Building Performance Standard Summary Recommendations

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Contents

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EXECUTIVE SUMMARY

Minnesota has long been a leader on pragmatic approaches to clean energy, mitigating climate change, and supporting public health. As the impacts of climate change have accelerated, the State has recently advanced its carbon goals to reach net zero emissions economy-wide by 2050. Minnesota legislators are increasingly looking for approaches to drive down emissions. As energy use from large existing buildings significantly contributes to the statewide emissions, building performance standards (BPS) could be an effective tool to lower emissions.

BPS establish greenhouse gas and/or energy performance targets for large existing buildings to drive continuous, long-term improvement in buildings over time (Institute for Market Transformation, 2024). As of this writing, 14 state and local government jurisdictions have adopted BPS. Further, more than 40 are members of President Biden's National BPS Coalition, which supports BPS adoption and implementation. Lessons from such jurisdictions highlight the importance of stakeholder engagement. Designing a BPS should take into account the circumstances and needs of buildings and their occupants, the local regulatory environment, and available resources to support performance improvements.

To inform potential legislative BPS initiatives, CEE hosted a series of stakeholder workshops and meetings. These involved a diverse group of building owners and managers, utilities, labor, cities, state agency staff, affordable housing representatives, energy and architecture professionals, and nonprofits. As a first step, we introduced and established a common understanding of BPS and the six main policy components: covered buildings, metrics, performance targets, timeline, resources and incentives, and compliance pathways. Then, we hosted small group discussions about the six components to gather feedback, understand areas of consensus, and identify topics that may require further exploration. This report summarizes those discussions and provides context and examples from existing BPS policies.

Most existing BPS throughout the country have been developed in phases with stakeholder engagement occurring in each phase. Often, initial engagement informs the foundational structure of a BPS that is written into statute or ordinance. Such foundations include overall policy goals or targets, defining the covered buildings, setting the performance metric/s, establishing a timeline, and defining compliance pathways at a high level. A second period of engagement often occurs in rulemaking processes when detailed aspects such as specific building performance targets and the fine points of compliance are defined.

Should the State move forward with a BPS, the following are high level conclusions and recommendations from stakeholder engagement for consideration:

- The policy should be simple and coordinated with existing policies, programs, and new construction codes whenever possible.
- The policy should cover publicly owned and private, commercial and multifamily buildings 50,000 square feet and greater. The impacted geography should match that of the energy benchmarking law. Specific building types and characteristics should receive special considerations.

- The metrics used should create fair market signals. Energy use intensity (kbtu/sq. ft./yr.), greenhouse gas intensity (mton/sq. ft./yr.), or both could be considered.
- BPS targets should balance considerations for individual buildings with State and sector-wide targets. A State BPS commission should be established to facilitate any target development and rules processes.
- Performance targets for existing buildings should follow performance improvements for new construction energy code after a lag in time.
- The BPS timeline should recognize climate goals and balance them with feasibility concerns. This likely puts the first target deadline in the late 2020's to early 2030's. The timeline should be phased in cohorts, with publicly owned buildings going first.
- Financial incentives and technical resources enhance the success of BPS. Resources from the State, City, and utility programs should be streamlined to support BPS. A BPS hub should be developed to provide guidance and facilitate access to resources. Finally, resources should be prioritized for disadvantaged buildings.
- Compliance alternatives may be based on a building's characteristics. Alternative compliance options should be available to meet diverse building needs and circumstances. Alternative compliance payments or a penalty should be used for enforcement.
- The Department of Commerce would be the most appropriate department to implement a BPS policy. The department should have adequate staffing and technology systems to manage compliance.

As a strategy for large existing building decarbonization, BPS has the potential to drive progress towards the State's climate goals. The conclusions and recommendations from this report summarize the initial round of engagement for a possible BPS. Additional future steps for BPS development include modeling analysis, further local stakeholder engagement, and monitoring the progress of BPS policies across the country. Such activities are important to inform a successful BPS approach that meets the needs of building owners, tenants, users, and the State.

INTRODUCTION AND PURPOSE

For nearly two decades, Minnesota has focused more resources on mitigating the state's impact on climate change and reducing its greenhouse gas emissions to create a healthier Minnesota for all. The state has been a leader in clean, renewable energy and has seen a 54% reduction in its electrical generation emissions since 2005 (Minnesota Pollution Control Agency, 2023). Further, the new 100% clean electricity law adopted in 2023 requires electricity generation to be carbon free by 2040 (Office of the Revisor of Statutes, 2023).

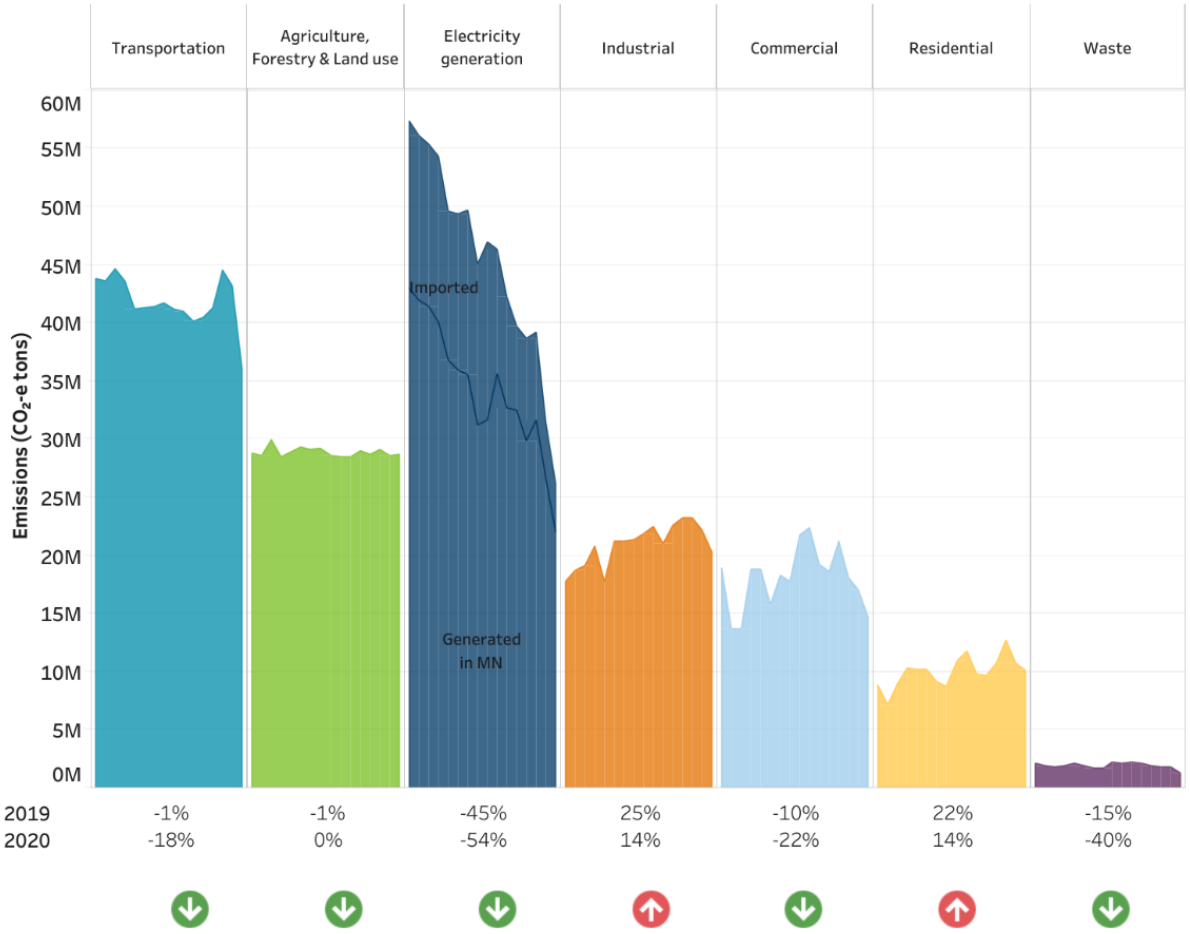

Figure 1. Minnesota greenhouse gas emissions by sector from 2005 to 2020. Building-related emissions can be approximated by adding together the electricity generation, commercial, and residential sectors, making building energy the top source of emissions in the state with over 60 million tons of CO2e. (Minnesota Pollution Control Agency, 2024)

