

Leveling Up Building Performance Regulations: How Governments Can Craft Equitable, Effective Building Performance Standards to Drive Widespread Market Transformation

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ABSTRACT

Building Performance Standards (BPS), already adopted in ten U.S. jurisdictions, are quickly emerging as a powerful tool for improving the energy performance of existing buildings. This strong interest highlights the importance of defining a set of best practices for creating BPS laws that are effective in improving building performance, racially and socially equitable, practical and fair for all stakeholders, and similar enough across jurisdictions to facilitate compliance by portfolios in multiple jurisdictions. To this end, the authors published the first-ever BPS model ordinance to provide a standardized template governments can use to develop effective, equitable BPS policies. Key features of the model ordinance have already been deployed in legislation in Montgomery County, MD and in Denver, CO.

The foundation of the model is its “trajectory approach,” which uses a series of interim performance targets leading up to final standards 15 or more years in the future to prompt building owners to take early action while providing long-term certainty and flexibility to plan for comprehensive, deep renovations. This approach can accommodate nearly any performance metrics that a jurisdiction chooses, though the ordinance recommends metrics to drive energy efficiency, electrification, and better indoor air quality. The model also recommends a Community Accountability Board tasked with reviewing impacts on disinvested communities and recommending strategies to reduce historical inequities.

This paper explores how governments can use the model ordinance’s innovative features to address challenges in developing effective and equitable BPS policies, and describes how utilities can aid successful implementation.

Introduction

In the United States, buildings are the largest contributor to greenhouse gas emissions, representing 35 percent of total energy-related emissions. In order for the U.S. to meet the goal established by [President Biden’s National Climate Task Force](#) of reducing greenhouse gas emissions by 50 percent by 2030, all levels of government must act to improve energy efficiency and accelerate decarbonization of U.S. buildings. In recent years, building performance standards (BPS) have emerged as a policy tool with great potential to spur dramatic improvements in building performance by directly regulating buildings’ energy use and/or greenhouse gas emissions.

Building performance standards are state and/or local laws that require existing buildings to achieve minimum levels of energy, climate, or environmental performance. BPS policies also have the potential to provide important benefits to communities by easing energy cost burdens for residents, improving indoor and outdoor air quality, and spurring job creation in the building retrofit industry.

Since 2018, ten jurisdictions have adopted BPS laws, with more policies currently in development as of May 2022. The [National Building Performance Standards Coalition](#), an initiative launched by President Biden and the White House Council on Environmental Quality in January 2022, represents more than 30 local governments that have committed to adopting building performance standards and complementary programs and policies by April 2024.

In response to the fast-growing momentum of BPS as a policy tool, the Institute for Market Transformation (IMT) published its [Model Ordinance for a Building Performance Standard](#) in January 2021 as a template for local and state governments to use when developing BPS laws. The ordinance benefits from lessons learned from the four jurisdictions that had adopted BPS laws as of January 2021 (District of Columbia, New York City, St. Louis, and the State of Washington) and from IMT’s experience assisting several other jurisdictions to develop BPS policies. This paper summarizes the model ordinance’s key features and concepts, explaining how governments and stakeholders can apply them to address challenges in developing effective and equitable BPS policies suited to their local context.

There is considerable variation among the ten BPS adopted to date. The laws use different types of performance metrics, apply them to different building size thresholds, and use different time intervals for the compliance cycles, as shown in Table 1. While it is inevitable and appropriate that each jurisdiction’s BPS reflects its own unique policy priorities and constraints, too much variation among policies can have undesirable effects, particularly for building owners with properties in multiple jurisdictions, who may struggle to manage compliance across their portfolios.

The purpose of IMT’s model ordinance is to provide the structural foundation for a strong building performance standard policy that jurisdictions can modify to suit local conditions. IMT encourages jurisdictions to work with community members, industry stakeholders, and technical experts to determine how to adapt the model ordinance to address the specific needs and priorities of their communities. Table 1, below, lists all jurisdictions with a building performance standard, and some key information about these ordinances.

