Legislation Details (With Text)

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Title:	Discuss and Provide Direction on Potential Regulatory Actions that Increase Energy Efficiency of Buildings (Community Development Director Tai). DISCUSS AND PROVIDE DIRECTION		
Sponsors:			
Indexes:			
Code sections:			
Attachments:	1. References and Resources		

Date	Ver.	Action By	Action	Result

TO:
Honorable Mayor and Members of the City Council

THROUGH:
Bruce Moe, City Manager

FROM:
Carrie Tai, AICP, Community Development Director
Dana Murray, Environmental Sustainability Manager
Ryan Heise, Building Official

SUBJECT:
Discuss and Provide Direction on Potential Regulatory Actions that Increase Energy Efficiency of Buildings (Community Development Director Tai).
DISCUSS AND PROVIDE DIRECTION

RECOMMENDATION:
Staff recommends that City Council discuss and provide direction to staff regarding potential regulatory actions that serve to increase energy efficiency of buildings, including possibly amending the building code to transition to decarbonizing new buildings to improve indoor air quality and reduce greenhouse gas (GHG) emissions.

FISCAL IMPLICATIONS:
Should City Council direct staff to develop updated regulations, costs related to staff time and implementation will be incurred. The electric readiness provisions will require plan checkers and

inspectors to apply additional check lists to mixed-fuel buildings. Energy performance amendments parallel the structure and terms of the State code and as such, increases in plan check and inspection time are commensurate with the amendments. While this is not expected to significantly increase staff time, upfront costs associated with training and reference materials are expected. Any added costs of administering amendments may be reviewed when next updating permit fees.

BACKGROUND:

In 2019, City Council directed staff and the Sustainability Task Force to discuss options and provide recommendations for increasing energy efficiency of new buildings through a “reach code.” A reach code is a local building energy code that “reaches” beyond the state minimum requirements for energy use in building design and construction, creating opportunities for local governments to lead beyond State requirements. Reach codes help encourage development of energy efficient sustainable buildings. California cities are rapidly implementing plans to cut pollution from homes and buildings to meet the State’s energy targets for new construction, aiming to achieve zero-net-energy (ZNE) for all new residential and municipal buildings by 2025 and for all nonresidential buildings (including high-rise residential) by 2030.

According to the California Air Resources Board, residential and commercial buildings are responsible for roughly 25% of California’s GHG emissions. Residential buildings are a significant source of climate pollution and produce roughly two-thirds of the State’s building emissions, and commercial buildings produce around one-third. One of the State’s policy mechanisms to achieve ZNE is to include energy efficiency and renewable energy requirements in the energy code, which is part of the State building code and must be adopted and enforced by local agencies. These codes include the California Energy Code and the California Green Building Standards Code. The Energy Code requires that builders use energy-efficient technologies and construction practices. Over 45 cities in California have adopted “reach codes” addressing energy efficiency beyond State requirements in 2019-2021, targeting decarbonizing new buildings to achieve ZNE. Building decarbonization refers to reducing energy emissions (”operational carbon”) from a building’s energy usage through shifting from fossil fuel appliances to advanced electric alternatives that run on clean electricity.

On September 3, 2019, the City Council discussed the history of the City having a reach code from 2010-2013 associated with the building codes, but having not “renewed” the reach code in the next California Building Standards Code update, which is reviewed every three years. Upon reviewing staff reports from November 2010, it was confirmed that the City adopted energy code measures 15% above Title 24 state energy efficiency requirements (effective 2011-2013). These measures put Manhattan Beach’s energy efficiency standards well beyond the minimum state requirements. In 2013 and 2016, the City adopted the State’s requirements for the California Energy Code.

Existing Regulation

In late 2019, the City of Manhattan Beach was required to adopt new changes to the California Building Standards Code, which took effect in 2020. The 2019 code adoption greatly accelerated energy efficiency in new buildings. Single-family homes built under the 2019 standards with rooftop solar use approximately 53% less energy than those built under the 2016 standards. Nonresidential buildings use about 30% less energy compared to the 2016 standards, largely due to lighting

improvements.

