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August 27, 2024

Honorable Members of the City Council
City of Los Angeles City Hall, Room 395
Los Angeles, CA 90012

**REPORT FROM THE DEPARTMENT OF BUILDING AND SAFETY RELATIVE TO
RECOMMENDATIONS AND BEST PRACTICES FOR REVISIONS TO THE CITY'S EXISTING
BUILDINGS ENERGY AND WATER EFFICIENCY ORDINANCE THAT MAY CONTRIBUTE
TO CITY-WIDE DECARBONIZATION OF THE BUILDINGS SECTOR; CF 21-1463**

Dear Honorable Councilmembers,

On December 8, 2021, the Los Angeles City Council adopted a motion (Koretz/Krekorian/Raman, CF-21-1463) which instructed LADBS, with assistance from the Climate Emergency Mobilization Office (CEMO), City of Los Angeles Housing Department (LAHD), and the Los Angeles Department of Water and Power (LADWP), to report on **recommendations, best practices, and other considerations for revisions to the City's existing Buildings Energy and Water Efficiency ordinance that may contribute to city-wide decarbonization of the building sector**. The motion indicates the plan should be informed by the CEMO Community Assemblies and that any strategies to achieve the LA Green New Deal goals should incorporate energy and housing justice principles.

STATE AND LOCAL CLIMATE GOALS AND COMMITMENTS

At the state level, California implemented: the California Green Building Standards Code to increase building energy efficiency; the Global Warming Solutions Act of 2016 to reduce GHG emissions by 40% by 2030 and 80% by 2050; and the 100 Percent Clean Energy Act of 2018 to achieve the goal of a fully renewable electric grid by 2045.

The LA Green New Deal (2019) establishes emissions and energy reduction goals for buildings, transportation, electricity, and waste to achieve carbon neutrality before 2050. It establishes specific targets for the building sector that are listed below:

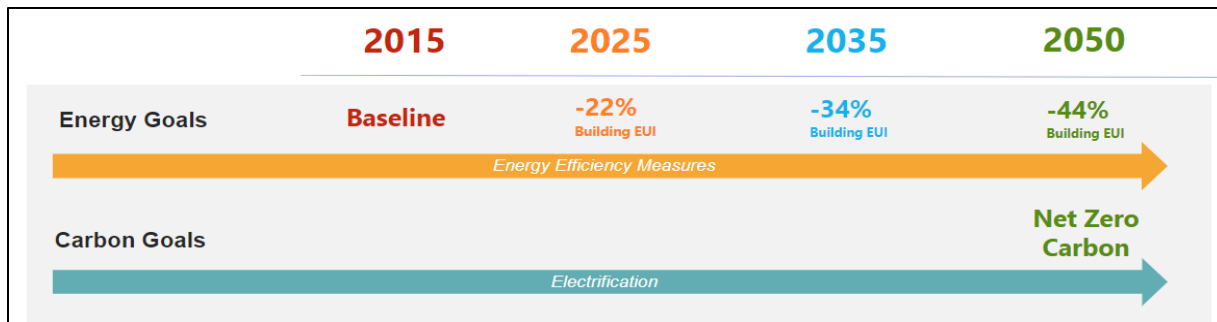


Figure 1: LA Green New Deal Energy and Carbon Goals

CURRENT CITY OF LOS ANGELES EXISTING BUILDING ENERGY AND WATER EFFICIENCY (EBEWE) PROGRAM

The **Existing Buildings Energy & Water Efficiency (EBEWE) Program** was established in Los Angeles through the addition of Division 97 to the Los Angeles Municipal Code (LAMC), effective on January 29, 2017. The EBEWE Program requires all buildings over 20,000 sq ft (including municipal buildings over 7,500 sq ft) to conduct annual benchmarking and reporting of their energy and water use and to conduct audits and retro-commissioning every five years. The EBEWE Program aims to reduce energy and water use in the City's largest buildings.

CITY OF LOS ANGELES BUILDING STOCK OVERVIEW

In the City of Los Angeles, buildings over 20,000 sq ft account for 3% of total buildings by count.

