Building Performance Standards: Overview for State and Local Decision Makers

EPA's Benchmarking and Building Performance Standards Policy Toolkit aims to inform and support state and local government decision makers who are exploring policies to reduce energy use and greenhouse gas (GHG) emissions from existing commercial and multifamily buildings in their communities. This section of the toolkit focuses on building performance standard (BPS) policies. It provides an overview of BPS requirements and offers information on key decision points. The toolkit includes four sections—each intended to build on the previous section—that focus on different aspects of policy development, including benchmarking and transparency (Section 1), BPS (Section 2), state and local government coordination (Section 3), and data access (Section 4). Each section lists additional resources on the topic.

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Overview

Building Performance Standard (BPS) policies are an emerging type of policy that establish specific performance levels that buildings must achieve. A BPS may be adopted by state or local governments and applied to existing commercial and multifamily buildings. As of October 2022, multiple state and local governments have passed BPS policies, including Boston, MA; Chula Vista, CA; Colorado; Denver, CO; Maryland; Montgomery County, MD; New York City, NY; St. Louis, MO; Washington State; and Washington, D.C. Several other local and state governments are exploring such policies, including the more than 30 that joined the National Building Performance Standards Coalition, launched by the White House in 2022.[i] None of the laws have yet completed a first compliance cycle.

A **building performance standard** is a policy that requires building owners to meet performance targets by actively improving their buildings over time.

BPS policies can be designed to improve performance for a variety of building aspects—including energy use, water use, and emissions—and send market signals to encourage investments in energy efficiency and other clean energy technologies and strategies, particularly electrification, but also increased use of renewable energy. State and local governments can work with a broad coalition of stakeholders—including the private sector, utilities, community representatives, and others—to help building owners[ii] achieve the standards over one or more performance improvement cycles. Additionally, state and local leaders and utilities can provide support, funding, and technical assistance to building owners in need of additional resources.

As policymakers establish climate commitments, reducing emissions from buildings is critical for reaching decarbonization goals. In the United States, commercial and residential buildings account for nearly 40 percent of energy consumed and over 30 percent of GHG emissions, and can be a source of much higher emissions in cities.[iii] In Washington, D.C., for example, emissions from the buildings sector made up 73 percent of the District's total emissions in 2018, representing a significant opportunity for a BPS to reduce emissions.[iv] Many jurisdictions across the country have comprehensive policies in place to address new building construction, but whole-building performance standards for existing buildings represent a newer approach.

Requiring reductions from existing buildings such as through BPS policies can go a long way toward achieving decarbonization goals, considering that a majority of the commercial and residential building stock that will be standing in 2050 is already built.[v] Additionally, a BPS may indirectly influence new construction, given that new buildings become subject to BPS policies once in place. Policymakers are also recognizing that equity principles must be incorporated when developing decarbonization policies such as a BPS to promote equitable outcomes on energy affordability, health, comfort, affordable housing preservation while allowing people to stay in their homes. See page 11 for a discussion of equity considerations in the design and implementation of a BPS along with several state and local examples.

Understanding the Value of Building Performance Standards

Jurisdictions that have established a BPS identify it as a key strategy to help achieve decarbonization goals.[vi] Although it is too soon to evaluate the effectiveness of BPS policies, they have the potential to drive a range of actions that reduce emissions, including energy efficiency upgrades, building electrification, and increased use of renewable energy. By requiring buildings to meet a specified level of performance, a BPS can establish long-term certainty, helping building owners plan for upgrades that improve their buildings while stimulating the local economy and creating jobs. For example, the BPS in New York City, NY, is estimated to have the potential to create a $20 billion retrofit market, which would make it the largest in the country, and lead to the creation of more than 140,000 jobs by 2030.[vii]

Clean energy upgrades can reduce power plant emissions, leading to improvements in outdoor air quality and public health in the surrounding community. They can also improve the comfort and productivity of building occupants. As building owners seek to better manage indoor air quality, high-efficiency HVAC systems with improved controls, adequate ventilation, and increased filtration have become increasingly important. Clean energy upgrades can also lead to EPA recognition, such as ENERGY STAR® Tenant Space recognition for leased office space and ENERGY STAR certification at the property level.

Stakeholder Engagement

Stakeholder engagement is a critical element of designing and implementing a BPS. Engaging and communicating at all stages of policy development can help state and local leaders align policy objectives with community priorities, gather input from individuals directly affected by the policy, and understand the needs of underserved groups. State and local governments can consider a variety of engagement strategies; see below.

Stakeholder Engagement Strategies

Identify interested stakeholders

Assemble a comprehensive list of internal and external stakeholders who should be involved in the process. Creating an open process early on can facilitate information sharing, establish a forum for feedback on local circumstances, and provide a contact list of interested stakeholders to keep informed throughout the policy development process. Reaching a wide array of stakeholders, including building owners, developers, utilities, community-based organizations and organizations representing residents' interests, can lead to an inclusive engagement process and facilitate access to data and financial incentives.

Create a structure of engagement

Consider the resources and availability of stakeholders when choosing a structure for engaging the community. Allowing for flexibility (e.g., holding in-person meetings with virtual components, varying meeting times to accommodate work schedules and responsibilities, and sending meeting notes to all interested stakeholders) and setting more than one opportunity to engage can increase participation. Generating a contact list of interested stakeholders can help streamline communication throughout the policy development and rulemaking process.[1]

Allow for ongoing engagement

Consider developing a working group or board to help guide decision making and tailor needs throughout the rulemaking and implementation process. Creating a BPS help desk to offer support and resources to those required to comply can help with continued relationship building and information sharing with stakeholders. Consider creating a network to provide assistance and resources on financing, rebates, and other resources for building owners, developers, builders, and designers throughout the compliance period.[2]

[1]For more detailed information on structuring stakeholder engagement, see the Institute for Market Transformation and Natural Resources Defense Council (NRDC), Engaging the Community in Policy Development (City Energy Project of NRDC and IMT, December 2018), accessed February 2021, https://www.energy.gov/sites/prod/files/2019/02/f59/City_Energy_Project_Resource_Library_Engaging_The_Community_In_Policy_De....pdf.

