GLOBAL NETWORK for ZERO

The Role of Building Performance Standards in National Decarbonization Efforts

By Aditya Nagapudi
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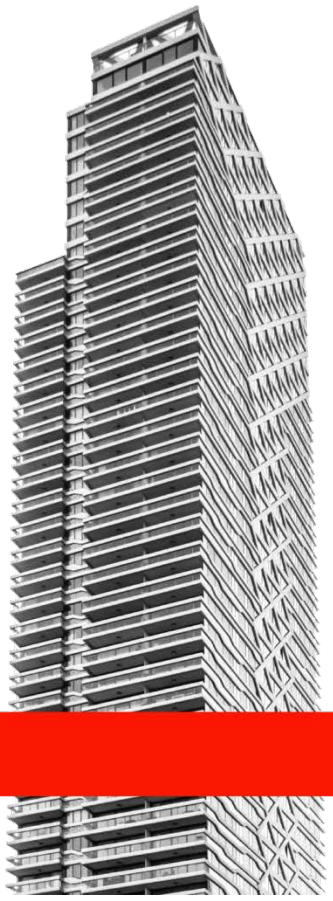
INTRODUCTION

In the U.S., the built environment is one of the highest emitting sectors, with commercial and residential buildings accounting for nearly 40% of energy consumed and over 30% of greenhouse gas (GHG) emissions. Although today's decarbonization efforts often focus on renewable electricity or electric vehicles, decarbonizing building stock is absolutely essential to meet our national climate goals.

The Global Network for Zero (GNFZ) was founded to accelerate the realization of a zero emissions world; we are committed to doing this through breaking down the barriers that existing buildings face in implementing green building programs and scaling the decarbonization of existing buildings. We believe that climate change is the single largest existential threat of our lifetime and decarbonizing existing buildings is one of our greatest opportunities to meet the Paris Agreement targets.



THE ROLE OF BUILDING PERFORMANCE STANDARDS IN NATIONAL DECARBONIZATION EFFORTS

To support our national climate goals, a growing number of cities across the U.S. have turned towards Building Performance Standards (BPS) as a tool for reducing GHG emissions from the real estate sector, delivering on state and local government energy and carbon goals for the built environment and meeting their climate, equity, public health and financial goals. BPS are outcome-based policies and laws aimed at reducing the carbon impact of the built environment by requiring existing buildings to meet energy and/or GHG emissions-based performance targets. BPS policies focus around improving the efficiencies of buildings across multiple avenues such as GHG reductions, energy efficiency, electrification, renewable energy and water efficiency. GNFZ aligns with BPS legislation: Our net zero certification for existing buildings can be leveraged as a stepping stone to comply to BPS policies.

In January 2022, the Biden Administration launched a National Building Performance Standards (BPS) Coalition, which brought together a nationwide group of state and local governments to co-design and implement BPS and complimentary programs and policies in their jurisdictions. Mayors, governors and county executives across the U.S. committed to leading the effort to decarbonize America's building sector by improving performance overtime through meeting short-term targets for decreasing energy use, water use and emissions. The initial goal was to have state and local officials collaborate with federal agencies, labor and NGOs to advance BPS legislations by Earth Day 2024.

Each local entity can customize the requirements of its BPS to fit its unique needs, but all of them must target a performance standard – or meeting a particular energy use or CO_2 emission target based on a per square foot basis of its building. They also must have a performance metric to track and have specific interim goals with a long-term goal of meeting net zero emissions for buildings by 2050. Policy compliance is also a critical component of BPS legislation. Though penalties for non-compliance vary among jurisdictions, the fines can be quite significant, which is designed to serve as a motivational force to compel the real estate industry to meet targets. Additionally, under the BPS policies, there are also obligations for reporting and third party verification.

At the state level, many states have deployed a broad range of policies to reduce building energy consumption and GHG emissions. The most common policy implemented by states in the area of building efficiency relates to the state's building code. The vast majority of states implement a state-level energy efficiency (EE) code, with a smaller number of "home rule" states leaving building code enforcement and adoption entirely up to local governments. Other states have performance-based targets that establish GHG emissions reduction or energy conservation requirements for buildings. States have also taken action to increase information-sharing about building energy usage by imposing benchmarking requirements — mandating that building owners track and report energy consumption — and implementing energy efficiency disclosure requirements.

In this report, we will examine some of the leading BPS that have been enacted, their goals and the potential impact they pose for the industry, and how GNFZ certification can help buildings track, plan and meet these regulations. In total, three BPS have passed targeting emissions reductions (Seattle, WA; New York City, NY; and Boston, MA) and eight have passed targeting energy (Chula Vista, CA; Reno, NV; Aspen, CO; Boulder, CO;

Montgomery County; MD; Denver, CO; St. Louis, MO; and Washington; D.C). Policy metrics are currently under consideration in 28 other cities.

In addition to cities, states are also turning to adopting statewide BPS legislation. To date, four states (Oregon, Maryland, Washington and Colorado) have passed statewide legislation, California has a statewide BPS under development, and still other states are also mandating the benchmarking of energy use or GHG emissions for some buildings. These efforts will only serve to bolster the nation's ability to reduce the carbon footprint of our buildings and meet our climate goals.

Of note, no city has passed targeting both emissions and energy reduction. BPS policies that track emission reductions are direct, address emissions from sectors, provide a holistic strategy and can have immediate impact as they address the root cause of climate change by reducing the release of GHG into the atmosphere. But energy reduction policies are equally critical as we transition to renewable energy sources to reduce reliance on fossil fuels and thereby reduction of GHGs from the atmosphere. Energy specific policies focus on improving energy efficiency, optimizing energy systems and can drive innovation in clean energy technologies, leading to advancements in renewable energy generation, storage and distribution.