As Minnesota shrinks emissions from electricity, emissions from other sectors have become more apparent (Figure 1). Buildings use electricity and benefit from its decarbonization, but they also use fossil gas, propane, and other sources of energy that cause emissions. The commercial sector emitted nearly 15 million tons of greenhouse gases in 2020. Improving building performance by reducing energy demand is an important strategy to lower those emissions. In 2023, Minnesota lawmakers required building benchmarking and disclosure, a

policy that requires measuring, monitoring, and reporting of building energy use, for commercial and multifamily buildings[1] 50,000 square feet and greater in the Twin Cities metro and in Duluth, Rochester, and St. Cloud (Office of the Revisor of Statutes, 2023). Buildings will begin reporting benchmarking data to the State program in 2025. Building benchmarking drives energy efficiency improvements in buildings and typically results in 1–3% energy savings annually (Jones, 2020) (Institute for Market Transformation, 2018).

The pace of energy and greenhouse gas emission savings, even with the benchmarking policy, is insufficient to meet Minnesota's climate target of net-zero greenhouse gas emissions by 2050. Members of the Minnesota legislature are motivated to develop climate-focused legislation to address this gap. According to Minnesota's Climate Action Framework, retrofitting large existing buildings and improving building energy efficiency standards were identified as two of the highest impact strategies for reducing cumulative greenhouse gas emissions (State of Minnesota, 2024).

For these reasons, we explored large existing building decarbonization policies. Research into policies around the country quickly identified building performance standards as an increasingly common policy and the approach with the greatest potential to achieve Minnesota's climate goals. This report describes the results of research, stakeholder engagement, and recommendations around potential building performance standards in Minnesota.

About Building Performance Standards

Building performance standards (BPS) establish greenhouse gas and/or energy performance targets for large existing buildings. Such policies drive continuous, long-term improvement in buildings over time (Institute for Market Transformation, 2024). As buildings can stand for many years, the impacts from BPS can significantly drive progress towards Minnesota's climate goals.

The first BPS was adopted in 2018 in Washington D.C. Since then, over a dozen cities and states and the federal government have adopted BPS. The jurisdictions with BPS are as varied as Chula Vista, CA (a San Diego suburb), St. Louis, MO, and the State of Colorado. More BPS policies are expected since the launch of President Biden's National BPS Coalition in 2022. The Coalition, comprising 40+ state and local governments participants including the City of Minneapolis, has committed to design and implement building performance policies and programs in their jurisdictions. With those participants, one quarter of existing commercial, multifamily, and federal buildings in the country are covered by or pursuing building performance standards (The White House, 2022).

[1] For the purposes of this report the terms "building" and "property" are used interchangeably.

Existing Landscape for Large Building Energy Performance in Minnesota

Energy efficiency in buildings has long been a priority in Minnesota. The first energy codes were adopted in 1976 (International Construction Code, 2022). In 1983, the Minnesota Legislature established the Conservation Improvement Program (CIP) requiring utilities to offer energy efficiency programs. Both codes and CIP have continued to evolve and expand over time. Most recently for codes, Minnesota adopted a new commercial energy code policy in 2023, which requires accelerated advancement of energy efficiency. The commercial energy code must incrementally improve every code cycle until meeting an 80% net energy reduction target in 2036, as compared to an ASHRAE 2004 baseline (Office of the Revisor of Statutes, 2023). The Minnesota Energy Code adopted in 2024 uses ASHRAE 90.1-2022 and has an approximate energy savings of 46% over the ASHRAE 2004 baseline. Meanwhile, CIP was most recently updated in 2021 with a new name, the Energy Conservation and Optimization (ECO) Act, and a new paradigm that allows for fuel switching for the first time was added to the core energy efficiency model.

The State has also sought new tools and approaches to advance energy efficiency in buildings, focusing on publicly owned facilities. The 2001 legislature adopted energy benchmarking requirements for all publicly owned buildings, which includes State, local government, and school buildings. At the same time, the State also passed the Sustainable Buildings 2030 standard (SB2030), which details requirements for new construction receiving state bonds. This standard aligns with the better-known Architecture 2030 framework that requires increasing levels of energy efficiency over time such that by 2030 new builds with state bonds are net-zero energy. SB2030 currently requires new builds to be 80% more efficient than a 2003 code level building (University of Minnesota Center for Sustainable Building Research, 2019). That will increase to 90% beginning in 2025. The 2023 benchmarking law was the State's first performance-related policy for non-publicly owned existing buildings.

METHODOLOGY

This exploration aimed to understand building performance standards and the opportunities and challenges of such a policy in Minnesota. To do that, we reviewed existing local and state BPS ordinances and statutes and spoke with staff and representatives from a number of jurisdictions including Colorado, Maryland, and Washington State. We also consulted reports, guidance, and/or staff from the following:

- The U.S. Environmental Protection Agency
- ENERGY STAR®
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
- American Council for an Energy-Efficient Economy (ACEEE)
- Institute for Market Transformation (IMT)
- Coldwell Banker Richard Ellis (CBRE)

Most notably, this process included local stakeholder engagement. Decarbonizing large existing buildings is a complex topic and involves many stakeholders. It is important that they can learn, share, and discuss their hopes and concerns prior to any potential large existing building decarbonization policy.

We convened large existing building stakeholders in three facilitated workshops between October and December 2023. The series involved over 60 people from building owners and managers, professional organizations, labor organizations, utilities, architecture and engineering firms, nonprofits, community organizations, cities, and state agencies. During the series, affordable housing stakeholders met for two separate discussions to focus on the unique context of affordable housing in existing buildings.

When the concept of BPS was introduced as a potential large building decarbonization approach, stakeholders raised several questions, which are summarized below.

- What buildings would be impacted?
- Where would funding for retrofits come from?
- What efficiency technology is ready and cost-effective?
- How would a BPS interact with existing policies such as benchmarking, new commercial codes, and the 100% by 2040 clean electricity law?
- Would a policy apply statewide or enable cities to develop a BPS?
- How would individual building targets be established?
- How would compliance be structured?
- How would a BPS impact the affordability of owning a building or renting space, especially regarding less wealthy owners and affordable housing?
- What are the milestones of policy development?

Throughout the workshop series, we sought to develop answers to the above questions and concerns and to understand stakeholder preferences regarding the various BPS components. The results of that are reflected in the feedback and discussion below.

DISCUSSION

Generalized Stakeholder Feedback

Overall, stakeholders acknowledged Minnesota's climate goals and the impetus for exploring building performance standards. We heard no open denial of climate science or of the need to reduce greenhouse gas emissions. Some stakeholders underlined the need for large-scale building decarbonization approaches. Those were most likely to be representatives of local governments, architecture and energy services firms, and clean energy nonprofits. Many stakeholders also recognized the potential benefits of improving building energy performance from improved building operations to lower utility bills to more comfortable spaces.