[2]For example, see "High-Performance Building Hub," Department of Energy & Environment, Washington, D.C., accessed Feburary 2021, https://doee.dc.gov/node/1445901.

Key Considerations for Policy Design

State and local governments have several key decision points to consider when designing a BPS. While existing BPS policies vary considerably, there are core elements that state and local leaders can consider in developing a policy that aligns with jurisdiction goals and accounts for the varied needs of stakeholders.

The remainder of this section provides an overview of the decision points in designing a BPS.

Align and Establish Goals

Goal Alignment

Across the United States, states and local governments have established long-term commitments to reduce GHG emissions, with some goals focused on reducing emissions by up to 90 percent by 2050 (see map, *States and Cities with GHG Emissions Reduction Goals*). Many state and local leaders have developed climate action plans that describe objectives and strategies to achieve decarbonization goals. These plans are often informed by an inventory of GHG emissions to assess the amount of emissions attributable to various sectors (see *EPA's State and Local GHG Inventory Tools*). Aligning a BPS with decarbonization objectives can help ensure that the standards outlined for buildings produce the necessary reductions to help meet a jurisdiction's climate goals.

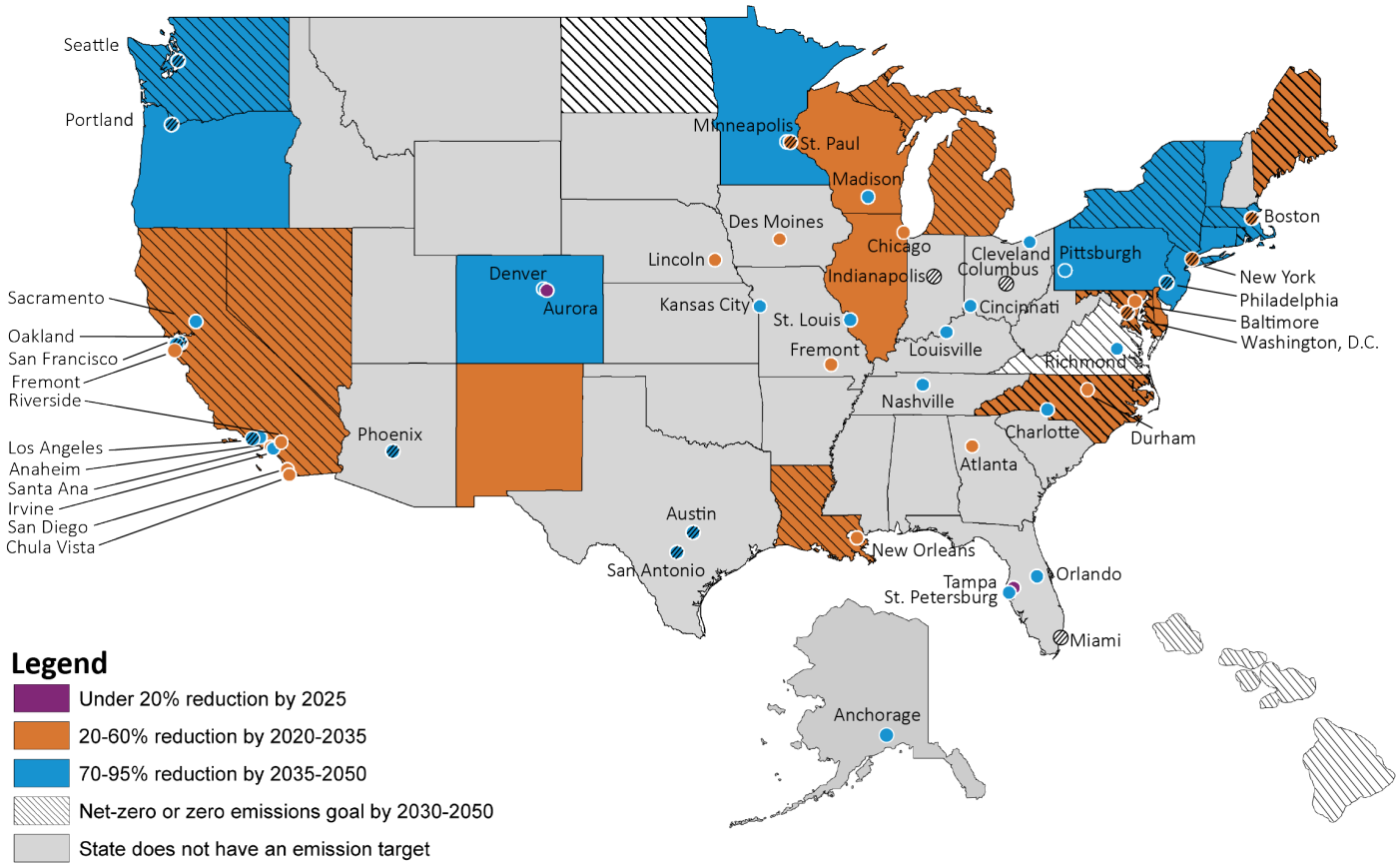
In addition to aligning climate goals, relying on data from an existing benchmarking policy offers decision makers information on the energy performance of existing buildings in their jurisdiction. Most BPS policies currently enacted rely on benchmarking data to help set BPS goals as the best-in-class resource for understanding the actual performance of buildings within a jurisdiction. State and local governments can couple benchmarking data with other data and analysis to identify achievable decarbonization pathways by building type, ground-truthing whether their BPS goals are realistic for building owners to achieve or if their policies need to be revised.

EPA's State and Local GHG Inventory Tools

EPA's GHG Inventory Tools are interactive spreadsheet models designed to help state, local, and tribal governments develop GHG emissions inventories, and provide a streamlined way to update an existing inventory or complete a new inventory. State and local governments can use these tools to develop GHG emissions inventories that assess the amount of emissions attributable to various sectors and create a simple forecast of emissions through 2050. The results can help to inform policy goals, including establishing building performance standards.[1]

[1] "State, Local and Tribal Inventory Tools," Energy Resources for State and Local Governments, U.S. EPA, last updated October 31, 2022, https://www.epa.gov/statelocalenergy/state-local-and-tribal-inventory-tools.