The new Energy Efficiency Standards for low-rise residential new development in Manhattan Beach's 2019 energy code focus on four key areas: solar photovoltaic (PV) systems, indoor air quality, demand response compliance options, and updated thermal envelope standards. Solar PV systems are mandatory for prescriptive compliance and effectively required for performance compliance. The Standards do not mandate PV for residential additions or alterations. The 2019 Code requires third-party Home Energy Rating System (HERS) testing, inspection, and verification. The 2019 code also introduces an all-electric compliance pathway for the first time, using heat pump space and water heating, applicable to new single-family and multifamily buildings, and low-rise residential additions and alterations.

Major changes to nonresidential, high-rise residential, and hotel/motel energy codes include improvements in lighting and new energy-efficiency requirements for healthcare facilities for the first time. New mandatory lighting control standards for these occupancies require all indoor lighting to automatically reduce lighting power when spaces are unoccupied, and similarly requires automatic scheduling and motion control of outdoor lighting. Both indoor and outdoor power allowances have been reduced across the board based on improved LED lighting efficiencies.

To further reduce the City's greenhouse gas emissions and air and noise pollution, the City voluntarily adopted regulations requiring a 150-300% increase over the 2019 State Green Code requirements for the number of dedicated electric vehicle charging spaces (EVCS) for multi-residential, hotel, and nonresidential construction. Under the current Statewide codes, the installation of EVCS equipment is not required; however, the City's more stringent standards mandate the installation of EVCS equipment for the same specified uses.

Jurisdictions in California are required to adopt updated building codes every three years. The next update of the California Building Standards Codes is scheduled for fall of 2022, to become effective January 1, 2023. Given that the triennial update is just over one year away, the policy development and adoption of a reach code would be best suited to coincide with the 2022 adoption.

DISCUSSION:

The City of Manhattan Beach continues to plan for climate change and reduce the community's carbon footprint, as seen through the current Climate Ready MB program. A reach code aimed at improving energy efficiency would help reduce fossil fuel emissions from buildings, as well as set the City up to meet State energy goals such as ZNE. Pursuant to Assembly Bill 32, California needs to reduce its greenhouse gas emissions to 40% below 1990 levels by 2030. In order for the State to reach its emission reduction goals, the building sector must be powered by renewable energy, something that could be made more feasible through reach codes.

In late 2019, early 2020, and June 2021, the Sustainability Task Force (STF) met and discussed increasing energy efficiency in new buildings. After reviewing the recently-adopted 2019 California

Building Standards Code, as well as best practices in reach codes in other cities, the STF discussed building decarbonization and electrification. Building electrification refers to replacing direct fossil fuel use (e.g., propane, heating oil, gasoline) with electricity use in a way that reduces overall emissions and potential energy costs while lowering other air pollutants. Building decarbonization encompasses electrification and refers to reducing operational carbon of buildings through electrification and clean electricity sources. STF members supported full electrification reach codes for new buildings to move the City away from fossil gas emissions.

The STF discussed the need for community education on appliance efficiency and the multi-benefits of electric appliances, including performance results of electric induction stoves versus gas stoves. Their recommendations were noted and included in the 2020 Mayor's Townhall on the Challenge of Climate Change, with over 100 people in attendance. The STF also expressed interest in the multi-benefits of building electrification, including creating safer homes without gas lines and improving indoor air quality of homes and businesses by eliminating the use of fossil fuels indoors. The STF concluded that the best way to increase energy efficiency and decrease GHG emissions in new buildings would be through the adoption of a reach code in Manhattan Beach to require all-electric new construction to decarbonize buildings.

Some examples of reach codes in other cities include more stringent energy storage and renewable energy standards for newly constructed mixed-fuel (electric and fossil energy) buildings, requiring electric-ready connections for all new construction, and phasing out fossil gas in new construction entirely through all-electric new buildings reach codes. These reach codes require new construction, including additions, to be powered solely by electricity or have electrical systems and designs that provide capacity for a future retrofit to facilitate the installation of all-electric equipment as a dual system with gas equipment plumbing connections. These all-electric readiness requirements are based on findings that all-electric buildings cause fewer GHG emissions and improve indoor air quality.