Table 1. Summary of current BPS laws

Jurisdiction/year enacted	Performance metric	Covered buildings	Compliance cycle
Washington, DC/2018	Standards set no lower than median ENERGY STAR score (or equivalent)	Commercial and multifamily $\geq$ 10,000 sq. ft.	5 years
New York City/2019	CO ₂ e emissions limits on a per sq. ft. basis	Commercial and multifamily $\geq$ 25,000 sq. ft.	Building must comply annually; emissions limits get stricter every 5 years
State of Washington/2019	Site energy use intensity targets are less than 2009 – 2018 averages	Commercial $\geq$ 50,000 sq. ft.	5 years

Jurisdiction/year enacted	Performance metric	Covered buildings	Compliance cycle
St. Louis, MO/2020	Site energy use intensity standards set no higher than 35 th percentile	Commercial and multifamily $\geq$ 50,000 sq. ft.	4-6 years
Chula Vista, CA/2021	Standards based on ENERGY STAR Score of 75 or higher	Commercial and multifamily $\geq$ 20,000 sq. ft.	5 years
Colorado/2021	TBD	Commercial and multifamily $\geq$ 50,000 sq. ft.	Buildings must meet performance targets in 2026 and 2030. Compliance years TBD for 2030-2050.
Boston, MA/2021	CO ₂ e emissions limits on a per sq. ft. basis	Commercial and multifamily $\geq$ 20,000 sq. ft. or with $\geq$ 15 residential units	Buildings must comply annually; limits get stricter every 5 years
Denver, CO/2021	Site energy use intensity	Commercial and multifamily $\geq$ 25,000 sq. ft.	Covered buildings must comply with interim performance targets in 2024 and 2027 before meeting a final standard in 2030.
Maryland/2022	Direct GHG emissions	Commercial and multifamily $\geq$ 35,000 sq. ft.	TBD
Montgomery County, MD/2022	Site energy use intensity	Commercial and multifamily $\geq$ 25,000 sq. ft.	Covered buildings will have to meet 1 interim standard five years from their start data and a final standard 5 years after that.

Principles Used in Developing the Model Ordinance

IMT developed its model ordinance with the following four overarching principles in mind:

Equity must be central to BPS policy design. IMT believes that equity must be the foundation of successful BPS ordinances. This should include, but not be limited to, procedural equity such as representation on bodies that co-design the ordinance as well as on decision-making bodies created by the ordinance. Policy makers should account for how BPS requirements will affect disinvested communities and include provisions to eliminate or reduce potential harm and, to the greatest extent possible, reduce existing inequities. For example, jurisdictions should be especially aware of the risk that renovation costs may be passed on from building owners to low-income tenants, making housing less affordable. Jurisdictions should also consider the importance of providing funding and technical assistance to nonprofits, affordable housing, houses of worship, and other properties that serve disinvested communities and whose owners may lack the resources to comply with BPS requirements.

BPS ordinances should help jurisdictions achieve goals beyond reducing energy consumption and greenhouse gas emissions. The IMT model ordinance gives jurisdictions suggested starting points to develop standards for multiple measures of building performance. It recommends performance metrics for water consumption, peak electricity demand, energy consumption, greenhouse gas emissions produced on the property site or from district energy systems, and for indoor air quality. By treating BPS as a platform for regulating more than one aspect of a building's performance, jurisdictions can address a range of measurable building performance outcomes appropriate to their local conditions and community priorities.

In deciding which performance requirements to include in its BPS ordinance, each jurisdiction will have to balance the benefits of each requirement against the additional cost and complexity. Using BPS as a platform allows jurisdictions to develop a single ordinance to drive a comprehensive, holistic approach to improve buildings. The alternative is a piecemeal approach that requires the passage of multiple ordinances over time with the risk that they may conflict with each other.

BPS should include both short- and long-term requirements to prompt building owners to take early action while allowing them time and regulatory certainty to plan for comprehensive deep renovations.

No jurisdiction has the political will, the funds, or the workforce to make every building high performance all at once. IMT believes that jurisdictions should design BPS ordinances as long-term policies, with performance requirements aligning with their building performance goals over 15 to 30+ years. For this reason, jurisdictions should set standards that clearly communicate to building owners the level of performance their buildings must ultimately achieve. Doing so allows owners to adjust long-term capital plans to most cost-effectively meet ambitious goals requiring major building renovations. For new construction, long-term performance standards put developers on notice that they must design new buildings that will be able to comply with future standards.

If a jurisdiction were to mandate only long-term requirements, then most property owners would delay action for many years. Given the urgency of community priorities and the need to

address the climate emergency, improvements in the near-term are more valuable than future improvements. IMT’s model BPS ordinance, therefore, recommends that jurisdictions require owners to meet interim standards at five-year intervals to ensure progress toward long-term, final performance standards. Ideally, jurisdictions would also provide incentives for acting more quickly and ambitiously. This combined approach provides property owners with the certainty they need for long-term capital planning while pushing them to make improvements at the earliest opportunity.

