CITY OF MANHATTAN BEACH CITY HALL
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TO: Honorable Mayor and Members of the City Council

FROM: Carrie Tai, Community Development Director

MEETING: City Council Regular Meeting, August 3, 2021

SUBJECT: Agenda Item No. 12 – Potential Regulatory Actions that Increase Energy Efficiency of Buildings.

DATE: July 30, 2021

SUPPLEMENTAL ATTACHMENT

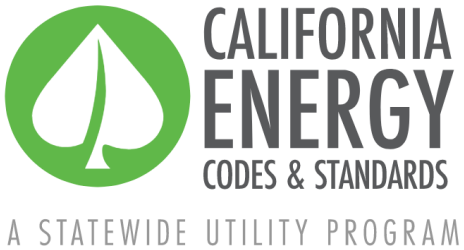
- PowerPoint Presentation

ENERGY EFFICIENCY IN BUILDINGS

AUGUST 3, 2021

BACKGROUND

- September 2019 – City Council directed staff and the Sustainability Task Force to discuss options and provide recommendations for increasing energy efficiency of new buildings above and beyond current State requirements.
- Reach codes "reach" above and beyond State requirements
- City had a reach code from 2010-2013, 15% above the State's energy efficiency requirement
- Subsequent codes relied on the increasing energy efficiency requirements in Green Code.



BACKGROUND

- Buildings cause ~25% of CA's GHG emissions
  - Residential buildings (2/3)
  - Non-residential buildings (1/3)
- State's energy targets for new construction aim for zero-net-energy (ZNE) by 2025 (residential/municipal) and 2030 (non-residential)
- ZNE is netting out a building's annual energy usage to zero by providing offsetting renewable energy and energy efficient buildings.
- Policy mechanism to achieve ZNE:
  - California Energy Code - energy efficiency and renewable energy requirements
  - California Green Code requires that builders use energy-efficient technologies and construction practices.

BUILDING ENERGY CODES IN MB

- Required to adopt new changes to CA Building Standards Code every 3 years.
- MB latest building code (adopted in 2019) increased energy efficiency in new homes:
  - Single family homes built with rooftop solar will use approximately 53% less energy than those built under the 2016 standards
  - Non-residential buildings built will use about 30% less energy compared to the 2016 code, largely due to lighting improvements

BUILDING ENERGY CODES IN MB

- New Energy Efficiency Standards for low-rise residential new development in 2019 energy code focus on four key areas:
  - Solar photovoltaic (PV) systems
  - Indoor air quality
  - Demand response compliance options
  - Updated thermal envelope standards

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

- New Energy Efficiency Standards for non-residential, high-rise residential, and hotel/motel new development energy codes include improvements in:
  - Indoor air quality
  - Lighting – reduced power allowances based on improved LED lighting efficiencies.
  - Requires automatic power reduction for unoccupied spaces, automatic scheduling, and motion control of outdoor lighting.

