildings play in local greenhouse gas (GHG) emissions and the need to take decisive action to reduce current and future GHG emissions.

Locally, emissions primarily come from three sources: transportation, solid waste, and building energy. According to the City of Pasadena's Climate Action Plan, as of 2009, approximately 47% of the City's GHG emissions are from residential and commercial energy use (dual-supplied – gas and electric), therefore, buildings provide a significant opportunity to reduce local GHG emissions. Recent advances in appliance technologies makes a transition to all-electric newly constructed buildings not only a viable and cost effective option, but also a key strategy for mitigating future emissions. Additionally, power distribution is becoming progressively less carbon-intensive through the integration of renewable sources and innovative technologies. Given these recent advances and understanding the role that buildings play in local GHG emissions, the MSC directed staff to conduct further research and outreach for a potential electrification ordinance.

DISCUSSION:

As of March, 2022, at least 54 municipalities throughout California have adopted ordinances to begin decarbonizing buildings, using an array of regulatory approaches. This includes numerous cities that have adopted "all-electric, whole-building" requirements. An ordinance prohibiting gas infrastructure for certain specific categories of construction in Pasadena would further advance the City's commitments to reach the shared goals of like-minded cities to reduce greenhouse gas emissions.

Why Propose Electrification?

Emissions from the use of natural gas and propane have become the largest source of Greenhouse Gas (GHG) emissions associated with buildings. These emissions make up about one-third of the greenhouse gas emissions in our region. According to the City of Pasadena's Climate Action Plan, as of 2009, approximately 47% of the City's GHG emissions are from residential and commercial energy use (dual-supplied) with residential energy use totaling 16% and commercial energy use totaling 31% of the community wide total.

The City of Pasadena's Climate Action Plan identifies various strategies for GHG emissions reductions, including encouraging the use of carbon-neutral energy in residential and commercial buildings. Pasadena cannot meet its climate goals without reducing natural gas use. State policies and lower prices of renewable energy mean that substituting natural gas with electricity is one of the quickest, safest, and least expensive pathways to eliminating GHG emissions from buildings.

Natural Gas and Public Health – Indoor natural gas use, particularly for cooking, worsens indoor air quality, which disproportionately harms communities that experience the first and worst consequences of climate change. Burning natural gas creates indoor air pollutants including carbon monoxide, formaldehyde, and nitrogen dioxide, all of which contribute to respiratory ailments. These impacts are compounded in small, poorly ventilated spaces. Children living in homes with gas cooking are 42 percent more likely to have asthma.

Electricity and Resilience – Gas lines are also more difficult to repair following disasters than electric infrastructure, and as such reduce a city's resilience. In times of disaster, the fossil fuel supply chain will likely be disrupted. Conversely, all-electric buildings can increase resilience. Electric appliances in conjunction with battery storage technology and renewable energy generation (such as rooftop solar) can operate absent the grid's electric supply chain.

Advantages of Residential Electrification (Using electricity to heat and cook)

Modern electric appliances such as heat pump water heaters, heat pump space heaters, heat pump clothes dryers and induction cooktops, now offer enhanced efficiency and performance.

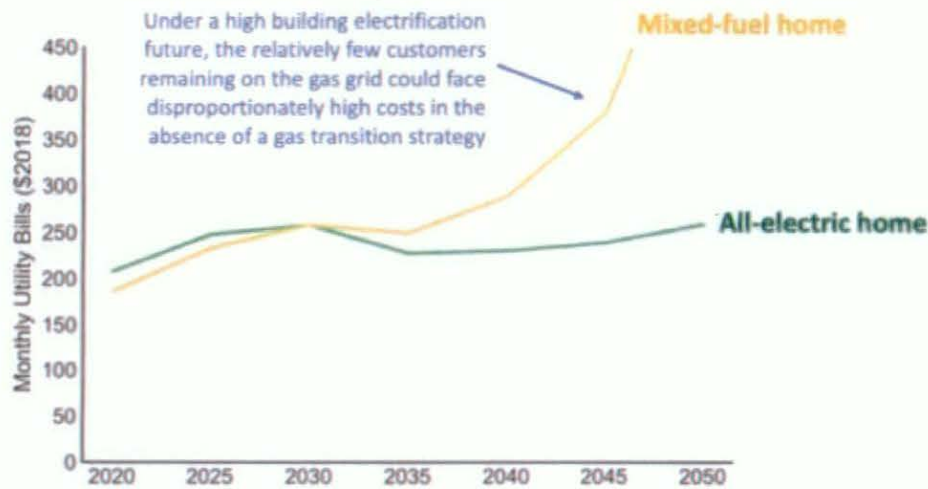
On operational cost of electrification, it is difficult to definitively determine whether an all-electric building will cost more or less to operate because the relative costs of electricity and natural gas fluctuate over time. As shown in Figure 1, statewide electrification policy studies suggest that natural gas rates will increase significantly as their use declines.

