



City Council Report

915 I Street, 1st Floor

Sacramento, CA 95814

www.cityofsacramento.org

File ID: 2021-00571

June 1, 2021

Discussion Item 22

Title: An Ordinance Adding to and Amending Various Provisions of Title 15 of the Sacramento City Code and Adopting Local Amendments to the California Building Standards Code, Relating to Green Building Standards Including Electrification; and a Resolution establishing a framework for existing building electrification and directing the evaluation of water conservation and green job opportunities. (Passed for Publication 5/18/2021; Published 5/21/2021)

Location: Citywide

Recommendation: Adopt: 1) an Ordinance adding to and amending various provisions of Title 15 of the Sacramento City Code and adopting local amendments to the California Building Standards Code, relating to green building standards including electrification; and 2) a Resolution establishing a framework for existing building electrification and directing the evaluation of water conservation and green job opportunities.

Contact: Helen Selph, Associate Planner, (916)-808-7852; Matt Hertel, AICP, Acting Long Range Planning Manager, (916) 808-7158, Community Development Department; Jennifer Venema, Interim Climate Action Lead, (916) 808-1859, Office of the City Manager

Presenter: Jennifer Venema, Interim Climate Action Lead, (916) 808-1859, Office of the City Manager

Attachments:

- 1-Description/Analysis
- 2-Ordinance - Redline
- 3-Ordinance - Clean
- 4-Process for Developing Infeasibility Guidelines
- 5-Resolution
- 6-Attachment to Resolution
- 7-Community and Stakeholder Engagement
- 8-Frequently Asked Questions (FAQ)

Description/Analysis

Issue Detail: The New Building Electrification Ordinance (Ordinance) establishes phased requirements for the electrification of new building construction. This Ordinance emerged as part of a comprehensive building electrification strategy intended to implement the direction from City Council which was based on a recommendation from the Mayor's Commission on Climate Change (MCCC) Final Report¹. On April 20, 2021, City Council approved the first phase of the effort, the Electric Vehicle (EV) Charging Infrastructure Ordinance. The New Building Electrification Ordinance (Ordinance) is the second phase of the City's electrification efforts and would provide requirements for new buildings to be all-electric.

The New Building Electrification Ordinance (Attachments 2 and 3) includes the following changes to the Sacramento City Code:

- Local amendments to the California Building Standards Code that will amend Title 15, Sacramento's Building Code to require:
 - Building permit applications filed on or after January 1, 2023, for newly constructed buildings that are three stories or less to be all-electric buildings.
 - Building permit applications filed on or after January 1, 2026, for newly constructed buildings that are four stories or more to be all-electric buildings.
 - Limited exemptions for specific uses, available only for building permits filed on or before December 31, 2025:
 - A limited exemption for food establishments for cooking equipment only.
 - A limited exemption for manufacturing process loads within a manufacturing or industrial facility².
 - A limited exemption for regulated affordable housing when virtual net energy metering is not available, for water heating only.

Infeasibility

Staff have conducted extensive outreach on the New Building Electrification Ordinance, as outlined in Attachment 7. In response to stakeholder feedback about the feasibility of electrification for all project types, the New Building Electrification Ordinance also includes provisions for an infeasibility waiver for the portions of the project where all-electric is

¹ Mayors' Commission on Climate Change final report and background information available online: <https://www.lgc.org/climatecommission/>

² A manufacturing or industrial facility means a building with the occupancy classification as defined in the California Building Code, Chapter 3, Section 306, Group F or Section 313, Group L. Group F refers to the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair, or processing operations that are not classified as a Group H hazardous or Group S storage occupancy. Group L refers to a room building or area where the use and storage of hazardous materials are utilized for testing, analysis, instruction, research, or development activities.

demonstrated by the project applicant to be infeasible. If a building permit applicant establishes to the satisfaction of the building official that compliance with the all-electric requirement is infeasible, the building official may grant a modification to the requirement. The infeasibility process provides flexibility for new construction projects that specific codified exemptions cannot provide and does not have a sunset date. After the electrification requirements are effective, staff will provide an annual report back to Council on the implementation of new building electrification, including the number and type of waivers.

The Ordinance also provides for the development of guidelines for considering infeasibility waivers. The infeasibility waiver process must include, (but is not limited to) the following:

- A meeting with the building permit applicant during which the building permit applicant can present documentation and any other evidence to support the building permit applicant's claim of infeasibility;
- Consultation with relevant industry experts, including the Sacramento Municipal Utility District;
- A written decision granting or denying the infeasibility waiver, including the reasons for the decision; and,
- that the guidelines shall not be effective until approved by resolution of the City Council.

Staff anticipate that adoption of the guidelines would occur in Fall 2022, in alignment with the 2022 California Building Standards Code.

Staff recommends that a technical panel be established as an informal body tasked with providing input on considerations for infeasibility waivers, vetting barriers where technologies are not yet market-ready for electrification and providing input on the infeasibility guidelines prior to Council adoption. Further information on the composition of the technical panel that will be tasked with the development and annual review of infeasibility guidelines and the process and timeline for developing infeasibility guidelines, are available in Attachment 4.

Ordinance Effective Dates

The New Building Electrification Ordinance and the EV Charging Infrastructure Ordinance (adopted April 20, 2021) will have the same phased timeline and effective dates, providing a balanced overall package with net cost savings for new development. The effective dates are January 1, 2023, and January 1, 2026, respectively, as described above. The effective dates are consistent with the MCCC recommendations and provide time for the development community to plan for the new mandate. These effective dates align with the effective dates of the 2022 and 2025 California Building Standards Code updates. Complete building permit applications (including payment of all required fees) filed with and accepted by the City's Building Division prior to the effective dates would not be subject to electrification requirements.

The California Building Standards Code is on a three-year cycle. Local amendments are only enforceable for the current California Building Standards Code. The current California Building Standards Code in effect is the 2019 code; accordingly, the 2023 and 2026 requirements in the City's Ordinance are not enforceable until California adopts the future state building codes, and the City adopts ordinances that are local amendments to the new California Building Standards Codes that would be adopted after July 1, 2022 and July 1, 2025, respectively. Staff will provide ongoing evaluation on the implementation of new building electrification and report back to City Council annually.

In addition to the New Building Electrification Ordinance, staff are planning for the gradual electrification of existing buildings in the next phase of City electrification efforts. The attached Resolution (Attachments 5 and 6) outlines the City's commitment to establishing a pathway for existing building electrification and directing the evaluation of water conservation and green job opportunities. Following the adoption of the New Building Electrification Ordinance, staff will begin engagement on electrifying/retrofitting existing buildings as outlined in the attached Resolution and Exhibit A.

Attachment 8 - Frequently Asked Questions (FAQ), includes responses to the key questions staff have received from residents and stakeholders. It has been revised to reflect recent changes and stakeholder feedback.

Policy Considerations: The 2035 General Plan includes the following key policies related to GHG emissions reduction.

ER 6.1.5 Community Greenhouse Gas Reductions. The City shall reduce community GHG emissions by 15 percent below 2005 baseline levels by 2020 and strive to reduce community emissions by 49% percent and 83% percent by 2035 and 2050, respectively. (RDR)

ER 6.1.7 Greenhouse Gas Reduction in New Development. The City shall reduce greenhouse gas emissions from new development by discouraging auto-dependent sprawl and dependence on the private automobile; promoting water conservation and recycling; promoting development that is compact, mixed use, pedestrian friendly, and transit oriented; promoting energy-efficient building design and site planning; improving the jobs/housing ratio in each community; and other methods of reducing emissions. (RDR)

The City Council committed to carbon neutrality by 2045 with adoption of the 2040 General Plan Vision and Guiding Principles (Resolution No. 2019-0433). The Council also declared a Climate Emergency on December 10, 2019 (Resolution No. 2019-0465), calling for the City to undertake significant action to accelerate the rapid decrease of GHG emissions. On August 25, 2020, City Council passed a motion directing staff to develop an ordinance to electrify new buildings and to plan for the electrification of existing buildings (Motion No. 2020-0226). On January 19, 2021, City Council reaffirmed electrification as a key strategy for the 2040 General Plan update. Specifically, the January 19th resolution commits to require new buildings to be electric and to gradually transition existing buildings away from natural gas, with assistance and financial incentives for low-income residents.

Economic Impacts: The economic impacts of passing an electrification ordinance may be reduced construction costs for residential development and increased demand for climate-friendly appliances. Cost-effectiveness studies indicate that all-electric construction is cost-effective for all low-rise and mid-rise construction prototypes studied. Cost-effectiveness of high-rise residential construction up to eight stories is cost effective, but above eight stories cost effectiveness varies depending on project design. All residential new construction building types are cost-effective when SMUD incentives are considered. City staff and SMUD will continue to engage stakeholders to share information and findings related to cost-effectiveness. Staff will continue to work with stakeholders to understand and address economic barriers for certain development types.

Staff will collaborate with stakeholders to advance “just transition”³ strategies and work to create new opportunities for jobs that may be impacted by a reduction of gas infrastructure work. Electrification and sustainable infrastructure will bring new labor demands and workforce development needs. City resources will be prioritized to assist marginalized and underemployed communities to enhance opportunities for our most in-need jobseekers. Through collaboration with multiple stakeholders, including members of the City’s Workforce Working Group (a Subcommittee of the City’s Investment Committee), workforce nonprofit providers, higher education partners, governmental agencies and industry partners, staff are integrating electrification conversations with workforce and economic development efforts.

In response to stakeholder concerns about the impact of the Ordinance on plumbers and pipefitters work, a feasibility analysis related to the cost of potential new water conservation standards for new development and associated workforce expansion potential is planned. This

³ Refer to the just transition concept provided in the UC Berkeley Center for Labor Research and Education report to the California Workforce Development Board, in which “‘Just Transition’ refers to protection, support, and compensation for displaced workers and communities when a society makes significant policy decisions that result in job loss in affected businesses” to ensure that impacts are mitigated with other “high-road” opportunities (p. 149, Cha, M. (June 2020). Chapter 4: Just transition: Tools for protecting workers and their communities at risk of displacement due to climate policy. *Putting California on the high road*. <https://laborcenter.berkeley.edu/wp-content/uploads/2020/08/Chapter-4-Just-Transition-Putting-California-on-the-High-Road.pdf>

additional work is supported by the Council's one-time funding allocation for 2021 Climate Implementation Work Plan in the Fiscal Year 2020/2021 Midyear Budget (Resolution No. 2021-0029) which was approved by City Council on February 2, 2021.

Environmental Considerations: Installation of additional electrical infrastructure in development would be required in some cases but would be offset by the lack of need to install gas infrastructure. The indirect effects of the regulation would substitute electrical energy use for natural gas. The combustion of natural gas produces indoor and outdoor air pollution as well as GHG emissions that are a significant contributor to climate change.

SB100 requires California utilities to provide carbon neutral electricity by 2045. The Sacramento Municipal Utility District currently provides electricity that is approximately 70% carbon free. SMUD is committed to achieving carbon-neutral electricity by 2030. On April 28, 2021, the SMUD Board adopted a 2030 Zero Carbon Plan that establishes goals for carbon neutrality. The substitution of clean, carbon-neutral electricity for natural gas will significantly reduce indoor and outdoor air pollution and GHG emissions.

This Ordinance is consistent with City policies in the 2035 General Plan and other plans, to reduce greenhouse gas emissions and improve air quality. Adoption of the Ordinance would not result in any significant effects. The 2023 and 2026 requirements in the ordinance are not enforceable until California adopts future state building codes and the City adopts ordinances that are local amendments to those future state building codes. Because it can be seen with certainty that the action would not result in significant effects the action is exempt from CEQA pursuant to the commonsense exemption provided in CEQA Guidelines section 15061(b)(3). In addition, this ordinance is exempt pursuant to CEQA Guidelines sections 15307 and 15308 because it is an action taken to assure the maintenance, restoration or enhancement of natural resources or protection of the environment where the regulatory process involves procedures for protection of the environment. The resolution adopting a framework for staff to follow in developing a plan for electrification of existing buildings is exempt from CEQA under Guidelines 15378 because it will not cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and it is exempt under section 15262 relating to feasibility studies for possible future action.

Sustainability: The New Building Electrification Ordinance will have a net positive environmental impact because it will reduce GHG emissions and other pollution associated with fossil fuel combustion from gas heating systems, stoves, water heaters, and other appliances. The electrification ordinance will also help improve air quality and further decarbonize Sacramento's economy. Electrifying buildings is a key strategy to achieve carbon neutrality and advance the recommendations from the MCCC.

Commission/Committee Action: On May 4, 2021, the Law and Legislation committee passed a motion forwarding the Ordinance to City Council for consideration. The motion also established direction for staff to provide more information about the composition of the informal technical panel to be established regarding the development of guidelines for considering infeasibility waivers. Attachment 4 includes details regarding the process for developing infeasibility guidelines and the composition of the technical panel.

The Ordinance reflects revisions to the original proposed standards previously presented to the Law and Legislation Committee on March 2, 2021. At the March 2nd meeting, the Law and Legislation Committee directed staff to split the New Building Electrification Ordinance by moving EV charging standards forward to City Council hearing with recommendation for adoption as a separate ordinance, while directing staff to refine the original new building electrification proposal and return to the Law and Legislation Committee.

On February 11, 2021, the Planning and Design Commission held a public hearing on the New Building Electrification Ordinance. The Commission unanimously passed a motion to forward the Ordinance to City Council for consideration, with an amendment to increase the parking incentives for projects which provide EV carsharing in addition to a Level 2 electric vehicle charger or an electric vehicle direct current fast charger.

Rationale for Recommendation: Council has declared a climate emergency and declared the City's intent to take bold and immediate action to address climate change. In response to the recommendations of the MCCC and Council direction, staff is recommending adoption of the New Building Electrification Ordinance.

Financial Considerations: The New Building Electrification Ordinance is not anticipated to have a significant cost impact for the City.

Local Business Enterprise (LBE): Not Applicable.

Background: The process of developing the Ordinance began on August 25, 2020, with Council Motion No. 2020-0226 directing the City Manager to take several actions including moving quickly to draft an ordinance to require electrification of new construction. Since receiving direction in August 2020, staff have conducted extensive outreach as described in Attachment 7 and conducted sessions with the various commissions listed above.

