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Title: Discuss and Provide Direction on Potential Requirements for Increased Energy Efficiency of New Buildings (Community Development Director Tai).
DISCUSS AND PROVIDE DIRECTION

Sponsors:

Indexes:

Code sections:

Attachments: 1. References and Resources, 2. Zero Emission Building Ordinances in CA (July 26, 2021), 3. Energy Efficiency Code Categories, 4. California Energy Commission Press Release (August 11, 2021), 5. California Energy Commission Energy Code Update Summary for 2022

Date	Ver.	Action By	Action	Result
10/19/2021	1	City Council Regular Meeting	accept	Pass

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

SUBJECT:
Discuss and Provide Direction on Potential Requirements for Increased Energy Efficiency of New Buildings (Community Development Director Tai).
DISCUSS AND PROVIDE DIRECTION

RECOMMENDATION:
Staff recommends that City Council discuss and provide direction to staff regarding potential requirements to increase energy efficiency of new buildings beyond state requirements.

FISCAL IMPLICATIONS:
There is no fiscal implication with conducting this discussion. Should City Council direct staff to develop new requirements, costs related to staff time and implementation will be incurred. 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. Targets aim to achieve zero net energy (ZNE) for all new residential and municipal buildings from 2020-2025 and for all nonresidential buildings (including high-rise residential) by 2030.

According to the California Air Resources Board’s *California Greenhouse Gas Emissions* for 2000 to 2019 and the California Energy Commission, residential and commercial buildings are responsible for roughly 25 percent of California’s GHG emissions (See Attachment). 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.

The California Energy Commission (CEC) is the state’s primary energy policy and planning agency. The CEC develops policy to reduce energy usage and costs, limit the environmental impacts of energy generation and use, and ensure a safe, resilient, and reliable supply of energy. Every three years the CEC presents Building Energy Efficiency Standards (Energy Code) updates for new construction and renovations to existing buildings. After the CEC adopts these standards, they are submitted to the California Building Standards Commission (CBSC) for approval and inclusion with other changes to the building code. The Energy Code is designed to be cost-effective so that implementation is affordable, while helping California manage energy demand and advance the state’s climate and clean air goals. As standards require upgrades, such as better insulation and more effective climate control in buildings, the increases in energy efficiency reduce utility bills while improving comfort inside buildings. The standards also reduce GHGs by using less energy from fossil fuel-burning power plants that emit smog forming pollutants and climate-changing gases (See Attachment).

Cities and counties may choose to adopt standards that exceed the state minimum. The California Green Building Standards (“CALGreen” or Part 11 of Title 24) includes voluntary reach standards, with model building code language for local governments that wish to go beyond the minimum statewide requirements. Reach standards are an important tool for jurisdictions to meet their own climate goals. It allows them to decide on standards that meet their needs and interests, so long as they also meet or exceed state code requirements. Over 50 cities in California have adopted “reach

codes” addressing energy efficiency beyond State requirements in 2019-2021, with the most widely adopted reach code approach by cities targeting electric new buildings to achieve ZNE. (See Attachment.)

On September 3, 2019, the City Council inquired about 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 more recent California Building Standards Code updates, which are updated every three years. Upon reviewing staff reports from November 2010, staff confirmed that the City adopted energy code measures 15 percent above Title 24 state energy efficiency requirements (effective 2011-2013). These measures placed Manhattan Beach’s energy efficiency standards well beyond the minimum state requirements at that point. In 2013 and 2016, the City adopted the State’s requirements for the Energy Code.

Existing Energy Efficiency Regulations

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 percent less energy than those built under the 2016 standards. Nonresidential buildings use about 30 percent 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 essentially required for low rise residential new construction since January 1, 2020, but do not require PV for residential additions, alterations, or non-residential new construction. The 2019 Code also requires third-party Home Energy Rating System (HERS) testing, inspection, and verification.

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.

