

# Putting Policy in Action: Building Performance Standard Implementation Guide



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## INTRODUCTION

Fighting climate change means taking serious steps to create healthier, more resilient, and more efficient buildings while reducing harmful emissions across communities. Understanding this, leading communities and jurisdictions are adopting building performance standards (BPS) that require performance improvements across a wide swath of buildings.

A BPS can include multiple standards, each targeted to increase performance for a different aspect of a building. These can include energy, gas, and water use, as well as emissions and peak energy demand. These targets become stricter over time, driving continuous, long-term improvement in buildings.

Since 2018, when the first BPS policy was adopted by Washington, DC, IMT has worked closely with policymakers and local stakeholders in leading jurisdictions to develop robust building performance standards that address not just energy use but other community priorities, such as health, affordability, and resilience. From this in-the-field experience, we have produced a suite of model documents containing best practice recommendations for the development of equitable and effective building performance standards. In this guide, IMT recommends strategies, processes, and rules that local and state jurisdictions can use to implement equitable policies. This guide is written to correspond to the requirements of implementing a BPS recommended in IMT's [Model Law for a Building Performance Standard](#),<sup>1</sup> which provides the structural foundation for a BPS law in any jurisdiction. Throughout this guide, you will find many references to corresponding recommendations and sections in the model law.

Readers from jurisdictions with BPS policies that significantly differ from IMT's model law will still find relevant recommendations to consider for implementation of their policies. For example, the section on Building Performance Action Plans

contains information that directly applies to any BPS policy that allows building owners to propose a custom compliance path to accommodate barriers to compliance such as mid-compliance cycle changes to occupancy or structural issues that restrict a building's ability to meet required standards. Similarly, the sections on setting up a high-performance buildings hub to support building owner compliance and on determining appropriate staffing levels for BPS implementation are relevant to any jurisdiction regardless of the structure of their BPS policy.

While this document will be of most immediate use to policymakers that are preparing to implement or are already implementing a BPS policy, readers from governments that are considering or in the process of developing BPS policies can also benefit from the information in this guide. In addition to specific recommendations, the guide presents a broad overview of the many aspects of implementing a BPS and thus is a valuable resource for policy planning as well as developing appropriations requests. The guide also addresses many issues that could be codified in the BPS law itself as opposed to post-adoption regulations or rulemaking, such as determining the levels of performance required by the standard, creating an equitable framework for issuing alternative compliance payments, and treatment of renewable energy.

IMT encourages jurisdictions to adapt these recommendations to local conditions with the counsel of local community and industry stakeholders. As with the model law, IMT considers this a living document to be periodically updated and amended based on the input of expert stakeholders and feedback from governments, community-based organizations, and others with experience implementing BPS policies. Please check [imt.org/bps](http://imt.org/bps) for the most up-to-date version.



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## SECTION I

# Preparing for Building Performance Standard Implementation

# CHAPTER 1

## Administrative Structure

This chapter addresses the administrative departments and advisory bodies needed to implement a building performance standard and includes information on each entity's role and responsibilities, as well as staffing guidance.

### Key terms and acronyms

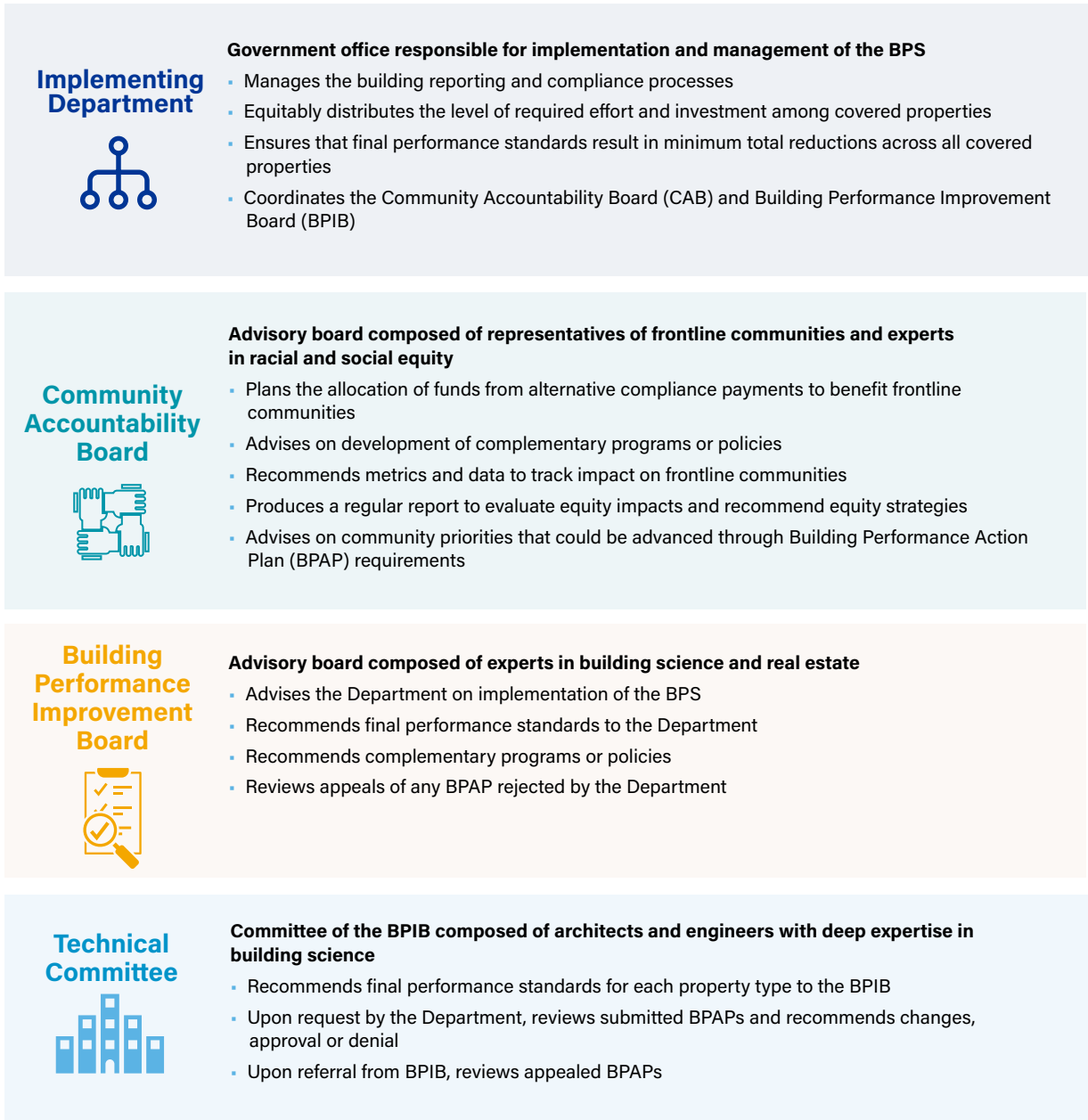
- **Building Performance Action Plan (BPAP):** The alternative compliance option in the IMT model BPS law that allows owners to propose custom compliance plans
- **Building Performance Improvement Board (BPIB):** An advisory body with expertise in real estate and building science that helps the implementing department develop and manage the BPS's rules, procedures, and complementary programs
- **Community Accountability Board:** An advisory body tasked with reviewing the BPS's impact on frontline communities and recommending programs, practices, and rules to reduce historical inequities
- **FTE:** Full-time equivalency in relation to employment status
- **Frontline communities:** Communities that experience the most immediate and worst impacts of climate change and are most often communities of color, Indigenous, and low-income communities
- **High-road contracting:** Procurement standards designed to advance diversity and inclusion among suppliers of products and services in the high-performance building economy
- **Implementing Department:** Shortened to "the Department" throughout this guide, it means the agency or department overseeing administration of the BPS
- **Racial equity impact assessment (REIA):** [Race Forward](#) defines a REIA as a "systematic examination of how different racial and ethnic groups will likely be affected by a proposed action or decision"

A full glossary is available in Appendix A.



Building performance standard (BPS) implementation requires robust support across a jurisdiction. Where do you start? IMT recommends establishing four interrelated entities to address the full scope of roles and responsibilities needed to implement a BPS.

**Figure 1. Administrative Roles for BPS Implementation**



## 1.1 Size and structure of administrative entities

IMT does not have a recommendation for the specific number of people that should comprise each of the entities. This will depend on a number of variables, such as the number of properties covered by the BPS, the rigor of the performance standards, and the [Building Performance Action Plan \(BPAP\)](#) eligibility rules established by the Department. In principle, each entity should have a large enough membership to accommodate anticipated workloads, while accounting for absences due to travel, illness, job-related relocation, etc. Jurisdictions could consider naming alternate members that could serve on an as-needed basis.

As stated in the IMT [model BPS law](#), Technical Committee members may also serve as members of the Community Accountability Board (CAB) or the Building Performance Improvement Board (BPIB). (Later sections explain these two entities in detail.) IMT recommends that Departments configure their advisory groups in whatever fashion makes the most sense according to pre-existing administrative rules and conventions, community and stakeholder feedback, and available resources.

To ensure equitable and inclusive engagement with boards and technical committees, the IMT model BPS directs the jurisdiction to compensate members of all advisory boards associated with the BPS policy for their time and participation. In addition to payment for their time, the jurisdiction should budget funds for providing meals, transportation, and childcare as necessary to enable participation by all board members regardless of economic status.

## 1.2 Implementing department

### RESPONSIBILITIES

The implementing department, referred to as the Department throughout this guide, is the government office responsible for overall administration and implementation of the BPS.

The Department recommends the membership of both the BPIB and CAB, and provides staffing to support these boards and coordinate their activities. In many cases, the Department will also be responsible for implementing a high-performance building hub as well as jurisdiction-created programs providing technical and financial assistance to building owners.

Beyond administrative activities, the Department's responsibilities include:

- Developing, with input from the Technical Committee and the Community Accountability Board, the administrative rules and processes for BPS implementation.
- Setting both interim and final performance standards for the BPS.
- Conducting outreach to inform and educate stakeholders about the BPS, including compliance responsibilities of the owners of covered properties.
- Managing all aspects of compliance including reporting and responding to requests for extensions, adjustments, and technical assistance from building owners and energy service providers.
- Enforcing the law to the extent such authority is granted by the law or applicable laws.
- Coordinating closely with relevant local and state government agencies as needed, including agencies that manage public buildings.
- Acquiring professional analysis whenever needed to support decision-making.

**Figure 2.** Composition of administrative entities



**ESTABLISHING KEY FUNCTIONS OF THE DEPARTMENT**

Implementing a BPS will require staff and resources beyond what most jurisdictions have historically dedicated to implementation of building performance policies such as benchmarking and transparency laws.

The total number of full-time equivalency (FTE) employees implementing a BPS will vary from jurisdiction to jurisdiction. Major variables include the size of the jurisdiction, the number of properties covered by the BPS, and the specific features of the BPS. Generally, the more buildings covered by the BPS, the more FTEs needed to properly implement it.

It is useful to think of staffing needs as a function of specific roles and job descriptions. One person may fulfill multiple roles in smaller jurisdictions with fewer covered properties, but as the number of covered properties increases it will become necessary to split up these roles between different staff members and potentially have more than one staff member fulfilling the same function. The critical roles and functions include the following:

### **Program management**

The Department should designate one person responsible for the overall management of the BPS law. This person will act as the lead authority on implementing the BPS by ensuring conformance with all pertinent regulations, reviewing the work of other staff members, and serving as the point of contact for any higher authorities such as city council or the legislature. This person may also work on the BPS in other capacities or may be a higher authority figure within the Department such as a director or manager.

### **Administration of advisory boards and Technical Committee**

Implementation of the BPS may require close collaboration between Department staff and a number of oversight committees and boards. Supporting structures such as the CAB, the BPIB, and the Technical Committee each will require staff capacity to organize, convene, and potentially chair. One or more Department staff members should be tasked with the responsibility of administering these bodies.

### **Building engineering and BPAP review**

A core goal of a BPS is the improvement of building energy efficiency and overall performance. This will require upgrades to building thermal barriers, lighting, HVAC, and other systems. Therefore, it is highly desirable for the Department to have staff that is familiar with building engineering and building science. In particular, these skills are necessary for the review of exemption requests and BPAP submissions. A Department staff member possessing this expertise can streamline the BPAP review process by reducing the number of submissions that require the review of the Technical Committee.

### **Data management**

Similar to benchmarking and transparency laws, BPS requires the collection of a significant amount of building performance data. The difference is that data plays a far more significant role in a BPS since it determines compliance. Each building's benchmarking report will need to be compared to its specific standard for that compliance year to verify its BPS compliance. Departments will require a significant amount of staff capacity to support the careful collection, review, verification, storage, and disclosure of this data. Staff involved in this role should be familiar with the basics of building science and energy performance, as well as database management, data analytics, and data quality review. Data management is an area that has been under-resourced in many jurisdictions with benchmarking and transparency laws. Jurisdictions should understand that more resources will be needed here than they might anticipate. Requiring third party verification of benchmarking data for key reporting years is also essential, as incorrect or poor quality data has significantly greater consequences for a BPS than a benchmarking policy.

### **Building owner outreach and engagement**

Department staff should oversee building owner outreach and engagement. To assist with this, IMT recommends that the bulk of the outreach to covered property owners should be the responsibility of a high-performance building hub, an organization dedicated to providing covered property owners and other BPS stakeholders with education, technical assistance, and other services in support of the BPS (see [Creating a High-Performance Building Hub](#) for examples of Hub resources and services). In most cases, the Hub should be operated by a third party that is well positioned to offer such support with funding from the jurisdiction or the Department; however, it is possible for the Department to provide Hub services in-house.

At minimum, there may be many hundreds, if not several thousands of owners and managers with properties covered by the BPS. The Department should, at minimum, issue official communications

via mail and, where possible, email, to all owners of covered properties, notifying them that one or more of their properties are covered by the new policy. Where possible, the Department should consider calling owners to brief them on the policy requirements. For general guidance on best practices in issuing an initial compliance notification, see page 17 of the City Energy Project's "[Implementing Building Performance Policies: How Cities Can Apply Legislation for Maximum Impact](#)" at [cityenergyproject.org](http://cityenergyproject.org).<sup>1</sup>

It is notoriously difficult to find correct contact information and even mailing addresses for owners of commercial buildings. Owners' liberal use of LLC structures and P.O. boxes means that it can be very difficult to get an official notification into the right hands. For this reason, the Department must have a strategy for less-formal notification via outreach (mailings, attending meetings, placing notices in newsletters, hosting briefings and meetings, etc.) to the various stakeholders, including, but not limited to, property owners that will be affected by the BPS requirements. A high-performance building hub should play a major role in this work and can even act as a central point for organizing this engagement. Departments and their hub partners should reach out to the following types of stakeholders:

- Property management firms
- Vendors, consultants, design professionals, and contractors
- Relevant professional associations such as the American Institute of Architects; Association of Energy Engineers; ASHRAE chapters; Building Owners and Managers Association; NAIOP, the Commercial Real Estate Development Association; and U.S. Green Building Council chapters.
- Community-based organizations that are well connected to frontline communities

## Tips for Reaching Frontline Communities

In conducting outreach to notify property owners, stakeholders, and the public about the BPS requirements, the Department will likely encounter difficulty reaching members of frontline communities. To address this, the Department should reach out to community-based organizations, starting with those that were involved in the policy's development, and ask for their help in connecting with hard-to-reach property owners or in raising general awareness of the BPS requirements and associated programs.

Jurisdictions should expect to have multiple FTEs working on notification in the initial BPS rollout. This work may be ideal for full-time fellows and seasonal interns, though close oversight from more experienced staff is recommended.

### Compliance enforcement

Enforcing the regulatory requirements involves all activities related to determining and acting on a property's compliance status, including any committee and board review, BPAP review, data checks, and enforcement. Department staff tasked with the program management, administration of boards and committees, building engineering expertise, and data management roles are all involved in compliance enforcement. Together they can either assist owners of properties with unique characteristics in navigating the regulatory review process, confirm data submissions, or enforce any needed consequences for non-compliance.

Please see [Appendix B](#) for staffing examples from jurisdictions with a BPS.

1. The City Energy Project was a \$20 million, multi-year project run by IMT and the Natural Resources Defense Council that partnered with 20 local governments across the U.S. to design locally tailored building energy efficiency policies and programs.

# 1.3

## Community Accountability Board (CAB)

The Community Accountability Board is tasked with reviewing the law's impact on frontline communities<sup>2</sup> and recommending programs, practices, and rules to reduce historical inequities.

### RESPONSIBILITIES

The IMT model law assigns the CAB the following responsibilities.

#### Advise on selection of BPIB members

The law directs the CAB to advise the Mayor or Governor on the selection of members to the Building Performance Improvement Board (BPIB). This promotes equitable representation on the BPIB and gives frontline communities a say in who advises on the technical aspects of implementation, an important role as these decisions will inevitably have equity implications. [See 1.4 Building Performance Improvement Board](#) for more information on this.

#### Help the Department equitably distribute the level of effort and investment among covered properties

The CAB provides valuable insight to the Department regarding the likely impacts on frontline communities and the resources that are needed to avoid exacerbating and begin repairing historical inequities. Specifically, the CAB is responsible for helping the Department:

- Develop the plan for allocating funds collected from alternative compliance payments. The model law states that a certain percentage of the funds collected from building owners' alternative compliance payments shall be used to support performance improvements in covered properties such that they benefit frontline communities. The CAB is responsible for determining how to distribute these funds. The CAB might choose to

### Identifying Representative Community Based Organizations

The Process Guide for City-Community Collaboration, written by Rosa González of Facilitating Power and Minna Toloui of Upright Consulting Services, identifies seven characteristics to look for when seeking community-based organizations that are truly embedded in frontline communities. According to the Process Guide, representative community-based organizations should be:

- **Rooted**, physically, in the community, meaning members of the organization's leadership "live in the same or a similar area, are people of color and/or have experienced similar burdens."
- **Accountable** to resident leaders from the frontline community who help determine the organization's strategic direction.
- **Trusted** by the community members because they have a record of meeting community needs.
- **Connected** with other organizations and networks in coalitions and alliances that allow for access to greater resources and capacities.
- **Collaborative** as indicated by a record of coordinating actions with partners to advance community goals.
- **Rigorous** in conducting its own research, especially participatory action research, or working with research partners to inform its work
- **Transformative** in its vision and committed to enacting community-driven solutions that make its vision a reality.

2. A jurisdiction should define "frontline communities" or a similar term (e.g., frontline communities, environmental justice communities, etc.) in its BPS law based on input collected from engaging such communities.

direct these funds to areas within the jurisdiction that have suffered from historical disinvestment or they may select certain types of buildings, regardless of their location, that serve important functions to frontline communities, such as buildings housing local nonprofit agencies, grocery stores, or houses of worship. See [“Data and Analysis Tools”](#) for examples of tools the CAB could use to develop its funding allocation plan.

- Develop rules for implementing the law, including complementary programs or policies. The most powerful way that jurisdictions can make the regulatory burden more equitable is to provide more technical and financial support to properties with fewer resources. In general, the CAB should have a role in the development of any incentive or financing programs that the jurisdiction either creates or coordinates with partner organizations. [A high-performance building hub](#) is one way a jurisdiction could help resource- and capacity-constrained building owners comply with the standards and realize the benefits of better building performance, while reducing the risk of displacement for low-income residential or commercial tenants.
- Advise on ways that Building Performance Action Plans could advance community priorities and review submitted action plans as requested by the Department. CABs could consider ways of making the BPAP process more accommodating for buildings located in frontline areas or serving frontline communities. For example, eligibility rules could be designed so that they anticipate the needs of owners of affordable housing buildings and make the process of applying for a BPAP easier and faster. Additionally, per the IMT model law, the CAB should recommend that BPAP submissions only be considered if they meet certain conditions designed to advance priorities for frontline communities, such as community health, resilience, or economic justice. See [Section 3.3 of the Building Performance Action Plan chapter](#) for a discussion of a potential mechanism for this.

## Evaluate equity impacts and recommendations for improvement

The CAB is tasked with recommending metrics and data that the Department should track to inform an analysis of the law’s impact on frontline communities. The CAB is responsible for using this information to develop recommended strategies for addressing inequities in the law’s implementation and outcomes. The CAB will publish its analysis and recommendations in a public report at a suggested interval of every three years. The CAB may consider tracking metrics including but not limited to:

- Compliance rates for buildings that serve frontline communities
- Number of BPAPs approved for buildings serving frontline communities relative to the total number of approved BPAPs
- Proportion of incentive dollars flowing to buildings serving frontline communities relative to the total amount distributed
- Amount of alternative compliance payments collected from building owners and how these were distributed among property types and locations
- For workforce development programs, the number of recruits, number of graduates, and number of placements from frontline communities relative to the totals for each entity

### Below are links to equity impact reports that the CAB could refer to as examples:

[Los Angeles Building Decarbonization: Tenant Impact and Recommendations](#) by Strategic Action for a Just Economy, December 2021

[Fighting Redlining & Climate Change with Transformative Climate Communities: Case Study - East Oakland](#) by The Greenlining Institute, November 2021

[Oakland 2030 Equitable Climate Action Plan](#) by the City of Oakland, CA, July 2020

[Monterey County: From Disenfranchisement to Voice, Power, and Participation](#) by Race Forward, 2019

[Environmental Justice Task Force Recommendations for Prioritizing EJ in Washington State Government](#) by the Environmental Justice Task Force of the Governor’s Interagency Council on Health Disparities, Fall 2020.

## Host the Community Accountability Meeting

The IMT model law requires the CAB, in partnership with the Building Performance Improvement Board and the Department, to host a public Community Accountability Meeting on a regular basis (suggested as annual in the model law) to gather input from members of frontline communities regarding the effects of the design and implementation of the BPS. This meeting introduces a measure of accountability to the CAB itself. It can also be an important way for the CAB, BPIB, and the Department to stay informed and collect ideas for adjusting the law's implementation and complementary programs to mitigate burdens and maximize positive effects on frontline communities. The CAB may wish to undertake a racial equity impact assessment (REIA), defined by Race Forward as a "systematic examination of how different racial and ethnic groups will likely be affected by a proposed action or decision. REIAs are used to minimize unanticipated adverse consequences in a variety of contexts, including the analysis of proposed policies, institutional practices, programs, plans and budgetary decisions."<sup>3</sup>

## ESTABLISHING THE COMMUNITY ACCOUNTABILITY BOARD

The CAB plays an important advisory role in many aspects of implementation, including selection of members of the Building Performance Improvement Board and the Technical Committee. Accordingly, the jurisdiction should establish the CAB and appoint its members as soon as possible after adoption of the BPS. The IMT model law calls for the Mayor or Governor to select local representatives of frontline communities and local experts in racial equity to serve on the CAB. In developing a list of candidates for the Mayor or Governor's consideration, IMT recommends that the Department work with community-based organizations that it consulted during the policy development process. Most CAB members should be:

- Community representatives with expertise in environmental justice and relevant lived experience

- Community-based organizations working in frontline communities
- Representatives of local businesses located in or serving frontline communities

One of the first things the CAB should do is articulate its vision of equitable implementation of the BPS. For example, an equitable BPS implementation program may feature rules and supporting programs to accomplish goals such as:

- Avoid contributing to the displacement of commercial or residential tenants in historically frontline communities.
- Provide additional financial and technical support to buildings that serve important functions in frontline communities such as local shelters, nonprofit agencies and houses of worship.
- Reduce economic burdens on covered properties in need of financial assistance, that serve members of frontline communities.
- Increase the share of contracts and jobs resulting from the BPS that go to members of frontline communities.
- Advance community priorities related to the built environment such as energy burden, indoor air quality, and resilience.

