



City of Arts & Innovation

Economic Development, Placemaking and Branding/Marketing Committee

**TO: ECONOMIC DEVELOPMENT,
PLACEMAKING AND BRANDING/MARKETING
COMMITTEE MEMBERS**

DATE: APRIL 22, 2021

FROM: CHAIR RONALDO FIERRO

WARDS: ALL

**SUBJECT: REACHING CARBON-NEUTRALITY BY 2040: ELECTRIFICATION OF THE
BUILT ENVIRONMENT VIA REACH CODE AND STRENGTHENING OF
ELECTRIC VEHICLE CHARGING INFRASTRUCTURE**

ISSUE: Development of a comprehensive electrification ordinance that requires (by 2023) all new residential construction of three stories or less to be all electric, that strengthens Electric Vehicle (EV) charging infrastructure, and that proactively addresses and promotes housing development affordability and a just transition towards “high-road” green jobs.

RECOMMENDATIONS:

That the Economic Development, Placemaking and Branding/Marketing Committee:

1. Direct staff to move forward with the discovery phase of a building decarbonization “reach code” amending Chapter 16 of the Riverside Municipal Code (Building Code) and California Building Standards Code and potential amendments to Chapter 19 (Zoning Code) that include:
 - a. an all-electric mandate for all new construction in low-rise buildings of three stories or less in city limits with an effective implementation date of January 1st, 2023 in line with the triennial building standards code update; and
 - b. Incentives, programs, and potential requirements for electric vehicle (EV) capable charging spaces for multi-unit residential developments and non-residential developments; and
2. Discuss and provide input on the formation and membership of an Ad-Hoc Decarbonization Technical Advisory Committee to gain input and industry advice from the development community, organized labor, advocacy groups, and other pertinent stakeholders on building decarbonization efforts; and
3. Discuss and provide input on potential community engagement strategies, including surveys, webinars and public workshops for residents, disadvantaged communities and the development and housing community.

BACKGROUND:

In 2020, the Riverside City Council adopted the **2025 City Council Strategic Plan** delineating bold climate goals, including an ambitious goal of achieving citywide carbon neutrality no later than 2040 – five years ahead of the Statewide mandate.

This would be no small feat. The scale of this challenge will require an all-hands approach and an inclusive process that engages, involves, and consults all community stakeholders, including the business community, developers, the building industry, major employers, organized labor, environmental justice organizations, disadvantaged communities and our youth.

The need for immediate climate action is clear. It is exemplified in the risks already impacting our community’s public health and safety, and our life-sustaining ecosystems– including rising temperatures and more extreme heat waves, drier landscapes and more intense droughts, increased risk of floods, and more frequent and larger wildfires.

The Intergovernmental Panel on Climate Change (IPCC) has made it abundantly clear that to avoid the worst impacts of climate change, we must act to dramatically reduce our carbon emissions and prevent global warming from exceeding 1.5 degrees Celsius.¹ To achieve this, global carbon emissions by 2030 will need to be nearly halved, with full decarbonization by 2050.

California has a long-standing commitment to reducing greenhouse gases (GHGs) and combating climate change. The state’s original climate change mitigation goals aimed to reduce emissions to 1990 levels by 2020 and reduce GHGs by 80 percent below 1990 levels by 2050. A decade later, Governor Edmund G. Brown Jr. set a 2030 climate target for the state when he signed Senate Bill SB 32 in 2016, requiring the state to reduce GHGs 40 percent below 1990 levels. In 2018, Governor Brown called for the state to achieve carbon neutrality by no later than 2045. In addition, California’s climate policies have extended beyond emissions targets. SB 100 requires the state to achieve a 60 percent Renewables Portfolio Standard (RPS) by 2030 and meet 100 percent of retail sales from zero-carbon electricity by 2045. Complementary to electric sector decarbonization goals are mandates and targets aimed at increasing the share of zero-emission vehicles on California roads. The state’s energy transition also extends to the built environment. AB 3232 authored by Assemblywoman Friedman in 2018 requires the California Energy Commission to examine strategies to reduce emissions from buildings 40 percent below 1990 levels by 2030.

This year, the State Legislature has continued this focus on the built environment, with the introduction of a building decarbonization package by Senator Dave Cortese, which includes:

- SB 30: prohibition of state facilities from being connected to the natural gas grid.
- SB 31: requirement for the State to identify, implement efforts and programs to promote building decarbonization.
- SB 32: requirement for cities to include building decarbonization efforts in General Plan updates.

What is Building Electrification? Building electrification, or “building decarbonization” refers to the process of phasing out gas infrastructure utilized for cooking and heating in buildings – which are powered by fossil fuels – and instead transitioning to the use of electricity – mainly powered by solar, wind and other sources of zero-carbon electricity.

¹ Intergovernmental Panel on Climate Change; “Special Report on Global Warming”

While buildings today rely on a variety of different fuels, fossil fuels such as natural gas and propane are used to power furnaces, boilers, and water heaters. In the kitchen, fossil fuels are used to power stovetops and ovens. According to the Environmental and Energy Study Institute, residential and commercial buildings account for 40% of carbon emissions nationwide.² Gas appliances are responsible for over 50 million tons of GHG emissions annually.