States and Cities with GHG Emissions Reduction Goals



Notes and sources: Baseline years of goals and policy type (i.e., legislation or executive order) vary. Some states and cities may also have interim goals not shown. The 49 cities shown here are those of the largest 100 U.S. cities that have GHG reduction goals, according to "Pledges and Progress: Steps toward Greenhouse Gas Emissions Reductions in the 100 Largest Cities across the United States," Brookings, Washington, D.C., October 2020, accessed February 2021, https://www.brookings.edu/research/pledges-and-progress-steps-toward-greenhouse-gas-emissions-reductions-in-the-100-largest-cities-across-the-united-states/. When data was available, city information was updated using, "State and Local Policy Database," ACEEE, Washington, D.C., accessed October 2022, https://database.aceee.org/. The source for state policy goals is: "State Climate Policy Dashboard," ClimateXChange, Boston, Massachusetts, updated June 2022, accessed October 2022, https://climate-xchange.org/network/dashboard/.

Performance Metrics

One of the most critical elements of any BPS is the selection of appropriate metrics on which to base compliance. In general, these metrics fall into two broad categories—energy metrics and GHG metrics[viii]—but many possible variations exist within those categories. Currently, no BPS regulates water use, but EPA is available for advising interested jurisdictions on appropriate metrics.

Ultimately, jurisdictions must choose the metric or combination of metrics that best align with their key strategies to achieve decarbonization goals. Selected metrics should be easy to implement by the government and easily understood and acted upon by building owners. There are potential benefits and drawbacks to consider for any metric or set of metrics codified in a BPS. For this reason, EPA conducted an extensive analysis of metrics that could be considered for use in a BPS.[ix] Following the analysis, EPA organized a 2-day workshop to discuss BPS metrics, and finally published recommendations on BPS metrics and normalization methods.[x]

EPA's Recommended Metrics and Normalization Methods

EPA recommends that jurisdictions developing state or local BPS policies adopt the following metrics:

- *To reduce energy use*: Site Energy Use Intensity (EUI)
- *To reduce onsite GHG and encourage electrification*: Direct GHG emissions or adopt a fossil fuel phaseout schedule

EPA recommends against the use of net energy metrics (subtract renewable energy from the total energy used to operate a building) in BPS. The use of net energy metrics could result in buildings bypassing efficiency and achieving compliance while still using large amounts of energy.

To normalize for business activity, EPA recommends that jurisdictions first evaluate benchmarking data by property type to determine if additional normalization is needed. Where performance in a property type is widely distributed, EPA recommends setting different targets based on operating characteristics using either a binning method or using the ENERGY STAR Score.

The BPS policies in place as of April 2022 use a variety of metrics, for example:

- Washington, D.C. is using EPA's 1–100 ENERGY STAR Score as a screen to identify which buildings need to be improved, using Site Energy Use Intensity (Site EUI) as the metric for measuring improvements.[xi]
- Washington State and Denver, CO, are using Site EUI as their metric, with requirements that buildings achieve certain Site EUI performance levels.[xii]
- St. Louis, MO, is using Site EUI as its metric both to identify buildings that need to comply and to measure improvements.[xiii]
- Chula Vista, CA, screens for whether a building has been ENERGY STAR or LEED for Existing Buildings: Operations & Maintenance (LEED EBOM) certified or has been assigned a score of 80 or higher. Building owners must complete prescriptive requirements and/or reduce the EUI of buildings that are not certified.
- New York City, NY, and Boston, MA, are using total GHG emissions as their metric to assign an emissions limit to all buildings. The emissions limit is based on an emissions rate per square foot multiplied by the building's square footage.[xiv]

Choosing specific metrics for a BPS involves balancing several considerations, such as:

Normalizing for business activity. Jurisdictions may want to adopt metrics that account for significant differences in building operations or activity. For example, the BPS policy in Washington, D.C. uses the ENERGY STAR score, which adjusts for key drivers of energy use by property type. However, normalization for operational parameters creates additional complexity that must be balanced against the benefits it offers.

Recognizing differences in property type when setting standards. All BPS policies passed to date have differentiated performance levels by property type. Certain property types tend to operate at a higher Site EUI than others (e.g., a supermarket is expected to consume more energy per square foot than a warehouse). Jurisdictions should consider how their BPS will differentiate performance levels by property type, depending on which metrics or compliance paths they adopt.

Setting a timeframe for compliance and interim milestones. To date, state and local governments have adopted BPS policies with interim standards defined by compliance cycles (e.g., every five years) until the ultimate, long-term performance standard is reached. Depending on how they are established, these interim standards can drive predictable improvements in building performance and corresponding GHG emissions reductions, while allowing for flexibility by enabling building owners to defer improvements so that upgrades can be aligned with capital planning within a longer timeframe. Establishing long-term standards using set metrics can provide building owners a clear sense of the reductions they must achieve over time.

Ensuring that performance is measured and standards are set based on high-quality data. An important consideration in BPS design is including measures to ensure that compliance data are high quality, such as requiring building owners to verify the data they submit. Such measures may increase confidence in the standards

and the assessment of a building's performance relative to them.

Changing standards based on local considerations. If a BPS has more than a single standard and compliance period, state and local governments could consider changing how standards are set over time. This would likely depend on several factors, such as changes in building performance, the carbon intensity of the electricity grid, technology developments, stakeholder needs, and shifting priorities. One key way to accomplish this would be to create flexibility in the legislation itself, where policymakers would have an opportunity to consider changing targets at defined points in time.

Determine Covered Properties

Property Types

State and local governments can apply a BPS metric to a variety of building types, although most BPS policies to date have covered existing commercial and multifamily buildings.[xv] The process for determining specific covered properties can be informed by several factors, including the amount of energy savings and GHG reductions that can be achieved, the degree of program outreach and support that building owners will need, and stakeholder input.