Both are critical components to achieve net zero goals. GNFZ's hope is that as BPS legislation continues to emerge as a tool, that we see policies emerge tracking both energy and emissions to enable a truly comprehensive approach to achieving net zero as a nation.

EMISSIONS

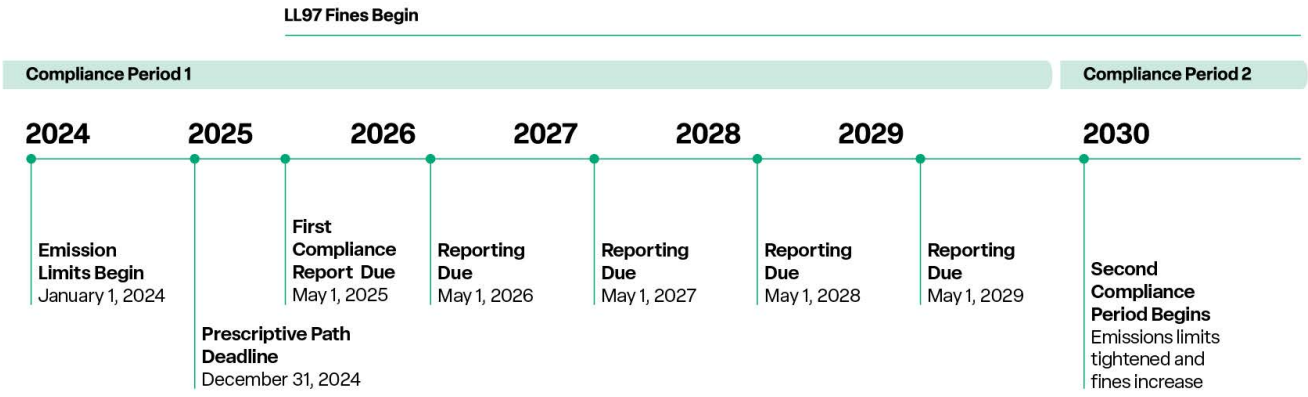
Enacted BPS policies tracking emissions are New York City's Local Law 97 (LL97), Boston's Building Emissions Reduction and Disclosure Ordinance (BERDO), Seattle's Building Emissions Performance Standard (BEPS). LL97 was the first BPS in the country to pass in 2019.

New York City's Local Law 97 (LL97)

LL97 is the centerpiece of NYC's Climate Mobilization Act which went into effect on November 15, 2019 as part of the city's Green New Deal. The legislation, the most ambitious climate law of any city in the U.S., set limits on GHG emissions for nearly 50,000 of NYC's largest buildings – or about 60% of its total building area. Buildings in NYC account for two-thirds of the city's GHG emissions. The city has a goal of reducing GHG emissions from its commercial buildings 40% by 2030 and 80% by 2050.

To support this, LL97 requires most buildings over 25,000 square feet to meet aggressive new energy performance standards and emissions limits by 2024 with stricter limits by 2030. If a building exceeds its annual GHG emissions limits, the building owner faces the following financial penalties split into three categories: $268 per tCO_2e/year over the building's annual carbon emissions limit, $0.50 per building sq. ft. per month for failure to file report on time, and $500,000 for providing false statements. The fines will be enforced for exceeding carbon caps starting 2025.

Note: Certain affordable and rent-regulated housing buildings are treated differently and provided with different compliance pathways, however many of these buildings will still need to report their first compliance report in 2025.



Navigating the path to LL97 compliance is not a one-time task but an ongoing journey that will span years. It involves continuous evaluation, adaptation, and improvement to meet evolving standards and regulations. Almost all buildings will need to be electrified at some point to comply with LL97. This includes systems like heat pumps, electric water heaters, electric rooftop units (RTUs), and high-efficiency condensing boilers. An energy audit can also help determine when equipment replacement is necessary and evaluate electric systems as replacements for existing ones. To learn more about the strategies that existing buildings can leverage to meet compliance requirements and achieve net zero, check out GNFZ's Energy Efficiency Strategies for Existing Buildings Resource which provides a comprehensive guide on improving the efficiency of building envelope, HVAC systems, lighting, water efficiency, landscape design, pumps and monitors, plug loads, waste management and renewable energy supplementation.

LL97 provides financial incentives to encourage the electrification of heating, cooling, and domestic hot water systems in buildings. Properties can receive deduction credits for installing and using electric equipment that meets specific minimum efficiency requirements. Buildings that electrify these systems can apply a negative emissions coefficient to the electricity consumed by qualifying equipment installed before 2030, with an even more favorable coefficient for systems installed before 2027. These credits can be used to mitigate penalties up until 2036, offering greater flexibility to buildings that install qualifying equipment earlier.

While initially controversial, LL97 is an example of forward-looking effective public policy that has proven to be an achievable and replicable model. When LL97 first came out, it was attacked by local building owners and developers. They argued that it disproportionately targeted buildings in densely populated areas and with longer hours of operation demanding higher energy consumption and even filed lawsuits to prevent it.

However, it's been reported that compliance rates for LL97 have been faster than even expected. Based on publicly available benchmarking data from 2022, 88% of all buildings, 89% of multifamily buildings, and 92% of office buildings meet 2024 LL97 limits, while 35% of all buildings, 37% multifamily buildings, and 40% of office buildings meet 2030 LL97 limits. This is a healthy trend and experts remain optimistic, but the industry needs to maintain steady focus to be able to hit 2050 targets. As per LL97's implementation timeline, buildings must report their emission from the prior year by May 1st each year and whether the law's requirements were met.