All-electric readiness requirements are designed to enable buildings to be pre-wired for electric appliances, in addition to or instead of gas lines, so that building owners will not have to make electrical capacity upgrades or other changes to the building at a later time. This is also known as being "electric ready" in construction. To further "electric readiness," these reach codes have typically included requirements for increasing electrical conductor space and service panel capacity in new buildings, and pre-wiring buildings for electric appliances. There are no cost-effectiveness findings for electric-ready provisions since, by themselves, they do not reduce energy. Including pre-wired electric systems is prudent as they are relatively inexpensive at the time of initial construction, yet it avoids much higher conversion costs in the future. Mostly prior to 2020, cities such as Davis, San Luis Obispo, and the County of Marin adopted electric-ready reach codes. Some are now considering updates to their building codes and moving beyond electric-ready. For example, in 2019 San Jose adopted an electric-ready ordinance and came back to adopt a natural gas infrastructure moratorium in 2020.

A reach code requiring all-electric fuel sources for new construction of buildings is the best-practice in energy efficiency in municipalities to decarbonize new buildings over the last nine months. Cities such as Ojai, Sacramento, Oakland, and Cupertino have passed reach codes such as this, and Santa Barbara is currently considering a similar one. All-electric buildings, even those with no other

energy performance enhancements, provide significant GHG reductions. The addition of energy efficiency and more solar can drive net energy use to nearly zero for some building types and GHG emissions to less than a third of a mixed-fuel 2019 State code-compliant building. All-electric new construction also is cost-effective. All-electric buildings are often cheaper to build due to the elimination of running expensive gas plumbing to the building, and generally make all-electric construction more cost-effective on a life-cycle basis. In additional to energy efficiency, this option also has the greatest public safety, health, and indoor air quality benefits.

Public Health and Indoor Air Quality:
A 2013 Lawrence Berkeley National Laboratory study found that 60 percent of homes in the state that cook at least once a week with a gas stove produce toxic levels of nitrogen dioxide, formaldehyde, and carbon monoxide, which would exceed even outdoor air quality standards. Although electric stoves generate some toxins from cooking, researchers found that gas stoves are more detrimental to indoor air quality because they produce significant fossil fuel combustion byproducts not generated by electric stoves (Attachment). This issue is compounded by state efficiency standards, which are designed to trap air indoors.

Clean Energy:
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 such as Southern California Edison (SCE) and community choice aggregators (CCAs) such as Clean Power Alliance. While it is theoretically possible to power buildings with renewable natural gas, there currently is no plan for large-scale conversion to renewable natural gas.

Through the City's participation in Clean Power Alliance (CPA), Manhattan Beach residents and businesses now automatically receive 50% renewable electricity from the grid, transitioning to 100% renewable energy in October 2021. All power customers still have the choice/option to lower their renewable energy tier or opt out of CPA and return to SCE. A reach code to electrify new buildings would enable the City to require electrification of new construction, ensuring that new construction is powered by clean energy.

Cost Effectiveness & Economics:
Changes to Title 24, Part 6 of the California Energy Code require the approval of the California Energy Commission and must be deemed cost-effective. According to the *California Energy Codes & Standards 2019 Cost-effectiveness study: Low-Rise Residential New Construction* (Attachment) and *California Energy Codes & Standards 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study* (Attachment), completed by the California Energy Codes and Standards group, a reach code requiring electrification is cost-effective. This means that in the long run, new development owners would see cost savings from installing electric appliances in new construction.