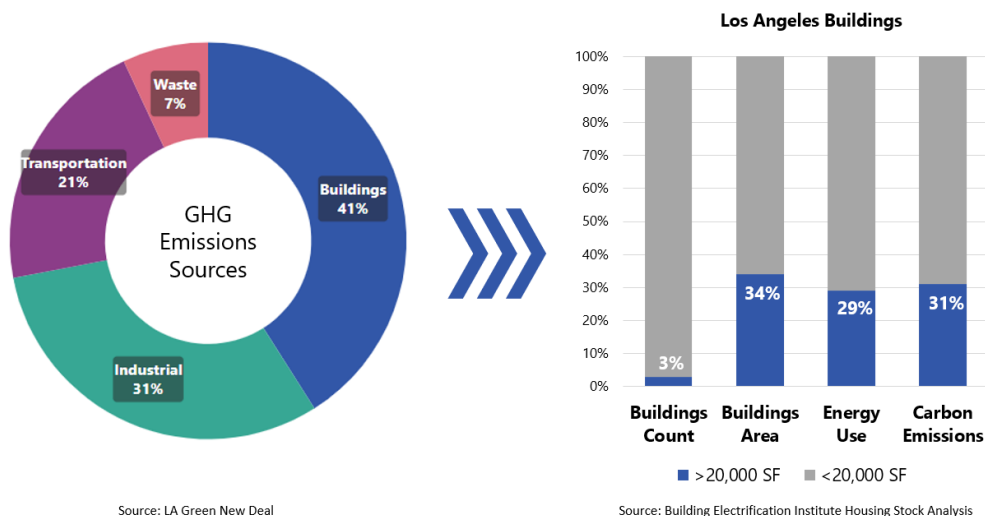


Figure 2: Citywide Greenhouse Gas Emissions by source and building sector breakdown.

Of buildings greater than or equal to 20,000 sq ft in area, the following chart (Figure 3) details the breakdown of area in sq ft by simplified use type:

Area of Buildings >20k SF (2023-24 County Assessor Data)

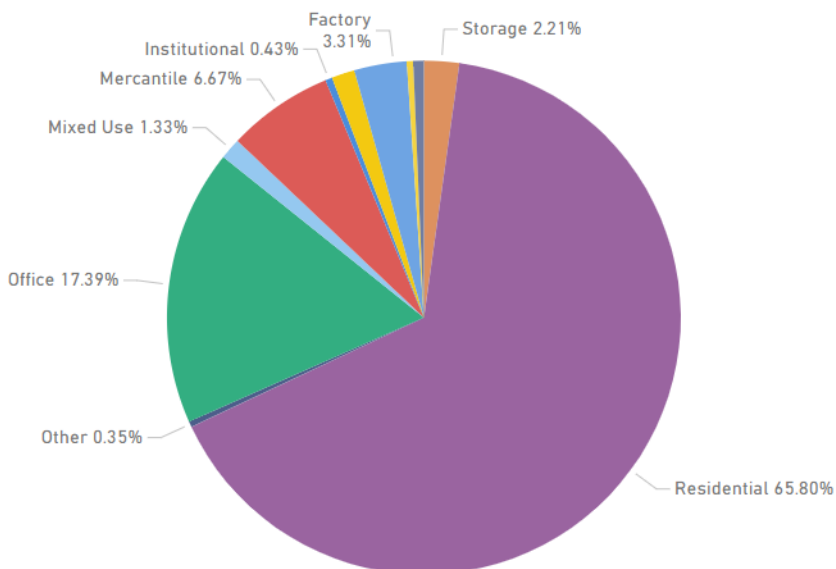
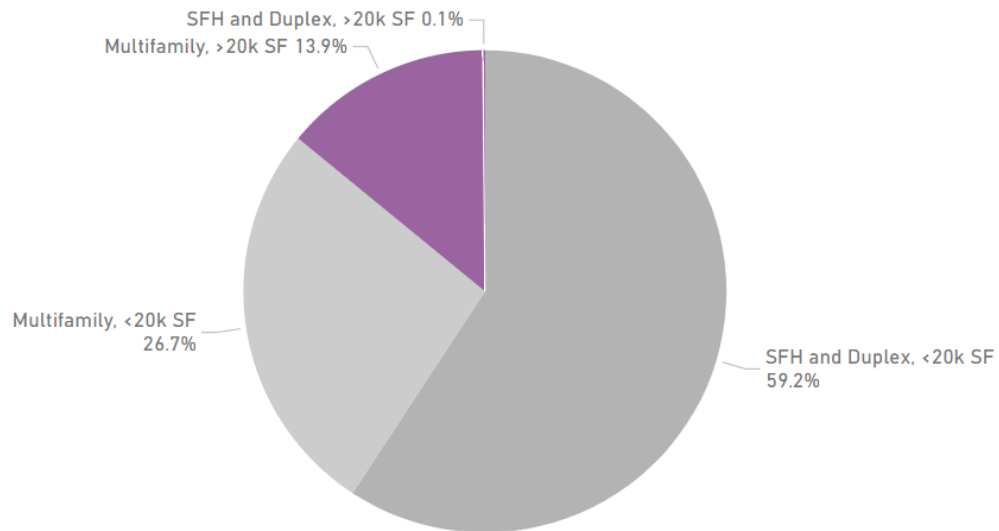