Building owners and managers emphasized concerns regarding upfront costs, technical capabilities, and long lead times for capital improvement projects as barriers to implementing retrofits in existing buildings to comply with a potential BPS. They desired policy simplicity but also recognized the need to specify the savings potentials of different building types and characteristics when targets are set. In every workshop, there was a recurring theme that strong "carrots" such as resources and incentives, as opposed to "sticks" like financial penalties, would more successfully achieve targets.

Meanwhile, labor and utilities noted a few specific concerns. Labor organizations emphasized the value of consistent workload streams, over boom-and-bust energy retrofit cycles and for job and business stability. Utilities underscored the importance of their continued ability to claim energy savings through ECO programs. The ability to claim savings motivates utilities to support programs that could be instrumental to BPS success.

Statewide versus Local BPS Approach

To date, there has not been a consistent geographic approach to BPS. Colorado, Maryland, Oregon, and Washington have statewide-BPS. California passed legislation to explore their own BPS. However, within these states, several cities have (or are considering) their own standards. For example, Portland, OR is exploring their own BPS. In the case of Chula Vista, CA, the City BPS policy preceded the State's exploratory legislation. Seattle, WA adopted their own BPS after their Office of Sustainability & Environment modeled that the State's BPS would not achieve their City climate goals. Seattle forecasts the State's BPS to result in a 4% citywide greenhouse gas (GHG) reduction by 2050, while the City's BPS will lead to a 27% citywide reduction (City of Seattle, 2024).

Regarding the question of a statewide BPS policy versus a policy that expressly enables BPS development by local governments, stakeholders mostly supported a statewide approach. They noted the value in regional consistency and lower implementation costs that can come with reduced complexity. Stakeholders also talked about how investments between jurisdictions with and without BPS could be distorted and uneven, and they expressed a desire to avoid that. Building owners, managers and labor representatives want to be able to easily decipher whether and how BPS may apply to them. Although City representatives expressed support for

a statewide BPS, they also shared a desire to customize and accelerate a city-level BPS beyond a state version citing needs for meeting their own city-level goals.

BPS Relationship to New Construction Code

It is typically easier and cheaper to embed high performance in new construction. Therefore, stakeholders reasoned that performance requirements for new construction should always come before requirements for existing buildings. They also stressed the need for thoughtful coordination among the policies such that buildings avoid the need to replace equipment before end-of-life. Some suggested that new construction receive a sort of performance credit or grace period as one way to avoid that outcome. A few affordable housing stakeholders acknowledged the importance of strong energy codes and the use of durable materials in building construction. This could ensure longer term cost-effectiveness and ease in meeting BPS targets.

BPS Components

BPS policies have six main components that require decision-making. We present the following summary of research and stakeholder discussions for consideration.

Covered Buildings

All existing BPS policies across the U.S. target some mix of large commercial and multifamily buildings. BPS policies typically define “commercial buildings” broadly as all non-residential buildings, which includes buildings such as governmental, non-profit buildings that may or may not house a commercial business. These buildings are targeted because energy use and greenhouse gas emissions generally scale with the size of the building. The bigger the building, the greater the energy use and associated greenhouse gas emissions. By targeting large buildings, the policies aim to achieve greater energy and carbon savings by engaging a relatively small number of buildings. This reduces the count of impacted properties and makes implementation more manageable for governmental agencies. Existing BPS policies’ definition of “large” varies from a minimum threshold of 10,000 square feet to 50,000 square feet.

The basis for BPS is energy benchmarking, which measures building energy performance using utility data and basic building characteristics. In 2023, the Minnesota Legislature adopted an energy benchmarking and disclosure policy that covers privately-owned commercial and multifamily buildings 50,000 square feet and greater in specific geographies. This currently includes buildings in the seven-county Twin Cities metro and in the cities Duluth, St. Cloud, and Rochester. This covered building set, which is estimated to include about 5,000 buildings, was determined by balancing a few aims:

- Seizing the large opportunity to improve energy efficiency and reduce greenhouse gas emissions associated with energy use in buildings
- Ensuring that utilities can provide these buildings the energy data access necessary for successful energy benchmarking, and
- Ensuring the State can manage policy implementation for the full count of covered buildings.

This balancing act is equally relevant for BPS. It's generally understood that there are diminishing returns in potential energy and carbon savings for every incremental expansion of covered building list by size threshold. At the same time, the level of cost and effort rise substantially. Given this, there was little interest among stakeholders to make a BPS covered building definition broader than that of the State's current benchmarking policies.

Publicly owned buildings, which could be differentiated between state and local government buildings or include both, were explicitly identified as important to include in a BPS. Stakeholders reasoned that publicly owned buildings use significant amounts of energy but more importantly, the government should lead by example. There's precedent for this in Minnesota, as publicly owned buildings have been required to benchmark by state statute for over 20 years (Minnesota Legislature, 2002), smoothing the pathway for benchmarking private buildings. Similarly for BPS, stakeholders argued that having government take on the risk of trying new energy performance measures and technologies can make an easier path for the private owners to follow. State buildings are already undertaking this step due to Executive Order 19-27 (Office of Governor Tim Walz and Peggy Flanagan, 2019), which effectively establishes a BPS for state buildings. It orders a 30% reduction of greenhouse gas emissions by 2025 relative to a 2005 calculated baseline and a 30% reduction in consumption of energy per square foot by 2027 relative to a 2017 adjusted baseline. This applies to the entire State building portfolio and allows for individual building performance to vary so long as the collective targets are met. City representatives supported the idea of publicly owned buildings being subject to a BPS in concept but also expressed concerns about costs and whether those costs would ultimately be borne by local property taxpayers.

Special Considerations

Many factors impact how easy it is to improve a building's energy performance. These factors include the building's ownership, uses, occupancy, energy systems, historic nature, and location (such as in a historically disadvantaged community). In some cases, the costs to improve the building's energy performance may incur their own undesirable consequences. Stakeholders noted the following building types and characteristics that may warrant special considerations in target setting, prioritization of support resources, and/or in flexibility in compliance.

- **Affordable housing** – For the purposes of this report, this category encompasses publicly owned, subsidized, and naturally occurring affordable housing. Residents can benefit from BPS with the potential for improved indoor air quality, upgraded equipment, and reduced energy bills. However, there are also noteworthy barriers and risks of BPS that are unique to affordable housing, which are catalogued in depth by ACEEE (Jarrah, Garfunkel, & Robiero, 2024). Chief issues include large, deferred maintenance backlogs, lack of access to capital or capital that is only accessible on certain federal program timelines, owners may have less control regarding how energy is used, and the risk of rent increases as owners seek to pay for the energy upgrades. The last issue can be particularly challenging, given a split incentive in which building owners control the asset and tenants pay the utility bills. Some jurisdictions such as Chula Vista aim to protect renters by placing restrictions on rent increases in buildings that undergo a retrofit to comply with a BPS policy. Jurisdictions like New York City have spent considerable time

developing BPS requirements for affordable housing because of the particularly complex nature of balancing affordable housing financing, ensuring renters are protected, and advancing building performance.