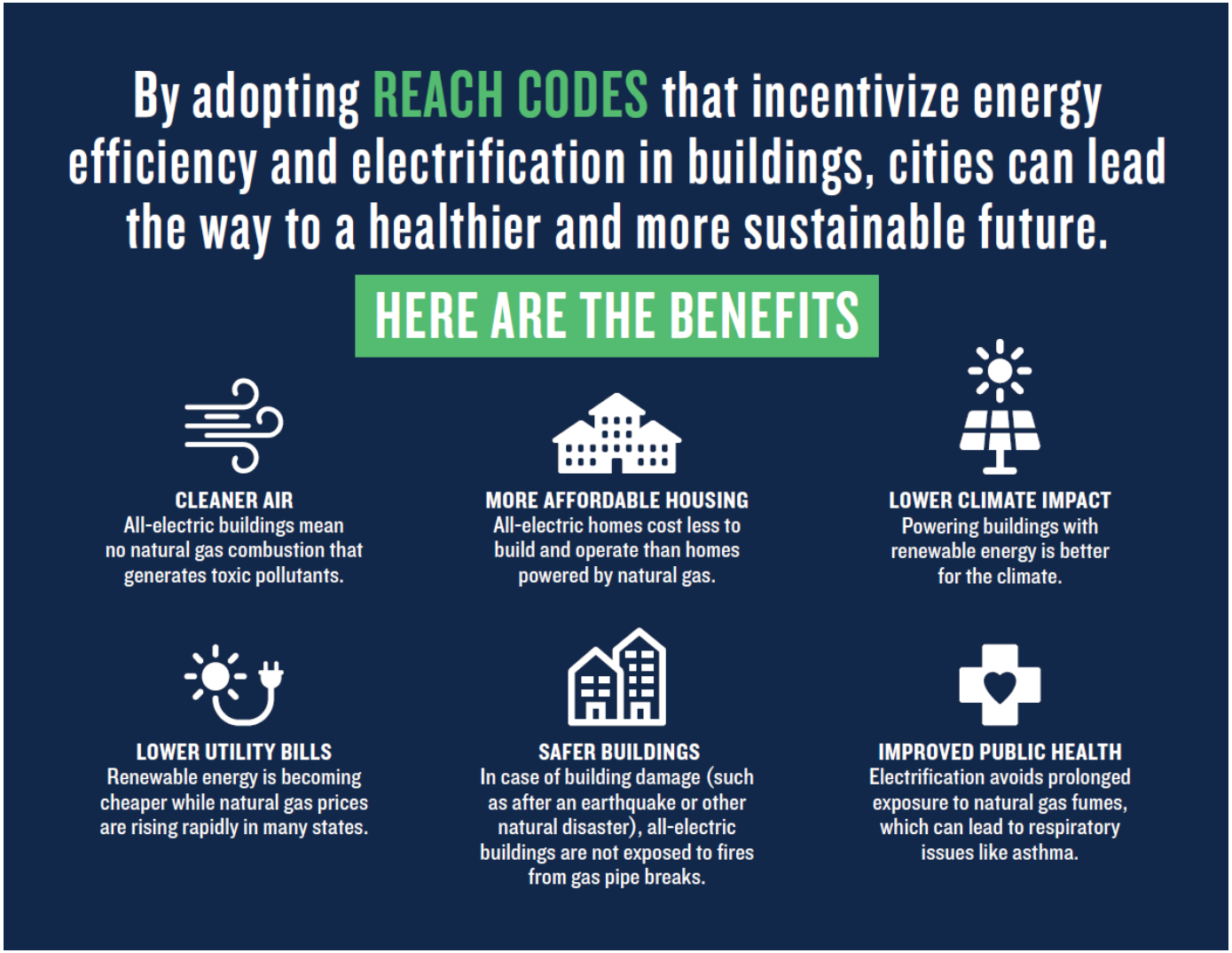
REACH CODES

- What are Reach Codes?
  - A local building energy code that "reaches" beyond state minimum requirements for energy use in building design and construction.
  - Designed to encourage low-cost all-electric new construction of healthier, efficient, safer, and zero emission buildings.

REACH CODES

- Why Reach Codes?
  - Incentivize lowest-cost construction options
  - Development of healthier, safer, lower emission buildings
  - Reflect sustainability-related values of our community
  - Improve indoor air quality and reduce risk of fires
- 45+ cities in CA have adopted "Reach Codes" addressing energy efficiency in 2019-2021