Figure 3: Los Angeles Residential Building Stock (County Assessor 2023-2024 Local Roll)

RESIDENTIAL BUILDING SECTOR

The City of Los Angeles has more than 2.4 billion square feet of residential building area, 86% of which is in smaller units (single-family homes, duplexes, and multifamily units under 20,000 sq ft). The 14% of residential area that is in buildings greater than or equal to 20,000 sq ft, amounting to 3.25 million square feet, is responsible for an estimated 14.6% of total City residential building stock carbon emissions. These buildings, while fewer in number, can still contribute significantly to overall energy savings and emission reductions due to their larger size, and number of individuals housed within.

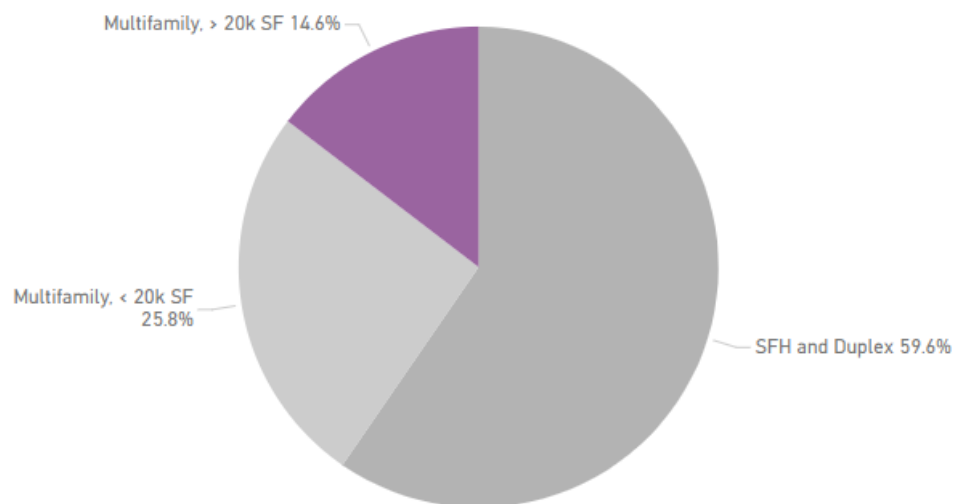
Residential Building Stock Area (2023-24 County Assessor Data)



The City of Los Angeles has 2.4 Billion square feet of residential building area. **14%**, or 3.25 Million square feet of this area is in buildings greater than or equal to 20,000 SF.

Figure 4: Los Angeles Building Stock Area Breakdown of Buildings >20,000 sq ft (County Assessor 2023-2024 Local Roll)

Residential Building Stock Emissions (2023-24 County Assessor Data, BEI Energy Data)



The residential building sector as a whole is responsible for an estimated 5.57 million tons of annual CO₂ emissions. **14.6%** of these emissions arise from buildings greater than or equal to 20,000 SF.

Figure 5: Los Angeles Residential Building Stock Carbon Emissions (County Assessor 2023-2024 Local Roll, BEI Energy Data, National Renewable Energy Laboratory (NREL) Grid Factors)

CHALLENGES AND IMPACT

Based on stakeholder input, the following are some major concerns that need to be addressed in developing decarbonization regulations:

- Retrofitting multifamily housing, including affordable housing, may cause the displacement of tenants.
- Property owners may not be able to afford building upgrades especially given that funding may be difficult to obtain and interest rates are high.
- Owners of buildings that are under financial distress typically cannot perform any upgrades to their building.
- Costs associated with retrofitting will likely be passed on to tenants through increased costs and rental rates.

Other concerns will be highlighted later in this report.

PEER CITY CASE STUDIES

Across the United States, major cities are recognizing the importance of decarbonizing buildings and are actively developing policies and programs to support this effort. New York City, for instance, has implemented Local Law 97, setting strict emissions standards for existing buildings. San Francisco has passed legislation requiring new municipal buildings to be all-electric, and Washington D.C. has initiated its Clean Energy D.C. Plan to reduce greenhouse gas emissions by increasing energy efficiency. Boston's Climate Action Plan has also emphasized building retrofits and energy-saving measures. These initiatives reflect a growing understanding of buildings as a critical lever for reducing carbon emissions and meeting climate goals.