This item was originally scheduled to be on the August 3, 2021 City Council agenda. Since then, there have been new developments with the State’s Energy Code. On August 11, 2021, the CEC adopted the 2022 Building Energy Efficiency Standards (Energy Code) for newly constructed and renovated buildings. The 2022 Energy Code focuses on four key areas in newly constructed homes and businesses: 1) encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units; 2) establishing electric-ready requirements for single-family homes to enable owners to use cleaner electric heating and cooking options; 3) expanding solar PV system and battery storage standards to make clean

energy available onsite and complement the state's progress toward a 100 percent clean electricity grid; and (4) strengthening ventilation standards to improve indoor air quality. (See Attachment.) The CBSC is scheduled to consider the 2022 Energy Code in December 2021. If approved by the CBSC, it would go into effect on January 1, 2023, giving builders, contractors and other interested parties a year to gear up for the changes. (See Attachment)

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. Pursuant to Assembly Bill 32, California needs to reduce its greenhouse gas emissions to 40 percent below 1990 levels by 2030. Since buildings are a significant source of climate pollution, striving to achieve ZNE through increased energy efficiency and renewable energy requirements is a key strategy.

To increase the energy efficiency of buildings beyond state requirements, California cities have had two primary approaches over the past few years.

The most widely adopted approach has been to require new construction, including additions, to be powered solely by electricity. These all-electric requirements are based on findings that all-electric buildings cause fewer GHG emissions and improve indoor air quality. Over 50 cities in California have adopted energy efficiency regulations above state requirements focused on electric buildings. (See Attachment.) CEC's adopted Energy Code for 2022 will require new single-family homes to be electric-ready, with dedicated 240-volt outlets and space (with plumbing for water heaters), so electric appliances can eventually replace any installed gas appliances.

The second most widely adopted approach has been to require solar PV on new construction. Since January 1, 2020, state building regulations essentially require PV on new low-rise residential buildings; however, many cities have adopted requirements for PV on nonresidential new buildings and high-rise residential buildings as well.

There are also several less-widely adopted regulations that cities have pursued that increase building energy efficiency, such as:

- requiring higher efficiencies for mixed-fuel (electric and gas) buildings through more stringent energy storage and renewable energy standards, such as requiring solar PV or stricter Total Energy Design Rating (EDR) margins through a variety of efficiency measures related to space-conditioning, indoor lighting, mechanical ventilation, and service water heating;
- requiring cool or sustainable roofs for new construction including increased requirements for reflectance and emittance values to reduce solar heat into the conditioned space;
- requiring solar collectors for hot water;
- requiring vegetation to cover minimum rooftop area;
- requiring solar or electric heat pumps for pool heating and water heaters; or

- requiring green building certification (or certification equivalency) from accredited programs such as LEED (Leadership in Energy and Environmental Design) for certain new development to require more energy efficiency and additional sustainable building features such as water efficiency, using sustainable materials, improving indoor air quality, etc.

A table of building energy efficiency categories, including building types, pros/cons, and examples of adopter cities is included in the attachments. Most current city energy efficiency regulations above state requirements address new buildings, although a few also address additions and existing buildings.

Sustainability Task Force Discussion & Recommendation

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 2019 California Building Standards Code, as well as best practices in reach codes in other cities, the STF discussed building electrification. Building electrification refers to replacing direct fossil fuel use with electricity use in a way that reduces overall emissions and potential energy costs while lowering other air pollutants. STF members supported full electrification for new buildings to move 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 multiple 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 to require all-electric new construction.

Cost Effectiveness & Economics:

Changes to the Energy Code require the approval of the CEC and must be deemed cost-effective. 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, for example concluded that electrification is cost-effective in that owners of new construction may see cost savings from installing electric appliances.