If one spends just an hour walking around NYC, if you have a chance to visit, you will be shocked to see some of the oldest buildings with a grade A sign for their energy efficiency. This should be an example for the rest of the industry of what is possible: Bold, forward-focused policy backed with the right resources so that it delivers results. As the only BPS currently in the compliance period, LL97 is setting a strong precedent for others to follow.

Boston's Building Emissions Reduction and Disclosure Ordinance (BERDO 2.0)

BERDO 2.0 aims to reduce air pollution and GHG emissions generated by large buildings in Boston. Owners of buildings subject to BERDO 2.0 are required to report their buildings' annual energy and water consumption. Starting in either 2025 or 2030, they will also need to comply with building emissions standards (i.e., emissions limits). The emissions standards set by BERDO 2.0 decrease over time, with all buildings expected to reach net zero emissions by 2050.

All commercial buildings 35,000 square feet or larger must comply with BERDO 2.0 starting in 2025, and all commercial buildings over 20,000 square feet or larger must comply starting in 2030. BERDO 2.0 also applies to residential buildings that have 15 or more units. Across Boston, there are an estimated 3,975 buildings affected. With buildings accounting for 70% of the emissions, the city's goal is to gradually reduce carbon emissions to net zero by 2050.

BERDO 2.0 is the 2021 amendment to the original 2019 Boston BERDO, which transitions the legislation from a building energy benchmarking and auditing to create a building performance standard. BERDO 2.0's emissions standards vary depending on building use but become more stringent every 5 years from 2025, until a zero emissions standard is implemented in 2050.

The legislation requires a qualified third-party entity to verify data for the first year of reporting, and every 5 years thereafter. If emissions standards are not met, fines ranging from $35 to $1,000 per day apply. All penalties associated with BERDO 2.0 go into the city's Equitable Emissions Investment Fund, which funds projects prioritizing the environment for populations disproportionately affected by climate change.

How to Get Started with Emissions Compliance in BERDO

1. Determine the First Year of Emission Compliance

- Buildings must begin complying with emissions standards in 2025 or 2030, depending on their size.
- Please note that a mixed-use building is considered residential if 50% or more of its Gross Floor Area, excluding parking, has a residential use. Likewise, a tax parcel is considered residential if 50% or more of its Gross Floor Area, excluding parking, has a residential use.

2. Identify The Emissions Standard

- Use the chart below to identify the emissions standard that applies to the concerned building.
- As a default, buildings are required to comply with the emissions standard that matches its largest primary use type.
- Mixed-use buildings may adopt a Blended Emissions Standard based on the square footage of each of the building's primary uses.

3. Start Planning for Emissions Compliance

- Buildings can decrease their emissions by reducing energy use and transitioning away from fossil fuels, using or buying renewable energy, or investing in environmental justice communities through Alternative Compliance Payments.
- All building owners are encouraged to start planning early to utilize equipment turnover and capital improvements as opportunities to reduce energy use and Emissions.
- BERDO Retrofit Hub provides a step-by-step guide for compliance.

BERDO 2.0 CO2e EMISSIONS STANDARDS BY BUILDING USE

Building Use	Emissions standard (kg CO_2e / SF / yr.)					
	2025–2029	2030–2034	2035–2039	2040–2044	2045–2049	2050–
Assembly	7.8	4.6	3.3	2.1	1.1	0
College/ University	10.2	5.3	3.8	2.5	1.2	0
Education	3.9	2.4	1.8	1.2	0.6	0
Food Sales & Service	17.4	10.9	8.0	5.4	2.7	0
Healthcare	15.4	10.0	7.4	4.9	2.4	0
Lodging	5.8	3.7	2.7	1.8	0.9	0
Manufacturing	23.9	15.3	10.9	6.7	3.2	0
Industrial						
Multifamily	4.1	2.4	1.8	1.1	0.6	0
Office	5.3	3.2	2.4	1.6	0.8	0
Retail	7.1	3.4	2.4	1.5	0.7	0
Services	7.5	4.5	3.3	2.2	1.1	0
Storage	5.4	2.8	1.8	1.0	0.4	0
Technology / Science	19.2	11.1	7.8	5.1	2.5	0

Seattle’s Building Emissions Performance Standard (BEPS)

Seattle has adopted a new Building Emissions Performance Standard (BEPS) Policy, unanimously approved by City Council and signed by Mayor Harrell on December 13, 2023. Seattle's BEPS policy was developed over two years of extensive stakeholder engagement.

All non-residential, multi-family buildings 20,000 square feet or larger should comply with BEPS. It affects 4,100 of the city’s existing buildings and will shape new construction and development projects. The building sector accounts for 37% of Seattle’s emissions according to the City’s most recent inventory, making it their second largest source of emissions after transportation (which accounted for 61% of emissions in 2020).

Based on the building area, the reporting deadlines for BEPS start from 2027 and compliance deadlines start from 2031. As such, starting in 2027, Seattle’s largest buildings (greater than 90,000 square feet) must verify energy consumption and emissions data from 2026 and submit their report to the government. This report is due by October 1st of each year moving forward. These regulations apply to buildings greater than 50,000 square feet in 2028, 30,000 square feet in 2029, and 20,000 square feet in 2030. The targeted reductions are 37% by 2030 and net zero by 2050.

There are two categories of fines under BEPS. First, failure to report or filing a false report carries financial penalties of $15,000 or $7,500, depending on the size of the building. Second, fines on the emissions side will be assessed by a combination of square footage and building type.

Three Pathways to Net Zero by 2050
The BEPS policy has flexible compliance pathways to accommodate buildings of many uses, size, type, ownership, age, and systems.

