

Summary of IMT's Model Ordinance for a Building Performance Standard



January 2021

The following pages give a high-level overview of the Institute for Market Transformation's (IMT) model ordinance for a building performance standard (BPS). The ordinance benefits from lessons learned from the four jurisdictions (District of Columbia, New York City, St. Louis, and the state of Washington) that had adopted building performance standards as of January 2021.

As a model ordinance, its intended purpose is to provide the structural foundation for a strong BPS ordinance in any jurisdiction. Its language is meant to be modified as necessary to reflect local circumstances and policy priorities. IMT encourages governments to work with community members, community-based organizations, building owners, and professionals with expertise in fields such as real estate, energy efficiency, and sustainability to co-design and tailor performance standards to the specific needs of their communities.

Finally, IMT's model ordinance is conceived as a living document that will be updated based on the input of experts and feedback from governments, community-based organizations, and other stakeholders that use it in their policy development process.



Principles

IMT designed the model ordinance with the following four principles in mind:

1 | Equity must be central in designing a BPS ordinance.

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. The BPS should also take into account how its requirements will affect disinvested communities by including provisions to eliminate potential sources of harm and, to the greatest extent possible, reduce existing inequities. For example, jurisdictions should be especially aware of the risk that the passing of renovation costs from building owners to tenants could make housing less affordable for low-income populations. IMT strongly recommends jurisdictions adopt strong tenant protections to avoid such an outcome. Jurisdictions should also consider the importance of providing funding and technical assistance for nonprofits, affordable housing, small business owners and others who lack the resources to achieve compliance.

Throughout the provisions of the ordinance, IMT has sought to consider and advance equity. For instance, 1) disinvested communities should be over-represented in the body that directs investment of funds raised by the ordinance, and 2) backstops to drive owners to improve building performance should be proportional to the value of the buildings property so that the most valuable buildings will have the strongest disincentives to inaction.

2 | A BPS ordinance should function as a platform.

A building performance standard ordinance should function as a platform for regulating aspects of building performance that relate to a jurisdiction's priorities. It can achieve goals beyond reducing energy consumption and greenhouse gas (GHG) emissions.

The IMT model ordinance gives jurisdictions the option to develop multiple standards. It recommends performance metrics for water consumption, peak electricity demand, energy consumption, and greenhouse gas (GHG) emissions produced on the property site or from district energy systems. Jurisdictions are encouraged to think creatively about the use of IMT's BPS-as-a-platform concept and not limit themselves to only the standards included in the model ordinance. Standards could be set to regulate buildings' performance with respect to a range of measurable outcomes for areas as diverse as health, equity, and resilience.

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

3 | A BPS should include long-term and short-term requirements.

A BPS should include both long-term and short-term requirements to prompt owners to take early action while providing them with long-term certainty and allowing them time 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 a BPS ordinance should be designed as a long-term policy commitment, with performance requirements aligning with the jurisdiction's building performance policy 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 enables long-term capital planning which is a necessity for cost-effectively meeting ambitious goals requiring major building renovations. For new construction, long-term performance standards put developers on notice that they must design buildings that will be able to comply with the future standards.

If a jurisdiction were only to mandate long-term requirements, then most property owners would delay action for years. Because improvements in the near-term are more valuable than future improvements, IMT's model BPS ordinance requires owners to meet interim standards at five-year intervals to ensure progress toward long-term, final performance standards. Ideally, jurisdictions should 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 are fixed but flexibility should be allowed for unusual circumstances.

4 | A BPS ordinance should offer appropriate flexibility.

There are events in a building's lifecycle, such as the end-of-life of an HVAC system or a planned major recapitalization, which could facilitate dramatic improvement in performance but will not necessarily align with the compliance dates for interim performance standards. IMT's model ordinance includes Building Performance Action Plans, a mechanism 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. These plans are intended to be used only for unusual circumstances.

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Equity, Housing Affordability, and Displacement Risk

Many U.S. cities are facing a housing affordability crisis where increasing housing costs threaten to reduce the already limited number of affordable units. This problem is especially acute in communities that already suffer from disinvestment and energy burden. Low-income residents, who may be at risk if housing costs increase, are likely already struggling to pay utility costs.