### Examples of Organizations on Which the CAB is Modeled

**Solid Ground Community Accountability Council (CAC).** A Seattle-based community organization, Solid Ground offers programs and services to low-income households in Seattle and across Washington state. Its Community Accountability Council is made up of community members whose input helps Solid Ground understand and incorporate the lived experience of people that use their policies and programs.

**Washington Health Equity Environmental Justice Task Force.** The task force was responsible for recommending how the Washington state agencies should incorporate environmental justice principles into their work.

3. Race Forward. "Racial Equity Impact Assessment" Fact Sheet. [https://www.raceforward.org/sites/default/files/RacialJusticeImpactAssessment\\_v5.pdf](https://www.raceforward.org/sites/default/files/RacialJusticeImpactAssessment_v5.pdf)



After creating a vision of equitable BPS outcomes, the CAB should determine what interventions are needed to achieve them. Ideas include:

- funding programs
- turnkey technical assistance programs
- financing programs
- workforce programs and promotion of high-road contracting
- interventions at the public utility commission or legislature levels

Finally, the CAB should issue recommendations for how the jurisdiction should deploy these interventions for maximum impact.

### DATA AND ANALYSIS TOOLS

To do its work effectively, the CAB will need to consult a mixture of quantitative and qualitative data and assessment tools. The following tools may help CABs.

Tool	Description
<p><b>Greenlink Equity Map</b></p>	<p>The <a href="#">Greenlink Equity Map</a> (GEM) tool allows users to see, down to the neighborhood level, how an area performs in terms of up to 30 equity indicators related to demographics, energy, housing, health, transportation, technology, and more. The CAB could use the GEM tool or a similar approach to inform its recommendations on how to distribute incentives and assistance to provide the greatest equity benefits.</p>
<p><b>National Equity Atlas &amp; Racial Equity Data Lab</b></p>	<p>The <a href="#">National Equity Atlas</a> provides equity metrics for the largest 100 cities, 150 regions, all 50 states, and the U.S. as a whole. The Atlas also offers a <a href="#">Racial Equity Data Lab</a> designed to help users build custom dashboards, data displays, and maps.</p>
<p><b>EPA federal and state environmental justice mapping tools</b></p>	<p>The U.S. Environmental Protection Agency’s (EPA) <a href="#">EJScreen Environmental Justice Screening and Mapping Tool</a> allows the user to combine environmental and demographic datasets to analyze environmental justice indicators across the U.S.</p> <p>EPA also keeps a <a href="#">list</a> of state-level environmental justice mapping tools with links to tools offered by California, Colorado, Maryland, North Carolina, and Washington.</p>
<p><b>Community Indicators Consortium data list</b></p>	<p>The Community Indicators Consortium, an organization that supports communities’ efforts to use community data to make equitable and sustainable improvements to their quality of life, keeps a <a href="#">central list</a> of sources of socio-economic, environmental, health, and demographic data.</p>
<p><b>Participatory Action Research Tools</b></p>	<p><a href="#">Partners for Collaborative Change</a>, a social justice organization, offers resources and curricula on how to conduct participatory action research using its Coliberate model and will soon offer curriculum developed specifically for community-driven climate resilience planning.</p> <p>The <a href="#">Portland Zero Cities Project Report</a> by Verde, a Portland-based community organization, documents how Verde used a Participatory Action Research model to work with Portland’s BIPOC communities to develop an equitable strategy to achieve a zero net carbon building sector by 2050.</p>
<p><b>Seattle Racial and Social Equity Index Map</b></p>	<p>The City of Seattle’s Office of Planning and Community Development created a <a href="#">Racial and Social Equity Index map</a> to help the City prioritize programs and investments. The Seattle Office of Sustainability and Environment uses this map to monitor equity implications in the compliance rates for its benchmarking and tune-up laws and to prioritize outreach and support efforts.</p>

## 1.4 Building Performance Improvement Board (BPIB)

### RESPONSIBILITIES

Like the CAB, the BPIB serves in a general advisory role to help the Department confidently develop and manage the BPS rules, procedures, and complementary programs. The BPIB serves as a resource to the Department including on issues involving building science and real estate expertise. The BPIB is especially useful for addressing sectors that may demand specialized expertise in building ownership, management, and operations, such as affordable housing, labs, universities, and hospitals. Many jurisdictions implementing BPS laws will already have regulations and established procedures for how to work with advisory bodies such as the BPIB, and in most cases, the Department should adapt the BPIB and its functions accordingly.

### ESTABLISHING A BPIB

Per the IMT model law, the Mayor, Governor, or Executive of the jurisdiction, in consultation with the [Community Accountability Board \(CAB\)](#), appoints people to serve on the BPIB. In practice, the Department will likely work with the CAB to develop a list of candidates for the Mayor's consideration. Good candidates for many of the membership slots may have emerged during the community and stakeholder engagement phases of policy development.

The IMT model law suggests groups, professions, and interests that should be represented on the BPIB. However, IMT encourages each jurisdiction to tailor the list in consultation with local stakeholders. In general, the BPIB is intended to reflect the perspectives of experts in affordable housing,

building ownership and operations, commercial real estate, energy services, green building, utilities, climate and racial equity/environmental justice. To ensure that the BPIB brings a truly local perspective, the model law includes language that jurisdictions can customize to specify how many BPIB members must also be residents of the jurisdiction.

## 1.5 Technical Committee

The Technical Committee acts as a resource to the BPIB and the Department on highly technical questions and issues. Like the BPIB, the Technical Committee's members are technical experts, but may have a more specialized and specific background in building science (versus expertise in real estate operations and management).

### RESPONSIBILITIES

While the Technical Committee may be consulted on any number of technical questions that arise in the implementation of the law, it has two primary functions: help the Department determine the performance standards for each covered property type and help the Department and BPIB review BPAP submissions and appeals.

### Setting performance standards

Per the IMT model BPS law, the Technical Committee is responsible for recommending the final performance standards for each covered property type to the BPIB, who makes the final recommendations to the Department to adopt. Note that in some jurisdictions the relevant legislative body will have to vote to approve the recommended performance standards, or the Department will need to promulgate the standards in rulemaking.

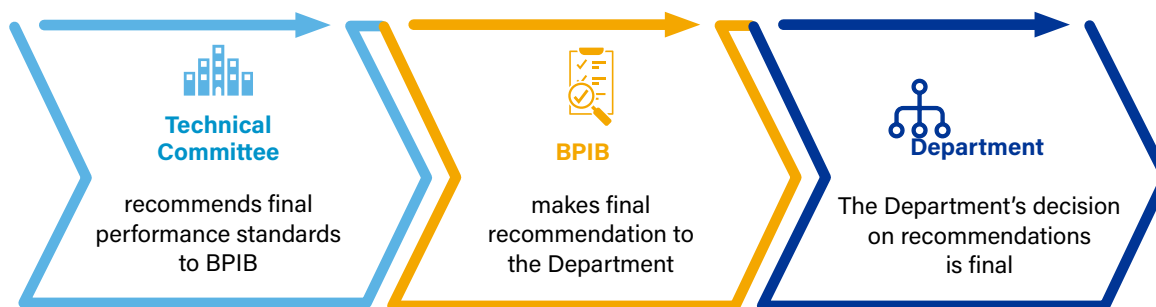
The reader should note that the IMT model law assumes that the jurisdiction has a formal process for establishing regulations or rules to clarify policy details not addressed in the law and that setting the actual performance standards could be accomplished during this process. In jurisdictions where this is the case, the Technical Committee can play a large role in helping the Department come up with rigorous performance standards. Some jurisdictions do not have such a rulemaking process and must establish all aspects of their BPS policies in the law itself. In this case, the performance standards would be determined before the formation of the Technical Committee, usually with the help of a paid consultant.

most cases, the Technical Committee would review a BPAP submission only on appeal. This will reduce the workload and focus the Committee’s expertise on the most challenging cases.

### ESTABLISHING THE TECHNICAL COMMITTEE

The Technical Committee’s membership should be composed of engineers and architects with deep expertise in building science. The collective expertise of the Technical Committee’s membership should cover all performance metrics included in the BPS.

**Figure 3.** Process of setting final performance standards



### Reviewing BPAP submissions and appeals

Once performance standards have been assigned to all covered property types, the Technical Committee’s primary responsibility is to judge the technical merits of property owners’ BPAP submissions on referral from the Department and the BPIB. Because Technical Committee membership is a part-time commitment, there will be limited time available for in-depth reviews of BPAP submissions. The Department should work with the Technical Committee to develop a BPAP submission form and a decision-making protocol to make the process of reviewing and judging BPAP submissions as efficient as possible. Furthermore, to the extent that the Technical Committee, the BPIB, and the Department can create rules of thumb that allow the Department to render a quick decision on a BPAP submission, the fewer BPAP submissions will need to go to the Committee for review. Ideally, in

For example, a jurisdiction whose BPS includes performance standards for site energy use intensity and water use, should have energy and water efficiency experts in its Technical Committee.

Technical Committee members should have extensive experience working with building owners to improve their properties’ environmental performance, including energy efficiency projects, electrification of space and water heating, water conservation projects, etc. In general, committee members should have expertise in at least the following areas of building performance: building envelope, HVAC, lighting, building operations (commissioning and retrocommissioning/retuning), and controls. If district energy systems (DES) are present in the jurisdiction, it is important that at least one member of the Technical Committee has professional expertise with DES systems (and does not work for the system operator).

A large part of the Committee's work will be to determine what performance improvements are or are not warranted for a building to pursue from a technical and an economic perspective. Thus, the ideal member would have experience on projects that go beyond business-as-usual practices to achieve significantly greater improvements in a building's performance. Such a member would be better prepared to determine when an owner's request for a BPAP merits the additional compliance flexibility.

If there are gaps in the Technical Committee's expertise, the Department should be prepared to bring in consultants with the required expertise on an as-needed basis. For example, the Technical Committee may be expected to have deep knowledge of building lighting and HVAC, but they may not be expected to be experts in refrigeration. If a refrigerated warehouse submits a BPAP, then the Technical Committee may bring in a refrigeration consultant, if necessary, to properly judge the warehouse's submission.



## CHAPTER 2

# Setting Performance Standards

This chapter explores the various performance metrics that may be considered within a building performance standard, and provides guidance on setting final and interim standards.

### Key terms and acronyms

- **CB ECS:** The Commercial Buildings Energy Consumption Survey
- **Coincident Peak Electric Demand:** A property's electric demand when total electrical demand on all sources on the electric utility is at its highest point for the year
- **ENERGY STAR Portfolio Manager (ESPM):** A web-based benchmarking tool developed by the United States Environmental Protection Agency that allows building owners to track and assess the energy and water consumption of their buildings. ESPM rates the performance of a building in relation to similar buildings and accounts for the impacts of year-to-year weather variations, building size, location, and several operating characteristics
- **Energy Use Intensity (EUI):** The annual amount of energy a building uses per square foot. EUI can be calculated as Source EUI (the amount of raw fuel, including energy lost during generation, transmission, and distribution, used by a building per square foot) or Site EUI (the annual amount of all the energy used at the building site, not counting energy lost during generation, transmission, or distribution, per square foot)
- **kBtu:** One thousand British Thermal Units (BTU), a common unit of energy measurement used to convert and combine energy measurements such as kilowatt hours (kWh) of electricity, therms of natural gas, and pounds of steam
- **Normalization:** The process of adjusting a performance metric to normal or average conditions.
- **Onsite and District Thermal Greenhouse Gas Emissions:** A performance metric measuring the emissions from energy a building uses on site or from a district energy system
- **Renewable Portfolio Standard (RPS):** A policy that requires a specific percentage of the electricity utilities sell to come from renewable resources
- **Trajectory Approach:** A method of setting covered properties' individual interim performance standards by drawing a straight line from each property's baseline performance to a final performance standard common to its property type
- **Water use intensity:** The amount of water a building uses adjusted for the square footage of the building and its landscaping

## 2.1 Performance metrics

Performance metrics are the heart of BPS. For BPS to function well, the process of calculating each building's performance metrics must be fair, clear, rigorous, repeatable, and objective. The stakes are high, because BPS are critical to achieving jurisdictions' goals and commitments, and because failure to comply can have significant consequences for building owners.

IMT recommends that in making decisions related to performance metrics, jurisdictions consult with stakeholders, especially owners of covered properties and representatives of frontline communities. Representatives of frontline communities should be thoroughly briefed and deferred to on matters with significant equity implications, like whether affordable housing should be its own property type or included in a single multifamily building property type.

In consultation with stakeholders, jurisdictions should evaluate each performance metric to determine how it would best be applied to the jurisdictions' building stocks. This evaluation may indicate that buildings should be grouped into different property types for different performance metrics. For instance, this evaluation may conclude that all multifamily buildings should be grouped together for other performance metrics, but affordable housing should be a separate property type for water usage because greater occupant density impacts water usage per square foot.

It may be in the public interest not to apply some performance metrics to certain property types because it is impractical to do so or because the

societal benefit of doing so is outweighed by the societal cost. For instance, an evaluation of benchmarking data from a jurisdiction's stock of unrefrigerated warehouses may indicate that they all consume minimal levels of water and so the water metric should not be applied to them.<sup>4</sup>

### CONSIDERATIONS

#### Normalization

Normalization is the process of adjusting a performance metric to normal or average conditions. For instance, weather normalization can be used to adjust buildings' performance metrics to reduce or eliminate the impact of unusual weather, for example an exceptionally hot or cold year. For fairness and practicality, IMT strongly recommends weather normalizing site EUI and onsite and district thermal greenhouse gas (GHG) emissions so that large numbers of buildings will not fall out of compliance due to a year with unusually hot or cold weather.<sup>5</sup>

The other types of normalization are for building size, property type, and operating characteristics. With the exception of indoor air quality, IMT recommends that every performance metric be normalized for building size and property type. (The word "intensity" in "site energy use intensity" connotes that the metric is normalized for building size.)

The most relevant operating characteristics vary by property type and performance metric. Examples of frequently important operating characteristics include operating hours, occupant density, and number of bedrooms. Below is advice regarding normalizing EUI for operating characteristics; IMT plans to develop similar guidance for normalizing onsite GHG emissions.

4. In such cases, the jurisdiction should determine whether there are mixed-use buildings that include building types excluded from particular metrics and which are served by shared building systems or shared utility meters. If so, then the jurisdiction will need to set final performance standards for the excluded building type or develop an alternative strategy for use in setting performance standards in these mixed-use buildings. Care should be taken to avoid creating loopholes that can be exploited by converting a small portion of a building to an excluded building type.

5. ESPM does not normalize GHG emissions, but it does weather normalize electricity and fuel consumption. Jurisdictions can use other software to automatically calculate normalized GHG emissions by multiplying such consumption by GHG coefficients. (ESPM also weather normalizes site and source EUI.)

EPA has created excellent BPS Metrics recommendations.<sup>6</sup> For every performance metric, jurisdictions should follow the process EPA lays out for site EUI to determine whether it is appropriate to account for one or more operating characteristics when setting each building's performance standards.<sup>7</sup> The EPA's appeals and binning approaches in EPA's recommendations are options for all building types but the binning approach may need to rely on operating characteristic inputs not found in ESPM. Contact IMT at [bps@imt.org](mailto:bps@imt.org) if you would like help in developing a plan for normalizing other BPS performance metrics for operating characteristics.

### **Leveraging ENERGY STAR Portfolio Manager (ESPM)**

For many compelling reasons, including harmonization among different jurisdictions' BPS and making it easier for building owners to comply, IMT strongly recommends that the popular ENERGY STAR Portfolio Manager (ESPM) be used as the platform for building owners to calculate and report their EUI, water use, and onsite and district GHG emissions.

For harmonization with ESPM and ease of implementation and compliance, jurisdictions' regulations should incorporate by reference EPA's ESPM rules, including the ESPM definition of gross floor area. Many individuals are familiar with ESPM and this definition, but others will confuse it with widely used terms in commercial real estate such as "rentable floor area," which for some buildings can differ from gross floor area by more than 20%. Jurisdictions should point building owners to ENERGY STAR guidance for all aspects of using ESPM, including calculating gross floor area and defining property types. The few instances where IMT recommends adjustments to ESPM inputs and outputs are discussed in the sections below.

Jurisdictions' regulations should also incorporate by reference EPA's ESPM property type definitions. These ESPM definitions should be used for as many performance metrics as practical, including EUI,

water, and GHG emissions. Many jurisdictions would be well advised to adopt these definitions without amendment. In consultation with building owners, representatives of frontline communities, and other stakeholders, some jurisdictions will determine that for reasons of fairness, equity, and/or practicality, that adjustment to ESPM definitions may be merited for certain performance metrics. Jurisdictions should seek to minimize such adjustments to maintain harmonization with ESPM.

## **METRICS**

### **Normalized Site EUI**

Normalized Site EUI has been the performance metric most frequently included in recently adopted BPS laws. It requires buildings to improve their efficiency. Because it does not apply a site-to-source multiplier to electricity usage, site EUI gives a boost to beneficial electrification.

ESPM normalizes all buildings' EUIs for weather and, of course, all EUIs are normalized for gross floor area.

### ***Normalizing EUI for Operating Characteristics***

In deciding whether and how to normalize EUI for operating characteristics, IMT recommends following "[EPA Recommended Metrics and Normalization Methods for Use in State and Local Building Performance Standards](#)."

Determining if and how to normalize site EUI to account for operating characteristics is a complex decision. For each building type, it is important to weigh the value of normalization against the added complexity that it entails. In many cases, normalization for operating characteristics may not be necessary, and therefore doesn't warrant the added complexity. This will be the case for building types whose operating characteristics don't vary widely and/or don't significantly impact the energy use of the building. An example might be police or fire stations. These buildings typically operate 24 hours a day, 7 days a week, making operating hours irrelevant in assessing energy use.

6. "[EPA Recommended Metrics and Normalization Methods for Use in State and Local Building Performance Standards](#)" (2022) only addresses normalizing site EUIs, but some of the approaches it outlines can also be used for other performance metrics.

7. *ibid*

Following EPA's recommendations in consultation with stakeholders, most jurisdictions will conclude that some property types' EUIs do not need to be normalized for operating characteristics and other types should be normalized using some combination of EPA's binning approach and/or [EPA's ENERGY STAR Score Method](#). The latter method entails selecting a target ENERGY STAR score for the final performance standard for each property type, which is translated by the goal-setting feature in Portfolio Manager into a bespoke site EUI target for each building based on that building's operating characteristics. Regardless of what normalization approach is used to set final performance standards, each building's interim performance standards should be set using the trajectory approach as described in the [standard setting section below](#).

### ***Adjusting EUI to Encourage Shifting Electric Loads to Off-Peak Periods***

Section 4.1.1 of the [IMT model BPS law](#) reads, "In order to encourage building operators to shift their electric load so as to reduce GREENHOUSE GAS EMISSIONS from the grid, the DEPARTMENT shall promulgate rules modifying the conversion of certain electricity to BTU for the purpose of calculating SITE ENERGY USE." See Appendix D for a discussion of how to approach such adjustments.

### ***Renewable energy***

To reduce global greenhouse gas emissions at the rate that the [Intergovernmental Panel on Climate Change \(IPCC\) Sixth Assessment Report](#) says is needed to keep global temperature rise under two degrees Celsius, and for jurisdictions to meet their ambitious climate commitments, bold action will need to be taken simultaneously on every front, including energy efficiency, renewable energy, electrification, and demand management.

BPS are the most powerful tool for driving energy efficiency, electrification, and demand management at the building level. Renewable portfolio standards (RPS) are a proven policy tool for driving renewable energy. BPS should be designed and implemented such that there is no option for buildings to use

renewable energy procurement as an alternative for bold action on energy efficiency, electrification, and demand management.

Under ESPM rules, site EUI is not impacted by onsite or offsite renewable energy. This approach insures that the BPS will incentivize owners to improve actual building performance, which is critical to achieving climate commitments and will often in turn create local jobs. The easiest and usually best option for jurisdictions is to stay aligned with ESPM by using ESPM site EUIs in their BPS and using means other than BPS to incent renewables (e.g. RPS with local carve outs, subsidies, and utility tariff design).

Alternatively, instead of aligning with ESPM, jurisdictions could adjust site EUI for renewable energy generation. One way to do this is to use "net site EUI" as the EUI metric; this entails jurisdictions calculating "net site EUI" outside of ESPM by taking each building's weather normalized site EUI from ESPM and then subtracting the building's onsite generation, which should also be retrieved from ESPM. This approach has the benefit of not rewarding building owners who neglect to input their onsite generation into ESPM, which is a very common mistake. For several reasons laid out in its statement, EPA strongly recommends that jurisdictions align with ESPM rather than using "net site EUI.

### ***IMT recommends against adjusting performance metrics for offsite renewables***

IMT recommends against adjusting performance metrics for offsite renewables for the following reasons<sup>8</sup>.

1. Doing so adds complexity and uncertainty for both the implementing jurisdiction and building owner
2. Doing so may result in owners simply procuring offsite renewables and neglecting opportunities to improve their buildings
3. Energy efficiency can alleviate grid constraints and lower overall energy costs; neglecting efficiency may threaten broader policy goals like electrification

8. IMT also strongly recommends against treating "renewable gas" differently than other gas for most of the same reasons.



4. Offsite renewables are less likely to create jobs in the jurisdiction, especially if they are generated far away, and can create a flow of capital out of the community
5. Offsite renewables do not improve the comfort, indoor environmental quality, or building safety for occupants
6. Offsite renewables do not reduce energy bills for energy-burdened tenants
7. Offsite renewables do not improve property values
8. Building owners and occupants rightly prefer to be held accountable for what they can control, and they cannot control the rules, availability, and prices of offsite renewables
9. The Greenhouse Gas Protocol requires governments to report location-based emissions, which are unaffected by renewable energy purchased from beyond each jurisdiction's borders
10. RPS, utility rate design, and other utility regulations are more effective means of driving construction of offsite renewables; localities may be more effective by working directly with utilities and regulators
11. Doing so can cause localities to face potential legal concerns regarding state preemption; for example, building owners are threatening to sue over the NYC BPS's REC provisions
12. As the grid decarbonizes, it will be increasingly important to focus on the time of energy use and generation.<sup>9</sup> It is very difficult to design 24/7 renewable regulations and IMT knows of no jurisdiction that has adopted such policies. Adopting long-term renewable regulations that are not 24/7 would lock a jurisdiction on the wrong path to achieve ambitious climate commitments.

For a more robust discussion of these considerations, see [“Energy Efficiency in Buildings: The Key to Effective and Equitable Clean Energy Action for Cities.”](#)

### **Adjusting for offsite renewables**

If a jurisdiction must adjust for offsite renewables, IMT recommends the following actions:

- Ensure that onsite improvements to buildings will not be crowded out by offsite renewables. Options for doing so include:
  - Limit buildings' ability to adjust performance metrics (e.g. to no more than 10% of the building's total electricity usage)
  - Limit the supply of offsite renewables (e.g. to nearby locations)
- Permit only 24/7 renewables (a broad international group of more than 40 energy suppliers, buyers and governments launched the [24/7 Carbon-Free Energy Compact](#), “a set of principles and actions that stakeholders across the energy ecosystem can commit to in order to drive systemic change”)
- Permit only long-term PPAs. Numerous studies have raised concerns about the extent to which RECs and short-term PPAs prompt offsite renewable construction

### **Onsite and district thermal GHG emissions**

The onsite and district thermal GHG emissions metric (or “onsite and district emissions metric”) is intended to reduce and ultimately eliminate fossil fuel use in buildings and district energy systems. It does not include GHG from the generation of electricity purchased off site. It complements an EUI metric by sending a stronger and unambiguous message to move away from local fossil fuel use. Using an onsite emissions metric without safeguards against significant inefficient electrification (like installing electric resistance heat) will frequently result in increased energy burden on residential tenants and so should be avoided. One safeguard against inefficient electrification is building into the BPS

9. The [California Independent System Operator \(CAISO\)](#) is already curtailing solar at times when generation exceeds electricity usage.

a second performance metric like site energy use intensity to incent efficiency. See [IMT's BPS Housing Affordability policy brief](#) for further discussion of the effects that inefficient electrification would have for residential energy burden.