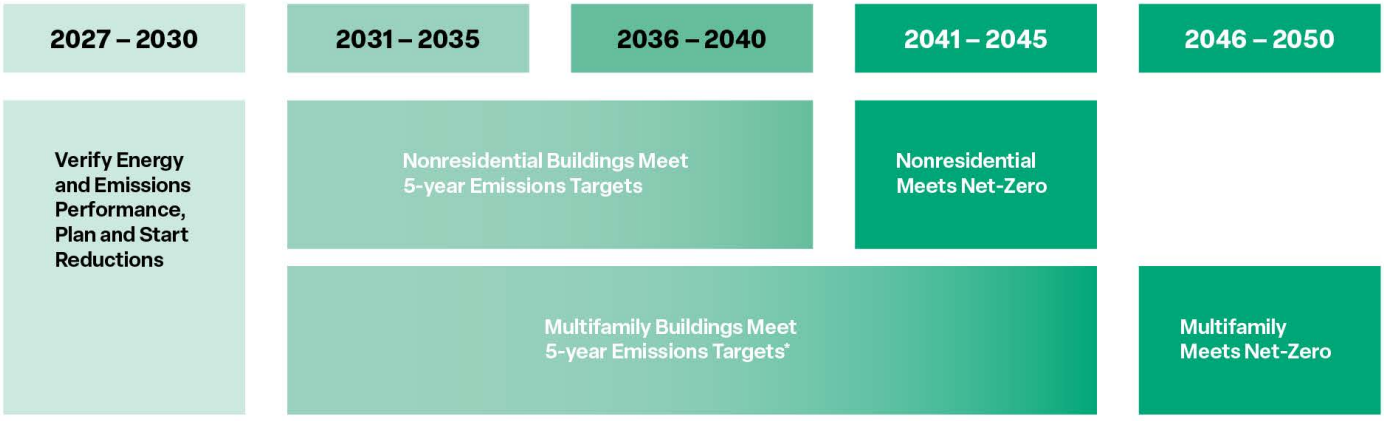
Path A
Meet standard or portfolio emissions targets at each 5 year interval. Compliance includes measuring energy and emissions planning and meeting 5-year targets and net zero by 2050.

Path B
Minor modifications to standard targets. Options include extensions or exemptions, ability to deduct emissions from certain end uses, or a compliance payment for the first interval.

Path C
Special consideration and flexibility due to unique circumstances. Option to create a detailed Decarbonization Compliance Plan for buildings that meet eligibility criteria.

Timing and Compliance Designed to Achieve Net Zero

BEPS compliance starts with reporting requirements to encourage owners to prepare for and begin emissions reductions, followed by meeting emissions targets in five-year intervals. Low-income housing and human services are given a longer lead time to prepare. In each subsequent interval, buildings are required to meet progressively lower emissions targets.



*Low-income housing and human services exempt from meeting 2031–2035 targets

Penalties for Noncompliance

The City will encourage strong compliance through robust owner and tenant engagement and support programs and incentives for early compliance. There are two categories of fines under Seattle's BEPS. First, failure to report or filing a false report carries financial penalties of $15,000 or $7,500, depending on the size of the building. Second, fines on the emissions side will be assessed by a combination of square footage and building type.

ENERGY

Eight cities across the United States have enacted a BPS policy tracking energy, including Energize Denver BPS, Boulder's Building Performance Colorado (BPC), Re-energize Reno, St. Louis Building Energy Performance Standard (BEPS), Building Energy Saving Ordinance in Chula Vista, CA, Building Energy Performance Standard in Montgomery, MD, DC Building Energy Performance Standards (BEPS) in Washington DC, Building Energy Use Disclosure Ordinance (BEUDO) in Cambridge, MA. For states (Oregon, Maryland, Washington and Colorado) have also passed statewide BPS legislation. For the purpose of this report, we have summarized a few of these city/state policies below.

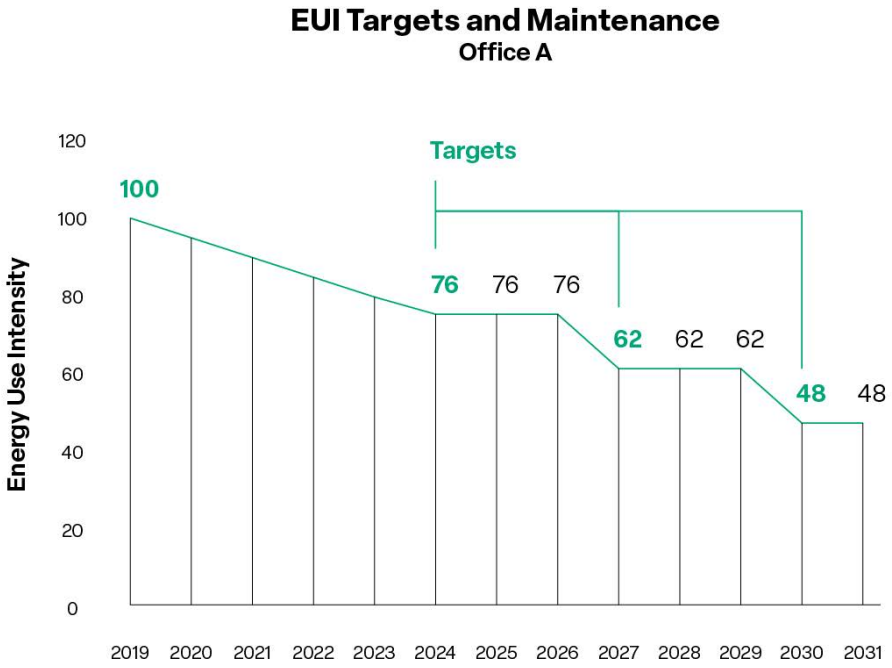
Energize Denver

The Energize Denver Ordinance, that was passed in 2021 and went into effect in early 2023, requires all buildings – 25,000 square feet and larger – to submit for annual benchmarking of the building's energy use to meet energy performance requirements based on the building's Energy Use Intensity (EUI), and to switch from natural gas to electric when replacing space and water heating equipment.

