

DOCKETED

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AGENDA REPORT

COMMUNITY DEVELOPMENT

DATE: March 3, 2020

TO: Mayor Butt and Members of the City Council

FROM: Lina Velasco, Planning and Building Services Director
Chris Castanchoa, Building Official
Adam Lenz, Environmental Services Manager
Shivali Gowda, CivicSpark Fellow

SUBJECT: Amendments to the Richmond Municipal Code Article VI repealing and replacing Chapter 6.02 adopting the 2019 California Building Standards Code (with noted administrative and energy code amendments), and repealing Chapters 6.04, 6.16, 6.20, 6.28, and 6.46

STATEMENT OF THE ISSUE:

State law mandates all local jurisdictions enforce the California Building Standards Code (California Code of Regulations Title 24) in the construction and maintenance of all buildings and structures. These standards are updated on a tri-annual basis. The State recently published the 2019 California Building Standards Code (CBSC) and per State law local jurisdictions must enforce these codes with an effective date of January 1, 2020. The proposed ordinance adopts the 2019 California Standards Code, with amendments to the Administrative code to provide clarification around work without permits, expiration of plan reviews and permits, refunds, reinspection fees, and appointments to the Board of Appeals, and Energy Code amendments to require higher levels of building electrification and solar production for newly constructed buildings to reduce greenhouse gas emissions. The City Council introduced an ordinance to adopt the 2019 CBSC in November 2019; but since that time, staff has made additional refinements and is introducing these and other changes.

RECOMMENDED ACTIONS:

ADOPT an ordinance (second reading) amending Richmond Municipal Code (RMC) Article VI, Building Regulations by repealing and replacing Chapter 6.02, adopting the 2019 California Building Standards Code with noted Administrative and Energy Code amendments, and repealing Chapters 6.04, 6.16, 6.20, 6.28, which are superseded by the 2019 codes and incorporated into RMC Chapter 6.02, and repealing Chapter 6.46,

which has been superseded by the California Green Building Standards Code incorporated into Chapter 6.02.

FINANCIAL IMPACTS:

There is no cost to the general fund associated with adopting this Ordinance.

DISCUSSION:

Under State law, various State agencies have statutory authority to develop building standards, also known as building codes. These standards are updated every three years and are adopted into the California Code of Regulations Title 24 through the California Building Standards Commission. The 2019 California Building Standards Code is based primarily on model codes developed by national code development organizations known as the International Code Council (Building, Fire, and Residential Codes), the National Fire Protection Association (Electrical Code) and the International Association of Plumbing and Mechanical Officials (Plumbing and Mechanical Codes). The one exception to this is the Green Building Standards Code, which is developed in its entirety by the State.

As with the State Building standards, the model codes are also updated every three years. Both the model codes and state standards are developed with extensive local government input. The City of Richmond participates in these efforts via our memberships and involvement in organizations such as the California Building Officials (CALBO) and the East Bay Chapter of the International Code Council (ICC). These efforts contribute to a set of construction codes that remain current with evolving industry practice, ensuring broad stakeholder input, building safety, construction consistency, and economic vitality. The 2019 California Building Standards Code, as adopted by the State, has been updated to better reflect current technology and standards for construction. Effective January 1, 2020, the City began enforcing the 2019 California Building Standards Code without any of the proposed local amendments in compliance with State law.

The proposed ordinance (Attachment 1) amends Richmond Municipal Code (RMC) Article VI, Building Regulations by repealing and replacing Chapter 6.02, formally adopting the 2019 California Building Standards Code with noted Administrative and Energy Code amendments.

In addition to adopting the 2019 CBCS in revised Chapter 6.02, the ordinance repeals Chapters 6.04 (Building Code), 6.16 (Electrical Code), 6.20 (Mechanical Code), and 6.28 (Plumbing Code), which separately adopted the various chapters of the CBCS, which are now adopted together in proposed RMC Chapter 6.02. This will streamline future updates. In addition, the ordinance repeals Chapter 6.46, Commercial and Residential Green Building Standards which has been superseded by the California Green Building Standards Code, incorporated into revised Chapter 6.02.

Administrative Code Amendments

The proposed amendments provide clarification around work without permits, expiration of plan review, refunds, reinspection fees, and appointments of the Board of Appeals. These amendments do not require approval by the State or any specific findings.

Energy Code (“Reach Code”) Amendments

Within the last year, 23 cities in California have adopted policies to support all-electric new construction as a strategy to reduce the carbon footprint of buildings and achieve local and State climate goals. On October 24, 2017, City consultants and staff presented various electrification policies to the City Council. At that meeting, the Council directed staff to develop electrification policies that go beyond the CBCS.

The proposed amendments to the energy code would require higher levels of building electrification and solar production for newly constructed buildings to reduce greenhouse gas emissions. The policy would become effective after California Energy Commission (CEC) Approval.

Proposed Reach Code

The proposed Reach Code in Attachment 1 applies only to newly constructed buildings, and not additions or remodels, as well as tenant improvements that include the replacement or upgrading new mechanical and electrical systems.