On January 19, 2021, City Council adopted Resolution No. 2021-0022 establishing the following key 2040 General Plan strategies for building electrification:

- Require all new buildings to be all electric and eliminate the use of natural gas and fossil fuels for building operations.
- Gradually transition existing buildings away from natural gas to electric and assist low-income residents by offering financial incentives.

Current and Future State Mandates

California has taken an aggressive stance to mitigate climate change at the state-level through the adoption of legislation and executive orders. The two major state GHG-related goals are established by Assembly Bill 32 (2006) and Senate Bill 32 (2016).

- AB 32 established a statewide GHG emissions reduction goal of attaining 1990 levels by 2020.
- SB 32 requires state agencies to achieve a 40 percent reduction below 1990 levels by 2030.

Executive Order (EO) B-55-18 was signed by the Governor Brown in 2018. This order sets a goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining neutrality thereafter.

Following the passage of SB100 (2018), which mandates that California utilities provide carbon-neutral electricity by 2045, local governments began passing ordinances that are variations on the theme of prohibiting fossil fuel energy sources in new construction.

In September 2020, Governor Newsom issued EON-79-20, setting new statewide goals for phasing out gasoline-powered cars and trucks in California. Under the order, 100% of in-state sales of new passenger cars and trucks are to be zero-emission by 2035. Additionally, the order also establishes that all medium- and heavy-duty vehicles and off-road vehicles and equipment sales shall also be zero-emission where feasible.

City of Sacramento – Climate Action Policy Direction

In November 2018, Mayor Darrell Steinberg and West Sacramento Mayor Christopher Cabaldon launched MCCC to develop recommendations for the cities of Sacramento and West Sacramento to achieve carbon zero by 2045. On June 29, 2020, the MCCC unanimously approved its final report for achieving carbon zero by 2045 in Sacramento and West Sacramento. The MCCC recommendations included the following for electrification in new construction:

- MCCC Built Environment Recommendation - Electrification in New Construction:
 - Mandating all-electric construction to eliminate fossil-fuel use in new low-rise* buildings by 2023 and all buildings by 2026**. (**Low-rise defined as under 4 stories. **Provided that the costs to go all-electric are cost-effective including the incremental costs of electrical infrastructure upgrades and the technology has shown to be feasible.*)
- MCCC Mobility Recommendation - Zero-Emission Vehicles:
 - Developing a comprehensive package of incentives, disincentives, and policies to encourage the adoption of zero-emission vehicles (ZEVs) so that:
 1. 70% of new vehicle registrations will be for ZEVs by 2030.
 2. All public, private, and shared fleets are fully electrified by 2045.

In coordination with the MCCC recommendations, the City is also in the process of updating the Sacramento Climate Action and Adaptation Plan (CAAP) to reduce community wide GHG emissions to 40% below 1990 levels by 2030 and developing a path forward for achieving carbon neutrality by 2045. It is anticipated that the draft CAAP will be available for public review in Summer 2021.

Decarbonization through electrification is one of the City's key strategies for reducing GHG emissions. Building code amendments are more effective and cost efficient than other GHG reduction measures, so they are a logical first step. Sacramento is looking to be a regional and statewide leader in taking proactive steps to reduce the impact of climate change.

ORDINANCE NO.

Adopted by the Sacramento City Council

Date Adopted

**AN ORDINANCE ADDING TO AND AMENDING VARIOUS PROVISIONS OF TITLE 15 OF THE
SACRAMENTO CITY CODE AND ADOPTING LOCAL AMENDMENTS TO THE CALIFORNIA
BUILDING STANDARDS CODE, RELATING TO GREEN BUILDING STANDARDS INCLUDING
ELECTRIFICATION**

BE IT ENACTED BY THE COUNCIL OF THE CITY OF SACRAMENTO:

SECTION 1.

In connection with the local amendments to the 2019 California Energy Code, and pursuant to California Health and Safety Code sections 17958, 17958.5, 17958.7, and 18941.5, the City Council finds and determines that:

- A. The amendments are reasonably necessary because of local climatic, geological, or topographical conditions.
- B. Under this adopting ordinance, specific amendments are established that are more restrictive than those adopted by the State of California under the State Buildings Standards Code, Title 24 of the California Code of Regulations.
- C. Express Finding Number 1: Climatic

The burning of fossil fuels used to heat structures, heat water, for cooking, and for other uses is a significant contributor to greenhouse gas emissions and consequently climate change. "Combustion of natural gas and petroleum products for heating and cooking needs emits carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Emissions from natural gas consumption represent 79.9 percent of direct fossil fuel CO₂ emissions from the residential and commercial sections in 2018."¹ "Long-lived gases such as carbon dioxide can persist in the atmosphere for more than 100 years, even with efforts to reduce emissions today."² "Scientists attribute the global warming trend observed since the mid-20th century to the human expansion of the 'greenhouse effect' warming that results when the atmosphere traps heat radiating from Earth toward space."³ Nitrous oxide, carbon dioxide, and methane are gases that contribute to the greenhouse effect.⁴

¹ United States Environmental Protection Agency, Source of Greenhouse Gas Emissions, as of October 27, 2020, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#commercial-and-residential>.

² Houlton, Benjamin, Jay Lund, (University of California, Davis), 2018. Sacramento Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-002, page 11.

³ NASA, Causes of Climate Change, as of November 25, 2020, <https://climate.nasa.gov/causes/>.

⁴ NASA, Causes of Climate Change, as of November 25, 2020, <https://climate.nasa.gov/causes/>.

“Global climate change imposes substantial local impacts and risks on the Sacramento Valley, including rising temperatures, changing precipitation patterns and amounts, sea level rise, flooding, drought, and wildfire.”⁵ A general summary of climate risks facing the Sacramento Valley Region, including the City of Sacramento, are as follows:

- Warming air and water temperatures
- More extreme heat-waves
- Drier landscapes
- Less snow
- Variable precipitation and seasonal shifts
- More intense droughts and floods with less predictability
- Higher Delta water levels compounded by subsidence
- Increased risk of wildfire
- Loss of ecosystem habitat⁶

“The Sacramento Region is expected to experience hotter and drier conditions and reduced snowpack that could cause reduced reservoir supplies and Sacramento and American River flows.”⁷ “Increased flood frequency and elevated flood risk are expected in California as a result of sea level rise, more intense storm events, and shifts in the seasonal timing of rainfall and snow pack runoff.”⁸ “Higher temperatures and the increased frequency of heat waves associated with climate change are expected to significantly increase heat-related illness, such as heat exhaustion and heat stroke.”⁹

Requiring all-electric construction, without gas infrastructure will reduce the amount of greenhouse gas produced in Sacramento and will contribute to reducing the impact of climate change and the associated risks.

Based upon this express finding, the following building standards in the 2019 California Building Standards Code are amended or added:

- 2019 California Energy Code sections 100.0(e)(2)(A) and 100.1(b) (prohibiting gas infrastructure, thereby decreasing the impact of greenhouses gases).

D. Express Finding Number 2: Geological

⁵ Houlton, Benjamin, Jay Lund, (University of California, Davis), 2018. Sacramento Summary Report. California’s Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-002, page 17.

⁶ Houlton, Benjamin Jay Lund, (University of California, Davis) 2018. Sacramento Summary Report. California’s Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-002, page 6.

⁷ City of Sacramento, Sacramento Climate Action Plan, Expected effects on the Sacramento Region, section 3.3, page 3-11, January 13, 2012.

⁸ City of Sacramento, Sacramento Climate Action Plan, Expected effects on the Sacramento Region, section 3-3, page 3-13, January 13, 2012.

⁹ City of Sacramento, Sacramento Climate Action Plan, section 3.3, page 3-13, January 13, 2012.

Sacramento is subject to ground tremors from seismic events as the City is located in a Design Category D, which relates to a high risk of earthquakes. The high-risk seismic zone is defined based on the proximity to known fault lines, soil type, and known mapped spectral accelerations. Large portions of Sacramento have very poor soil conditions, including liquefiable soil. The soil is often expansive in nature and very acidic which leads to pre-mature deterioration of plumbing piping installed in the ground. Although non-metallic gas pipe is not susceptible to deterioration, there are many homes built with metallic gas pipe infrastructure. The elimination of natural gas infrastructure in new dwellings would reduce the hazards associated with gas leaks during seismic events.

Based on this express finding, the following building standards in the 2019 California Building Standards Code are amended:

- 2019 California Energy Code sections 100.0(e)(2)(A) and 100.1(b) (prohibiting gas infrastructure, thereby decreasing the impact of greenhouses gases).

E. California Energy Code

The City Council finds that the modifications made to the California Energy Code in this ordinance are cost-effective for new buildings three stories or less as required by California Public Resources Code section 25402.1(h)(2). This finding of cost-effectiveness is based on the August 1, 2019 California Energy Standards 2019 Cost-effectiveness study: Low-Rise Residential New Construction, and the July 25, 2019 California Energy Codes and Standards 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study. The cost-effectiveness studies have determined specific modifications to the 2019 California Energy Code for climate zone 12 are cost-effective. Further, pursuant to California Public Resources Code section 25402.1(h)(2), the City Council finds that the amendments made to the California Energy Code in this ordinance for new buildings three stories or less will require diminution of energy consumption levels to those permitted by the 2019 California Energy Code.

It is anticipated that cost-effectiveness studies for new buildings four stories or more will be published prior to the January 1, 2026 effective date for new buildings four stories or more.

SECTION 2.

Chapter 15.30 is hereby added to the Sacramento City Code to read as follows:

Chapter 15.30 AMENDMENTS TO THE CALIFORNIA ENERGY CODE

15.30.010 Amendments to the CEnC.

The CEnC is amended as set forth in this chapter.

15.30.020 Title lines.

For the purposes of this chapter, and notwithstanding the provisions of Section 1.04.060, the title lines (or “catchwords”) in this chapter are part of such Sections.

15.30.030 Local amendments to the CEnC.

A. Subsection 100.0(e)(2)(A) of the CEnC is amended to read as follows:

A. All newly constructed buildings. Sections 110.0 through 110.12 apply to all newly constructed buildings within the scope of Section 100.0(a). In addition, newly constructed buildings shall meet the requirements of Subsections B, C, D or E, as applicable.

i. For building permit applications filed on or after January 1, 2023, except as provided in subsection (vi) and (vii), all newly constructed buildings that are three stories or less shall be all-electric buildings notwithstanding any other provisions in this California Energy Code.

ii. For building permit applications filed on or after January 1, 2026, except as provided in subsection (vii), all newly constructed buildings that are four stories or more shall be all-electric buildings notwithstanding any other provisions in this California Energy Code.

iii. For the purposes of all-electric building requirements, a newly constructed building as defined in Section 100.1 shall not include newly constructed additions and improvements, including tenant improvements, in existing buildings as defined in the CBC.

iv. Except as provided in subsection (vi) and subsection (vii), building permits shall not be issued to convert all-electric buildings that are three-stories or less into mixed-fuel buildings where the initial building permit application is filed on or after January 1, 2023.

v. Except as provided in subsection (vii), building permits shall not be issued to convert all-electric buildings that are four-stories or more into mixed-fuel buildings where the initial building permit application is filed on or after January 1, 2026.

vi. Limited exemptions. For building permit applications filed on or before December 31, 2025, an applicant may request one of the following limited exemptions to construct a mixed fuel building:

a. Ground floor food service establishment for the area of the building with cooking equipment. The building official shall grant the exemption only for natural gas or propane piping systems, fixtures, or infrastructure necessary for cooking equipment within the designated food service area.

b. Manufacturing or industrial facilities for the area of the building with process loads. The building official shall grant the exemption only for the area of the building with process loads.

c. Water-heating systems and equipment in regulated affordable housing for those portions of the building where virtual net energy metering is unavailable.

vii. Infeasibility.

If a building permit applicant establishes to the satisfaction of the building official that it is infeasible to comply with the all-electric building requirements in subsection 100.0(e)(2)(A)(i) or subsection 100.0(e)(2)(A)(ii) because of the type of building, physical site conditions, commercial availability of electric appliances or equipment, necessary operational requirements, electrical infrastructure requirements, or the public health, safety, or economic welfare in the event of an electric grid outage, the building official may waive the requirements of subsection 100.0(e)(2)(A)(i) or subsection 100.0(e)(2)(A)(ii) only for those portions of the building where all-electric is infeasible.

B. The following definitions are added to Subsection 100.1(b) to read as follows:

ALL-ELECTRIC BUILDING means a building that does not have natural gas piping or propane plumbing installed on a lot or within a building, and that uses electricity as the sole source of energy for its space heating, water heating (including indoor and outdoor pools and spas), cooking appliances, outdoor kitchens, outdoor fireplaces, and clothes drying appliances. All-electric buildings may include solar thermal pool heating.

COOKING EQUIPMENT means equipment intended for commercial use, including ovens, ranges, brewing kettles, and cooking appliances, for use in a restaurant, brewery, or other business establishment where food or beverages are prepared and served for consumption on-site or off-site, other than a cottage food operation as defined in California Health and Safety Code Section 113758.

FOOD SERVICE ESTABLISHMENT means a building with cooking equipment where food or beverages are prepared and served for consumption on-site or off-site.

MANUFACTURING OR INDUSTRIAL FACILITY means a building with the occupancy classifications as defined in the California Building Code, Chapter 3, Section 306, Group F or Section 313, Group L.

MIXED-FUEL BUILDING means a building that uses natural gas or propane as fuel for space heating or cooling, exterior heating, decorative uses and lighting, water heating (including pools and spas), cooking appliances or clothes drying appliances, onsite generation of electricity (except where primarily fueled by onsite digestion of organic

material), or contains fixtures, piping systems, or infrastructure for natural gas or propane equipment for such uses.

PROCESS means an activity or treatment that is not related to the space conditioning, lighting, service water heating, or ventilating of a building as it relates to human occupancy.

PROCESS LOAD means an energy load resulting from a process.