Large commercial and multifamily buildings have potential for significant energy savings and emissions reductions. Because owners of large commercial buildings tend to have more resources and technical expertise in-house they may need less support than owners of smaller buildings. When considering buildings to be covered, decision makers may want to plan for additional support needs for certain property types and owners of smaller buildings. Conducting stakeholder outreach will provide state and local governments with a better understanding of property owners' needs and inform equitable access to available resources for compliance.

As is common practice, jurisdictions with existing benchmarking policies can align their covered property types with their covered properties under a BPS, relying on the effort, outreach, and data collection already established through a benchmarking policy.

Exemptions and Accommodations

Exemptions and accommodations for certain property types are important to ensure that the design of a BPS considers equity. Existing BPS policies consider factors such as financial hardship, capacity constraints, building usage, occupancy rates, major renovations, the condition of a property, and change of ownership for determining exemptions and accommodations. Jurisdictions with a benchmarking policy in place can also consider matching the property type exemptions under those requirements with exemptions in their BPS policies.

State and local decision makers, in consultation with stakeholders, can identify accommodations for additional support and compliance flexibility that enable building owners and tenants to realize the benefits from compliance strategies and support policy goals. This is particularly relevant for under-resourced buildings, such as affordable housing. For example, in St. Louis, MO, the BPS extends compliance for affordable housing and houses of worship to six years relative to four years for other propriety types. This helps balance the benefits of a BPS for affordable housing and other under-resourced market segments with the strain on their budgets and staff required to comply with the standard.[xvi]

Consider Compliance Approaches

Compliance Pathways

Determining allowable compliance pathways is an opportunity for state and local governments to build in flexibility, while aligning stakeholder needs with BPS objectives.

Washington, D.C.'s Compliance Pathways

Washington, D.C.'s Building Energy Performance standard provides building owners with a variety of paths to choose from to bring their buildings into compliance. More details about these compliance paths will be available once the rules and guidance documents are finalized. Compliance pathways as of February 2021 include:

- Performance: reduce site energy usage by 20%
- Prescriptive: implement cost-effective efficiency measures
- Standard: reach the standard for the property type; only available for property types that are above the national median
- Alternative compliance: special circumstances such as portfolios, deep retrofits, etc.[1]

[1]"BEPS [Building Energy Performance Standard] Frequently Asked Questions," Department of Energy & Environment, Washington, D.C., accessed February 2021.

Compliance can be based on achieving a performance standard, implementing a set of prescriptive measures, or other pathways for special circumstances, with alternative compliance fines for building owners who fail to comply. State and local decision makers may want to primarily direct building owners to a performance pathway because it ensures a set level of savings; however, considering additional pathways can allow for compliance flexibility. For example, developing a set of cost-effective prescriptive measures may help building owners with resource constraints meet the standard and provide certainty concerning compliance. In addition, incorporating flexibility by extending compliance timeframes can enable building owners to align building upgrades with their capital planning, granted the long-term standards are met.

State and local leaders can consider various compliance pathways when selecting performance metrics for a BPS. They can consider which technology investments will align with the performance metrics used to set the BPS and whether the investments are viable for building owners. State and local governments and utilities can encourage investment in building performance improvements by providing incentives via early adoption programs (see *Washington State's Early Adopter Incentive Program*), or offering benefits or exceptions for buildings with ENERGY STAR certification.[xvii] Regardless of the compliance approach taken, a BPS will likely require some mechanism to allow for alternative compliance pathways for some buildings, such as those with highly energy-intensive space uses or characteristics that make them fundamentally different from most buildings and building types.

Washington State's Early Adopter Incentive Program

Washington State's BPS includes a program to incentivize early compliance. The program was expanded in 2022 and is administered by the utility and the Washington State Department of Commerce. Early adopters who bring their buildings into full compliance with the standard can receive a performance-based incentive totaling 85 cents per square foot.[1]

[1]"Clean Buildings," Washington State Department of Commerce, Olympia, WA, accessed February 2021, https://www.commerce.wa.gov/growing-the-economy/energy/buildings/.

Enforcement for Noncompliance

While state and local governments can focus on educating building owners and providing support to boost compliance through performance improvements, enforcement can help discourage noncompliance.

When determining fines for noncompliance, state and local governments have considered a level that would encourage compliance by setting an amount higher than the estimated cost of compliance. Fines—also called "alternative compliance payments" can connect to building size (e.g., dollars per square foot), or can be on an absolute energy or GHG basis, or can taper depending on the level of improvement a building achieves by the end of a performance period, or can correspond with the property's assessed value. Fines could also be triggered if the owner does not meet reporting requirements, or takes measures that harm occupant health or safety, or

falsifies data. State and local governments can consider the role of tenants in building performance by enabling building owners to pass incentives and fines to their tenants. This may create an opportunity for tenants to support building performance improvements; however, it is important to consider the effects this could have on under-resourced buildings and underserved tenants, and identify any necessary protections such as those to ensure any pass-through of fines to tenants is proportional to what they control. State and local governments may also consider providing additional support and considerations for owners of certain buildings or building types, including affordable housing or other under-resourced buildings.

In addition, state and local governments can consider distributing the fines collected to support those building owners in need of financial support. As BPS policy implementation gets under way in the coming years, there will be opportunities to assess the effectiveness of different enforcement approaches to inform future policy development, including approaches that go beyond fines such as the revocation of occupancy permits.

Provide Support to Building Owners

Technical Support

State and local governments are well-positioned to offer technical support and education to building owners. This can include providing education materials on planning and implementing cost-effective performance improvements, answering questions on reporting or compliance requirements, and establishing a support mechanism to assist underserved owners/tenants and under-resourced buildings (see *St. Louis, MO's Building Energy Improvement Board*).

Technical support needs will likely vary by building type. For example, owners of large commercial buildings tend to have more resources and technical expertise in-house, whereas owners of other building types such as small commercial and affordable housing may need more support. State and local governments can consider convening building owners and technical experts to plan services similar to Washington, D.C.'s Building Innovation Hub.[xviii] This type of platform can offer coordinated technical assistance, oversight, and outreach to help building owners with compliance. In addition, state and local governments might explore partnering with colleges and universities to provide technical support with students serving as support staff.