The IMT model BPS law reads, "In calculating GREENHOUSE GAS EMISSIONS, the DEPARTMENT shall include leakage and other emissions resulting from extraction, processing and distribution of fuels to the extent practical." Significant GHG emissions result from the extraction, processing and distribution ("upstream emissions") of fossil fuels including gas, fuel oil, and propane. The largest component of these emissions is the release of un-combusted gas into the atmosphere. The main component of "natural" gas is methane, which has a global warming potential 30 times higher than carbon dioxide (CO<sub>2</sub>) over 100 years and 83 times higher over 20 years.<sup>10</sup> Failure to account for upstream emissions would significantly undercount the global warming impact of fuel consumption.

Jurisdictions should strongly consider factoring in upstream GHG emissions by weighing the benefits and costs. Accounting for upstream GHG emissions will add some complexity and require calculations outside of ESPM, but more accurately reflect buildings' true climate impact and better align the signal BPS laws send to building owner with climate realities. The carbon dioxide equivalent (CO<sub>2</sub>e, the metric for measuring greenhouse gas) from upstream emissions can be added to the CO<sub>2</sub>e from all other sources to calculate each building's total onsite and district emissions. Ideally, jurisdictions will incorporate estimates to account for all upstream emissions. Jurisdictions should multiply estimated gas leakage by Global Warming Potential to convert it into CO<sub>2</sub>e. Jurisdictions can calculate buildings' onsite emissions by capturing the buildings' weather normalized fuel

use from ESPM and multiplying it by factors that account for both combustion emissions and upstream emissions to convert it to total onsite emissions as measured in CO<sub>2</sub>e. For buildings served by a district energy system, the jurisdiction should also add the emissions resulting from buildings' share of the system's fuel use applying the same combustion and the same or similar upstream emissions factors. (Most buildings' only source of onsite emissions will be their consumption of gas or fuel oil.)

Jurisdictions will have to perform the above calculations outside of ESPM (for example in a spreadsheet) because ESPM does not account for upstream emissions or district energy in their calculation of "direct emissions."<sup>11</sup> Jurisdictions without district energy systems and whose BPS ignore any offsite factors<sup>12</sup> in calculating onsite emissions may choose to use ESPM's calculation of "direct emissions" in place of "onsite and district emissions"; doing so will 1) reduce the work of BPS implementation, and 2) better harmonize with ESPM.

If a jurisdiction has reliable gas leakage estimates for its gas utilities, then those estimates should be used to estimate leakage attributable to each therm of consumed gas. Where such estimates are not available, the [Gas Index](#) is one potential source for regional gas leakage data. It estimates leakage from gas production, transmission, distribution, gas meters, and buildings for 71 cities across the U.S. Jurisdictions should update gas leakage rate estimates as new reliable data becomes available.<sup>13</sup> Doing so will incent gas utilities to measure and reduce their leakage rates. Jurisdictions should recognize that utility gas leakage is outside of building owner control, and so should consult with owners, and consider giving owners one or more years of notice before updating leakage rates.

10. The [Intergovernmental Panel on Climate Change \(IPCC\) Sixth Assessment Report](#), 2022.

11. EPA's [Building Emissions Calculator](#) can be used to calculate district thermal emissions and will accept custom emissions factors, including factors that account for upstream emissions, but cannot be used to account for upstream emissions for fuels consumed within buildings.

12. This is one of many arguments against designing BPS to account for offsite factors like green power purchases.

13. IMT recommends using local or regional leakage estimates, especially for natural gas. But, due to lack of such data or for other reasons, some jurisdictions will choose to use national upstream emissions estimates. Nationally on average, 2.86 lb of CO<sub>2</sub>e in upstream emissions are attributed to each therm of gas consumed in buildings and 4.34 lb of CO<sub>2</sub>e in upstream emissions are attributed to each gallon of number 2 fuel oil consumed in buildings. These estimates are both based on IPCC AR6 global warming potentials applied to fugitive emissions and other upstream emissions as derived from Table ES-1 of [Life Cycle Analysis of Natural Gas Extraction and Power Generation](#), April 19, 2019, DOE/NETL-2019/2039.

Some jurisdictions may have existing utility policies that allow users to purchase biogas, also known as “renewable natural gas (RNG).” When purchased through the natural gas grid, this RNG is conceptually similar to “green power” or REC purchases. IMT strongly recommends against designing BPS to treat such RNG differently than other gas. Doing so poses many of the same risks as does treating offsite renewable electricity differently from mother electricity (see below). As far as IMT knows, in every jurisdiction that has studied RNG, the total potential recoverable RNG in the region is a tiny fraction of the gas currently being consumed. Thus, this RNG should be reserved for its highest and best use: manufacturing, high temperature applications, and other processes for which it is more difficult than in buildings to substitute alternatives to gas. Lastly, ESPM does not allow reporting of RNG use, which adds to the burden that special treatment of RNG would place on jurisdictions and building owners.

In some jurisdictions, for some or all their building types, there may be a fair and effective alternative means to drive electrification of buildings. Rather than applying an onsite and district GHG emissions metric, a simpler alternative could be to establish mandatory phase out schedules for fossil fuel consuming equipment. See [EPA recommendations](#) for additional discussion. Note that before pursuing this option, lawyers should evaluate the jurisdiction’s legal authority employ this option.

### Water use

Depending on their current and projected vulnerability to droughts and on their water and wastewater systems, water usage is very important to some jurisdictions and less so to others. Similarly, utility water usage always consumes energy and indirectly generates GHG emissions, but these impacts vary greatly among water and wastewater systems. Therefore, not every jurisdiction will or should choose to include a water metric in its BPS.

The IMT model BPS law defines “water use” as “the total gallons of water used annually inside or outside of buildings by a COVERED PROPERTY.” [IMT recommends setting a single metric for the total water used both indoors and outdoors](#) because few buildings meter outdoor water use separately and requiring buildings to meter separately would entail significant cost that often could not be justified by the benefits.

IMT recommends that jurisdictions consider defining “water” as “fresh water” to exclude reclaimed water as a way to encourage water reclamation, which conserves fresh water and produces environmental benefits.<sup>14</sup> The distinction between “water” and “fresh water” will have no impact on most buildings today as water reclamation is currently rare, but in the future it may become commonplace in some jurisdictions with the provision of dedicated infrastructure to deliver reclaimed water to buildings. Constructing or repurposing such infrastructure would create a significant number of green jobs for local trades including pipefitters.<sup>15</sup>

### Coincident peak and local peak electric demand

The coincident peak electric demand and coincident peak local electric demand metrics are designed to motivate owners to manage the electric demand of their buildings in a way that helps maintain electric grid reliability (i.e., “demand management”). Managing electric demand on the building side is far less expensive than relying exclusively on costly investments in generation, transmission, and distribution. The savings that result from buildings managing their demand will ultimately flow to all electric ratepayers in the form of lower electric prices.

Building owners, occupants, and developers have many tools to reduce buildings’ peak electric demand, including efficient HVAC equipment, adjusting thermostat set points, reducing or shifting

14. Note that doing this has the potential to misalign BPS with ESPM, which treats all water the same including riparian water, irrigation wells, and non-potable municipally-treated water.

15. See also [High-Road Contracting Toolkit](#) by Emerald Cities Collaborative and the Building Innovation Hub for guidance regarding procurement and workforce training to help frontline communities receive a fair share of newly created contracts and jobs.

lighting and other electric loads, onsite electricity generation and thermal energy and battery storage.

The coincident peak electric demand, and coincident peak local electric demand metrics, motivate owners to minimize their building demand at the times when the utility system is peaking, and minimize coincident peak load on the local electric distribution infrastructure including the substation serving the building.

“Coincident peak demand” differs from the more familiar “peak electric demand” which owners see on their utility bills. Peak electric demand is the highest summer or winter demand for electricity from an individual building. Many utilities use this to calculate demand charges assessed on commercial customers.

In contrast, coincident peak demand focuses on the times when the electrical grid is under the greatest strain and reduced demand from buildings would provide the greatest value. For example, if total demand on the grid peaked for the year at 5:00 pm on August 3, then each building’s coincident peak demand for the year would be that building’s demand at that same time. Coincident peak electric demand signals to owners when they should reduce their demand to help prevent brownouts or blackouts.

In order for a coincident peak demand metric to realize its grid reliability benefits, electric utilities must install smart meters. Utilities must also capture and publish interval demand data, including the time intervals when demand on the utilities’ grid peaked both at the utility level and at the substation level. In some cases, it may be appropriate to use data from the independent system operator rather than the electric utility to find the highest point of demand for the covered year. This data should be stored and accessible for ten or more years for future reference to inform future decisions that benefit grid reliability.

Utilities must also put in place user-friendly demand response infrastructure to provide a warning to building owners and operators when coincident peak demand is expected, so that they can shift building energy use to minimize demand. Utilities should warn

operators starting days ahead, based on weather forecasts, and provide a user-friendly interface to allow operators to program their building automation systems to respond to electronic peak warnings by shifting building electric load away from peak times, for example by adjusting thermostat set points. Many utilities and aggregators already operate demand response programs, which serve this function and pay building owners to participate in the program.

There are few jurisdictions where demand response programs, smart metering, and building automation technology already have proliferated widely among covered properties. The vast majority of jurisdictions will need to delay the date that a coincident peak demand standard goes into effect to provide time to work with their electric utilities to install advanced grid infrastructure and to educate building owners and give them time to put in place technology and practices to manage their electric demand.

As with all BPS metrics, a jurisdiction could apply peak metrics to only a subset of covered properties that meet specified thresholds such as minimum square footage, annual electric load (kWh), or peak electric demand (kW). The BPS coverage decision should be informed by equitable stakeholder consultation, technical analysis, and segmentation of the building stock by current and potential future impact on peak demand.

The ideal way to drive building operators and occupants to manage their electric demand would be by rewarding them with lower utility bills that fully reflect the system benefit of such behavior. Unfortunately, few utilities apply such time-of-use electric rates to all non-residential customers; hence the benefit of coincident peak demand BPS metrics. Jurisdictions served by electric utilities that later adopt robust and mandatory time-of-use electric rates may be well advised to sunset their peak demand BPS metrics when the rates are fully in place so that the new utility tariffs adequately reward building owners that have made investments in demand management.

## Ventilation and Indoor Air Quality (IAQ)

Addressing indoor air quality problems is a critical priority for many communities especially as the world fights a pandemic airborne virus.

Initially, IMT recommends that jurisdictions use carbon dioxide concentration as the sole performance metric for indoor air quality. While there are many pollutants that impact indoor air quality, the technology to measure carbon dioxide is widely available and relatively inexpensive, and carbon dioxide serves as a good overall indicator of how much outside air reaches occupants—a critical factor in reducing the spread of airborne illness and exposure to pollutants.

With growing realization of the central role that indoor air quality and ventilation play in reducing the spread of contagious respiratory diseases, the case for regulating indoor air quality is stronger than ever before. Urgent action is needed to protect public health, yet most owners have never measured the carbon dioxide concentrations in their buildings; moreover, many markets have a limited workforce trained to evaluate ventilation system performance and the relationship to IAQ. The IMT model BPS law balances urgency with owner and industry needs by phasing in more rigorous, performance-based requirements to give industry time to plan for and transition to new requirements.

In 2021, IMT and International WELL Building Institute published a [Building Performance Standard Module: Ventilation and Indoor Air Quality Policy Brief](#). The brief lays out in greater detail the case for BPS to address IAQ and the mechanics of how to do so, including detailed recommendations regarding how jurisdictions can gradually strengthen IAQ requirements by adding in performance requirements for additional air pollutants. The brief also provides links to useful technical resources.

IMT recommends that jurisdictions work with communities to understand their priorities as it relates to IAQ and to set high-level IAQ goals. To deliver on these goals, jurisdictions should formally or informally convene volunteer IAQ experts to develop rules, schedules, and training materials. Jurisdictions with sufficient resources should also consider hiring an IAQ expert to staff the volunteer process and to lead in production of deliverables.

IAQ is the only performance metric in the IMT Model BPS law for which IMT does not recommend use of the trajectory approach (which is described in more detail in the next section). Instead, IMT recommends that jurisdictions work with their communities and experts to set a single unchanging maximum carbon dioxide concentration. Based on available research, IMT's default recommendation of 1,000 parts per million is protective of public health while being relatively inexpensive for most buildings to achieve.

Jurisdictions will need to provide detailed rules for how and where to sample indoor air to demonstrate compliance. They will need to set separate sampling and testing rules for continuous monitoring and third-party performance tests. Jurisdictions should look to building certifications like [RESET Air](#) as a starting point for developing these rules. Jurisdictions should work with experts and stakeholders to strike a balance of protecting public health while minimizing costs and paperwork and assuring that the expert workforce serving buildings in the jurisdiction has or will have adequate capacity to enable buildings to comply.

If the existing BPS law does not provide for an IAQ metric, the Department can still establish a safeguard for IAQ by creating a rule that a building will not be considered compliant with BPS if its IAQ decreases as a result of other performance improvements.

## 2.2 Setting final and interim performance standards

A critical task for a jurisdiction developing a BPS is determining the appropriate performance standards for the various property types covered by the policy. Performance standards should be set so that they are technically achievable for the vast majority of buildings within each covered property type and are aligned with the jurisdiction’s overall building performance goals, which should in turn be aligned with the jurisdiction’s broader climate and social commitments. In all cases, Departments should develop standards using a rigorous analysis of their jurisdiction’s building stock, building performance data and local circumstances, including applicable energy codes.

Although some jurisdictions may, for legal or other reasons, set the actual numeric values for performance standards in the BPS law, IMT believes it is usually preferable to set them through rulemaking after the adoption of enabling legislation.

In most jurisdictions, the Department will not have the in-house expertise or staff resources to complete the analyses needed to set performance standards. IMT’s model law addresses this challenge by creating a Technical Committee of experts in building science, real estate, and other relevant technical fields whose responsibilities include developing a set of recommended final performance

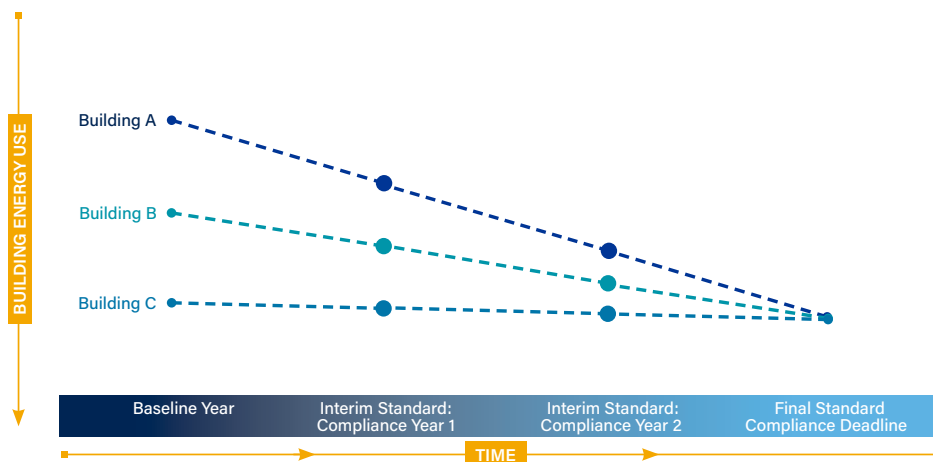
standards for each property type included in the BPS. The Technical Committee’s work occurs after the adoption of the BPS. Therefore, in most cases, jurisdictions would need to allow the committee at least one year following passage of the law to make its recommendations before setting numeric values. Jurisdictions that set their performance standards in the law rather than in rulemaking should solicit the assistance of technical experts during their policy development process.

The “trajectory approach” is a central element of IMT’s model BPS law. In setting final and interim performance standards per the trajectory approach, the Department’s main tasks are:

- Sort all covered properties into property types.
- For each performance metric, set a final performance standard for each property type.
- For each performance metric, calculate each building’s individual interim performance standards by drawing a straight line from the building’s performance in the baseline year to the final standard for its property type.

Figure 4 below illustrates the trajectory approach by using three buildings of the same type that must meet the same final performance standard. While the final energy performance standard is the same for each of the three properties, the trajectory to achieve the standard varies for each individual property to reflect its baseline performance. Properties must meet their individual interim performance standards at regular intervals to ensure that they make progress toward the final standard.

**Figure 4.** IMT Trajectory Approach for setting standard compliance paths



## PROPERTY TYPE GUIDANCE

### Sorting covered properties into property types

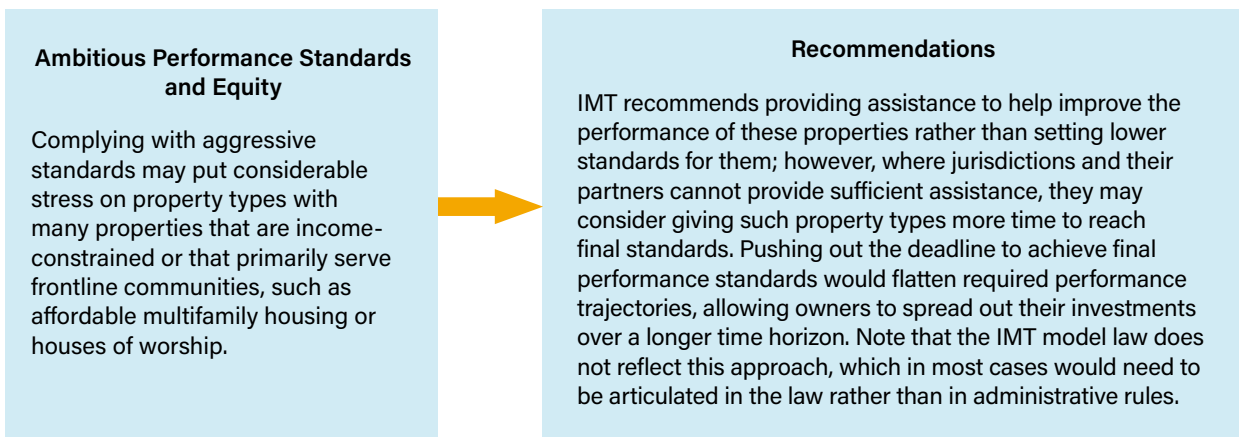
An important aspect of setting achievable final performance standards is sorting covered properties into appropriate categories according to their property type. By placing buildings with similar uses into a property type category, it is possible to establish a common final performance standard that is achievable for buildings within the category with few exceptions. IMT generally recommends that Departments sort covered properties into property use types based on the ENERGY STAR Portfolio Manager (ESPM) property types. There are more than 80 different property types in the ESPM system, a number that could seem overwhelming, so Departments should look for opportunities to set final performance standards that apply to a group of similar property types. Departments should only group property types on the back end, assigning identical final performance standards for similar property types but retaining all 80 property types on the front end displayed for building owners. In this way, owners will be able to find narrow property types that closely match their buildings. For example, [Denver](#) employed this approach, retaining all 80 ESPM property types on the front end, but consolidating them into 55 groups on the back end for the purposes of setting final site EUI standards.<sup>16</sup>

### Addressing properties with incorrect property type designations

If the Department suspects that a building's property type, as reported in its benchmarking data, is incorrect, then it should conduct an investigation using online mapping tools, analysis of the building's energy use relative to the type's distribution, etc. If the investigation causes the Department to conclude that the building has been mis-categorized, then the Department should re-assign it. The owner should have the opportunity to appeal any change in designation, with the Building Performance Improvement Board having the final say in any dispute.

### Accounting for buildings with more than one property type

For each building that contains more than one property use type, for example an office building with a ground floor retail store, the Department should follow the ENERGY STAR approach and calculate a blended final performance standard, using a weighted average based on the square footage of each property type within the building.



16. Departments should be wary of assigning performance standards to overly consolidated groups of property types. For example, there is considerable variation in the energy consumption of a medical office and an office. It would be inappropriate to set the same final performance standard for both property types, despite the fact that they both fit into the broad category of "offices."

## RECOMMENDED APPROACH FOR SETTING FINAL PERFORMANCE STANDARDS

As noted above, the IMT model law assigns the Technical Committee the primary responsibility for recommending final performance standards to the Department. The precise role of the Technical Committee in developing the initial recommendations will vary according to the extent of its building science expertise, the time members have available to devote to the task, their experience and comfort with this type of data analysis, and most importantly, the Department's resources.

In most cases, IMT recommends that jurisdictions with sufficient resources procure an experienced consultant to lead the data analysis work.<sup>17</sup> The Technical Committee would help the Department develop a request for proposals and then a scope of work with the selected consultant. The Committee would play the lead role in guiding and evaluating the consultant's work product to make sure that it aligns with the jurisdiction's goals as articulated in its climate commitments and the on-the-ground conditions in the local building stock. The Committee should also ensure that any recommendations made by the consultant are in line with the energy codes governing that jurisdiction.

Regardless of who ultimately provides the data analysis underpinning the recommended final standards, they must balance what is technically and economically feasible at present with a projection of what will be technically and economically feasible in future years. Further, they should understand current energy codes and estimate the performance of buildings that will be constructed after the law has been adopted. Therefore, the Technical Committee and/or the Department's consultants should have experience analyzing building performance at the

portfolio level and working with large building datasets such as the [Commercial Buildings Energy Consumption Survey \(CBECS\)](#).

In jurisdictions with requirements for energy audits, retrocommissioning, or building retuning, the compliance documentation can be useful for setting standards. For example, ASHRAE Level 1 or 2 energy audits<sup>18</sup> or tune-up reports can contain valuable building systems and equipment data. Where such requirements are not in place, expertise from local energy audit providers can help jurisdictions understand the types of building equipment commonly found in the local building stock.

For jurisdictions where limited resources prevent outsourcing this work to a consultant, the Department could ask the Technical Committee to lead the work of developing the performance standards. Local universities may be a valuable source of low-cost or free capacity to help with data analysis for resource-strapped jurisdictions. For example, St. Louis received free technical assistance from Washington University in St. Louis to help it determine the performance standards.

Building owners and developers will likely demand insight into the analysis itself as well as input into the standards that apply to their properties before codification in the law or regulations. This is especially true for specialized building uses such as hospitals, laboratories,<sup>19</sup> and other buildings that house energy-intensive processes. Departments, in consultation with their Technical Committees, should reach out to covered property owners, especially those that own properties with intensive energy processes, to collect their feedback on recommended standards and potentially invite them to participate in the process.

17. See Appendix C for a sample scope of work for procuring a consultant to recommend final performance standards.

18. ASHRAE Standard 211-2018, Standard for Commercial Building Energy Audits, establishes consistent practices for conducting and reporting energy audits for commercial buildings and defines the procedures required to perform Energy Audit Levels 1, 2, and 3

19. The Laboratory Benchmarking Tool, the successor to the Labs21 Benchmarking Tool, which was retired in 2019 after 16 years of service, gives users access to a database of owner-submitted energy data for laboratory buildings.