BPS ordinances introduce an additional risk of worsening this problem, as owners of multifamily buildings may seek to pass the costs associated with BPS compliance through to tenants in the form of rent increases. These costs could further stress residents' budgets and lead to displacement. On the other hand, BPS ordinances also present a significant opportunity to reduce renters' utility burden, which is disproportionately high for low-income populations and communities of color.¹

To reduce the risk of exacerbating the affordability crisis, IMT urges jurisdictions considering BPS to adopt new or amend existing tenant protection regulations to protect low-income residents from evictions or rent increases that could result from BPS compliance. Over the coming months, IMT will provide jurisdictions with additional tools and guidance on how to develop tenant protections that are compatible with BPS. In the meantime, the model ordinance already contains provisions designed to accommodate many needs of affordable housing. For example, the ordinance gives owners of affordable housing the flexibility to align energy efficiency

investments with existing refinancing periods. It also recognizes the importance of having local affordable housing stakeholders serve on bodies that advise the jurisdiction on implementation of the BPS, so that the unique and complex parameters of this market segment can be taken into appropriate consideration. IMT will continue to work on solutions to further mitigate risks to affordable housing. In the meantime, jurisdictions should refer to the following resources for more information on tenant protections:

- [EFFA Tenant Protection Principles National Housing Law Project resources on Tenants and Foreclosures](#)
- ["Understanding the Housing Affordability Risk Posed by Building Performance Policies,"](#) by Bridgett Neely and the Institute for Market Transformation, 2020.

The model ordinance includes a section directing a task force to create a combined funding and technical assistance program for buildings, including affordable multifamily buildings, whose owners lack the financial, staff or technical capacity to comply with the BPS. The intended

1. ACEEE. Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities. April 20, 2016. <https://www.aceee.org/research-report/u1602>.

outcome of this program is that owners would not be forced to sell or redevelop their buildings in response to the costs imposed by BPS but would be able to continue operations, comply with BPS requirements, and enjoy the benefits of improved building performance, with no upfront capital expenditure.

The model ordinance creates a Community Accountability Board (CAB) tasked with reviewing the ordinance's impact on disinvested communities and recommending programs, practices, and rule changes to reduce

historical inequities. 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 recommending actions to repair the legacy of disinvestment in low-income communities and communities of color.



Structure of the IMT BPS Model Ordinance

The trajectory approach

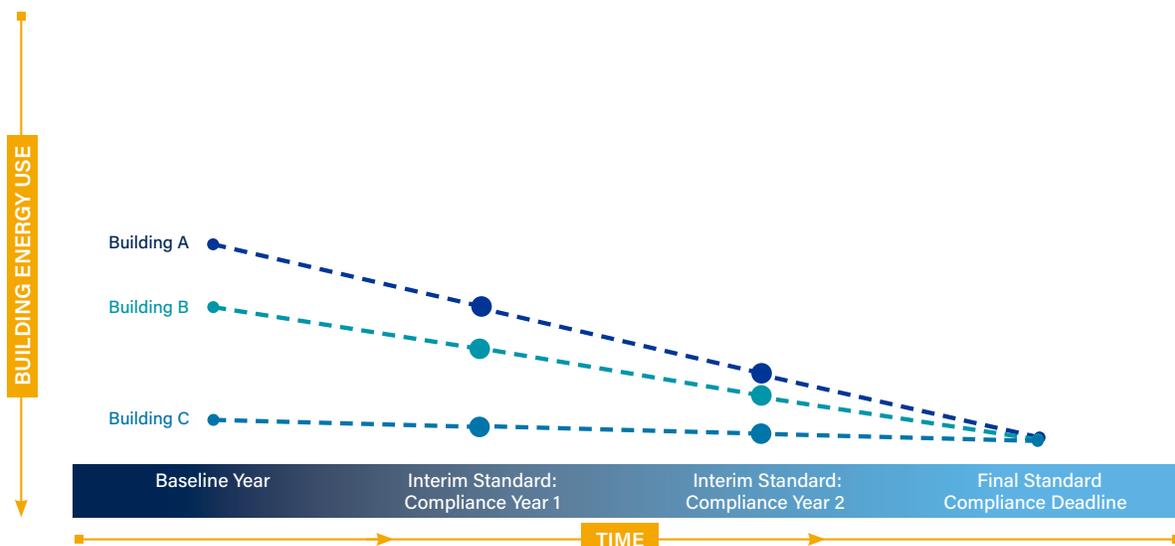
The IMT BPS model ordinance calls for the government department implementing the ordinance to sort covered buildings into groups according to property type. Examples of basic property types are office, retail, restaurants, and grocery stores. Jurisdictions may, however, want to be more targeted in their categorization, for example splitting affordable housing from other multifamily or splitting convenience stores from other grocery categories.

