

BUILDING PERFORMANCE STANDARDS

PREPARED FOR THE

American Cities
Climate Challenge

A FRAMEWORK FOR EQUITABLE POLICIES
TO ADDRESS EXISTING BUILDINGS

JULY 2021



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ABOUT THE AMERICAN CITIES CLIMATE CHALLENGE

The Bloomberg Philanthropies American Cities Climate Challenge is an initiative that empowers 25 of the largest U.S. cities to implement near-term climate goals and become primary drivers of progress towards meeting America's pledge on climate. Recognizing that cities account for more than 70% of global carbon emissions—and that mayors have significant authority over cities' highest emitting sectors: transportation and buildings—the Climate Challenge aims to enhance the work already being done by mayors across the U.S. and to support cities in the fight against climate change.

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PREFACE

Cities across the US are experiencing myriad interlocking crises. The COVID-19 pandemic has resulted in a significant loss of jobs and economic opportunities. The US has been hit with one climate disaster after another, all while global carbon pollution continues to rise. While communities across the country were encouraged to shelter in place, others were told to evacuate due to wildfires or hurricanes. In the midst of this uncertainty, it is clear that access to safe, energy-efficient, and comfortable buildings plays a significant role in people's lives. Unfortunately, affordable housing shortages coupled with systemic racism have made it difficult to ensure wellbeing and safety across buildings and communities. Cities are on the frontlines of these crises and addressing them. Policies seeking to resolve any of these issues should be as interlocking as these crises themselves.



INTRODUCTION

Buildings are central to people's lives and, with the right tools, can contribute to health and resiliency benefits, as well as greenhouse gas reductions. Currently, buildings disproportionately expose people to health risks, and are very large sources of GHG emissions and energy consumption. For existing buildings, Building Performance Standard (BPS) policies have emerged as a high-impact solution to accelerate progress.



Developing a robust Building Performance Standard (BPS), and associated supporting programs, is an opportunity for local governments to reimagine the future of buildings, neighborhoods, and communities. If done correctly, a BPS can serve as a powerful cornerstone policy to meet a number of local government priorities at once: decarbonization, electrification, resilience, energy affordability, public health, inclusiveness and racial equity, economic inclusion, and more. Since many building stakeholders, city departments, and complementary programs need to come together underneath a comprehensive BPS, cities must take special care to coordinate and evaluate their decisions to ensure optimal, equitable outcomes. To do this, and to consider if this policy best serves the needs of the jurisdiction, careful, early, and iterative engagement and planning is needed.

What is a BPS?

At its most basic, a Building Performance Standard (BPS) establishes targets for buildings to reduce energy use or greenhouse gas emissions, or to improve other metrics, over time. In addition, successful BPS policies include complementary support programs and assistance for covered buildings, local workforce, and underserved populations.

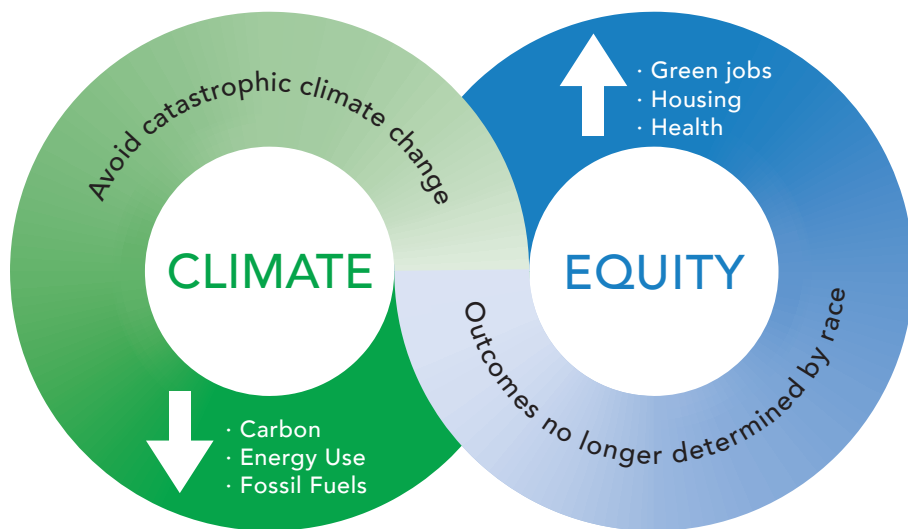
A BPS policy requires buildings to achieve a performance standard by specific dates. To do this, buildings must benchmark their performance over time.¹ Buildings that do not meet the performance standard are required to reduce energy, carbon, or other outputs by the set date. Although many local governments have energy benchmarking policies to build on, others have an opportunity to leap-frog and develop a BPS to incorporate new energy-use benchmarking requirements.

1 Building energy benchmarking refers to regularly measuring energy usage in a building, comparing the building's energy usage to similar buildings, and making data public (this [definition comes from Climate Challenge Playbook](#)).

Equity Imperatives

For city-wide climate action, there is a growing consensus that accelerating decarbonization requires the twin goals of both reducing carbon and increasing social and racial equity². As cities seek to solve many problems simultaneously, a BPS can be an important policy and programmatic tool. Any policy, including a BPS, can do further harm and perpetuate existing inequities if not carefully designed around these considerations. A BPS cannot solve every issue, but it can be designed to make measurable progress for communities and the climate.

Climate and Equity Twin Goals



A BPS policy should include an approach to equity organized around community needs. This approach should prioritize the following equity imperatives: 1) understand community priorities, 2) do no harm, and 3) do some good. It is important to understand what issues matter most for those who may be impacted by the policy. A well-rounded stakeholder engagement process is needed to identify equity considerations specific to the constituents and communities of concern. Consider potential unintended consequences, such as rent increases, which tend to burden low-income communities and communities of color. Through intentional design and implementation, a BPS policy can improve people’s lives through, for example, improvements to public health and new economic opportunities for those who need them most.

² See [Denver Climate Action Task Force 2020 Recommendations](#) as an example of centering equity in climate action.

Addressing Historical Disinvestment

The United States' history of disinvestment, particularly through racist housing policies that began in the 1930s, has caused intergenerational crises in lower-income and BIPOC (Black, Indigenous, and people of color) communities. The Federal Housing Authority, with banks at their side, legalized race-based housing policies by redlining Black communities and communities of color ([APHA Report](#)). As a result, redlined neighborhoods were cut off from proper investment and resources—like educational opportunities, healthy or sufficient housing, fresh food, and green spaces—and those investments were instead funneled into predominantly white communities.

While redlining was officially banned in 1968, it continues to have an impact on neighborhoods and communities to this day. For example, many large multifamily buildings are concentrated in previously redlined areas. These buildings are often used as either: 1) affordable housing serving low-income populations that are under-resourced, which leads to housing quality issues such as lead, mold, and asbestos, or 2) market rate buildings that have been recently constructed or renovated, and contribute to rising housing costs, gentrification, and displacement in these neighborhoods.

Homeownership among BIPOC communities is low while housing costs and burdens for low-income communities are high. Designing a BPS and supporting programs for these buildings and impacted communities with these histories in mind will be critical to doing no harm and doing some good.

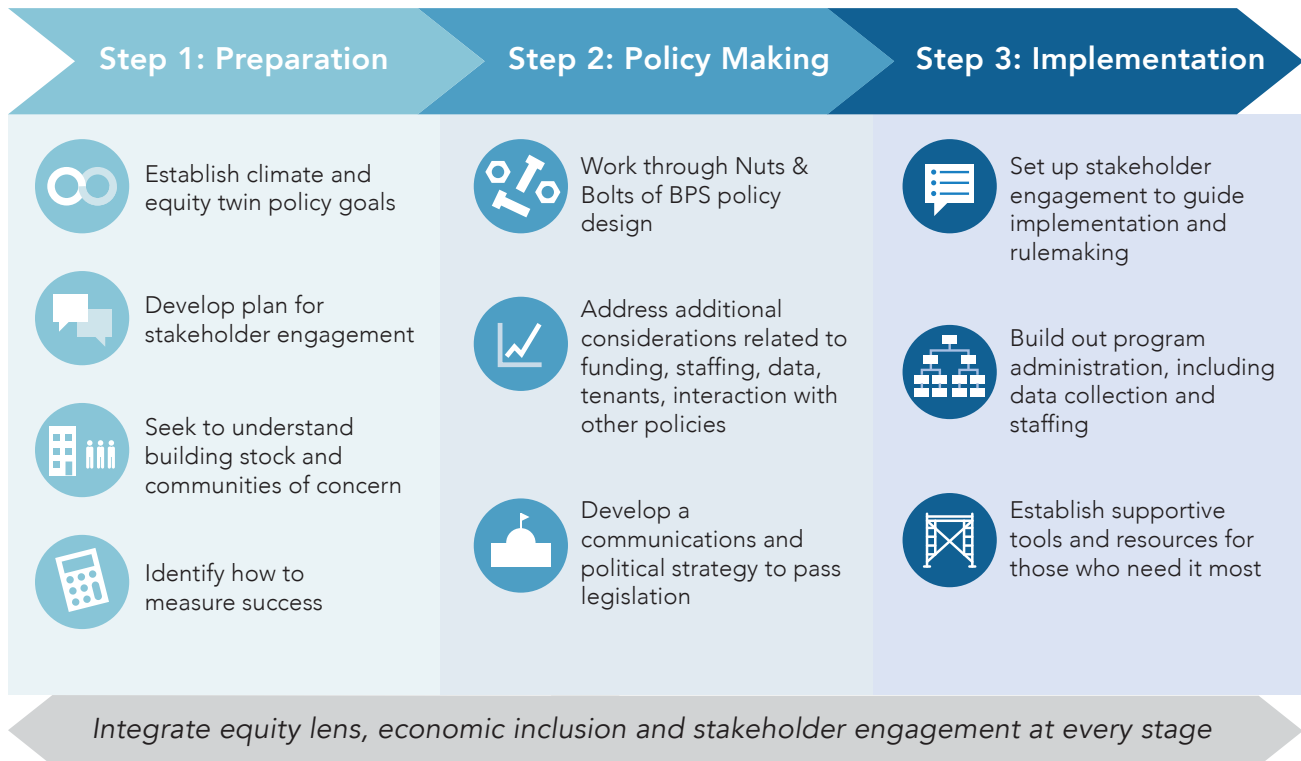
Purpose of this Guide

There is no one-size-fits-all BPS solution. While many jurisdictions share some commonalities, each city is unique and should pursue approaches that work for its communities based on a robust engagement process³.

The purpose of this guide is to walk through the process of BPS preparation, policy design, and implementation. The primary audience for this guide is local government staff working on building policy and program design. The guide is also intended to support other stakeholders involved with city policymaking, such as community advocacy groups and professional trade organizations.

This framework is organized into three key steps. Throughout, the guide underscores a focus on coequal goals for a BPS: advancing climate and equity outcomes.

BPS Framework Overview



³ Note, however, that there are benefits to aiding in compliance from building owners if there was as much standardization and consistency as possible, particularly within metropolitan regions.



Step 1

PREPARATION

For jurisdictions considering a BPS, significant preparation is critical. Some cities have spent upwards of a year or more developing a BPS policy. Step 1 identifies the research questions, engagement approach, and key early decisions that cities should make before diving deep into the details of policy making (Step 2) and implementation (Step 3).



**Establishing
Policy Goals**



**Market Segmentation:
Understanding Baseline
Conditions**



**Stakeholder
and Community
Engagement**



Measuring Success



First, it's important to recognize that a BPS is an advanced policy, potentially transformative in nature. As such, most cities considering a BPS will need to have the following in place:

- **City Leadership:** City leaders will need buy-in on this policy to set firm long-term goals. City leaders must build consensus and trust from those who will be regulated or otherwise impacted.
- **Legal Authority:** Authority to establish a BPS may come from the state, including the state public utility commission. The city itself may have also codified the ability to set performance standards for existing buildings. In any case, it is important to engage the city's legal counsel to ensure it is comfortable with the city's authority to pass a BPS ordinance.
- **Partners:** External stakeholders including building owners, renters, community-based organizations, and community members who have a shared interest in better buildings and in the city's future prosperity. Additionally, internal stakeholders include other city's departments for housing, buildings, planning, economic development, and more.
- **Benchmarking and Disclosure:** Understanding how buildings currently perform is an important precursor for requiring improvement. If needed, this component can be developed as part of the BPS.



Establishing Policy Goals

Perhaps the most important component of preparation is to lay out clear goals for the BPS. What will be different in the years ahead after the successful implementation of a BPS? In addition to specific goals for how the BPS will contribute to reduced energy use and carbon reductions, cities should develop specific, explicit, and coequal equity goals for their BPS policies. Establishing a clear set of “twin goals”—equity and climate—for BPS policies will help ensure that climate policies will be attentive to the needs of historically marginalized community members, will avoid causing additional harm, and will enjoy broader constituencies of support.

BPS and Equity

Equity cannot be an add-on or co-benefit; it must be integrated throughout the BPS process. City teams should determine how twin equity and climate goals intersect, and develop measurement and evaluation processes to ensure progress toward both simultaneously. Leading with equity, BPS should result in: (1) access to high-road jobs and economic opportunity for impacted communities, (2) retrofits that support affordability/anti-displacement, and (3) greater health, safety, and resilience for those residents most in need.

Local building and energy practitioners often excel at articulating what is needed to make progress on climate. In contrast, knowledge of the best interventions to resolve inequity is found in dialogue with community leaders and members with lived experience. Given the intersectional nature of climate and equity, a successful BPS must be developed by drawing from a broader body of expertise to ensure that both outcomes are achieved. This likely requires coordinating across city departments and engaging with leading community-based organizations.

Equity Orientation and Implementation Tools for Cities

Are city staff, BPS stakeholders, and partners on the same page about equity and what problems can be addressed and solved with building performance policy design? The Urban Sustainability Directors Network (USDN) offers a free self-guided training that can help provide a base level of fluency and awareness: [Equity Foundations Training](#).

With a common foundation among city staff and collaborators, the process of designing, drafting, implementing or assessing a BPS policy can sharpen the focus on achieving equity outcomes through the use of a racial equity tool. These tools can address language, accountability, data disaggregation, disproportionate impacts, economic impacts, inclusive engagement, and more. A few examples from cities and NGOs are listed below, offering cities guidance in shaping questions and processes for stakeholder engagement.

- Zero Cities Project: [Equity Assessment Tool](#)
- The City of Cleveland’s Climate Action Plan: [Racial Equity Tool](#)
- Seattle Office of Civil Rights: [Racial Equity Toolkit](#)
- San Francisco Planning: [Racial and Social Equity Action Plan](#), including a Racial and Social Equity Assessment Tool ([R-SEAT](#)) which has been used to screen each measure in the city’s forthcoming Climate Action Strategy for unintended consequences
- USDN: [Library of examples](#) on integrating equity in city sustainability work

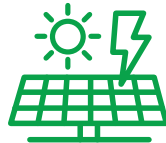
BPS and Climate

In terms of climate goals, BPS policies should support: (1) reducing energy use, (2) electrifying as much as possible, and (3) increasing renewable energy to reduce fossil fuel consumption. Meeting these objectives will result in less carbon pollution and, if designed intentionally, should also advance equitable outcomes⁴.

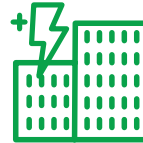
Building Pathways



Reduce
Building
Energy Use



Increase
Renewable
Energy



Electrify
Buildings

-
- 4 Tokyo, for example, passed the world's first BPS policy, and has since seen a 27% emissions reduction from its covered buildings between 2010-2018, showing the potential of a BPS to meet climate goals.