### **Assigning final standards to property types for which there are insufficient data**

All jurisdictions will find some properties that have few local peers, such as airports, aquariums, and stadiums. Without a large number of similar local properties to compare, it is difficult to confidently set a final performance standard based on local data. For some of these, national datasets may be available which can serve as the basis for setting a standard; but for many others no such national datasets exist. In these cases, jurisdictions have taken the following approaches:

- Boston combined similar but less common property types into larger categories and used CBECs data to set standards.
- Denver assigned types with insufficient data a final site EUI performance standard that is 30 percent below the property's baseline.
- St. Louis used CBECS data to set performance standards for property types with fewer than 10 properties.
- Washington, DC used ENERGY STAR National Median EUIs and ENERGY STAR scores to set performance standards for property types with fewer than 10 properties.



## Examples from Other Jurisdictions

The following examples briefly describe how leading BPS jurisdictions have approached setting performance standard numeric values and estimating expected costs and benefits of compliance with the standards.



**Boston, MA**

Boston hired a consulting company, Synapse Energy Economics, to recommend GHG standards for each covered property type and to estimate the cost of common emission abatement strategies. See page 25 of [this report](#) to see a description of Synapse's methodology. The June, July, and September presentations in [this folder](#) offer detailed descriptions of the inputs Synapse used to develop and model the abatement strategies.



**Denver, Co**

Denver had a local engineering firm, Group 14 Engineering, conduct [an analysis](#) of its benchmarking data and national CBECS data to determine the EUI performance standards for all the property types covered by its building performance standard adopted in November 2021.



**Montgomery County, MD**

Montgomery County hired Steven Winter Associates to calculate performance standard targets for covered properties and estimate the associated compliance costs. The [final report](#) was published in February 2022.



**New York, NY**

New York City used audit data collected under Local Law 87 to analyze the most cost-effective energy and GHG reduction strategies in its large building stock. See [One City Built to Last](#), by the Buildings Technical Working Group, a Mayor-convened task force of more than 50 leaders in real estate, building design, construction, finance, and environmental justice, for tables estimating the cost per square foot and annual cost savings per square foot of common energy conservation measures. See [Turning Data Into Action: Retrofitting Affordability](#), to see packages of energy conservation measures and their estimated costs that the authors developed for NYC multifamily housing buildings.



**Washington State**

Washington used an [amended version](#) of ASHRAE Standard 100 - Energy Efficiency in Existing Buildings to set EUI targets for covered properties. Rather than estimate compliance costs for covered properties, the state wrote a requirement into its law that buildings that do not meet the standard on their own by the compliance deadline will go into a conditional compliance path. These owners will need to do an energy audit and energy management plan that uses life-cycle cost analysis to determine a bundle of measures that will meet the standard with a savings-to-investment ratio of 1.0 or greater. Thus, no owner will be required to pay for uneconomic improvements.



**Washington, DC**

Per its BPS law, Washington, DC chose to set most of its standards for most property types at the local median ENERGY STAR score for each property type. Before drafting its law in 2018, DC applied for technical assistance to analyze the potential energy and GHG reductions for a BPS as well as the cost implications for building owners. The consultants, C40 Cities and Lawrence Berkeley National Laboratory, used data from the DC Sustainable Energy Utility to estimate the costs and savings at the building level. See the report, "[Washington DC Building Energy Performance Standard: C40 Technical Analysis](#)." After passage of its BPS, DC commissioned Steven Winter Associates to estimate the policy's likely economic impact in its report, "[Cost and Benefit Impact Study of the Building Energy Performance Standards Program](#)."

## 2.3. Calculating interim standards

To determine each covered property’s performance trajectory, for each performance metric, the Department simply draws a line between the property’s performance in the baseline year and the final performance standard it is required to meet in the final year. The property’s interim standards are those points on the line that correspond to the interim compliance years. To calculate each property’s interim performance standards, the Department needs to calculate the slope of the property’s performance trajectory and then use the slope to determine the required performance level at each interim compliance deadline. The two formulas below show how to make this calculation.

$$\text{Slope} = \frac{\text{Final Performance Standard} - \text{Property's Baseline Performance}}{\text{Number of Years Covered by BPS Requirements}}$$

$$\begin{aligned} \text{Interim Performance Standard} \\ &= \text{Slope} * (\text{Interim Compliance Year} - \text{Baseline Year}) \\ &+ \text{Baseline Performance} \end{aligned}$$

As an illustrative example, take a property with a site EUI of 100 kBtu/sq. ft./year in its baseline year of 2020. The property has 20 years, starting January 1, 2021 and ending December 31, 2040 to meet its property type’s final site EUI performance standard of 60 kBtu/sq. ft./year. It must also meet interim performance standards on a 5-year basis, thus it has a set of site EUI standards, particular to the property, which it must meet in the years 2025, 2030, and 2035. To find the 2025 Interim Standard from this example, the calculation would be:

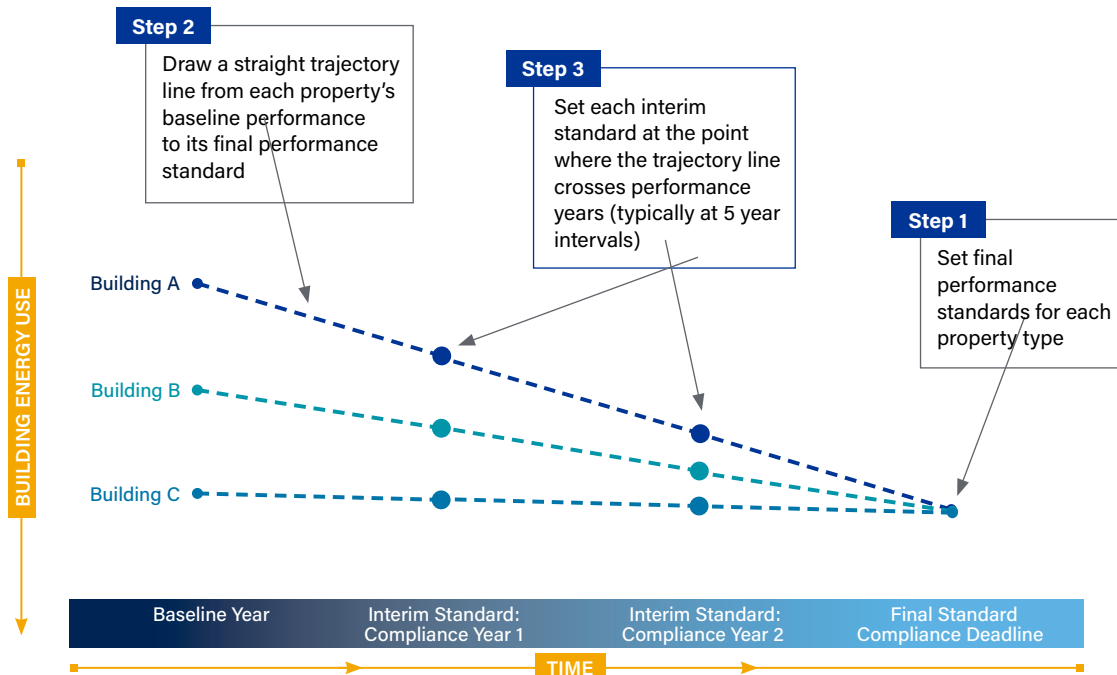
$$\text{Slope} = \frac{\left(\frac{60\text{kbtu}}{\text{sf}} - 100\frac{\text{kbtu}}{\text{sf}}\right)}{20 \text{ years}} = -\frac{2 \text{kbtu}}{\text{sf year}}$$

$$\text{2025 Interim Performance Standard} = -\frac{2 \text{kbtu}}{\text{sf year}} * (2025 - 2020) + 100 \frac{\text{kbtu}}{\text{sf}} = 90 \frac{\text{kbtu}}{\text{sf}}$$

This calculation can easily be automated using Microsoft Excel to establish interim standards for every covered property.

Where the final standard is net zero emissions (e.g., an onsite and district GHG emissions metric), the interim standards can be set as simple “percent reduction” targets.

**Figure 5.** Illustration of the process for jurisdictions to set interim standards



## DETERMINING BASELINE PERFORMANCE

Calculating covered properties' interim performance standards using the trajectory approach requires the Department to know each covered property's baseline performance for each performance metric. The IMT model BPS law is written so that the Department has the authority to determine the baseline year(s) it will use for each covered property for each performance metric. The baseline year(s) selected by the Department determines the value of each covered property's baseline performance for each performance metric.

Departments in jurisdictions that have collected high-quality data for multiple years pursuant to a benchmarking requirement can use this data to set covered properties' baseline performance for all metrics for which they have available data.<sup>20</sup> IMT recommends that Departments set the baseline performance according to the average performance over two to three years to reduce the impact of weather variations.

In response to the impacts of the COVID-19 pandemic on buildings' performance, Departments may consider allowing owners of covered properties to select a year within a range of the previous three to four years to use as a baseline year. This allows owners to select the year within the given range that provides the most room for improvement, giving them more flexibility to comply with interim standards but not affecting their obligation to meet the fixed, final performance standards.

## DETERMINING INTERIM PERFORMANCE STANDARDS WHEN BASELINE DATA IS UNAVAILABLE

When determining interim standards, the Department will need to decide how to handle properties for which there is no historical benchmarking data to set a baseline, such as recently built buildings and buildings which will be constructed in the future. One approach is for the Department to establish a reasonable baseline based on the performance of similar buildings within the property's type. Another, and perhaps preferable option, is for the Department to set the baseline performance for a new building based on energy modeling performance calculations that designers may have submitted as part of the new building's building code permitting process; specifically the baseline performance should be set at the performance of the modeled reference building (as opposed to the subject building), updated to reflect as-built conditions.

Either of these approaches will give the owner an incentive to cause its new building to be designed, built, and operated to 1) perform better than the energy code under which the building was permitted and 2) enable the building to comply with multiple interim BPS standards over many years by maintaining the same excellent level of performance it achieves in its initial year of operation.<sup>21 22</sup>

20. If the Department's BPS law includes performance metrics for which the Department has not collected sufficient historical data to set baseline performance, it will need to wait until it has collected at least two, preferably three, years of data from building owners before determining baseline performance.

21. A high-performance buildings hub can provide best practices research to help owners overcome split incentives and put in place performance-based building procurement and design-build-operate-maintain contracts to select and incentivize firms to design, build, and operate buildings for excellent performance.

22. In designing BPS, care should be taken to incentivize each building to perform as well as possible and not poorly in its initial year. So, new buildings' baseline performance should not be set based on their actual performance in operations.

## Setting Water Use Intensity Standards

IMT recommends that jurisdictions solicit local building water use experts to provide pro bono advice on setting water performance standards and consider whether to hire an expert consultant specializing in building water use.

Pursuant to section 4.1.2 of the IMT model BPS law, jurisdictions adopting water performance standards should consider setting a single final standard calculated by summing two distinct water budgets, one for total (not per square foot) indoor water consumption and one for total (not per square foot) outdoor water consumption to reflect the different environmental and occupant needs of those sources of water demand as shown in this formula:<sup>23</sup>

$$\begin{aligned} \text{Final water intensity standard} \\ = (\text{indoor water budget}) + (\text{outdoor water budget}) \end{aligned}$$

$$\begin{aligned} \text{Indoor water budget} \\ = (\text{gallons of indoor water per year per sq.ft.}) \\ \times (\text{total sq.ft. of landscaped area}) \end{aligned}$$

$$\begin{aligned} \text{Outdoor water budget} \\ = (\text{gallons of outdoor water per year per sq.ft.}) \\ \times (\text{total sq.ft. of landscaped area}) \end{aligned}$$

As with other performance standards, interim water intensity standards should be set using the trajectory approach.

A water budget per square foot of gross floor area should be set for each building typology relying on available local building benchmarking data. In most cases, the indoor budget will need to be set as gallons of water per year per square foot multiplied by total building square footage.<sup>24</sup> The lowest water consuming quartile or decile for a typology can be used as a starting place for setting the final indoor performance standard.<sup>25</sup> Jurisdictions should follow the process EPA lays out for site EUI to determine whether it is appropriate to account for one or more

operating characteristics when setting each building's final water performance standard.<sup>26</sup> EPA's binning and appeals approaches are options for all property types but will likely need to rely on operating characteristic inputs not found in ESPM. Only multifamily buildings are eligible for EPA's [1-100 Water Score](#), and so jurisdictions have the option to use a modified version of EPA's [ENERGY STAR Score Normalization Method](#) for multifamily buildings and for no other property type. EPA's Water Score uses historic weather factors and does not adjust year to year to normalize for observed weather.<sup>27</sup>

For outdoor water consumption, jurisdictions may seek to establish more ambitious final performance standards. One recommended option is setting a final performance standard for outdoor water consumption at zero gallons per year. Zero is a reasonable, achievable goal when local, climate-appropriate vegetation is used. See the California Department of Water Resources' [Model Water Efficient Landscape Ordinance](#) for further best practices in setting water budgets for landscaping.

Water use intensity standards should be adjusted to reflect changes in the square footage of landscaped area or building area. Increases in building or landscaped areas (e.g. due to replacing parking with vegetation) should result in increases in a property's performance standard. Decreases in areas should result in proportional decrease to performance standards. To calculate how much to increase the standards, a consumption per square foot representing current best practice for landscaping and for each property type should be set for the baseline year. The actual adjustment will depend on when the landscaping change or construction occurs by using the trajectory approach to draw a straight line from the baseline performance to the final performance standard.

23. IMT knows of no conclusive data, but Jonah Schein, National Program Manager for Homes & Buildings of EPA's WaterSense Program, estimates that on average multifamily buildings in the United States could use as much as 20% of their total water use for irrigation.
24. In a perfect world, multifamily water BPS might be set on a per occupant basis, but IMT knows of no jurisdiction that has accurate occupancy data or will likely have it in the foreseeable future. In part because setting BPS based on occupancy is not a practical option, jurisdictions will need to pay special attention to equity in making decisions related to water and should defer to affordable housing owners and to representatives of frontline communities, including related to the question of whether to create separate BPS property types for affordable housing and for other multifamily buildings.
25. EPA ENERGY STAR plans to publish a water look up table with 10, 25, median, and 75 percentiles nationally of water use intensity by gross square foot of building area.
26. "EPA Recommended Metrics and Normalization Methods for Use in State and Local Building Performance Standards" (2022) only addresses normalizing site EUIs, but some of the approaches it outlines can also be used for other performance metrics.
27. Available data does not generally show variations in rain levels driving peaks and valleys in water use. Unfortunately, currently most irrigation is automated and occurs despite rain. Nevertheless, jurisdictions could evaluate benchmarking and other data and consider starting with (or adding in future years) weather normalization of water use.

# CHAPTER 3

## Building Performance Action Plans

This chapter examines the process of establishing Building Performance Action Plans, which provide flexibility to building owners facing exceptional challenges in meeting building performance standards.

### Key terms and acronyms

- **Building Performance Action Plan (BPAP)**
- **Community Accountability Board (CAB)**
- **Community Priority Actions:** Discrete actions that building owners can choose from when developing their BPAP proposals which advance key strategic goals as identified by the CAB.
- **Financial hardship:** Financial hardship, as defined in the IMT model law, is a designation that applies to buildings that meet the following conditions:
  - Had arrears of property taxes or water or refuse charges that resulted in the building's inclusion, within the prior two years, on the city's annual tax lien sale list; or
  - Has a court-appointed receiver in controls of the building due to financial distress; or
  - Is owned by a financial institution through default by the borrower; or
  - Has a senior mortgage subject to a notice of default.
- **Qualifying scenarios:** Situations that justify a building owner's BPAP proposal

A full glossary is available in [Appendix A](#).

The Building Performance Action Plan (BPAP) is a feature of the IMT model BPS law that provides additional flexibility to owners facing exceptional challenges in meeting their designated interim or final performance standards. It enables owners to submit customized improvement plans for their buildings to the Department, which either approves, recommends amendments, or rejects them. An approved BPAP constitutes a binding agreement between the owner and jurisdiction. An owner is deemed compliant with the BPS as long as they abide by the terms of the plan, even if the property does not meet the originally assigned interim or final performance standards.

Jurisdictions should design their BPS requirements so that the vast majority of covered properties are able to comply through the core compliance pathways defined by the jurisdiction. However, there will inevitably be cases where owners have legitimate needs for additional flexibility. For example, a building may have tenants with unique energy usage needs, have a historic designation that limits the types of retrofits that can be performed, or may face economic constraints that make meeting BPS requirements unachievable. Some jurisdictions may be inclined to provide exemptions to such buildings, but the BPAP compliance path provides owners flexibility while still obligating them to make significant improvements to their building's performance.

A well-designed BPS should result in only a small number of properties—those with exceptional circumstances—seeking compliance through a BPAP. To help ensure this, jurisdictions should write regulations that set a high bar for BPAP eligibility and strictly adhere to them when screening submissions. This is important because reviewing each BPAP submission requires significant staff time. Jurisdictions face a real risk of being overwhelmed if they are too lax in defining BPAP eligibility or too ambitious in setting core compliance pathways.

## 3.1 Information included in BPAP

A submitted Building Performance Action Plan should contain the following (at a minimum):

- Identification information for the covered properties, including but not limited to address, property or parcel identification, and any additional building identification numbers.
- Identification and contact information for the owner and any owner-designated individual responsible for the BPAP submission, such as a property manager.
- A detailed narrative describing the reasoning for the BPAP. The narrative should give a robust justification for the circumstances that limit the building's ability to meet the BPS requirements.
- A completed building energy audit report.<sup>28</sup> The Department must establish a minimum standard for acceptable energy audits, such as the ASHRAE Level 2, or better, and for how recently the audit must have been completed to be acceptable.
- All primary deliverables from the completed building energy audit, including a full inventory of building energy systems, a list of proposed energy conservation measures for the building, including expected energy savings and common economic calculations (payback, return on investment, etc.).
- A detailed narrative describing how the owner's submission meets the spirit of the BPS through performance improvements as well as investments in community priorities as identified by the Community Accountability Board.

28. Jurisdictions with water use performance standards should refer to the City Energy Project's "[Water Audit Guidance for Commercial Buildings](#)" to define a water audit reporting standard for their BPAP intake process.

- A detailed timeline of implementation of all proposed BPAP-related improvements and community priority actions. The timeline should demonstrate that the owner will implement all improvement measures and investments without unnecessary delay. For example, a building owner requesting more time to accommodate the planned replacement of a major piece of equipment can still promptly invest in low-cost, high-payback efficiency measures such as a building tune-up.

Because the above information is critical for assessing the BPAP, IMT recommends that the Department collect it in a uniform electronic format. Jurisdictions have found that collecting hardcopy or pdf versions of audit reports is not conducive to analysis.

## 3.2 Providing compliance flexibility through the BPAP

There are two main ways that jurisdictions can use the BPAP process to provide flexibility for meeting BPS requirements: 1) extending the deadline for an interim or final performance standard and 2) adjusting a building's performance requirements.

### EXTENDING THE DEADLINE

Extending an interim or final compliance deadline gives owners more time to improve the performance of their buildings. This approach can benefit owners of buildings that have the technical means of reaching their interim and final performance standards, but, due to extenuating circumstances, are unable to do so in the needed timeline.

### ADJUSTING THE PROPERTY'S PERFORMANCE REQUIREMENTS

In some cases, a building's extenuating circumstances may justify adjusting the performance level it is required to achieve. As an example, a jurisdiction could adjust a building's final energy use

intensity standard from 30 kBTU per square foot per year to 40 kBTU, if the jurisdiction determines it is unreasonable to require the building to meet the original final standard. Jurisdictions should only consider this option for buildings that have structural or technical limitations or some unalterable particularity in the way they are used.

In most cases, the Department should prefer extending a building's compliance deadline to adjusting its final performance standard, as this would keep the building's performance aligned with the jurisdiction's ultimate climate and energy goals. However, both types of accommodation can represent large concessions to building owners. While these concessions might be justified due to a building's circumstances, jurisdictions should consider setting additional minimum criteria for building owners to meet in order for a BPAP to be accepted, such as a commitment by the building owner to take specific actions to benefit the community as described in the next section.

## 3.3 Community priority actions and the role of the Community Accountability Board

Per the IMT model BPS law, the Community Accountability Board (CAB) is charged with advising on community priorities that could be advanced through the BPAP. The CAB has the responsibility of identifying the communities most in need, identifying those communities' top priorities (e.g., public health, housing affordability, equity, climate resiliency, and sustainability), and issuing guidance to building owners on how their BPAP proposals could address these priorities.



For Departments taking this approach, IMT recommends that the CAB publish a list of identified community priority actions. Within each priority, the CAB should provide discrete actions that building owners can choose from when developing their BPAP proposals. CABs and Departments could work together to assign each action a point value and require building owners to reach a minimum point total in order to be considered for a BPAP.<sup>29</sup> Note that these actions are in addition to, not instead of, the building owner’s proposed performance improvements. The table below provides a hypothetical example of what a list of community priority actions might look like.

Once proposed and approved, community priority actions would be incorporated into the BPAP agreements between building owners and the jurisdiction. The CAB would oversee follow up to ensure execution and implementation of these commitments.

### Prescriptive Compliance Paths

Some jurisdictions may provide prescriptive pathways for compliance, in which building owners are given a list of prescriptive building improvements to implement in lieu of meeting the performance levels required by the standard.

While prescriptive pathways could be useful for certain types of buildings and owners, IMT recommends only using them when absolutely necessary. It is logistically simpler to adjust a building’s compliance deadlines or final performance standards than develop a prescriptive compliance pathway.

Creating a detailed list of prescriptive measures for owners to implement may be technically taxing for jurisdictions and they will not guarantee the same level of certainty in any level of performance outcome. There is a large body of evidence showing that even buildings designed to deliver high levels of performance can perform poorly because of the way they are operated and maintained.

### Sample Community Priority Actions

Community Priority Category	Actions (point values TBD by CAB and Department)
Public Health	<ul style="list-style-type: none"> <li>Contribute a percentage of total BPAP project cost to fund air quality improvements in frontline community areas</li> <li>Agree to designate part of the building (if located in an area where there is a need for one) as a public cooling center during heat emergencies</li> </ul>
Housing Affordability	<ul style="list-style-type: none"> <li>For owners of uncovenanted (also known as naturally occurring) multifamily housing, agree not to raise rents or agree to cap rent increases below modeled tenant savings</li> <li>Contribute a percentage of total BPAP project cost to rent assistance/relief fund for low-income renters</li> </ul>
Economic Equity	<ul style="list-style-type: none"> <li>Agree to use high-road contracting principles when procuring professional services for the work proposed in the BPAP</li> <li>Contribute a percentage of total BPAP project cost to community land trust in support of low-income home ownership</li> </ul>

29. CABs and Departments could consider making some actions mandatory and others optional.

## 3.4

# Defining qualifying scenarios for BPAPs

BPAPs are, by definition, variations on the typical BPS compliance, and require additional work from staff to manage and process. They also could potentially decrease the benefits of BPS by lowering the possible energy savings and community benefit. To balance the need to be flexible with the need to achieve overall BPS objectives, the Department should clearly define qualifying scenarios and should provide clear guidelines on who can request a BPAP. There are a number of reasons why building owners would ask for flexibility from a BPAP; however, it is likely that most owners submitting BPAP proposals will do so for economic reasons. Departments should keep in mind that while there will be buildings in economic situations that warrant greater flexibility, mere assertions that meeting the BPS requirements is “too expensive” should not be grounds for a BPAP.