REACH CODES



Infographic: NRDC

DECARBONIZING BUILDINGS

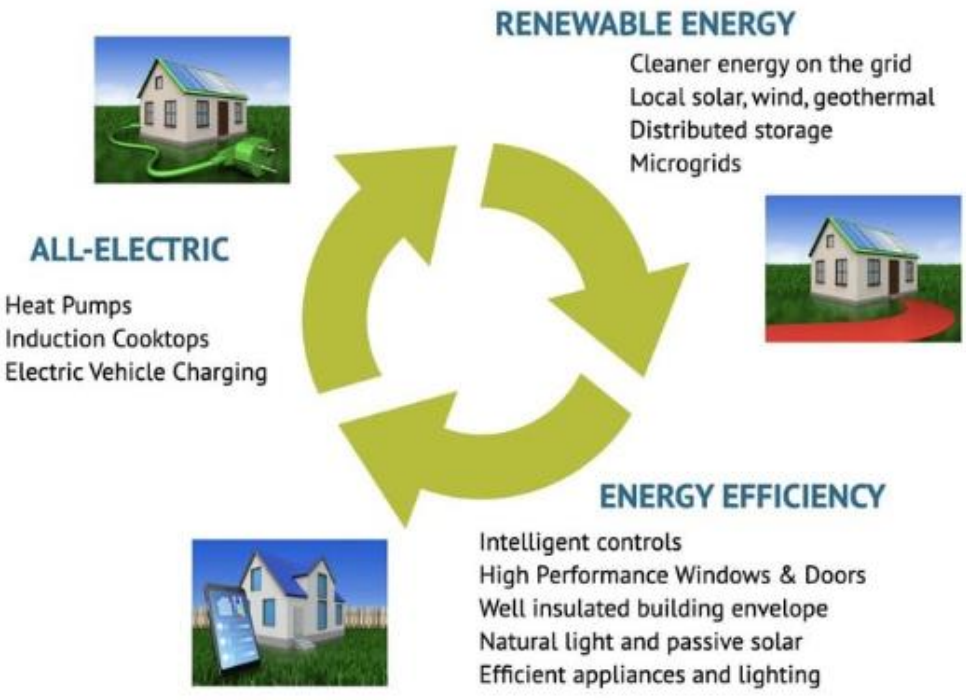


Image Courtesy of Elemental Green

- Building decarbonization
  - Reducing energy emissions ("operational carbon") from a building's energy usage through shifting from fossil fuel appliances to electric alternatives that run on clean electricity.
- Building electrification
  - Replacing direct fossil fuel use (e.g., propane, heating oil, gasoline) with electricity use in a way that reduces overall emissions

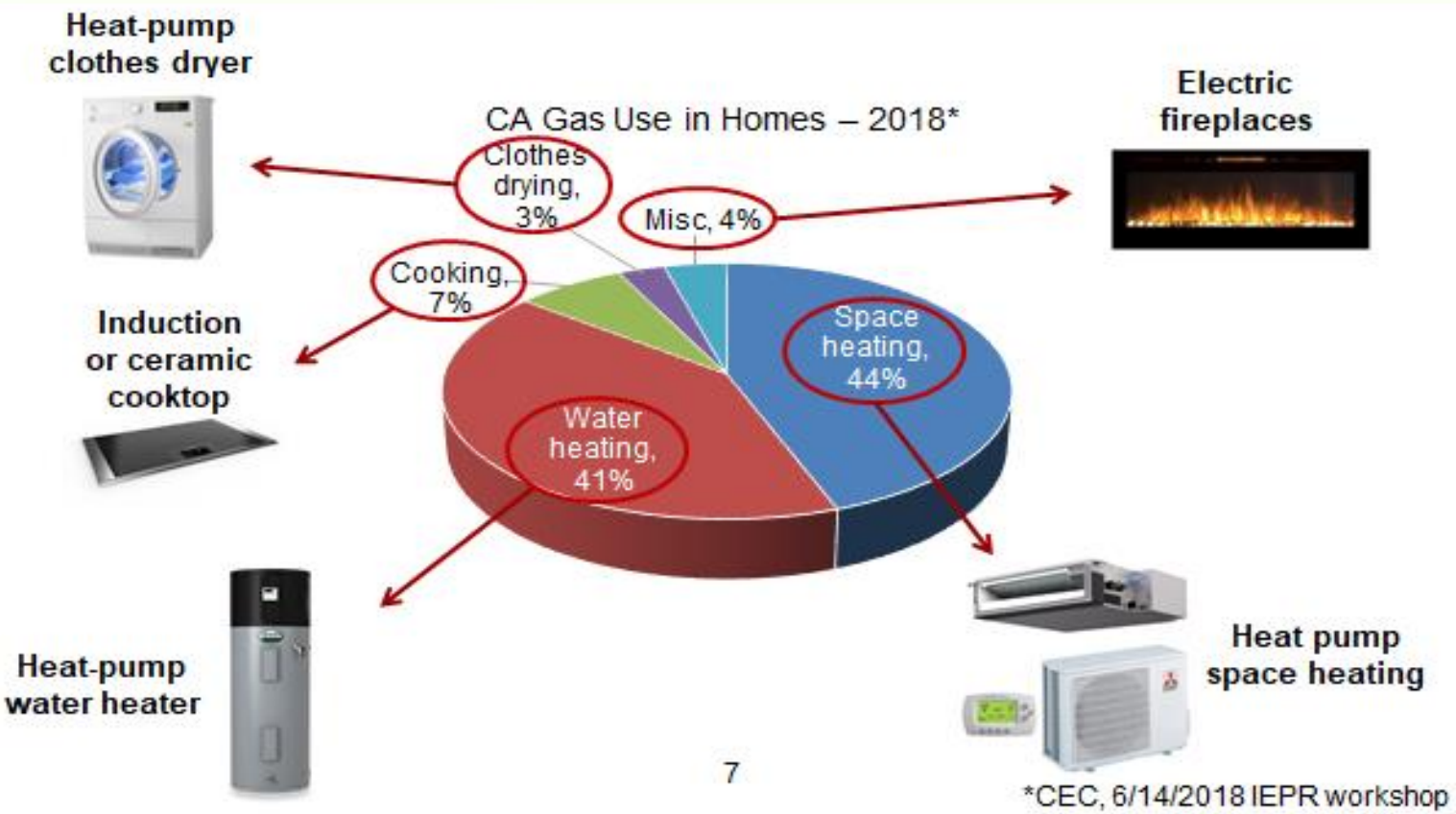
EFFICIENT ELECTRIC APPLIANCES

Energy Star

- High-efficiency equipment and design will lower energy requirements
- Advances in technologies such as electric heat pumps and other electrical equipment are yielding much higher overall efficiencies than their fossil gas counterparts.
- Use these appliances greatly increases a building's energy efficiency.