To the greatest extent possible, we will establish a regional approach to developing building decarbonization strategies by working collaboratively with the County of Los Angeles and surrounding cities. There is no one size fits all approach to building decarbonization. Therefore, we will explore strategies that will adapt various policy tools and programs to the specific context of the City which consider the variations in building stocks.

Common approaches include:

- Mandatory Benchmarking and Reporting (energy and/or carbon)
- **Building Performance Standards (BPS)**
- Energy Efficiency Incentive Programs
- Green Financing Initiatives
- Requirements for Major Renovations
- Electric Ready Requirements
- Expanded Appliance Standards

Of the above approaches, the most common pathway for affecting a large proportion of a city's emissions, while only targeting a small number of building owners, involves creating benchmarking requirements that evolve over time to include Building Performance Standards.

A **building performance standard (BPS)** is a regulation that sets specific energy efficiency or carbon emission targets for existing buildings, often tailored to the building's size and type.

Eleven (11) cities nationally have implemented building performance standards, including New York, Washington D.C., Boston, and Denver.

In our review of other city performance standards, we looked at both peer city reviews of size thresholds as well as the analysis of LA building stock that was performed by Buro Happold, LADBS' consultant for this project. Size thresholds are typically set to align with a city's existing benchmarking ordinance (size could change in the future as part of a phasing approach). It was very typical for these other cities to match the size requirement for their BPS with their existing benchmarking ordinance. In the case of LA, buildings 20,000 sq ft or larger that are privately-owned and 7,500 sq ft and larger that are city-owned buildings must comply with the EBEWE ordinance.

The second component of the analysis consisted of looking at the LA building stock to determine the impact of various size thresholds. For example, the 20,000 sq ft threshold accounts for 3% of the buildings and 31% of the total emissions. If the size threshold was changed to 7,500 sq ft and above (city-owned and privately-owned) the number of buildings doubles to 6% yet the total emissions only increases to 39%. In this case, adjusting the size threshold to 7,500 would require twice as many buildings to comply while only slightly improving the reduction in emissions.

The last area considered were the financial barriers and the types of buildings that exist within the various size thresholds. Moving the threshold below 20,000 sq ft increased the number of multifamily/affordable housing buildings that would need to comply. Smaller buildings might have financial challenges meeting the performance targets without resources and funding.

Table 1.1 Comparison of BPS in North America (Figure 6) on the next page is from ASHRAE's Technical Resource Guide to Building Performance Standards. It includes details on municipalities with active building performance standards.

Table 1.1 Comparison of BPS in North America

Jurisdiction^a	Building Type Scope	Initial Compliance Period	Performance Metric(s)
Boston, Massachusetts, USA	Municipal buildings of any size Commercial buildings $\geq 20,000$ ft ² Multifamily buildings $\geq 20,000$ ft ² or 15 units	2025 for buildings $\geq 35,000$ ft ² ^b	Carbon dioxide equivalent (CO ₂ e) GHG intensity (GHGI)
Chula Vista, California, USA	Municipal, commercial, institutional, and multifamily buildings $\geq 20,000$ ft ²	2023 for buildings $\geq 50,000$ ft ² ^b	Site energy use intensity (EUI) reduction target (%) or ENERGY STAR score
Denver, Colorado, USA	All commercial and multifamily buildings $\geq 25,000$ ft ²	2024 for buildings $\geq 25,000$ ft ²	Site EUI ^c
Montgomery County, Maryland, USA	Public, commercial, institutional, and multifamily buildings $\geq 50,000$ ft ² initially, decreasing to $\geq 25,000$ ft ² over time	2024 for public buildings $\geq 50,000$ ft ² ^d	Site EUI
New York, New York, USA	All commercial and multifamily buildings $\geq 25,000$ ft ²	2024	CO ₂ e GHGI
Reno, Nevada, USA	Municipal buildings $\geq 10,000$ ft ² Commercial and multifamily buildings $\geq 100,000$ ft ² initially, decreasing to 30,000 ft ² over time	2026	ENERGY STAR score or site EUI
St. Louis, Missouri, USA	Municipal, institutional, commercial, and multifamily buildings $\geq 50,000$ ft ²	2025	Site EUI
State of Colorado, USA	Public, institutional, commercial, and multifamily buildings $\geq 50,000$ ft ²	2026	Under development
State of Maryland, USA	Public, institutional, commercial, and multifamily buildings $\geq 35,000$ ft ²	2030	On-site GHG emissions ^e
Vancouver, British Columbia, Canada	Commercial buildings $\geq 100,000$ ft ²	2026	CO ₂ e GHGI and heating (space and hot water) energy intensity
State of Washington, USA	Commercial buildings $\geq 50,000$ ft ² ^f	2026	Site EUI
Washington, District of Columbia (D.C.), USA	Municipal buildings $\geq 10,000$ ft ² Commercial and multifamily buildings $\geq 50,000$ ft ² initially, decreasing to 10,000 ft ² over time	2026	ENERGY STAR score or source EUI

^a See Section 1.5.1 for links to more details on these BPS policies.