In most cases, the decision to submit a BPAP should be made by an auditor who would state if the building can or cannot reasonably comply with the BPS. An auditor is a third party professional whose role is to examine covered properties, when requested by owners, and determine whether they can reasonably be expected to make alterations to comply with the BPS, or whether they should apply for a BPAP due to their particular situation. As auditors are typically paid by owners, there is an inherent tension that will likely increase BPAP requests. To mitigate this, Departments could consider creating a list of approved auditors from which owners would choose. Departments should also consider commissioning a periodic audit of the BPAP submissions they receive to identify any firms exhibiting a pattern of recommendations that indicate conspicuous bias. When defining qualifying scenarios in rules, Departments should solicit the advice of stakeholders, community partners, and technical experts. The following scenarios represent situations for which building owners are likely to submit BPAPs.

### Financial Hardship

Buildings may at times face severe financial hardship that makes meeting the requirements of the BPS extremely difficult or impossible, whether due to significant cash flow limitations or even bankruptcy.

Financial hardship, as defined in the IMT model law, is a designation that applies to buildings that meet the following conditions:

- Had arrears of property taxes or water or refuse charges that resulted in the building's inclusion, within the prior two years, in the city's annual tax lien sale list; or
- Has a court-appointed receiver in controls of the building due to financial distress; or
- Is owned by a financial institution through default by the borrower; or
- Has a senior mortgage subject to a notice of default.

The model law gives Departments the ability to grant extensions, adjustments, or exemptions outside of the BPAP process to the interim or final performance standards of buildings meeting the conditions of financial hardship as defined above.

### COSTS ARE ECONOMICALLY UNWARRANTED

For some buildings, the cost of meeting the performance standard may indeed be so high that it would be unreasonable to hold the owner to it. This scenario could apply to a resource-constrained building owner, for whom the cost of improvements would jeopardize their business, or it could apply to a profitable owner with easy access to capital whose building can only meet the standard through a large investment with little return in terms of GHG or energy reductions. When an owner is able to prove such a case for their building, the Department should consider adjusting the building's performance standard to an economically justifiable level.

In making this case, building owners must be able to demonstrate definitively that it is economically unwarranted to implement the improvements needed to meet the BPS standard by the compliance deadline, even after taking into account all possible incentives, financing, and cash flow resources available. Departments should set a high evidentiary standard for determining this scenario as it may be vulnerable to abuse.

### ALIGNMENT WITH MORTGAGE REFINANCING CYCLES

For certain properties, the ability to meet BPS requirements may depend on the alignment of their refinancing/capital cycles with BPS compliance cycles. This is most common for regulated and subsidized affordable housing buildings, condominiums and co-ops though other similar cases exist. Affordable housing buildings often work on 15-year capital and mortgage refinancing cycles, with all major capital improvements scheduled for the end of each cycle. As there may be multiple times during a typical 15-year refinancing cycle that an affordable housing building may be required to meet interim performance standards, this may create issues for such properties.<sup>30</sup>

#### Uncovenanted Affordable Housing, Displacement Risk, and BPAPs

Displacement of residents of uncovenanted, or naturally occurring, affordable housing is a serious concern when implementing a BPS.

The Department may consider creating a BPAP scenario specifically for this type of building; however, unless strongly recommended by the Community Accountability Board, IMT believes that other strategies to avoid displacement should be prioritized.

For example, governments could offer grants or low-interest-financing to owners of these buildings on the condition that they do not increase rents to a level that would threaten to displace low-income tenants.

To help alleviate these issues, these building owners should submit BPAPs for their properties. These BPAPs should include the timeline for their buildings' refinancing cycles and a full list of auditor-recommended building improvements sufficient to meet the BPS requirements. The BPAP agreement should contain a commitment by the building owner to implement those improvements, not counting low- or no-cost measures that are not dependent on financing such as a building tune-up, at the time of the new refinancing cycle.

### ALIGNMENT WITH MAJOR EQUIPMENT LIFECYCLES

A building owner may have installed major energy-consuming equipment prior to the passage and implementation of the BPS that would be financially burdensome to replace before the end of its life cycle. Equipment such as boilers and furnaces have service lives of 20 years or more. While it is beneficial to replace low-performing equipment to meet the BPS requirements, Departments may wish to make allowances for major capital equipment that is still early in its life cycle.

A BPAP submission for equipment in the middle of its life cycle should include a detailed inventory of the equipment being discussed, including its age, cost of replacement, and the potential performance improvements that could be gained by replacing it. The submission must also include a list of all other improvements that the building owner will pursue immediately or over the intermediate timeframe to make progress toward the BPS requirements, including the timeline for phase-out of the equipment in question.

IMT recommends that Departments not accept BPAPs based on delaying compliance until the end-of-life for any system or equipment installed after adoption of the BPS (outside of a short grace period of six months to a year). This rule would dissuade owners from using the BPAP process as a loophole to install less efficient equipment in the time-gap between law adoption and the first compliance cycle.

30. For more on aligning BPS compliance requirements with the needs of affordable housing, see IMT's policy brief, [Building Performance Standard Module: Housing Affordability](#), May 2022.

The Department should also pay attention to the types of building systems and equipment they make eligible for consideration in this BPAP scenario. Long-lived building systems and equipment that have a significant impact on overall energy performance are often designed to last for the entirety of a building's lifetime. The Department should be careful not to design their BPAP rules in such a way that they effectively exempt owners from ever having to upgrade these systems.

### **CAMPUS-SCALE UPGRADES NEEDING ADDITIONAL TIME**

In campus settings (e.g., universities and hospitals), meeting BPS targets may require energy master planning and fundamental changes to district energy infrastructure. These upgrades can often take a decade to implement and Departments should be willing to work with campuses to ensure the plan will meet final standards.

### **SIGNIFICANT CHANGE IN PROPERTY TYPE OR BUILDING OPERATIONS**

Buildings may submit a BPAP to account for variations in their performance due to significant changes in the way that they are used. For example, an office building that replaces a law office tenant with a data center may need to request an adjusted EUI performance standard to account for the more intensive energy use of its new tenant. Similarly, a building that is converted from one property type to another (such as the conversion of a commercial building into multifamily residential), would need to submit a BPAP requesting new performance standards appropriate to its new property type.

### **EXPIRATION OF LONG-TERM LEASE**

In some buildings, a tenant and not the owner of record holds contractual control over a portion or the whole of the property. Such lease contracts can extend far longer than the interim compliance cycles for the BPS, limiting the building owner's ability to implement improvements. In such cases, building owners submitting BPAPs should provide the length of the lease agreement at issue, the contractual language limiting the owner's ability to upgrade the leased space, and a list of all the building improvements that are precluded by the contractual limitations.

The BPAP should provide a schedule describing when the owner will implement improvements that are not obstructed by the terms of the lease as well as the improvements that the owner commits to once the lease period is over.

### **DESIGNATED HISTORIC BUILDING**

Buildings that are nationally or locally designated as historic, or that are located within landmark districts, are subject to particular restrictions on retrofits and renovations. Many historically designated buildings cannot alter the appearance or even material of their exterior facade or windows. This may limit performance improvements options, though it is unlikely to prevent all measures. Most historic buildings can still benefit from upgrades to their HVAC systems, lighting, and water heating equipment, and certain window upgrades may also be permissible. A BPAP application for a historic building should include all building performance improvements that could be implemented without violating legal limitations imposed by the building's its historic designation.



# 3.5 Documenting BPAP scenarios

Departments should consider requiring scenario-specific documentation with submission of the BPAP, as shown in the following table. The list is not

exhaustive nor should a Department necessarily require an owner to submit all of the listed documentation.

## Sample BPAP Scenarios

Economic BPAP-Qualifying Scenario	Sample Documentation <sup>31</sup>
<b>Economic Infeasibility</b>	<ul style="list-style-type: none"> <li>• Proof that the owner has availed itself of all available city, state, federal, private, and utility incentive programs for which it could reasonably participate</li> <li>• Financial model showing that the most cost-effective means of compliance is economically unwarranted</li> </ul>
<b>Alignment with Refinancing Cycle</b>	<ul style="list-style-type: none"> <li>• Proof of refinancing schedule (e.g., maturity date of current mortgage)</li> <li>• Documentation of prepayment penalty &gt; 1% of property’s assessed value</li> </ul>
<b>Alignment with Planned Replacement of Major Equipment</b>	<ul style="list-style-type: none"> <li>• Professional engineer’s attestation that building’s compliance with next standard/ability to meet final standard depends on replacement of major equipment</li> </ul>
<b>Significant Change in Property Type or Building Operations</b>	<ul style="list-style-type: none"> <li>• Use change Certificate of Occupancy, permits, or other documentation from the permitting department indicating the change of use</li> <li>• Third-party verified benchmarking results and compliance report</li> <li>• Site visit by Department staff</li> </ul>
<b>Expiration of Long-Term Lease</b>	<ul style="list-style-type: none"> <li>• Copy of lease</li> <li>• BPAP plan must show that the building has/will implement all practical operational and capital improvements that do not depend on the lease expiration</li> </ul>
<b>Designated Historic Building</b>	<ul style="list-style-type: none"> <li>• Documentation of the legal limitations placed on the building</li> <li>• ASHRAE Standard 211, Level 2 or better audit and effective savings-to-investment ration/return on investment numbers demonstrating that available performance improvement measures are impracticable</li> <li>• A meeting with the historic review board, the building owner, and a Department staff member</li> <li>• A letter from the local historic review board verifying the restrictions placed on the building</li> <li>• Proposed operations and maintenance program</li> </ul>

31. The sample documentation in this table includes examples collected from rules and guidance published by the [District of Columbia's Department of Energy and Environment](#) and the [City and County of Denver's Office of Climate Action, Sustainability & Resiliency](#).

## 3.6 BPAP transparency

IMT recommends that Departments establish a presumption that approved BPAPs will be publicly available, with exceptions for information that is confidential or for which publication would not be in the public interest. Transparency helps hold both the property owner and the Department accountable for the fulfillment of the BPAP and assures other owners and the public of the fairness of the BPAP process.

Departments should consult with their legal departments to decide how to treat sensitive or confidential information that may be required to judge a BPAP submission, particularly if that information would be vulnerable to being made public due to Freedom of Information Act requests or the effects of state sunshine laws.

## 3.7 Guidelines for software and tools for managing BPAPs

BPAP software and forms should be an integrated component of the Department's broader BPS software solution. Please see [Data Management and IT](#) for more details. The Department should create user-friendly, standardized BPAP forms. Standardization of the BPAP submittal process is critical to assist the Department in efficiently reviewing the BPAP applications.

The BPAP software should be able to handle all documentation, data, and other information needed by the Department to deliberate on the BPAP submission. Where possible the software should be compatible with any other reporting, compliance tracking, asset tracking, data management, and customer relations management software that the Department uses for implementation of the BPS.

### Typical Questions to Ask when Reviewing a BPAP Submission

Each BPAP submission will likely raise different issues and questions. While this variance should be expected, there are some useful questions the Department can ask when reviewing any BPAP submission, including:

- Has the building owner completed or will it complete all cost-effective measures before the compliance deadline?
- How far does the BPAP push the building's performance considering its limitations?
- What other options has the building owner pursued to meet the BPS requirements? Has it exhausted all other options?
- Has the building owner applied for all available incentives?

## 3.8 Guidelines for reviewing BPAPs

Under the IMT BPS model law, the Department is responsible for reviewing, approving, or rejecting any BPAP submission. The Department should plan to dedicate staff time to the administration of BPAP reviews. The actual number of hours needed will vary with the number of BPAP submissions.

### APPROVING/ADJUSTING/DENYING BPAPS

The Department should publish guidance documents to give building owners clear guidelines on expectations for the BPAPs and the criteria by which they will be judged.

A minimum prerequisite for review of any BPAP should be that it is complete. All submitters should understand that BPAPs will not be reviewed unless they contain all required information.

If a BPAP has an invalid or otherwise incomplete energy audit, this could be grounds for requesting adjustments or rejecting the application. The Department should require that audits be completed by accredited, third-party professionals who can attest to the accuracy of their reports.

Departments should use an iterative approach to reviewing BPAPs that allows building owners to respond to feedback on their submissions. Departments should push buildings pursuing BPAP compliance as far as they deem appropriate during this process.

### REVIEWING APPEALS AND WORKING WITH THE TECHNICAL COMMITTEE

If the Department rejects a BPAP, the owner has the right to appeal the decision. In the IMT model law, such appeals are referred to the Building Performance Improvement Board (BPIB), which is responsible for reviewing appeals and issuing a final decision.

The BPIB can request the assistance of the Technical Committee in reviewing an appeal's technical aspects, including the energy audit report and recommendations, and then determining if the proposed action plan is justified by the circumstances of the building and is aligned with the spirit of the BPS. The Technical Committee makes recommendations to the BPIB – whether to reject or accept the BPAP application – and the decision by the BPIB will be final and binding.<sup>32</sup>

### ATTACHING BPAP TO DEED

Under the IMT model law, a BPAP agreement is incorporated by reference in an attachment to the property's deed. This means the commitments and agreements made in the BPAP are transferable to any future owners of the property if the current owner intends to sell.

IMT's model BPS law requires building owners to provide a reference to the BPAP in all listings, notices, advertisements of sale, term sheets, or contracts of sale. This eliminates the risk of the BPAP becoming a form of "passing the buck" or "kicking the can down the road," by ensuring that the new owner is aware of the binding agreement with the jurisdiction before purchasing the property.

Building owners are required to apply to the Department for a certification that the building is in compliance with the BPS at least three weeks prior to its listing. The Department should include in that certification a reference to any BPAP agreement to which the building is subject and its commitments.

### TRACKING BPAP COMPLIANCE

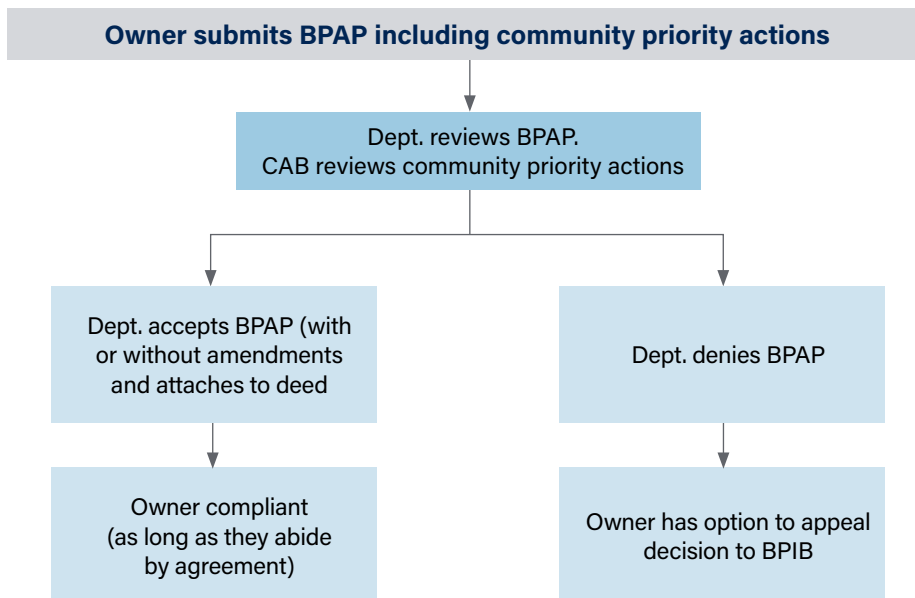
By submitting a Building Performance Action Plan, property owners agree to an ongoing relationship of review, tracking, and follow-up from the Department. Departments should establish regular check-ins, such as annually or quarterly, to discuss with the owner the steps they are taking to meet the BPAP's agreed-upon timeline. The BPAP may include multiple commitments over an extended period, all of which need to be followed up on.

In this area, a robust customer relationship management system (CRM) as discussed above can be an asset to the Department. Keeping track of the fulfillment of multiple complicated BPAP commitments with varying timelines of deliverables can be made far easier with the aid of such a system.

If an owner misses a deadline, the Department should consider whether the BPAP needs to be renegotiated. If a building owner fails to meet the commitments of the BPAP in an appropriate timeline without justification, then the Department should rescind the BPAP, and deem the building non-compliant with the BPS and subject to applicable alternative compliance payments.

32. Some jurisdictions lack the authority to make CAB or BPIB decisions binding. In such cases, the CAB, BPIB, and Technical Committee should be purely advisory, and the three bodies can still add much expertise and value to Departmental decision making.

Figure 6. BPAP review process



### 3.9 Extensions and Adjustments

Adjustments to the BPS requirements for particular properties should be done within the BPAP process. Outside of the BPAP process, the Department should expect that situations will arise that require extensions and even exemptions for covered properties.

#### EXTENSIONS

Inevitably, Departments will encounter situations where building owners will seek extensions of their compliance deadlines for commonplace reasons that do not require a BPAP to justify. Requests of short-term extensions due to simple logistical issues will come up regularly. These can include difficulty in getting all tenant data, in learning submission interfaces, in finding any necessary third-party certifier, in finalizing an alternative compliance payment, or just simply running late on a deadline. The Department may find it easiest to address such matters by issuing one-time extensions of no more than 30 days past the BPS compliance deadline.

Longer-term extension requests should only be granted if they meet criteria clearly defined in regulations. The IMT model BPS defines qualifying circumstances for extension requests of over six months. These can include a major renovation where the building is no longer occupied, lack of a certificate of occupancy for the building, and certain types of severe financial hardships.

The following table suggests scenario-specific documentation that Departments should consider requiring owners to submit when requesting an extension. The list is not exhaustive, nor should a Department necessarily require an owner to submit all of the listed documentation.

#### CATEGORICAL EXEMPTIONS

Exemptions should only apply to cases where a building was included in a covered properties list in error (e.g., the building is smaller than the minimum size threshold, was incorrectly categorized as a covered property type, or is owned by a higher level of government and is not subject to the implementing jurisdiction’s regulatory authority).



**Sample Extension Scenarios<sup>33</sup>**

Extension Scenario	Recommended Documentation
<b>Financial Hardship</b>	<ul style="list-style-type: none"> <li>▪ Audited financial statements for the most recent [3] years</li> <li>▪ Evidence of a current tax lien on the building or a lien removed within the [2] years prior to the delay request</li> <li>▪ Evidence of a court-appointed receiver in control of the building</li> <li>▪ Evidence of a financial institution owning the building due to default by the owner</li> <li>▪ A deed that has been acquired in lieu of foreclosure within the [2] years prior to the delay request</li> <li>▪ A notice of default on the mortgage</li> <li>▪ Evidence of pursuing financial support and finding all options to be insufficient to offset the building's conditions of financial distress. Such options could include:                             <ul style="list-style-type: none"> <li>- Government or utility-provided incentives</li> <li>- Privately or publicly offered financing (e.g., bank loans, PACE, financing programs)</li> </ul> </li> </ul>
<b>Pending Demolition</b>	<ul style="list-style-type: none"> <li>▪ Raze permit or application</li> </ul>
<b>Building Unoccupied</b>	<ul style="list-style-type: none"> <li>▪ Third-party verified benchmarking results and compliance report</li> <li>▪ Documentation from relevant government agencies (permitting department, revenue department, etc.) showing the building is registered as vacant</li> <li>▪ Site visit by Department staff</li> </ul>
<b>Pending Major Renovation</b>	<ul style="list-style-type: none"> <li>▪ Alteration permit approval from the permitting department</li> <li>▪ ≥ 75% Construction Documents</li> <li>▪ Financial commitment statement from a public-funding agency, investor, or financial institution demonstrating formal intention to complete a major renovation within the current compliance timeline or, at the latest, within the timeframe established by the delay request</li> <li>▪ Other detailed evidence of pending major renovation including executed tenant lease agreements, design documents, scopes of work, owner's project requirements, etc.</li> </ul>
<b>Change of Ownership</b>	<ul style="list-style-type: none"> <li>▪ Change of ownership disclosure acknowledgement letter signed by both the buyer and seller</li> <li>▪ Completed sale of property disclosure form</li> <li>▪ Narrative explaining, to the satisfaction of the Department, building owner's inability to comply on time</li> </ul>

33. The sample documentation in this table includes examples collected from rules and guidance published by the [District of Columbia's Department of Energy and Environment](#).

## CHAPTER 4

# Data Management and IT

This chapter recommends the key functions and features that jurisdictions should have in the data management system they use to administer BPS.

- **BPPMS:** Building Performance Policy Management Software.
- **CRM software:** Customer Relationship Management Software
- **Property Owner Portal:** a public-facing, web-based interface that gives owners and managers access to real-time building and program information
- **UBID:** Unique building ID

A full glossary is available in [Appendix A](#).

IMT recommends that each jurisdiction develop or acquire a robust building performance policy management software (BPPMS) system to streamline management of data and communications. This will greatly reduce the administrative burden on the Department and improve the reporting and compliance experience for building owners and managers. IMT considers BPPMS to be a best practice for managing a benchmarking law and a necessity for managing a BPS. A BPPMS comprises three main functional areas:

- A buildings database that provides all functions needed to handle creation, collection, and storage of information related to buildings covered by the BPS law, including physical and operating characteristics, performance data over time, and performance standard requirements. It is strongly recommended that this database be merged with or linked to the database currently used by the department that oversees building codes and permitting.
- A program administration dashboard with customer relationship management (CRM) capabilities that can manage all supervisory and administrative functions, report and present data, and manage all information and processes related to the people associated with each property in the buildings database.
- A building owner portal that owners and operators of covered properties can use to look up information concerning their properties, such as its performance standards and compliance deadlines or to submit documentation such as Building Performance Action Plans.

These components may rely on different underlying software applications. Nevertheless, end users should, to the greatest extent possible, see the overall BPPMS as being a single integrated solution, with a common user interface. An ideal system would be able to interface with Energy Star Portfolio Manager, automatically determine BPS compliance status of covered properties based on their submitted data, communicate that compliance status to the current owner, track change of ownership or management, track all received compliance-related documentation, track all additional communications with building ownership or management, and track overall building performance over time, all in one system.



# 4.1

## Buildings database

### CREATING THE COVERED PROPERTIES LIST

The BPPMS should be able to help a city develop the initial list of properties that are required to comply each year under the BPS. This list is based on set criteria under each law and is typically based on:

- Building size
- Building use type
- Building ownership (certain owners, including the federal government, are not typically covered by BPS)
- Date of first certificate of occupancy

Each building is identified using

- Building address
- Building ID (consider using the [U.S. Department of Energy's Unique Building ID](#))
- Tax parcel ID (optional)
- Portfolio Manager number (optional)
- Name of the building, if any (optional)

Assigning a building identification number or code to each covered property is a critical first step in setting up the BPPMS to facilitate matching of records. Department staff need to merge data from multiple sources potentially including but not limited to the local tax assessor, CoStar, the building department permit database, and municipal utilities. The BPPMS should be capable of identifying which records across the different datasets represent the same physical building, by automatically matching records based on the key building identification fields listed above or, when necessary, by overlaying the GIS coordinates of each building's footprint. It should also provide the capability to manually match/un-match records for those building references that cannot be accurately matched automatically. The BPPMS should be capable of automatically creating new building records when an authorized user uploads a new dataset, and allow the user to manually delete building records.

### BUILDING-PROPERTY HIERARCHY

The BPPMS should be capable of maintaining a parent-child hierarchy of buildings and properties, so that detailed information can be maintained at the building level when available, but rolled up to the campus level for data that cannot be captured at the individual building level. The BPPMS should include provisions to allow manual editing of the relationships among buildings and properties, so that multiple buildings can be easily combined into one record, or a single record can be split into multiple buildings when this is deemed necessary.