According to the 2016 Riverside Economic Prosperity Action Plan and Climate Action Plan, residential and commercial/industrial emissions account for 54% of total baseline emissions from 2007.³ In order to make a significant dent in our carbon emissions and keep global warming below 1.5° degrees Celsius – proactive action is needed to transition the construction of new buildings away from fossil fuels. Without electrifying buildings and generating that electricity from renewable sources, neither California nor Riverside will reach its climate goal of being carbon neutral before 2045. Embracing electrification will allow us to make serious headway on these imperative climate goals.

As of the publication of this report on April 7, 2021, 42 different local governments in California have adopted building code amendments to reduce reliance on gas infrastructure and decarbonize buildings. This list includes Oakland, San Jose, Santa Cruz, San Francisco, and Sacramento. If adopted, Riverside would be one of the first Southern California jurisdictions to do so, outside of San Luis Obispo and Santa Barbara.

DISCUSSION:

The City of Riverside is currently the 12th largest City in California and the County seat to the third most populous County in California. There is a real opportunity for Riverside to lead the rest of the region, state, and nation in implementing pragmatic and sensible climate policy. In addition, this type of climate leadership will further efforts to leverage and establish a new green economy dynamic with Riverside at the forefront of green tech and climate innovation.

When the City Council adopted the Riverside 2025 Strategic Plan, the document included a clear commitment to taking bold action to achieve carbon neutrality by 2040 and to be a leading regional voice in efforts to reduce GHG emissions and *“Champion proactive and equitable climate solutions based in science to ensure clean air, safe water, a vibrant natural world and a resilient green new economy for current and future generations.”*

Decarbonization through electrification is a key strategy to reducing GHG emissions and is a “least-regret” logical first step in making a meaningful dent in citywide carbon emissions. In addition, passing a local ordinance will help build momentum for the California Energy Commission and the US Energy Department to pass statewide and national building efficiency standards.

Successfully decarbonizing buildings will require a multipronged approach with varied strategies and phasing for existing buildings and new construction. Buildings are long-term assets; and as such, the continued construction of gas-powered buildings essentially locks in an energy system infrastructure for multiple decades. Every new building built in Riverside is an opportunity for us to invest in a carbon-free future and enhance positive outcomes for future generations.

Advances in electric heat pumps and other electrical equipment are yielding much higher overall efficiencies than their natural gas counterparts. Electric heat pumps, unlike traditional electric

² Environmental and Energy Study Institute; “Buildings and Built Infrastructure”

³ City of Riverside, “Riverside Economic Prosperity Action Plan and Climate Action Plan”

resistance heaters, do not generate heat, but concentrate and transfer it for end uses such as space conditioning/heating and water heating. This process uses less primary energy and emits much less carbon, particularly when it is powered by renewable energy. Induction cooktops are also gaining popularity and are significantly more efficient than gas stoves.

Ultimately, coupling code enhancements for new buildings with existing and future efforts to undertake energy efficiency measures in existing buildings, develop new funding mechanisms, and building energy resilience systems, such as locally constructed microgrids, will prove an effective strategy in mitigating the climate impact of our local building stock.

Cost-Effective and Benefits of Early Implementation: All-Electric buildings have been proven to be cost-effective for new construction for nearly all building types since most electric appliances have similar or lower operating costs compared to natural gas appliances. However, the alternative of retrofitting can require significant and costly upfront investments. Given this reality, early implementation of building electrification will provide cost-savings to developers, builders and eventual tenants and homeowners in the long run. An earlier effective date will also avoid the construction of “stranded assets” (obsolete gas infrastructure) that will eventually require retrofitting once federal and state mandates go into effect.

According to an Energy and Environmental Economics report commissioned by the California Energy Commission, building electrification is a lower-cost, lower-risk and longer-term strategy in comparison to “renewable natural gas” (RNG; biomethane, hydrogen and synthetic natural gas, methane produced by combining hydrogen and carbon).⁴

While natural gas currently plays an integral role in California’s energy grid (80% of all California homes are connected to the natural gas grid) – consumer behavior is shifting as customers wean off of gas usage and federal and state climate mandates come into play, causing large reductions in gas demand across the State of California over the next 10 years. Over time, as costs become reliant on a decreased ratepayer base, unsustainable increases in gas rates will become inevitable. Without policy intervention, a small share of ratepayers, mainly low-income residents, and renters, will be forced to bear the brunt of increased gas costs. The E3 report found that given this risk, early implementation of building electrification mandates can serve as a risk-reduction strategy to protect vulnerable communities from increased energy costs.