Table 1: Summary of proposed Reach Code requirements/standards:

Building Type	Requirements/Standards
New residential buildings (single family and three stories or less multifamily) and residential tenant improvements replacing or upgrading new mechanical and electrical systems	Require to build all-electric building for: Space heating, water heating and clothes dryers. a. Natural gas can still be used for stoves, fireplaces or other appliances if desired. b. Prewiring for electric appliances is required where natural gas appliances are used.
New nonresidential buildings and high-rise multifamily	Require to: 1. Build an all-electric building that uses electricity as the source of energy for all appliances, including but not limited to heating/cooling appliances, cooking appliances, fireplaces and clothes dryers; and 2. Install a minimum amount of on-site solar based on square

<p>buildings (greater than three stories) and nonresidential tenant improvements replacing or upgrading new mechanical and electrical systems</p>	<p>footage: a. Less than 10,000 square feet requires a minimum of three kilowatt photovoltaic system b. Greater than or equal to 10,000 square feet requires a minimum of five kilowatt photovoltaic system</p> <p>Exceptions include: - Life science buildings may use natural gas for space heating if desired. To grant exception, applicants are required to provide third-party verification to analyze why all-electric space-heating requirement is not cost effective and feasible. - Public agency owned and operated emergency operations centers (such as fire stations and police stations) may use natural gas. To grant exception, applicants are required to provide third-party verification to analyze why all-electric space-heating requirement is not cost effective and feasible. - Nonresidential kitchens (such as for-profit restaurants and cafeterias) may appeal under certain conditions to an appointed body designated by the City Council if they want to use natural gas stoves. The advisory body's decision can be appealed to City Council. For all exceptions, natural gas appliance locations must be electrically pre-wired for future electric appliance installation</p>
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The Reach Code requirements were selected based on these following criteria:

- Feasibility and cost-effectiveness;;
- Significant greenhouse gas reductions (greatest environmental benefit);
- Ease of implementation and efficiency for the development community and city operations; and,
- Community acceptance.

State Code and Reach Code Process

The California Health and Safety Code enables local communities to modify the California Building Standards Code and adopt different or more restrictive requirements with the caveat that:

- The local modifications must be substantially equivalent to or more stringent than the building standards published by the California Building Standards Code; and
- The local jurisdiction is required to make specific or express findings that such changes are reasonably necessary because of local climatic, geological, or topographic conditions ([Guide for Local Amendments of Building Standards](#))

These required findings are included in Attachment 1. For the Energy Code amendments, the City has to file an application to the California Energy Commission (CEC) to prove that the local amendments related to the energy code are cost effective and save more energy than those required by the state.

Cost Effectiveness Study Results

The Statewide Reach Codes cost effectiveness studies (Attachments 2 and 3) contain the cost effectiveness analysis of various building prototypes with different Reach Code options. The reports were prepared by PG&E and Southern California Edison Company (SCE) and funded by the California utility customers under the auspices of the California Public Utilities Commission. Attachment 4 is a costs effectiveness memo prepared by Energy Solutions evaluating the cost effectiveness of the proposed Reach Code, which reached the same conclusions as the above mentioned reports.

The studies act as tools for communities to select different Reach Code options ranging from increased energy efficiency to all-electric requirements. For Richmond, the studies provide evidence that the proposed electric requirements for new buildings and solar production are cost effective. Table 2 highlights the estimated cost savings between new all-electric and natural gas buildings.

Table 2: Cost savings between all-electric and natural gas building

Building prototype	Construction Savings	Operational Savings
Single family home	Up to \$5,349	\$4,416
Multifamily - three stories or less (per dwelling unit)	Up to \$2,337	\$1,864
Office	\$82,330	\$52,738
Retail	\$24,111	\$22,661
Hotel	\$1.3 million	\$1.24 million

A majority of the cost savings is experienced upfront in the construction phase by avoiding the cost to install natural gas infrastructure. Additionally, building operational savings was calculated using time dependent valuation (TDV.) TDV was developed by the CEC to reflect time dependent value of energy including the long-term projected costs of energy, such as the cost of energy during peak periods. It also provides a value for GHG emissions produced/reduced as part of the calculation. TDV is expressed as the overall lifecycle savings of a building, which for the purposes of the study is 15 years for residential and 30 years for nonresidential. If peak demand costs and greenhouse gas costs are removed from TDV, the cost to operate single-family, multifamily, offices and hotels would be increased.

Additionally, the studies used the lowest energy efficient appliances allowable under federal law for the building prototypes. There are higher energy efficient and cost effective appliances available on the market that would further reduce utility bill costs for customers. In addition, producing on-site solar as required under the proposed Reach Code for new buildings would further reduce operation costs.

Community Engagement and Feedback

As part of the CEC advanced energy community grant, Energy Solutions reached out to 10 developers active in Richmond seeking input on energy policies with respect to building and zoning codes. Feedback provided from developers has been considered and incorporated into the recommended ordinance.

As part of the Zero Net Energy Pilot Program with the Richmond Community Foundation, City Staff and Energy Solutions provided technical assistance to a team of architectural and general contractors. Throughout the process, the City received feedback and identified design best practices for all-electric construction which have been incorporated into the ordinance.