^b Building size threshold for compliance decreases in future compliance periods.

^c Also includes an electrification requirement for space- and water-heating equipment.

^d Compliance for different building types and sizes is phased over time.

^e At the time of writing this guide, the state was still defining its BPS metrics.

^f Multifamily and commercial buildings $\geq 20,000$ will be covered starting in 2031.

Figure 6: Comparison of BPS in the United States (ASHRAE)

BASELINE BUILDING STOCK ENERGY INVENTORY

In order to gain a better sense of the nature of building energy usage in Los Angeles, a baseline building stock energy inventory was created. This was accomplished by merging County Assessor Local Roll data for buildings equal to or greater than 20,000 sq ft for 2023-2024 with Energy Use Intensity (EUI) from the 2018 EBEWE data set.¹

Merging this data with the LA County Assessor dataset provided us with the information needed to calculate total building stock energy usage. Figures 7, 8, and 9, provide high level summaries of this analysis:

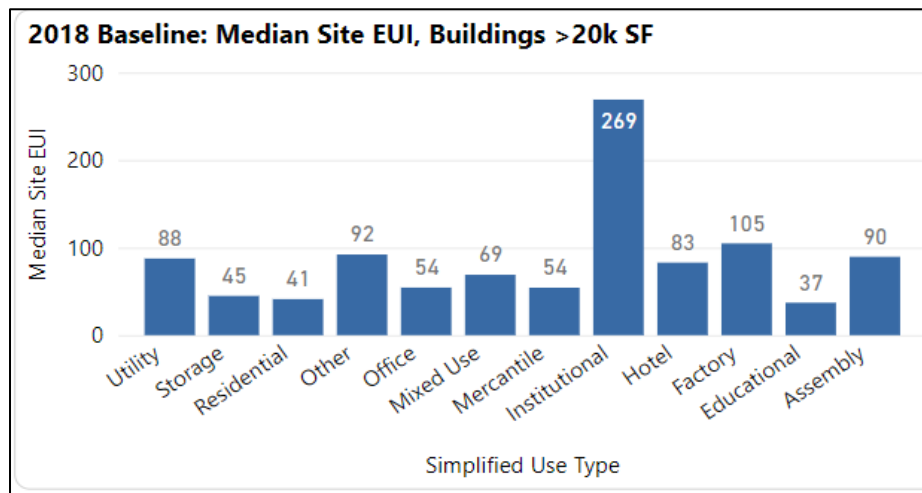


Figure 7: Median EUI of Simplified Building Use Types based on 2018 reported and estimated energy use data

¹ A spatial merge was used to join 2.5 thousand buildings from the 2022 EBEWE dataset to the assessor data, which provided the Energy Star Types for those matched buildings. Determining the Energy Star Type for the others required cross matching the Assessor Building Use types to Energy Star Types based on best match. The baseline for each building type's EUI was determined using 2018 EBEWE reported data. This year was chosen because it was the first year that buildings of all sizes had to report their energy usage. EUIs were determined for each Energy Star building group where 10 or more data points were present. If between 7 and 9 data points were present, the baseline EUI was calculated by taking the 65th Percentile measurement for that sample size. For Energy Star groups with small sample sizes or no reported data in 2018, an EBEWE proxy group was chosen. For example, there was not adequate reported data for "Lifestyle Centers", so the "Other – Mall" reported EUI was applied. For select uncommon groups like data centers where national baselines varied from the EBEWE reported data and no other EBEWE group could serve as an adequate proxy, the 65th Percentile was taken even if the sample size was below 7. Climate zone specific Prototype Models were used to estimate the split between end uses. Electric grid factors were referenced from the 2018 EPA eGrid data for the CAMXc grid region.