Multiple studies, including Rocky Mountain Institute's *The Economics of Electrifying Buildings* (Attachment) and Environment and Economics, Inc.'s *Residential Building Electrification in California* (Attachment) have shown that using efficient electric heat pumps rather than gas-fired appliances is

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

Ordinance Development Process & Implementation:
The basic scope of a reach code ordinance for Manhattan Beach would include staff reviewing available model ordinances and customizing an ordinance to the needs of the City. Staff would identify model ordinances developed through a collaborative effort involving the California Energy Commission, the State's major utilities, several community choice aggregators and representatives from local governments and energy policy agencies. The City would work with these groups on outreach to the building and construction community.

The ordinance would become effective upon approval by the California Energy Commission, which is expected within 90 days of adoption by City Council. It would be administered as part of the normal building permit process. Staff training would be conducted prior to the effective date.

POLICY ALTERNATIVES:
Staff seeks City Council direction in identifying which actions could be taken to develop a reach code for new buildings- both residential and non-residential. Note that existing buildings are not discussed in this report- just new buildings. However, local governments are currently researching and establishing best-practices on decarbonizing and electrifying existing buildings. Staff will continue to track best practices in this emerging area, especially in California cities, and could report back during the next building code cycle. In addition, should City Council direct staff to draft a reach code, the definition of "new" buildings would be researched and specified to determine whether major remodels, additions, etc. would fall under the new construction definition, just as that definition is clarified in the current building code. Lastly, City Council could consider including infeasibility waivers with Options Two and Three for new development, which staff would research and specify for certain exceptions.

Below are four policy alternatives for consideration, for both residential and non-residential new buildings. City Council can direct the same policy alternative for both types of new buildings, or different ones.

Option One: *Do Nothing to New Buildings.*
The first option would be to continue with business as usual and not amend the City's adoption of the California Building Standards Code with a reach code that addresses new buildings.

Option Two: *All-Electric Reach Code for New Buildings*
Option two would be to direct staff to add a work plan item to include a local “reach code” amendment in the next California Building Standards Code requiring all-electric fuel sources for new construction of buildings. After adoption by City Council, this amendment would require approval from the California Energy Commission.
Option two is the option recommended by the Sustainability Task Force.

Option Three: *All-Electric Reach Code for New Buildings with Waiver*
Option three would be to direct staff to add a work plan item to include a local “reach code” amendment in the next California Building Standards Code adoption to require all-electric fuel sources for new buildings, with a waiver option for stoves. Waivers for specific appliance exceptions (stoves) could be considered by the City, though indoor air quality and public health benefits would not be as positively impactful as option two. After adoption by City Council, this amendment would require approval from the California Energy Commission.

Option Four: *Electric-Ready Reach Code for New Buildings*
Option four would be to direct staff to add a work plan item to include a local “reach code” amendment to the next California Building Standards Code, requiring electric-readiness for new construction of buildings. An electric-ready ordinance for new construction requires either installation of electric appliances or pre-wire for future electrification. After adoption by City Council, this amendment would require approval from the California Energy Commission.

PUBLIC OUTREACH:
Prior outreach regarding electrification of buildings and appliances occurred during the Mayor’s Townhall on the Challenge of Climate Change in March 2020, with more than 100 residents in attendance. In addition, during a solar workshop in 2019 and during Climate Ready MB public workshops and focus groups in 2021, electrification of buildings, paired with renewable energy has been discussed as a key action cities are taking to meet GHG reduction targets.

Should Council direct staff to draft a reach code, outreach to the community could include all-electric kitchen demos, workshops, and energy efficient electric appliance recommendations, accompanied by publication of all required notices in a newspaper of general circulation for public hearings associated with any potential municipal code amendment.

ENVIRONMENTAL REVIEW:
The City Council’s discussion of potential regulations is not a “project” as defined under Section 15378 of the State California Environmental Quality Act (CEQA) Guidelines; therefore, pursuant to Section 15060(c)(3) of the State CEQA Guidelines, the activity is not subject to CEQA. Thus no environmental review is necessary. In the event that the City Council directs staff to prepare amendments to the Municipal Code, at that time, said activity would be subject to CEQA.

LEGAL REVIEW:
The City Attorney has reviewed this report and determined that no additional legal analysis is necessary.

ATTACHMENT:
1. References and Resources