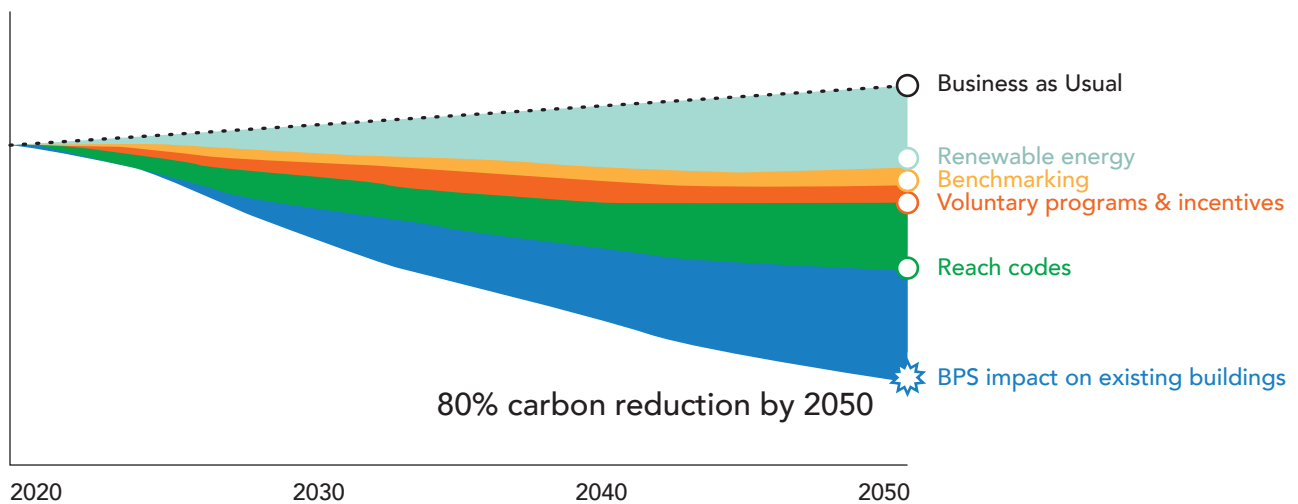


Cities should ask these questions upfront:

- What must its building stock look like in the future (often 2030, 2040, or 2050) for the city to achieve its climate and equity goals?
- What regulations are already in place to help meet those goals?
- What are the gaps or discrepancies between current regulations and where buildings need to be?
- What gap is the BPS seeking to fill and where might other new policies still be needed?

It is clear that existing policies and programs fall short in their ability to drive the major efficiency improvements and GHG reductions that are needed from buildings to achieve carbon neutrality by mid-century. Even the best voluntary energy efficiency programs rarely result in the upgrade of more than 1-2% of eligible buildings annually⁵. Achieving climate goals requires swift and decisive action, especially considering that between now and 2050 there are only one to three opportunities to replace most equipment at the end of its useful life. While many jurisdictions have enacted ambitious reach codes for new construction, similar mandates for existing buildings are needed to achieve climate goals.

Illustrative Emissions Reduction Potential for Building Sector



5 [York, Nowak, and Molina 2015](#)



Stakeholder and Community Engagement

In preparing to develop a BPS policy, it is important to consider stakeholder engagement and structures for decision-making. How local governments make policy varies widely, including the role of City Council, which city staff take the lead, the normal pace of review and decision making, the typical process to introduce and pass legislation, and what the engagement process looks like.

City staff must begin by thinking about the purpose of engagement, who to engage, how to engage them, and when. Local government can then convene policy advisory group(s) that build on the city staff's thinking and support a robust stakeholder engagement process.

The Purpose of Engagement

The first question to answer when creating a stakeholder engagement process is: what is the purpose of stakeholder and community engagement? Here are some common answers:

- **Gain critical perspectives:** Gain unique perspective and expertise that government staff do not have. This will make the policy more effective, while reducing unnecessary burdens, including educating and empowering the community to provide input on desires, expectations, and goals.
- **Design the policy effectively:** Gain insight into how the policy could leverage existing programs, networks, or investments to increase effectiveness while reducing costs. This may result in certain exemptions, incentives, and alternative compliance paths for some groups.
- **Build support:** Understand how key influencers view these issues and policy, which helps in adapting policy and advocacy language to prevent unnecessary opposition and to build support.
- **Address social and racial inequities:** Understand how a BPS policy might intersect with the priorities of historically marginalized and disproportionately impacted communities, and help correct historic and systemic inequities.
- **Create new partnerships:** Begin building toward long-term productive working relationships between local government and historically marginalized communities based on mutual understanding and respect.

How Purpose Relates to Engagement Methods

Different methods of engagement send different messages to the people you are engaging and produce different outcomes. [The Spectrum of Community Engagement to Ownership](#) presents some of these differences when centering equity issues and community perspectives.

Outcomes can be achieved by using different types of engagement that fall on a spectrum from light-touch informing and consulting to deep collaboration and empowerment. Types of engagement further to the right on the spectrum give more power to stakeholders. This is especially important when working with historically marginalized groups who haven't, in the past, had the power to voice their concerns, perspectives, and solutions.

See also: [Climate Equity and Community Engagement in Building Electrification](#)



Who Needs to Be Engaged

Once the purpose of engagement has been established, and the available methods are clear, cities will find it easier to determine who should be engaged. The City should take care to inform these stakeholders of the context of BPS policy development and the opportunity to advance multiple goals. It may be helpful to clarify that the cost of inaction on energy efficiency and decarbonization is not zero—it can, in fact, be far more expensive than the alternative (see [San Francisco Department of the Environment, 2020](#)).

When engaging with city, county, and state-level stakeholders, be sure to include the following groups:

- City council
- Building department
- Housing department
- Health department
- Planning and zoning departments
- Sustainability/Environment department
- Utilities/regulators
- Labor/unions
- Building owners
- Relevant state agencies
- Workforce and economic development
- Community development agencies
- Affordable housing providers
- Law and finance representatives
- Regional/county government office
- Engineering and architectural design firms
- Contractors and building trades
- Chambers of Commerce

★ See [Appendix A](#) for example roles and responsibilities for each BPS stakeholder

Understanding your city's relationship with CBOs

Be aware of how other city departments have interacted in the past and at present with community groups, including the level of trust and relationships. The city is generally seen by community groups as one entity.

Community Engagement

It is especially important to develop an equitable, two-way dialogue with community leaders and community-based organizations (CBOs) in the development of a BPS policy. Community-driven processes and solutions can help build coalitions to support the passage of the BPS policy and ensure its longevity, while also undoing the harms of previously imposed policies, such as redlining. CBOs, in particular, serve as capacity-builders for larger communities and can be strong partners in this work.

Community engagement provides an opportunity to: 1) better understand historic injustices, 2) give a voice to those who will be most impacted by the policy, or those who are most burdened by the inequities the city is trying to solve, and 3) offer those impacted an opportunity to co-design the outcome. Historically, the opposite has far too often been the case. Even the most carefully crafted BPS policy that considers all population groups is likely to draw opposition if neighborhood and community advocacy groups are not given an opportunity to share ideas and concerns. Local governments must, further, respond to these various concerns, and do so with sincerity and commitment.

Consider prioritizing the inclusion of people and groups who have historically been underrepresented and are from impacted communities, such as:

- CBOs
- Youth organizations
- Racial and social justice groups
- Housing and tenant advocates
- Citizen groups or local coalitions
- Local residents

BPS Community Engagement Case Study: Portland

In order for cities and communities to work together, cities need to build relationships and repair trust. One effective example is the participatory action research approach from the [Zero Cities Project](#) involving the City of Portland, CBOs, and communities of color. While the City of Portland and community members had a skeptical relationship at the start, the City made space for CBOs to lead community engagement, prioritized community wisdom and lived experience, committed to community-led engagement throughout policy development, and compensated community members and CBOs for their time and active facilitation. In doing so, a collaborative and meaningful engagement process was created to directly inform decision-making from the beginning of policy design. In Portland, the City continues to partner with local CBOs and community members to develop building performance standards based on the community's desire to prioritize rental properties and tenant concerns.

Additional resources: Seattle's [Inclusive Outreach and Public Engagement Guide](#) and the [Process Guide for City-Community Partnerships](#).

Real Estate Engagement

Owners of real estate of any type have several things in common: money invested in the asset, a system for managing the asset in order to ensure compliance with the law and maintain or grow its value, and a stake in the future prosperity of the neighborhood and city where they stand to gain through real estate value. This audience values clear, consistent, and advanced signals from the city about the future market conditions where they will conduct their business.

Rather than asking *if* buildings should improve energy and carbon performance, cities might instead ask *how* building and carbon performance can best be achieved while also advancing equity. A productive discussion asks building owners, tenants, and their interest groups for their input on what the best path forward looks like. For example, this may mean a future where lease agreements align owner and tenant incentives towards efficiency.

Building owners are also concerned about contractor availability and skill-level of internal personnel to maintain high-levels of performance. Be sure to leverage the BPS policy to enhance demand for diverse workers and build out workforce programs.

When developing the list of key real estate stakeholders, consider including representatives from the following groups:

- Real estate owners and managers
- Building associations (e.g., Building Owners and Managers Association (BOMA), International Facility Management Association (IFMA), NAIOP Commercial Real Estate Development Association, CoreNet)
- Developers
- Affordable housing owners and developers
- Property management companies
- Sustainability and/or energy efficiency consultants
- Residents and community advocates
- Major tenants and tenant groups (tenant rep/broker)
- Large institutional building owners, such as hospitals, colleges, universities, school systems
- Major non-profit building owners
- Other real estate stakeholders in your community (e.g., major condo associations, local business associations)

Check out [Understanding the Business of Real Estate](#) for policymakers on how the real estate industry functions—including how different market actors work together throughout the various phases of a building’s lifecycle—and how to foster more meaningful conversations with this stakeholder group.

How to Launch Engagement

After considering the *Why* and the *Who*, it is time to plan out the *How*—the process and structure for engagement activities to work through the specific policy design and decision-making activities detailed in Step 2. This work is best done with a task force, steering committee, or working group. For consistency, this BPS Framework identifies this as the “policy advisory group(s)” made up of city, community, real estate, technical and regional stakeholders.

The policy advisory group(s) should develop a shared set of principles, help develop the BPS policy, and ultimately build support for passing the policy. Begin by coming to a common understanding of baseline conditions in the city that encompasses both buildings and communities of concern. This is an opportunity for local governments to begin building and/or repairing trust with community groups, stakeholders, and potential partners. The stakeholder engagement process should seek to identify existing complementary programs and initiatives, inform effective policy development, and potentially find new partners for funding and implementation.

In many cases, city staff already has touchpoints through various agencies and departments that are either reinforcing messages on the importance of building performance and available resources, or sending mixed messages (e.g., incentives for switching to higher efficiency natural gas equipment that will lock in emissions for the life of the equipment). Along the way, local governments should evaluate their existing points of intervention and leverage with building owners. Whether through existing or new channels, these engagement opportunities can be used to steer building efficiency and decarbonization activities and make improvements over known data baselines.

See the City Energy Project’s resource, [Engaging with the Community in Policy Development](#), for further guidance on: identifying appropriate stakeholders, effective meeting structures, timelines for meetings, example meeting topics, sample invitation language, agendas, and meeting note templates.

Equity Considerations for Stakeholder Engagement

As policymakers approach the design and facilitation of policy advisory group(s), it is essential to acknowledge and plan for diverse perspectives, backgrounds, and levels of familiarity with technical, environmental, community, or equity issues. This includes considering the likely power imbalance between stakeholders with different expertise, relationships, or histories of being marginalized from policymaking processes.

Local governments should devote resources to designing and carrying out an engagement process that navigates these differences in a way that allows all stakeholders to help the city shape an equitable and effective policy. This usually means retaining the services of a skilled process designer or facilitator who has experience with equitable stakeholder engagement.

Other hurdles may include imbalances between group members who: are able to be present as part of their job and others who are unpaid volunteers, those who must travel far to attend meetings, meeting formats that are more or less comfortable for some, and more. Cities can employ various tactics to proactively ensure that all voices are heard and that there is a common understanding of how individuals and the group will collaborate and make decisions.

See also: the National Recreation and Park Association's [Community Engagement Resource Guide](#).



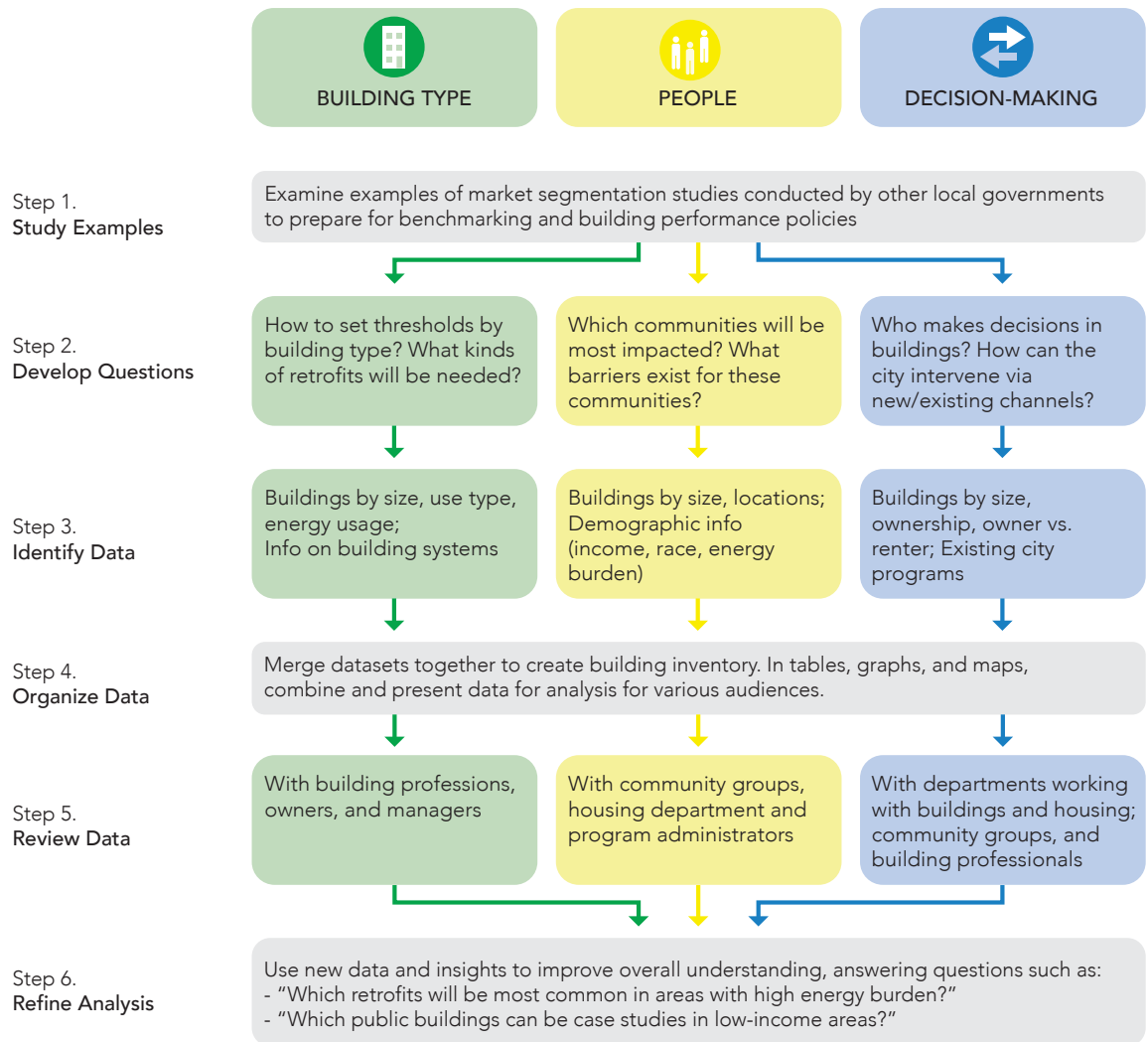
Market Segmentation: Understanding Baseline Conditions

To first gain a better understanding of the types of buildings, owners, and tenants that could be impacted by a BPS policy, most jurisdictions conduct a market segmentation study (also known as building stock analysis). Market segmentation identifies building characteristics and intervention strategies, as well as priority populations and their needs. This data collection and interpretation takes time—even when data and resources are limited—but provides better insight for policymakers.



A Starting Point

Market segmentation can be daunting, but every community—even with limited resources—can make a good start. The list below outlines six steps cities can take to develop a clearer understanding of the buildings and people that will be impacted by a BPS.



★ See [Appendix B](#) for more detail on the Six Steps to Market Segmentation, including data sources, considerations, and links to helpful resources.

If resources are limited, city staff should focus on those building types, people, or geographies of greatest importance or concern, and identify available data key to basic analysis. Cities seeking a more complete analysis will need to sift through four types of data (listed below). Armed with these data, cities can ensure that investments in BPS address a wide variety of city goals.