- **Buildings on district energy systems** – These buildings may benefit from efficient centralized systems, but they lack control over the system and its fuel stock. Stakeholders expressed concerns about such buildings being penalized for being unable to meet targets when their options for doing so are more limited. Some Minnesota district energy systems, such as District Energy Saint Paul and the Duluth Energy System, have recently made strides to improve efficiency by switching from steam to hot water systems and to reduce carbon by moving to biomass and other non-fossil fuel-based feedstock. Additional policy or program structures that support district efficiency and decarbonization efforts could work in tandem with a BPS to achieve performance targets similar to buildings not on district systems.
- **Historic buildings** – Stakeholders speculated that historic buildings may have higher retrofit needs than more modern buildings, and those subject to historic preservation rules may find themselves caught between conflicting requirements when trying to comply with BPS. Stakeholders suggested that building age may dictate building performance and that old buildings may be at an inherent disadvantage in being able to meet the performance targets. However, representatives from cities with benchmarking ordinances have found no evidence of building age being a factor in building performance. It was posited that age of equipment rather than structural age may be a bigger determinant of building performance.
- **Buildings that use energy to support life and/or require controlled environmental conditions** – Energy plays a critical role in the operations of hospitals, laboratories, and museums. The critical functions within these buildings may affect the limits of energy reduction.
- **Buildings with data centers** – Often contained in buildings classified as office, data centers use a significant amount of energy and can distort the relative performance of the building as it relates to its building type. Stakeholders suggested that allowances or special targets be set that take the existence and size of data centers into account.
- **Publicly owned buildings** – Although generally supportive of building performance improvements, noting the climate, health, and comfort benefits, City and State representatives expressed concerns about having sufficient resources to meet BPS requirements. Cities worried about the risks of an unfunded mandate, noting that in order to find sufficient funds they may need to turn to property tax levies. Stakeholders shared similar concerns regarding public schools. Providing sufficient resources to support public building improvements may be a key tool for success given that such buildings could not be fined for non-compliance.
- **Buildings in financial distress** – Building owners and managers expressed concern about these buildings having capacity and resources to meet BPS targets. Some of these also came in the form of concern of low occupancy rates. Notably, the 2023 benchmarking policy has definitions and exemptions for buildings with less than 50% occupancy and financial distress.

- **Commercial buildings** – Stakeholders acknowledged that owners generally have greater control of performance in commercial buildings compared to multifamily ones and that these buildings often have immediate opportunities for potential energy savings. Two key concerns were raised, however. Retrofits may disrupt tenants and/or cause them to move. Tenant type and occupancy can also vary over time. For example, a space that holds an accounting firm may later be leased to a medical clinic, which has a very different energy use profile. Stakeholders suggested that BPS rules not disincentivize these types of transitions.

In general, stakeholders stressed the differences among buildings should be central to how BPS targets, resources, and/or compliance flexibility is determined.

Metrics

Building performance is commonly measured by either energy use or greenhouse gas emissions or a combination of the two. There are a variety of ways building energy and related emissions can be measured (Institute for Market Transformation, 2022). However, most existing BPS policies normalize for building area and often center on what is under a building owner's control. Stakeholders showed support for this approach. Participants agreed that normalizing for building area ensures that larger buildings are not unfairly penalized for their size. They also underscored the greater chance of success if there is a direct link between the requirements and what the building owner can control.

This rationale results in two main metric options: site energy use intensity (EUI), measured in kbtu/sq. ft./yr., and greenhouse gas emission intensity (GHGi) measured in mton/sq. ft./yr. The selection of the building performance metric has a profound impact on the measures a building owner may pursue. Lively discussion among stakeholders showed an even split and included compelling arguments for both metrics, summarized in Table 1.

Many stakeholders supported simplicity wherever possible. Simplicity can lower the amount of time and therefore costs to understand and meet a given standard. Many existing BPS seek simplicity by using only one metric. However, they often pay with complexity in other ways such as the addition of numerous compliance pathways. Given the goals of BPS, the diversity of buildings, and the valid arguments for the two metrics, avoiding complexity may be challenging.

Growth in population and buildings were also raised as metrics issue. Theoretically, a BPS could establish an absolute sector-wide cap or target on energy or emissions. However, no existing BPS has done that to date. Stakeholders expressed that an absolute target would not be able to accommodate growth.

Table 1. Stakeholder arguments for two BPS metrics

Site EUI Advantages	GHGi Advantages

• Simplicity
  ○ Easily calculated using total energy consumption from utility bills and gross square footage
• Energy is the current standard
  ○ Aligns with current building code and energy programs
  ○ Provides easier alignment for new buildings that need to meet building code during development and BPS once constructed
  ○ Energy is a common language among contractors, building managers, and utilities
  ○ Common language makes it easier to connect with and promote savings
  ○ Builds on benchmarking
  ○ Direct connection to energy burden
  ○ Feels less mysterious to building managers
• Energy efficiency focus
  ○ Cuts waste and costs
  ○ Reduces grid strain
  ○ Pace of utility grid greening is irrelevant
  ○ Drives energy optimization
  ○ Less risk of increasing energy burden
• Fuel neutral
  ○ Energy code is agnostic to type of energy used
  ○ Likely garners fewer detractors
  ○ Creates equitable incentives between utilities
	• Alignment with the State's core climate goal and impetus for BPS
	• Flexibility
	  ○ Compliance options of energy efficiency and/or clean energy generation
	  ○ Accommodates buildings that have limited ability to do energy efficiency onsite
	  ○ Provides additional options for buildings that may struggle with efficiency alone (e.g., historic buildings)
	• Increase climate literacy
	  ○ Clearly connects building performance to climate change
	  ○ Raises awareness of climate change
	  ○ Models exist to easily calculate GHG emissions
	• Leverage the greening of the grid
	  ○ Minnesota's 2040 100% clean electricity utility mandate gives a clear timeline of lower emissions energy source
	• Incentive alignment
	  ○ Some IRA funding is GHG based

Performance Targets

Performance targets set the specific level of energy or carbon performance a building must meet to comply with a BPS. The specific performance levels and how they are established for individual buildings can depend on many factors, including, but not limited to, the existence of climate and energy goals, building type and characteristics, and opportunity for savings. If targets are not set in the policy, the legislation can direct the target development process to consider such factors.

A little over half of existing BPS set an end target for the whole group of covered buildings, with interim targets for incremental reductions. Performance targets for individual buildings are then

set such that the collective reductions meet the end target for the entire group. This sector-wide end target often aligns with established higher-level climate and energy goals. In statute, Minnesota has an economy-wide 50% carbon reduction goal from a 2005 baseline, and the State seeks economy-wide carbon neutrality by 2050. Other State-level direction comes from the Climate Action Framework, which aims for 50% carbon emission reduction from a 2005 baseline specifically for existing buildings by 2035. Stakeholders provided supportive comments for BPS sector-wide end target alignment with the 2050 goal but had concerns about orienting requirements with the 2035 goal. They cited unknowns regarding how existing building performance currently compares to a 2005 baseline and the relatively short timeframe to make retrofits.

Given that establishing targets is one of the most complex components of BPS, major discussion with stakeholders revolved around the process for establishing them. Participants emphasized the need for a thoughtful process with robust stakeholder engagement, consistency and predictability over time, and decisions that reflect the conditions and needs in Minnesota. The ability to revisit, modify, and update targets as new information becomes available and conditions change was also raised as an important process feature. However, stakeholders stressed the need for sufficient guardrails to limit the process' openness to political scrutiny.

Noting the above factors, we explored four main options for setting targets:

1. **Legislation** – Stakeholders acknowledged that incorporating performance targets into legislation may be the most expedient path, but they were very concerned about the risks. One major concern is the influence of politics. Another is that the Legislature's fast-paced environment can make it difficult to clarify details like complex and technical building performance targets. Legislators are also not subject matter experts. The risks of getting such details wrong can have real consequences for building owners and occupants. Opportunities to amend such details are limited because the Legislature is only in session for a few months in a year. This logic seems to track similarly elsewhere. All but one existing BPS have refrained from including performance targets in legislation.

Is benchmarking data required for setting targets?