### COLLECTING ANNUAL BENCHMARKING SUBMISSIONS

Most energy reporting will be handled through Energy Star Portfolio Manager (ESPM), a free online software supported by the EPA.

The BPPMS should be able to:

- Automatically download data on a user-defined schedule.
- Synchronize downloaded records with the master database using building ID, building address, ESPM ID or other user defined fields.
- Avoid importing duplicate records each time by automatically rejecting exact duplicates and flagging likely duplicates for manual review.
- Import a minimum of 10 to more than 250 individual data fields per record.
- Allow capture and storage of the data values for each reporting year, without overwriting data from previous years.
- Allow the capture and storage of multiple data values for each reporting year, without overwriting previous data from the same year, to allow for corrections in data submission.

## DETERMINING DATA FIELDS TO IMPORT

The BPPMS should allow Department staff to define, on a field-by-field basis, whether the existing data values or the values in the imported records take precedence when data is being imported from an external source. This would include user-defined, rules-based logic to define what actions take place in the following situations:

- The data field is populated in both the imported record and in the existing record, with different values in the two locations
- The data field in the existing record is blank, but the matching field is populated in the imported record
- The data field in the imported record is blank, but the matching field is populated in the existing record

Where rules have not been predefined and any of the above situations are encountered when importing data, the BPPMS should prompt the user to manually select the correct action to take. These actions will determine which data will be stored as the “master” value for each data field, for a given reporting period. The BPPMS should maintain an audit trail to identify the source of each value that has been imported, and should retain any values that were imported, but are not currently considered to represent the master value for that field.

## DATA QUALITY ASSURANCE AND CONTROL

Data quality errors typically fall into two categories: critical errors (generally missing or improperly formatted data) and warnings (values that fall outside of the normally expected range).

Building owners will be notified and required to correct all critical errors to be in compliance. Fields that were flagged with warnings do not necessarily need to be corrected, but the building owner must verify that the data is correct as submitted before the report will be considered to be in compliance.

The BPPMS must be capable of doing the following:

- Automatically running a user-defined set of data quality checks on each benchmarking report received.

- Flag each record to identify any fields that generated critical errors or warnings.
- Issue a status notice and next steps via email or on the user portal.
- Perform the above functions within 24 hours of the time the data has been downloaded from the ESPM website.
- Allow user to develop the rules to define the type of data check that will be performed for each field. These should include at a minimum the ability to:
  - Check for valid data in any required fields
  - Check for gaps in time sequence data
  - Check that data for each field falls within define upper/lower bounds
- Perform simple calculations to compare values across different fields or time periods.
- Examples of typical error checking rules are documented in the IMT report “[Managing Benchmarking Data Quality](#).”

## CALCULATE/INPUT AND STORE PERFORMANCE STANDARDS FOR EACH BUILDING

The buildings database should be able to take the performance standard values for each property type and assign the appropriate standard(s) to each covered property according to its property type (for buildings with more than one use type, the software should calculate a weighted average based on floor area breakdown). Jurisdictions will need to program in the specific requirements of their BPS law.

If a jurisdiction’s BPS uses the IMT model BPS law’s trajectory approach, the software should be able to automatically calculate each covered property’s performance trajectory from its baseline performance to the final standard for its property type for all relevant performance metrics (e.g. Site EUI, Onsite and District Thermal Greenhouse Gas Emissions, Water Use, etc.), thus identifying the performance levels the building is required to meet for all interim standards.

## COLLECT AND STORE INFORMATION RELATED TO COVERED PROPERTIES

The buildings database should be able to collect and store information related to a covered property, such as an accepted Building Performance Action Plan that alters the property's final or interim performance standards or compliance years, an exemption from the BPS requirements, or any other notable circumstances that would affect a property's compliance status.

## TRACKING COMPLIANCE STATUS

The BPPMS must be able to track to multiple deadlines, including benchmarking reporting and building performance standards.

For benchmarking, compliance status can be one of the following:

- Submission received and in compliance
- Submission received and not in compliance
- Action required: Critical Error (missing data must be provided)
- Action required: Warning (owner must confirm that any suspicious data submitted was correct)
- Submission not received and not in compliance
- Approved for extension
- Approved for annual exemption
- Approved for a permanent exemption and removal from covered properties list
- Other – for addressing records for buildings that do not fall under the standard compliance requirements. These may include but are not limited to:
  - Buildings that are not subject to the jurisdiction's benchmarking requirements but have voluntarily chosen to report

For building performance standards, when buildings submit their benchmarking data in a compliance year for an interim or final performance standard, the buildings database should automatically compare each building's actual performance that year to the relevant standard to determine its compliance status, accounting for any conditions that may apply to the building, such as an approved building performance action plan or an exemption. Compliance status can be one of the following:

- Submission meets the standard for all relevant performance metrics; property is in compliance
- Submission does not meet the standard for one or more relevant performance metrics; property is not in compliance
- Submission does not meet the standard for one or more relevant performance metrics, but owner has made its alternative compliance payment; property is in compliance
- Submission not received; property is not in compliance with either the benchmarking or BPS requirements
- Approved for an extension
- Approved for permanent exemption
- Building Performance Action Plan under review
- Approved for a Building Performance Action Plan and compliant (conditional on meeting the terms of the BPAP)

## BUILDING PERFORMANCE ACTION PLAN SUBMISSION DATA

The BPPMS will need to collect and store all information related to [BPAP](#) submissions.

# 4.2 Customer relationship management

## TRACKING BASIC CONTACT INFORMATION

Multiple points of contact for any covered property are often needed to ensure compliance. The BPPMS should allow the user to be able to see and edit all contacts associated with each property, as well as all properties associated with each contact. This contact information will be used to track and manage all interactions with the key points of contact for each property, as described below. The BPPMS should also allow designation of a primary point of contact for a given property, with all other individuals included as secondary contacts. The information that can be captured for each contact should include, at a minimum:

**Name** \_\_\_\_\_

**Title** \_\_\_\_\_

**Role** \_\_\_\_\_  
 (e.g. owner, tenant, property manager, facilities manager, HOA, consultant, or other. The role may vary for different properties the person is associated with.)

**Phone** \_\_\_\_\_

**E-mail** \_\_\_\_\_

**Mailing Address** \_\_\_\_\_

## TRACKING CUSTOMER INTERACTIONS

The BPPMS should be designed to track interactions with property contacts, automate many of the routine steps needed to notify owners of their upcoming reporting and performance requirements and respond to their requests and submissions. Every interaction with a stakeholder needs to be recorded by contact name and matched to the properties related to the inquiry. Notes should be organized so the user can see all of them for each property, ensuring consistent responses from staff member users who provide stakeholder support.

Notes should document:

**Date of inquiry** \_\_\_\_\_

**Contact information** \_\_\_\_\_

**Building information** \_\_\_\_\_  
 (address, building ID)

**Content of what was discussed** \_\_\_\_\_

**Status of inquiry** \_\_\_\_\_  
 (open, in progress, closed)

**Type of inquiry** \_\_\_\_\_  
 (a way to categorize common problems and/or questions like missing building ID, issues with obtaining data, requests for assistance using the submission platform, general questions, etc.)

This process should be synchronized with an email function so each sent/received email is automatically associated with the specific property and contact. For example, if the user uses Microsoft Outlook or MailChimp to send an email to a specific contact, this should be automatically linked with the building record in question in the CRM.

The BPPMS should maintain a queue of all help requests that have been received so that when support staff log into the system, they see all the new requests that need responses. Staff should have the ability to assign requests to different program users, and generate reports of the requests that each user has in their queue, to make sure that they are addressed in a timely manner.

### TARGETED MESSAGING

The BPPMS must be able to generate targeted e-mail messages for individual recipients, using templates that are defined by users. These messages may be initiated manually, in response to a specific request being processed by the user, or automatically, in response to the execution of a rules-based trigger.

### HELP DESK RESPONSES

The BPPMS should allow users to autofill template forms to quickly generate responses that resolve the most common issues. The templates should support mail merge functions that work with the e-mail system specified by the jurisdiction so that the generic responses can be customized by automatically inserting the name of the person requesting the information, their e-mail address, and the building(s) that they were inquiring about. The BPPMS should also track user authorship whether by login or a signature sign off.

### RULES-BASED RESPONSES

The BPPMS should automatically notify stakeholders any time there is an activity or a change in status of which they should be aware. These messages will be triggered by the execution of a user-defined rule within the BPPMS. Some examples of expected triggered responses include:

- Compliance status updates. Immediately after data quality checks have been completed on a building report, the BPPMS should automatically generate an e-mail informing the property owner that their report:
  - was successfully processed and they are in compliance with the benchmarking and/or BPS requirements, or
  - generated critical errors or warnings, in which case the e-mail should provide the actions they are expected to take

- Help Desk response. Any time a user submits a request for assistance to the Help Center the BPPMS should log the request and send a confirmation that the request has been received.
- Extension requests and Building Performance Action Plan submissions. When a user submits a request for an extension from either benchmarking or building performance standards requirements or a BPAP submission proposing an alternative compliance plan, the BPPMS should log the request and send a confirmation that it has been received. As soon as the extension request or BPAP submission is either approved or denied, an automated notification should be sent to the building owner describing the determination that has been made and any next steps that the owner is expected to take.

### MASS COMMUNICATIONS

The BPPMS should be able to:

- Directly send mass communications to all contacts or any grouping of contacts, using user-defined mail merge templates, or manage a listserv that can be easily exported to the jurisdiction's selected e-mail platform, such as MailChimp or Constant Contact. These mass e-mail communications can include regular reminders about compliance deadlines or announcements of programmatic opportunities targeting specific owner groups. For example, such targeted e-mailing could be used to promote a state weatherization program for unsubsidized affordable housing to that specific category of owners and operators.
- Perform queries to select records for a communications campaign based on criteria such as contact type, company, property type, building size, and compliance status.
- Output contact information for a filtered list of properties in a printed or electronic format compatible with the needs of third-party mailing services for physically mailed notifications.



## 4.3 Program administration dashboard

The BPPMS should include a program dashboard for internal staff to monitor the status and activity level of the overall building performance program. Examples of the types of metrics on the dashboard include:

- Compliance status: number/percent of properties that fall under each of the compliance categories listed above for both benchmarking requirements and building performance standards. This should be available by property type or for all covered properties.
- Help desk support activities: number of interactions with stakeholders processed over the preceding day/week/month, average time to resolve an inquiry, types of issues addressed
- High priority properties: flagged properties that need attention
- Number of extension or exemption requests in queue that are still awaiting review
- Number of BPAP submissions in queue that are still awaiting review

All metrics should be presented in a highly graphical and interactive manner to make it easy for the user to track key metrics. Users should be able to customize display of the data.

## 4.4 Property owner portal

The BPPMS should be connected to a “property owner portal,” a public-facing, web-based interface that gives owners and managers access to real-time building and program information. The portal should have a user friendly, visual interface with an easy property selection process such as an interactive map or list by address. It should include:

- A look-up or request function that allows owners and managers to see the interim and final performance standards that apply to their properties.
- A way for owners and managers to check their properties’ compliance status for benchmarking and performance standard requirements as well as any other related requirements (e.g., audits, tune-ups) that may apply.
- Web-forms for submitting exemption and extension requests, as well as a way to check on the status of such requests
- Status of owner-submitted inquiries
- A web-form or other means of submitting a Building Performance Action Plan as well as a way to check on the status of the submission.
- Links to resources and services such as the High-Performance Building Hub and relevant financing and incentive programs



## 4.5 Software functionality

The following are additional functionalities in which jurisdictions have expressed interest. They do not fall into “core functions” of software requirements but are helpful add-ons that may be considered necessary in the future.



### Building stock database synchronization

Some jurisdictions desire the ability to synchronize their information with additional data sets beyond local tax assessor data, such as CoStar or GIS files. This adds functionality to extract data from these sources and match the data fields with the values in the BPPMS.



### Building ID generation

The Unique Building ID (UBID) methodology developed by the U.S. Department of Energy should be closely examined as a potential standard for use by cities that already have access to the building-level GIS data that it requires. More information is available at <https://buildingid.pnnl.gov/>.



### Building scorecards

Several jurisdictions now generate scorecards<sup>34</sup> to educate owners on ways to improve their properties' performance. The BPPMS should be able to automatically create scorecards for each property that remind owners of upcoming interim and final performance standards, show the gap between current performance and the coming standards, calculate the property's potential alternative compliance payment if it does not improve to meet the standard, and recommend next steps for the owner.



### Energy and water audits

Jurisdictions that have requirements for certain buildings to conduct periodic audits need a way to collect the detailed information that those reports will include. The BPPMS should be capable of importing audit reports from DOE's Audit Template tool and other applications using the DOE's BuildingSync protocol, and link the data received to the appropriate building record within the BPPMS. In addition to importing the electronic data, the BPPMS should also be capable of collecting and linking to PDF files, for situations where copies of signed reports or approved certifications need to be maintained.

34. See the IMT and Urban Sustainability Directors Network report “Energy Benchmarking Scorecards: Sharing Data to Motivate Action” for example scorecards.

# CHAPTER 5

## Violations and Enforcement

This chapter recommends a structure for equitable enforcement of a building performance standard.

### Key terms and acronyms

- **ACP:** Alternative compliance payment. ACP is an alternative to terms such as fine, fee, or penalty.
- **Abatement cost:** The estimated cost of improving a building's performance per unit of the relevant performance metric
- **Assessed Property Value:** The dollar value assigned to a property for the purpose of calculating property taxes

A full glossary is available in [Appendix A](#).

BPS should be designed and implemented with the intention that the vast majority of owners will voluntarily comply by meeting the performance standards. Nevertheless, some owners may not voluntarily comply, so the jurisdiction needs to be prepared to enforce its BPS. In general, the consequences of non-compliance should be serious enough to incentivize owners to seek compliance through performance upgrades rather than simply paying not to comply.

## 5.1 Alternative compliance payments

In writing BPS legislation, IMT recommends jurisdictions use the term alternative compliance payments (ACPs) rather than “fines,” “fees,” or “penalties” for a number of reasons:

- In some jurisdictions, fines and fees are legally limited to the owners’ cost of compliance, meaning they do not offer a positive motivation to comply. An enforcement framework based on ACPs may give jurisdictions more flexibility than is allowed by fines or fees.
- For some jurisdictions, any monies acquired from fines and fees go into a general fund and cannot be earmarked for specific purposes. Jurisdictions may be more able to direct ACPs to fund energy efficiency incentives or a [high-performance buildings hub](#).
- Many existing commercial lease agreements do not allow building owners to pass “fines” or “penalties” on to commercial tenants. According to real estate professionals consulted in the development of the IMT model law, these restrictions are unlikely to apply to an ACP, thus giving commercial tenants an incentive to cooperate with owners in improving building performance and aligning the incentives of owners and tenants. Note that this consideration does not apply to multifamily leases because the term used has no bearing on an owner’s ability to pass costs through to residential tenants.

### HOW TO SET ACPs

ACPs should be set high enough to create a strong incentive for covered properties to comply through improved performance while not creating undue burden that may impact an owner’s ability to operate. At the same time, ACPs should reflect both the magnitude and the duration of non-compliance so that those who are close to achieving compliance or are only marginally late in doing so, have relatively lower payments. Jurisdictions also need to consider that many owners have limited financial resources that constrain their ability to make performance improvements or pay an ACP. This situation is particularly common for affordable housing providers, both regulated and naturally occurring.

In setting an ACP, the first factor should be a property’s actual performance relative to each standard under the BPS. In general, the greater the gap between a property’s performance and the standard—whether measured by energy use intensity, greenhouse gas emissions, air quality, water consumption, or other performance metrics—the greater the ACP amount should be. If a property misses its standards by a small amount the resulting ACP enforcement should be correspondingly small. Similarly, the ACP should reflect the duration of non-compliance: the longer a property is out of compliance, the higher the ACP should be. Lastly, if the BPS has multiple performance metrics—such as energy and water consumption, or carbon and air quality—each ACP should be calculated separately with the owner responsible for paying the total of all of the ACPs.

ACPs are calculated by multiplying an ACP coefficient (e.g., \$x per kBtu) by the extent to which a property has missed its interim or final performance standard (e.g., kBtu of site EUI). For more, see explanation below.

This approach creates a strong and clear incentive for owners to meet their properties’ performance standards but also recognizes the efforts of owners who come up short.

## SETTING ACP COEFFICIENTS BASED ON ABATEMENT COST

One strategy for setting ACP coefficients is to base them on the cost of performance improvement upgrades (the “abatement cost”). This approach ensures that the cost of paying the ACP would be higher on average than the cost of complying through retrofitting to improve performance for a property with an average assessed value per square foot. The ACP coefficient should be expressed on a per unit (of the applicable performance metric) per square foot basis. For example, the average cost of abating one ton of CO<sub>2</sub>e should be less than the cost of the ACP per ton of CO<sub>2</sub>e.

To estimate the cost of abatement for a given performance metric, the Department would need to review of a variety of different performance improvement measures, their costs, and performance improvement potential across a wide range of property types.<sup>35</sup> Feedback from real estate stakeholders as well as experts in building science can be critical inputs into this work. The Technical Committee could be tasked with determining these average cost of abatement amounts as part of the work to set the final performance standards (see [Setting Final and Interim Performance Standards](#)). If the Department has access to it, data collected through an energy audit, retro-commissioning, or retuning law can be useful for determining local average abatement costs.

This average cost of abatement will likely vary by property type, property size, between individual properties, and will change over time as the market does. This is unavoidable. The goal is to get an approximate average that can help guide the setting of the ACP coefficient. It should be expected that the jurisdiction will periodically have to repeat this analysis to update the ACP coefficient as the market evolves, but at intervals no shorter than five years.

IMT recommends the following formula to calculate the ACP for non-compliant buildings:

$$[Actual\ Performance-Performance\ Standard] \times [ACP\ Coefficient] = ACP\ Owed$$

As mentioned, the cost of abatement will vary significantly from property type to property type. Departments may therefore choose to establish different ACP coefficients that reflect this, understanding that such an effort will be technically difficult and resource intensive.

### ACPs for Under-Resourced Properties and Owners

An alternative way of addressing equity in enforcement is to set a separate ACP formula that would only apply to under-resourced property owners. Rather than rely on assessed value as a proxy for under-resourced owners, the Department would determine a set of qualifications an owner would have to meet to be eligible for a reduced ACP coefficient. Departments interested in taking this approach should look to [The City and County of Denver for a model](#) of how to designate under-resourced properties and owners.

## WEIGHTING OF ACPs BASED ON ASSESSED VALUE FOR EQUITY

Embedding equity concerns in all aspects of the BPS policy is important for its success, and this includes enforcement. In recognition that property owners will vary considerably in their financial resources and capacities, IMT recommends that jurisdictions account for an owner’s resources when issuing ACPs. While it would be difficult to determine each owner’s ability to pay an ACP, one potential approach is to use a property’s assessed value as a proxy for the financial status of its owner.

35. Departments that commission a consultant to help them set performance standards for covered properties should consider including deliverables estimating the average costs of abatement and recommendations for ACP amounts in the consultant’s scope of work. The U.S. Department of Energy may be willing to assist jurisdictions by commissioning such analysis by national labs.

While the correlation between a building's assessed property value and its owner's ability to pay is not perfect, IMT believes the correlation is strong enough that in most cases, the ACP for non-compliant owners will reflect their financial situation better than if their properties' assessed values were not taken into account. Such an approach, if successful, would help prevent under-resourced owners from being inequitably burdened by their ACPs and deter wealthier owners from simply paying the ACP rather than improving the performance of their properties. However, the approach would also diminish the incentive provided by ACPs to improve properties with lower valuations. Jurisdictions should seek advice from their CABs as to whether factoring appraised value into ACPs would be a net positive for equity.

Under this ACP framework, the ACP amount is multiplied by a fraction (e.g. 0.001 percent) of the value of the non-compliant property as assessed by the jurisdiction's property tax assessor. A non-compliant property with a higher value would have to pay a larger ACP than that of a lower value property for the same violation.

IMT recommends the following formula to calculate the assessed value-weighted ACP for non-compliant buildings:

$$[\text{Actual Performance-Performance Standard}] \times [\text{ACP Coefficient}] \times [\text{A Fraction (e.g., 0.001\%)} \text{ of the Assessed Property Value}] = \text{Alternative Compliance Payment}$$

Close collaboration with the property tax assessor's office will be important in developing the rules around this approach. Careful consideration of the value of properties owned by non-profit entities should be considered to ensure those properties are not overly burdened.

Note that this is just one potential method of tying enforcement to equity considerations. Jurisdictions should work with their Community Accountability Boards to explore this approach as well as any and all alternative methods to deploy equitable enforcement measures they deem appropriate. In particular, given how much buildings vary even

within a property type, the jurisdiction should have an accessible process that owners may use to appeal ACPs.

## FREQUENCY OF PAYMENTS

### Example of ACP Based on Performance and Assessed Value

Weighting ACPs by performance gap and assessed property value sets clear incentives for BPS compliance that are reasonable and equitably distributed. As an example, consider a mid-sized residential building valued at \$10,000,000 that has a BPS of 50 kBtu/sq. ft./year site EUI but performs at 75 kBtu/sq. ft./year. If the ACP coefficient has been set at \$5 per kBtu/sq. ft./year over the BPS, and the property value was weighted at the suggested 0.001 percent, then, applying the equation above, we get:

$$[75 \text{ EUI} - 50 \text{ EUI}] \times [\$5 \text{ per kBtu}] \times [(0.001 \times 0.01) \times \$10,000,000] = \$12,500 \text{ ACP}$$

For the sake of consistency and comparability, all metrics should be expressed on a per square foot basis whenever possible.

The IMT model law recommends that an ACP be levied annually rather than on a one-time basis until a property meets all of the interim and/or final performance standards. Repeated annual payments puts continuous pressure on owners to make the needed performance upgrades to bring their properties into compliance. In addition, if an ACP is levied on a one-time basis rather than annually, the ACP level needed to motivate compliance will be much higher. Owners that cannot meet their performance standards due to technical constraints should file a BPAP to avoid annual ACP payments.

## ESCALATING ACPs FOR REPEATED NON-COMPLIANCE

Jurisdictions should consider an escalation of the ACP coefficient for owners whose properties repeatedly or egregiously miss their performance standards. Under this approach, the first ACP amount is calculated using the jurisdiction's standard calculation. For subsequent violations of the same

requirement, a multiplier is added, with the multiplier itself increasing each year. As with requiring annual payments, this puts increasing pressure on owners to comply.

### ACP TRUST FUNDS OR ACCOUNTS

Jurisdictions should investigate whether they have the authority to write the BPS bill to empower the Department to establish a dedicated fund into which all monies acquired through ACPs, or a portion thereof, are deposited. (In some cases, there will be an existing fund appropriate for receiving these monies instead of creating a new fund.) Monies from this fund could be used for BPS compliance support initiatives such as technical assistance programs, financing and incentive programs, and High-Performance Buildings Hubs. IMT's model law requires that Departments set aside a portion of ACP-derived funds for specific social equity purposes as defined by the Community Accountability Board. These include investing in frontline communities through targeted technical and financial assistance for building performance improvements, retrofit industry workforce development, and other programs.

## 5.2 Other enforcement mechanisms

ACPs are not the only enforcement mechanism available to jurisdictions. Some jurisdictions may choose to use some additional powers to encourage compliance by owners of covered properties.