St. Louis' Building Energy Improvement Board

St. Louis, MO viewed equity as one of the most important design decisions when constructing their BPS. Equity is also a driving force behind the Building Energy Improvement Board, a nine-member board appointed by the Mayor to provide support to underserved people and under-resourced buildings. The Board is responsible for the following:

- Democratically approves equitable accommodations;
- Oversees establishing and approving standards by property types in each compliance cycle;
- Reviews and recommends amendments to proposed regulations;
- Meets on a quarterly basis to approve alternative compliance plans (available on a case-by-case basis to provide necessary expertise to building owners who need it);
- Helps with creating suggested template compliance plans, recommending complementary programs, providing technical expertise, and connecting building owners to utility incentives for affordable housing.[1]

[1]"Next-Generation Building Performance Policies: Maximizing Energy Savings and Environmental Impacts," Better Buildings®, U.S. Department of Energy, Washington, D.C., accessed February 2021, https://betterbuildingssolutioncenter.energy.gov/webinars/next-generation-building-performance-policies-maximizing-energy-savings-and-environmental.

EPA Support for BPS Design and Implementation

EPA is available to support state and local governments throughout all phases of BPS development, including strategic advisory discussions, reviewing draft policies and regulations, providing technical support on implementation (including the use of ENERGY STAR Portfolio Manager), and more. EPA seeks to serve as a bridge between building owners and policymakers. For a summary of EPA resources for BPS, please see this webpage: Benchmarking Policies and Building Performance Standards: EPA Resources.

Funding Support

It is critical to ensure that funding is in place for a state or local government to design and administer the BPS. Decision makers can develop new or feature existing sources of funding to assist building owners with compliance. For many building owners, compliance with a BPS could require significant investment and financial assistance.[xix] Some examples of possible funding sources include the following: incentive program offerings from local utilities targeted to covered building types[xx]; Property-Assessed Clean Energy (PACE) financing, a low (or no) upfront cost loan that can be used to fund energy efficiency and renewable energy projects and is repaid through a building's property tax bill; green banks that leverage public funding to attract private capital for investments in clean energy projects (see *Washington, D.C.'s Green Bank*); and federal tax credits and funding opportunities for energy efficiency and clean energy programs and projects.[xxi]

Washington, D.C.'s Green Bank

Washington D.C.'s building energy performance standard sets aside dedicated funding for the District's new Green Bank. The DC Green Bank has partnered with the Montgomery County Green Bank to offer Montgomery County's Commercial Loan for Energy Efficiency and Renewables (CLEER) Program for commercial buildings in the District as well. D.C.'s Green Bank is also matching their financing offerings to rebates from the D.C. Sustainable Energy Utility and supporting work with diverse contractors.[1]

[1]American Council for an Energy-Efficient Economy. "Webinar: Building Energy Performance Standards the Importance of Financing to Fund Critical Upgrades." YouTube video, 1:32, September 17, 2020, https://www.youtube.com/watch?reload=9&v=sDdxf5B9wFI&feature=youtu.be&ab_channel=ACEEEDC.

Establish Reporting Requirements

Regardless of the specific implementation details of a state or local BPS, it is likely that EPA's ENERGY STAR Portfolio Manager tool will play a role in the performance reporting process. This is especially likely if the jurisdiction has already required the use of Portfolio Manager through a benchmarking and disclosure ordinance. (See Section 1 of this toolkit for more information on benchmarking policies.) State and local decision makers may want to consider the following:

Reporting Mechanism

The most common reporting approach under existing benchmarking requirements is for the state or local government to set up a custom reporting template in Portfolio Manager, and to publish this as a **Data Request**. Building owners access the Data Request by clicking on a dedicated URL. After clicking the link, respondents select the properties for which they are reporting data and release their report to the requesting state or local government. The reported properties from all respondents are combined in the reporting template, and the requesting government downloads the data from Portfolio Manager as one data set. The other reporting approach available in Portfolio Manager is called **Property Sharing**. Through this method, covered building owners share read-only access with an account set up by the state or local government for reporting. This approach allows the state or local government to directly view the respondent's property record in real time and extract the necessary metrics for compliance and reporting. Some local governments have used these methods in tandem, helping them resolve data quality issues with respondents more easily. These reporting approaches are described in more detail in the *Summary of Benchmarking Reporting Approaches* table on page 10.

Access to Historical Data

Because BPS policies may assess performance against a historical baseline, it is critical to ensure the availability of data going back an appropriate number of years. Addressing this will require the establishment of clear expectations for the historical whole-building data that utilities should provide when supporting requests from building owners. A BPS can also establish requirements for providing historical property data to the new owner of a property upon sale. This ensures that the new owner will have access to any baseline data that may be required as a part of BPS reporting and compliance, and will not need to start the data-gathering process anew.[xxii]

Changes to Metrics in Portfolio Manager

Generally speaking, the building-specific models underlying EPA's ENERGY STAR 1-100 scores available in Portfolio Manager are updated every four to five years as new national data sets become available. At these times it is common for a property's ENERGY STAR score to change to reflect changes in the efficiency of the building population. For all types of buildings, including those not eligible for an ENERGY STAR score, EPA's regular updates to site-to-source energy conversion factors—necessary as the mix of fuels and renewable energy used to generate electricity changes—may result in changes to metrics. When changes occur, they are applied both going forward and retroactively in Portfolio Manager. Policymakers may want to consider whether or how any significant impacts to performance due to these changes would be addressed in assessing compliance against a BPS, given that the impact of these changes are outside of the building owner's control.

The ENERGY STAR Portfolio Manager Building Emissions Calculator

EPA's ENERGY STAR Portfolio Manager calculates a building's GHG emissions (including carbon dioxide, methane, and nitrogen oxide) from on-site fuel combustion and purchased electricity and district heating and cooling, and enables tracking of avoided emissions from any green power purchases. This is done using emissions factors for the 26 eGRID subregions.