The main goal is to reduce GHG emissions and building EUI across Denver by 30% by 2030. As a part of its 80x50 Climate Action Plan, the City and County of Denver set a goal to reduce GHG emissions 80% by 2050. In response to this target, Denver set sector-specific goals to establish a clear path to 2050 with a strong emphasis on measurable carbon reductions from all key sectors. Commercial and multifamily buildings in Denver produce 51% of local GHG emissions – the largest contributor of any sector. To combat these emissions, Denver set the goal to reduce energy consumption in commercial buildings 10% by 2020, 30% by 2030, and 50% by 2050. It also set an additional goal to reduce heating emissions 50% by 2040.

The Energize Denver Ordinance establishes EUI targets for buildings 25,000 square feet and larger. These buildings must meet a final EUI target by 2030, with interim targets in 2024 and 2027.

The City of Denver requires building owners to submit an annual benchmarking report by June 1 of every year. Buildings must meet or exceed target levels over the next six years, starting in 2024. Owners can receive an extension for 2025 to avoid paying fines and penalties by the city. Owners of buildings 25,000 square feet and larger should have received a letter in February 2023 confirming their 2024 and 2027 interim EUI targets and their 2030 EUI target. Each building's baseline and interim EUI targets are unique to that building.



Energize Denver Hub: Existing Buildings

Denver's Energy Benchmarking Ordinance requires building owners and managers to annually assess and report their building's energy performance while providing them with targeted resources to improve energy efficiency. The Energize Denver Hub is a one-stop shop for understanding the requirements and finding resources to help. When building owners electrify their HVAC systems and improve energy performance, Denver will:

- Reduce greenhouse gas emissions from commercial and multifamily buildings by 80% by 2040
- Lower energy bills for building owners and tenants
- Improve indoor air quality and comfort for building users

Compliance

Building performance and electrification standards are new to everyone in the building The Energize Denver and Green Building Ordinances require buildings 25,000 sq. ft. and larger to:

- Submit annual benchmarking of the building's energy use
- Meet energy performance requirements based on the building's Energy Use Intensity (EUI)
- Electrify when replacing space and water heating equipment
- Install a cool roof or meet other compliance options when replacing a roof

BEPS Maryland

The Climate Solutions Now Act of 2022 requires the Maryland Department of the Environment (MDE) to develop BEPS regulations that cover most large buildings in the state. Buildings covered under state policy are 35,000 square feet and larger (excluding the parking garage area). Starting in 2025, owners of covered buildings will be required to report energy data to MDE through the U.S. EPA's ENERGY STAR Portfolio Manager tool. Starting in 2030, buildings must meet interim standards, with final standards including net zero direct emissions required by 2040.

On July 15, 2024, MDE released a new draft proposed BEPS regulation with net direct GHG emissions standards. MDE has announced that it will "officially withdraw the December 2023 BEPS" proposed regulations and publish these new draft regulations in September 2024. The Department intends to hold a public hearing on the proposed BEPS regulations in October. The new timeline for implementation is outlined below:

Summer 2022	Climate Solutions Now Act (CSNA) requires MDE to implement BEPS
Winter 2024	MDE holds public hearing and comment period on 2023 proposed BEPS regulation
Spring 2024	FY25 Budget Bill requires MDE to withdraw 2023 proposed site Energy Use Intensity (EUI) standards
Summer 2024	MDE releases 2024 draft BEPS regulation
Fall 2024	MDE intends to propose the 2024 BEPS regulation
Spring 2025	Covered buildings report 2024 energy use data to MDE by June 1, 2025
Spring 2026	BEPS Baseline Report Submission of 2025 energy use data on June 1, 2026
Summer 2026	MDE conducts studies required by FY25 Budget
Fall 2026	MDE submits report to the Maryland Legislature of covered buildings' 2025 calendar year energy use data
Spring 2027	MDE intends to re-introduce site EUI standards, satisfying CSNA requirement
January 2030	BEPS interim standards begin to take effect
Spring 2031	Covered buildings report 2030 energy use data to demonstrate compliance

The Economic Impact of this new initiative would be

Denver's Energy Benchmarking Ordinance requires building owners and managers to annually assess and report their building's energy performance while providing them with targeted resources to improve energy efficiency. The Energize Denver Hub is a one-stop shop for understanding the requirements and finding resources to help. When building owners electrify their HVAC systems and improve energy performance, Denver will:

- On average, over the 2025-2050 time horizon, covered buildings spend $0.65 per square foot
- Under a future regulation that includes emissions and site EUI standards, over the 2025-2050 time horizon, on average covered buildings save $4.47 per square foot
- Significant funding from the federal Bipartisan Infrastructure Law and Inflation Reduction Act are expected to reduce costs of compliance with BEPS and speed their return on investments
- Building Energy Transition Implementation Task Force recommended programs, policies, and incentives aimed at reducing GHG emissions from the buildings sector and development of a plan for funding the retrofit of covered buildings to comply with BEPS