The City received a letter of support for the Energy Code amendments from Pacific Gas and Electric Company (PG&E) (Attachment 5).

Exemption for Life Sciences Laboratories

Life Science Laboratories contain vulnerable lab experiments, which depend on temperature-controlled rooms. While all-electric laboratories and life science buildings are technically feasible as demonstrated by a University of California system study, staff recommended those buildings to be exempted only for space heating.

As a result of lacking case studies, life science buildings may use natural gas for space heating, but water heating appliances are required to be electric. However, for every life science and laboratory building permit application, the applicant must submit a third-party verification to analyze why electric heating is not feasible and cost effective. This exception only applies to the 2019 building code cycle and would be re-evaluated in 2022.

Environmental Background for Energy Code Amendments

All-electric buildings are one of the key strategies to decarbonizing the state's building stock. The state's electric system is rapidly becoming cleaner, driven by escalating renewable portfolio standards and cleaner product offerings by the utilities and community choice aggregators (CCAs). While it is theoretically possible to power buildings with renewable natural gas, there currently are no plans for large-scale conversion to renewable natural gas.

In addition, many building systems can be powered with all-electric appliances, and all-electric heat pump equipment for space heating, and water heating systems. More than 80 percent of a building's energy use relates to heating/cooling space and heating water. Natural gas is fossil fuel that is typically used for heating space and water for building occupants. As increased development occurs in the community, it is important to consider feasible and reasonable policies and regulations that will not increase the community's natural gas usage to achieve or exceed the City's GHG emissions reduction goal.

The all-electric readiness requirements are designed to enable buildings initially equipped with natural gas appliances to replace them with electric appliances at a later time without having to make electrical capacity upgrades or make other changes to the building. The all-electric readiness requirements are based on findings that all-electric buildings generate fewer GHG emissions. Including these is prudent as they are relatively inexpensive at the time of initial construction while enabling buildings to avoid much higher conversion costs in the future.

Environmental Benefits of Energy Code Amendments

According to the Richmond's 2012 Greenhouse Gas Inventory, natural gas accounted for 39.8% percent of all residential greenhouse gas (GHG) emissions. Natural gas comprises 72% of the total energy emissions, while electricity is only 28%. When comparing commercial to residential emissions, residential emissions make up 27% of overall natural gas emissions. The commercial consumption of natural gas has been increasing incrementally since 2014. The data in the Richmond Climate Action Plan demonstrates that it is necessary to implement this ordinance to ensure the reduction of natural gas consumption in Richmond in order to meet the City's and State's long term carbon reduction goals.

In the Richmond Climate Action Plan, the goal for Renewable Energy Strategy (RE.3): Electrification and Fuel Switching is to reduce greenhouse gas emissions by 12,043 MT CO₂e by 2020 and 47,709 MT CO₂e by 2030. The City of Richmond has set climate action goals to reduce emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. Consistent with this goal, the Climate Action Plan established a 2020 GHG reduction target of 15% below 2005 levels by 2020. Taking just the residential natural gas emissions reduction of 11,945 MTCO₂e between the 2005 and 2017 Greenhouse Gas Inventory, or a 13.8% reduction, the City is on track to meet 2020 goals for residential natural gas emissions reduction. However, the City will fall short of 2030 and 2050 goals if larger measures such as this natural gas prohibition on newly constructed buildings are not implemented, especially with consumption of natural gas increasing incrementally the last few years as seen in Figures 4 and 5. The City does not have current greenhouse gas emissions data to determine the emissions reduction for the commercial and industrial sectors between 2012 and 2017.

Next Steps

Once introduced, staff will bring the ordinance back to City Council for adoption (second reading). After adoption by City Council, the Building Official will submit the proposed Energy Code Amendments (Reach Code) to the CEC for approval. Approval by the CEC may take up to 60 days. Staff has been working closely with the CEC to ensure that the proposed Reach Code and cost effectiveness studies meet the State standards for adopting local energy code amendments. After approval by the CEC, the Building Official will submit the proposed Reach Code to the Building Standards Commission for final approval. The Reach Code will not be effective until these approvals are granted by the State.

The Reach Code will be administered as part of the building permit process and will apply to all building permit applications submitted after its effective date. Building staff participated in the development of the draft ordinance and will be provided additional training prior to the effective date. Notices of the new Reach Code requirements will be posted at the Permit Services counter and will be distributed via list serves, the City Manager's Weekly report, and by engaging developers seeking entitlements with the City.

ENVIRONMENTAL REVIEW: The adoption of this Ordinance is exempt from the California Environmental Quality Act (CEQA) per the State CEQA Guidelines Section 15061(b)(3), in that it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment. The proposed Ordinance will not have an impact on the environment because they do not directly facilitate new development, or changes in the type and intensity of land use.

ATTACHMENTS:

1. Ordinance adopting 2019 California Building Standards Code (with Administrative and Energy Code amendments)
2. [Statewide Reach Code residential cost effectiveness study](#)
3. [Statewide Reach Code nonresidential cost effectiveness study](#)
4. Energy Solutions Cost Effectiveness Memorandum
5. PG&E Letter of Support