REGULATED AFFORDABLE HOUSING means a building to be occupied by low or moderate income households as defined in California Health and Safety Code Section 50093; offered at an affordable rent as defined in California Health and Safety Code Section 50053 for a period of at least 30 years; and subject to restriction for a period of at least 30 years under a recorded regulatory agreement between the property owner and a local, state, or federal agency.

VIRTUAL NET ENERGY METERING means a billing arrangement that allows multi-tenant building owners to install a single solar system to cover the electricity load of both common and tenant areas connected at the same service delivery point. The electricity does not flow directly to any tenant meter, but feeds some common area loads and the remainder goes onto the grid. The electricity that is feed back to the grid is then proportioned to the tenant's bill.

15.30.040 Infeasibility exemption determination process.

The building official shall develop guidelines to consider infeasibility exemptions under Section 15.30.030.A. The guidelines must include a process that includes, but not is not limited to, a meeting with the building permit applicant during which the building permit applicant can present documentation and any other evidence to support the building permit applicant's claim of infeasibility; consultation with relevant industry experts, including the Sacramento Municipal Utility District; and a written decision granting or denying the infeasibility exemption including the reasons for the decision. The guidelines shall not be effective until approved by resolution of the City Council.

SECTION 3.

If any provision of this Ordinance or its application to any person or circumstance is held invalid or ineffective by any court of competent jurisdiction, or by reason of any preemptive legislation, that invalidity shall not affect the validity of the remaining provisions of this Ordinance. The City Council declares that it would have passed this Ordinance and each section, subsection, subdivision, sentence, clause, and phrase, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases, or words be declared invalid.

Adopted by the City of Sacramento City Council on by the following vote:

Ayes:

Noes:

Abstain:

Absent:

MAYOR

Attest:

City Clerk

Passed for Publication:

Published:

Effective:

ORDINANCE NO.

Adopted by the Sacramento City Council

Date Adopted

**AN ORDINANCE ADDING TO AND AMENDING VARIOUS PROVISIONS OF TITLE 15 OF THE
SACRAMENTO CITY CODE AND ADOPTING LOCAL AMENDMENTS TO THE CALIFORNIA
BUILDING STANDARDS CODE, RELATING TO GREEN BUILDING STANDARDS INCLUDING
ELECTRIFICATION**

BE IT ENACTED BY THE COUNCIL OF THE CITY OF SACRAMENTO:

SECTION 1.

In connection with the local amendments to the 2019 California Energy Code, and pursuant to California Health and Safety Code sections 17958, 17958.5, 17958.7, and 18941.5, the City Council finds and determines that:

- A. The amendments are reasonably necessary because of local climatic, geological, or topographical conditions.
- B. Under this adopting ordinance, specific amendments are established that are more restrictive than those adopted by the State of California under the State Buildings Standards Code, Title 24 of the California Code of Regulations.
- C. Express Finding Number 1: Climatic

The burning of fossil fuels used to heat structures, heat water, for cooking, and for other uses is a significant contributor to greenhouse gas emissions and consequently climate change. "Combustion of natural gas and petroleum products for heating and cooking needs emits carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Emissions from natural gas consumption represent 79.9 percent of direct fossil fuel CO₂ emissions from the residential and commercial sections in 2018."¹ "Long-lived gases such as carbon dioxide can persist in the atmosphere for more than 100 years, even with efforts to reduce emissions today."² "Scientists attribute the global warming trend observed since the mid-20th century to the human expansion of the 'greenhouse effect' warming that results when the atmosphere traps heat radiating from Earth toward space."³ Nitrous oxide, carbon dioxide, and methane are gases that contribute to the greenhouse effect.⁴

¹ United States Environmental Protection Agency, Source of Greenhouse Gas Emissions, as of October 27, 2020, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#commercial-and-residential>.

² Houlton, Benjamin, Jay Lund, (University of California, Davis), 2018. Sacramento Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-002, page 11.

³ NASA, Causes of Climate Change, as of November 25, 2020, <https://climate.nasa.gov/causes/>.

⁴ NASA, Causes of Climate Change, as of November 25, 2020, <https://climate.nasa.gov/causes/>.

“Global climate change imposes substantial local impacts and risks on the Sacramento Valley, including rising temperatures, changing precipitation patterns and amounts, sea level rise, flooding, drought, and wildfire.”⁵ A general summary of climate risks facing the Sacramento Valley Region, including the City of Sacramento, are as follows:

- Warming air and water temperatures
- More extreme heat-waves
- Drier landscapes
- Less snow
- Variable precipitation and seasonal shifts
- More intense droughts and floods with less predictability
- Higher Delta water levels compounded by subsidence
- Increased risk of wildfire
- Loss of ecosystem habitat⁶

“The Sacramento Region is expected to experience hotter and drier conditions and reduced snowpack that could cause reduced reservoir supplies and Sacramento and American River flows.”⁷ “Increased flood frequency and elevated flood risk are expected in California as a result of sea level rise, more intense storm events, and shifts in the seasonal timing of rainfall and snow pack runoff.”⁸ “Higher temperatures and the increased frequency of heat waves associated with climate change are expected to significantly increase heat-related illness, such as heat exhaustion and heat stroke.”⁹

Requiring all-electric construction, without gas infrastructure will reduce the amount of greenhouse gas produced in Sacramento and will contribute to reducing the impact of climate change and the associated risks.

Based upon this express finding, the following building standards in the 2019 California Building Standards Code are amended or added:

- 2019 California Energy Code sections 100.0(e)(2)(A) and 100.1(b) (prohibiting gas infrastructure, thereby decreasing the impact of greenhouses gases).

D. Express Finding Number 2: Geological

⁵ Houlton, Benjamin, Jay Lund, (University of California, Davis), 2018. Sacramento Summary Report. California’s Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-002, page 17.

⁶ Houlton, Benjamin Jay Lund, (University of California, Davis) 2018. Sacramento Summary Report. California’s Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-002, page 6.

⁷ City of Sacramento, Sacramento Climate Action Plan, Expected effects on the Sacramento Region, section 3.3, page 3-11, January 13, 2012.

⁸ City of Sacramento, Sacramento Climate Action Plan, Expected effects on the Sacramento Region, section 3-3, page 3-13, January 13, 2012.

⁹ City of Sacramento, Sacramento Climate Action Plan, section 3.3, page 3-13, January 13, 2012.

Sacramento is subject to ground tremors from seismic events as the City is located in a Design Category D, which relates to a high risk of earthquakes. The high-risk seismic zone is defined based on the proximity to known fault lines, soil type, and known mapped spectral accelerations. Large portions of Sacramento have very poor soil conditions, including liquefiable soil. The soil is often expansive in nature and very acidic which leads to pre-mature deterioration of plumbing piping installed in the ground. Although non-metallic gas pipe is not susceptible to deterioration, there are many homes built with metallic gas pipe infrastructure. The elimination of natural gas infrastructure in new dwellings would reduce the hazards associated with gas leaks during seismic events.

Based on this express finding, the following building standards in the 2019 California Building Standards Code are amended:

- 2019 California Energy Code sections 100.0(e)(2)(A) and 100.1(b) (prohibiting gas infrastructure, thereby decreasing the impact of greenhouses gases).

E. California Energy Code

The City Council finds that the modifications made to the California Energy Code in this ordinance are cost-effective for new buildings three stories or less as required by California Public Resources Code section 25402.1(h)(2). This finding of cost-effectiveness is based on the August 1, 2019 California Energy Standards 2019 Cost-effectiveness study: Low-Rise Residential New Construction, and the July 25, 2019 California Energy Codes and Standards 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study. The cost-effectiveness studies have determined specific modifications to the 2019 California Energy Code for climate zone 12 are cost-effective. Further, pursuant to California Public Resources Code section 25402.1(h)(2), the City Council finds that the amendments made to the California Energy Code in this ordinance for new buildings three stories or less will require diminution of energy consumption levels to those permitted by the 2019 California Energy Code.

It is anticipated that cost-effectiveness studies for new buildings four stories or more will be published prior to the January 1, 2026 effective date for new buildings four stories or more.

SECTION 2.

Chapter 15.30 is hereby added to the Sacramento City Code to read as follows:

Chapter 15.30 AMENDMENTS TO THE CALIFORNIA ENERGY CODE

15.30.010 Amendments to the CEnC.

The CEnC is amended as set forth in this chapter.

15.30.020 Title lines.

For the purposes of this chapter, and notwithstanding the provisions of Section 1.04.060, the title lines (or “catchwords”) in this chapter are part of such Sections.

15.30.030 Local amendments to the CEnC.

A. Subsection 100.0(e)(2)(A) of the CEnC is amended to read as follows:

A. All newly constructed buildings. Sections 110.0 through 110.12 apply to all newly constructed buildings within the scope of Section 100.0(a). In addition, newly constructed buildings shall meet the requirements of Subsections B, C, D or E, as applicable.

- i. For building permit applications filed on or after January 1, 2023, except as provided in subsection (vi) and (vii), all newly constructed buildings that are three stories or less shall be all-electric buildings notwithstanding any other provisions in this California Energy Code.
- ii. For building permit applications filed on or after January 1, 2026, except as provided in subsection (vii), all newly constructed buildings that are four stories or more shall be all-electric buildings notwithstanding any other provisions in this California Energy Code.
- iii. For the purposes of all-electric building requirements, a newly constructed building as defined in Section 100.1 shall not include newly constructed additions and improvements, including tenant improvements, in existing buildings as defined in the CBC.
- iv. Except as provided in subsection (vi) and subsection (vii), building permits shall not be issued to convert all-electric buildings that are three-stories or less into mixed-fuel buildings where the initial building permit application is filed on or after January 1, 2023.
- v. Except as provided in subsection (vii), building permits shall not be issued to convert all-electric buildings that are four-stories or more into mixed-fuel buildings where the initial building permit application is filed on or after January 1, 2026.
- vi. Limited exemptions. For building permit applications filed on or before December 31, 2025, an applicant may request one of the following limited exemptions to construct a mixed fuel building:
 - a. Ground floor food service establishment for the area of the building with cooking equipment. The building official shall grant the exemption only for natural gas or propane piping systems, fixtures, or infrastructure necessary for cooking equipment within the designated food service area.
 - b. Manufacturing or industrial facilities for the area of the building with process loads. The building official shall grant the exemption only for the area of the building with process loads.

c. Water-heating systems and equipment in regulated affordable housing for those portions of the building where virtual net energy metering is unavailable.

vii. Infeasibility.

If a building permit applicant establishes to the satisfaction of the building official that it is infeasible to comply with the all-electric building requirements in subsection 100.0(e)(2)(A)(i) or subsection 100.0(e)(2)(A)(ii) because of the type of building, physical site conditions, commercial availability of electric appliances or equipment, necessary operational requirements, electrical infrastructure requirements, or the public health, safety, or economic welfare in the event of an electric grid outage, the building official may waive the requirements of subsection 100.0(e)(2)(A)(i) or subsection 100.0(e)(2)(A)(ii) only for those portions of the building where all-electric is infeasible.

B. The following definitions are added to Subsection 100.1(b) to read as follows:

ALL-ELECTRIC BUILDING means a building that does not have natural gas piping or propane plumbing installed on a lot or within a building, and that uses electricity as the sole source of energy for its space heating, water heating (including indoor and outdoor pools and spas), cooking appliances, outdoor kitchens, outdoor fireplaces, and clothes drying appliances. All-electric buildings may include solar thermal pool heating.

COOKING EQUIPMENT means equipment intended for commercial use, including ovens, ranges, brewing kettles, and cooking appliances, for use in a restaurant, brewery, or other business establishment where food or beverages are prepared and served for consumption on-site or off-site, other than a cottage food operation as defined in California Health and Safety Code Section 113758.

FOOD SERVICE ESTABLISHMENT means a building with cooking equipment where food or beverages are prepared and served for consumption on-site or off-site.

MANUFACTURING OR INDUSTRIAL FACILITY means a building with the occupancy classifications as defined in the California Building Code, Chapter 3, Section 306, Group F or Section 313, Group L.

MIXED-FUEL BUILDING means a building that uses natural gas or propane as fuel for space heating or cooling, exterior heating, decorative uses and lighting, water heating (including pools and spas), cooking appliances or clothes drying appliances, onsite generation of electricity (except where primarily fueled by onsite digestion of organic material), or contains fixtures, piping systems, or infrastructure for natural gas or propane equipment for such uses.

PROCESS means an activity or treatment that is not related to the space conditioning, lighting, service water heating, or ventilating of a building as it relates to human occupancy.

PROCESS LOAD means an energy load resulting from a process.

REGULATED AFFORDABLE HOUSING means a building to be occupied by low or moderate income households as defined in California Health and Safety Code Section 50093; offered at an affordable rent as defined in California Health and Safety Code Section 50053 for a period of at least 30 years; and subject to restriction for a period of at least 30 years under a recorded regulatory agreement between the property owner and a local, state, or federal agency.

VIRTUAL NET ENERGY METERING means a billing arrangement that allows multi-tenant building owners to install a single solar system to cover the electricity load of both common and tenant areas connected at the same service delivery point. The electricity does not flow directly to any tenant meter, but feeds some common area loads and the remainder goes onto the grid. The electricity that is feed back to the grid is then proportioned to the tenant's bill.

15.30.040 Infeasibility exemption determination process.

The building official shall develop guidelines to consider infeasibility exemptions under Section 15.30.030.A. The guidelines must include a process that includes, but not is not limited to, a meeting with the building permit applicant during which the building permit applicant can present documentation and any other evidence to support the building permit applicant's claim of infeasibility; consultation with relevant industry experts, including the Sacramento Municipal Utility District; and a written decision granting or denying the infeasibility exemption including the reasons for the decision. The guidelines shall not be effective until approved by resolution of the City Council.

SECTION 3.

If any provision of this Ordinance or its application to any person or circumstance is held invalid or ineffective by any court of competent jurisdiction, or by reason of any preemptive legislation, that invalidity shall not affect the validity of the remaining provisions of this Ordinance. The City Council declares that it would have passed this Ordinance and each section, subsection, subdivision, sentence, clause, and phrase, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases, or words be declared invalid.