Additionally, all-electric homes are considered substantially safer than their dual-supplied counterparts because there are no emissions from gas combustion and there are no gas pipes that can leak due to wear, age, or earthquake.

Why Focus on New Buildings?

The greatest opportunities for electrifying buildings are present when the building is being designed and constructed. With new buildings, the total electrical usage can be calculated leading to the correct size for the electrical main supply. Existing buildings converting to all-electric will encounter challenges in upgrades to the electrical service, routing of new electrical circuits within the building walls, and the removal of abandoned gas lines.

Figure 1 – Monthly Utility Bills for All Electric vs Dual-Supplied Homes in CA



Source: <https://www.ethree.com/at-cec-e3-highlights-need-for-gas-transition-strategy-in-california/>

Why Exempt Single-Family New Construction?

While most of the 54 jurisdictions that require electrification included new single-family dwellings in their ordinances, staff recommends at this time to exempt single-family new construction, including ADUs from electrification requirements. This will enable current property owners to choose the energy type that works best for their needs and will allow for this category of housing to remain competitive while there is still a desire for gas infrastructure in single-family housing.

Further, while the 2022 California Energy Code (effective January 1, 2023) does not mandate the electrification of new single-family homes, it does require new home construction to incorporate electric-ready features.

What about Construction Costs?

A common misconception is that construction costs for all electric buildings is higher, although there is growing evidence that there is an actual cost savings in construction since gas infrastructure is omitted entirely. Further, while some claim that electrification will increase the cost of housing, this is unfounded because while the cost of construction is a factor in the cost of housing, the greater influence on housing prices relates to demand and fluctuation in the housing market.

In researching an electrification ordinance, the City of Oakland found that the cost of all-electric buildings are actually similarly favorable to dual-supplied buildings. And modern electric appliances are significantly more efficient than gas appliances, using fewer units of energy for the same work. Electric heat pump water heaters are up to five times more efficient than gas water heaters. Moreover, electric energy costs can be offset through local renewable generation such as rooftop solar, while gas must be purchased from an outside source.

The City of Morgan Hill found in their research for an electrification ordinance that avoiding the installation of gas pipelines into a development can save approximately \$7,000 per unit in construction costs. While the increased cost of installing a larger utility electrical transformer will reduce the net savings, depending on the location, all-electric construction is expected to be less expensive on average. Some local developers already choose to construct all-electric homes without natural gas.

How are Restaurants Impacted?

The biggest concern with the electrification of commercial buildings pertains to restaurants, specifically those that have a business reason for gas-powered cooking appliances, such as barbeques, pizza ovens and woks. While some cities have opted to exempt restaurants or delay compliance with the electrification requirements (some due to incremental impacts with COVID restrictions), there are other cities that have applied the requirement across the board to all commercial buildings. Although the proposed ordinance will not require electrification for new and remodeled restaurants, equipment and appliances that can utilize electric energy are encouraged.

What about Electrical Capacity and Reliability?

Some may question whether having an all-electric home or business makes one more vulnerable to dependency on electric power. The answer to this question is largely in the capacity and reliability of Pasadena's electrical supply grid. Our city is fortunate to have its own municipal utility where in Pasadena's Water And Power (PWP) 2018 Power Integrated Resource Plan provided that the utility is to maintain a capacity planning reserve margin of at least 15%. The reliability of PWP's power systems is found to be three-times more reliable than neighboring utilities. Further, PWP's 2020 Annual Report states that upgrades, maintenance and forecasting to the electrical distribution system will minimize service failures and power outages. It is contended that increased demand by further electrical usages, such as electric vehicles, electric appliances, and all-electric buildings can be accommodated by PWP. For further information these documents can be found at:

<https://ww5.cityofpasadena.net/water-and-power/powerirp/>
<https://ww5.cityofpasadena.net/water-and-power/annualreports/>

What kind of outreach has the City conducted?

An outline of the proposed requirements and exemptions were presented to various stakeholder groups which included the Building Industry Association (BIA) of Southern California, the Building Owners and Managers Association of Greater Los Angeles (BOMA GLA), the Pasadena Building Electrification Coalition and various groups with the Pasadena Chamber of Commerce and BizFed. The input received from these groups are found in Attachment B.

COUNCIL POLICY CONSIDERATION:

The recommended action furthers the City Council's strategic plan goal to ensure public safety by adopting the most currently available codes for all types of construction in the City. The staff recommendation also supports the City's commitment to increase conservation and sustainability.

FISCAL IMPACT:


There are no negative fiscal impacts anticipated with the adoption of this proposed ordinance. An ordinance would result in additional electric sales to PWP customers. The additional revenue would help fund PWP's fixed costs, thereby lowering average electric rates for all customers. It would also increase the revenue basis for determining the General Fund transfer from the Light and Power Fund.

Respectfully submitted,



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Attachments: (2)

Attachment A: Building Electrification Requirements & Exceptions

Attachment B: Stakeholder Group Comments to Building Electrification