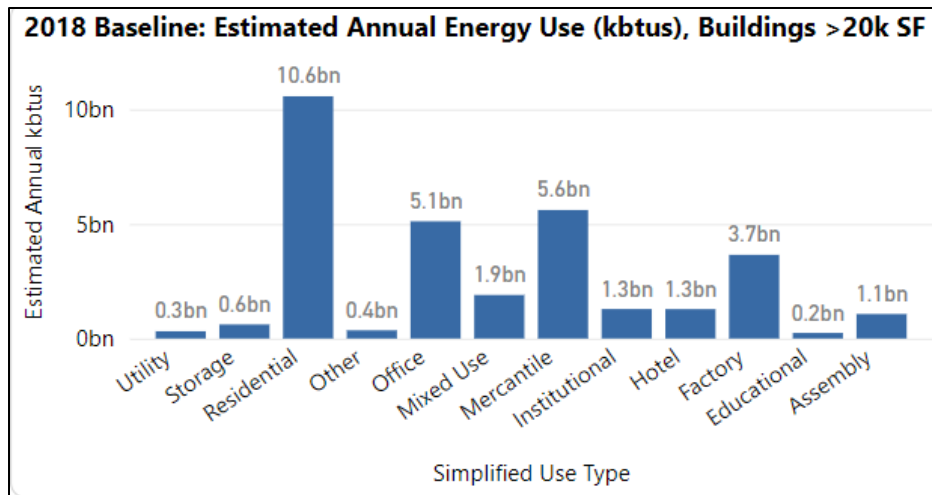


Figure 8: Estimated Annual Energy Use of Simplified Building Use Types based on 2018 reported and estimated energy use data

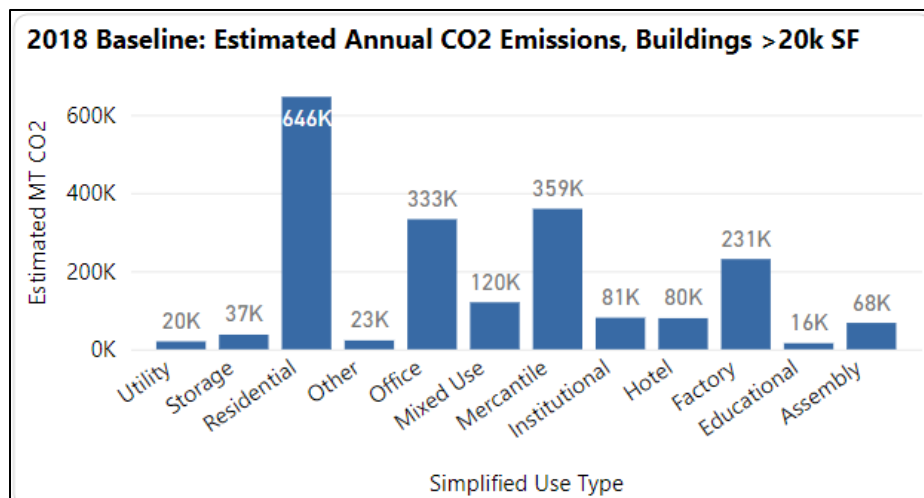


Figure 9: Estimated Annual CO2 Emissions of Simplified Building Use Types based on 2018 reported and estimated energy use data

TARGETS AND ESTIMATED IMPACTS

The LA Green New Deal aims to achieve a 44% reduction in site EUI across all building use types in Los Angeles by 2050². The introduction of a building performance standard can help achieve this, by requiring certain energy performance targets to be achieved. Achieving a reduction in EUI indicates that a building is performing more energy efficiently; thereby, reducing GHG emissions, including carbon. The most expeditious way to implement a BPS EUI target, is to amend our current EBEWE ordinance to include it and the various compliance pathways described in this report. However, we will consult with the City Attorney regarding also establishing carbon targets.

BPS targets will consider the various building use types and provide targets in line with that building type's energy use. While these targets are preliminary, the energy and carbon reduction aligned with the LA Green New Deal can offer insight into the scale of the impact that a building

² Each building use type uses a different amount of energy as shown in above in figure 7

performance standard might have. For instance, reducing the average site-EUI of all building use types by 44% from what they were in 2018 is estimated to lead to a significant 86% drop in CO2 emissions for larger buildings over 20,000 sq ft. These substantial decreases are projected to result from a mix of building upgrades, which, while not detailed at this stage, are assumed for the sake of modeling, along with the expected move towards cleaner energy sources on the grid.³