Adopted by the City of Sacramento City Council on _____ by the following vote:

Ayes:

Noes:

Abstain:

Absent:

MAYOR

Attest:

City Clerk

Passed for Publication:

Published:

Effective:

RESOLUTION NO.

Adopted by the Sacramento City Council

ESTABLISHING A FRAMEWORK FOR EXISTING BUILDING ELECTRIFICATION AND DIRECTING THE EVALUATION OF WATER CONSERVATION AND GREEN JOB OPPORTUNITIES

BACKGROUND

- A. On June 29, 2020, the Mayors' Commission on Climate Change Final Report recommended the electrification of new and existing buildings, each of which are critical for the reduction of greenhouse gas emissions.
- B. On August 25, 2020, City Council passed Motion No. 2020-0226 directing staff to develop an ordinance for new building electrification, and a plan for electrification of existing buildings with a focus on marginalized neighborhoods.
- C. On January 19, 2021, City Council adopted Resolution No. 2021-0022 establishing building electrification as a key strategy of the 2040 General Plan by:
 - a. Requiring all new buildings to be all electric and eliminate the use of natural gas and fossil fuels for building operations.
 - b. Gradually transition existing buildings away from natural gas to electric and assist low-income residents by offering financial incentives (Resolution No. 2021-0022).
- D. On February 2, 2021, City Council approved a \$4.4 million one-time allocation for 2021 Climate Implementation Work Plan projects in the Fiscal Year 2020/2021 Midyear Budget (Resolution No. 2021-0029), which supports additional work for water conservation and workforce tasks. These efforts are currently in process.
- E. On March 2, 2021, the Law and Legislation Committee provided further direction to begin engagement on existing building retrofits.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

- Section 1. Adoption of the Framework for the Electrification of Existing Buildings as set forth in Exhibit A to this Resolution is approved.
- Section 2. City staff shall report back on progress and any recommendations to City Council by the end of 2021 for green job opportunities and accelerating

the transition of potentially impacted labor segments into green and decarbonized sectors.

- Section 3. Concurrent with preparation for implementation of the New Building Electrification Ordinance, the Community Development Department and Department of Utilities shall evaluate opportunities for the expansion of water conservation standards for buildings and shall submit an update to the City Council prior to July 1, 2022, in advance of ordinance effective dates.

Timeline for Development of Infeasibility Guidelines

Infeasibility Guidelines for New Building Electrification Requirements (Applicable on January 1, 2023 for New Buildings 1-3 Stories)		Timing
1	Adoption of New Building Electrification Ordinance	June 2021
2	Finalize Technical Panel Participants	Summer 2021
3	Retain Technical Panel Consultants	Fall 2021
4	Convene Technical Panel	Fall 2021
5	Panel meets to discuss list of infeasible technology, potential infeasibility criteria and potential waiver process	Fall 2021/Winter 2022
6	Develop Draft Infeasibility Waiver Guidance Document for new buildings	Spring 2022
7	2022 California Building Standards Code published by State	July 1, 2022
8	City ordinance with any necessary state approvals concerning the 2022 California Building Standards Code including local amendments	July 1, 2022-December 31, 2022
9	Outreach re: Draft Infeasibility Waiver Guidance Document	Summer 2022
10	Finalize and Council Resolution Adopting Infeasibility Waiver Guidance Document	Fall 2022
11	2022 California Building Standards Code becomes effective	January 1, 2023
12	Technical Panel reconvenes to review Infeasibility Waiver Guidance Document	Fall 2023
Infeasibility Guidelines for New Building Electrification Requirements (Applicable on January 1, 2026 to all New Buildings)		Timing
1	Panel meets to revisit list of infeasible technology and update infeasibility criteria	Fall 2024
2	Develop updated Draft Infeasibility Waiver Guidance Document for new buildings	Spring 2025
3	2025 California Building Standards Code published by State	July 1, 2025
4	City Adopts ordinance with any necessary state approvals concerning the 2025 California Building Standards Code including local amendments	July 1, 2025- December 31, 2025
5	Outreach re: Updated Draft Infeasibility Waiver Guidance Document	Summer 2025
6	Finalize and Council Resolution Adopting Infeasibility Waiver Guidance Document	Fall 2025
7	2025 California Building Standards Code becomes effective	January 1, 2026
8	Technical Panel reconvenes to review Infeasibility Waiver Guidance Document	Fall 2026 and annually thereafter

Composition of Technical Panel for Development and Annual Review of Infeasibility Guidelines

Panelists
City Staff, Office of the City Manager (Climate)
City Staff, Building Division
City Staff, Planning Division
City Staff, Office of Innovation and Economic Development (Workforce)
SMUD Technical Staff
PG&E Technical Staff
Three Manufacturing Representatives – One Manufacturing Industry Representative, Two Manufacturing Operators
Three Business Representatives – Two Chamber or Property Business Improvement District Representatives, One Cultural/Ethnic Business Association Representative
Two Restaurant Representatives – One Industry Representative, One Restaurateur Representative
Two Equity/Environmental Justice Representatives
Electrification Consultant
Manufacturing Technology Expert (Consultant)
Restaurant & Cooking Equipment Technology Expert (Consultant)
Developer, Affordable Housing
Developer, Other
Labor Representative

Table of Contents:

Exhibit A – Framework for the Electrification of Existing Buildings in the City of Sacramento

Framework for the Electrification of Existing Buildings in the City of Sacramento

Vision

Sacramento's building stock will be zero-emission by first ensuring a collaborative and just decarbonization transition, to bring the benefits of clean, affordable, and resilient energy use to the most pollution- and cost-burdened households.

Objectives

1. Develop a pathway to equitably transition residents and businesses off gas infrastructure.
2. Prioritize and engage disadvantaged communities and small local businesses in the transition of the existing building stock to be fully electric, with a focus on historically marginalized low-income people of color.
3. Create a funding strategy for electrification that identifies anticipated investment need and funding tools and sources, and accounts for potential utility investments and state and federal funds.
4. Collaborate with utility providers to leverage resources and coordinate for electrification, while creating pathways to overcome regulatory barriers to collaboration.
5. Identify workforce strategies to create new sustainable jobs and empower new forms of employment in decarbonization, especially for affected trade groups and communities with high unemployment.
6. Ensure the health and resilience of Sacramentans by planning for an equitable transition to zero-emission appliances and the phased transition away from gas infrastructure.
7. Plan for transitioning the most energy-burdened households to affordable clean energy and minimizing their exposure to volatile gas rates that may increase by more than ten times by 2050.¹

Milestones

1. Project kickoff (Spring - Summer 2021)
 - a. Identify lead/supporting city staff resources (Spring 2021)
 - b. Release RFP and select technical and engagement project team (Spring 2021)
 - c. Council workshop to kickoff strategy (Summer 2021)
2. Equitably engage the community (Summer 2021 – Ongoing)
 - a. Create a community engagement strategy (Spring 2021)
 - b. Meetings with the Environmental Justice Collaborative Governance Committee (Quarterly)
3. Coordinate and create new resources/partnerships for building electrification
 - a. Regular meetings with City, SMUD and PG&E staff
 - b. Establish a Working Group consisting of community leaders, environmental justice representatives, labor unions, utility providers, equipment manufacturers, local business community, city staff, and elected officials.
4. Deploy initial learning pilots with utility partners (2021 – 2022)
 - a. Support collaboration for initial SMUD/PG&E pilot (Summer 2021 – Winter 2021)
 - b. Identify available utility resources and potential grant funds for scaling programs (2021 – 2022)
 - c. Establish a statewide model pilot program to transition a disadvantaged community off of gas infrastructure (Winter 2022)
5. Electrification Pathway
 - a. Release of draft electrification pathway strategy for stakeholder and public review (Summer 2022)
 - b. Electrification pathway adoption by City Council (Fall/Winter 2022)

¹ Gridworks (2019). *California's gas system in transition*. <https://gridworks.org/initiatives/cagas-system-transition/>

Community and Stakeholder Engagement

Updated May 2021

2040 General Plan Update/Climate Action and Adaptation Plan:

Staff have conducted an extensive community outreach program as part of the outreach for the 2040 General Plan and Climate Action and Adaptation Plan Update which included the concept of electrification. To date, outreach efforts have included:

- Three meetings with the General Plan Environmental Justice Working Group (EJWG) to review climate action key strategies and GHG reducing actions
- Four city-wide workshops (April/May of 2019)
- Ten community plan meetings (Summer of 2019)
- Three Environmental Justice listening sessions (2019)
- Interest Based Focus Group on climate change (February 2020)
- Virtual City-wide Workshops with 920 respondents to questionnaires (May-June 2020)
- A scientific survey with 504 respondents (August 2020)
- Virtual Self-Guided Community Plan Area Workshops (October 2020)
- Plus: Pop-up events, youth engagement at Luther Burbank High School, youth events at Dyer Kelly elementary school, youth engagement through Summer at City Hall, youth engagement with youth ambassadors from La Familia, Asian Resources, and Greentech, Lift every Voice event (2019 and 2020)

Feedback from public and virtual workshops showed that the community is generally supportive of efforts to reduce GHG emissions, so specific questions about building electrification were included in the citywide scientific survey for the 2040 General Plan Update.

Of the 504 respondents who participated in the scientific survey, 65% of respondents indicated support for electrification of new construction, with 37% of respondents indicating strong support. As a scientific survey with a rigorous methodology, these findings can be interpreted as representative for the entire community with a +/- 4.38% margin of error at a 95% confidence level.

In addition, the survey showed that 63% of the respondents supported phasing out natural gas-powered appliances in existing buildings over the next 20 years.

Mayors' Commission on Climate Change:

The Mayors' Commission on Climate Change (MCCC) met first in November 2018 and held its ninth and final meeting on June 29, 2020 when the final MCCC recommendations were unanimously approved. Throughout the duration of the Commission's efforts, input was gathered from the public, key stakeholders, and Technical Advisory Committee members in person and via online public comment. The City of Sacramento Mayor's Office collaborated with Climate Commissioners Meg

Community and Stakeholder Engagement

Updated May 2021

Arnold and the Sacramento Metro Chamber to host a series of business roundtables and conversations with small and businesses, individuals, large employers, supply chains and over 100 stakeholders tied to business. Industries and stakeholder groups involved included real estate and development, multi-family property owners and managers, building contractors, restaurants, manufacturing operators, major employers, green businesses, shared mobility service providers, labor unions, and workforce development organizations. The City of Sacramento Mayor's Office and Climate Commissioner and West Sacramento Councilman Chris Ledesma presented to and received feedback from the West Sacramento Chamber of Commerce as well.

The Built Environment Technical Advisory Committee solicited comments on the electrification strategies and tactics during each meeting as did the MCCC during its public meetings and online. The Mobility Technical Advisory Committee had further advised that the cities adopt CALGreen Tier 2 standards for EV capability. Although not included in the final report adopted by the MCC, the Electric Vehicle Charging Infrastructure Ordinance is consistent with this recommendation. The built environment recommendation reflects feedback from the development community on considerations for and potential projects in downtown Sacramento. This feedback resulted in the split timing strategy for electrification of new construction with low-rise by 2023 and the high-rise buildings by 2026.

Outreach also included feedback from the Equity Technical Advisory Committee and organizations that represent entities that will be affected by the retrofit of future buildings.

Sacramento Municipal Utility District:

The Sacramento Municipal Utility District (SMUD) kicked off its building electrification programs in June of 2018 with incentive programs for space and water heating, induction cooking, and programs for single family and multifamily developers. To date over 3,000 customers have taken advantage of these programs. As part of these programs SMUD has performed various outreach including:

- Over a dozen training events focused on architects, engineers, contractor, and developers.
- Induction training events held in over 6 libraries in the Sacramento area.
- Maintained induction cooking unit in the library's' lending program.
- Held a heat pump water heater technology forum at SMUD with over 100 attendees.
- Handed out flyers and magnets at home shows.
- Building contractors who work in SMUD programs promote electrification and its benefits.

Community and Stakeholder Engagement

Updated May 2021

- SMUD's website includes information about the benefits of going electric, information about residential electric vehicles, all-electric smart homes, and SMUD programs (including educational videos explaining the technology and the environmental benefits of the technology).

EV Strategy/Blueprint:

In December 2017, the City adopted its first EV Strategy following stakeholder and community engagement. The City conducted additional engagement in 2019 to solicit community feedback on EV adoption and development standards through the City's EV Blueprint planning effort. Outreach included the following:

- Over 15 community events throughout Sacramento including pop-up events and workshops to stakeholder presentations,
- An online survey available on the City website and at events, with 307 responses.
- A presentation to the Planning and Design Commission, with support for Title 17 amendments and an initial proposal of requiring EV-ready installations with an installed outlet.
- Stakeholder meetings with business and development representatives, affordable housing providers, and EV mobility technology companies.

SPECIFIC OUTREACH CONDUCTED TO DATE FOR THE ORDINANCE:

City staff have participated in a number of stakeholder meetings. Feedback and discussion from stakeholders engaged in the last five months follows. The ordinance reflects staff recommendations, accounting for the range of issues raised in the extensive engagement process. See Electrification Q&A for further information these issues.

American Institute of Architects, Central Valley Chapter

- Discussion focused on SMUD incentives, electric equipment, and utility readiness. Both PG&E and SMUD indicated support and ready to handle electrification of new construction as of today.

UA Local 447, Plumbers and Pipefitters

- UA Local 447 generally embraces climate actions with some caveats.
- Gas piping work averages about 22.5% of the UA Local 447 work. According to UA Local 447, this work would account for more than 300,000 person-hours per year. A concern is that this ordinance could potentially put 150 members (10%) out of work in a year, without a "just transition" to ensure members can shift workload into other types of carbon-free work while maintaining and increasing wages.

Community and Stakeholder Engagement

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- Suggestions to identify additional opportunities for greywater and rainwater catchment systems to provide work for plumbers and pipefitter to offset losses. These are ongoing items of discussion with the UA Local 447 for collaboration and partnership to operationalize a just transition with labor and workforce groups.