1. Core local government data for buildings (e.g., tax assessor data, [building energy benchmarking data](#), permits) and local equity or vulnerability indicators (e.g., [climate equity index scores](#), [displacement vulnerability](#), or [national CDC indices](#)).
2. Demographic and socio-economic data available from the [American Community Survey](#) (e.g., age, race, income, and energy burden).
3. Market data from both public sources (e.g., ENERGY STAR® certified buildings, source emissions data) and private sources (e.g., CoStar), especially around subsidized affordable housing.
4. Other data that may provide a more complete picture of the local community (e.g., utility program participation data, historic or vulnerable buildings lists, [energy burden data](#), and neighborhood development plans).

In this data identification and organization phase, city staff may find it helpful to reflect on potential gaps in understanding of the building stock and impacted communities. Common gaps that may limit understanding of a city's building stock include: building level heating fuel data, detailed permit data, energy burden, or data within large multifamily properties (e.g., roof, heating and cooling system, exterior finish). Building ownership information and ownership structure would also be helpful to target support from under-resourced building owners.

Any starting point will need refining to match the most relevant building types in a particular city. Data summaries and insights should be shared with the policy advisory group(s) for review and discussion.

Categorizing Building Types

Local governments including District of Columbia, Boston and Cambridge, MA began their BPS journey by categorizing buildings in a manner that aligns with [ENERGY STAR Portfolio Manager®](#) property types. Other options include categorizing buildings by occupancy types in alignment with the [International Building Code](#) or the named building typologies in [ASHRAE Standard 100](#).

From Theory to Practice

All cities will encounter some difficulty with market segmentation because the specific approach varies depending on data availability, as well as utility and state context and community priorities. Where data does exist, not all of it will be complete, accurate, or current. It is helpful to consider the veracity of the data sources and if or how data can be verified. Some building types often have poor data quality (e.g., Class C and D commercial, houses of worship, special building types). Some data will relate to buildings, other data will point to utility meters (sometimes for multiple buildings) or parcels. The data that exists may not be readily accessible due to digital access, incompatible software, or restricted use.

Whatever the building or use type, it can be difficult to ascertain who the tenants are and what their needs and vulnerabilities may be. Importantly, the stakeholder engagement process is another key instrument for data collection about the values, priorities, constraints, and attitudes of building owners and occupants of buildings that may be covered by the emergent BPS policy.

While challenges with data will be present, the best way to create a thoughtful BPS policy is to work with available data to understand impacts and openly discuss what is known and how best to act upon it. Make sure to allocate time for this process to allow for both input and analysis.

Getting Started

The complexity of market segmentation will increase with any effort to identify smaller and smaller groups of buildings or people with similar characteristics, and, additionally, with the overlaying of goals. Any initial effort in market segmentation can be improved upon by direct stakeholder feedback and discussion about remaining questions. As a result, city staff that engage with stakeholders and monitor policy outcomes will have continual opportunities to refine their understanding of market needs, and to incorporate these findings into policy design. In short, just get started and commit to continuous improvement.

Additional Issue Areas for Planning

Before developing specific policy, cities should consider targeting preparation efforts and relationship building in key issue areas. These cross-cutting issues will weave into the BPS policy design and implementation process in important ways.

The Grid: Electrification and Renewables

As our electric grids use cleaner and more renewable sources of power, the movement to decarbonize will require more [electrification](#). Jurisdictions aiming for zero-emission buildings will ultimately phase out on-site fossil fuel combustion. Therefore, in developing a BPS policy, it is not a question of *whether* [to electrify buildings](#), but *when*. Specifically, when does increased investment in optimizing fossil fuel-based system performance no longer make sense?

A BPS has the potential to avoid carbon lock-in by sending an early signal to building owners that they should begin the process of electrification. The timeline and policy structure to encourage electrification will require stakeholder and community [engagement](#), along with consideration of local building stock characteristics and electric grid context.

In the preparation stage, it's important to understand how building electrification will affect the local grid and how the electricity mix is expected to evolve over the coming decades. The electric utility provider is an important stakeholder and likely has existing studies and relevant initiatives underway. Building electrification may make it easier for the utility to manage the grid, especially if it helps smooth out daily and seasonal peak loads. Jurisdictions may also consider developing recommendations for utility/regulatory commission processes to address regulatory barriers and disincentives to electrification.

Housing: Quality and Affordability

Check out this [National Low-Income Housing Coalition primer](#) on programs and policies that make housing affordable to low-income people across America.

With a growing affordability crisis in many jurisdictions, a BPS policy and associated support programs should be used to improve housing quality and affordability, while avoiding gentrification and displacement. Consider that landlords might pass along the compliance costs to their renters, especially in unregulated affordable housing where there is no restriction on how much the landlord can charge for rent.

Among the most promising tools to help address this challenge are grants and technical assistance to building owners (contingent on not raising rents) to cover all or most of the costs of upgrades. Regarding regulated affordable housing, while many programs exist to finance upgrades, the key will be to ensure they incorporate support for energy efficiency and electrification measures. Furthermore, it is also important to consider the burden that required upgrades put on potentially already overburdened staff.

To address housing affordability concerns, cities should utilize the market segmentation research and other local research to better identify current and future housing conditions, including health, safety, and resiliency considerations. Two readily available sources include the [Greenlink Equity Map](#) and [PolicyMap](#).

No matter how housing is addressed in a BPS, it's critical to support tenants, small landlords and under-resourced building types. The stakeholder engagement activities, including the policy advisory group(s), should include housing advocates and tenant representatives who can help shape the BPS policy and target funding, supportive programs, and resource hubs for those who need it most.

Additional Resources

- [Mandating Building Efficiency while Preserving Affordable Housing: Opportunities and Challenges](#): National Housing Trust (NHT) and American Council for Energy Efficient Economy examine how policies to regulate energy use in buildings can be designed to ensure that low- to moderate-income households and communities of color are not negatively impacted.
- [Understanding the Housing Affordability Risk Posed by Building Performance Policies](#): IMT and Firefly Energy Consulting identify how jurisdictions can design policies and budgets for programs to enable affordable housing to benefit from building performance standards without increasing total cost of occupancy or undermining the viability of naturally occurring affordable housing (NOAH).
- [Recommendations for Implementing the District's Building Energy Performance Standard in Affordable Multifamily Housing](#): NHT and Housing Association of Nonprofit Developers (HAND) convened District of Columbia's affordable housing advocates, developers, and owners to discuss how to implement the District's new Building Energy Performance Standards (BEPS) in affordable housing.

Economic Inclusion: Equitable Workforce and Business Opportunities

As a policy that will have significant economic impacts, it is vital that BPS policies are economically inclusive and establish the proactive steps to create jobs and business opportunities for disadvantaged and underrepresented populations. BPS policies should increase diversity in technical building construction trades (e.g., electrical, plumbing/ pipefitting, HVAC), and promote a high-road workforce that features family-sustaining wages, comprehensive benefits, training and opportunities for growth, and worker representation. Although most of these will be private sector jobs, with building owners directly hiring contractors, jurisdictions can create supply and demand for a diverse workforce with high-road employment opportunities providing pathways out of poverty.

To do so, city staff should both understand the types and quantities of jobs likely to be required by the BPS, and conduct an initial landscape analysis. This analysis should include the jurisdiction's current policy/regulatory requirements for diversity and inclusion in its procurement and workforce. It should also look at the local workforce and contractor supply, including the diversity of technical building trades.

Some of the questions to explore in the landscape analysis include:

- What policies and requirements are already in place to require diversity hiring?
- Is there a sufficient capacity of pre-apprenticeship programs that feed the clean energy trades?
- What does the diversity in the building trades workforce look like today? What is the gap?
- What skills and qualifications are necessary? Are local programs (incentives/rebates) requiring those skills and qualifications to guarantee quality retrofits/jobs?
- Does the local labor market have an adequately sized and skilled workforce? If not, what is the gap between this and what is required to meet the goal? Are retirements accelerating, and is new recruitment keeping pace to replace these workers?
- What is the existing training capacity? What does the pipeline look like? Is it accessible to BIPOC and Minority and Women Business Enterprises (MWBE)?
- What is the demographic distribution of jobs and contracting opportunities? How can they be more inclusive and high-road?

This initial landscape analysis may require engaging with economic development colleagues and other local organizations to identify relevant reports, programs, and data. Jurisdictions should consider that the BPS will drive specific types of building upgrades that would require certain skilled trades, engineers, and others. Throughout the stakeholder engagement process, city staff can explore how the BPS can be designed to drive demand for diverse workers and businesses to meet these needs, including supportive programs that build economic power in historically marginalized communities.

High-Road Workforce Guide for City Climate Action Guidebook

This [publication](#) provides a step-by-step guide for cities to pursue high-road workforce development as well as examples of best practices of cities to engage qualified, diverse local workforces to meet their climate goals.

Cost Considerations: Compliance, Funding, and Financing

A BPS can be effective in spurring investment in efficiency in all market segments, including affordable housing. The market segmentation analysis should be designed to facilitate cost analysis for different building types and sizes. Stakeholders, including the policy advisory group(s), in order to shape supportive programs will need cost information to weigh different policy design considerations, including energy performance targets, penalties, and a timeline.

Think ahead to potential sources of funding and financing for implementation. For example, the [Portland Clean Energy Fund](#) and [Seattle's Green New Deal](#) are being partially funded by new business surcharges on large corporations. Utilities should be engaged early on to ensure existing and possibly new programs are in place to reduce cost of compliance for building owners, especially those with the greatest needs. There is no shortage of [financing and funding possibilities](#), but they will take time for the policy advisory group(s) to explore, especially if a variety of building types are covered in the BPS. See [Step 3](#) for more details.

Finally, cities may also consider the cost of *inaction* when making the case for a BPS policy. The cost of not acting now on energy efficiency and decarbonization strategies is not zero. On the road to carbon neutrality, all cities will need to transform their built environment and help repair deep inequities. The earlier goals are set, the cheaper they will be to meet for the city and its building owners. Opportunities for building re-engineering are infrequent, but cyclic. There are triggers—building equipment replacement cycles, new ownership, asset “repositioning,” or significant vacancies. Financing cycles also depend on building type, e.g., deed-restricted vs. government-owned affordable housing. With clear long-term goals, owners can determine the best upgrade pathway for their building.



Measuring Success

As you prepare to advance a BPS policy, consider how you will measure the success of your policy in relation to twin climate and equity goals. Success of the policy should not solely be tied to the technical compliance of individual buildings, but rather track progress towards your established policy goals.

The guiding question for measuring your success is, “How will we know if we are making progress on our goals?” When engaging with stakeholders, consider three components to answering this question and measuring success:

- 1. Data and indicators.** The BPS will establish metrics for reporting individual building compliance. Along with this, the city should also identify metrics used to measure the success of the policy overall. Data should be specific to equity goals, such as jobs and contracts for economic inclusion, health indicators, rent or cost burden for affordability, and climate goals, such as reduction in carbon or energy use across the city as a whole. Policy goals may also include the percentage of technical support or funding flowing to under-resourced buildings.
- 2. People involved.** Consider what data is available, how the data will be collected, reviewed, and analyzed, and how data can be used to strengthen relationships and open-dialogue with the community. Build on metrics already tracked through city inspection of properties for health and resilience factors.
- 3. Process and accountability.** Finally, establish a process for bringing the people and the data together at regular intervals to review progress, and assess where course corrections may be needed in policy implementation.

In order to ensure that the indicators are reliable and measurable, city staff may need to work with other departments and agencies who are better equipped to track these indicators and/or data. And, finally, it is important for the data to be easily shareable and useful. The stakeholder process should inform how regularly this information will be shared and with whom.

For example, if your twin climate and equity goals are to reduce GHG emissions and promote economic inclusion, then cities must monitor and manage equitable access to the work generated by a BPS policy. Therefore, it is important to identify specific indicators that can be measured, like the value of MWBE contracts awarded throughout the BPS policy, particularly where public or utility funds are involved.

Approaching BPS with an Equity Lens

To achieve both climate and equity goals, we provide a summary of example questions and lines of inquiry to guide BPS development activities following the different types of equity as presented in the [USDN Equity in Sustainability Report](#).

Type	Description	Example Questions
Procedural equity	Inclusive, accessible, authentic engagement and representation in processes to develop or implement sustainability programs and policies	<ul style="list-style-type: none"> • How should the process engage communities? Specifically, how will the process engage and involve communities of color? • Does the BPS approach support community priorities? • How will decisions about the BPS reflect community concerns and priorities? • How will communities of color and other historically marginalized or burdened communities be involved in analyzing and evaluating the impacts of the BPS on their communities or their priorities?
Distributional equity	Programs and policies result in fair distributions of benefits and burdens across all segments of a community, prioritizing those with highest need	<ul style="list-style-type: none"> • Who will benefit and who will be burdened by a policy choice or program? • Who will benefit the most? Who is left out? • Does the policy repair past harms and environmental and social inequities? • Costs: <ul style="list-style-type: none"> – Who will have to pay for the upgrades? – Will landlords pass along the costs to renters? – Whose energy bills will be reduced? Whose could increase? • Does the policy support communities of color and low-income populations through workforce development, contracting opportunities, or the increased diversity of employees/staff across any sectors? • Do the burdens of compliance compound other burdens that are disproportionately experienced by social or racial groups? • Are resources and support accessible and beneficial to historically burdened people and communities?
Structural equity	Decisions are made with a recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups	<ul style="list-style-type: none"> • Does the policy explicitly address equity? • Metrics: <ul style="list-style-type: none"> – Who is involved in developing goals and metrics? – What is the best indicator to track the outcome we are looking for? – What is the current data collected and what does the data tell us? – Is the data disaggregated to illuminate disparity (by race, age, ethnicity, gender, sexual orientation, language, income, etc.)? – What information will we use to measure if we are on track? • What are the accountability structures within the local government to perform and achieve the policy goals? • What are the mechanisms for the community to hold the local government accountable to its goals and metrics? • What are the formal mechanisms for revising and adapting the policy with community input based on ongoing learning about negative impacts, unintended consequences, or equity issues?

Step 2

DECISION MAKING AND POLICY DESIGN

This section focuses on the nuts and bolts of policy design, and key decision-points for policymakers to work through during the stakeholder engagement process. A successful BPS policy requires balancing technical and community input. The policy advisory group(s) and public outreach should represent a commitment to equity, technical knowledge, and influence. The goal is to pass outcome-oriented legislation that reflects the principles established by city leaders and the community.



**Nuts and Bolts
of a BPS**



**Communications
and Political Strategy**



**Additional
Considerations
for Policy Design**



Nuts and Bolts of a BPS

As city staff and the policy advisory group(s) delve into policy design, consider which elements are core requirements to be incorporated into the ordinance itself, and which are details that may be better suited for rulemakings or guidance that follow ordinance adoption. Ordinances should have enough teeth to ensure desired outcomes are met. They should also have enough structure for rulemakers to work with, for regulated building owners to prepare for enforcement, and should have the necessary level of flexibility during implementation. Additionally, rules should provide technical guidance to ensure that building owners and compliance staff are on the same page, and that BPS goals are met.

The table below lists seven key aspects of a BPS policy framework. Informed by emerging BPS best practices, this table summarizes essential policy components to be included in the ordinance itself. It also includes major considerations that can be addressed in the ordinance, rulemakings, or supporting programs.

BPS Components	Ordinance Essentials	Major Considerations
1) Define scope of covered buildings	<ul style="list-style-type: none"> Building type (e.g., commercial, multi-family, industrial) Building size threshold (e.g., >25,000 sqft) 	<ul style="list-style-type: none"> Specific exclusions
2) Choose a building performance metric	<ul style="list-style-type: none"> Primary metric (e.g., site EUI, GHG intensity, ENERGY STAR score) 	<ul style="list-style-type: none"> How metric selection influences types of actions in buildings Combination of metrics to meet different BPS goals
3) Set targets for covered buildings	<ul style="list-style-type: none"> How targets are set How targets may change over time 	<ul style="list-style-type: none"> Long-term and interim target(s) Is the metric based on a percentile or absolute target
4) Establish a timeline	<ul style="list-style-type: none"> When compliance begins Length of compliance periods 	<ul style="list-style-type: none"> Approach for resource-constrained buildings Phased approach for different building types or sizes
5) Determine compliance pathways	<ul style="list-style-type: none"> Establish process and/or body that defines compliance pathways and penalties 	<ul style="list-style-type: none"> Prescriptive options Pathways for resource-constrained buildings
6) Determine compliance penalties	<ul style="list-style-type: none"> Clear framework for determining penalty amount over time (specific values in the ordinance may not provide enough flexibility) 	<ul style="list-style-type: none"> Monetary and non-monetary Determine if penalties relate to estimated cost of compliance Find out what penalties fund Determine how financial hardship is addressed⁶
7) Identify supportive programs	<ul style="list-style-type: none"> Designate staff to develop appropriate programs 	<ul style="list-style-type: none"> How to incorporate economic inclusion in program efforts Specific support for building owners without adequate financial resources

★ [See Appendix C](#) for a comparison of how three cities (New York City, District of Columbia, and St. Louis) approached each of these components

⁶ Financial hardship, as defined by the City of San Jose, California, is annual business income (gross receipts) that is less than or equal to two times the poverty level income established by the U.S. Department of Health and Human Services (see City of San Jose's [Financial Hardship Program](#) and the Federal Register for the [2020 state-by-state Poverty Guidelines](#)). During COVID-19, some cities may have expanded their definitions of hardship to protect more vulnerable people and businesses.