Final performance standards should be fixed, but BPS policies should accommodate unusual circumstances that prevent building owners from reasonably meeting their performance requirements.

IMT’s model ordinance includes a policy mechanism called Building Performance Action Plans whereby property owners can propose an alternative compliance plan with performance levels and timing that differ from the requirements of one or more interim or final standards. IMT strongly believes that a BPS policy should contain a similar mechanism, as there will inevitably be building owners who have legitimate reasons that they cannot meet their assigned performance standards or schedule due to structural, operational, legal, or financial constraints.

Key Technical Features of IMT’s Model Ordinance

The following sections describe the key technical elements that comprise the model ordinance’s recommended structure for a BPS.

1. Trajectory Approach

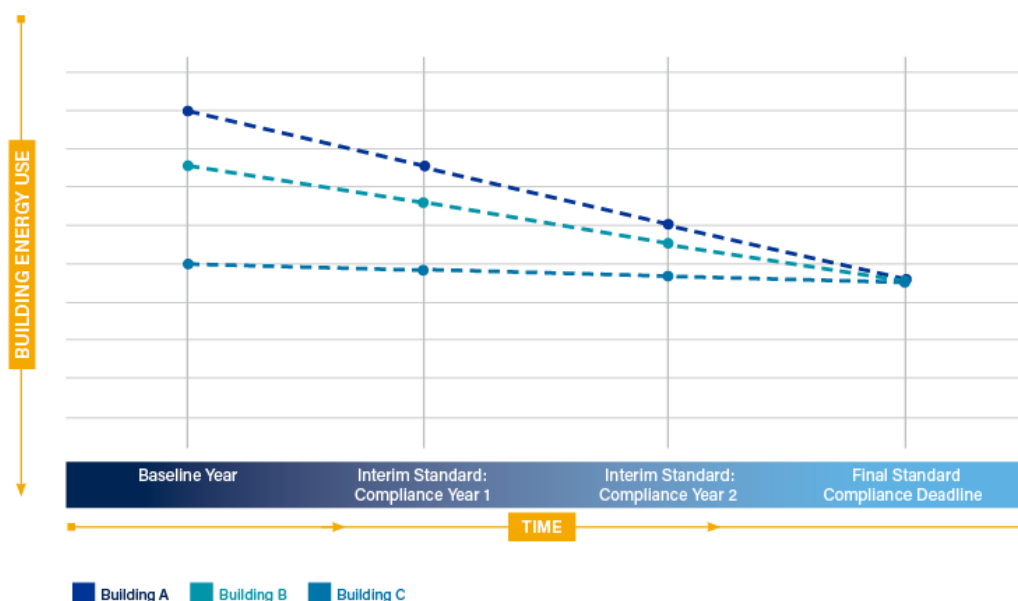
The central element of IMT’s model ordinance is the “trajectory approach,” which balances long-term certainty with flexibility. The model ordinance calls for the government department implementing the BPS to sort covered buildings into groups by property type. For each property type, the department sets an ambitious but achievable final performance standard that each property must meet by a specified future date. In the ordinance, IMT recommends setting final performance standards 15-30+ years in the future. This long timeframe will allow almost all buildings to encounter at least one building lifecycle event that provides opportune timing to make a capital investment that dramatically improves performance, such as replacing a roof or HVAC system.¹ To ensure progress toward final performance standards, the ordinance also calls for interim performance standards that buildings must meet at five-year intervals.

While every building of each property type is subject to the same final performance standards, each building’s required minimum trajectory to achieve interim standards varies according to its baseline performance. The ordinance assumes that performance data is available for covered buildings for each of the standards included in the ordinance or that required data will be collected as the first step in implementing the ordinance. Figure 1 provides an example of three buildings of the same property type (e.g., multifamily). The buildings must all meet the same final performance standard for energy use intensity, but their performance trajectories

¹ Examples of such lifecycle events include end-of-life of equipment, tenant turnover, mortgage refinancing, and other transactions.

differ based on each building's performance in the baseline year. Building A, which consumed the most energy in the baseline year, has a steeper improvement slope than Building B, which has a steeper slope than Building C. Because Building C was already performing well in the baseline year, it need only improve at a modest rate to comply with interim and final standards. The same principles apply to every property type and to every performance metric (e.g. water, greenhouse gas, etc.).