Downtown Urban Infill/Business Coalition/Building Industry Association

- Issues noted are as follows:
 - Options and availability are sometimes limited for certain uses. As an example, tanks in breweries typically require gas.
 - Concerns about feasibility and costs for developers.
 - Availability of equipment may be limited for some applications such as industrial uses and larger facilities.
 - Chefs and the cooking industry prefer cooking over a flame as allowed by gas cooking appliances. Many chefs also like to cook with cast iron, which can damage induction cooktops.
- Concerns: Implications about potentially adopting earlier than 2023:
 - Post-COVID market recovery not expected until the end of 2022.
 - Lead time is needed for developers to plan their projects. Do not want to drive businesses outside of the City.
 - Sacramento has a skilled labor gap and shifting to all electric could exacerbate challenges.

Pacific Gas & Electric

- PG&E conveyed support of the City's electrification efforts and has assisted by providing the support of PG&E on-call contractors to present and participate in City-led webinars.

Sacramento Metropolitan Air Quality Management District

- SMAQMD supports the efforts due to significant air quality benefits.
- The New Building Electrification Ordinance aligns with the District's recently amended Greenhouse Gas Thresholds Best Management practices, which establish that new projects subject to the thresholds should not include gas or should mitigate emissions with prewiring for 100% electric.

350 Sacramento

- Key recommendations include:
 - An earlier effective date, similar to the recently enacted ordinances already in effect elsewhere in the state. If the effective dates remain unchanged, an electric-ready requirement should go into effect now. Electric-ready would reduce the costs for major retrofits.

Community and Stakeholder Engagement

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- Major retrofits should be addressed as the next strategy.

City of Sacramento Housing Policy Working Group

- Housing Policy Working Group members noted the following:
 - Recommended meeting with affordable housing developers to understand their unique challenges.
 - Strong interest was expressed in working with SMUD to advance net energy metering and virtual net energy metering as a critical priority. *See Electrification Ordinance Q&A for more details about the role of Net Energy Metering and Virtual Net Energy Metering in electrifying multi-unit affordable housing.*
 - The challenge of electric central water heating for high-rise development was noted.
- In separate stakeholder meetings, affordable housing developers shared further information regarding electric hot water heaters, considerations for electric readiness, and cost considerations.
- In follow-up conversations, Working Group members also indicated:
 - A distinguishing feature of net energy metering is that affordable housing developers can use it as an upfront tool to make a project more competitive for financing. By contrast, SMUD rebates for all-electric housing are available after construction is complete.
 - Certain electric appliances, such as induction cooktops are more expensive than conventional gas appliances. Without the ability to take advantage of SMUD rebates, an upfront financing tool, or net energy metering, these costs cannot be easily accommodated by affordable housing projects while remaining competitive for available financing programs and tax credits.

SacEV Association

- Participants emphasized the importance of standards to increase EV charging options in multi-family development, and recommendations to increase the requirement for EV capability and EV infrastructure to more ambitious levels.

SacPEV Collaborative

- Feedback included the following:
 - Standards for new construction are critical to ensure the provision of EV charging in multi-family development and advance equitable access to zero-emission vehicle technologies.
 - The next state building code is anticipated to increase EV capability requirements for voluntary CALGreen tiers, consistent with the City's

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proposal and aligns with anticipated future voluntary EV charging tiers in CALGreen.

Restaurant Stakeholders

- City staff convened and participated in multiple meetings to discuss restaurant perspectives with local restaurateurs, the California Restaurant Association, PBIDs, and ethnic and business chambers.
- Several stakeholders emphasized their desire for a permanent restaurant exemption in the ordinance, and further delay in ordinance implementation. Many restaurant stakeholders indicated concern with shifting cooking methods to electric technologies, while others indicated a desire for partnership and collaboration to demonstrate electric cooking technologies.
- Local Asian restaurateurs shared information on challenges for electrifying traditional Asian cooking methods, and feedback on the absence of market readiness for some high-intensity cooking applications.

Manufacturing Stakeholders

- In several discussions with local manufacturing representatives, the Sacramento Valley Manufacturing Initiative, the Power Inn Alliance, and chambers of commerce, stakeholders shared information regarding manufacturing processes, challenges, and concerns with electrification and ordinance timelines. Issues raised included evaluating necessary electrical service sizes, grid reliability, impact on restaurants, relative cost of gas vs. electricity, technical feasibility, the infeasibility waiver process, and SMUD incentives.
- Staff also received feedback on timelines for the phased infrastructure investment and build-out of manufacturing parcels. Stakeholders also provided examples of local manufacturing process loads.

Sacramento Association of Realtors, Government Relations Committee

- Stakeholders discussed the ordinance and considerations for next steps to plan for the electrification of existing buildings.

Environmental Justice Collaborative Governance Committee

- Staff met with the EJCGC to listen to questions and feedback, and confirmed a schedule for ongoing engagement on existing building electrification efforts.

Community and Stakeholder Engagement

Updated May 2021

Topic-Focused Webinar/Outreach Event Series

City staff hosted eight topical webinars on electrification topics. These webinars were broadly promoted through the electrification ordinance email distribution lists, stakeholder outreach, and the City website at Cityofsacramento.org/SacElectrificationOrdinance.

Electrification 101:

- Pre-recorded webinar providing essential background information about what the City is proposing, and the rationale and context for building electrification. Speakers included City staff, SMUD staff, and staff from the Building Decarbonization Coalition.

Green Businesses: CleanStart Perspectives November 12, 2020 (Hosted by CleanStart)

~10 participants

- Presentation: “Sacramento Electrification Update” an event hosted by CleanStart, with interest and clarifying questions from participants.

Electrifying Commercial Development – December 10, 2020

~50 participants

Presentations by Scott Shell, EHDD; Ted Tiffany, Guttman & Blaevoet; and Steve Oliver, SMUD

- Guest speakers provided case studies of the electrification of commercial buildings. They asserted that electrification of commercial projects is generally feasible at all scales, and equipment is available. Examples included case studies of mid- and high-rise all-electric projects (e.g., the new 21-story headquarters for the California Natural Resources Agency in Downtown Sacramento, currently under construction).
- Regarding transformer and infrastructure issues: equipment technology is still evolving that will impact power load, but it is incumbent on designers and engineers to plan ahead, and ask lots of questions on design assumptions, which can solve many of the challenges.
- Some special uses may not be able to fully forego gas infrastructure with current technologies, such as research labs that require lots of emergency power, and breweries, which may still require alternatives like biogas.

All-Electric Residential Appliances – December 14, 2020

~40 participants

Presentations by Nicholas Dunfee, TRC Companies; and Steve Oliver, SMUD

- Presentations about the recommended all-electric technologies for residential development, and SMUD incentives.

Community and Stakeholder Engagement

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Electrification of Special Uses: Labs & Manufacturing – December 17, 2020

Presentation by Stet Sanborn, Smith Group; and Steve Oliver, SMUD

- Presenters provided numerous examples of all-electric labs, healthcare centers, and manufacturing uses. The discussion acknowledged that some uses can be more challenging to fully electrify due to high load, the need for power backup options, and intensive energy demands in 24-7 operations.

Electrifying Multi-unit and Affordable Housing – January 7, 2021

(~130 participants)

Presentations by Sean Armstrong, Redwood Energy; and Vanessa Guerra Martinez, Mutual Housing

- Presenters provided numerous examples of all-electric and zero-net energy affordable housing. However, all examples are outside of the SMUD territory and use net energy metering to incorporate solar photovoltaics and thereby enjoy increased competitiveness for financing and tax credits.
- The absence of a virtual net energy metering program with SMUD poses a challenge to the standard ways that housing developers package competitive affordable housing projects for funding. Local developers anticipate that this barrier will be exacerbated as new affordable housing projects electrify and need additional methods or support in lieu of virtual net energy metering.
- *See Attachment 3-Frequently Asked Questions for more details about the role of Net Energy Metering and Virtual Net Energy Metering in electrifying multi-unit affordable housing.*

Electrification & Workforce – January 15, 2021

(~24 participants)

Presentations by Larry Rillera, California Energy Commission; and Luis Sanchez, Community Resource Project Inc.

- Presentations highlighted programs, initiatives, and opportunities related to electrification, EV charger installations, retrofits, and workforce. A number of partnerships and pathways exist, yet panelists acknowledged the need for partnership to facilitate the transition of low-income communities and trades into clean-energy workforce opportunities.

Electrification of Commercial Kitchens – January 25, 2021

(~39 participants)

Presentations by Richard Young, Food Service Technology Center; and Courtney Payne, SMUD

Community and Stakeholder Engagement

Updated May 2021

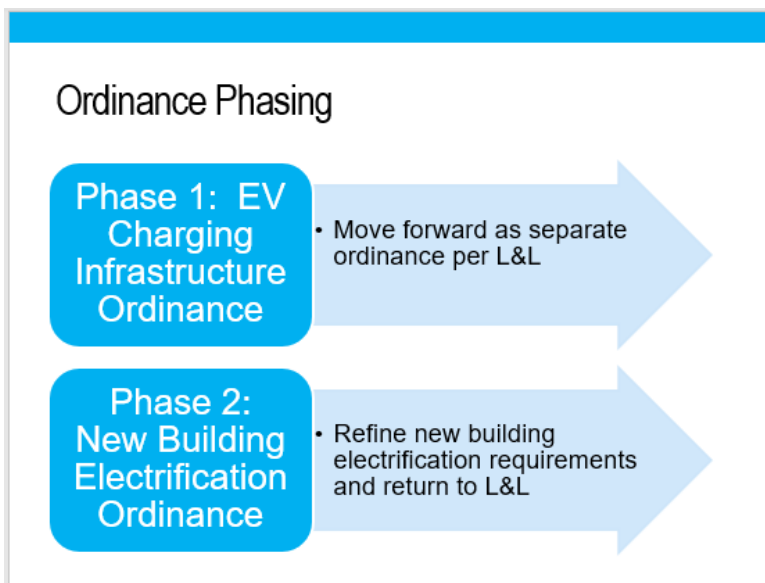
- Presenters highlighted examples of commercial electric cooking equipment and SMUD rebates. Participant feedback on the webinar highlighted the concerns across the restaurant industry with going all electric on thin profit margins, especially in times of economic recession. Gas appliances are low-tech across the industry. Although electric kitchens may provide ongoing cost savings, they require upfront investment.



The following Q&A is intended to provide key information about the **New Building Electrification Ordinance** including what it is, why the City is pursuing building electrification, what it will do, and when it will be effective.

City Council directed City staff to begin the process of adopting a new building electrification ordinance on August 25, 2020. Since that time, staff have conducted study sessions with the Law and Legislation Committee and Planning and Design Commission and held numerous virtual stakeholder meetings including eight educational/public outreach webinars on various aspects of new building electrification. Many of the following questions are based on questions posed in stakeholder meetings and webinars by community members.

On March 2, 2021, the Law and Legislation Committee directed staff to split the draft New Building Electrification Ordinance by moving EV charging standards and incentives forward to City Council hearing as a separate ordinance, while directing staff to refine new building electrification requirements and return to the Law and Legislation Committee for review.



On April 20, 2021, City Council passed an ordinance pertaining to EV charging infrastructure standards, parking incentives, and zero emission carsharing incentives. The ordinance includes incentives for carsharing as recommended by the Planning and Design Commission.

1. What is building electrification?

- Building electrification is the substitution of gas appliances (furnaces, water heaters, cooking ranges and stoves, dryers, etc.) with clean, safe, and highly efficient all-electric alternatives.

2. What are the benefits of building electrification?

- **Smaller carbon footprint:** As electricity from the grid gets cleaner, all-electric buildings will eventually stop producing greenhouse gas emissions. The electricity provided today by the Sacramento Municipal Utilities District (SMUD) is already approximately 72% carbon free and SMUD has a goal to provide 100% carbon-neutral electricity by 2030.¹ All-electric buildings that purchase 100% renewable electricity are already zero-emission. Electric buildings are a key strategy to attain the City's goal of carbon neutrality by 2045.
- **Better indoor air quality:** All-electric buildings improve indoor air quality and promote better public health by eliminating natural gas combustion inside homes. Burning gas in household appliances produces harmful indoor air pollution, which has been tied to increased risk of respiratory disease and greater impacts on those with existing conditions.² Studies have also shown that gas stoves may increase children's risk of asthma by 42%.³
- **Better outdoor air quality:** The gas and propane burned in buildings causes six times higher nitrogen oxides (NO_x) emissions than all in-state power plants combined.⁴ Reducing combustion of gas and propane in buildings leads to the reduction of nitrogen oxides, a main contributor to ozone. Ground-level ozone aggravates respiratory health; reducing ozone is a key step to improve the poor air quality that disproportionately impacts many low-income neighborhoods in Sacramento. Sacramento is currently a non-attainment area for federal 8-hour ozone standards.⁵ Additionally, in 2021 the American Lung Association ranked the Sacramento metropolitan region as the sixth most polluted in the nation for ozone, with an F rating.⁶
- **Fire Safety:** All-electric buildings are safer since buildings with gas appliances have higher risk of explosions. A gas explosion can occur when there is a gas leak in the presence of a spark or flame. Leaks from gas pipelines are common, with more than 2.3% or more of gas leaking while in transport between extraction to the gas meters at the point of the end user.⁷ Examples of significant gas leaks include those in Aliso Canyon (2015 – 2016), and explosions like those in San

¹ SMUD's carbon-free energy resources include large hydroelectric. Currently, SMUD's power is approximately 30% eligible renewable for purposes of California reporting, which excludes large hydroelectric. On April 28, 2021, SMUD's Board of Directors is scheduled to consider the 2030 Clean Energy Vision which would establish the commitment to zero carbon for SMUD's energy resources by 2030: <https://www.smud.org/en/Corporate/Environmental-Leadership/2030-Clean-Energy-Vision>.

² Logue, J., et al. (2014, January 1). Pollutant exposures from natural gas cooking burners: A simulation-based assessment for Southern California. *Environmental Health Perspectives*.