1. Defining Scope of Covered Buildings

Decision to make: Fundamental to a BPS is determining which buildings will be covered. There are many ways to define the scope of the policy: will it prioritize certain building use types, sizes, or other classification criteria?

Setting the scope is critical because it determines which buildings will be directly affected by the BPS and associated supportive programs. It will also inform how the costs of compliance and the economic benefits will be distributed.

Cities should use two lenses with stakeholders when assessing scope of buildings, informed by the market segmentation analysis and other engagement activities:

- **Top-down view:** What is needed from the buildings sector to achieve equity and energy/GHG reduction goals?
- **Bottom-up view:** What reductions are technically feasible along a timeline for each building or building type? Which building sizes, sectors, and types contribute to the most GHG emissions and opportunities to address inequities and economic disparities?

Looking at the overlap between these two lenses can help define which buildings should be covered by a BPS to ensure success.



Scope of covered buildings is typically determined by a combination of size (floor area) and building type. Here are the most common sectors:

- **Large commercial buildings** are commonly chosen because they cover a lot of floor area with a relatively small number of buildings, and tend to make up a considerable portion of energy use. Additionally, many of the decision makers of these buildings have access to capital that can be invested into energy upgrades.
- **Multifamily housing** is, similarly, a common choice to include as, often, the buildings are large and tend to have higher potential for energy and GHG savings. In some cases, this can also help reduce tenant energy bills and improve living conditions.
- **Affordable housing and other under-resourced building types** should be included because they stand to benefit from the health, resiliency, and cost benefits of a BPS. While some jurisdictions have excluded these building types in an effort to shield them from the costs of compliance, this also erodes the level of service they provide to vulnerable populations. Affordable housing should be included in a BPS policy with a commitment to supportive resources (e.g., funding and financing) and technical support allocated for those most in need. Flexibility and support for these buildings should be built into the policy.
- **Industrial (manufacturing) buildings** have diverse energy use profiles and therefore require specific analysis to understand appropriate performance requirements, given their different processes and activities.
- **Smaller buildings** tend to be numerous, with nearly as many decision makers, but each one makes up a relatively small portion of energy use and environmental impact. Access to capital tends to become less certain in this segment. Smaller buildings may lend themselves better to alternate policy solutions to reduce climate impact.
- **Single family** homes are typically more diverse in usage and ownership, requiring a separate (or broader) stakeholder process and outreach strategy, and therefore may be better suited to a different approach.

A BPS policy should result in fair distributions of benefits and burdens across all segments of a community, prioritizing support for those with highest need. Therefore, in defining covered buildings, be sure to consider who will most benefit and who will be left out. Additionally, who will be burdened, and will landlords pass along the costs to renters? Whose energy bills will be reduced or could increase?

If exemptions are considered, consider opportunities for alternative compliance pathways (or flexible compliance timelines) rather than blanket exemptions. Finally, consider which buildings are covered under existing benchmarking and disclosure laws or other requirements, including whether these requirements should be modified to better support a BPS⁷.

2. Choosing a Building Performance Metric

Decision to make: City policymakers need to select a building performance metric to measure compliance. The choice of metric can influence, or even determine, which types of upgrades owners may choose to meet their compliance targets. The building performance metric will be used as a primary evaluation method to determine whether a building is in compliance with a BPS.

Building owners will make decisions on building improvements based on the metric. The building performance metric should correlate to your policy goals and local context, including utility considerations related to the grid and how it is expected to evolve. For instance, if the electricity mix is very clean, choosing a purely carbon-based metric may drive building electrification efforts more explicitly to reduce fossil-fuel end uses. It could, however, create issues with higher electric loads, demand impact grid stability, or require new infrastructure. On the other hand, choosing a site energy use target can encourage energy efficiency efforts for both electricity and on-site fuel burning consumption, whereas a source energy use target could actually discourage electrification by penalizing electricity for its projected generation, transmission, and distribution losses⁸.

A combination of metrics may be beneficial to your policy goals, but can add complications to compliance by making it more challenging for owners to understand and city staff to enforce. Simpler metrics, with fewer variables, may be more egalitarian in that there is less opportunity for gamesmanship. Incorporating occupancy can encourage densification, but is very difficult to measure and enforce with any accuracy.

7 For instance, to address the inevitable sale of buildings over time, some form of public disclosure of building performance in the chosen metric should be considered. This can help bring building performance to the negotiating table during property transfer to highlight necessary work for the future.

8 Whether source energy discourages electrification depends on the specific electricity grid mix, e.g., where grid electricity is heavily coal- or fossil-fuel based. Regardless, source energy still favors efficient electrification such as heat pumps, which are more efficient than fossil-fuel based systems.

Examples of common BPS metrics used by local governments:

Metric Cities	Pros	Cons
<p>Energy Star Score [1-100]</p> <p>NYC Local Law 33 (letter grades)</p> <p>DC BEPS</p>	<ul style="list-style-type: none"> • Use of building adjustment factors to account for variability of occupants within a building type • Recognizable logo and score for building owners • Portfolio Manager is already commonly used to support benchmarking and disclosure and can generate scores 	<ul style="list-style-type: none"> • Normalization factors were created using national averages and may not be appropriate for local application • Some inputs are difficult to verify, opening the possibility of falsified data • Utilizes national comparison for scoring curve rather than city specific • Uses a national site-source conversion factor for electricity, which does not fully represent the penetration of clean energy in a local or regional grid • Some building types do not qualify for ENERGY STAR scores, which will necessitate alternative metrics for these facilities • EPA periodically updates scores so they are not a stable metric
<p>Site EUI [kBTU/SF]</p> <p>St. Louis Board Bill 219 of 2019-2020</p>	<ul style="list-style-type: none"> • Relatively few measurements to make (just floor area and energy use) • Owner can calculate energy use intensity (EUI) directly from energy bills 	<ul style="list-style-type: none"> • Not all site energy is equal. Depending on the local grid mix, on-site fuel burning is more important to reduce, but is not explicitly captured in this metric • Weather normalization would need to be applied
<p>GHG Intensity [kgCO₂e/SF]</p> <p>(annual)</p> <p>NYC Local Law 97</p> <p>Considered for Boston BEPS</p>	<ul style="list-style-type: none"> • Most directly ties BPS to GHG reduction commitments • Enables comparison of building-specific GHG emissions 	<ul style="list-style-type: none"> • Annual carbon emissions do not factor in time of use fuel mix for electricity • Individual building performance is more difficult to compare year over year if the coefficients change • Carbon coefficients for electricity and gas can only be forecasted in advance to help buildings plan ahead • Weather normalization would need to be applied to energy use

The following metrics do not address whole building energy usage, but focus on certain aspects of energy usage to limit electricity demand, on-site fuel use, or specific equipment performance, and can be considered as additional metrics.

Metric	Pros	Cons
Peak Electric Demand [Max kW/SF]	<ul style="list-style-type: none"> Encourages load flexibility to be grid-optimal, a requirement for renewables-based electricity grids Doesn't penalize electricity consumption at off-peak times 	<ul style="list-style-type: none"> Relies on utility cooperation/coordination Needs to be paired with an electrification requirement or a combustion-limit (see next entry) to reduce on-site fuel burning
On-site combustion limits [burned fuel EUI or emissions limits]	<ul style="list-style-type: none"> Explicitly reduces burning fossil fuel on-site Can be paired with site energy for a comprehensive metric 	<ul style="list-style-type: none"> Could encourage inefficient electrification if not paired with an efficiency metric May be construed as unfair to fuel-burning technology
Thermal Energy Demand Intensity (TEDI) [kWh/m ² /yr] or [kBTU/SF/yr] ⁹	<ul style="list-style-type: none"> Focus on HVAC energy use efficiency, allowing flexibility for different space use types 	<ul style="list-style-type: none"> Typically applied to new construction Requires energy model, not calibrated to actual building energy use Neglects non-HVAC loads Will not change year to year unless changes occur to alter demand
Total System Performance Ratio (TSPR) [kBTU/lbCO ₂ e]	<ul style="list-style-type: none"> Sets relative whole system efficiency for HVAC systems instead of individual components Ratio of predicted heating, cooling, and ventilation load to carbon emissions 	<ul style="list-style-type: none"> Typically applied to new construction Requires energy model, not calibrated to actual building energy use Neglects non-HVAC loads Will not change year to year unless equipment changes Not available for all building types

9 <https://guidelines.vancouver.ca/G015.pdf>

Normalizing data for changes in weather. Energy used for cooling and heating changes from year to year due to varying weather conditions. Energy reporting platforms such as ENERGY STAR Portfolio Manager attempt to correct for this automatically but not completely (see Portfolio Manager [Technical Reference on Climate and Weather](#)). If weather is not accounted for, data quality will provide less insight into energy consumption. This energy use driver is outside the building owners' and occupants' control, and may result in higher energy use in a very hot or cold year.



3. Setting Targets for Covered Buildings

Decision to make: Targets provide building owners with interim goals which, if reached, help the local jurisdiction meet long-term climate goals. The ordinance should set the overall BPS goal, and, if that target will change over time, should increase in stringency to gradually meet those long-term goals. Same as with the metric used, the target should encourage a reduction and eventual elimination in on-site combustion.

Policymakers should set targets with the twin goals of climate and equity in mind. Achieving climate goals will require ambitious targets over the long-term, and providing some certainty to the market now can help owners plan over this timeframe. However, the targets also need to balance the achievable performance of individual buildings and available resources with the overall goal for the city-wide building stock.

The building performance target identifies a specific numerical value for buildings to achieve according to the selected metric (e.g., ENERGY STAR score, site EUI, or GHG intensity). The market segmentation data, including energy use patterns of the covered buildings, should be used to engage stakeholders to analyze different potential performance targets. The targets are typically defined relative to the overall building stock (e.g., target set at 65th percentile, where at least 65% of buildings have a higher EUI, or median ENERGY STAR score). The forecasted emissions factors associated with the electricity grid should also be considered for targets associated with GHG intensity.

Cost analysis is likely needed at this stage to estimate levels of investment and cost burden associated with target performance levels. Additionally, who will pay for the upgrades and how supportive programs can more fairly distribute benefits and burdens should be discussed, as well as workforce demand and expected contracting opportunities associated with different building performance targets.

Estimating Workforce Demand

Check out the [American Council for Energy Efficient Economy \(ACEEE\) Jobs Analysis 101](#) to learn more about how net job impacts are calculated.

4. Establishing a Compliance Timeline

Decision to make: Along with selecting a metric and setting building performance target(s), policymakers must choose when these standards are set and how long each compliance cycle will be.

A BPS policy should identify a compliance timeline, including long-term and interim deadlines for compliance. Set a timeline that requires early action to make progress as quickly as possible, while respecting obstacles to implementation. For example, for policies that include a percent reduction target, setting a baseline year within two to three years of passing a BPS would set the stage for data collection with verified data and penalties for non-compliance.

The stakeholder engagement process can give you insights into appropriate timing considerations:

- **Under-resourced and marginalized communities.** The timeline should prioritize under-resourced and marginalized communities and buildings within those communities first so that they aren't left behind¹⁰. To address concerns about burdening low-income renters with the costs of the upgrades, which could be passed on by landlords to tenants, ensure that supportive programs are up and running prior to the deadline for compliance.
- **Equipment replacement cycles.** Providing a long-enough time horizon can allow the retrofit work required for compliance to align with the natural capital cycles of buildings, or with normal equipment life cycles, and can greatly reduce costs and tenant disruption¹¹. Furthermore, seek to coordinate energy upgrades and improvements with other health/safety upgrades such as mold and lead removal efforts.
- **Utility coordination.** Engage the local utilities to ensure adequate distribution infrastructure upgrades for electrification and renewable electricity supply, and to support electrification in the BPS-covered buildings. Given the limited number of equipment replacement cycles between the present and 2050, jurisdictions should ensure that utility investments at the distribution level are aligned with the BPS timelines for efficiency and electrification upgrades.

10 The 10/28 BPS cohort call touched on this in the context of electrification: https://docs.google.com/document/d/11aHgfUcThga5A7GHunrFo79_8d54vC62i1_dVc_gA9o/edit

11 For instance, retrofits are most cost-effective when equipment (e.g., HVAC and water heating) reaches the end of its useful life, often 20 years or more.

- **Workforce development needs.** Developing an economic inclusion and workforce strategy can inform your city's compliance timeline. The policy should support communities of color and low-income populations through workforce development, contracting opportunities, and increased diversity of employees. Time is needed to train additional workforce and provide connections between available labor and building owners. There may be a necessary scale-up period to normalize the types of work and build the skilled labor needed to perform the work.

Most building owners do not know the optimal course of action for their building to meet long-term climate goals. The building owners, especially those without long-term planning structures already in place (such as smaller landlords), will need the right technical assistance about when and how to take action. An appropriate and transparent timeline will help guide the owners without long-term plans and should dovetail with support programs to assist those owners.



5. Defining Compliance Pathways

Decision to make: Cities must decide what options or pathways will be made available to buildings to be in compliance with the BPS. Decide if each building can comply by improving energy performance (per the BPS metric), complete a scope of prescriptive items, pay for compliance, or defer/develop a plan for future compliance.

The primary compliance pathway is for a covered building to meet the performance target defined by the BPS policy and rulemaking. However, giving some options for compliance can help alleviate concerns of building owners and stakeholders, and increase their support of a BPS. Not all of the options presented here will provide the same levels of savings, nor will they necessarily ensure that buildings will achieve their performance targets.

Compliance paths may also include:

- **Percent reduction.** If a covered building does not meet the performance target, it may comply by achieving a defined percent reduction in energy use or percent improvement in performance. A challenge to this pathway is that it may be easier for an inefficient building to achieve a set improvement (e.g., a 20% site EUI reduction) than for a median or a higher performing building to do so.
- **Prescriptive compliance.** If a covered building does not meet the performance standard, it may comply by installing or implementing a predetermined set of measures. Jurisdictions may find it difficult to design prescriptive packages suited to their individual goals, type of performance target, building stock, or available governmental budget. Since prescriptive compliance does not require direct measurement of building performance, jurisdictions should exercise caution if they choose to consider this option. If a jurisdiction chooses to include a prescriptive path, then it should work to ensure that the prescriptive compliance requirements will be reliably enforceable and will further its BPS goals.
- **Alternative compliance.** A covered building that has specific circumstances, or is an identified special building type, complies by a means not available to other covered buildings. This may be particularly applicable in cases like campuses, industrial buildings, or affordable housing. Alternative compliance may be used as a tool to chart custom compliance paths for buildings to match with their capital investment or occupancy cycle.

Specific Building Types: Considerations for Alternative Compliance

Providing more flexibility and options for policy compliance will require a more complex compliance management plan during implementation. For alternative compliance, consider the following unique circumstances:

- **Campuses**, where shared systems between buildings are common, may be addressed either by aggregating energy up to the central plant level, or by requiring submetering so that more granular building-by-building tracking can be performed. Aggregating may provide owners with the most flexibility for meeting the requirements. Building-by-building would more easily allow for comparison across building occupancy types but may require submetering of spaces or specific buildings for BPS enforcement/compliance. Another option would be to have the campus submit a master plan with total performance improvements that align with the BPS goals.
- **Some industrial buildings**, or other buildings with high process or mission-critical loads, such as laboratories, may require an alternative approach, such as one where process loads are separated out and the rest of the building's usage is held to the relevant metric. This may require additional reporting work outside of typical reporting requirements to justify the distinction between whole-building energy use and that subset which may be submitted for compliance.
- **Affordable housing** may have other challenges, such as increased density, which can increase certain loads (such as domestic hot water), or lack of access to capital for energy upgrades. Ensuring that there is support and incentives to help with planning and scope definition (effectively reducing soft costs), as well as offsetting the capital cost requirements, is critical in this market segment.