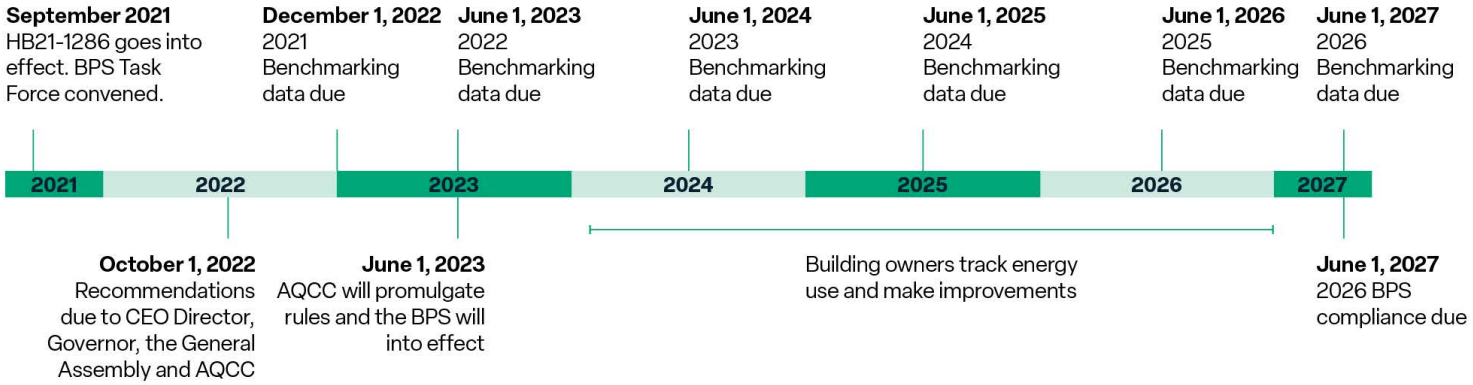
Compliance Pathway

- If a covered building does not meet its emissions reduction targets, then the owner
- can come into compliance by paying a fee for any emissions that are above target levels
- The Alternative Compliance Fee may not be less than the Social Cost of Greenhouse Gases (SC-GHG) adopted by MDE or the federal government
- Revised federal figures for the SC-GHG were released on November 11, 2022, and are currently open for public comments.

Building Performance Colorado (BPC)

Boulder's "Energy Performance for Buildings" statute (HB21-1286) requires owners of commercial, multifamily, and public buildings 50,000 square feet or larger to annually benchmark their whole-building energy use and meet set building performance targets. These buildings are required to report their annual energy use to the Colorado Energy Office (CEO). The goal is to reduce emissions sector-wide 7% by 2026 and 20% by 2030. There is significant focus on energy efficiency to reduce energy waste, costs, and GHG emissions in buildings. BPC uses Building Property Type-Specific Site EUI targets as its metric, meaning a building must meet the target EUI applicable to its property type.

Boulder's BPC took effect in October 2023 and the CEO has developed technical guidance to help building owners and industry professionals understand these new building performance requirements. This covers the specific requirements, options for demonstrating compliance, and strategies to reduce energy use and carbon emissions in buildings.



Building Performance Standards Deadlines

To comply, Boulder's buildings must submit a benchmarking report or file a waiver and pay an annual $100 fee, per covered building. Only one approved submission is required per building to be in compliance with the State of Colorado. If a building owner does not submit their benchmarking report and pay the annual fee, a building owner may be subject to a civil penalty. Civil penalties went into effect on January 1, 2024.

GNFZ'S ALIGNMENT WITH BUILDING PERFORMANCE STANDARDS

Meeting the requirements of the various BPS policies include emissions reductions, reporting and third party verification. The design community, building owners, and facility managers across cities/states with BPS standards need to prepare for reporting requirements and consider strategies to meet their upcoming emissions limits. This will require third party verification for the emissions reported and a plan to meet the target goals.

This is where GNFZ, as the world's premiere independent net zero certification body, can play a key role. GNFZ certification can be leveraged by commercial real estate professionals as a stepping stone to comply to BPS legislation – but also to go beyond it and differentiate your organization and its assets or portfolio as a market leader. A unique aspect of GNFZ's certification is that there are no prerequisites or requirements to participate as we meet buildings where they are regardless of their current performance and provide them with a roadmap they can leverage to take their buildings to net zero. This means that we are able to work at the bottom or the top of the market so projects that are both on par with BPS targets or are struggling to meet their emissions limits can leverage the certification to comply.

GNFZ is also committed to continuing to evolve our platform and certification in the future to embed features and functionality to demonstrate how projects stand toward BPS compliance of their jurisdiction.