Benchmarking data is helpful for establishing BPS targets, though it is not necessary. The DOE and EPA BPS Technical Assistance Network supported by national lab staff have established three approaches for establishing targets:

- Use benchmarking data from all of the covered buildings to understand range of performance by local building stock to set specific standards
- Conduct energy modeling and statistical analysis to estimate appropriate targets based on reference data set, such as existing benchmarking data from the five Minnesota cities with ordinances and B3 benchmarking data for public buildings, or,
- Develop a modified version of a national standard such as ASHRAE 100, which contains reference targets for each climate zone.

2. **Rulemaking Process** – Rulemaking is a formal process commonly used to provide clarity and uniformity, and to fill in details of a policy that were not put directly into statute (Shepard, 2012). Adopted rules carry the force of law. Guided by the Administrative Procedure Act, the process is undertaken by the agency directed to implement the policy and requires a solicitation of comments, statement of need and reasonableness, public notice, and, given certain conditions, a public hearing. An administrative law judge determines whether the agency has met all legal and procedural requirements, and upon approval are sent to the governor for approval. The process also requires the agency to determine if the cost of compliance would exceed $25,000 for small businesses and cities. If that threshold is surpassed for any singular business or city, that entity may apply for an exemption to the rule. Though large buildings are commonly run by larger entities, it is common for large buildings to be legally owned by small, limited liability corporations, which could claim small business status. The result of this is that a not insignificant portion of buildings may be eligible for this exemption, markedly affecting the potential overall carbon reduction impact of the policy.

   Stakeholders acknowledged the slower, methodical approach to target setting that rulemaking can bring. It invites expert technical analysis and stakeholder input. The recent Accelerated Energy Codes rulemaking process was cited as a successful example from which to learn. While some stakeholders voiced great familiarity with rulemaking, others said that it can be hard to know how and when to provide input. State agency staff shared that rulemaking can take anywhere from one to three years, especially with the research required and staffing allocation. Rulemaking examples for existing BPS in other jurisdictions align with that timeline. A few stakeholders noted minimal concern regarding the potential length of time for rulemaking, stating that it is most important for building owners to know that the rules are forthcoming. This implies that the sector-wide targets and the interim target compliance dates can provide enough information in the near term to guide initial actions such as undergoing an energy assessment or audit of the building. Stakeholders also noted that changes in administration and leadership could issue sweeping changes, posing a potential risk to rulemaking.

3. **Commission Process** – The legislature could establish a building performance commission tasked with setting targets. State commissions in Minnesota are long-term advisory bodies that have statutorily defined structures for membership. The state has a number of existing commissions, which could be viewed as models. One example raised was the Legislative-Citizen Commission on Minnesota Resources (LCCMR), which makes environmental funding recommendations to the legislature. The analogy here would be a building performance commission that recommends targets to the legislature, which would need to be approved and codified before coming into effect.

   The advantage of a commission is that it allows for substantial engagement of relevant stakeholders and subject matter experts. In fact, the representation of the commission

could be defined in statute. The permanent nature of commissions also allows for ongoing review and revisions as necessary. At the same time, stakeholders voiced concern that this option lacks clear procedures and transparency. The requirements for legislative approval also carry the challenges of that political environment.

Stakeholders further discussed alternatives to the LCCMR example. Theoretically, a commission process could be established so that the commission's recommendations earn the force of law, as with administrative rules. However, there is no precedent of such a commission process in Minnesota, and no participants were interested in exploring the idea further. Stakeholders also explored alternative group structures to a commission including a task force or advisory groups. Task forces are advisory bodies that work for a limited time and on a specific subject. Stakeholders reasoned that there is a time-limited nature of establishing targets. However, there were further reflections that there is also value in a more permanent advisory group to revisit targets over time. Technical advisory groups (TAGs) were mentioned as another example approach. Currently, TAGs are a sublayer of advisory bodies to the Construction Codes Advisory Council. These are established by the Department of Labor and Industry to probe, review, and create recommendations for narrow subtopics of the construction code. Stakeholders noted the more flexible nature of TAGs in that their existence, duration, and topic focus can change over time.

4. **Combined Commission and Rulemaking Process –** This process would begin with a building performance commission with legislatively defined membership that is advisory in nature. The commission would create recommendations to be evaluated as part of agency rulemaking. Stakeholders viewed this option most favorably. By combining the commission and rulemaking approaches, the State can simultaneously leverage the benefits of both and negate some of the disadvantages of each single approach. Stakeholders suggested that this blended approach ensures the most robust level of stakeholder and expert involvement. They liked the clarity of defining commission membership in legislation. A commission with balanced representation defined in statute can assure stakeholders with less capacity or ability to engage that their perspectives are represented during the process. The subsequent rulemaking process provides a secondary or back-up opportunity to engage directly. The clear procedural nature of rulemaking also gave stakeholders more confidence in an orderly process. Participants suggested that this combined approach could potentially shorten the time needed for rulemaking. As considerable rulemaking time is spent researching for and developing the statement of need and reasonableness, the commission recommendations from relevant stakeholders and subject matter experts could supplant some of that.

It should be noted that any target-setting process outside the legislature would require funding for staff to facilitate that process.

Target Setting Considerations

Regardless of the process for establishing targets, stakeholders discussed two additional target-setting frameworks that could be considered. First, stakeholders proposed that BPS provides an opportunity for a building performance cap-and-trade market. This concept would allow buildings that have more difficulty meeting performance targets to claim credit for the achievements of another building beyond the performance target. Some jurisdictions such as Boston, Cambridge, and Colorado allow for the trading and crediting of performance improvements within a portfolio under the same owner. New York City has an emissions cap-and-trade market built into its ordinance. However, details about the structure are not yet available.

A second framework discussed related to the proportioning of the sector-wide target. In this scenario, targets could be set such that only a portion of the covered building list (e.g., group A) must achieve significant incremental change in performance in a given cycle. This portion could consist of the worst performing buildings, those with the greatest opportunity for savings. Stakeholders generally supported this approach, as it could direct resources and incentives to a smaller group of buildings, making each single building eligible for more resources and incentives. They also noted a preference for undertaking fewer big retrofit projects, which this would accommodate, rather than many smaller retrofits because of the cost of mobilization. This was particularly emphasized by affordable housing stakeholders, which are more likely to have severe spikes and dips in access to capital. This approach would also reward buildings that are already relatively high performers and buildings that have recently undertaken performance investments (e.g., group B). Some climate-focused stakeholders noted concerns about group B buildings being exempted from target requirements in any cycle because a lack of attention may cause performance to decline, and they preferred to support the establishment of good performance habits. Overall, stakeholders supported balancing the required savings from the two groups in the realm of two-thirds coming from group A and one-third of savings required of group B. Other factors such as building type, occupancy, and other characteristics were also stressed as important elements for this approach.

Baseline

The BPS approaches discussed with stakeholders require reductions from an established baseline. Stakeholders examine multiple approaches to establish a baseline. An initial idea from the group involved creating baselines using individual building data. Given that benchmarking for the likely covered buildings will not be available until 2026 with calendar year 2025 results, 2025 would be the first feasible baseline year. However, many stakeholders found fault with that approach because using a 2025 baseline would not align with the State's climate goals. The goals are measured against a 2005 baseline.

Energy consulting stakeholders noted that Minnesota building performance data exists and could be used to establish average performance baselines by building type and/or other building characteristics. Therefore, all covered buildings regardless of year built would be compared against the same baseline building set and follow the same trajectory. For example, if the average office building in 2005 had an EUI of 100 kbtu/sq. ft./year and the BPS target is an 60%

reduction by 2040, every office whether built in 1980 or 2030 would need to meet an EUI of 40 kbtu/sq. ft./year by 2040. The ability of this approach to accommodate new buildings addresses stakeholder concerns of alignment not just with climate goals but also with new construction code.