Figure 1. Illustration of the trajectory approach



The trajectory approach in IMT's model ordinance can accommodate almost any performance metric,² thereby empowering jurisdictions to incorporate multiple performance metrics, including those beyond energy consumption and greenhouse gas (GHG) emissions. For example, a jurisdiction could set performance standards based on a buildings' indoor air quality or water consumption. This adaptability allows jurisdictions to use the approach to fit local context. For example, in a state where statute makes it difficult to regulate energy at the local level, the jurisdiction can set performance trajectories based on buildings' GHG emissions, whereas another jurisdiction without this constraint might choose to use site energy use intensity³ (EUI) to target energy consumption since it is directly controlled by building owners and occupants.

² ENERGY STAR Score is a notable exception. Because it is not an absolute measure of a building's performance but rather a relative index of a building's energy efficiency, it is poorly suited for use with the trajectory approach.

³ Site energy use intensity measures the amount of fuel and electricity a building consumes in a year on a per square foot basis.

2. Building Performance Action Plan

The Building Performance Action Plan (BPAP) is a feature of the model ordinance that allows owners additional flexibility to meet their required performance levels by proposing a customized compliance plan for their buildings. Owners submit proposed BPAPs to the implementing department, which either approves, recommends amendments, or rejects the proposal. An approved BPAP constitutes a binding agreement between the owner and the jurisdiction. Under this approach, owners are deemed compliant with the BPS as long as they abide by the terms of the plan.

Though jurisdictions should expect the vast majority of covered buildings to meet their performance standards on time, 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 or limitations on the types of retrofits that can be performed, or may face economic constraints that make meeting BPS requirements infeasible. Some jurisdictions may be inclined to provide exemptions to such buildings, but the BPAP compliance path provides a better option by offering owners flexibility, while still obligating them to make significant improvements to their building's performance.

3. Performance Metrics

An increasing number of U.S. jurisdictions are seeking ways to accelerate the decarbonization of buildings, leading to a debate about the merits of energy metrics versus GHG emissions metrics. Focusing solely on one or the other forces jurisdictions to make trade-offs. For example, a BPS that only mandates performance based on energy consumption may miss opportunities for electrification of heating systems. An ordinance only covering GHG emissions could lead to electrification without reducing energy use, leading to large and unnecessary investments in grid infrastructure and storage technology that could be largely avoided by efficient use of electricity.

IMT's recommended approach avoids these trade-offs. By including site energy use intensity, onsite GHG emissions, and coincident peak demand, the ordinance drives building owners to invest in the principal building decarbonization strategies of energy efficiency, electrification, demand management, and building-grid integration to maximize the effective use of renewable energy.

Based on its legal authority, policy goals, and the priorities of its communities, a jurisdiction should also consider metrics related to other areas of building performance such as resilience or indoor environmental quality. To this point, the model ordinance includes a water use intensity metric as well as a section that jurisdictions can use to lay the groundwork for future performance standards based on indoor air quality as measured by CO₂ levels inside the building.

Energy Metrics: Site EUI. The three most common metrics for measuring a building's energy performance are site EUI, source EUI, and ENERGY STAR score. IMT recommends using site EUI as the metric for a performance standard as it has two major advantages over source EUI and ENERGY STAR Score. First, site EUI measures energy consumption that is within the direct control of building owners, whereas source EUI (which also serves as the basis for calculating the ENERGY STAR Score) accounts for the total amount of raw fuel that buildings

require to operate, including energy lost during transmission and distribution of electricity. Site EUI frees owners from worrying about how these grid losses, which are outside of their control, will affect their properties' standings with respect to the performance standard. Second, because it measures only the energy consumed onsite, ignoring losses from transmission and distribution, site EUI favors electrification. In contrast, source EUI provides little incentive for electrification because natural gas has a lower site-to-source conversion ratio than electricity.

ENERGY STAR Scores are also less appropriate for fixed, long-term building performance standards because ENERGY STAR regularly updates the curve from which ENERGY STAR scores are generated. This means that individual buildings' ENERGY STAR scores can change over time, unnecessarily increasing the regulatory uncertainty that owners face. Using a metric consistent with the trajectory approach, which sets final and interim performance standards many years in advance, avoids this problem.