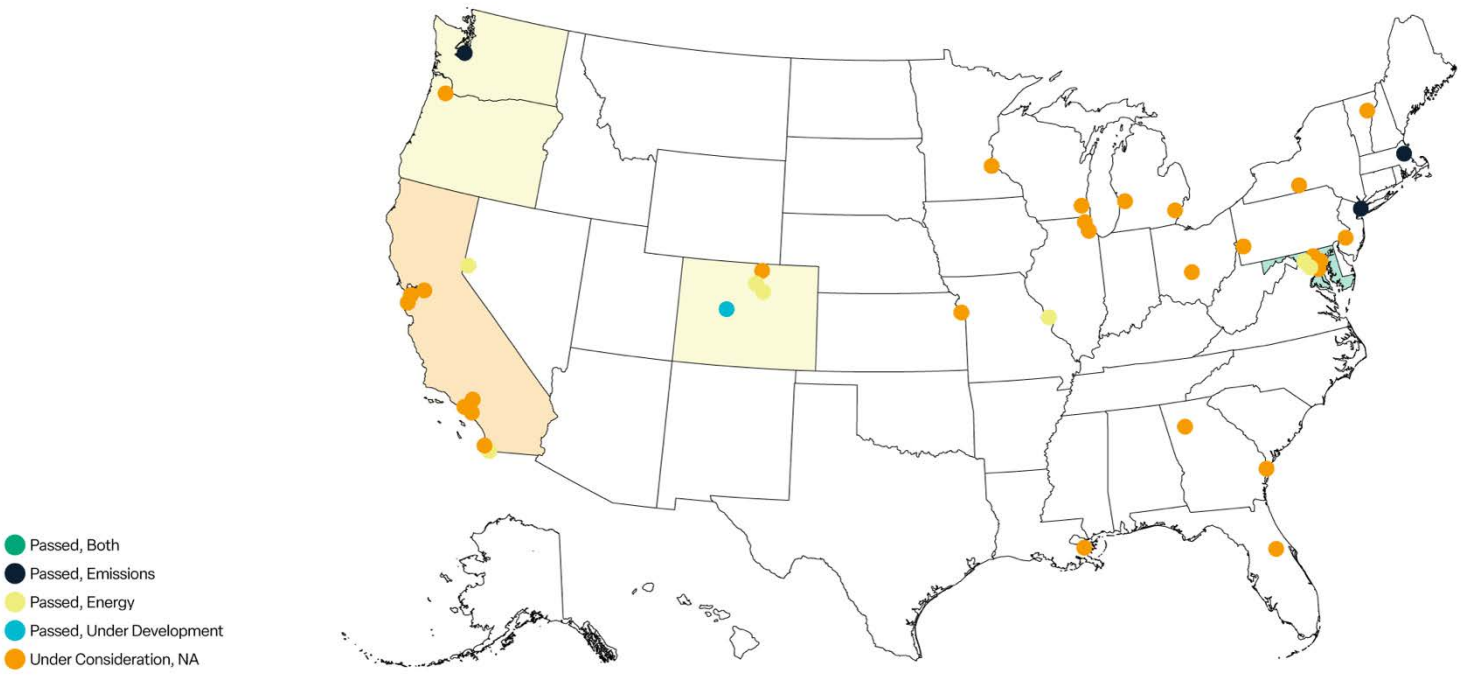
APPENDIX I

BPS POLICIES ACROSS THE U.S. AS OF JUNE 2024

The below table and corresponding map summarizes all the BPS currently enacted around the U.S.

Name	Type	Location	Enacted, Impl timeline	Building Criteria	Metric	Description
Local Law 97	Emissions	NYC	2019, 2024	> 25,000 sqft (Commercial, Industrial, Multifamily)	CO_2e emissions per sqft	40% reduction by 2030, 80% by 2050 exceed Median
BERDO 2.0	Emissions	Boston	2021, 2025 (>35,000sqft) 2030 (>20,000sqft)	> 20,000 sqft (Commercial, Multifamily)	CO_2e emissions per sqft	50% reduction by 2030; 100% reduction by 2050
BEPS (Building Energy Performance Standard)	Emissions	Seattle, WA	2023, 2031 onwards	> 20,000sqft (Commercial, Multifamily)	CO_2e emissions per sqft	37% reduction by 2030, Reach net zero by 2050
Maryland's Building Energy Performance Standards (BEPS)	Emissions, Energy	Maryland	2022, 2030	> 35,000sqft Commercial, Multifamily	CO_2e emissions per sqft, EUI	20% reduction in carbon intensity by 2030, zero emissions by 2040
Energize Denver (BPS)	Energy	Denver, CO	2021, 2024 onwards	> 25,000 sqft (Commercial, Multifamily)	Energy Use Intensity (EUI)	40% reduction by 2025, 60% reduction by 2030, 100% reduction by 2040 (of 2005 levels)
BPC (Building Performance Colorado)	Energy	Boulder, CO	2023, 2024 onwards	> 50,000sqft (Commercial, Multifamily)	Energy Use Intensity (EUI)	Reduce sector-wide emissions 7% by 2026 and 20% by 2030 from 2021 levels
Reenergize Reno	Energy	Reno, NV	2019, 2026	> 30,000sqft Commercial, Industrial, Multifamily	Energy Star Score	20% reduction of energy and water use by 2025
St. Louis Building Energy Performance Standard (BEPS)	Energy	St. Louis, MO	2020,2025 onwards	> 50,000sqft Commercial, Multifamily, Affordable Housing	Energy Use Intensity (EUI)	100% reduction by 2050

Building Energy Saving Ordinance, Ordinance 3498	Energy	Chula Vista, CA	2021, 2023 onwards	> 20,000sqft Commercial, Multifamily	Energy Star Score	55% reduction by 2030 (of 2005 levels)
Building Energy Performance Standard	Energy	Montgomery County, MD	2022, 2028 onwards	> 25,000sqft Commercial, Multifamily	Energy Star Score, EUI	Reduce 80% of greenhouse gas emissions by 2027 and 100% by 2035
DC Building Energy Performance Standards (BEPS)	Energy	Washington DC	2021, 2025 onwards	> 25,000sqft Commercial, Multifamily	Energy Star score	50% reduction by 2032; 100% reduction by 2050 (of 2005 levels)
Building Energy Use Disclosure Ordinance (BEUDO)	Energy	Cambridge, MA	2023, 2026 onwards	> 25,000sqft Commercial	EUI	Net zero GHG emissions by 2035 for large commercial properties (100,000+ sqft.) and by 2050 for small commercial properties (25,000+ sqft.)



The BPS map highlights the current status of BPS adoption at the state and local level across the U.S. Jurisdictions are colored according to their BPS adoption status and selected performance metric (e.g., emissions or energy).