³ Gas Stoves Can Emit Elevated Indoor Nitrogen Dioxide (NO₂) Levels Often Exceeding Indoor Guidelines and Outdoor Standards. *Source: Health Effects from Gas Stove Pollution, Rocky Mountain Institute, 2020, <https://rmi.org/insight/gasstoves-pollution-health>.*

⁴ California Air Resources Board: <https://www.arb.ca.gov/ei/emissiondata.htm>

⁵ Sacramento Metropolitan Air Quality Management District (2021). Air quality pollution and standards. <http://www.airquality.org/air-quality-health/air-quality-pollutants-and-standards>

⁶ American Lung Association (2021). *State of the Air 2021*. <https://www.lung.org/research/sota>

⁷ Alvarez, R., et al. (2018, July 13). Assessment of methane emissions from the U.S. oil and gas supply chain. *Science*, Vol. 361, pp. 186-188. Environmental Defense Fund (2018, June). Synthesis of U.S. methane measurements. <https://www.edf.org/climate/methane-studies>

Bruno, CA, in 2010, Merrimack Valley, MA, in 2018, and San Francisco in 2019. A ruptured gas pipeline in San Bruno was responsible for the 2010 explosion and resultant fire that killed 8 people and destroyed more than 38 homes. This disaster led to \$1.6 billion in damages to PG&E.⁸ Although an extreme example, San Bruno depicts the embedded risk with the extensive natural gas infrastructure that supplies gas to homes and buildings.

- **Cost Savings:** All-electric new buildings do not require the installation of gas infrastructure, reducing capital costs. New, and existing all-electric buildings can benefit from reduced operating costs⁹. Studies have shown that cost savings for all electric construction can range, with potential savings upwards of tens of thousands of dollars, depending on the type of construction (See questions 15-16 below).
- **Equity:** All-electric new construction can reduce construction costs and make housing more affordable. For low-income households that spend a disproportionate amount of their income on utilities and are more likely to live in substandard housing or neighborhoods with worse air quality that further increases risk of asthma, zero emission homes are an important opportunity to deliver social equity benefits.

3. Why is the City developing a new building electrification ordinance?

- This ordinance is a key strategy to achieve carbon neutrality by 2045 and implements direction of the City Council and the recommendation of the Mayors' Commission on Climate Change. In June 2019, the [Mayors' Commission on Climate Change](#) unanimously approved a final report, with the electrification of new buildings as a key strategy. Representatives on the Commission consisted of a range of stakeholders including business and environmental leaders, real estate and development professionals, governmental agencies, and nonprofits. Specifically, this broad range of Commissioners advised that the City mandate all-electric construction to eliminate fossil-fuel use in new buildings under 4 stories by 2023 and all new buildings by 2026, with caveats for cost-effectiveness and technical feasibility.¹⁰ Following this recommendation, City

⁸ CPUC (2021). *Information on natural gas pipeline safety*. <https://www.cpuc.ca.gov/sanbruno/>

Ariaratnam, S. (2014). Overview of the explosion of a 30-in. steel natural gas pipeline in San Bruno, California. *Pipelines*. <https://doi.org/10.1061/9780784413692.006>

⁹ Cost effectiveness studies:

- Reach Code, New Construction, Low Rise Residential: https://www.smud.org/-/media/Documents/Corporate/About-Us/Energy-Research-and-Development/2019-Low-Rise-Reach-Code-Analysis_SMUD_Final.ashx
- Reach Code, New Construction, Mid Rise Residential: <https://www.smud.org/-/media/Documents/Corporate/About-Us/Energy-Research-and-Development/2019-Mid-rise-NC-Cost-Eff-Report-1.ashx>
- Reach Code, New Construction, Low Rise Commercial: <https://www.smud.org/-/media/Documents/Corporate/About-Us/Energy-Research-and-Development/2019-NR-NC-Cost-Effectiveness-Study-2019-07-25.ashx>
- Low rise, single family and multifamily new and existing building electrification analysis: <https://www.smud.org/-/media/Documents/Corporate/About-Us/Energy-Research-and-Development/E3-Residential-Building-Electrification-in-California-April-2019.ashx>
- 2020 Reach Code Cost-Effectiveness Analysis: Detached Accessory Dwelling Units: https://www.smud.org/-/media/Documents/Corporate/About-Us/Energy-Research-and-Development/2019-Low-Rise-Reach-Code-Analysis_SMUD_Final.ashx
- 2019 Cost-Effectiveness Study: 2020 Analysis of High-Rise Residential New Construction: <https://frontierenergy.com/wp-content/uploads/2019-Cost-Effectiveness-Study-2020-Analysis-of-High-Rise-Residential-New-Construction-report.pdf>
- 2019 Cost-Effectiveness Study: 2020 Reach Code Cost-Effectiveness Analysis: Detached Accessory Dwelling Units https://localenergycodes.com/download/760/file_path/fieldList/2019%20New%20Detached%20ADUs%20Cost-effectiveness%20Report.pdf
- Website on the reach code analysis: <https://explorer.localenergycodes.com/studies/city-sacramento/>

¹⁰ Mayors' Commission on Climate Change final report and background information available online: <https://www.lgc.org/climatecommission/>.

Council passed Motion No. 2020-0226 on August 25, 2020,¹¹ directing the City Manager to take a number of actions including drafting an ordinance to require electrification of new construction. Responding to this direction, staff prepared this ordinance and incorporated the provisions advised by the Commission, with the recommended timelines and accommodation of situations of technical infeasibility.

4. What type of construction will be subject to the ordinance?

- a. The ordinance applies only to new construction and will not apply to tenant improvements, remodels or permits for existing buildings.

5. Will the proposed ordinance apply to additions and remodels, or tenant improvements?

- a. No, this ordinance will not apply to additions and remodels, or tenant improvements, only new construction.

6. Will the City take my gas stove away?

- No. This ordinance will apply only to newly constructed buildings and will not affect buildings that already have gas. However, the City is beginning a technical analysis and engagement process to develop a strategy for decarbonizing existing buildings by 2045. Staff will seek input and evaluate how to phase future efforts to electrify existing construction. City staff will work closely with local stakeholders to develop and recommend a process. Staff anticipate a multi-year effort in close coordination with SMUD and with extensive input from the community and stakeholders.

7. What other jurisdictions have enacted an electrification ordinance?

- a. A growing number of cities in California (44 so far) already have approved all-electric new construction ordinances. The City of Berkeley was the first to enact all-electric requirements and a ban on natural gas infrastructure in 2019, which went into effect in 2020. Other cities recently adopting these requirements include the City of San Jose and the City & County of San Francisco. In California:
 - i. 6 jurisdictions have placed a moratorium on natural gas infrastructure and over 20 jurisdictions in California have adopted all-electric reach codes¹².
 - ii. An additional 8 cities have adopted less stringent ordinances, which establish electric-preferred or electric-ready standards, while stopping short of prohibiting the inclusion of gas or propane infrastructure.
 - iii. Depending on timing, Sacramento could be the first of the top ten big cities in California outside of the Bay Area to adopt an electrification ordinance; Sacramento could also be the first large inland community in California to do so.¹³

¹¹ Recorded presentation and Council materials available online: https://sacramento.granicus.com/MediaPlayer.php?view_id=22&clip_id=4693&meta_id=596110.

¹² A **reach code** is a local building energy code that “reaches” beyond the state minimum requirements for energy use in building design and construction.

¹³ A number of other smaller communities have also adopted requirements for all-electric construction. The City of Davis currently requires new residential development to be electric-ready (refer to Chapter 8 of the Davis Municipal Code: <https://qcode.us/codes/davis/>).

8. What is included in the ordinance?

- The EV Charging Infrastructure Ordinance approved by City Council on April 20, 2021 includes:
 - Local amendments to the California Building Standards Code that will amend Title 15 of the Sacramento City Code to require new nonresidential, multifamily dwellings, and hotels and motels to provide 20% EV capable charging spaces and at least one installed, operational Level 2 EV charger, effective January 1, 2023 for new construction of three stories or less, and effective January 1, 2026 for new construction of four stories or more.
 - Amendments to Title 17 of the Sacramento City Code effective May 20, 2021 to:
 - Incentivize EV charging stations by allowing the substitution of one EV parking space with a Level 2 charger or a direct current fast charger to be substituted for two parking spaces.
 - Incentivize zero emission carsharing by allowing the substitution of one zero emission carsharing space for four required on-site vehicle parking spaces up to a maximum of 20% of the required on-site vehicle parking spaces.
- The revised Ordinance pertaining to new building electrification includes:
 - i. Local amendments to the California Building Standards Code that will amend Title 15 of the Sacramento City Code to require:
 1. Building permit applications filed on or after January 1, 2023, for all newly constructed buildings that are three stories or less to be all-electric buildings.
 2. Building permit applications filed on or after January 1, 2026, for all newly constructed buildings that are four stories or more to be all-electric buildings.
 3. A limited exemption for food establishments for cooking equipment only.
 4. A limited exemption for manufacturing process loads within a manufacturing or industrial facility.
 5. A limited exemption (for water heaters only) in regulated affordable housing when virtual net energy metering (VNEM) is not available.
 6. Provisions for an infeasibility exemption process for those portions of the project where all electric is infeasible. The process would allow an applicant to request an infeasibility exemption when they can demonstrate to the satisfaction of the City building official that it is technically infeasible to meet the requirements of this ordinance.

9. What are the effective dates of the ordinances?

- a. Effective Dates:
 - i. One-Three Stories and 20% EV capable spaces/EV charging: January 1, 2023.
 - ii. Four-stories or more and 20% EV capable spaces/EV charging: January 1, 2026
 - iii. EV parking and ZEV carsharing incentives: 30 days from adoption

- b. The proposed electrification requirements would not apply to building permit applications submitted and accepted by the City's Building Division with payment of all required fees prior to the effective date of January 1, 2023 or January 1, 2026, respectively.
- o These effective dates align with the anticipated effective date of the 2022 California Building Standards Code and the anticipated effective date of the 2025 California Building Standards Code. The state's building code is on a three-year cycle and serves as the basis for any legally enforceable local code. Accordingly, the City's electrification ordinance is not enforceable until California releases the future state building codes, and the City re-adopts the ordinance as amendments to the new statewide building code.
- c. During the transition period between the ordinance adoption date and effective date of the Ordinance, the City's Planning and Building Divisions will conduct targeted outreach and educate potential development project applicants about the benefits of all-electric construction and engage stakeholders in the development of the process and criteria for the infeasibility waiver.

10. What about requiring all projects to be "electric-ready" before the all-electric requirements go into effect? How is it different from requiring all-electric?

- An electric-ready building includes both electric and natural gas infrastructure, but the building's electrical systems and designs provide capacity, space, electrical conductors or raceways, and related devices for a future retrofit of building appliances and equipment to be all-electric. In contrast, an all-electric project would not include any natural gas or propane infrastructure.
- The costs to make new development electric ready may be minimal when compared to the cost of retrofitting mixed-fuel buildings. For example, electric-ready adds \$300-\$400¹⁴ to the cost of constructing a single-family dwelling, while the cost to retrofit a mixed-fuel single-family dwelling to upgrade to all-electric may be 3 - 4 times more than that after construction.
- Cost-benefits could greatly vary for multi-family and nonresidential development. There may also be a diminishing cost-benefit for upfront inclusion of electric-ready improvements, when compared to future costs for retrofits.
- Due to the range of potential costs, more analysis and outreach would be needed prior to including an electric-ready provision in the ordinance. In order to meet the expedited ordinance timeline, staff have not included this provision in the ordinance.

¹⁴ Reach Codes:

Energy & Environmental Economics. 2019. Residential Building Electrification in California. April 2019. https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

California Energy Codes & Standards. (August 1, 2019). 2019 Cost-effectiveness Study: Low-Rise Residential New Construction. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. https://localenergycodes.com/download/73/file_path/fieldList/2019%20Res%20NC%20Cost-eff%20Report

TRC. 2016. Palo Alto Electrification Final Report. November 2016. <https://www.cityofpaloalto.org/civicax/filebank/documents/55069>

[Additional cost-effectiveness studies available online: https://localenergycodes.com/content/resources.](https://localenergycodes.com/content/resources)

11. What criteria will be used to determine if all-electric is not feasible for a proposed new building?

- a. Following the adoption of the ordinance, staff will work with a technical panel to develop a process and criteria for determining if all-electric construction is not feasible. In response to stakeholder comments and direction from the Law and Legislation Committee on May 4, 2021, the Technical Panel will include a range of representatives including manufacturing, business, development, restaurant, equity/Environmental Justice, and labor. The recommended ordinance stipulates that infeasibility guidelines will be adopted by a City Council resolution. The infeasibility guidelines will serve as a resource to provide a clear, transparent process for applicants, identify technologies that may not be market ready, or project-specific conditions that may make all-electric construction infeasible. As proposed in the draft ordinance, the burden will be on the applicant to show infeasibility. City staff anticipate convening the technical panel in Fall, 2021. Following the adoption of infeasibility guidelines, city staff will continue to evaluate the infeasibility waiver process in collaboration with local stakeholders and refine the process for inclusion with amendments to the 2022 California Building Standards Code.

12. What types of new development are hard to electrify, and how does the ordinance respond to these challenges?

- a. Despite the rapid schedule as directed by the Mayor and City Council, City staff have vetted issues through webinar events and discussions with local stakeholders, developers, chefs, affordable housing advocates, labor representatives, engineers, architects, and more. The ordinance includes provisions for an infeasibility waiver, recognizing some of the limited, current technical challenges of all-electric in certain applications. Electrification may pose challenges for a few uses and development types. Based on this information, on March 2, 2021, the Law and Legislation Committee directed staff to revise the ordinance to provide limited exemptions. On May 4, 2021, staff are presenting recommended limited exemptions that respond to these issues:
 - i. Gas equipment has broader industry acceptance and understanding by the restaurant community. Some members of the restaurant community have indicated that the ordinance would pose a hardship and have asserted the importance of maintaining flexibility for natural gas equipment in commercial cooking, even though the ordinance would only apply to construction of new buildings.
 - ii. In certain cooking applications such as big pizza and bakery ovens, the ongoing operating costs for electric cooking equipment may be higher than the cost of operating gas equipment.¹⁵ Certain traditional cooking practices rely on the use of flame, such as traditional Asian cooking methods with woks.
 - iii. Manufacturing and special use sectors may also have certain types of equipment that cannot be feasibly electrified while maintaining critical services. For example, some uses may require equipment such as a co-generation plants and emergency generators. The

¹⁵ Richard Young (December 21, 2020). Frontier Energy, the Food Service Technology Center. Personal communication. ryoung@frontierenergy.com, <https://fishnick.com/>.