Electrification Metric: Onsite and District Thermal Greenhouse Gas Emissions. By creating a performance standard based on onsite GHG emissions, a jurisdiction can require property owners to phase out fossil fuels used in their properties or provided through district energy systems. This metric works in tandem with a site energy use metric to encourage electrification and require the reduction of overall energy consumption, both critical requirements for a low-emissions building sector. This metric should not be used in isolation without a metric or other measure to drive the reduction of overall energy consumption.

This metric excludes building GHG emissions attributable to electricity purchased from the grid because accurately measuring this requires access to data on the grid's carbon intensity by time of day as well as property owners having time-of-use data on when their properties use energy. These conditions are currently present in few, if any, U.S. jurisdictions. Therefore, the preferred way to drive electrification is to require buildings to phase out their onsite GHG emissions.

Grid Reliability: Coincident Peak Demand Metrics. Jurisdictions that adopt BPS will see buildings increasingly replace their use of onsite fossil fuels with electricity. Building electrification, coupled with the growing market penetration of electric vehicles, will make it critical that buildings be able to shift electricity demand to off-peak times to avoid brownouts, the use of carbon-intensive peaker plants, or costly and carbon-intensive expansion of grid infrastructure. IMT's model ordinance includes two metrics that jurisdictions should consider to address this issue.

The ordinance creates a standard for a property's maximum coincident system peak electric demand (the property's electric demand when total demand from all sources on the entire electric utility's system is at its highest) and a standard for a property's maximum coincident peak local electric demand (the property's electric demand when total demand from all sources on the electric substation serving the property is at its highest).

For these metrics, jurisdictions would set a final performance standard stating the maximum of electric power, expressed in kilowatts, that a property can draw at peak times. Just like the site EUI and onsite and district thermal GHG emissions metrics described above, for each property, the jurisdiction would draw a line from its performance in the baseline year to the final standard, thus calculating its interim standards.

As of July 2022, no jurisdiction has adopted a BPS using peak demand metrics. These metrics are highly dependent on the availability of data from the electric utility at the system and substation scales. Also, for these metrics to fully produce their intended result, utilities must send

electronic signals to building systems in advance of critical peak electric demand. Therefore, standards based on these metrics are only recommended for jurisdictions where the utility is committed to providing the necessary data as well as advance warning of anticipated peak demand, and where smart metering and building automation technology have proliferated widely among covered properties. As with other metrics, each jurisdiction could consider using this metric only for a subset of covered property types.

Health: Indoor Air Quality Metric. We spend approximately 90% of our lives indoors. The air we breathe can either support or harm our short- and long-term health. Especially as the world fights a pandemic from an airborne respiratory virus, it is imperative to communities and policymakers to protect public health by assuring indoor air quality and sufficient ventilation (IMT 2021).

The ordinance creates an indoor air quality standard starting with carbon dioxide (CO₂). While breathing typical levels of CO₂ is harmless, measuring CO₂ provides building owners and occupants with an indication of how much outside air is getting to the space, and how well air is circulated. So, CO₂ levels serve as a proxy for other indoor pollutants and are more practical as a performance metric because the technology to detect CO₂ is widely available and less expensive than the equipment necessary for other pollutants.

The ordinance does not use the trajectory approach for indoor air quality. Instead, it recommends a static performance standard of 1,000 parts per million of CO₂ for all building types and time periods. CO₂ levels can be measured continuously using equipment installed in the building or periodically with mobile monitors. In the first compliance periods, building owners have alternative compliance options including showing that ventilation systems were designed to meet ASHRAE Standard 62.1-2004 or later. To date no jurisdiction has adopted a BPS policy regulating indoor air quality.

4. Alternative Compliance Payments

The IMT model ordinance uses the term “alternative compliance payments” (ACPs) to refer to payments that building owners make to jurisdictions to comply with the ordinance in lieu of achieving the level(s) of performance required by the BPS. IMT does not use terms such as “fines” or “penalties” for a number of reasons:

- In many jurisdictions, “fines” and “penalties” are subject to very specific enforcement structures, which may deny the jurisdiction authority to enforce BPS at a level commensurate with the investment owners must make to comply. An enforcement framework based on ACPs may give jurisdictions more flexibility than is allowed for fines or penalties.
- For many jurisdictions, any monies acquired from fines and penalties go into a general fund and cannot be earmarked for specific purposes. Using the term ACP may allow some jurisdictions to more easily direct funds to programs that support owners’ BPS compliance such as energy efficiency incentives or a high-performance building hub.
- Tenant decisions have a significant impact on building performance. So, it is critical that building owners and tenants work together to improve building performance and that commercial tenants be incentivized to do so. Many existing commercial leases do not charge tenants for their actual utility usage and do not allow building owners to pass any

portion of fines or penalties on to commercial tenants. According to real estate professionals consulted in the development of the IMT model ordinance, these lease restrictions typically do not apply to an ACP, thus aligning the incentives of owners and commercial tenants to work together to improve the building's performance. Note that under multifamily leases, the term used has no bearing on owners' ability to pass costs through to tenants.

Developing Equitable Building Performance Standards

IMT believes that equity must be the foundation of successful BPS ordinances. This starts with policymakers committing to a policy development process that is inclusive, transparent, and equitable. Governments should work with disinvested communities to identify those communities' challenges, priorities, and aspirations and to co-develop BPS policies that address them to the greatest extent achievable. Meaningful community engagement challenges the top-down approach to policy development by giving disinvested communities a leading role in decision-making. In particular, community members who have typically been excluded from power and decision making should help determine policy on issues including, but not limited to, the following:

- The potential effect that performance requirements will have on affordable housing and the cost of living for low- and middle-income residents
- How to structure performance requirements and supporting implementation programs to advance equity and community priorities
- How to make inclusive and equitable workforce development programs to help contractors and vendors meet increased demand for their services and products
- How to increase contracting opportunities for small-, minority-owned, women-owned, and local businesses through equity-focused procurement practices
- How to distribute incentives and technical assistance equitably by prioritizing buildings that serve disinvested communities
- Representation on boards created by the BPS law, such as the Community Accountability Board (see below)
- Other aspects of the BPS policy that may be a priority for disinvested communities, such as compliance timelines for houses of worship, nonprofits, and other community spaces

IMT will publish a framework and process guide for conducting equitable and inclusive engagement with frontline communities for the development of building performance standards and other climate policies.

Addressing Equity in the Model Ordinance

Perhaps the most obvious equity concern related to BPS is the risk that it may pose to residents of affordable housing. BPS laws have the potential to worsen the affordable housing crisis, as owners of multifamily buildings may seek to pass the costs of BPS compliance through to tenants in the form of rent increases (Hart et al 2020), contributing to displacement and gentrification. However, affordable housing is not the only building type for which BPS laws pose equity concerns. Other income-constrained properties, such as houses of worship, small businesses, and buildings owned by nonprofits, may struggle to meet the requirements of a BPS

without assistance or special considerations. IMT's model ordinance contains several specific policy mechanisms designed to address equity in BPS implementation.

Equitable Assessment of Alternative Compliance Payments. In terms of equity, IMT's model directs the department tasked with implementing the BPS to set ACPs proportional to the assessed value of the covered property to make the payments more equitable. For example, if two apartment buildings miss a performance standard but one is a luxury building located in a premium location and the other is in an area with lower rents, then it would be inequitable for both buildings to pay the same ACP. By tying the payment to the buildings' assessed value, the high-end property would pay a higher ACP reflecting its higher economic value and greater access to capital.

Distribution of Alternative Compliance Payments. The model ordinance directs the implementing department to establish an account or trust fund in which to store monies collected via ACPs. The ordinance directs the Department to spend a portion – to be determined by the jurisdiction and its community stakeholders – of the fund to improve the regulated performance of covered buildings serving disinvested communities, according to plans developed by the Community Accountability Board (see below).

The intent of this provision is to ease the burden of compliance for properties such as affordable multifamily buildings, nonprofits, and buildings housing small businesses located in areas with a concentration of low-income or residents of color or that have experienced a historical lack of public and private investment. This reduces the risk of unintended consequences such as rent increases, displacement of frontline community members, and greater economic hardship for community members due to the requirements of the BPS.

Community Accountability Board. As one of the first steps in implementation, the ordinance requires creation of the CAB composed entirely of representatives of disinvested communities and equity experts. The CAB is responsible for advising on the later selection of members to the other two advisory bodies created by the ordinance, developing a plan to distribute assistance funds to disinvested communities, evaluating the ordinance's impacts on equity and disinvested communities, and recommending actions to repair the legacy of disinvestment in low-income communities and communities of color.