APPENDIX II

CITIES THAT HAVE MADE COMMITMENTS TO NET ZERO

In addition to enacting BPS, many cities have also made separate commitments to get to net zero. Those are outlined below:

Boston, MA: The Next Generation Roadmap Act, signed into law in 2021, requires the Commonwealth to reduce our greenhouse gas emissions by at least 50% by 2030. Reaching that target will set them on a trajectory to net zero emissions by 2050.

New York City, NY: NYCERS commits to targets of reducing Scopes 1 and 2 GHG emissions in the city's public equity and corporate bond (including investment grade, high yield and convertible bond) portfolios by 32% by 2025, 59% by 2030, and 100% by 2040 using a baseline of December 31, 2019.

Los Angeles, CA: The Los Angeles County Board of Supervisors unanimously approved an updated climate action plan on April 16 with the goal of reducing GHG emissions emitted within unincorporated county areas to net zero by 2045.

San Francisco, CA: The City of San Francisco adopted new climate action goals to reduce GHG emissions and address the urgent threat of climate change. Mayor London N. Breed introduced legislation to increase San Francisco's ambition and set new science-based targets that are aligned with the Paris Climate Agreement. Included in the legislation is the goal to become a net zero emissions city by 2040.

Seattle, WA: The 2018 Climate Action Strategy calls for Seattle-specific building performance policy to reduce emissions. It calls for Seattle to reach an almost 40% emissions reduction in the buildings sector by 2030 and to be net zero carbon emissions by 2050. The City Council Green New Deal Resolution (Res 31895) calls for a Seattle free of climate pollutants sooner by 2030.

Austin, TX: In September 2021, the Austin City Council adopted the Austin Climate Equity Plan. The plan includes the bold and aggressive goal of equitably reaching net zero community-wide GHG emissions by 2040 with a strong emphasis on cutting emissions by 2030. Getting to net zero means the Austin community would reduce its use of fossil fuels to nearly zero.

Denver, CO: The City and County of Denver recently released a comprehensive plan to achieve net zero energy (NZE) in new buildings and homes by 2030, one of many initiatives being taken to meet the jurisdiction's goal of an 80% reduction in GHG emissions by 2050.

Portland, OR: By 2030, Portland is targeting reducing carbon emissions by 50% or more, compared to 1990 levels; and by 2050, reducing carbon emissions to net zero.

Washington, DC: The District has already made tremendous progress toward carbon neutrality, cutting emissions by 36% between 2006-2021. However, that still leaves more than 7 million metric tons of carbon emissions per year that the District needs to eliminate to achieve carbon neutrality by 2045.

Indianapolis, IN: Indianapolis is committed to reducing its 2018 per capita citywide emissions by 62.8% by 2030. This is in addition to the city's commitment to net zero citywide emissions by 2050.

Minneapolis, MN: A cornerstone of the 2023 Climate Equity Plan recently adopted by the City Council and Mayor Jacob Frey centers around the goal of achieving net zero GHG emissions in Minneapolis by 2050.

San Jose, CA: San Jose Mayor Sam Liccardo announced that the the City of San Jose will pledge to go carbon neutral by the end of the decade. San Jose will become the largest city in the U.S. to have set the ambitious goal of carbon neutrality by 2030.

Santa Monica, CA: The Climate Action & Adaptation Plan sets a goal to achieve an 80% reduction (below 1990 levels) in community carbon emissions by 2030.

Baltimore, MD: At the direction of Mayor Scott, the city has set a series of targets to achieve 100% carbon neutrality by 2045. The Scott administration is aiming for a 30% reduction in carbon emissions by 2025, a 60% reduction in emissions by 2030, and full carbon neutrality – or 100% reduction in net emissions – by 2045. mayor.baltimorecity.gov

Charlotte, NC: The city has set a goal of fueling the city's fleet and facilities with 100% zero carbon sources by 2030. It also set a community-wide goal for Charlotte to become a low-carbon city by 2050 by reducing GHG emissions to below 2 tonnes of CO_2 equivalent per person annually.

Chicago, IL: Chicago's new climate goals set a course to reduce the city's carbons emissions 62% by 2040. chicago.gov

Dallas, TX: Dallas passed the Dallas Comprehensive Environmental & Climate Action Plan (CECAP) in May 2020, which calls for all new construction to be net zero by 2030.

Kansas City, MO: Kansas City set goals for reaching net zero by 2050 at 2023 Climate Summit.

Louisville, KY: Louisville formally committed to the goal of achieving net zero GHG emissions communitywide by 2040 – a goal that requires only a few updates to its 2020 ERP, including carbon sequestration strategies to offset emissions that cannot be avoided.

Miami, FL: On the trajectory to its net zero emissions by 2050 goal, the city set an interim target of 60% reductions below 2018 levels by 2035.

Oakland, CA: The ECAP was developed pursuant to the City Council's adopted 2030 GHG emission reduction target of 56% relative to 2005 levels, as well as Oaklands 2018 Climate Emergency and Just Transition Resolution. Oakland's City Council also adopted a 2045 Carbon Neutrality Goal, calling for a dramatic reduction in Oakland's GHG emissions and "deep decarbonization" of the building and transportation sectors by 2045.

Philadelphia, PA: The City of Philadelphia has committed to achieving carbon neutrality by 2050.

Phoenix, AZ: The City of Phoenix approved a climate action plan with the goal of reaching net zero by 2050 while also reducing 50% of emissions by 2030.

Raleigh, NC: Raleigh is committed to reducing community-wide GHG emissions, with the goal of an 80% reduction by 2050.

San Antonio, TX: San Antonio has a goal to be carbon neutral by 2050.

New Orleans, LA: The city has a goal of net zero emissions by 2050 and is adjusting their interim goal to reduce emissions 50% by 2035.