### OTHER FINES AND FEES

The ACP should be the primary enforcement mechanism for BPS. In practice though, there may be owners that refuse to comply with BPS either through meeting the standards or paying the ACP. Ideally, these situations will be very rare, but Departments should possess the authority and willingness to administer serious consequences for such cases. Consequences may include severe fines or penalties

beyond the limits of the ACP. Departments must be willing to pursue these penalties through requisite legal processes. In some cases, a sister agency like the Attorney General will be responsible for enforcing such penalties.

### BUILDING PERMIT LIMITATIONS

Another possible way to enforce a BPS is to establish limitations on the issuing of building or occupancy permits for non-compliant properties. As large buildings may require any number of minor or major building permits at any given time, any limitations on owners' access to permitting could be a major consequence. While this approach is certain to get the attention of owners and encourage them to comply with BPS, it is not recommended unless clear limits on this enforcement mechanism can be established.

Building permits are required for many building alterations from critical life saving measures like replacing heating systems in winter to fixing air handlers so they provide necessary air supply to occupants, but also to implement the very performance upgrades needed for buildings to comply with BPS. Preventing or even slowing down the administrative process needed to acquire such permits could be detrimental to not only the BPS, but also and more importantly, the safety and health of occupants.

Therefore if this enforcement mechanism is to be used it must only apply to building permits without a clear health, life safety, or building performance function. As clearly defining such parameters may be difficult in practice, and the risks of unintended consequences are high, it is recommended that jurisdictions take great care before utilizing this mechanism especially when BPS administration and building permitting reside in different agencies. Should a jurisdiction pursue this enforcement strategy, it is critical to retain consistency between permitting rules and the requirements of the BPS. If, for instance, the BPS includes electrification requirements, then building codes should evolve in parallel to limit permits for fossil fuel-consuming equipment after a certain date.



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## SECTION II

# Coordination and Supporting Programs



## CHAPTER 6

# Inter- and Intra-Governmental Coordination

This section describes some of the government offices, both within and outside the implementing jurisdiction, with whom the implementing department may need to coordinate in developing its BPS implementation program.

### Key terms and acronyms

- **Green bank:** mission-driven financial institution that uses innovative financing techniques to drive greater implementation of clean energy projects

A full glossary is available in [Appendix A](#).

Departments implementing BPS policies should coordinate with relevant government departments within and without the jurisdiction throughout the process of policy development and implementation. This will help to align external messaging regarding the BPS and its requirements, coordinate with existing programs that may overlap with aspects of the BPS policy, and acquire buy-in for additional programs or activities that the BPS may require.

Departments should make a list of all potential government actors they will need to communicate, collaborate, or otherwise interact with to implement BPS successfully. The more complex the policy, the greater the need for coordination with other governmental departments and entities, but in many cases the following governmental entities will have a role to play in the successful rollout and ongoing management of a BPS policy:



### **Sustainability/Resilience Offices**

It is likely that for most local governments, the sustainability or resilience office will be responsible for implementing the BPS. However, where this is not the case, the Department should work closely with the Sustainability or Resilience Office to coordinate communications, as this office is likely to interface with stakeholders and community members that are keenly interested in the BPS.



### **Buildings Department**

The buildings department is a critical organization to involve in BPS development and implementation planning. In some cases, the buildings department will need to administer processes that are important for the BPS policy's implementation. In St. Louis for instance, where the Buildings Division is implementing BPS, owners can have their building's certificate of occupancy revoked for non-compliance. Denver's building performance policy (which includes a BPS) directs its Development Services Department not to issue permits for certain fossil-fuel powered heating systems after a certain date.

Even if a BPS policy does not require specific administrative actions from the buildings department, the implementing department should still prioritize coordination with them. As explained in the issue brief "[A Lifecycle Approach to Building Performance Regulation](#)," there is currently no explicit link between energy codes and BPS, meaning it is possible for a new building to be constructed that complies with the energy code but does not perform well enough to meet the levels of performance required by the BPS. This presents a significant risk of political backlash and the potential for legal action against the jurisdiction. Departments should work closely with the buildings department to create a comprehensive, lifecycle approach to regulating the performance of buildings, and specifically take into account the current energy code requirements when setting BPS targets. The issue brief suggests six near-term steps governments implementing BPS should take to reduce risk and make progress toward harmonizing code and BPS requirements.

In cases where the buildings department is the implementing department, coordination with other buildings department activities is easier to facilitate; however, thus far, building performance policies including BPS have most often been implemented by sustainability offices, meaning that coordination between multiple departments will be necessary. For buildings departments, implementing BPS may present an opportunity to leverage new BPS-related funding to improve existing data management systems and hire additional personnel to initiate a new, lifecycle approach to building performance regulation.



## Housing Department/Authority

BPS comes with a risk of exacerbating the crisis of unaffordable housing that governments in nearly every urban area in the country are struggling to address. Therefore, it is especially important to monitor the effects that BPS has on the affordable housing properties it covers. Departments should work closely with their housing departments, housing finance authorities, tenant advocates, and other relevant governmental organizations to understand the risks to both regulated and unregulated affordable housing and make a plan to monitor and respond to these risks. IMT recommends that Departments consider designating or hiring a staff person to serve as the official liaison to such organizations as well as owners and residents of affordable housing covered by the BPS.



## Facilities Management Department

It is important that buildings owned by the government implementing the BPS comply with its requirements. The failure of a significant number of publicly owned properties to meet the BPS requirements would be embarrassing for the jurisdiction and its political leadership and create a public relations problem. For this reason, the Department should meet with the department(s) responsible for managing government facilities as well as any other relevant departments, such as the finance or procurement department, to ensure they are aware of the BPS requirements and are developing plans to bring all covered public buildings into compliance. Because jurisdictions may find it difficult to enforce BPS requirements on themselves via ACPs or other financial methods, it is important to set a clear expectation that government buildings will lead by example in meeting the standards.



## Green banks

A green bank is a mission-driven financial institution that uses innovative financing techniques to drive greater implementation of clean energy projects. The purpose of a green bank is to leverage its own funds with private lender dollars to provide better loan rates, terms, and credit access for sustainability projects. Jurisdictions that already have a green bank operating locally should work with the bank to coordinate or create programs that are aligned with the requirements of the BPS.



## State government

Local jurisdictions should be prepared to work with state government departments and legislatures on a number of issues related to their BPS, including:

- Potential pre-emption of the jurisdiction's BPS by the legislative action
- Financial or material support from state energy offices to assist with BPS implementation
- Changes to statewide utility regulations that could help meet the goals of the BPS (see "[Chapter 7: Engaging with Utilities and Regulators](#)")

# CHAPTER 7

## Engaging with Utilities and Regulators

This section describes the role of utilities in creating and implementing a BPS.

### Key terms and acronyms

- **Decarbonization:** Processes that remove carbon from or avoid adding carbon to the Earth's atmosphere. In the case of buildings, this generally means focusing on efficient, low-carbon materials and operations.
- **GEB:** Grid-integrated efficient building
- **GHG:** Greenhouse gas(es)
- **Megawatt-hour (MWh):** one megawatt (1,000 kilowatts) of power used continually for one hour, which is similar to how utility bills are measured, but at a utility scale
- **IRP:** Integrated Resource Planning, which is the name of a common utility process for multi-year strategic planning
- **Public utility commissions:** entities that regulate utilities
- **TOU:** Time-of-use which refers to when during a day energy is used. Different points during a day may require utilities to generate more or less power.

A full glossary is available in [Appendix A](#).

Utilities play a critical role in a just energy transition, and jurisdictions should consider the role their utilities can play in BPS implementation. Addressing utility-related BPS considerations in advance will allow jurisdictions to more effectively achieve multiple priorities in a coordinated way— including GHG emissions reductions, building electrification, energy efficiency, peak demand reductions, and grid flexibility. More specifically, building performance standards present an opportunity to encourage utilities to share data, incorporate buildings into their planning processes as assets, and offer policy compliance support.

While some of the issues described below can be addressed by working directly with utilities, others will require going to [Public Utility Commissions](#), the state agencies that regulate utilities, and formally intervening in regulatory proceedings, which can be time- and resource-intensive and require levels of expertise that many local governments may not possess. By forming a coalition with other local governments and aligned advocates and soliciting support from organizations that can offer technical expertise, jurisdictions may be able to add sufficient capacity to intervene in regulatory proceedings.

There are a number of key utility-related considerations jurisdictions should take into account when designing and implementing a BPS:



#### Rates

Mandatory or widely-used voluntary utility Time-of-Use (TOU) rates are very helpful for BPS implementation, because they provide price signals that encourage load shifting in buildings to off-peak hours for cost savings and, depending on the generation mix on the grid, GHG reductions.



#### Resource and Distribution System Planning

The anticipated energy and demand savings from a BPS are important to consider in utility planning processes – both to inform the load forecast in resource planning, and for potential impacts on the distribution system and related infrastructure investments. Non-wires alternatives, such as high-performance, grid-interactive efficient buildings (GEB) have the potential to act as assets to the system – contributing to demand flexibility and reducing overall energy consumption – which may defer or replace investments in utility distribution systems.

Jurisdictions should consider intervening in utility resource and distribution planning dockets to make this case. For example, the City of Minneapolis submitted rigorous [comments](#) in Xcel Energy's integrated resource plan highlighting how building improvements can help meet future resource needs. In another example, the District of Columbia [argued](#) that the utility load forecast justifying a \$200+ million dollar distribution did not take into account efficiency improvements and so was unfounded. See IMT's report – [Participating in Power: How to Read and Respond to Integrated Resource Plans](#) – for more on engaging in IRPs.



#### Incentive Program Eligibility

Utility energy efficiency incentives can play a key role in BPS compliance by subsidizing building owners' energy improvements; however, utilities are often unwilling or legally prohibited from offering incentives for energy conservation measures that are required by an existing code or standard. This may or may not apply to BPS policies, which mandate performance to a certain level and do not require implementation of specific energy efficiency measures. Because utility incentives may be an important factor to ensure the success of a BPS, jurisdictions should engage in advance with utilities and regulators to determine whether buildings covered by BPS requirements will be eligible for incentives.



### Energy Savings Attribution

In addition to eligibility, there is also a question of the level of attributable savings utilities will be able to claim from energy efficiency program support for BPS, given their novelty. The answer to this question is critical as it will largely determine how motivated utilities will be in designing and delivering programs that support a BPS. As with eligibility, discussions should take place with utilities and regulators in advance of implementation.



### Electrification

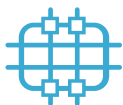
A BPS that is focused primarily on decarbonization will have metrics that drive building electrification. Without parallel energy efficiency goals, electrification runs the risk of increasing the energy burden on frontline communities in areas where electricity costs are higher than gas costs. In the long run, electrification may also increase gas rates as the fixed costs of running the gas system are spread over fewer and fewer customers. On a grid where coal is a major source of electricity generation, electrification will also increase GHG emissions until the coal plants are replaced with renewable energy. All of these factors should be carefully considered in BPS design.

From a process perspective, jurisdictions interested in using GHG emissions, rather than energy, as their primary BPS metric, should first determine the proportion of covered properties with meters that can collect energy use data at intervals of one hour or less. Then, for a GHG metric to be meaningful, there must also be time-of-use GHG emissions data available from the grid (currently very rare) or an hourly schedule of conversion factors for megawatt-hour (MWh) to GHG emissions forecasted for the BPS compliance period. An energy metric is a simpler place to start and will still achieve GHG reductions if the carbon content of the grid is still relatively high.



### Equity

Given the substantial capital investments that will be required to achieve BPS compliance, there is a risk of driving up housing costs, exacerbating affordable housing concerns, and increasing the energy burden among low-income customers. To minimize these risks, significant resources should be devoted to financial and technical assistance to buildings in underserved communities. Utilities can provide critical support for this, making up for resources which jurisdictions often lack, and possibly help themselves at the same time if they have efficiency mandates specific to low-income customers.



### Grid Flexibility

With the growth in variable renewables on the grid and increasing electrification of buildings and transportation, the timing of electricity consumption will be of increasing importance. Current BPS metrics address building level consumption on an annual basis, but the carbon content of electricity varies from minute to minute and providing grid flexibility from buildings requires having at least hourly energy use data. To achieve meaningful grid flexibility contributions, a building needs to receive day-ahead demand forecasts and automated demand response signals from their utility, and it may therefore need to come at a later phase of BPS implementation. But intentionally designing BPS from the start to encourage grid-interactive efficient building capabilities and associated demand flexibility can enable deeper GHG savings under future grid conditions as well as minimizing needed infrastructure investments.

## CHAPTER 8

# Creating a High-Performance Building Hub

This chapter describes the steps needed to develop and launch a high-performance building hub to support BPS implementation. Hubs offer services and education in support of the goals of a BPS policy.

### Key terms and acronyms

- **High-Performance Building Hub:** a “Hub” is a centralized location where all real estate stakeholders in a jurisdiction can access critical guidance, technical assistance, and/or access to available incentives to building owners, designers, contractors, and operators.
- **Needs assessment:** a research process to determine the resources and services a Hub should deliver to close identified gaps in the high-performance buildings market

A full glossary is available in [Appendix A](#).

IMT strongly recommends that every jurisdiction that adopts a BPS also invest in a high-performance building hub (Hub). A “Hub” is a centralized location where all real estate stakeholders in a jurisdiction can access critical guidance, technical assistance, and/or access to available incentives to building owners, designers, contractors, and operators. Hubs are non-exclusive aggregators of the information that can help covered property owners comply with the policies, including but not limited to the BPS, that lead to the achievement of the jurisdiction’s climate goals.

A Hub’s goal is to remove obstacles that prevent the implementation of high-performance building strategies by both spotlighting good practices of local market leaders and aiding those who may not have the necessary resources—be it information, expertise, or finances—to act and improve their buildings’ performance.<sup>35</sup>

The creation of a Hub can seem like a daunting undertaking when a jurisdiction is starting on its own. However, IMT and its partners have already launched several Hubs in various jurisdictions across the nation and are forming a network of Hubs called the Building Performance Partnership. Drawing from this experience, this section summarizes best practices and lessons learned to stand up a Hub in a time-efficient and cost-effective manner.

### Cost of a Hub

Based on IMT’s experiences setting up Hubs in Washington, DC and St. Louis, MO to support real estate stakeholders covered by the City’s BPS, a Hub would likely cost \$150,000 to \$220,000 for the initial year (including stakeholder engagement and planning), with the bulk of the costs going to the salary of an executive director and programming expenses.

In later years, the Hub could expect to spend between \$175,000 and \$400,000 annually with the higher part of the range accounting for the addition of staff and expanded programming. When making a budget request to fund the BPS implementation program, jurisdictions should be sure to include a separate line item dedicated to Hub funding.

## 8.1 Identify local market needs

Before determining exactly what resources and services a Hub should deliver, the Department should begin by assessing current market gaps and obstacles through a needs assessment process.

There are a number of ways jurisdictions can provide support to their local markets, such as:

- Providing guidance on how to make the business case to senior leaders;
- Offering one-on-one consultations with experts on cost-effective policy compliance strategies;
- Offering information on available financing options;
- Providing guidance on how to implement building improvements; and
- Offering access to technical demonstrations or trainings.

Having a detailed understanding of the stakeholders—and their particular priorities, perspectives, and challenges—is essential for determining the most impactful programs and services a Hub should offer. An assessment of the high-priority needs in a local market begins with the following steps:

- 1. Consider links to other priorities.** Consider how the Hub might tie building performance goals to other community priorities, such as promoting economic development or social equity. These priorities will affect who should be included in stakeholder engagement and which data need to be collected to inform Hub planning. For example, the DC Building Innovation Hub is planning an equity data overlay of its BPS’ covered properties to prioritize buildings in frontline communities that need more technical and financial resources.

35. IMT’s “[Providing Local Market Support with a High-Performance Building Hub](#)” provides a short overview of how to set up an effective Hub.



- 2. Take stock of who will be affected.** Building owners, operators, tenants, and community members will be affected by BPS—both directly and indirectly. Jurisdictions should talk with them to understand what they need both immediately and in the future to meet the BPS requirements. Interviews and an industry-wide survey of the stakeholders will help define what the Hub should offer.
- 3. Evaluate all opportunities and drivers for high-performance buildings.** The BPS itself will be the greatest driver for high-performance buildings; however, if the Department anticipates other major shifts in the local market, such as tax incentives to encourage a specific type of development or an upcoming utility program, it should consider how the Hub could accommodate these broader anticipated market changes.
- 4. Evaluate available datasets.** Analyzing building benchmarking data, current energy code requirements, employment statistics, and demographic and economic data can help the Hub get a sense of the current state of the building stock and local building industry. This analysis can help determine how a Hub could best fill identified gaps in the market.

For a Hub to be successful, it must continually re-evaluate the market's changing needs over time. A Hub should be designed to not only support property owners with compliance but also should strive to push the market forward towards a more innovative and equitable future.

The most important requirement for those who will conduct the needs assessment is local knowledge and connections to stakeholders who will be affected by the BPS. Other important factors include technical knowledge about designing, constructing, and operating high performance buildings; awareness of financing options for building upgrades; experience doing stakeholder engagement and interviews; as well as the ability to synthesize data from numerous sources into actionable guidance.

The first step of conducting industry interviews and surveys can be done by the Department, or can be contracted to another entity. IMT served in this capacity in Washington D.C., and has advised on numerous similar efforts in other jurisdictions. It is essential to have a lead interviewer who is familiar with local industry dynamics, and preferably not an employee of the implementing jurisdiction. It is also helpful to have a few additional people consulting to provide multiple perspectives on interview questions and outreach tactics. This is particularly true of outreach to under-resourced building owners, such as nonprofits and affordable housing properties.

By following the above steps, the Hub can start moving from ideation to action in the form of a Business and Operations Plan.

## 8.2 Develop a business and operations plan

Using the information gleaned from the needs assessment, the Hub staff should develop a business and operations plan to define, target, and prioritize the Hub's offerings in order to deliver impactful outcomes for the jurisdiction, its community members, and its stakeholders.<sup>36</sup> Depending on the goals outlined in the community engagement and policymaking process, IMT has seen Hubs focus on decarbonization, electrification, and/or social equity. Each strategy has different metrics, resources, and services. Therefore, the plan should feature the following elements:

- A concise description of the Hub's strategic priorities, including its target audiences, the types of buildings it will prioritize, the services it will offer, and the key success metrics it will track.

36. Local jurisdictions and regional entities have successfully worked with national partners possessing expertise in high performance buildings and energy efficiency, such as IMT, to do both the Needs Assessment and the Business and Operations Plan. Based on IMT's review of existing Hubs, the Department should anticipate spending between \$50,000 to \$100,000 on the Needs Assessment and Business and Operations Plans. The longer the process and/or the more community engagement and outreach the Department seeks, the higher the potential costs.

- A description of the Hub's organizational structure. Will the Hub be operated by the implementing jurisdiction or by a third-party organization?
- A partnership plan laying out how the Hub will work with existing organizations and programs that offer complementary services, expertise, or capacities. The plan should identify which partners the Hub should approach for assistance in different areas such as strategic guidance, technical assistance, and funding support. A valuable expansion of the partner plan is to consider the establishment of a dedicated advisory board representing key building industry stakeholders. In addition to providing ongoing strategic guidance to the Hub, this group could also serve as Hub ambassadors who assist in marketing its programs and expanding its partner network.
- A funding plan that clearly states how much money the Hub will need for its operations and from which sources it will raise funds. A Hub's success depends on stable, multi-year funding. While a Hub should work diligently and creatively to raise funds from a variety of sources, it is unlikely that a Hub will be able to launch and attain long-term viability without significant government funding. For example, the District of Columbia funded a needs assessment and business and operations plan for the DC Building Innovation Hub with an initial investment of \$100,000. A second round of District funding, adding up to approximately \$400,000, covered the start-up cost for the Hub, including the personnel costs (a Hub Director and support staff for administrative assistance), website and branding development, and the first outputs of resources and services.
- A staffing plan for the number of people the Hub will need and the roles each will take on. The most important staff role is the Hub Director who leads the strategic direction, partnering, and budgeting of the organization. While partners may be able to fulfill some of the functions of running a Hub, such as providing administrative, communications, or fundraising support, in many cases the Hub will need additional staff to assist the Director with carrying out the Hub's core operations as well as marketing, outreach, and content development.
- The Hub's success depends on collaboration with an array of organizations and organizational types, including utilities, nonprofits, and businesses. A communications plan identifies which audiences the Hub wishes to reach and which strategies it will use to deliver the desired messages. Additionally, the Hub will need to coordinate with its partners, including staff from the Department, to ensure that all parties are projecting consistent messaging.

## 8.3 Launching the Hub

The Hub will develop and deliver comprehensive programmatic resources that educate stakeholders on BPS policy objectives and requirements, and connect them to best practices and high-performance building solutions. Successful Hubs have been viewed as trusted, neutral, non-political entities that direct the industry to services, supporting organizations, and implementation solutions; they do not create or modify policy. The types of resources and services offered are determined by the needs assessment and the business and operations plan. Many of these resources can be adapted from Hubs operating in other markets to fit the city's specific needs. Types of resources may include the following (please refer to the [DC Building Innovation Hub](#) to see examples):

- **Policy compliance checklists and FAQs:** Simple, easy-to-use resources describing Building Performance Standard (and other policy) compliance pathways.
- **Playbooks and templates for implementing improvement strategies:** Guidance related to constructing and retrofitting primary building systems (envelope, ventilation, heating/cooling, domestic hot water, plugs and process loads), strategies for new construction to go above the energy code to comply with the BPS, implementing low-cost strategies to decrease energy-related operating costs, and assessing high-performance building technology solutions.

- **Contract templates and toolkits:** Guidance to enable building owners to support sustainability and equitable decarbonization through leasing and procurement processes. This could include RFP templates, a recommended process for high-road contracting, sample contract language, and sample leasing provisions that overcome the split incentive between landlords and tenants.<sup>37</sup>
- **Case studies:** Promoting peer-to-peer learning, showcasing best practices, and minimizing perception of risk.
- **Funding and financing guides:** A regularly-updated directory of available financial incentives, grants, tax abatements, and utility rebate programs to help property owners fund improvements.
- **Help desk:** A phone number and email address that building owners can use to get answers to their questions regarding the BPS requirements.

Beyond providing compliance resources, the Hub can also act as a convener and translator for the industry to advance and share ideas. Outreach and engagement events might include:

- **BPS compliance presentations:** Regular presentations on the BPS explaining who must comply, relevant deadlines, compliance pathways and reporting processes.
- **Peer-to-Peer activities:** Workshops in which industry peers share successes, challenges, and lessons learned with one another.

Based on the needs assessment and available funding, the Hub may offer additional, more resource-intensive services, including the following:

- **One-on-One compliance consulting services:** Hub staff and advisors could provide tailored support to covered property owners, particularly those whose properties serve frontline communities, who need direct, individualized

assistance to comply with BPS. The DC Building Innovation Hub conducted a pilot program in 2021 that connected 20 under-resourced affordable multifamily housing owners with resources and assistance to help them comply with BPS requirements. This pilot reached 2,700 residential units or 17 percent of all non-compliant affordable multifamily housing buildings in the District.

- **Workforce development programs:** Following the adoption of BPS, the market for high performing building services should experience significant growth. After New York City adopted Local Law 97, Urban Green estimated that the new law would create a \$20 billion retrofit market and 141,000 new jobs by 2030, a 13-fold increase from baseline. Hubs should align with existing workforce development programs or even create programs of their own to equip students with skills that will be in demand because of the BPS. Programs such as small and medium disadvantaged business accelerators or matching services that connect vendors and customers present opportunities for Hubs to address inequity by preparing members of frontline communities to compete for contracts and jobs resulting from the BPS.
- **Funding source:** Where resources permit, Hubs could administer dedicated funding or financing for building performance improvements. Jurisdictions may consider setting aside a portion of such funding for specific social equity purposes including support for under-resourced buildings serving frontline communities.