In 2022, EPA released a new tool, the **ENERGY STAR Portfolio Manager Building Emissions Calculator**. This tool allows users to estimate past, current, and future emissions, including application of custom factors and allowing for market-based GHG inventorying. The tool allows users to leverage their ENERGY STAR Portfolio Manager data. In 2023, EPA will further enhance and integrate the Building Emissions Calculator by allowing the results to flow back into Portfolio Manager.

Summary of Benchmarking Reporting Approaches

Reporting Method	Characteristics	Pros and Cons
Data Request	Creates a "snapshot of performance" based on requested metrics and time period	• Requires action from the building owner each reporting cycle that may improve data quality and completeness. • Defined metrics and time period ensure greater data privacy. • Offers fewer insights into historical data and into building owner inputs that could have errors.
Property Sharing	Provides "real-time" and full view into all building owner inputs and corresponding metrics	• Allows state or local government to see rolling view of current and historical inputs and metrics as building owner makes changes and when EPA refreshes metrics such as 1-100 ENERGY STAR scores. • Could create issues by not prompting the building owner to review data quality and completeness. • May raise data privacy concerns among building owners, requiring transparent communication around what data points will be retrieved, when, and for what purposes.

Equity Considerations and Examples for BPS

Policymakers are recognizing that equity principles must be incorporated when developing decarbonization policies. This will ensure that these policies result in reductions in energy use and carbon emissions while promoting equitable outcomes on energy affordability, health, comfort, affordable housing preservation, and housing displacement. Policies that include under-resourced buildings while offering managers and residents additional support rather than excluding them from requirements can achieve stronger environmental results while providing the benefits of building upgrades to more people. When designed with equity in mind, building benchmarking and BPS policies can be an enduring strategy for achieving progress for buildings, communities, and the climate.

Addressing equity in building performance policies is an evolving area of practice. This section first identifies common overarching considerations or strategies that can support equity in the design of building performance policies. These strategies are followed by implementation approaches with specific local and state policy examples. These examples are illustrative; many additional states and cities are finding other innovative ways to address equity concerns. While these examples focus on BPS policies, many of the approaches could also be designed to apply to building benchmarking policies.

Overarching Considerations and Strategies

The underlying goal of a building performance policy is to maximize benefits while avoiding harm, especially for communities with environmental justice concerns. Policymakers must determine what is appropriate to include in the BPS given its scope, which is generally to regulate the performance of existing commercial and multifamily buildings. Some goals, such as workforce development, preserving naturally occurring affordable housing (e.g., through rent stabilization), etc., may be more suited to companion policies or programs, or a broader policy package where a BPS is one of many components. However, incorporating the following broad strategies in BPS policy development can help bolster equity:

- **Engage with affected residents, tenants, owners, and managers** of buildings serving disadvantaged populations[1] throughout policy development and implementation.
- **Provide technical and/or financial support** to under-resourced owners to assist in achieving compliance.
- **Structure penalties progressively** (i.e., fine amounts correlate with resource levels) to the extent possible.
- **Consider alternative compliance paths/options/timeframes** for under-resourced owners serving disadvantaged populations.
- **Prevent negative outcomes for tenants** of affordable multifamily buildings, including naturally occurring affordable housing, by limiting pass through of compliance costs, and rent or utility increases.

Definitions of disadvantaged populations or disadvantaged communities vary. The White House Office of Management and Budget guidance on defining disadvantaged communities for federal agencies is available at: https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf.

Key Resources:

1. Urban Sustainability Director's Network. *Building Performance Standards: New Framework for Equitable Policies to Address Existing Buildings.* July 2021. https://www.usdn.org/projects/building-performance-standards.html.
2. Institute for Market Transformation. *Understanding the Housing Affordability Risk Posed by Building Performance Standards.* August 2020. https://www.imt.org/resources/understanding-the-housing-affordability-risk-posed-by-building-performance-policies/.
3. National Housing Trust and ACEEE. *Mandating Building Efficiency while Preserving Affordable Housing: Opportunities and Challenges.* August 2020. https://www.energyefficiencyforall.org/resources/mandating-building-efficiency-while-preserving-affordable-housing/.

Equity Implementation Approaches and Examples

- **Include Disadvantaged Communities in Stakeholder Engagement** – Including under-resourced building owners, community-based organizations, and tenant representatives in stakeholder engagement from the start and throughout the policy design and implementation process helps to ensure policymakers listen to and understand the concerns of building owners and communities who will be affected by the policy. Meaningful engagement[2] ensures that communities have equal opportunity to shape and benefit from the policies. St. Louis, MO, has a Building Energy Improvement Board that includes affordable housing owners and tenants, as well as labor representatives, to provide input on implementation, compliance, and complementary programs. Denver, CO, is working with community members and stakeholders to co-create services and incentives that meet the needs of under-resourced building owners and occupants as they implement the Energize Denver BPS ordinance.
- **Compliance Flexibility** – BPS policies require attention to under-resourced building owners who will need additional support, including nonprofit organizations, houses of worship, small businesses, community centers, and affordable multifamily housing. Structuring a policy to include under-resourced buildings with accommodations, rather than excluding them from the requirements, provides an opportunity to realize multiple benefits from building upgrades. For example, a BPS could include extended compliance timelines, a progressive penalty structure, or adjustments to targets for qualifying situations. Montgomery County, Maryland's Building Energy Performance Standard (BEPS) groups buildings by type and sets standards based on technical feasibility. A key feature of the BEPS is a Building Performance Improvement Plan (BPIP)[3] to allow flexibility for properties that cannot reasonably meet standards. BPIPs will be developed by owners and reviewed and approved by a Building Performance Improvement Board. Under-resourced buildings may be eligible for timeline extensions or alternative compliance paths. St Louis' Building Energy Performance Standard Targets gives affordable housing and houses of worship six years to meet standards while other building types have four years. Boston, MA's Building Emissions Reduction and Disclosure Ordinance includes a compliance path for buildings experiencing hardship.
- **Consumer impacts and financial support** – Throughout policy design and implementation, policymakers can consider impacts that could arise for consumers. For example, if building owners pass the cost of BPS compliance to low-income tenants, this could worsen household energy burdens or raise rents, increasing the risk of displacement. Low-income building occupants may also have limited ability to mitigate or respond to any adverse conditions that arise during building improvements. To address this, policymakers can build in measures to protect occupant's living conditions or offer funding and/or financing programs to bring down the cost of compliance and help pay for energy audits, predevelopment expenses, and health and safety measures. For example, the BPS in Washington, D.C. imposes the maximum fine on buildings that endanger occupant health and safety. Alternative compliance penalties and other funding go into the District's Sustainable Energy Trust Fund, which provides funding to multifamily affordable housing and owners of rent-controlled building so that they can improve and comply.
- **Technical support for implementation** – Compliance with BPS policies can place additional burdens on staff for under-resourced buildings. Robust and targeted technical assistance can facilitate compliance. Washington, D.C.'s Affordable Housing Retrofit Accelerator offers training and technical assistance to affordable housing buildings.
- **Complementary programs and policies** – Complementary policies and programs (including energy efficiency programs, green banks, and clean energy policies) can play an important role in generating more successful and cost-effective BPS policies, especially for under-resourced building owners. Policymakers can develop programs tailored to meet the needs of under-resourced building owners and underserved areas to help reach compliance with BPS policies. Washington State's Early Adopter Incentive Program, administered by utilities and funded by the state's public utility tax, includes an Equitable and Inclusive Early Adopter Incentive Plan that reserves incentives for buildings located in rural areas or areas with environmental health disparities, those with high energy use, or multifamily affordable housing.