¹⁶ Link to Studies: <https://www.smud.org/en/Corporate/About-us/Research-and-Development#af4d3e2a-33c7-4612-90ab-3cb869e6da1e-326a400b-d34c-43e8-b0bf-36c07bc1486e>

ordinance infeasibility waiver will provide flexibility where all-electric is technically infeasible for new construction.

- iv. Affordable housing developers have indicated that additional costs for electric heat pump water heaters can increase construction costs and challenge the ability of project developers to secure competitive financing.
- b. The revised Ordinance includes limited categorical exemptions available to permits filed through 12/31/25 that would allow the use of mixed-fuel technologies for these use cases. The ordinance also includes a refined infeasibility exemption process which does not have a sunset clause. The infeasibility exemption could also accommodate the unique needs of these building types and operators, consistent with the approach of other jurisdictions in California that have already enacted electrification ordinances, such as Oakland, San Francisco, and San Jose. Over the next year, City staff will continue to collaborate with stakeholders to develop the infeasibility exemption guidance for City Council adoption via resolution.

13. How is manufacturing/industrial defined by the building code?

- a. Section 306 of the California Building Code describes Occupancy Group F, factory/industrial uses as: "...the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous or Group S storage occupancy." It goes on to list a number of different typical uses, but these are just examples. The language above is what we would use to determine if a given use was in fact Group F.

14. Why adopt these ordinances now when state building codes are updated every three years?

- a. Decarbonization through electrification is one of the City's key strategies for achieving carbon neutrality. The ordinance will reduce greenhouse gas emissions (GHG) and provide many co-benefits including improved indoor and outdoor air quality and improved public health.

It is not certain if or when state building codes will require all-electric construction. Passing the proposed ordinance in 2021 will signal intent to the development community and provide time for designers and builders to adequately plan for the new mandate.

- b. Building code amendments are more effective and cost efficient than other GHG reduction measures available to the City. In addition, most electric appliances have similar or lower operating costs compared to natural gas appliances.
- c. Avoiding the cost of gas infrastructure provides significant savings. Studies¹⁶ have shown that all-electric low-rise buildings are already cost effective for new construction and adding EV capability requirements is also cost effective for all building types except medium office. When SMUD incentives are factored in, even medium office is cost effective, and other building types come out significantly ahead.

The electrification ordinance is expected to reduce the cost to build new low-rise housing. Delaying will cost more in the long run by creating stranded assets (obsolete gas infrastructure and

¹⁶ Link to Studies: <https://www.smud.org/en/Corporate/About-us/Research-and-Development#af4d3e2a-33c7-4612-90ab-3cb869e6da1e-326a400b-d34c-43e8-b0bf-36c07bc1486e>

appliances) that will cost significantly more to retrofit in the future when gas infrastructure is removed to meet state and utility standards for carbon emission reduction.

15. How can all-electric new construction benefit low-income and affordable housing residents?

- a. Cost effectiveness studies have shown that all-electric low-rise construction is typically cost effective.¹⁷ The studies showed that the elimination natural gas infrastructure can provide significant cost savings, with ongoing savings to residents. One study estimated that over a 30-year period, residents in new electric construction would pay less in energy bills by approximately \$5,349 in single family housing and \$2,337 in low-rise multi-family.¹⁸ The upfront costs associated with installing new gas distribution and service lines are paid off over time by the residents of the newly constructed buildings through monthly utility bills. This leads to higher energy rates for residents over the long term.
- b. A major portion of natural gas rates are to pay for infrastructure maintenance. The projected decrease in natural gas usage due to improved efficiency and electrification is projected to significantly increase the cost of natural gas over time¹⁹. Avoiding new natural gas infrastructure will decrease the number of stranded assets and help protect the community as a whole from energy rate increases.

16. How will the ordinance impact the production of affordable multi-family housing?

- a. To ensure the ordinance does not limit the construction of affordable multi-family housing, the revised ordinance provides a limited exemption for water heating systems and related equipment in regulated affordable housing where virtual net energy metering is unavailable (VNEM).

This exemption is based on the feedback from affordable housing developers who report that electric heat pump water-heating systems and related equipment can raise the cost of constructing affordable multi-family housing. This is partly supported by recent cost-effectiveness studies for high-rise new construction which show the costs depend on project design. Cost-effectiveness studies show that central electric heat pump water heaters can increase costs in high-rise housing above eight stories by approximately \$557 per multi-family unit, while clustered heat-pump water heaters can save \$228 per unit.²⁰ Costs are anticipated to decrease over time as technologies and market demand advance, but upfront costs would currently challenge affordable housing developers to secure limited and highly competitive funding and project financing. The proposed limited exemption is intended to mitigate this potential added cost.

¹⁷ Refer to footnote 3 for links to low-rise cost-effectiveness studies.

¹⁸ Low-rise multi-family defined as 8 units. California Energy Codes & Standards. (August 1, 2019). 2019 Cost-effectiveness Study: Low-Rise Residential New Construction. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. https://localenergycodes.com/download/73/file_path/fieldList/2019%20Res%20NC%20Cost-eff%20Report.

¹⁹ Increasing costs of natural gas: https://gridworks.org/wp-content/uploads/2019/09/GW_Calif-Gas-System-report-1.pdf

²⁰ 2019 Cost-Effectiveness Study: 2020 Analysis of High-Rise Residential New Construction: <https://frontierenergy.com/wp-content/uploads/2019-Cost-Effectiveness-Study-2020-Analysis-of-High-Rise-Residential-New-Construction-report.pdf>

Some water heating in high-rise housing may still be cost-effective when clustered, and accounting for SMUD rebates. Also, despite the exemption, studies have shown that central water heating in buildings up to eight stories are cost effective.

- b. In other regions, affordable housing developers can use Virtual Net Energy Metering (VNEM) as a tool to make solar photovoltaics feasible for multi-family housing. In an increasingly competitive financial environment, VNEM is a tool that affordable housing developers have relied on to compete for and secure limited financing from public housing agencies, the state, and federal tax credits.
- c. SMUD has committed to create a new VNEM option for deed-restricted affordable housing development through a rate-making process that kicked off on May 18, 2021²¹ at the SMUD Finance and Audit Committee, with anticipated SMUD Board action to approve and establish the new rate in Fall 2021. Once established, VNEM will provide an additional benefit to low-income customers by reducing monthly utility allowances.

17. What other incentives for affordable housing development is the City considering?

- City staff and SMUD are committed to reducing the barriers for affordable housing developers to build all-electric. The City has eliminated city development impact fees for qualifying affordable dwelling units and provides a fee deferral program for other development impact fees that it collects for other agencies. The City is working to further remove barriers to the production of housing with policy and code changes, permit streamlining, and other initiatives. City staff will continue to work through these issues and identify appropriate solutions with key stakeholders to facilitate the construction of affordable housing. SMUD may also consider updates to its rules and programs as described above.

18. Cost-effectiveness studies have shown that all-electric low-rise construction is cost effective, but is the combination of all-electric + EV capable cost-effective for new low-rise construction?

- a. For most building types (except medium office), the savings from building all-electric offsets the small added cost of additional EV infrastructure, providing overall cost savings in comparison to mixed-fuel construction. Even medium office was found to be cost-effective when SMUD incentives were considered, which resulted in a savings of \$88.²²
- b. Adding EV capacity requirements in new construction is cost effective when compared to the cost of retrofitting to add EV capacity later.
 - i. Installing EV capable spaces during construction adds approximately \$800 per space. Recent studies have indicated that retrofitting that same space can cost approximately

²¹ For more, refer to the May 18, 2021 Finance and Audit Committee presentation: <https://www.smud.org/-/media/Documents/Corporate/About-Us/Board-Meetings-and-Agendas/2021/May/2021-05-18-Finance-and-Audit-Exhibit-to-Agenda-Item-1---Jennifer-Davidson-and-Eric-Poff.ashx>

²² Cost estimates for this question were determined using cost-effectiveness studies referenced in footnote #6. Staff calculated the number of EV capable parking spaces for project prototypes assuming average rates of parking provision based on Title 17 requirements and typical projects. Electrical system assumptions were vetted with SMUD. The incremental costs of EV capability and installed Level 2 chargers were calculated for each prototype based on the California Air Resources Board CALGreen Technical Cost and Analysis (2019) (California Green Building Standards Code, Title 24, Part 11, Sections 4.106.4 and 5.106.5.3, <https://ww3.arb.ca.gov/cc/greenbuildings/pdf/tcac2018.pdf>).

\$2,370 - \$3,700, depending on the number of spaces. Incorporating the infrastructure with initial construction yields savings between \$1,570 - \$2,900 per space.²³

- c. By packaging EV capability together with all-electric, the City is taking forward a net-positive cost package for new low-rise construction. Staff's initial review of available cost effectiveness studies indicates that this approach can yield substantial savings, especially for residential buildings:
 - i. Accounting for both 20% EV capability and all-electric requirements for low-rise, data suggests that savings ranges from over \$6,000 (for a mid-rise, ~88-unit development) to over \$60,000 (for a low-rise multi-family project with 8 dwelling units).

19. Are all-electric buildings 4-stories and above cost-effective?

- a. Cost effectiveness studies have been completed for mid-rise new construction and high-rise new construction²⁴. These studies show that all-electric construction saves an average of \$700 per midrise dwelling unit, and also provides \$35 savings on energy bills annually. Construction costs for all-electric high-rise multi-family vary depending on project design and how hot water heating is addressed. The cost differences can range from a savings of \$228 per unit to a cost increase of \$557 per dwelling unit. (Central heat-pump water heating adds \$557 per unit in cost, while clustered heat-pump water heating saves \$228 per dwelling unit).

SMUD provides rebates to encourage all-electric construction and off-set or exceed costs, as shown in the table below:

New Construction Building Type ²⁵	SMUD Rebates Per Unit	Construction Costs Savings per unit ^{26,27,28}	Annual Bill Savings per unit
Single-Family	\$5,000	\$5,000	\$400
Low-rise Multifamily	\$1,750	\$2,000	\$120
Mid-rise Multifamily	\$1,750	\$700	\$35
High-rise Multifamily	\$1,750	-\$557 to +\$228	\$25 to \$75

Source: SMUD summary, from cost-effectiveness summaries linked throughout this report and available at <https://explorer.localenergycodes.com/studies/city-sacramento/>.

20. Does SMUD have the resources to provide reliable grid capacity?

- a. As reliability is a core value, SMUD has the resources and capital investment plans in place to ensure that all customer energy requirements are met and that the grid can continue to deliver as electrification of buildings and transportation becomes more prevalent in the Central City and throughout SMUD's service territory. On May 4, 2021, SMUD staff will present on grid capacity to the City's Law and Legislation Committee.

²³ Energy Solutions/PG&E study done for San Francisco <https://evchargingpros.com/wp-content/uploads/2017/04/City-of-SF-PEV-Infrastructure-Cost-Effectiveness-Report-2016.pdf>

²⁴ Refer to footnote 3 for links to low-rise cost-effectiveness studies.

²⁵ Low-rise construction is defined as three stories or less, mid-rise is four stories to seven stories, and high-rise is any building with eight stories or more.

²⁶ California Energy Codes & Standards. See Tables 2 & 3 in [2019 Cost-effectiveness Study: Low-Rise Residential New Construction Addendum – SMUD Analysis](#).

²⁷ California Energy Codes & Standards. [2019 Mid-rise New Construction Reach Code Cost-Effectiveness Study](#).

²⁸ California Energy Codes & Standards. [2019 Cost-Effectiveness Study: 2020 Analysis of High-Rise Residential New Construction](#).

21. What impacts will the electrification of new buildings have on the grid?

- a. Impacts to the grid for the electrification of new buildings are less than many may imagine because existing peak electrical loads are in the summer; the SMUD system is sized for summer peak loads, while the shift to all-electric space heating (which uses more electricity than other appliances) would occur in the winter. In addition, electric heat pump space heating, electric heat pump water heating, and induction stovetops are all very energy efficient.
- b. The potential impact of electric vehicle charging on the grid is more significant. These impacts will not happen overnight, and SMUD has ongoing forecasting in place and is actively planning to address impacts created by electric vehicle charging to meet future grid demand.

22. Are there issues related to locating transformers in tight mid-and high-rise infill sites (particularly those with podium parking)? Would projects lose some developable space due to the need to add large transformers for all electric?"

- a. Some infill development projects may face challenges to fully electrify. Infill projects with zero-lot line development are already challenged to find space for utility infrastructure, including transformers. Developers have shared concerns that under current SMUD rules regarding transformer size and clearance, going all-electric may require more space for infrastructure than is available. To accommodate challenges such as these, the ordinance includes provisions for an infeasibility exemption process. The City will continue to work with SMUD to address the unique needs of infill development.
- b. Project design that considers utility infrastructure from the initial stages, including building design that provides adequate space for utility infrastructure, clustering heat-pump water heaters to reduce electrical loads, and appropriately sizing infrastructure such as transformers, can address many of these issues. Transformer sizes do not necessarily have to increase in size due to building electrification. To learn more about space requirements for mid-rise infill sites, please refer to SMUD's [Electrical service in downtown Sacramento](#) (pdf). Applicants should schedule a pre-application meeting with SMUD's Commercial Development team (development@smud.org or 916-732-5448) to discuss their specific project needs.

23. Will the new building electrification ordinance create or exacerbate a shortage of electrical contractors?

- a. No, every gas appliance has to be wired for 120V (for fans, electric starts, etc.) so there is virtually no change in the labor needed by electricians to electrify new construction. However, input from local electricians indicates the need for a larger trained workforce – this represents an important workforce opportunity.