Carbon Offsets and Renewable Energy Certificates

Some stakeholders may be interested in having the option of purchasing carbon offsets or renewable energy certificates (RECs) as a compliance pathway. Both carbon offsets and RECs vary significantly in quality—credits issued that meet the eligibility requirements of a state or regional RPS or emissions scheme generally have the highest quality. For instance, many states require utilities to comply with a [renewable portfolio standard \(RPS\)](#). In this case, consider whether the BPS should require RECs or carbon offset investments to occur within the city or region. Jurisdictions should evaluate how the price of high-quality carbon offsets or RECs compares with building upgrades to ensure that the BPS policy achieves its intended climate and equity goals for community benefits.¹²

12 For example, New York City caps offset purchases at 10% of a building's energy budget, and requires that RECs must be generated within or directly delivered to the city's electric grid.

6. Determine Compliance Penalties

Decision to make: For buildings that do not meet the performance standard, policymakers must determine the type and level of penalty necessary to incentivize energy improvements and compliance. Jurisdictions should also identify what monetary penalties will fund, once collected.

How should monetary penalties be used?

In Washington State, penalties fund energy efficiency programs such as weatherization of homes. However, some building and energy efficiency stakeholders would prefer they be reinvested into the commercial building stock. Work closely with community stakeholders to determine how the funds should be used, particularly with equity goals in mind.

If a building does not comply with the BPS, the local governments can levy penalties which can be either monetary or non-monetary. Monetary penalties can come in many forms, depending on the department levying the cost. For example, the fine can come in the form of an added property tax or as a buildings department violation fine. One drawback with fines is that there is a possibility that they can be passed on to tenants as increased rent or utility cost pass-through¹³.

When considering monetary penalties, the goal is to ensure that penalties are high enough to drive action instead of payments from owners, and ensure penalties match stakeholder expectations of fairness. Consider utilizing the market segmentation and associated cost analysis to base the penalty on average cost of compliance.

A BPS can also create tiers of penalties based on how non-compliant a building is. Like a speeding ticket, the faster you go, the higher the fine; the more frequently you get ticketed, the higher the fine. One way to achieve this is to scale the compliance penalty to how far the building is from the required threshold. Building valuation may also be used to scale the compliance penalty.

Non-monetary penalties can come in the form of permit-blocking violations or other penalties that inconvenience the building owner. These types of penalties may not be passable to tenants or written off as an expense. For example, failure to comply with New York City's Retro-commissioning Law (LL87/09) is a "Major (Class 2) violation" from the NYC Department of Buildings, which prevents other renovation projects from happening until the report is filed (and the additional fine is paid)¹⁴.

There should also be some consideration of financial hardship to address those cases where buildings may not be able to comply with the BPS. Providing additional support, whether through education, scope assistance, financing, or concierge-level incentive program guidance, can help under-resourced buildings benefit from the BPS.

13 Note that jurisdictions may be capped as far as how much they can fine. This should be something investigated early as state-enabling legislation may be required to levy penalties.

14 For more information, see New York City's [Energy Audits and Retro-Commissioning](#) webpage.

7. Identifying Supportive Programs

Decision to make: To ensure that buildings can achieve the BPS targets, jurisdictions should assess what support is needed for owners of different building types. The BPS should identify lead agencies responsible for establishing and maintaining supportive programs, along with potential funding streams.

To support equity goals, in tandem with BPS policy design, also plan how to tailor support for under-resourced buildings and communities of concern. Building owners will need a lot of help to complete retrofits that improve health and reduce energy use. The policy advisory group(s) can help identify existing funding and technical assistance programs and assess gaps where new programs and support are needed.

In order to develop programs that provide proactive and comprehensive support to those in greatest need, be sure to gather input from these communities. For building owners without sophisticated planning mechanisms, a functional support structure can be the difference between achieving BPS goals and not.

A coordinated group of dedicated staff may be needed to administer the assistance programs for buildings owners and retrofit service providers. This could be a sub-group of an existing government agency or department. It could also be a new agency/department group that works across city agencies to ensure social and technical issues are equally addressed.

Supportive programs for workforce and economic inclusion

In tandem with expanding support for building owners, jurisdictions can develop supportive programs with an eye towards economic inclusion in building a local workforce. For instance, the BPS policy may explicitly include requirements to increase the demand for diverse workers and contractors, where public funds seek to:

- Employ professionals or firms with technical certifications (especially those certifications that both provide training targeting underserved communities, and are accessible to local, diverse, BIPOC businesses and workers),
- Adhere to local, diverse procurement goals or requirements,
- Establish priority local hire, and/or
- Require community benefits agreements.

Supportive programs can foster and connect workforce development training programs to building owners who need assistance, balance workload, and think holistically about retrofitting the building stock at scale.



Additional Considerations for Policy Design

Funding and Staffing for BPS Implementation and Compliance

In the design of the BPS, local governments should begin to identify the structure and funding for implementation, including rulemaking to finalize BPS requirements and to oversee compliance. Program funding should be pursued in parallel to the ordinance development. Otherwise, there is less likelihood of securing this level of funding later. During the policy design stage, review existing city government infrastructure and partnership opportunities for BPS policy implementation and enforcement.

Many details of a BPS policy are likely to be left to rulemaking. Policymakers should consider carefully how this will occur, who will be the lead agency, and the stakeholder process to guide implementation efforts. Given that implementation may warrant different perspectives and expertise from policymakers, jurisdictions should plan to convene a set of stakeholders to advise on implementation and rulemaking. The structure should be identified in the BPS, including formalized roles for the lead agency and for stakeholders in the rulemaking process.

The details (or lack of) in the BPS policy will determine the number of decisions to be made in implementation, which may necessitate sub-committees or working groups, each focused on a subset of topics, such as how the fines/penalties collected are being used, or reviewing the activities and impacts of new supportive programs. These activities will need to be resourced, including for economic inclusion efforts and for continued community engagement to support long-term implementation.

★ [See Appendix E](#) for Longer-term Funding Opportunities

Data Collection and Data Quality Considerations

Data quality is a critical part of managing BPS compliance. Data verification requirements should therefore be included in the BPS law. It can be onerous to review all data submitted, though an audit of some portion of the data received from complying buildings can discourage careless data entry or gaming. Data quality can be improved by automatic uploading of energy use from utilities and requiring professional verification of data prior to submission.

Local governments could also require the submission of specific asset data for a better understanding of types and age of energy-using equipment in buildings. While this is more data to manage, this information can help improve supportive programs, including how utility incentives can better help small building owners.

Collaborate with utilities on energy usage data. To minimize the possibility of data entry problems, and to make compliance as easy as possible, consider working with the local utility to develop an automated system for uploading utility data on electricity and gas consumption. See City Energy Project best practices for [Engaging with Utilities for Energy Data Access](#). It is important that utility accounts are updated as ownership changes. This can be the building owner's responsibility or the utility's responsibility.



Tenant Issues and Concerns

To achieve both climate and equity goals, tenants are an important consideration under any BPS policy. For both commercial and residential tenants, the following issues should be considered:

- **Split incentives.** Tenant energy usage and behavior are key drivers of building performance. Split incentives occur when building owners are responsible for capital improvements, but tenants are responsible for energy usage. Incentives should be aligned so building owners have reason to install the most efficient, climate friendly building systems and tenants are motivated to reduce their energy consumption overall.
- **Tenant disruptions.** Consider the risks of short-term displacement for completing building upgrades and strategies to minimize disruption.
- **Rent increases.** If upgrade costs or penalties/fines are passed through to renters, this could result in eviction and long-term displacement. A BPS should ensure that the costs of compliance are not simply passed through to the tenants through rent increases, particularly for those who can least afford it.

BPS stipulations around tenant-owner cooperation can help bridge the gap of split incentives and finger pointing regarding existing building performance. Engage tenants and other stakeholders in identifying which tenants are likely to be most adversely impacted by a BPS, and how. In the multifamily sector, rent-regulated housing can provide a backstop against compliance costs being passed through to tenants; however, market-rate or unregulated affordable housing does not have the same protection.

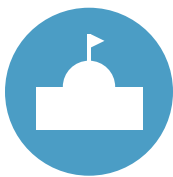
Check out [Green Lease Leaders](#) for ideas and opportunities to incorporate green leasing to drive high-performance and healthy buildings.

Interaction with Building Codes

A BPS policy is a specific mechanism for existing buildings. However, newly constructed buildings become existing buildings upon certificate of occupancy. For many reasons—such as varying occupancy, setpoints, plug loads, and other unregulated loads not typically included in a building energy model—the typical energy performance estimation methodology for planned new buildings are not good indicators of future energy performance; they are a compliance tool for permitting. Some newly-constructed or substantially-renovated buildings that comply with energy codes for permitting may not meet the BPS when operational.

Minimally, there must be an effort to educate developers, designers, and contractors on the distinctions and interactions between the energy code and a BPS. Generally, jurisdictions should ensure that energy-modeled performance targets within the energy code for new buildings align with the BPS targets for existing buildings. For example, [New York City Local Law 31 \(2016\)](#) requires certain projects be designed to use no more than 50% of the current median usage for similar buildings.

Another option available to jurisdictions with control of their own codes is to set the new construction code at a level which reasonably approximates the final standard performance level. Such codes should minimally encourage electrification, which is more cost-effective when included as part of initial construction, as opposed to a retrofit scenario.



Communications and Political Strategy

Even the most carefully crafted BPS cannot deliver its intended outcomes if the policy is not adopted, supported, or resourced. Developing and implementing a communications and political strategy is a must for a successful BPS.

Questions that will be helpful for cities to ask and answer include:

- Is there a policymaker champion supporting and steering the BPS policy development?
- Are the building owners who will be regulated engaged and informed?
- Are the relevant communities of tenants, workforce, and industry professionals on board?
- Are the agencies that will be expected to implement or support the policy engaged and supportive?
- Are you reaching stakeholders who are often not part of decision-making in the jurisdiction, but will be highly affected?
- And, *for all of the above*, do these audiences feel their ideas and concerns are being heard and given appropriate consideration?

Local governments may benefit from framing discussions with various groups around how the city's bold climate and equity goals can be achieved. When framed this way, the dialogue can focus on the how—timelines, costs, barriers, and opportunities—rather than whether or not a BPS should be adopted. The stakeholder engagement process, in addition to informing the specifics of the BPS policy, is also an important strategy to build widespread support for policy passage.

A few examples of communicating about a new BPS policy:

- In St. Louis, MO, the city and its partners developed and circulated a [summary](#) of the proposed BPS policy and its projected cost implications. NRDC published a [blog](#) to highlight the benefits of the policy to further build support.
- In Montgomery County, MD, the county issued a stakeholder recommendation report from its community and stakeholder engagement process with proposed policy actions for its emerging BPS.
- In Boston, the city developed a Clean Buildings Standard factsheet to share information about the policy development process and timeline.

Additional Resources

[Advancing Building Energy Efficiency in Cities](#): an independent assessment of the City Energy Project in 2016 revealed several key factors to program success related to political strategy, stakeholder engagement, appropriate sequencing, and cross-departmental collaboration, among others.

[Building Performance Standards Overview](#): to better make the case, see IMT's [2-page overview](#) of BPS policy, its [analysis](#) of job creation and energy cost savings from building energy rating and disclosure policies, as well as its [Benefits of Benchmarking Building Performance](#) report range which includes helpful guidance documents for jurisdictions interested in exploring this next step in climate action.

Step 3

IMPLEMENTATION

While designing policies is one thing, effectively implementing them is quite another. Due to its emphasis on mandating performance, implementing a BPS differs significantly from other forms of building policy, such as benchmarking and transparency laws or audit and re-tuning requirements. BPS laws are more complex legal instruments with potentially more severe consequences for non-compliance. BPS implementation will also demand greater technical expertise and experience than other, more prescriptive policies.

This section focuses on the next phases of stakeholder engagement for: implementation, city staffing, program administration, building and financing the necessary support infrastructure, and documenting progress. Throughout this section, consider the responsibilities of city staff the funding and staffing needs, and where partner organizations fit in.



**Stakeholder
Processes for
Implementation**



**Supportive Tools
and Resources**



**City Staffing
and Support for
Ordinance Roll-out
and Implementation**

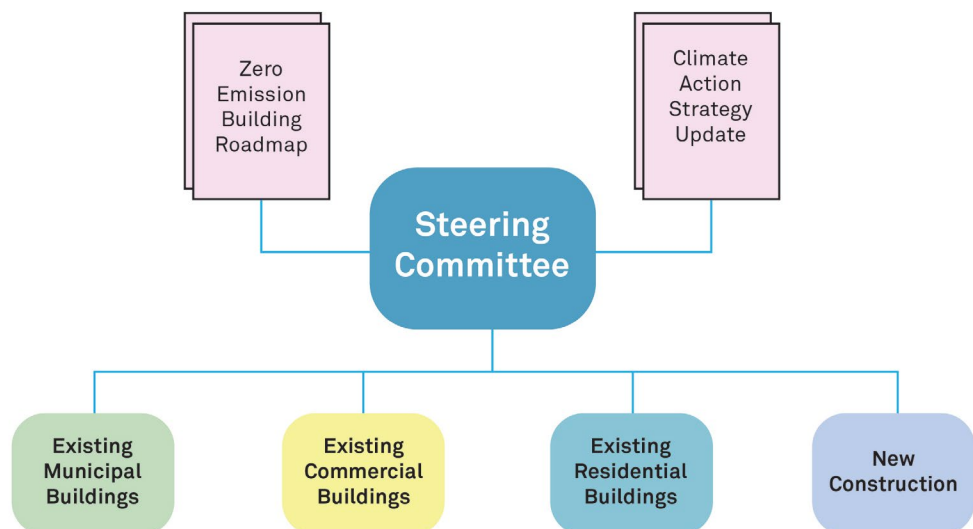


Stakeholder Processes for Implementation

Stakeholder engagement remains critical during implementation. Although a lot of important foundational work is included in the BPS ordinance itself, there will be additional decisions, both large and small, that need to be finalized. Examples from cities include designating a zero-emission building task force, energy improvement board, working group, or advisory group to guide implementation activities and remaining rulemaking decisions.

The working groups may report up to an overarching group that oversees implementation. For simplicity, this BPS Framework identifies these stakeholder groups broadly as the “implementation advisory board.” The specificity of the BPS policy itself should dictate the scope of the implementation advisory board’s responsibilities and oversight power.

Example from City of San Francisco: [Zero Emission Building Taskforce](#), a public-private collaboration of stakeholders



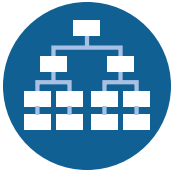
★ See [Appendix D](#) for a Comparison of BPS Implementation Structures in New York, St. Louis, and District of Columbia, including stakeholder groups

Depending on the specific BPS policy, additional rulemaking activities may include addressing the following issues:

- **Performance targets.** While the BPS policy will set overall goals for building stock, it *may* leave it to rulemaking to set the specific numerical performance targets by building type that buildings need to achieve to be in compliance with the BPS. There may be nuances in how buildings can meet the targets, and the timing, left to rulemaking.
- **Alternative compliance pathways.** While the policy may identify alternative compliance pathways, the implementation advisory board may need to develop the specific prescriptive measures pathway, define alternative compliance plans, grant extensions for hardship, or set parameters for alternative compliance payments.
- **Compliance penalties.** While the ordinance is likely to offer guidance (e.g., maximums or commensurate with cost of compliance), it may be left to rulemaking to determine the specific penalties and how they are calculated.

More flexible compliance pathways will likely require sufficient skills and expertise to review detailed engineering plans and assess technical and financial merits. In addition to technical skillsets, consider what other perspectives are needed on the implementation advisory board, particularly related to historically underserved communities.





City Staffing and Support for Ordinance Roll-out and Implementation

As with any new policy, few cities are likely to have the in-house capacity to manage all facets of a BPS. Furthermore, securing the commitment for new city staff positions can be politically challenging. Cities need to be prepared to develop long-term partnerships for BPS support with clear deliverables, well-defined objectives, and strong project management. Securing funding for city staffing and supportive programs at the time of policy passage is optimal to ensure resources for effectively implementing the policy.