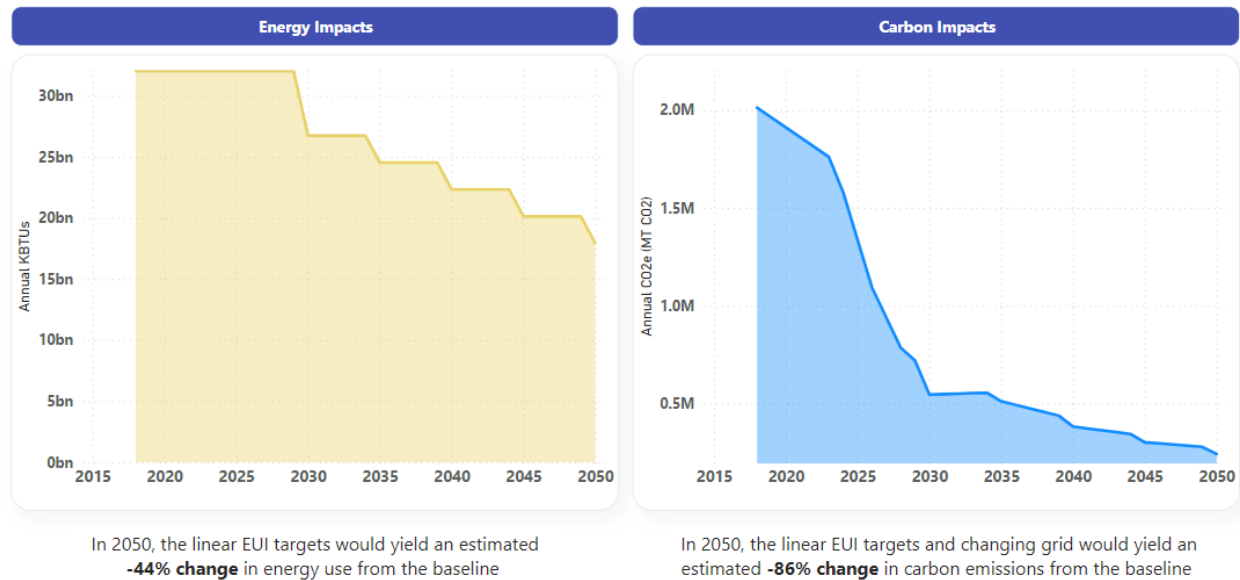


Figure 10: Estimated energy and carbon impacts through 2050 of the preliminary phased site EUI targets based on the LA Green New Deal goal of a 44% reduction.

The LA Green New Deal target is Net Zero by 2050, indicating that these remaining emissions would require additional measures to achieve this goal, detailed in the Alternative Compliance Pathways section.

ALTERNATIVE COMPLIANCE PATHWAYS

Considering that there are various unique characteristics or circumstances that can prevent a building from meeting a Building Performance Standard target, a mechanism should be included whereby property owners can pursue alternative compliance pathways. These pathways offer various performance or prescriptive options and timing that differ from the main requirements of the energy targets. These plans are intended to be used for specific circumstances or use types that should be defined in the BPS requirements. Potential alternative compliance pathways for consideration are explored in the following sections.

³ To assess the carbon footprint of buildings, Buro Happold (BH) utilized Prototype Models to estimate how different building types consume both fuel and electricity. For projecting future electricity consumption, BH applied a set of conversion and grid factors provided by an NREL dataset, which covers predictions from 2024 to 2050. These factors help us understand the expected changes in emissions due to evolving electricity production methods. All the data we've used for greenhouse gas (GHG) emissions are specific to the CAMXc Grid Region and fall under what is defined in the NREL dataset as the Mid-Case Scenario. This scenario uses moderate predictions for variables like the cost of energy technologies, fuel prices, and the rate at which energy demand will grow. It assumes that the current trends in energy policies and incentives, such as the Investment Tax Credit (ITC), will continue without significant changes. For natural gas, we've taken similar steps, using conversion factors and an emissions intensity factor from the EIA to estimate the GHG emissions from natural gas usage over the years.

Some buildings will not be able to achieve EUI targets even after implementing the retrofit packages studied. For these building owners, it's likely that a combination of operational efficiency measures, more intensive retrofits, and/or renewable energy solutions will have to be implemented to meet the EUI targets. For certain building owners, this level of intervention may cause serious financial hardship or be infeasible due to building type and usage. For this portion of the building sector, establishing alternative compliance paths will be critical to ensure building owners have flexibility and that the policy is implemented equitably.

Further analysis is required to determine the types and number of buildings that will be qualified to use the alternative pathways and the total energy reduction that will be achieved for each pathway.

The following alternative compliance pathways are potential options for the LA Building Performance Standard:

- Prescriptive Pathway
- Emissions-based Pathway
- Relative Reductions Pathway

In addition to these alternative compliance pathways, **exemptions, time extensions**, and other options for flexible compliance, are recommended.

Alternative Compliance Pathway: Prescriptive Pathway

A prescriptive pathway will benefit buildings when it will otherwise be infeasible to comply with a performance-based approach due to building age, physical conditions or tenant relocation issues. This pathway would offer a structured approach to compliance through the implementation of specific energy efficiency upgrades. It aims to be minimally disruptive and focuses on reducing energy use and costs while improving housing quality.