Relationship Between Benchmarking and BPS

Benchmarking policies record the performance of buildings and are therefore foundational to BPS. Benchmarking involves entering building characteristic data and utility energy use data into the online ENERGY STAR Portfolio Manager, which is run by the US federal government. Building owners and managers understand the status of their building's status relative to the BPS target with benchmarking data. As they make improvements to their building, they can track progress toward the target over time through benchmarking. Reported benchmarking data is ultimately used to determine compliance with the BPS target. In Minnesota, benchmarking reporting will be required annually for covered buildings. A building's compliance against the BPS target would likely be evaluated on a stated cycle, such as every 5 years.

A similar approach could be taken for emissions-based targets by using the 2005 building performance data and known emissions factors for the energy generation mix at the time. Particularly because the grid has become nearly 50% cleaner in the last 20 years, building owner stakeholders noted that buildings have likely reduced the emissions associated with their building since 2005. Building owners were encouraged by the idea of claiming partial success toward targets from the beginning. Other stakeholders cautioned that targets with a 2005 baseline should be designed in a way such so that they aren't automatically met because of the changes in Minnesota's electricity mix without making them impossible to achieve.

Timeline

Influential Factors

Establishing a BPS timeline requires a thoughtful plan that considers many factors including:

- Climate goals
- Building retrofit speed feasibility, which factors in financial, technical, and occupant components
- Efficiency standard of new construction code
- Available workforce
- Benchmarking timeline
- Agency implementation needs

Energy consumption from buildings is a top contributor to statewide carbon emissions (Figure 1). However, stakeholders remarked that among all economic sectors, the building energy sector has one of the clearest pathways for decarbonization. This is thanks to experience from a long history of State energy codes and utility energy efficiency programs, technological

advances, and historic funding opportunities. That said, decarbonizing buildings, especially large buildings, is not easy. Large buildings are typically unique, so out-of-the-box retrofit solutions are less prevalent than they are for single-family homes, for instance, which have more standardized energy systems. Building owners and managers explained that decarbonization retrofits would need to be fit into capital improvement plans. These are multi-year plans, typically three to six years, which help organizations identify necessary projects and schedule their implementation. In particular, large capital projects can be a big lift and require many years to coordinate the financial and technical elements and implement the project. A few building owners and managers also noted the challenges of the current fiscal environment especially for commercial office buildings and that a few large office buildings had recently gone into receivership as a result.

When large commercial and multifamily building owners and managers identify capital projects, they often consider the age of equipment. Typically, owners and managers want to maximize the life of the equipment to get the greatest value from their investment. Stakeholders voiced concerns about BPS potentially driving early equipment replacement, especially for recently constructed buildings. Architects also cautioned that depending on the equipment's age and embodied carbon, early retirement could result in higher net emissions. Stakeholders suggested that these issues be addressed in the compliance timeline and/or target rules.

New commercial energy codes are anticipated to follow the energy reduction trajectory in Figure 2 (Callahan, 2024). Because incorporating high energy performance is easier and more cost-effective in new buildings than in existing buildings, it is valuable for the market to develop the strategies and practice deploying them where barriers are lower, first. Existing buildings seeking to comply with a BPS could benefit from a more practiced market, especially as decarbonization strategies scale and reduce in cost. Therefore, stakeholders suggested that any energy performance requirements in existing buildings lag those of new construction.

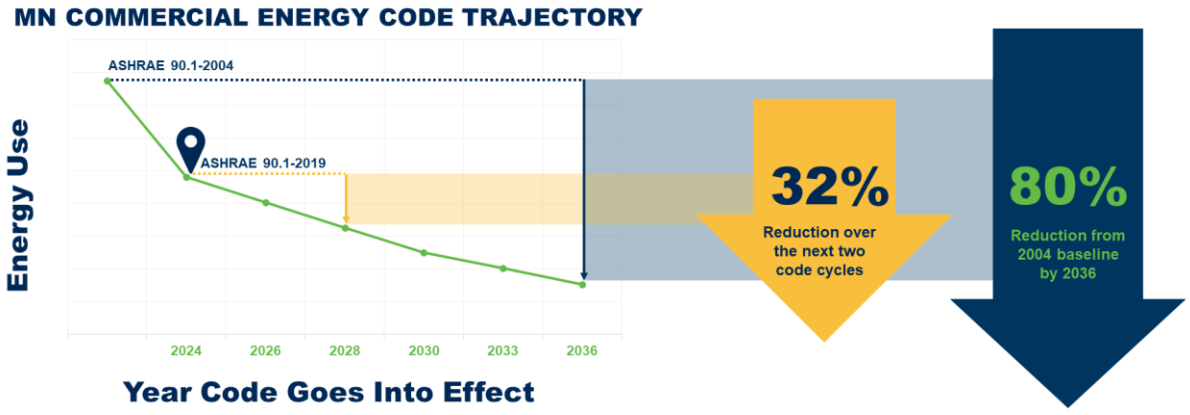

Figure 2. Minnesota commercial energy code trajectory (Callahan, 2024)

Retrofits in large buildings require significant numbers of energy, facilities, and trades professionals. Stakeholders expressed worries about there being sufficient workforce to plan and implement building retrofits. A policy for which all buildings must comply at the same time every so many years could lead to boom-and-bust cycles of work. To avoid this, a solution highly favored by stakeholders is to phase BPS compliance deadlines by roughly equal building cohorts. Phased retrofit deadlines would encourage building retrofits to similarly be staged over time, thereby making the workload more consistent. A few stakeholders suggested that phasing could skip years between cohort compliance to better smooth the workload. Labor representatives expressed concern about retrofit work being completed on time because buildings may wait as long as possible to complete upgrades.

Definitions of Key Dates

A BPS timeline typically contains the following key dates:

1. Policy adoption date – the date on which a jurisdiction adopts the policy.
2. Initial compliance deadline – the first deadline by which a building must meet an interim building performance target.
3. Cycle length – the length of time, in years, between interim compliance dates.
4. End compliance deadline – the final deadline by which a building is to meet the building performance target.

There are two necessary pieces of data for a BPS compliance cycle: benchmarking data, which provides the current performance of the building, and the performance targets, which denote performance levels targeted by certain date. Well before the first BPS compliance deadline, the building must have benchmarking data available. The 2023 benchmarking law established the first reporting deadline in 2025 for the first cohort of buildings 100,000 square feet and greater and in 2026 for the second cohort that are 50,000 to 100,000 square feet. The first year in which all necessary data for the first cohort could be available for BPS is 2026, assuming the target-setting process concludes by that date. This means that the initial compliance year for BPS for the first cohort must be in 2026 or after and for the second cohort in 2027 or after. City representatives who have implemented benchmarking also noted that it can take a year or two of benchmarking to produce high-quality data.

The final major factor in considering a BPS timeline are the needs of the implementing agency, which in Minnesota would most likely be the Department of Commerce (see Implementation). The critical path for implementation is the process for establishing performance targets. The Department of Commerce cannot fully establish implementation structures until the targets are established. Because benchmarking is a key component of BPS, any implementation of a BPS will benefit from the benchmarking systems currently being directed by the Department of Commerce. As of this writing, the Department of Commerce is on track for staffing and setting up software systems to manage benchmarking implementation. BPS requires implementation resources beyond benchmarking, therefore the time for staffing and implementation would also need to be factored into the timeline.