[1]The Institute for Market Transformation's Model BPS Ordinance includes sample language for a Building Performance Action Plan.
[2]The Institute for Market Transformation's Model BPS Ordinance includes a Community Accountability Board concept that provides an example of a structure through which governments and communities can work together.
[3]The Institute for Market Transformation's Model BPS Ordinance includes sample language for a Building Performance Action Plan.

EPA

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EPA Resources

EPA offers robust training materials and support to help state and local decision makers understand how to benchmark in Portfolio Manager, implement and finance energy efficiency improvements, and quantify the multiple benefits of clean energy:

ENERGY STAR Building Performance Policy Brief – This brief provides the latest updates on building performance policies and trends.

ENERGY STAR Resources for Benchmarking Policies and Building Performance Standards – This webpage highlights ENERGY STAR tools, resources, and support for state and local governments designing and implementing building performance policies.

ENERGY STAR: An Overview of Portfolio Manager—Guide describing some of ENERGY STAR Portfolio Manager's basic functions, such as how to navigate through the tool, enter building data, and connect and share data with others.

ENERGY STAR Portfolio Manager Technical Reference: Greenhouse Gas Emissions—Overview of the GHG emissions metrics used in Portfolio Manager and how to calculate the emissions footprint associated with a building's energy consumption.

ENERGY STAR for Existing Buildings—Explore a set of EPA tools and resources to help commercial and institutional building owners or managers save energy. Resources include getting started, finding financing, earning recognition, and communicating success.

State, Local, and Tribal GHG Inventory Tools—Interactive spreadsheet models designed to help state, local, and tribal governments develop GHG emissions inventories, and provide a streamlined way to update an existing inventory or complete a new inventory.

Tools for State, Local, and Tribal Governments—Overview of the State and Local Climate and Energy Program's tools to help state, local, and tribal governments quantify and achieve their environmental, energy, and economic objectives.

Local Action Framework: A Guide to Help Communities Achieve Energy and Environmental Goals—State and Local Climate and Energy Program's step-by-step guide to help local and tribal governments plan, implement, and evaluate new or existing energy or environmental projects.

Clean Energy Finance: Green Banking Strategies for Local Governments—This primer provides a basic explanation of green banks, the benefits they offer, issues local governments might consider when deciding whether to create a green bank, and several case studies. It also provides information on other green banking opportunities for local governments.

Did Your Energy Efficiency Project Get Lost in Translation? Financial Speak for Facility Managers—Highlights alternative financing solutions specific to energy efficiency that may offer a solution for facility managers in getting approval for a project.

Additional Resources

American Council for an Energy-Efficient Economy—Mandatory Building Performance Standards: A Key Policy for Achieving Climate Goals—Summarizes current trends and profiles 17 jurisdictions where BPS policies are being successfully implemented, implementation is just beginning, or adoption is being considered.

American Council for an Energy-Efficient Economy—How Energy Efficiency Programs Can Support Building Performance Standards—Discusses the role of energy efficiency programs before and after BPS policies take effect, including approaches to crediting energy savings achieved.

Institute for Market Transformation (IMT)—Exploring Building Performance Standards—Set of resources focused on BPS policies for local governments, building owners, and tenants.

Institute for Market Transformation—Summary of IMT's Model Ordinance for a Building Performance Standard—Overview of model ordinance for a building performance

standard that incorporates lessons from four jurisdictions that have adopted BPS policies.

National Housing Trust—Recommendations for Implementing the District's Building Energy Performance Standard in Affordable Multifamily Housing—Overview of recommendations to Washington, D.C.'s Department of Energy and Environment for the Building Energy Performance Standard as it relates to multifamily affordable housing developers and owners in the District.

Urban Green—All About Local Law 97—Set of resources focused on New York City, NY's BPS, enacted under Local Law 97.

Urban Sustainability Directors Network and Cadmus—A Guidebook on Equitable Clean Energy Program Design for Local Governments and Partners—Guidebook supporting local governments and their partners to intentionally design clean energy programs that enable current and emerging technologies to be accessed equitably.

[i] Other jurisdictions have adopted forms of performance requirements for buildings, including San José and Brisbane, CA; Boulder, CO; and Reno, NV. For the purposes of this document, we refer to the types of BPS policies adopted in Washington, D.C.; New York City, NY; St. Louis, MO; and Washington State.