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 opportunity to make a capital investment to dramatically improve performance, such as replacing a roof or HVAC system. To ensure that buildings make progress toward the final performance standard, the ordinance also creates interim performance standards that they must meet at five-year intervals.

While the final performance standards are the same for each property type, the trajectory to achieve interim standards varies for each individual building to reflect 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 needed data will be collected as the first step in implementing the ordinance. Diagram 1 illustrates how a department determines each individual building’s trajectory and interim performance standards. The building’s performance level in the baseline year and its required performance in the final year are plotted. Drawing a straight line between these two points identifies the performance level the building must achieve to comply with each interim standard.

Diagram 1 provides an example of three multifamily buildings that must meet the same final performance standard for energy, but their trajectories 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.

Diagram 1: The IMT BPS Trajectory Approach



Because Building C was already performing well in the baseline year, it only has to improve by a modest amount to comply with the interim and final standards. The same principles apply to every property type and to every performance metric (e.g. water, GHG, etc.).

Building performance action plans

A well-designed BPS ordinance should provide flexibility to building owners. This is not just about being politically savvy, it also is critical to a jurisdiction achieving its goals. For instance, installing a moderately efficient boiler might meet the first interim standards, but the most cost-effective way for the owner to meet the final standards may be to make deep retrofits including envelope improvements to reduce the heating and cooling loads and a super-efficient electric heat pump with a direct outdoor air system and variable refrigerant flow. Were that owner to install the moderately efficient boiler, it would have to remove the boiler well before the conclusion of the boiler's useful life in order to meet the final performance level required, resulting in needless expense and wasted resources.

The model ordinance allows owners facing unusual situations to propose a customized, alternative compliance plan, called a "Building

Performance Action Plan" (BPAP). If the department approves a plan, then a building abiding by the terms of the plan would be deemed compliant with the BPS and would not be required to meet one or more performance standards.

The ordinance creates a technical committee containing experts in building science to review proposed BPAPs and recommend them for acceptance or rejection by the department. IMT encourages jurisdictions to work with owners, which are developing BPAP applications to include in their applications specific measures to achieve other goals related to community priorities such as resilience or public health with an emphasis on benefiting disinvested communities. The CAB shall evaluate the value of such measures to disinvested communities.

The ordinance does not allow owners to use BPAPs to delay improvements unnecessarily. As mentioned above, improvements in the near-term are more valuable than future improvements, so a well-designed, well-implemented BPS ordinance will maximize short-term actions while providing owners the flexibility to take advantage of existing equipment replacement, financing, and occupancy cycles to reduce or eliminate extra costs.

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Metrics

The IMT BPS model ordinance empowers jurisdictions to regulate the performance of buildings as measured by multiple metrics, including metrics that go beyond energy and carbon. It recommends metrics for decarbonization, increasing the flexibility of the electricity grid, indoor air quality, and efficient water use, but, based on community priorities, jurisdictions should also consider metrics related to building performance in other areas such as resilience. In addition to local priorities, the metrics a jurisdiction decides to include in its BPS ordinance will depend on the scope of the jurisdiction's legal authority.

Metrics supporting building decarbonization

An increasing number of U.S. jurisdictions are seeking ways to accelerate the decarbonization of buildings, leading to a debate about the merits of basing BPS ordinances on a metric measuring energy consumption or GHG emissions. Focusing solely on one or the other forces a jurisdiction to make trade-offs. For example, an ordinance that only mandates performance based on energy consumption may miss opportunities for electrification. 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.