Whichever combination of services the Hub offers, it is critical to ensure broad awareness of both the BPS and the Hub among owners of covered properties. Owners cannot comply with a BPS that they are not aware of and they cannot access Hub resources that they do not know about. In the initial launch of the Hub, staff should conduct a thorough outreach

37. The Green Lease Library, a resource provided by IMT and the U.S. Department of Energy's Better Buildings Alliance, offers numerous resources on how to institute high-performance leasing provisions. IMT's "[Model Performance-Based Lease Template](#)," contains language that owners can use to establish a performance standard for the building which is tied to local BPS requirements that applies to tenant spaces by defining an energy consumption limit and/or plug load standard.

campaign to raise awareness among building owners and managers. Depending on budget, the outreach campaign should include mass physical mailers, email campaigns, and individualized phone outreach to owners and managers. While time consuming, talking to individual owners and managers of covered properties is often the most effective way to build awareness of requirements and available assistance programs, increasing overall compliance and participation rates.

## 8.4 Build a communications strategy

When a BPS is adopted, real estate stakeholders are curious and uncertain about how it will affect their operations and bottom line. To reduce the amount of anxiety and pushback, the Hub should launch its own website as soon as it is feasible. This does not need to be overly complex in its development and structure. This website should describe the Hub and its mission, provide access to any resources developed by the Hub, and include a calendar of relevant events of the Hub or its partners. Ideally, the website would also showcase relevant regulatory developments. Since the Hub will interface with a wide variety of stakeholders, the website will be the primary tool for communicating the activities the organization is embarking on and its role in the regional market.

In order to prepare for the launch of a website, Hub staff should consider the following:

- **Branding:** As a needs assessment should reveal, there may be a number of buildings-related networks and associations in a given region. The Hub will need to differentiate itself according to its mission and its specific role. Therefore, it is crucial that the Hub develop a brand identity that conveys its purpose and sets it apart from other organizations.
- **Communication Plan:** IMT recommends regular communication with stakeholders as the website and programs are being developed so that stakeholders are familiar with the concept and its offerings by the time the website is launched. The communication plan should include a timeline that includes when to engage formal media outlets, when to post about the launch on social media, and when to provide “social media toolkits” to the Hub’s partners and stakeholders so that they can amplify the news as trusted sources among their networks. All of these communications should culminate in an official launch event to let stakeholders know that the Hub is up, running, and ready to help.

### A Network of Hubs: the Building Performance Partnership

Many jurisdictions are looking to develop a Hub to support not just policy implementation, but to help shift the local real estate market towards a more sustainable future, where all residents can benefit from a healthy and thriving built environment. To help jurisdictions meet this goal, IMT and the [Building Energy Exchange](#) have created the [Building Performance Partnership](#), a nationwide network of Hubs that will accelerate measurable, equitable and sustainable action to improve the health, comfort, and performance of buildings.

The participating Hubs as of June 2022 include those in Washington DC, New York City, St. Louis, Kansas City, and Denver. The Partnership provides resources such as training, education, financing solutions, case studies, building efficiency tools, action plans, and vendor requirements to other Hubs. As each Hub finds solutions to their prioritized needs in the market, these best practices and lessons learned will be shared and adapted to other jurisdictions with similar needs, improving the effectiveness of all Hubs within the network. Visit [www.imt.org](http://www.imt.org) to learn more about the steps you can take to establish an impactful Hub in your jurisdiction.

## CONCLUSION

As this guide has demonstrated, implementing building performance standards equitably and effectively will require careful planning, extensive and inclusive outreach, and significant investment of public resources. BPS is a new policy instrument, adopted as of this writing by just 10 U.S. state and local governments, and none of these policies' compliance deadlines has yet occurred. With experience, these leading jurisdictions will undoubtedly discover best practices, tools, and resources that augment or supplant the guidance contained in this document. IMT will continue to track the implementation practices of BPS jurisdictions, updating this guide to reflect the most up-to-date thinking on how to equitably and effectively implement building performance standards. For more information on building performance standards, please visit [imt.org/bps](http://imt.org/bps).



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## APPENDICES

# APPENDIX A

## Glossary

<b>ACP:</b>	Alternative compliance payments
<b>Abatement cost:</b>	The estimated cost of improving a building's performance per unit of the relevant performance metric
<b>Assessed property value:</b>	The dollar value assigned to a property for the purpose of calculating property taxes
<b>BPPMS:</b>	Building performance policy management software
<b>Building Performance Action Plan (BPAP):</b>	The alternative compliance option in the IMT model BPS law that allows owners to propose custom compliance plans.
<b>Building Performance Improvement Board (BPIB):</b>	An advisory body with expertise in real estate and building science that helps the implementing department develop and manage the BPS's rules, procedures, and complementary programs.
<b>CBECs:</b>	The <a href="#">Commercial Buildings Energy Consumption Survey</a>
<b>Coincident peak electric demand:</b>	A property's electric demand when total electrical demand on all sources on the electric utility is at its highest point for the year
<b>Community Accountability Board (CAB):</b>	An advisory body tasked with reviewing the BPS's impact on frontline communities and recommending programs, practices, and rules to reduce historical inequities.
<b>Community priority actions:</b>	Discrete actions that building owners can choose when developing their BPAP proposals which advance key strategic goals as identified by the CAB.
<b>Covered property:</b>	A property that must meet the requirements of the BPS law
<b>CRM:</b>	Customer Relationship Management

<b>Decarbonization:</b>	Processes that remove carbon from or avoid adding carbon to the Earth's atmosphere. In the case of buildings, this generally means focusing on efficient, low-carbon materials and operations.
<b>DOE:</b>	U.S. Department of Energy
<b>ENERGY STAR Portfolio Manager (ESPM):</b>	A web-based benchmarking tool developed by the United States Environmental Protection Agency that allows building owners to track and assess the energy and water consumption of their buildings. ESPM rates the performance of a building in relation to similar buildings and accounts for the impacts of year-to-year weather variations, building size, location, and several operating characteristics.
<b>Energy Use Intensity (EUI):</b>	The annual amount of energy a building uses per square foot. EUI can be calculated as Source EUI (the amount of raw fuel, including energy lost during generation, transmission, and distribution, used by a building per square foot) or Site EUI (the annual amount of all the energy used at the building site, not counting energy lost during generation, transmission, or distribution, per square foot).
<b>FTE:</b>	Full-time equivalency in relation to employment status.
<b>GEB:</b>	Grid-integrated efficient building.
<b>GHG:</b>	Greenhouse gas(es).
<b>Green bank:</b>	Mission-driven financial institution that uses innovative financing techniques to drive greater implementation of clean energy projects.
<b>Financial hardship:</b>	As defined in the IMT model law, this is a designation that applies to buildings that meet any of the following conditions: <ul style="list-style-type: none"> <li>• Had arrears of property taxes or water or refuse charges that resulted in the building's inclusion, within the prior two years, on the city's annual tax lien sale list</li> <li>• Has a court-appointed receiver in controls of the building due to financial distress</li> <li>• Has a senior mortgage subject to a notice of default</li> <li>• Is owned by a financial institution through default by the borrower</li> </ul>
<b>Frontline communities:</b>	Communities that experience the most immediate and worst impacts of climate change and are most often communities of color, Indigenous, and low-income communities.
<b>High-performance building hub:</b>	A "Hub" is a centralized location where all real estate stakeholders in a jurisdiction can access critical guidance, technical assistance, and/or access to available incentives to building owners, designers, contractors, and operators.
<b>High-road contracting:</b>	Procurement standards designed to advance diversity and inclusion among suppliers of products and services in the high-performance building economy.
<b>Implementing department:</b>	Shortened to "the Department" throughout this guide, it means the agency or department overseeing administration and implementation of the BPS.



<b>IRP:</b>	Integrated Resource Planning, which is the name of a common utility process for multi-year strategic planning.
<b>kBtu:</b>	One thousand British Thermal Units (BTU), a common unit of energy measurement used to convert and combine energy measurements such as kilowatt hours (kWh) of electricity, therms of natural gas, and pounds of steam.
<b>Megawatt-hour (MWh):</b>	One megawatt (1,000 kilowatts) of power used continually for one hour, which is similar to how utility bills are measured, but at a utility scale.
<b>Needs assessment:</b>	A research process to determine the resources and services a Hub should deliver to close identified gaps in the high-performance buildings market.
<b>Normalization:</b>	The process of adjusting a performance metric to normal or average conditions.
<b>Onsite and district thermal greenhouse gas emissions:</b>	A performance metric measuring the emissions from energy a building uses on site or from a district energy system.
<b>Property owner portal:</b>	A public-facing, web-based interface that gives owners and managers access to real-time building and program information.
<b>Public utility commissions:</b>	Entities that regulate utilities.
<b>Qualifying scenarios:</b>	Situations that justify a building owner's BPAP proposal.
<b>Racial equity impact assessment (REIA):</b>	Race Forward defines a REIA as a "systematic examination of how different racial and ethnic groups will likely be affected by a proposed action or decision.
<b>Renewable portfolio standard (RPS):</b>	A policy that requires a specific percentage of the electricity utilities sell to come from renewable resources.
<b>TOU:</b>	Time-of-use which refers to when during a day energy is used. Different points during a day may require utilities to generate more or less power.
<b>Trajectory approach:</b>	A method of setting covered properties' individual interim performance standards by drawing a straight line from each property's baseline performance to a final performance standard common to its property type.
<b>UBID:</b>	Unique building identification.
<b>Water use intensity:</b>	The amount of water a building uses adjusted for the square footage of the building and its landscaping.

# APPENDIX B

## Staffing Examples

While the number of staff needed by a jurisdiction will vary based on local circumstances, the chart below describes the staffing plans and budget requests developed by Washington, DC; St. Louis, MO; and Montgomery County, MD for BPS laws or legislation.

### Staffing Examples

Jurisdiction	Number of Covered Properties	BPS Staff	Budget (including non-personnel costs)
Montgomery County MD	1,850	7 FTEs	\$1.1 million annually
St. Louis MO	~900	4 FTEs	\$299,600 (personnel costs only)
Washington, DC	1,662 in 1 <sup>st</sup> compliance cycle; increasing to 5,000 by 3 <sup>rd</sup> cycle	7 FTEs	\$1.1-1.2 million annually

### Montgomery County, MD staffing and budget request

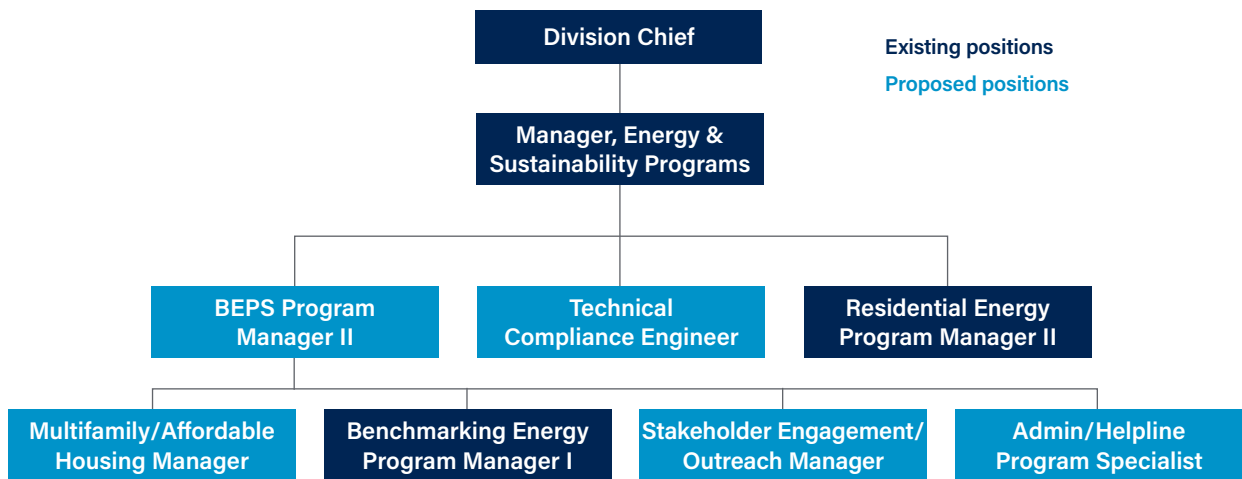
Montgomery County, MD's Department of Environmental Protection requested five new FTEs in addition to the two existing positions already dedicated to running its benchmarking and residential energy programs and a salary budget of \$411,917 per year to implement its performance standard legislation. The five new positions are:

- Building Energy Performance Standard Program Manager. This position oversees implementation of the entire BPS program, including staffing and supporting the County's version of the Building Performance Improvement Board, developing regulations, advising on BPS policy and data analyses, and managing the BPS program support staff.
- Multifamily and Affordable Housing Program Manager. This position supports multifamily and affordable housing owners and managers in both the benchmarking and BPS programs, assisting building owners with compliance, connecting with key stakeholders in the multifamily housing sector, and coordinating with regional peers on multifamily and affordable housing energy efficiency strategies.
- Technical Compliance Manager/Senior Engineer. This position reviews Building Performance Improvement Plans with the Building Improvement Advisory Board and provides expert guidance to building owners on building upgrade projects.

- **Stakeholder Engagement and Outreach Manager.** This position engages with the public on BPS through webinars, public meetings, and other opportunities for engagement. Develops outreach materials, give presentations, conduct “train the trainer” instruction, and generally maintain partnerships with key stakeholders during BPS implementation.
- **Administrative Support/Helpline Program Specialist.** This position provides administrative support to the BEPS and benchmarking programs by responding to inquiries from the public, staffing a help desk, processing mailings, logging correspondence, and assisting with citation processing.

In addition to these new positions, DEP requested \$780,000 per year in programmatic funds to be used for providing technical assistance to building owners (this portion of the funding represents the County’s contribution to the DC Building Innovation Hub, which would expand to serve building owners covered by neighboring Montgomery County’s performance standard), conducting data and engineering analyses, developing a customer relationship management database for tracking compliance and correspondence, and producing outreach materials.

**Figure 7.** Montgomery County, MD BPS and Benchmarking Staffing Plan



### Washington, DC BPS Staffing

Washington, DC's Department of Energy and the Environment (DOEE), created a Building Performance and Enforcement Branch and requested seven new full-time employees to implement its BPS policy:

- 1 Branch Chief
- 1 Technical Compliance Lead responsible for making sure that building owners have fulfilled the requirements of DC's various compliance paths
- 3 Technical Program Staff (with one focused on affordable housing)
- 1 Enforcement Administration Staff
- 1 Seasonal Intern

These FTEs were requested in addition to the staff (approximately two FTEs) already supporting

the benchmarking program. It is important to note that not all the new positions were placed in the new Branch - in particular, the Enforcement Administration staff position expands the capacity of the enforcement branch to process the enforcement actions generated by the new BPS program. The total cost to implement the BPS program, including personnel costs for the seven FTEs and non-personnel costs totals approximately \$1.1 – 1.2 million annually.

### St. Louis BPS Staffing

St. Louis has the lightest staffing plan of the three jurisdictions; however, it also regulates the fewest number of buildings (900) under its law. St. Louis requested \$299,600 to cover personnel costs (salaries, benefits, and modest expenses for supplies and equipment) for four FTEs to implement both the benchmarking and BPS laws.



## APPENDIX C

# Sample Scope of Work for Setting Final Performance Standards

A scope of work for the data analysis to inform recommendations for the final performance standards should include the following tasks and activities:

- Collect and review available data, including but not limited to:
  - Local benchmarking data from prior years
  - Publicly available sources such as CBECS and EPA's forthcoming EUI Finder tool; publicly available benchmarking datasets especially from jurisdictions that are nearby and/or have similar climates and building stocks; specialized benchmarking datasets for specific property use types such as the Laboratory Benchmarking Tool for laboratories.
  - Data for estimating retrofit costs – data sources can include audit reports, actual retrofit costs, and other data voluntarily provided by stakeholders in the construction and retrofit sectors.
- Recommend occupancy type groupings: the consultant should recommend how the Department should classify buildings into property types, according to occupancy, operating characteristics, and other relevant factors. As noted above, IMT recommends that Departments use the ENERGY STAR property types as the basis of its classification system; however, there may be some buildings for which a different classification would be more appropriate.<sup>38</sup>
- Recommend final performance standards for each property type and/or provide a range of scenarios for the Department to consider. The consultant's recommendations should be aligned with and informed by any energy, GHG emissions, water conservation, or other relevant commitments the jurisdiction has made including climate action plans. The consultant should estimate the aggregate energy, GHG emissions, or water consumption reductions and other relevant improvements (e.g., grid impacts) that would be achieved by compliance with the recommended standards, taking into account future construction, using current energy code information and growth projections. Should this data analysis be conducted prior to the adoption of the law, the Department could ask the consultant to model the effects (e.g., GHG emissions reductions, cost of compliance, other economic costs and benefits, etc.) of setting the final compliance year for the BPS at different times, e.g. 2040 vs 2045.
- Determine typical measure packages that could support compliance with final standards, and the energy/carbon savings they can provide, to ensure the final standards will be technically achievable.
- Estimate the costs and benefits of compliance with recommended final performance standards and/or potential scenarios.

38. For example, in consultation with community representatives, the Department may choose to create a property type for affordable housing separate from the property type for other multifamily buildings.

- Recommend standards for property types for which the Department has an insufficient set of data (e.g., property types representing only a small number of buildings within the jurisdiction such as stadiums or airports) or an approach for setting such standards.

The scope of work should require the consultant to submit a report addressing all tasks and any supporting documentation and calculations used to make the submitted recommendations.



## APPENDIX D

# Adjusting EUI to Encourage Load Shifting

Section 4.1.1 of the IMT Model BPS reads, “In order to encourage building operators to shift their electric load so as to reduce GREENHOUSE GAS EMISSIONS from the grid, the DEPARTMENT shall promulgate rules modifying the conversion of certain electricity to BTU for the purpose of calculating SITE ENERGY USE.”

Section 4.1.1 is intended to make whole the (typically small number of) building owners who increase their site EUI by putting in place grid-friendly measures like thermal storage that have the side effect of increasing site EUI. No adjustments would be made for other buildings; so, currently, no adjustments would be made for the vast majority of buildings.

ENERGY STAR Portfolio Manager (ESPM) does not currently capture the time of use of electricity. For now, jurisdictions seeking to make such adjustments will have to do so outside of ESPM, for instance by instructing building owners to follow all ESPM rules in entering data into ESPM and then for each building requiring an adjustment, extracting all data inputs for that building from ESPM, adjusting kWhs using a spreadsheet and creating a second ESPM entry for that building using the adjusted kWhs. The site EUI from this second ESPM entry would be used for compliance with the BPS.

In setting algorithms to adjust for load shifting, the Department should keep in mind the jurisdictions’ goals, including its climate commitments. Overall climate impact should be a key input in setting adjustment algorithms: typically, jurisdictions should

seek to set adjustment algorithms to reward building owners for load shifting to the extent that shifts produce climate benefits. For instance, adjustment could reward building owners who shift electric loads by chilling water at night when there is abundant low-carbon wind energy and using the chilled water to cool the building at times of peak demand for electricity when fossil fuel generation is running full tilt and so electricity is relatively carbon intensive; kWh could be adjusted down such that each kWh consumed as a consequence of load shifting would reflect the lower off-peak carbon intensity.

**Caveat:** This adjustment will add to the complexity of BPS for the jurisdiction and for building owners, and the adjustment will cause misalignment with ENERGY STAR Portfolio Manager. Buildings with this adjustment will have one EUI for BPS and another EUI for qualifying for the ENERGY STAR certification. Jurisdictions should weigh whether the benefits in fairness and incenting grid-friendly actions by owners merit the added complexity and risk of confusion. If the answer is no, then section 4.1.1 should not be included when drafting the jurisdiction’s BPS. If the answer is maybe, then the “shall” in section 4.1.1 should be changed to “may.”

If the jurisdiction adopts the IMT Model BPS coincident peak performance metrics, then the peak metrics may provide sufficient incentive for building owners to shift their electric load and eliminate the need for adjustments for load shifting. However, adjustment may still be needed to treat load shifting fairly.

# APPENDIX E

## District Energy

In many cases, the best, least difficult, most effective, and least expensive means of decarbonizing buildings served by district energy systems will be to decarbonize those district systems rather than the alternative: each owner electrifying each of its buildings served by the systems. In jurisdictions where this may be the case, as part of the process of developing its BPS, the jurisdiction should convene the operators of the district energy systems that serve the community and the systems' customers to devise a plan for decarbonizing the systems. The investment to make these upgrades will typically ultimately have to come from the systems' customers (directly or indirectly through increased district energy prices); in many cases, these investments will be accomplished by customers signing or amending long-term contracts with the district systems. A BPS is a uniquely powerful tool to align the incentives of district energy systems and their customers and to provide the urgency needed to drive collective action among many building owners to finance major investments to decarbonize district systems.

As always, jurisdictions should treat fairly all building stakeholders, including buildings served and not served by district energy. To do this, jurisdictions should put district energy on a level playing field with systems (e.g. heat pumps) within buildings.

Treating district energy fairly is straightforward with respect to site EUI. ENERGY STAR incorporates consumption of district energy as it calculates buildings' site EUI.

But, in calculating greenhouse gas emissions, ENERGY STAR Portfolio Manager uses nationally determined emission factors for steam, hot water, and chilled water consumed by buildings. This approach does not encourage the decarbonization of local district energy systems, as buildings are unable to claim the benefits of emissions reductions of local plant operators. For this reason, IMT does not recommend using generic emission factors for district energy.

Instead, IMT recommends that effectively each building's pro rata share of district energy systems' activities should be treated as though it occurs within the building. Jurisdictions should develop emission factors specific to each district energy plant serving covered buildings and assign each building its share of district systems' GHG emissions for the purpose of calculating the building's district thermal GHG emissions. Jurisdictions will need to publish rules governing these complicated calculations. In writing such rules, IMT suggests that jurisdictions use as their starting point:

1. the Greenhouse Gas Protocol publication, *Allocation of GHG Emissions from a Combined Heat and Power (CHP) Plant*<sup>39</sup>

39. Gillenwater, M., Woodfield, M., Simmons, T., McCormick, M., Camobreco, V., Hockstad, L. and Upton, B. 2006. Calculation tool for direct emissions from stationary combustion: Allocation of GHG Emissions from a Combined Heat and Power (CHP) Plant. World Resources Institute. Available at: [https://ghgprotocol.org/sites/default/files/CHP\\_guidance\\_v1.0.pdf](https://ghgprotocol.org/sites/default/files/CHP_guidance_v1.0.pdf)



2. the Synapse Energy Economics November 2022 memo, *Allocation of Emissions from District Energy Systems with Multiple Outputs—Building Performance Standards*, available at <https://www.synapse-energy.com/emissionsfactors>

Alternatively, those jurisdictions that have the requisite legal authority, can package with their BPS a law requiring decarbonization by district systems to an extent and on a pace that is fully

aligned with achievement of the jurisdictions' climate commitments. Such a law should be developed in consultation with district systems and their customers. IMT recommends that jurisdictions follow the example of BPS treatment of electricity by excluding consumption of district energy from the calculation of onsite GHG. Consumption of district energy should, however, always be included in the calculation of site EUI and other energy and greenhouse gas metrics.





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