EFFICIENT ELECTRIC APPLIANCES

High-efficiency electric alternatives to gas use in residential buildings



COST EFFECTIVENESS

- All-electric buildings are often cheaper to build due to the elimination of running gas plumbing to the building.
- Lower initial costs generally make all-electric construction more cost-effective on a life-cycle basis.
- California Energy Code requires the approval of the California Energy Commission and must be deemed cost-effective.
- California Energy Codes and Standards group study indicates a reach code for electrification is cost-effective in the long run, as residents will see cost savings from installing electric appliances.

ELECTRIFICATION & ECONOMICS

Electrification improves affordability

Building all-electric saves +1,500 to $6,000 in construction costs.

Residents save $4,000-$10,000 on utility bills over 20 years.

Adding solar lowers utility bills by an additional $500 per year.

Gas rates rising. Utilities expect 24-46%% rate hike between 2019-2022

Source: E3 Study 2019 and Synapse 2018

PG&E

SoCalGas

A Sempra Energy utility

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PUBLIC HEALTH

- Cooking at least once a week with a gas stove produces toxic levels of nitrogen dioxide, formaldehyde, and carbon monoxide, which would exceed some outdoor air quality standards.
- Gas stoves are more detrimental to indoor air quality because they produce significant fossil fuel combustion
- This issue is compounded by state efficiency standards, which are designed to trap air indoors.

Rocky Mountain Institute

GREENHOUSE GAS EMISSIONS

- All-electric buildings provide significant GHG reductions.
- Energy efficiency and more solar can reduce net energy use to nearly zero for some building types and GHG emissions to less than a third of a mixed-fuel building.
- All-electric buildings are one of the key strategies to decarbonize buildings
- The state's electric system is rapidly becoming cleaner, driven by escalating renewable portfolio standards and cleaner utility product offerings.

SUSTAINABILITY TASK FORCE

- In late 2019, early 2020, and June 2021 the Sustainability Task Force (STF) discussed increasing energy efficiency in new buildings.
- Reviewed the 2019 California Building Standards Code and best practices in reach codes in other cities
- STF discussed building decarbonization and electrification.
- STF discussed community education on benefits and efficiency of electric appliances, including performance results of electric induction stoves
- *Supported full electrification reach codes for new buildings to move the city away from fossil gas emissions and improve public safety and indoor air quality*
- Recommendations were included in the 2020 Mayor's Townhall on Climate Change

REACH CODE DEVELOPMENT

- Review available model ordinances and customizing to the needs of the City.
- Identify model ordinances developed through a collaborative effort involving the regulatory agencies, utility providers, and local governments and energy policy agencies.
- The City would work with these groups on outreach to the building and construction community.

REACH CODE IMPLEMENTATION

- Next update of the building codes - Fall 2022
- Adoption by the City Council
- Approval by the California Energy Commission
- Notices of the requirements would be posted at the public counter and the City website.
- Administered as part of the normal building permit process.

POLICY ALTERNATIVES

All-Electric Reach Code

- Requires inclusion of all-electric fuel sources for new buildings.
- Cities such as Ojai, Sacramento, Oakland, and Cupertino have passed ordinances such as this and is the trending best-practice in municipalities over the past 6-9 months. Santa Barbara just passed a similar ordinance in late July 2021.

Recommended by the Sustainability Task Force.

POLICY ALTERNATIVES

All-Electric Reach Code with Waiver

- 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

POLICY ALTERNATIVES

Electric-Ready Reach Code

- Require electric-readiness for new construction of buildings
- Requires either installation of electric appliances or pre-wire for future electrification.
- Recently, cities such as Davis, San Luis Obispo, and the County of Marin adopted electric-ready reach codes. Some are now moving beyond electric-ready. For example, in 2019 San Jose just adopted a natural gas infrastructure moratorium in 2020.

STAFF RECOMMENDATION

Staff recommends that the City Council discuss and provide direction on a reach code for new buildings.

Choose One for Residential and One for Non-Residential:

1. Do Nothing to New Buildings

2. All-Electric Reach Code for New Buildings
Recommended by the Sustainability Task Force

3. All-Electric Reach Code for New Buildings with Waiver

4. Electric-Ready Reach Code for New Buildings

QUESTIONS?