Timeline Components

Initial compliance deadline

This study and the stakeholder engagement process evaluated timeline options with the assumption of policy adoption in 2024. Given all the timeline influence factors, existing jurisdictions have typically established initial compliance deadlines an average of 5 years in the future from the policy adoption deadline (Table 2). As such, stakeholders discussed options of 2028, 2029, or 2030 for the first compliance deadline. Many reflected that it was hard to have a specific opinion without knowing the performance target and scale of the reduction needed. Generally, with the deadline options presented, building owner and manager stakeholders favored relatively small targets in the realm of 10% for the first deadline. Further, given the uncertainty of the reductions needed from individual buildings, many stakeholders gravitated to 2030 as the first compliance year. Another reason was the opportunity to align with the State's 2030 climate goals. Some building owners opposed the initial compliance deadline being too far in the future, such as beyond 2030. They said that if the State is serious about climate mitigation it should provide a deadline that is realistic but soon to drive action. It should be noted that the conversation of initial compliance deadline options centered primarily around privately owned buildings and was held before the topic of publicly owned buildings as an additional cohort had been raised.

Table 2 - Summary of existing BPS timelines. Fields are left blank where no information could be found.

Jurisdiction	Adoption date	Initial BPS compliance year	Cycle in years	End date	End target
Boston[2]	2021	2025	5	2050	City goals 50% GHG reduction by 2030 from a 2005 baseline, and carbon neutrality by 2050
Cambridge[3]	2023	2026	5	2035 / 2050[5]	100,000+ sq. ft. non-residential buildings to reach 'Net Zero Emissions' by 2035, <100,000 sq. ft non-residential buildings must reach 'Net Zero Emissions' by 2050.
Chula Vista[4]	2021	2023 / 2026[5]	5		
Colorado[6]	2021	2026	4	2050	20% reduction by 2050
Denver[7]	2021	2024	3	2030	30% EUI reduction; gives climate office power to set new, final EUI targets for 2040, 2050, and beyond should it be deemed necessary to make climate goals.
Federal[8]	2022	2024	1	2030	GHG emissions by 50 percent by 2032, net zero by 2045
Maryland[9]	2022	2030	5	2040	20% GHG reduction from 2025 to 2030; 60% by 2035; net zero emissions 2040; EUI trajectory
Montgomery County[10]	2022	2028	5	2033 / 2036[5]	
New York City[11]	2019	2025 / 2036[5]	5	2050[5]	40% GHG reduction by 2030, net zero by 2050
Oregon[12]	2023	2028 / 2030[5]	5		
Seattle[13]	2023	2031	5		
St. Louis[14]	2020	2025	4		
Washington[15]	2019	2026	5		
Washington D.C.[16]	2018	2024	5		

[2] (City of Boston, 2024)
[3] (City of Cambridge, 2023)
[4] (City of Chula Vista, 2024)
[5] Multiple dates indicate there are different dates corresponding to different covered building cohorts.
[6] (State of Colorado, 2024)
[7] (City and County of Denver, 2024)
[8] (Council on Environmental Quality Executive Office of the President, 2022)
[9] (Maryland Department of the Environment, 2024)
[10] (Department of Environmental Protection, 2024)
[11] (City of New York, 2019)
[12] (82nd Oregon Legislative Assembly, 2023)
[13] (Office of Sustainability & Environment, 2024)
[14] (City of St. Louis, 2024)
[15] (66th Legislature - 2019 Regular Session, 2019)
[16] (Department of Energy and Environment, 2023)

Compliance plan requirement option

Stakeholders raised the idea of a requirement for buildings to provide a plan for achieving the first interim target ahead of the first compliance deadline. It was described as a strategy to help buildings stay on track toward compliance. Other jurisdictions such as Washington D.C. take this approach. Given their various responsibilities managing a building, some building owners and managers said it could be all too easy to procrastinate on a BPS requirement with a due date several years away. This was a sentiment shared by some labor representatives. Building owners and managers noted that depending on the enforcement penalties, the risk of non-compliance could be severe. Being required to submit a plan two to three years ahead of the first compliance deadline could mitigate that risk. There are existing resources for energy and capitol planning, which could be utilized, including from ASHRAE Standard 100-2024 Energy and Emissions Building Performance Standard for Existing Buildings. As far as what that plan should look like, some suggested the plan be a relatively low lift but enough to drive buildings to actively take steps toward compliance. Some stakeholders expressed disfavor for a full audit report or capital improvement plan requirement. They reasoned that the State likely could not review them all, and businesses would see it as another compliance hurdle. On the other end of the spectrum, stakeholders reasoned that a simple awareness check (e.g., a form in which a building owner simply checks a box marked, “Yes, I’m aware of the policy”) would be an ineffective paper exercise. An intermediate approach would be to request building owners and managers share paperwork for certification and efficiency programs they are already partaking in as a way to demonstrate progress. Alternatively, a plan could be required only to unlock financial incentives. In general, there was much support for voluntary planning resources and less enthusiasm for a plan reporting requirement.

Phasing

Due to workforce and implementation needs, stakeholders favored following a practice of phased compliance deadlines by building cohorts. The benchmarking policy has two cohorts defined by size: 100,000+ square feet and 50,000 to 99,999 square feet. A few stakeholders questioned whether there should be more cohorts, though there were no strong suggestions put forth. Because the majority of stakeholders expressed favor for publicly owned buildings also being covered by BPS, it was suggested that publicly owned buildings be the first cohort required to comply. Thus, stakeholder conversations converged on timeline options below, with support increasing with the latter options.

Table 3. Timeline options discussed with stakeholders. Not an extensive list of all possible options.

Option	Publicly owned Building First Deadline	Private Building 100,000+ square feet First Deadline	Private Building 50,000 to 99,999 square feet First Deadline
1	2028	2029	2030
2	2029	2030	2031
3	2030	2031	2032

Resources and Incentives

Supporting building performance enhancements for both publicly owned and privately owned buildings with resources and incentives is likely to lead to greater success of a BPS. In every conversation, stakeholders emphasized the need for support if a BPS is adopted. Among those, four main themes emerged as key strategies: technical and financial guidance, contractors, financial tools, and early adopter incentives.

Technical and Financial Guidance

Stakeholders expressed wishes for holistic technical and financial guidance to understand what is needed for compliance, identify the most cost-effective pathway for compliance, and assist with implementing retrofit projects. Core components include:

Policy and program navigation

- Guidance on how to comply with the policy
- Streamlined resources on available technical and financial programs
- Custom advice on the appropriate City, State, federal, and utility technical and funding programs and connections to them
- Clerical support in signing up for various technical and financial programs and completing policy requirements

Deep technical assistance

- Technical guidance for diversity of building size, type, and condition (see Special Considerations)
- Guidance on appropriate audits, assessments, and/or recommissioning that fits the scale of performance improvement needed
- Building energy modeling support to understand which improvements are most cost-effective and meet the BPS target
    - This could include expanding the Energy Design Assistance program, which is supported by Xcel Energy and CenterPoint Energy
    - Alternatively, this could involve establishing a list of engineers and architects for modeling and project design
- Connections to appropriate contractors
- Technical checklists for common performance improvement opportunities
- Case study exchange and tenant education

In six U.S. cities, new entities, often referred to as “BPS hubs” have been established to provide such services. New York City’s Building Energy Exchange and Washington D.C.’s Building Innovation Hub are two of the longest standing examples of BPS hubs. These BPS hubs have become trusted third parties that provide key navigation on the city, state, federal, utilities, and other programs and resources relating to building performance improvement. In Minnesota, utilities are a main provider of energy-related resources and incentives. However, as buildings are often customers of multiple utilities, they receive piecemeal energy solutions based on fuel type rather than whole-building analysis and retrofit support. A hub can become a central coordinator of disparate utility programs. With a singular mission of building performance, a hub

can assess the gaps in support for buildings and identify and advocate for whole-building solutions. The existing BPS hubs are nonprofit entities supported by varying combinations of philanthropic, state, utility, and membership funds.