Below is an overview of types of work to enforce and provide support for the BPS, including data management and software needs, and examples of staffing from cities that have already passed BPS.

Outreach and Notification

To conduct outreach about the BPS policy and associated supportive programs, cities will need staff or partners who can build websites and develop written materials that describe and communicate the requirements of the BPS policy to different building sectors. In particular, consider key partner organizations (e.g., business improvement districts (BIDs), Chambers of Commerce, Building Owners and Managers Association (BOMA), US Green Building Council (USGBC), landlord trade associations and community-based organizations) to help spread the word to their constituents through presentations and webinars. Engaging trusted partners and organizations is key to maximizing awareness of the policy.

Furthermore, additional resources are needed to reach underserved communities, as many cities do not have deep connections in these communities. Strong partnerships or coordination with other city or county departments that have existing relationships can make this easier. However, the implementing department should plan to build direct relationships with underserved and inadequately funded communities over the long-term for a more successful policy. For instance, the NYC Mayor's Office of Sustainability works closely with its Department of Housing Preservation and Development and Department of Citywide Administrative Services to support them with compliance for its BPS.

Data Collection System Requirements

To implement a BPS, a data collection system and process must be established. Some jurisdictions have invested in adaptive customer relationship management (CRM) software solutions for benchmarking and audit ordinances, which may be expanded for BPS policy implementation and management. By evaluating the current CRM and buildings data collection processes local governments can better assess if additional complexity can be added on for tracking BPS compliance.

Example Software Needs for BPS

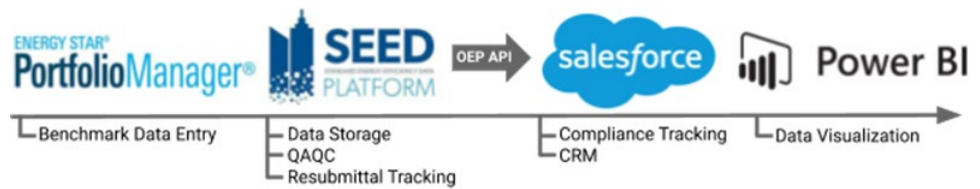
Types of functions	Software Needs
Customer relationship (building owner) management and outreach	<ul style="list-style-type: none"> • Collect contact information (multiple entries per building) • Mass-email with customizable fields • Track correspondence with building owner (including enforcement warnings) • Automate messages based on compliance cycles (e.g., reminders six months before deadline or incomplete data entry) • Consider public lookups for status, targets, and other key information points by building • Online application for building owners to submit exemptions, requests for extensions, and other compliance requests
Energy usage and compliance data	<ul style="list-style-type: none"> • Collect annual energy usage data (potentially including integration/ automated data transfer from Portfolio Manager, with SEED as one example) • Calculate custom fields (such as normalization of performance metrics and custom emissions factors to determine targets, progress toward targets, other indicators, and fine amounts) • Interpret custom fields into compliance status and notifications. Consider a public-facing calculator for ascertaining progress toward targets • Export data for quality control and reject outliers (possibly integrating with data visualization software)

Cities that have committed to improving equity outcomes through their BPS policies will need to set up systems that can identify and track identified equity metrics as well. These are likely not metrics the city sustainability or buildings department is currently collecting. Housing and community development departments are more likely to have relevant data about affordable housing and other community programs that could support the creation of BPS equity metrics.

Finally, the city's Information Technology (IT) department should be consulted before setting technical requirements or issuing a request for proposals (RFPs), as their expertise will be immensely helpful, particularly in how to design a system that reduces staff time required for processing compliance.

Example Data Management Flowchart

Several cities are utilizing this data management process for benchmarking and audit requirements, which could be adapted to suit BPS needs.



Estimating Staffing Needs

The specific number of staff each city will need to implement a BPS will differ considerably based on the number of buildings covered, the complexity of the policy and compliance options, as well as the existing staff and resources already available in the city. This guide is intended to provide cities with an understanding of the types of activities needed to implement a BPS law. Jurisdictions may directly hire staff to carry them out or enter into partnerships with qualified third parties.

Staffing for Implementation: Examples from Three Cities

District of Columbia (DC), as the first U.S. city to adopt BPS legislation, highlights how a mix of hiring and partnerships can meet the capacity requirements of implementing a BPS. Before adopting its BPS, DC had two staff positions dedicated to the implementation of its benchmarking law. Upon BPS passage, the team requested an additional seven positions. DC created a new branch to manage enforcement, consisting of a branch chief, a specific position focused on enforcement, and positions to develop rules and regulations that would move into program support after implementation. The District of Columbia also created a new position to build support programs and provide detailed technical assistance for the affordable housing market. Additionally, the District of Columbia supported the establishment of the Building Innovation Hub, a resource hub which houses two external staff, while leveraging financial support from existing outside organizations like the DC Sustainable Energy Utility and DC Green Bank.

St. Louis is creating a new Office of Building Performance, to be housed within its Building Division, to oversee implementation, compliance, and enforcement of its BEPS and benchmarking policy. At full capacity, the Office is expected to have four staff members. It will include dedicated staff to provide data analysis and technical assistance to building owners—particularly those owners of multifamily and affordable housing. Staff will also support a nine-member Building Energy Improvement Board (BEIB), charged with establishing compliance options and providing recommendations regarding other aspects of BEPS implementation.

New York City created a new Office of Energy and Emissions Performance within its Department of Buildings to oversee BPS implementation. A 16-member Climate Advisory Board is charged with refining the law over time and informing rulemakings, all supported by eight Climate Working Groups¹⁵.

15 For more information, check out the [Statutory Language associated with Local Law 97](#).

BPS Program Administration Funding

The most immediate need for most jurisdictions will be funding city staff to support BPS implementation. The ordinance itself will specify the responsible department to lead implementation, but the number of staff needed, and sources of funding, are likely less defined. The required staffing and city budget needed to administer the program's compliance aspects will depend on:

- Number of buildings covered
- Stringency of required building performance improvements
- Enforcement methods and timelines
- Ordinance complexity and exemptions
- Parallel programs designed to support uptake and compliance (e.g., resource hub)

For benchmarking and disclosure policies, jurisdictions have primarily used discretionary funding in budgets, reallocated general fund dollars to cover program administration costs, or created a specific fund within the municipal budget. However, long-term sustainable funding is needed for BPS policy implementation. Ballot measures, such as those in [Portland](#), [Seattle](#), and [Denver](#), can provide new sources of funding for BPS administration.

For buildings that do not meet the performance standard, some level of penalty can be levied (one example is the Certificate of Occupancy Review Process for the DC Green Building Act). However, the revenues generated from this will take time, are largely unpredictable, and would be an unreliable source to pay for city staff to manage the program.





Supportive Tools and Resources

As mentioned, a BPS policy should encompass supportive tools and resources, particularly for under-resourced buildings and underserved communities. Technical and financial assistance should be provided to building owners, property managers, service providers, tenants, and other relevant parties.

Technical assistance may include everything from providing basic information about the BPS, offering personalized assistance, connecting building owners and managers to qualified vendors, developing and delivering trainings and events, and linking building owners with available funding and financing.

Leveraging Existing Funding and Financing Programs

Additional city resources will be needed to provide technical and educational support for building owners—whether the local government is leading or supporting efforts. The amount of resources needed will depend in large part on:

- Capacity of building owners, especially the amount of affordable housing and underserved communities most in need of support
- Level of workforce preparedness for building efficiency upgrades at scale
- Availability of funding and financing that is accessible to under-resourced buildings

While some local governments may leverage state or utility programs to support building performance, these programs may be difficult to navigate, especially for building types/owners with less technical and financial capacity. A supportive program, such as a resource hub or Retrofit Accelerator, could play a role in simply connecting buildings to these programs.

In other states where state or utility support is limited, cities will need to get more creative. While not mutually exclusive, there are two categories of funding and financing to consider: (1) funding that can be accessed through the existing city budget or other sources, such as private philanthropy, and (2) third party capital, which typically requires repayment with interest.

ICLEI's [Climate Finance Decision Making Tree](#) provides a decision-making framework for local and regional governments (LRGs) to assess different financing tools.

No matter which route is taken, cities should pay special attention to covered buildings experiencing financial hardship, affordable housing, and other market segments that struggle to access capital for building upgrades. Ideally, funding and financing is also paired with one-on-one technical support to help streamline the process. These resources are critical for leveling the playing field for more equitable outcomes.

Funding that can be Accessed

A first step to identifying funding for building upgrades and renovations is to review and access existing incentive, grant, or other programs for building energy efficiency and emissions reductions. Utility-funded programs, often mandated by state public utility commissions, have long been important drivers for efficiency across the country, but it's important to understand their nuances. For example, some utility programs only provide incentives to projects that exceed regulation, but not to projects that are required by code or regulation. This needs to be considered as part of BPS policy development in partnership with the local utility.

From an equity perspective, utility incentive programs don't always work well for buildings with the greatest need. They are often structured as rebates, requiring upfront investment that a low-income resident or landlord may not have. These programs are sometimes complicated to navigate (remember that time is a resource) and may not be equitably marketed to under-served communities. Often, these programs also fail to work well with affordable housing financing programs. For these reasons and more, it is critical to assess the potential funding needs and gaps, and to engage early with local utilities to help address them in the BPS development process and implementation.

Federal Government Programs

Federally funded programs, especially the Department of Housing and Urban Development and the Department of Energy, can provide important assistance for owners and tenants. A full list can be found on the [DSIRE website](#). Key examples include:

- Weatherization Assistance Program ([WAP](#)), usually administered by community development or health agencies, targets efficiency in residential properties.
- Low-Income Home Energy Assistance Program ([LIHEAP](#)), a program of WAP.
- Community Development Block Grants ([CDBGs](#)), an annual formula grant supporting decent housing and improved living for low- and moderate-income Americans.
- The [179D](#) Commercial Buildings Energy-Efficiency Tax Deduction enables building owners to claim a tax deduction for installing qualifying systems.

Third Party Capital

With the accelerating need for building upgrades, funding that can be accessed through energy programs may not be sufficient to drive building performance and associated climate and equity goals at the required speed and scale. It also may not be appropriate for building owners with sufficient access to resources and capital. To close the gap, financial institutions are prioritizing lending for energy efficiency and clean energy, while targeting these priority sectors for investment. Due to credit risk thresholds that tend to lock out lower-income borrowers, most programs have been oriented toward market rate or the moderate-income spectrum. There also has been a lack of uptake and demand due to wariness to take on debt for building upgrades. To make financing equitably available, local governments should consider additional funding or credit enhancement support for lower-income households and neighborhoods, and increase financial education through targeted strategies.

Depending on what state you are in, a wide variety of third party [financing](#) tools are available. Examples include:

- [Green banks](#) are mission-driven institutions, usually operating county- or state-wide, that use innovative financing to accelerate the transition to clean energy.
- [Energy Service Companies](#) (ESCOs) have a handful of financial tools that allow organizations to pay for upgrades through the energy savings they reap.
- [Property Assessed Clean Energy](#) (PACE) can also provide 100% up front financing, with repayment over time, through a voluntary assessment. Commercial PACE programs are active in [24 states](#), with some states also offering residential PACE.

Green Banks

The CleanEnergy DC Omnibus Amendment Act increased support for the [DC Sustainable Energy Utility](#) (\$20M/year) and funded the [DC Green Bank](#) (\$70M over six years) in the District of Columbia. The [NYC Energy Efficiency Corporation](#) is a local green bank, which will also support a local C-PACE program.

Along with staff needed to support BPS policy communications and compliance, additional dedicated staff will likely be needed to administer funding, financing, and technical assistance programs for building owners and retrofit service providers. The staff could be housed within government or, alternatively, in a local nonprofit that partners with the city.

New Programs: Resource Hubs and Accelerators

Supportive programs are critical and should be funded and planned for in parallel to BPS policy development. Plan to engage stakeholders on identifying gaps in existing offerings, and focus on the needs of underserved communities to better target new programs or program approaches where they are most needed. A “one-size-fits-all” approach to supportive programs can perpetuate inequalities, so targeting and tailoring resources will be key to success. There will always be tension between trying to provide services for everyone while also developing effective and equitable programs for those audiences in greatest need of assistance. [Targeted Universalism](#) can be used as a framework to help advocate for more specialized services.

The [USDN Guidebook on Equitable Clean Energy Program Design](#) supports local governments and their partners to intentionally design programs that enable current and emerging clean energy technologies to be accessed equitably.

Many cities are considering offering technical assistance in the form of resource hubs or Retrofit Accelerator programs, such as [DC’s Building Innovation Hub](#) or the [NYC Accelerator](#). Developing and running a program offering all of the above forms of assistance is an important element of success alongside BPS policy design considerations, and may require significant funding and staffing commitments from a city.

First, city staff should define the goals for what the resource hub intends to achieve, who it intends to serve, and how it will serve stakeholders. The city should ascertain: which services are already being provided by existing organizations, how effective these programs have been at reaching priority audiences, which new services are needed within the ecosystem, who should provide these services, and which could be contracted out or performed in-house. These considerations should occur before securing long-term funding for an ongoing support program.

Programs can vary significantly in their form and function. At its simplest, a resource hub may simply be a website that hosts how-to guides to BPS requirements, timelines, and existing resources for owners and tenants of regulated buildings. At its most advanced, a program may offer various forms of consultative services, financial and technical assistance, and in-depth education and training for building owners and the workforce. Below is a list of potential services that these programs can offer, from simplest (often cheapest) to most complex (generally more expensive). Consider structuring assistance to scale up or down depending on the needs of building owners and communities of concern:

- **How-to Guide:** Free, consolidated list of requirements and implementation resources (e.g., [Atlanta Building Efficiency Energy Audit Requirement](#) help page including a directory to find auditors)
- **Local Law Compliance Resources:** Compliance checklists, building performance target calculators, and 1-1 support to ensure building owners understand BPS requirements and related building codes and regulations (e.g., [Compliance Checklist from Montgomery County, MD](#))
- **Educational Resources:** Presentations, workshops, and trainings on key topics, which can be posted on a website, hosted virtually, or held in person (e.g., [Building Energy Exchange](#), which is the educational arm of the NYC Accelerator)
- **Public Recognition:** Voluntary challenges, awards, and case studies on websites to celebrate market leaders (e.g., [NYC Carbon Challenge](#))
- **Financial Assistance:** Assistance to connect building owners to existing incentives and other resources, or the direct provision of incentives, grants, and/or financing for building owners
- **Technical Assistance:** Assistance to help building owners assess compliance needs, select upgrades, connect with trusted service providers, and other building-specific consultative services
- **Workforce development:** a resource hub or Accelerator that can support workforce development by: connecting workers to existing trainings, creating contractor qualification lists, developing incentives for employers to invest in high-road jobs, and requiring MWBE subcontractors for implementation of the resource hub or Accelerator

Jurisdictions should directly engage with stakeholders to develop the services of their resource hub or Accelerator. This can be through advisory groups and/or targeted market surveys that determine whether each service is (1) already provided and a program can direct building owners and decision-makers to it, (2) not currently provided and should be part of the program at the time of launch, (3) not currently provided and could be incorporated into a program over the longer term, or (4) not currently provided but not a priority. The answers to these questions will likely differ depending on audience. Cities should plan to invest significant resources into the development of these services, as even the most basic will require more than trivial investments and continual iteration to ensure the services are effective.

No matter what form it takes, a resource hub or Accelerator can make building performance visible, accessible, and create pathways for more targeted support for individual stakeholders. Consider specific audiences in order to tailor the type and depth of support to specific needs. For instance, in-depth assistance and handholding should be available for under-resourced buildings and historically marginalized tenants, workers, and businesses. Other higher-resourced buildings could have access to the lighter-touch components of the hub.

American Cities Climate Challenge research on Resource Hubs

Based on interviews in four cities, building owners and tenants:

- see value in a centralized hub for building performance to help save time and money, as well as to reduce their risks of noncompliance
- overwhelmingly preferred online resources to a physical space
- prefer to have options for 1-on-1 support and consultations

Of course, jurisdictions should first identify what support services may already be offered within the community and if these can be strengthened or complemented. These insights can be gained from the research conducted to prepare the BPS policy. In some locales, support infrastructure from nonprofits or community-based organizations may be better trusted. Nonprofits may also be able to fundraise from foundations and other sources that cities cannot.