IMT believes that such a board is necessary to build trust between government and disinvested communities and to provide a warning system to identify and address the emergence of any unintended consequences of the policy that may cause greater inequities.

Building Performance Action Plans and Community Priorities. The BPAP process represents an opportunity for the jurisdiction to advance community priorities identified by the CAB in areas such as public health, resilience, and equity in exchange for additional compliance flexibility. For example, a building owner could propose opening a portion of its building as a cooling center to serve neighboring communities during heat emergencies in place of fully complying with one or more of the other metrics. The CAB has the responsibility of identifying frontline 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.

The Role of Utilities in Policy Implementation

Jurisdictions pursuing BPS must also plan to engage directly with their utilities and with state regulatory commissions on a number of key issues to facilitate the success of their policies. By addressing utility-related BPS considerations in advance, jurisdictions can more effectively achieve priorities such as energy equity, GHG emissions reductions, building electrification, energy efficiency, peak demand reductions, reliability, and grid flexibility. For BPS policies to reach their full potential, utilities must share required data with building owners and governments, incorporate buildings into their planning processes, and utilities and/or program administrators must support building owner compliance through incentive programs, financing, and technical support.

Jurisdictions considering a BPS should be prepared to work with their utilities on the following issues:

- **Data Access:** As with other building energy policies, data is the foundation of BPS – for setting reasonable standards during development of the ordinance, for determining buildings’ compliance status, and for enforcement during implementation. The annual building energy consumption data provided through benchmarking provides basic information needed for a BPS. However, access to hourly, 15-minute interval, or even real-time data would allow jurisdictions to establish more accurate measures of buildings’ greenhouse gas emissions intensity and apply innovative performance metrics such as coincident peak demand metrics. Access to data at this level of granularity will likely raise privacy concerns that need to be addressed with utilities and/or utility regulators.
- **Incentive Program Eligibility:** Utility energy efficiency incentives can play a key role in BPS compliance by providing funding to support building owners’ improvements for BPS compliance; 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 rationale may or may not apply to BPS policies, which in most cases only mandate performance to a certain level and do not require implementation of specific energy efficiency measures – that is BPS typically do not include “prescriptive” requirements. Because utility incentives may be an important factor to ensure the success of a BPS, cities should engage in advance with utilities and regulators to determine the extent to which 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.
- **Metrics:** The granularity of available utility data, as well as access to carbon data for the electric grid, should inform whether a city chooses carbon or energy as their primary BPS metric. For a carbon metric to be meaningful, jurisdictions and building owners must have timely access to time-of-use carbon data (such access is very rare) or an hourly schedule of conversion factors for megawatt-hour to greenhouse gas forecasted out for the BPS compliance period (also quite complicated). An energy metric is a simpler place

to start and will achieve carbon reductions if the carbon content of the grid is still relatively high. Note that GHG data for the grid may only be available from the grid operator, which may be a separate entity from the utility. If carbon data is critical to the jurisdiction's ordinance strategy, they will need to engage with the grid operator.

- **Equity:** Utilities can provide targeted support for buildings serving disinvested communities, helping to make up for the fact that jurisdictions often lack the resources to do so, and possibly help utilities meet any efficiency mandates specific to low-income customers.
- **Rates:** Mandatory or widely-used voluntary utility Time-of-Use (TOU) rates are very helpful for BPS implementation, to send price signals that encourage load shifting in buildings to off-peak hours for both cost savings and carbon reduction. In designing any new rates, the utility should take into account potential unintended consequences such as exacerbating inequities and energy burdens. In most cases, mandating TOU rates presents fewer challenges for non-residential ratepayers.
- **Resource and Distribution System Planning:** The anticipated energy 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.

Conclusion

Building performance standards are the most powerful policy tool to drive rapid improvement across the existing building stock. Because these policies can dramatically shift the market, great care should be taken in their design to ensure progress toward community priorities, advance equity, and align with local climate commitments. In doing so, it is possible to balance the urgency of addressing equity and the climate emergency against the need for flexibility in compliance pathways, accommodating building lifecycle events, and minimizing unintended consequences. Developed after extensive consultation with experts and stakeholders and building upon lessons learned from precedent BPS, the IMT Model BPS Ordinance provides local and state governments a vetted starting point in navigating these challenges and balancing these goals. The model also facilitates harmonization of BPS across jurisdictions, which enables economies of scale in implementation and compliance especially by owners of portfolios of buildings in multiple jurisdictions.

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