Another example in multiple studies, including Rocky Mountain Institute's *The Economics of Electrifying Buildings* and Environment and Economics, Inc.'s *Residential Building Electrification in California* (see attachments) 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 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 PV capacity. In fact, investing savings from the gas infrastructure in additional PV capacity to

offset more of the electricity load from the building is cost-effective for the owner from day one.

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 need to be adopted by the City Council and then the California Energy Commission.

POLICY ALTERNATIVES:

Staff seeks City Council direction in two areas. The first is whether City Council supports increasing energy efficiency requirements for new buildings above minimum state requirements. If the City Council does support this, the second direction is to identify which of the following policies could be pursued to increase energy efficiency in buildings. Staff would add a work plan item to analyze these policies for an in-depth discussion with the City Council. Should the City Council then direct a reach code to incorporate these policies as regulatory actions, staff would return with a draft reach code ordinance.

Option One: Do Not Increase Energy Efficiency Requirements for New Buildings.

The first option would be to continue with business as usual. This means the City would adopt the current and required California Building Standards Code and not include energy efficiency regulations that exceed State requirements. All new residential buildings will be required to be electric-ready beginning January 1, 2023.

Option Two: Increase Energy Efficiency Above State Requirements for New Buildings.

The second option would be to incorporate potential policies below to achieve greater energy efficiency than the 2022 California Building Standards Code. Should the City Council direct staff to pursue Option Two, one or more of the following policies and concepts (2.A. through 2.D.) can be directed for further research and discussion:

2.A. All-Electric/Electric-Only New Buildings.

Require all-electric fuel sources for new construction of buildings. This would require all-electric new development (with no gas appliances or gas plumbing), through amending the energy code. ***This option is recommended by the Sustainability Task Force.***

2.B. Photovoltaic (PV) Systems Required on New Nonresidential Buildings.

Require PV on new nonresidential buildings. Options under this could include requiring small or large minimum size capacity, solar size based on roof area, or solar based on projected annual electrical usage.

2.C. Increase Energy Performance Requirements for New Buildings.

Require electric-ready, mixed-fuel buildings to comply with greater energy performance levels,

whereas all-electric buildings must only meet the State energy code. This could include requiring higher efficiencies for mixed-fuel buildings through more stringent energy storage and renewable energy standards, such as requiring solar PV or requiring a variety of efficiency measures related to space-conditioning, indoor lighting, mechanical ventilation, and service water heating to achieve stricter energy budgets.

2.D. Other Energy Efficiency Regulations.

Implement one or more of the following less-widely adopted options to increase energy efficiency:

- Require improvements to roofing product performance with increased requirements for reflectance and emittance to reduce solar heat into the conditioned space
- Require solar PV to offset minimum percentage of usage
- Require solar collectors for hot water
- Require vegetation to cover minimum rooftop area
- Require solar or electric heat pumps for pool heating
- Require electric heat pumps for water heaters
- Require green building certification (or certification equivalency) that includes energy efficiency and more extensive sustainable building features beyond energy efficiency as required in accredited programs such as LEED for certain new development.

PUBLIC OUTREACH:

Prior outreach regarding energy efficiency and 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 Climate Ready MB public meetings 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 the City Council direct staff to proceed with additional requirements, staff would conduct outreach as part of the work effort. Additionally, Should City Council direct staff to pursue Option 2.A., 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 outreach events and meeting agendas associated with any potential changes to the Municipal Code.

At the state level, in developing the 2022 Energy Code standards over the past two years, the CEC met with more than 50 industry stakeholder groups, and 43 public workshops were held. (See Attachment)

ENVIRONMENTAL REVIEW:

The City Council's discussion of potential requirements 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 in the future, that activity would be subject to CEQA.

LEGAL REVIEW:

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

ATTACHMENTS:

1. References and Resources
2. Zero Emission Building Ordinances in CA (September 23, 2021)
3. Energy Efficiency Code Categories
4. California Energy Commission Press Release (August 11, 2021)
5. California Energy Commission Energy Code Update Summary for 2022