Resource Hubs and Accelerators: A range of program types and approaches

Since 2015, New York City has supported improved building performance through the [NYC Accelerator](#) (formerly the NYC Retrofit Accelerator), which is complemented by a local nonprofit called the [Building Energy Exchange](#) (see this [NYC report](#) on lessons learned from the NYC Accelerator). The Building Energy Exchange offers education and resources, while the NYC Accelerator provides “Efficiency Advisors,” who are program staff that handhold building decision-makers through a retrofit process.

The District of Columbia has funded a nonprofit to launch its [Building Innovation Hub](#) that similarly aspires to facilitate building energy use reductions across the city.

The City of St. Louis is partnering with its local USGBC chapter to [solicit](#) consulting support to build a business plan for a regional energy resource hub.

The Washington State Department of Commerce has a simple [web page](#) with information about the BPS policy and links to relevant information and technical resources.

Cities may further consider how other government and nonprofit resource hubs are designed to reach their intended audiences with the services they need.

- The Department of Energy’s Better Buildings program runs a [Renewable Energy Resource Center](#) to provide introductory explanations, finance options, technical, self-help guidance for advanced users, and answer questions about switching to renewable energy.
- The National Renewable Energy Laboratory administers a [Zero Energy Buildings Resource Hub](#) that provides design guidance, technology options, and case studies for schools, offices, and districts.
- The City of Houston operates a [Green Building Resource Center](#) as both an online and physical presence to provide all permit-seeking applicants an opportunity to explore green building technologies, materials, methods, and learn from educational programming.

While not a large program, the [NYC Accelerator Internship program](#) partners with City University of New York (CUNY) to equip students with hands-on professional experience in high-performance building operation, design, and construction, through a part-time internship with companies seeking to implement energy upgrades.

Workforce and Economic Inclusion Considerations

Resource hubs and other BPS support programs should also foster a diverse supply of contractors and workers and help them be successful. The alignment of supply and demand for diverse workers is critical to achieve increasingly ambitious building performance goals while preventing over-supply of trained workers with false promises to underserved communities.

To build out a workforce of diverse contractors, the resource hub can:

- Connect workers to existing trainings offered through workforce development organizations, community colleges, pre-apprenticeship programs, and others.
 - Begin with pipeline programs that introduce young people from diverse communities to clean energy career opportunities. These include programs like [Conservation Corps](#), [YouthBuild](#), and school-based programs like [Emerald Cities ACES](#).
 - Working with organized labor, you can identify appropriate pre-apprenticeship programs, programs to enhance diversity in the trades, and union support for diverse signatory contractors to the union.
 - Seek out other workforce programs in your area that target diverse communities and provide skill-up opportunities. These may be sponsored by utilities or the government.
- Identify where there are gaps in existing workforce programs to support implementation of the BPS policy, and seek to engage partners to develop trainings, career promotion opportunities, and incentives for employers to invest in high-road jobs.

Along with fostering a diverse supply of contractors, the resource hub can ensure that jobs exist to employ this expanded workforce. For example, the support program can:

- Create contractor qualification lists for building owners and supporting MWBE contractors to ensure they are represented. A contractor hub or workforce clearinghouse can provide qualified, diverse contractors to the market.
- Require MWBE subcontractors for implementation of the resource hub or Accelerator.
 - The resource hub and supportive programs should seek to engage professionals or firms with technical certifications that are accessible to local, diverse, BIPOC businesses and workers. Look for partners who adhere to local diversity procurement goals or requirements.

Documenting and Reporting Out Results

Finally, it is important to document and summarize the broader results of the BPS policy as a whole. Analyzing the achieved impacts after the first compliance deadline is strongly recommended in order to evaluate how well (or not) the BPS is meeting its intended policy outcomes. Review these early results with your implementation advisory board and/or other stakeholder groups to adjust or amend the policy or its details. At the broader community level, sharing the results publicly can help build support and engagement with the overall effort.

Example reports may include:

- **Energy use disclosure reports** can also help describe changes in energy use over time at the citywide, building segment, and individual level. These can be built on to indicate improved health outcomes, local investment, and other indicators of improved social well-being. Examples include:
 - [St. Louis Benchmarking Report](#), and [St. Louis Equity Indicators Baseline Report](#)'s "Opportunity to Thrive" section, combines datasets in a way that measures how the BPS affects energy and equity together
- **Equity related progress reports** can help describe changes in health, economic opportunity, and energy burden over time. Examples include:
 - [San Diego Climate Equity Index](#) measures the level of access to opportunity residents have within a census tract, alongside the degree of potential impact from climate change to these areas
 - [New Orleans disadvantaged business enterprise \(DBE\)](#) program report
 - [Greenlink Equity Maps](#) visualizes data through neighborhood equity maps
 - Workforce and contractor diversity reports

Making the data publicly available allows the community and stakeholders to create reports and tools, and engage in meaningful conversations about the BPS policy and ongoing opportunities for further GHG reductions in the building stock.

CONCLUSION

Today's technology is sufficient to transition cities to a zero-carbon economy. With both climate and infrastructure under stress, and with proven technologies in hand, the most precious resource is time.

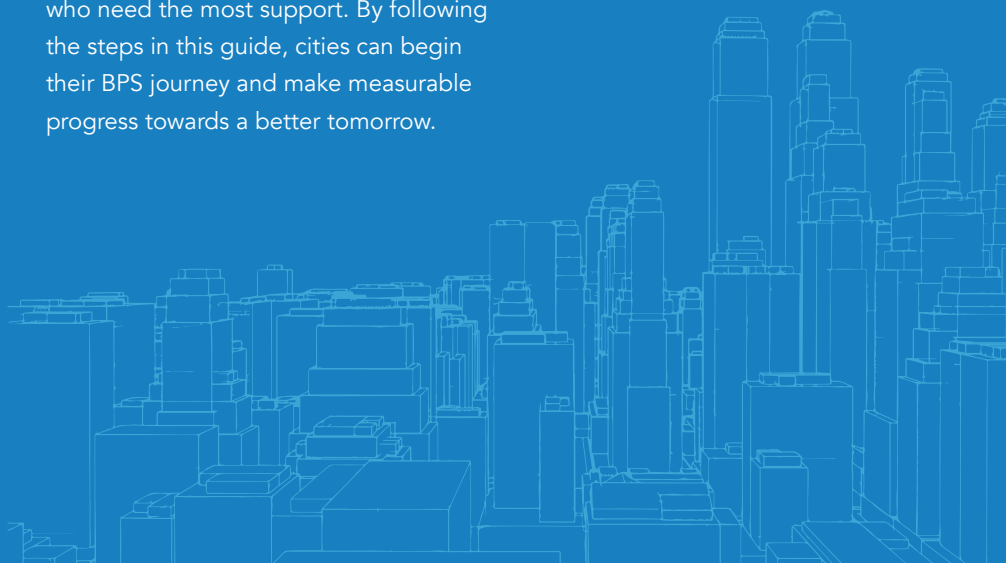
Every day, cities have myriad opportunities to reinforce this message about the collective urgency needed to improve building performance. Whether at the permitting counter, in programs interfacing with building industry stakeholders, in planning and policy decisions, license renewals, tax assessments, and beyond, cities and their partners have the power to set and meet ambitious goals. A well-designed and community-supported BPS can serve as the much-needed signal to drive strong and lasting climate action in our buildings.

The path to a city's BPS policy will not be easy. It will require sincere commitment to engagement, equity, economics, and a resilient future. While the policy examples presented in this framework are still in their infancy, they hold promise for impactful results. As more jurisdictions chart their course to superior building performance, all cities will benefit from the knowledge and experience they generate—to say nothing of the climate and equity benefits.

The best outcomes will result from interconnected policies, programs, and partnerships that provide a solid foundation for a BPS and amplify its impacts throughout the community. A BPS can serve as a powerful cornerstone, integrating a number

of building policies and programs to help meet a number of city priorities: decarbonization, electrification, resilience, energy affordability, public health, inclusiveness and racial equity, economic inclusion, and more. Equitable outcomes are by no means a given—they derive from inclusion and engagement throughout the process, including resource allocation once the policy is adopted.

The time to act is now. The earlier cities work to achieve their climate and equity goals, the more time and flexibility they will have to prioritize resources for those who need the most support. By following the steps in this guide, cities can begin their BPS journey and make measurable progress towards a better tomorrow.



FOR FURTHER READING

Reports

American Council for Energy-Efficient Economy: [Mandatory Building Performance Standards: A Key Policy for Achieving Climate Goals \(June 2020\)](#)

Carbon Neutral Cities Alliance: [Existing Building Performance Standards Targets and Metrics Final Report \(March 2020\)](#)

City Energy Project: [Incorporating Equity into Energy Benchmarking Requirements](#)

Greenlining Institute: [Equitable Building Electrification: A Framework for Powering Resilient Communities](#)

New Buildings Institute: [The Technical Basis of Building Performance Standards](#) (March 2021)

Resources for the Future: [Building Performance Standards: Lessons from Carbon Policy](#)

Websites

Institute for Market Transformation: [Exploring Building Performance Standards Resources](#)

U.S. Environmental Protection Agency: [Benchmarking and Building Performance Standards Policy Toolkit](#)

TERMINOLOGY

Affordable Housing. High-quality, healthy homes in which all-in costs fit within a household's budget and do not force residents to make choices between other critical needs such as food, utilities, medicine, childcare, etc. (source: Building Electrification Institute). Affordability should be based on residents' ability to pay for good quality housing (outcome), rather than policies or restrictions in place. Additionally, the following terms are relevant:

- **Regulated Affordable Housing:** Housing that is rent-restricted and/or income-restricted in order to maintain affordability. Includes subsidized affordable housing, public housing, and rental assistance housing. Also known as "deed restricted affordable housing."
- **Unregulated Affordable Housing:** Housing that is currently priced below market rate and/or is affordable to existing residents, but is not subject to regulations restricting rents or incomes. Also known as "naturally occurring affordable housing" or NOAH.

Building performance standard. Policy establishing targets for buildings to reduce energy use or greenhouse gas emissions, or to improve other metrics over time, generally to achieve a performance threshold by specific dates. In addition, successful BPS policies need to include complementary support programs and assistance for covered buildings, local workforce, and underserved populations.

- **Performance standard (or performance threshold):** A designed metric, or level of performance, that a building must meet to be compliant.
- **Metric:** The unit of measurement (energy, carbon or other) that will be used to report data and compliance. A BPS can have multiple metrics which, taken together, define the areas the city deems most important in achieving its goals.

Compliance. Applies to covered buildings and demonstrates that requirements of BPS are met, either through the performance threshold or standard, or through other paths as defined by the policy.

- **Covered building:** A building that must comply with the BPS.
- **Compliance cycle:** The period of time for measuring building performance.
- **Compliance path(way):** The method by which a building demonstrates compliance with the standard.
- **Penalties:** Monetary or non-monetary consequences levied in a single compliance cycle or reporting period for an individual building not meeting the performance threshold or any other compliance path.
- **Reporting period:** The frequency with which a covered building is required to submit compliance documentation. This may be more frequent than a compliance cycle.

Engagement: “The process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations, to address issues affecting the well-being of those people.”¹⁶ There are many reasons cities must connect with people outside government to craft, pass, implement, and evaluate an effective policy. Here are three definitions of engagement activities:

- **Stakeholder engagement:** Engagement with people or organizations that have a stake in the policy and its effects, including internal governmental, interagency, building and market actors, businesses and community members.
- **Community engagement:** Engagement with specific community groups who will be directly impacted by the policy, and especially those who have been historically marginalized from decision-making and/or experience disproportionately high burdens or low benefits of programs and policies.
- **Public outreach:** Communications and education meant to reach members of the general public.

Environmental and social justice communities: Local and regional definitions vary. For example, the California Public Utilities Commission defines Environmental and Social Justice (ESJ) Communities as communities where residents are: 1) predominantly people of color or living on low incomes; 2) underrepresented in the policy setting or decision-making process; 3) subject to disproportionate impact from one or more environmental hazards; and 4) likely to experience disparate implementation of environmental regulations and socioeconomic investments.¹⁷

Financial Hardship: Cities may choose to set their own definitions for financial hardship, such as annual business income (gross receipts) less than or equal to two times the poverty level¹⁸. During COVID-19, some cities may have expanded their definitions of hardship to protect more vulnerable people and businesses.

16 “Principles of Community Engagement: First Edition” (1997) referenced in “[Principles of Community Engagement: Second Edition](#)” (2011). Centers for Disease Control and Prevention: CDC/ATSDR Committee on Community Engagement.

17 See US EPA’s [Learn about Environmental Justice](#) web page.

18 See City of San Jose’s [Financial Hardship Program](#) and the Federal Register for the [2020 state-by-state Poverty Guidelines](#).

APPENDIX A: STAKEHOLDER AND COMMUNITY ENGAGEMENT SUMMARY

The table below summarizes *possible* roles and responsibilities for each BPS stakeholder, delineated by the three major phases of BPS development as outlined in this guide (Preparation, Policy Making, Implementation). While each city will approach BPS engagement differently, this table provides a starting place for understanding how the wide variety of stakeholders can play a role. Cities should also consider the [impact of Covid-19](#) when it comes to [equitable engagement](#).

Stakeholder Type	Stakeholder	Preparation Role	Policy Making Role	Implementation Role
City Government	Sustainability	Often serve as task force coordinator; if applicable, manage consultant supporting engagement and market segmentation	Ensure policy addresses carbon, equity, and other task force goals; manage consultant if applicable	Re-engage task force; monitor progress against metrics, as well as unintended harm; develop awards and recognition
	Building Department	Market segmentation: benchmarking data analysis (if available)	Assess BPS impact on City compliance costs and staffing needs	Align internal admin processes with the BPS; create streamlined process for regulated building owners; ensure compliance
	Housing Department	Market segmentation: housing stock analysis, including affordable housing; clarify how owner types interact with city	Research displacement risk associated with policy options	Support compliance for regulated residential building owners (e.g., regulated affordable housing, properties subject to rental registries)
	Planning / Zoning	Market segmentation: neighborhood development plans	-	Integrate BPS into planning and zoning review, align any planned rules for new construction with BPS
	Community Development	Market Segmentation: key socioeconomic data; incorporate current / future housing needs	Understand how BPS would impact different communities, especially historically underserved communities	Incorporate CD resources into building performance hub
	Finance Department	Market segmentation: understand how owners interact with city	Compare compliance costs associated with policy options	Incorporate BPS into city budget; ensure any fees go toward implementation
	Law Department	Establish city's legal authority to pass a BPS ordinance (including fee issuance)	Work with city council to introduce and pass legislation	Support approach to enforcement
	City Council	Engage lead committee, educate all council people	Hold committee hearings; Pass legislation	Monitor progress; connect constituents to resources
	Mayor's Office / Comms	Press release when ready to announce policy making process, carbon / equity goals	Periodic updates, including mayoral media opportunities; public event upon passage	Report out on progress; ensure key implementing departments stay engaged (e.g., BPS part of personnel reviews)

City and/ or Regional Government	Public Health Department	-	Compare health benefits associated with policy options, esp. for most vulnerable residents	Track public health impacts of implementation
	Economic Development	Identify strategies for economic inclusion	Compare economic impact associated with policy options, esp. for low-income residents	Identify incentives, especially for smaller buildings and affordable housing
	Workforce Development	Identify workforce development opportunities	Compare workforce development impact associated with policy options	Engage workforce orgs to meet demand
	Other Relevant County / State Departments	Market segmentation: provide assessor data; consider opportunities for regional BPS	-	Consider how to make BPS more regional
Quasi Public	Utilities (esp. gas and electric)	Market segmentation: energy use data	Support analysis of BPS impact, especially grid electrification impacts	Provide whole-building data; ensure existing program eligibility, and consider new incentives
	Labor / Unions	Begin researching BPS impact on workforce, union jobs	Compare workforce / union impact associated with policy options	Track BPS impact on jobs
Real Estate and Professional Services	Building Owners (commercial, industrial, institutional, affordable housing)	Advise on market segmentation and inform real world constraints	Provide feedback to the city and task force on perceived BPS impact to owner (benefits, compliance costs vs. cost of inaction, need for support, etc.)	Provide feedback on market realities—what works and what doesn't; identify constraints with occupancy, deferred maintenance, capital investment cycles, and capacity to implement
	Building Associations (e.g., BOMA, IFMA, NAIOP, etc.)	Advise on market segmentation and inform real world constraints	Begin educating membership on BPS; compare policy options against impact on membership	Provide input on building performance hub priorities; establish supplemental training for members
	Major tenants and tenant groups	Advise on market segmentation and inform real world constraints	Understand BPS impacts (e.g., health benefits, cost savings, etc.) and tenant role	Engage on green leases
	Design professionals (e.g., AIA, ASHRAE, ASPE, AHRI, USGBC, ASID)	Advise on market segmentation and inform opportunities for collaboration and efficiency	Provide perspective on costs, compliance, and process efficiencies	Engage on calibrating BPS metrics and improving processes for reporting and compliance
	Contractors and Service Providers	Inform city of how work is typically done and how to scale up contractor capacity	Provide an implementer perspective on policy options	Provide input on building performance hub priorities, informed by market realities
Community	CBOs (e.g., community development corporations)	Identify workforce development opportunities and strategies for economic inclusion	Identify strategies for using BPS to correct historic inequities; outreach regarding public engagement	Outreach regarding building performance hub; provide feedback on BPS implementation
	Racial and social justice groups	Market segmentation: support energy burden analysis	Help ensure BPS addresses systemic inequities (e.g., through racial equity tool)	Track progress, help hold city and partners accountable in achieving equitable outcomes
	Citizen groups or coalitions	Understand BPS, begin developing advocacy approach	Advocate for policy passage	Provide education on BPS

APPENDIX B: SIX STEPS TO MARKET SEGMENTATION

The following six steps offer an outline for how to deconstruct the market segmentation process and make the best use of available data.