Public Health Benefit: In addition to the emission impacts of transitioning away from gas to electrification, research has shown significant public health benefits to the transition to electrification. According to a UCLA Fielding School of Public Health Report titled, “Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California,” replacing all of California’s gas appliances with electric appliances would prevent 900 cases of respiratory illnesses, lower health care costs by \$3.5 billion and save 350 lives every year. These co-benefits make building electrification a highly compelling strategy for emissions reductions, especially compared with alternatives that rely on higher levels of combustion.⁵

According to the study, cooking with gas appliances for over an hour can cause carbon monoxide and nitrogen dioxide levels to increase above the acute national and state-based ambient air quality thresholds in over 90% of scenarios modeled by the research team. It was also found that those concentrations are the highest for those that live in apartments due to the smaller space of the residency. A 2013 study in the International Journal of Epidemiology showed that living in a home with gas cooking increased children’s chance of having asthma by 42%. This

⁴ Energy and Environmental Economics Report; “The Challenge of Retail Gas in California’s Low Carbon Future”

⁵ UCLA Fielding School of Public Health; “Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California”

presents additional risks for renters, many who are low-income, and again shows how environmental justice communities are disproportionately affected by the negative impacts of gas infrastructure.

Ensuring a Just Transition to High-Road Jobs: Riversiders should not have to choose between economic prosperity and protecting our environment. Inland working families are struggling on both fronts – from economic and job insecurity due to the pandemic to asthma and polluted neighborhoods because of worsening impacts of climate change. As this Committee considers phasing out fossil fuel infrastructure as a critical climate change action item, it is important for the Committee to ensure that there is a just transition and comprehensive mitigation efforts taken to ensure that local jobs are retained in clean energy and sustainability-focused job fields.

A UCLA Luskin Center for Innovation Report about building decarbonization workforce needs and recommendations found that electrifying 100% of California’s existing and new buildings by 2045 would create over 100,000 full-time equivalent jobs, even after accounting for losses in the fossil fuel industry.⁶ In order to ensure this type of outcome, the report recommended that policymakers engage fully with affected unions to grow high-road jobs and minimize job losses; prioritize demand-side strategies; and target investments in supply-side strategies, such as workforce training.

This point is accentuated in a recent report from the California Workforce Development Board, saying: *“deliberate policy interventions are necessary in order to advance job quality and social equity as California transitions to a carbon-neutral economy, just as such efforts are required to reduce pollution, protect human and environmental health, and safeguard communities from an already changing climate.”*⁷

Deliberately supporting high-road jobs (defined as high-paying job opportunities associated with a carbon-free economy) as a municipal organization and utility agency will ensure that the benefits of low-carbon policies are broadly shared among the community. This is in line with the City Council’s Economic Prosperity Strategic Goal and Riverside’s larger goal of being an international hub for clean and green economic industry.

Formation of Technical Advisory Committee: While building decarbonization is an essential policy action to realize the city’s goal of reaching carbon-zero by 2040, it will require developers, builders, businesses and laborers in Riverside to pivot current practices and phase out from gas infrastructure. Because of this, it is important that these stakeholders are included in the process of developing this policy from the beginning stages.

This advisory group will meet throughout the next 5 months to develop an innovative building decarbonization policy that addresses the critical need for immediate climate action, keeps housing and development costs low, and transitions the local economy towards a net benefit of high-paying green jobs.

Project Timeline: Given these policy considerations and the desire to ensure that stakeholder concerns are heard, mitigated and fully apart of the discussion of transitioning to building electrification, the Chair has put forth the project timeline for committee review:

⁶ UCLA Luskin Center for Innovation; “California Building Decarbonization: Workforce Needs and Recommendations”

⁷ California Workforce Development Board; “Putting California on the High Road: A Jobs and Climate Action Plan for 2030”

- **April 22, 2021 (today):** Receive a presentation on supporting the City's goal of reaching carbon-neutrality by 2040 through an amendment to the Building Code and California Building Code (via a Reach Code) to establish all-electric requirements for new construction and provide direction regarding possible pathways for implementation.
- **April – September 2021:** Implement discovery, outreach, public education, and stakeholder engagement efforts, such as:
 - Formation of an informal standing Technical Advisory Committee made up of a diverse array of community stakeholders with the goal of informing the policy development process. The informal group will meet throughout the development of the ordinance and provide input on potential mitigation strategies.
 - Holding webinars, public meetings, and committee workshops to educate the public on the benefits and co-benefits of the transition to all-electric buildings.
- **October 2021:** Return ordinance framework to the committee for discussion and recommend forwarding to the City Council, Board of Public Utilities and potentially the Planning Commission.
- **November:** Board of Public Utilities and Planning Commission to hold meetings review the electrification ordinance framework and make recommendations to the City Council.
- **December 2021:** City Council to hold public hearing on electrification ordinance with recommendation for approval and forwarding of the reach code to the California Energy Commission.
- **January/February 2021:** California Energy Commission to post the reach code and accept comments for 60 days. At the regularly scheduled meeting closest to the end of the public comment period, the Commission will consider the adoption of the reach code.

FISCAL IMPACT:

There is no fiscal impact associated with the recommendations in this report. If new programs or policies are recommended and implemented, the fiscal impact, if any, will be defined during City Council review and approval of this item.

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Chair, Economic Development, Placemaking and Branding/Marketing Committee

Attachments:

1. UCLA Fielding Public Health Report
2. UCLA Luskin Workforce Report
3. CARB Resolution in Support of All-Electric Building

4. AIA Presentation on Current Examples
5. Fact Sheet