24. How will the new building electrification ordinance impact labor?

- a. The City anticipates more work for electrical infrastructure and equipment that can largely be met with the existing workforce in the near-term. However, long-term, as the City works towards carbon neutrality and both local and state targets for zero-emission vehicles, more trained workers will be needed to ensure the construction and installation of zero-emission vehicle infrastructure, including both EV chargers and hydrogen fueling stations. This will create a need

for more electrical contractors, and an important workforce opportunity to provide needed high-quality jobs to the community. For example, in 2019, the International Brotherhood of Electrical Workers Local 340 estimated a shortage of approximately 1,500 people in the apprentice program, but apprenticeship has significant barriers to entry.²⁹ This represents an important jobs opportunity, and the City is committed to bridging this gap. Together with local partners, schools, and stakeholders, the City is working to create a pipeline for the new types of jobs opportunities consistent with the City's electrification goals. The City's recent \$10M CARES-funded workforce development investment, 1,942 Sacramento residents have received direct employment services through the City's Workforce Recovery Programs (WRP) to date.³⁰

- b. State research indicates that building codes can shape the evolution of the market and encourage development of a local pool of contractors ready to meet code requirements and able to support a "high-road" path for local, high-quality jobs.³¹ The City also recognizes the immense opportunity to create more jobs by attracting the manufacturing industries that are developing clean energy and zero-emission mobility technologies. The California Mobility Center is an important example of the regional commitment and investment in green jobs development.
- c. Through ongoing partnership and collaboration, the City is committed to developing a "just transition" to new market opportunities for local jobs in fossil fuel-related industries that may be impacted by the ordinance. The phased timing of the ordinance provides the City with additional time to ensure this smooth transition. Data from local pipefitters indicates that gas piping and appliance work can be an important portion of their workload.³² However, new opportunities abound in water conservation and reuse, and other aspects of the City's sustainability programs. The 2021 Climate Implementation Work Plan identified funding needs to address opportunities for green jobs and water conservation and reuse. The Midyear Fiscal 2021 Budget recommendation includes funding for these efforts that would accelerate green job efforts (pending approval by City Council).

25. Will new building electrification make Sacramento less resilient in preparing for the electrical outages that result from winter storms?

- a. No, increasing electric buildings and vehicles in Sacramento does not correlate with making the grid less resilient. Modern gas appliances require electricity to operate (for fans, electric starts, etc.), so modern electric appliances are no less resilient. Unforeseen electricity outages can occur resulting from car accidents, falling trees, storms, or even animals interfering with equipment. During an outage, SMUD consistently meets aggressive reliability targets, minimizing frequency and duration of outage events and distribution system disruptions. Also, all-electric appliances can easily be set up to use a backup power source including generators or solar-powered batteries.

²⁹ Refer to the *EV Economic Pathways* analysis Frontier Energy conducted for the City's EV Blueprint project (2019): http://www.cityofsacramento.org/-/media/Corporate/Files/Public-Works/Electric-Vehicles/5-2_EV-Blueprint_Final-EV-Economic-Pathways.pdf?la=en

³⁰ Learn more about the City's CARES investments: <https://www.cityofsacramento.org/Economic-Development/CARES-Act>.

³¹ Refer to *Putting California on the High Road* (June 2020), prepared by the UC Berkeley Labor Center for the California Workforce Development Board: <https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf>

³² According to the U.A. Local Union 447, the Plumbers and Pipefitters Union, approximately 22% of union member workload in late 2020 was for gas piping.

- b. During California's primary natural disaster events, wildfires and earthquakes, utilities are supposed to turn the gas off. If 100% reliability is a goal for your home or project, electrification with battery and solar backup via microgrid is the way to get there.
- c. PG&E is also required to shut down gas service during fires and/or earthquakes. Gas service was shutoff in areas of the state for tens of thousands during Camp and Kincaid Fires, in some cases for over 10 days. For new buildings with gas appliances, having gas service does not improve resiliency, as new gas appliances require electricity for ignition and motors to function. This includes tankless water heaters, furnaces, gas dryers, gas ranges (especially with digital controls). Resilience is best handled with battery storage, propane (long storage life) generators or both.
- d. Natural gas pipelines and the electric grid both go down on occasion.

26. Does SMUD provide incentives to support building electrification?

- a. Yes, SMUD provides excellent incentives to support electrification. A summary of residential incentives as of January 2021 follows, but more information on SMUD programs follows.



SMUD Smart Homes Program Manual
11/20/2019

Table 1 – Single Family, All-Electric Incentives

Incentive	Amount Available
Base Incentive for All-Electric Home	\$4,000
Induction Cooktop	\$1,000
Battery Bonus	\$2,000
Total All-Electric Incentive per home	Max \$7,000

Table 2 – Single Family, All-Electric Ready/Mixed Fuel Incentives

Incentive	Amount Available
Compliant with All-Electric Ready Definition (Required)	\$1,000
Heat Pump HVAC only**	\$950
Heat Pump Water Heater only**	\$800
Induction Cooktop	\$600
Electric Laundry Dryer	\$200
Electric Fireplace or Outdoor Grill	\$50
Subtotal All-Electric Ready Incentive per home	Max \$3,000

** Must choose either heat pump HVAC or heat pump water heater, or both

Table 3 – Multifamily, All-Electric Units

Incentive	Amount Available
Base Incentive for All-Electric Unit	\$1,250.00
Induction Cooktop	\$500.00
Battery Bonus	N/A
Total All-Electric Incentive per home	\$1,750.00

Table 4 – Multifamily, All-Electric Ready (Mixed Fuel) Units

Incentive	Amount Available
Compliant with All-Electric Ready Definition (Required)	\$310
Heat Pump HVAC*	\$320
Heat Pump Water Heater*	\$450
Induction Cooktop	\$300
Electric Laundry Dryer	\$110
Subtotal All-Electric Ready Incentive per home	Max \$1,380

* Must choose either heat pump HVAC or heat pump water heater, or both

- b. Residential New Construction:
Smart Homes <https://www.smud.org/en/Going-Green/Smart-Homes>

- Retrofit:
Commercial Multifamily: <https://www.smud.org/en/Business-Solutions-and-Rebates/Business-Rebates/Multi-Family-go-electric-incentives>
Home Performance Program <https://www.smud.org/en/Rebates-and-Savings-Tips/Improve-Home-Efficiency>
- Commercial New Construction:
Integrated Design Solutions: <https://www.smud.org/en/Business-Solutions-and-Rebates/Business-Rebates/Integrated-Design-Solutions>

27. Are there all-electric alternatives to gas stoves?

- a. Yes, electric smooth-top ranges and stoves have improved and provide high performance reduce indoor and outdoor air pollution. While they may cost more upfront, induction cooktops perform even better than electric smooth-tops and conventional gas stoves, save on fuel costs, and reduce greenhouse gas emissions. There are also induction woks that can replace conventional woks over a gas stovetop. SMUD incentives are available for electric cooking options.
- b. Although the recommended ordinance includes an exemption for commercial cooking equipment, efforts will continue to ensure broad availability of electric commercial cooking equipment over time. SMUD programs will continue to support the advance of market-ready technologies, with new programs to ensure that commercial cooking equipment dealers are offering electric options.

28. What is electric induction cooking?

- a. Conventional stovetops use electric resistance to heat metal coils, which heats the air between the cooktop and the pan. Electromagnetic induction cooktops are a new type of electric stovetop that uses electromagnetic coils beneath a ceramic glass surface to transfer energy directly into metal pans. With induction cooking, the air between the cooktop and the pan never gets hot, so there is no residual heat and no need for a warning light. Induction cooktops are faster, more precise, and more energy efficient than conventional electric stovetops. Pots and pans need to have a magnetic (steel or iron) bottom in order to work with the electromagnetic induction cooktop. A quick way to test if pots and pans will work with induction is to see if a magnet sticks to the bottom.

29. Are there all-electric options for fireplaces?

- a. Yes, there are great all-electric alternatives to traditional wood or gas-burning fireplaces, and they do not require any maintenance, wood chopping, chimney cleaning or expensive installation. Electric fireplaces are affordable, clean, safe, and easy to install.

30. Will propane infrastructure be exempt?

- a. No, propane is a fossil fuel. The proposed ordinance will require newly constructed buildings to be all-electric and will prohibit the inclusion of natural gas piping or propane plumbing. Outdoor grills, patio heaters, and other appliances that use portable propane tanks will still be allowed as long as the appliance is not permanently plumbed for gas.

31. Isn't the City limiting innovation by requiring buildings to use electricity? Why not allow fuels like renewable natural gas?

- a. The ordinance ensures innovation in technologies that create clean power. Electricity can come from a range of creative on-site technologies, or from the grid. The ordinance ensures innovation in energy sectors that are consistent with the City's policy goals. The ordinance does not preclude a range of options for electrical power; it only precludes the use of natural gas or propane.
- b. Burning natural gas and other forms of fossil fuels pollutes the air that the community breathes and increases health risk. Natural gas appliances also ensure a reliance on aging and expensive natural gas infrastructure system with safety risks. Continuing a reliance on fossil fuels falls short of the action needed to clean Sacramento's air or achieve carbon resilience.
- c. There is very little renewable gas available today (less than 1% of current use versus 34% renewable electricity in 2018), and the potential future supply from sustainable sources is limited. Renewable gas is also much more expensive than fossil fuel gas, while renewable electricity is getting cheaper than electricity from gas power plants. When produced sustainably, renewable gas can play a limited role in reducing emissions, but given its scarcity and high cost, it is unlikely to ever replace a large enough share of the state's fossil gas use. The limited supply may be better used where it is most impactful in harder-to decarbonize sectors, for example, in certain industrial and heavy machinery applications that may be accommodated through the ordinance's proposed infeasibility process. Renewable natural gas will not eliminate impacts on indoor air quality or safety risks outlined in previous questions.³³

32. Can I listen to recordings of the building electrification webinar series?

- Yes, these can be found on the project webpage:
<http://www.cityofsacramento.org/SacElectrificationOrdinance>

33. The market-penetration of electric heat pump water heaters is currently only at 2%, which seems too low to reasonably consider a mandate.

- a. Heat pump water heaters, as they exist today, have been made in the United States since 1978 as smaller brands, and have been manufactured by all the major brands since 2009. Furthermore, one in four homes in the United States is currently all-electric.³⁴

The State of California does not currently have a threshold for market adoption of water heaters in order to comply with its own laws regarding air pollution, which is the worst in the nation. Yet the market may not change of its own accord. Regulations and mandate help to create the market. In all of the examples below, the regulation came first, and then the product was invented.

- California's South Coast Air Quality Management Board required low-NOx water heaters to be created by May of 2006. Prior to the mandate, there was no such thing sold anywhere else in the U.S.

³³ Building Decarbonization Coalition, Sierra Club, NRDC (2019, October). <https://www.buildingdecarb.org/local-government-resources.html>

³⁴ One in Four U.S. Homes is All-Electric <https://www.eia.gov/todayinenergy/detail.php?id=39293>

- The SCAQMD later required ultra-low-NOx water heaters to be created for California by Oct 1st, 2019. These also did not exist before the requirement.
- The CEC banned electric resistance water heaters in the 2016 Code, requiring all new construction to use heat pump water heaters to build all-electric.
- Another example is High-Global Warming Potential refrigerants. The Air Resources Board announced their 2023 phase-out years ago, when there were no substitute refrigerants in use in the U.S., and the manufacturers have started changing out the refrigerants (e.g., R-134a is switched for R-513 in water heaters; R-410a is switched for R-32 in HVAC heat pumps, etc.).

34. How can the City pass a reach code over a future building code cycle?

- a. The current ordinance as drafted will have no legal effect concerning modifications to the California Building Standards Code in the near term. The City will be required to pass a new ordinance for the next building code cycle (after July 1, 2022) that will provide modifications to the 2022 building standards code that will be effective January 1, 2023.

In addition, the City will need to pass a new ordinance after July 1, 2025 that will provide for modifications to the 2025 building standards code that will be effective January 1, 2026. The amendments to Title 17, Planning and Development Code, will be effective in 2021.

- Codifying the phased implementation now provides developers and contractors with time to plan and prepare for the new ordinance.

35. What is the process for approving local amendments to the California Building Standards Code (California Code of Regulations, Title 24) for the proposed electrification ordinance?

- a. There are two processes that provide for local amendments to the California Building Standards Code:
 - 1) Local amendments that are more stringent due to climatic, geographic, or topographic conditions. This generally requires a city, through an ordinance, to identify the specific local conditions, specify the local amendments and specify how the local amendment is made necessary because of the local condition. This process requires the City to file the ordinance and findings with the California Building Standards Commission.
 - 2) The other process concerns Part 6, the California Energy Code. This process allows a city to adopt local energy standards. The City would be required to determine that the proposed standards are cost effective. In addition, the California Energy Commission is required to find that the standards will require buildings to be designed to consume less energy than permitted by the California Energy Code.

36. How many new buildings are expected to be built between now and 2026 before the ordinance becomes effective?

- Based on building permit data from 2018 and 2019, it is estimated that approximately 2,250 new buildings (total residential and non-residential) and 2,240 new dwelling units will be constructed between now and 2026.

37. What about existing buildings?

- Although this Ordinance specifically addresses removing gas infrastructure from new construction, the greenhouse gas emissions from natural gas combustion in existing buildings must be

addressed in order for Sacramento to achieve carbon neutrality. On May 4, 2021, staff are presenting the Law and Legislation Committee a recommended framework to develop an existing building electrification strategy, to identify milestones and key steps. Developing a strategy for existing buildings will be a separate but related effort to the New Building Electrification Ordinance.

- On August 25, 2020, City Council passed a motion (No. 2020-0226) directing staff to initiate a number of climate actions, including to work with PG&E and SMUD to determine a schedule and funding for retrofits to gas infrastructure over the next decade. In the coming months, City staff will work with the Environmental Justice Collaborative Governance Committee, other stakeholders, and technical experts, to develop an equitable approach to existing building electrification.
- Identifying ways to expand programs which currently provide weatherization services, energy efficiency retrofits, and rooftop solar, to include electrification is an important aspect of the strategy to transition all buildings to all-electric. These programs currently target qualifying low-income households primarily for the purpose of reducing their utility bills and greenhouse gas emissions. Expanding these programs to include the replacement of gas appliances with all-electric will provide a significant improvement in GHG reduction and will also provide the co-benefit of improving indoor air quality with health benefits to low-income families.