Segmentation activity	Notes and Actions	Considerations
(1) Study Examples of how cities have conducted market segmentation analysis	<ul style="list-style-type: none"> See Examples, Tools, and Resources below 	While no city's efforts will be a perfect fit for another, some cities have begun blazing a trail. Consider how other internal and external partners may have clues that can bolster market segmentation.
(2) Develop Questions your city aims to answer through this analysis to meet various goals	<ul style="list-style-type: none"> Outline the list of established city goals Add BPS goals of climate and equity 	For example, cities may ask: which buildings include the greatest potential for energy savings? Which buildings provide the best potential for improving equity outcomes? Which communities will be most impacted? Who makes decisions for building upgrades? What are existing points of engagement for the city? What types of energy upgrades are likely to happen without a BPS policy?
(3) Identify Data needed to answer key questions	Collect four types of data: <ul style="list-style-type: none"> Local government data Demographic and socio-economic data Market data Other data 	See below for more detail
(4) Organize Data in ways that will be most helpful for analysis	Organize by: <ul style="list-style-type: none"> Owner types Building types Geography Tenant demographics Energy consumption Other factors 	Combine datasets into a single dataset in order to compare indicators. Organize owner types, to the extent possible, into categories such as: affordable housing (regulated, unregulated, and rent controlled), market rate rental, market rate owner-occupied, co-op, or condo. Which owners will need the most assistance? Which will simply need clear signals? Which owners are difficult to reach?

<p>(5) Review Data with key stakeholders</p>	<p>Key stakeholders include:</p> <ul style="list-style-type: none"> • Policy advisory group(s) • Partners • Community groups • Building owners and managers • Building industry professionals 	<p>Most cities can conduct an initial analysis to give stakeholders a starting point. Others may find it helpful to start fresh and report back later to show progress and collect feedback. Review data in various formats to illuminate diverse insights (see 4).</p>
<p>(6) Refine Analysis based on new data and feedback to enhance overall understanding</p>	<p>Market segmentation is not complete until:</p> <ul style="list-style-type: none"> • Stakeholders are given an opportunity to review and provide input to inform decision making • Analyzed data informs collective understanding 	<p>Cities will continue to learn more about the buildings, owners, and communities that are covered under the ordinance. Incorporate these findings at regular intervals.</p>

Cities should, minimally, develop a data set at the building or parcel level and match different datasets to these parcels using unique identifiers such as parcel identification numbers. Begin with the most comprehensive building- or parcel-level dataset available, and map additional datasets.

Data Type	Data Sources and Data Examples for Market Segmentation
Core Local Government Data	<ul style="list-style-type: none"> • City assessor data or county clerk for valuation, title, and transfer history; • Permit history, including occupancy types; • Building and housing sales; • Reported benchmarking or audit data to extract energy use trends (if available).
Demographic and Socio-Economic Data	<ul style="list-style-type: none"> • Census data (American Community Survey) for race, income, etc. (see Data Gems program for tips); • Environmental risk maps (e.g., CalEnviroScreen, NPR data set of city heat islands, or Headwaters Economics' Neighborhoods at Risk); • Affordable housing units by type (deed-restricted, private subsidy, or naturally occurring affordable housing, or "NOAH"); • State and regional data from the Bureau of Labor Statistics; • Equity mapping tools such as the Greenlink Equity Map; or services with thousands of indicators such as PolicyMap. (See Gentrification and Displacement Risk map from Portland, OR, and the Growth and Equity report from Seattle, WA);
Market Data	<ul style="list-style-type: none"> • LEED and ENERGY STAR buildings; • State or utility market characterization studies (if available); • National energy consumption data (see CBECS); • eGrid source emissions data; • Private data sources (e.g., CoStar, Multiple Listing Service).
Other Data	<ul style="list-style-type: none"> • Historic & landmark lists or maps; • Buildings that already require retrofits (e.g., seismic); • Owner occupied vs. renter- or tenant-occupied; • Stormwater system maps; • Neighborhood development plans; • Adoption of clean technology such as solar or EVs; • Utility program participation data.

Examples, Tools, and Resources

- **Architecture 2030 Zero Tool.** Utilized by USDN's [Zero Cities Project](#), this tool has helped 11 cities complete building stock assessments, covering use type, floor area, energy consumption, emissions by fuel, and more. This work is built on a [robust methodology](#) that outlines a clear set of data inputs, with an order of preference, including (1) a building stock dataset, (2) building energy consumption, (3) building fuel mix, and (4) building emissions data. The collected data provide [quantitative insights](#) into the building stock in each city. [Click here to learn more about the Zero Tool.](#)
- **National Renewable Energy Laboratory (NREL) ResStock and ComStock Tools.** A [2019 report](#) by the National Renewable Energy Laboratory (NREL) shows how NYC prepared for its market segmentation analysis using the open-source [ResStock](#) and [ComStock](#) tools. Both were developed by NREL for building stock analysis of residential and commercial buildings. The report recommends a seven-step approach for cities to make best use of the tools: (1) Develop target questions, (2) Identify partners, (3) Collect data, (4) Establish scenarios, (5) Define metrics, (6) Plan a results presentation, and (7) Identify gaps. Table 1 on pages 8-9 of the 2019 report identifies key data sources for use in the market segmentation process.

Example Market Segmentation Reports and Analyses

- **Performance Standards for Existing Buildings.** A [2020 project summary](#) by the Carbon Neutral Cities Alliance illustrates the process of collecting key data about local buildings and their energy and carbon profiles. The project uses these inputs to develop targets for building or space/use types that will help four cities achieve deep carbon reduction goals by 2050. For further information, the [full report](#) is also available.
- **Making Sense of your Multifamily Housing Stock.** This [2017 report](#) by Elevate Energy outlines a coherent approach for cities and energy program administrators to better understand the community's stock of multifamily housing in preparation for building performance policymaking. The report helps break down many of the complexities in multifamily housing—from building types to ownership to meter rate structures and beyond—to identify, access, and employ various data sources to support market segmentation.
- **Affordable Homes First: Advancing a Green New Deal for Los Angeles Renters.** A [2019 report](#) by Energy Efficiency for All makes the case for sweeping investments in energy efficiency in LA's affordable housing. Appendix B (pages 52-58) provides an in-depth look at market segmentation, including data analysis and visualizations. The report findings may be helpful for cities that are designing the questions to ask of the available data.
- **One City Built to Last Technical Working Group Report: Transforming New York City Buildings for a Low Carbon Future.** The Buildings Technical Working Group conducted in-depth research into how buildings in New York City use energy. The first chapter (pages 16-31) of the [2016 report](#) provides exceptional detail on building energy consumption in the city—past, present, and future. The report shows how data from building benchmarking can illuminate energy consumption patterns across a wide array of building types. The market segmentation outputs are used to build various building energy scenarios to inform the building performance policymaking process.

APPENDIX C: EXAMPLES OF BPS ORDINANCES AND RULES

The table below summarizes the following three BPS policies:

- District of Columbia: [CleanEnergy DC Omnibus Amendment Act of 2018](#)
- New York, NY: [Local Law 97 of 2019](#)
- St. Louis, MO: [Board Bill 219 of 2019-2020](#)

The ordinances differ in how much detail is spelled out in the legislation itself, and how much is left to rulemakings and departmental guidance. St. Louis, which has the least amount of detail, establishes a Building Energy Improvement Board (BEIB) to provide rulemaking within one year of passage. New York City includes the most amount of compliance-related detail, including the role of renewable energy, while still providing flexibility around topics like carbon trading systems and the specifics of alternative compliance pathways. The District of Columbia’s policy, in part because it was part of a larger clean energy omnibus, includes the most detail around funding and technical support.

For more examples of how different cities have approached BPS policy development, see [IMT’s Comparison of Building Performance Policies \(2021\)](#). See also the [IMT model BPS ordinance](#).

	District of Columbia	New York, NY	St. Louis, MO
1) Defining scope of covered buildings	All private buildings over 50,000 SF and DC-owned buildings over 10,000 SF in first period; lowers in SF over two additional periods to all buildings over 10,000 SF	All buildings over 25,000 SF, and buildings with <35% of rent-regulated apartments. Government-owned buildings and buildings with >35% rent-regulated apartments have alternative pathway	All buildings over 50,000 SF, excludes industrial, manufacturing, state- and federal-owned buildings
2) Choosing a building performance metric	ENERGY STAR Score or equivalent metric of Source EUI (possible GHG metric in the future)	Carbon intensity (tons CO2 equivalent per square foot)	Weather-normalized site energy intensity (kBtus per square foot)
3) Setting targets for covered buildings	At the beginning of each 6-year period, buildings meet local median ENERGY STAR score for their property type, or enters 5-year compliance cycle to reduce site EUI by 20%, or comply prescriptively	40% reduction by 2030, 80% by 2050, compliance threshold calculated in 2024-29 and 2030-34 compliance periods; more stringent limits expected in 2035	Left to rulemaking, but must be based on the 35th percentile (BEPS targets must be set such that at least 65% of buildings need to improve their energy performance) calculated at the beginning of each compliance period
4) Establishing a timeline	Standards set every 6 years, including a 5-year compliance cycle and one year for data analysis and enforcement.	Compliance every year, with set targets in 2024-29 and 2030-34 compliance periods.	4-year compliance periods beginning in 2021 (6-year compliance periods for affordable housing and houses of worship)

<p>5) How to comply or alternative pathways</p>	<p>Buildings not meeting performance standard must either: (1) reduce site EUI by 20% before the end of the compliance cycle, or (2) comply prescriptively.</p> <p>DOEE may establish exemption criterion for qualifying affordable housing to delay compliance due to financial distress, change of ownership, vacancy, major renovation, pending demolition, etc.</p>	<p>If a building is operating at 40% or more over the building performance standard, the owner can apply for an adjustment, which will result in a required 30% reduction relative to 2018 performance.</p>	<p>The Building Energy Improvement Board (BEIB) may define alternative compliance plans, grant extensions for hardship, or allow alternative compliance payments. Buildings undergoing a deep retrofit are compliant for the next 15 years.</p>
<p>6) Determine compliance penalties</p>	<p>Penalties to be based on the cost of compliance (based on cost/SF); BEPS Task Force recommends penalties should be based on building size and the percentage of goal achieved.</p>	<p>Maximum annual penalty is the difference between a building's annual emissions limit and its actual emissions, multiplied by \$268/ton of CO₂e; variances for financial hardship.</p>	<p>Determined by the BEIB and Building Division. Building Division plans to withhold occupancy and building permits for buildings failing to comply.</p>
<p>7) Identify supportive programs</p>	<p>Omnibus Act provided funding to stand up the DC Green Bank, provided additional funding for Sustainable Energy Utility, and for affordable housing. DOEE supported IMT in standing up a high-performance building hub in 2020 to help owners comply with the law.</p>	<p>Not included in the ordinance, but New York City has had numerous programs in place prior to the BPS.</p>	<p>Not included in the ordinance, but St. Louis is launching a Building Energy Exchange HUB in 2021. The HUB has secured funding for the next 3 years.</p>

Note, as of spring 2021, the City of Boston is developing a BPS and considering compliance every five years with targets calculated for all periods in the initial law, with a final carbon neutral target. Therefore, building owners know the targets in advance. [Click here for the latest on Boston's BPS policy development activities](#), including materials presented to the Technical Advisory Group and a Resident Advisory Group.

APPENDIX D: BPS IMPLEMENTATION EXAMPLES

The table below summarizes how three leading U.S. cities have approached BPS implementation.

	District of Columbia	New York, NY	St. Louis, MO
Implementation Advisory Panel(s)	The BEPS Task Force advises on BEPS rulemakings and implementation. Member representation can be found in the Task Force's recommendations for rulemaking. The CleanEnergy DC plan also had a robust engagement process	To refine the law and inform implementation, a 16-member Climate Advisory Board was appointed in December 2019. The Advisory Board created 8 Climate Working Groups to support rulemaking. A Buildings Technical Working Group supported development of a low-carbon buildings report in 2016	The BPS ordinance authorizes a Building Energy Improvement Board (BEIB) to establish standards by property type, recommend amendments and complementary programs, define alternative compliance paths, and review appeals. The BEIB builds off the Benchmarking Implementation Advisory Group
City staffing	Led by Department of Energy and Environment, supported by many other District agencies	Created a new Office of Energy and Emissions Performance within the Department of Buildings (DOB) to oversee BPS implementation	Building Division's 2021 budget includes funding for an Office of Building Performance
Resource Hub	The Building Innovation Hub connects the local real estate community to help build and operate high-performance buildings, comply with the BPS, and create local jobs	NYC Accelerator provides free one-on-one support to building owners to make upgrades; Building Energy Exchange provides research and workshops for industry professionals	Utility incentives and PACE financing available for commercial and residential. The Missouri Botanical Garden's EarthWays Center has actively supported high-performance building in the city since 1988
Local funding and financing support	CleanEnergy DC Act increased support for the DC Sustainable Energy Utility (\$20M/year), the DC Green Bank (\$70M over 6 years), affordable housing compliance (\$3M/year), and allows utilities to apply to offer incentive programs. DC PACE also provides financing	The NYC Energy Efficiency Corporation is a local green bank, which will also support implementation of NYC's C-PACE program	The USGBC's Missouri-Gateway Chapter to provide education programs

APPENDIX E: LONGER-TERM FUNDING OPPORTUNITIES FOR BPS PROGRAM IMPLEMENTATION

To support BPS program administration and new support programs for building owners, raising new sources of funding may be desirable, or necessary, to complement limited existing funding sources. Municipal finance often involves a wide variety of [funding sources](#), some of which have already been applied to local climate action. Newer funding sources have also emerged in recent years to begin meeting climate funding gaps. The table below summarizes some potential municipal funding sources, organized by type: taxes, fees, debts, and grants.

Funding Type	Funding Source	Examples / Notes
Taxes	Property Taxes (e.g., value creation, tax increment financing, or TIF)	For example, link city-issued TIF to carbon or equity requirements
	Carbon/Utility use	For example, Boulder's CAP tax generates approx. \$1.8 million per year
	Retailer tax	For example, Portland's 1% clean energy surcharge on certain products of large retailers; Denver's climate sales tax
	Salary/Payroll tax	For example, JumpStart Seattle
Fees	Transportation-related (e.g., congestion pricing, parking fees, vehicle efficiency, shared ride fee, etc.)	For example, Congestion pricing in London and NYC, shared ride fee in SF
	Developer Impact fees (including mitigation fees)	Mitigation fees focus on the environment
	Utility Franchise fee	The "rent" a utility pays the city to use right-of-ways
Debts	Traditional Bonds (e.g., General Obligation)	Funds raised through GO bonds can be used for most program types
	Other Bonds (e.g., Green , Social Impact, Opportunity Zones)	A variety of cities have issued green bonds
Grants	Foundations (primarily local and corporate)	Could support local nonprofits helping advance BPS
	State and Federal Government	Check DOE's funding and financing page and relevant state programs