Alternative Compliance Pathway: Emissions-Based Pathway

The Emissions-based Pathway offers a compliance solution through carbon dioxide equivalent (CO₂e) intensity targets or percentage reductions from a baseline. This pathway could be available to most buildings, especially commercial buildings pursuing all-electric operations. This pathway encourages electrification, and ensures that all-electric buildings benefit as the grid becomes greener, by enabling them to meet decarbonization targets more effectively. Given that this compliance pathway is fuel agnostic (and not the main BPS pathway) it should not be in conflict with any laws governing fuel type usage.

Alternative Compliance Pathway: Relative Reductions Pathway

The Relative Reductions Pathway offers a compliance solution for high EUI buildings and those in financial distress, allowing them to meet energy performance targets by reducing their EUI by a specified percentage rate. It's designed for buildings that may struggle to meet absolute EUI targets, providing a flexible approach that requires progress towards energy or carbon goals, often necessitating a plan developed by a qualified professional.

STAKEHOLDERS EQUITY CONCERNS

Some stakeholder groups were concerned about the potential equity, environmental justice, tenant protection, and labor justice implications of any new decarbonization regulations. The following is a summary of issues that were raised by stakeholders to ensure that decarbonization of the building sector is both feasible and equitable.

Environmental Justice

Frontline communities, including Black, Indigenous, low-income, and other communities of color, face disproportionate impacts from air pollution, climate change, energy burden, and extreme heat. Equitable decarbonization can be achieved by: increasing access to solar energy benefits, monitoring and improving air quality, taking a holistic healthy homes approach to building decarbonization, and protecting low-income residents from gas-cost increases.

Affordable Housing Preservation

A building performance standard could negatively impact affordable housing by requiring costly building upgrades or potentially displacing tenants. The BPS should examine how its requirements will affect disinvested communities by including provisions to eliminate potential sources of harm. This could potentially be achieved by providing a temporary (e.g. five-year) extension of time, co-creating an alternative compliance path for mission-based affordable housing providers, accelerating public financing for mission-based affordable housing, and dedicating funding to the preservation of mission-based affordable housing.

Tenant Protections

While energy improvement and decarbonization can make housing safer, less polluted, and more comfortable by addressing indoor pollution, current regulations don't prevent landlords from passing on the cost of decarbonization to tenants, and may even provide grounds to evict tenants for significant renovations. Tenants can be protected from such risks by: closing the Substantial Remodel Loophole, making retrofits ineligible for pass-through costs to tenants in rent-stabilized units, improving the Tenant Habitability Plan, penalizing illegal construction, and allowing rent reductions for disruptive construction work.

Labor Justice

A building performance standard will result in increased levels of renovation work that should be aimed at supporting the local workforce and increasing local employment opportunities. This can potentially be achieved by prioritizing public agency-led direct installs over property owner-initiated projects.

LEGAL ISSUES

On April 17, 2023, the United States Court of Appeals for the Ninth Circuit struck down the city of Berkeley's natural gas ban in new construction in a case brought before the court by the California Restaurant Association. The court denied requests for a rehearing of the case in January of 2024, and the city of Berkeley agreed to repeal the policy in March of 2024. In light of this court challenge, LADBS will work closely with the Office of the LA City Attorney to ensure that any new proposals regarding decarbonization are not in conflict with the intent of the law.

RECOMMENDATIONS

1. Assess and report back on the potential impacts to residential and commercial property owners, and the potential negative impacts to small business owners, tenants, and renters, potentially including a phased implementation schedule that starts with the largest buildings first and gradually includes smaller buildings.
2. Conduct stakeholder engagement that provides recommendations to improve equity and environmental justice outcomes.
3. Maintain the threshold for compliance at buildings larger than 20,000 sq ft as this aligns with the existing EBEWE requirements, and targeting larger buildings, provides the most cost-effective impact.
4. Provide time extensions and exemptions for compliance with the BPS for multi-family dwellings with affordable housing, rent stabilized buildings, buildings under financial distress (to be defined), small businesses, and other building types to be identified during stakeholder outreach.
5. Identify existing incentives and proposed new incentives from the Department of Water and Power (DWP) that align with the goals of the Green New Deal.
6. Amend the existing EBEWE program to implement the agreed upon Building Performance Standards, reduction targets, and compliance pathways necessary to equitably achieve the City's Green New Deal goals for energy and carbon reductions. Amendments will also include extensions of time, exemptions, and a compliance schedule.

Respectfully,



Osama Younan, General Manager
Department of Building and Safety