By regulating multiple performance metrics, the IMT BPS model ordinance avoids these trade-offs. By including both site energy use intensity and onsite GHG emissions, the ordinance drives building owners to invest in all the principal building decarbonization strategies of energy efficiency, electrification, and building-grid integration to maximize the effective use of renewable energy.

Energy metric

The three most common metrics for measuring a building's energy performance are site energy use intensity (EUI), source EUI, and ENERGY STAR score. IMT recommends using site EUI as the metric for a performance standard. Site EUI measures the amount of fuel and electricity a building consumes in a year on a per square foot basis. Within the context of a BPS ordinance, 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 the building owner, whereas source EUI (which also serves as the basis for calculating the ENERGY STAR score) accounts for the total amount of raw fuel that a building requires 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 whereas source EUI can incentivize the use of fuels like natural gas, which has a lower site-to-source conversion ratio than electricity.

An ENERGY STAR score, besides its use of source EUI, is a less appropriate metric for a BPS based on a fixed, long-term energy performance standard because ENERGY STAR regularly updates the scoring curve on which ENERGY STAR scores are based. This means that individual buildings' ENERGY STAR scores can change over time, making the scores less suitable for use with IMT's trajectory approach, which sets final and interim performance standards many years in advance.

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 the use of fossil fuels on their properties or 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 requiring the reduction of overall energy consumption.

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

Metrics supporting electric grid reliability

Jurisdictions that adopt IMT's model 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 peak electric demand and a standard for a property's maximum coincident peak local electric demand. Coincident peak electric demand is defined as a property's electric demand when total electric demand from all sources on the entire electric utility's system is at its highest. Coincident peak local electric demand is defined as a property's electric demand when total electric 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 amount of electric power, expressed in kilowatts, a property can draw at peak times. Just like the site EUI and onsite and district thermal GHG emissions metrics, 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.

Both of these metrics are highly dependent on the availability of system and substation data from the electric utility. 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.

Setting Standards

A critical task for a jurisdiction implementing a building performance standard is setting technically achievable final performance standards for each metric adopted for each property type. In aggregate, these standards should be designed to accomplish the desired performance outcomes of the jurisdiction and its communities. Setting these standards requires detailed analysis, preferably including analysis of building performance data related to each metric and solid estimates of the ability and cost to improve for each property type. Jurisdictions that do not have access to local building performance data for a given metric will need to adopt requirements to collect such data alongside their BPS ordinance or find a source of data that stakeholders agree is applicable to the jurisdiction. Jurisdictions will greatly benefit from analyzing at least one year of data for each metric for all covered properties to inform the process of setting final standards. Jurisdictions should not delay adoption of a BPS if data is available for only some of the metrics. (Many jurisdictions already have benchmarking data available that will serve for energy/carbon metrics.) The ordinance can make clear that some standards will be implemented

immediately while making explicit plans to collect the needed data for other standards that will be implemented later.

Most jurisdictions will not have the in-house expertise or staff resources to complete the analyses needed to set appropriate standards. For this reason, IMT's model ordinance creates a committee of experts in building science and other relevant technical fields. This technical committee is tasked with developing a set of recommended final performance standards for each property type and metric included in the ordinance. The technical committee's work would occur after the adoption of the BPS ordinance, meaning that in most cases jurisdictions would need to allow the committee at least a year to make their recommendations before the standards could be determined. Jurisdictions that must set their performance standards in the ordinance rather than in rulemaking should solicit the expertise of technical experts to help them determine performance standards during their policy development process.

For jurisdictions that lack the local expertise to set final energy/climate performance standards or the resources to hire expert consultants, the Carbon Neutral Cities Alliance's "Performance Standards for Existing Buildings Performance Targets and Metrics Final Report," is accompanied by a spreadsheet tool that jurisdictions can use to calculate long-term site EUI performance targets for many property types.

For more information on building performance standards, visit imt.org/bps.



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