[ii] From this point forward, the term "building owner" is used to indicate "building owner and/or operator," with the understanding that many property owners rely on third-party management companies to operate buildings on their behalf.

[iii] U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2022 with Projections to 2050* (Washington, D.C.: EIA), accessed February 2021, www.eia.gov/aeo; U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018,* EPA 430-R-20-002 (Washington, D.C.: U.S. EPA, 2020), accessed February 2021, https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2018.

[iv] "Greenhouse Gas Inventories," Department of Energy & Environment, Washington, D.C., accessed February 2021, https://doee.dc.gov/service/greenhouse-gas-inventories.

[v] American Council for an Energy-Efficient Economy (ACEEE), *Halfway There: Energy Efficiency Can Cut Energy Use and Greenhouse Gas Emissions in Half by 2050* (Washington, D.C.: ACEEE, September 18, 2019), accessed February 2021, http://www.aceee.org/research-report/u1907; ACEEE, *Mandatory Building Performance Standards: A Key Policy for Achieving Climate Goals* (Washington, D.C.: ACEEE, June 22, 2020), accessed February 2021, https://www.aceee.org/white-paper/2020/06/mandatory-building-performance-standards-key-policy-achieving-climate-goals.

[vi] "Climate Mobilization Act," New York City Council, City of New York, NY, accessed February 2021, https://council.nyc.gov/data/green/; "Clean Energy DC Act," Department of Energy & Environment, Washington, D.C., accessed February 2021, https://doee.dc.gov/service/clean-energy-dc-act.

[vii] "Retrofit Market Analysis," Urban Green, City of New York, NY, June 18, 2019, accessed February 2021, https://www.urbangreencouncil.org/sites/default/files/urban_green_retrofit_market_analysis.pdf.

[viii] Energy metrics and GHG metrics include, but are not limited to, Site Energy Use Intensity—the total amount of energy a property consumes on-site, regardless of the source (electricity, natural gas, or another fuel), divided by the property's gross floor area; ENERGY STAR Score—the measure of how well a property is performing relative to similar properties nationwide, while normalizing for weather and business activity; Source Energy Use Intensity—the total site energy required to operate a property, adjusted to factor in the amount of energy required to generate, transmit, and distribute the energy consumed by the property, divided by the gross floor area; and GHG Emissions Intensity—the amount of carbon dioxide equivalent (CO_2e) that is emitted as a result of the total energy used to operate a property (either directly via on-site fossil fuels, indirectly from grid-based generation, or a combination thereof), divided by the gross floor area.

[ix] "White Paper: Understanding and Choosing Metrics for Building Performance Standards." (U.S. EPA, July 2022) https://www.energystar.gov/buildings/tools-and-resources/white_paper_understanding_and_choosing_metrics_building_performance_standards.

[x] "EPA Recommended Metrics and Normalization Methods for Use in State and Local Building Performance Standards." (U.S. EPA, May 2022, updated September 27, 2022) https://www.energystar.gov/buildings/tools-and-resources/epa_recommended_metrics_and_normalization_methods_use_state_and_local_building.

[xi] D.C. Law Library, D.C. Law 22-257, CleanEnergy DC Omnibus Amendment Act of 2018 (Washington, D.C.: D.C. Law Library), accessed February 2021, https://code.dccouncil.gov/us/dc/council/laws/22-257.

[xii] State of Washington, Certification of Enrollment, Engrossed Third Substitute House Bill 1257, Chapter 285, Laws of 2019, 66th Legislature, 2019 Regular Session, Energy Efficiency, Effective Date: July 28, 2019 (State of Washington, Secretary of

State), accessed February 2021, http://www.commerce.wa.gov/wp-content/uploads/2019/06/HB1257.pdf.

[xiii] City of St. Louis, MO, Ordinance 71132, Building Energy Performance Standard (BEPS) (City of St. Louis, MO, Effective June 4, 2020), accessed February 2021, https://www.stlouis-mo.gov/government/city-laws/ordinances/ordinance.cfm?ord=71132.

[xiv] New York City, NY, Local Laws of the City of New York for the Year 2019, No. 97 (New York City, NY), accessed February 2021, https://www1.nyc.gov/assets/buildings/local_laws/ll97of2019.pdf.

[xv] Additional facility types can include public buildings and manufacturing facilities, with special attention to performance metrics considerations.

[xvi] "Building Energy Performance Standards," City of St. Louis, MO, accessed February 2021, https://www.stlbenchmarking.com/Building-Energy-Performance-Standards.

[xvii] "ENERGY STAR Certification for Buildings," ENERGY STAR, accessed February 2021, https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification; "Energy-Saving Competitions," ENERGY STAR, accessed February 2021, https://www.energystar.gov/buildings/save_energy_commercial_buildings/ways_save/energy_saving_competitions.

[xviii] "Connecting Ambition and Action in DC," Building Innovation Hub, Washington, D.C., 2021, updated 2022, accessed February 2021, https://buildinginnovationhub.org/.

[xix] "Cash Flow Opportunity Calculator," ENERGY STAR, updated March 7, 2018, accessed February 2021, https://www.energystar.gov/cfocalculator; "Finding Money for Your Energy Efficiency Projects," ENERGY STAR, updated August 12, 2019, accessed February 2021, https://www.energystar.gov/buildings/tools-and-resources/finding-money-your-energy-efficiency-projects.

[xx] "How Energy Efficiency Programs Can Support Building Performance Standards," ACEEE, Washington, D.C., October, 2020, accessed February 2021, https://www.aceee.org/topic-brief/2020/10/how-energy-efficiency-programs-can-support-building-performance-standards.

[xxi] *Clean Energy Finance: Green Banking Strategies for Local Governments,* EPA-430F-18-004 (Washington, D.C.: U.S. EPA, October 2018), updated November 15, 2022, accessed February 2021, https://www.epa.gov/statelocalenergy/clean-energy-finance-green-banking-strategies-local-governments.

[xxii] Consider avoiding a reliance on baseline or performance measurement in years with highly atypical business activity or operations, including 2020 and 2021, due to impacts from the COVID-19 pandemic.