The City of Minneapolis, MN, a signatory of the National BPS Coalition, is a recipient of a federal Resilient and Efficient Codes Implementation grant to conduct a BPS hub needs assessment. The City has offered to share and collaborate with the State on those findings.

Washington, D.C. offers another example of providing such services, but targeted at a specific building type. During development of their Building Energy Performance Standard, the affordable multifamily housing was identified as a building set with specific needs. As a result, the City developed the Affordable Housing Retrofit Accelerator program. This program offers technical and financial assistance to qualifying affordable multifamily housing that do not meet their BPS requirements.

Contractors

Building performance professionals such as energy modelers, designers, engineers, electricians, HVAC technicians, insulation and building envelope contractors, and more are integral to achieving BPS targets. Stakeholders shared that building owners often have significant trust in their trades partners. Educating and working with these partners could be a valuable entry point to drive progress toward BPS targets, particularly for buildings with existing relationships with contractors. For buildings without such existing relationships, leveraging existing networks could be beneficial. Stakeholders shared that utilities have lists of contractors with whom they work, and contractors are themselves connected with one another. One interesting idea from stakeholders is a program to compensate contractors for referring a building to another contractor. For instance, an HVAC contractor could refer a building to a lighting contractor thereby opening another project opportunity. Stakeholders reasoned that this could make it easier for the customer to get comprehensive help, save on navigator services, and potentially save time.

For a BPS to succeed, there needs to be sufficient skilled workforce to deliver building performance retrofits. Stakeholders noted a current shortage in building retrofit professionals, and that a BPS may make exacerbate it. They suggested that efforts to increase trained professionals leverage existing training programs as much as possible and that training programs should be designed to lead to full-time careers rather than individual jobs.

Financial Tools

Understanding the potential improvement costs for a BPS is an important piece for financial tools decision-making. As of this report, Minnesota is getting help from the BPS Technical Assistance Network with modeling potential improvement costs. The Technical Assistance team includes experts from the Department of Energy, Environmental Protection Agency and several national labs. In 2024, the team currently has multiple research lines into financial programs that could support building performance improvements.

Even without such data, however, stakeholders recognized the potential scale of costs. They expressed concern about the ability to pay for the improvements needed to meet performance

targets. Offering financial incentives is the obvious solution, if enough financial resources are available. However, no singular financial resource was raised that would likely cover all BPS improvement costs. Discussions narrowed to break down the types of projects and how they could be paid for. Some projects may need assistance to cover just the incremental cost of an efficient upgrade compared to a standard version. Example projects include equipment upgrades at end-of-life, which are often an already integrated part of asset management plans. For other projects such as envelope retrofits, there may be no baseline version to compare against. Such projects may need much more support with project costs.

Rebates, grants, cost shares, loans, and tax credits are the main finance tools available for building improvements. A list of known financial programs is available in Table 4 along with opportunities for adjustment and expansion. As stakeholders expressed their likely interest in the various programs, they shared that large buildings usually do not struggle to get access to capital. More often, the hurdle is the return on investment. Big building owners can also self-finance from their reserves. Overall, cost shares, forgivable loans, tax breaks, and other grant-like products received the most support.

Table 4. Known finance tools that could be used for performance improvements

Program Type	Program Name	Tool	Opportunity Notes
Tax-related programs	4d Affordable Housing Energy Incentive[17]	Cost share	Minneapolis tags a successful clean energy matching component to the 4D program. This approach could be scaled statewide.
	Property Assessed Clean Energy (PACE)[18]	Loan	PACE could be expanded whether through a bigger lending pool, higher loan limits, or other limitations removed.
	Federal 179D Tax Credit[19]	Tax credit	Owners can claim up to $5 per sq. ft. in tax credit for energy efficiency improvements that total at least 25% energy reduction.
State Programs	Minnesota Climate Innovation Finance Authority (Minnesota's "Green bank")[20]	Loan	This new entity could develop low-interest loans specific to BPS covered buildings.
Federal Programs	Department of Energy Loan Funding[21]	Loan	
	Solar for All program[22]	Grant	
	GHG Reduction Fund[23]	Grant	
	Community Development Financial Institutions Fund[24]	Loan	This private product may be nimbler than public housing financing, which is typically only available once a year.
ECO Utility Programs	Energy Design Assistance[25]	Rebate	Though focused on new construction, this modeling process and incentive structure could be mirrored for existing buildings.
	Business Energy Assessments[26]	Rebate	A version of this program model could be used for existing buildings.
Federal, State, Local, Utility, and Nonprofit Partnership	TrillionBTU[27]	Loan	This program could be expanded with additional funding.

[17] (City of Minneapolis, 2024)
[18] (Saint Paul Port Authority, 2024)
[19] (Internal Revenus Service, 2023)
[20] (Minnesota Department of Commerce, 2023)
[21] (U.S. Department of Energy, 2024)
[22] (U.S. Environmental Protection Agency, 2024)
[23] (U.S. Environmental Protection Agency, 2024)
[24] (U.S. Department of Treasury, 2024)
[25] (Xcel Energy, 2024) Xcel Energy.
[26] (Xcel Energy, 2024)
[27] (Saint Paul Port Authority, 2024)

Utility programs show great promise to support building performance improvements. Existing programs could be leveraged, and new programs could be created to better align with BPS whole-building goals. Given that buildings are often customers of multiple energy providers, including district systems, a BPS could drive utilities to provide streamlined and consistent offerings regionwide. Stakeholders supported aligning utility programs to make navigation easier. This can be done through ECO plan modifications in the short term. ECO plan changes could also be considered for the 2026–2029 triennial plans.

The ECO Act has no spending caps with regards to energy efficiency. This is one of the reasons why utility programs are such a promising financial solution for building improvements. At times, utilities have exceeded their planned budgets, which were monitored and approved by the Department of Commerce. However, given that utility incentives ultimately come from ratepayers, utility program spending should be astutely managed. Stakeholders also reflected on another limitation of utility programs — namely that they buy down the cost of efficiency, but not capital improvement projects. The implication of this being that, though critical, utility programs cannot be the only available finance tool.

Stakeholders further shared that current utility incentives sufficiently motivate lighting projects but are often insufficient for large capital upgrades such as HVAC replacements. Utility incentive amounts could be increased and aligned with a BPS in future utility triennial plans to make them a more impactful cost-reduction tool for building owners. Further, some stakeholders supported on-bill financing as a potentially helpful tool. Others disagreed, saying that it is difficult to get contractors to promote a loan product. For such a tool to be successful, there would need to be training and buy-in from contractors on any incentive product created to support a BPS.

Utility energy rates can also play a role in incentivizing retrofit projects. Some stakeholders noted that current energy rate design may disincentivize or make the financial outlay for performance retrofits challenging. They suggested that regulatory structures could be made more favorable for building performance standards.

Publicly owned buildings are not eligible for a number of the programs listed in Table 4. Instead, they have access to four government-focused programs. The Guaranteed Energy Savings Program (GESP) provides energy performance contracting for local governments. The Local Energy Efficiency Program (LEEP) helps local units of government and school districts identify, study, implement, and finance energy efficiency and recommissioning projects. The Public Entity Energy Audit and Renewable Energy Feasibility Study Loan Program provides loans to local governments and schools at a 2% interest rate. Lastly, the Energy Conservation Improvement Revolving Loan Account for State Buildings provides funding from energy savings on a revolving basis. Additional funding for these programs could support further building improvements.

Early Adopter Incentives

Legislators are considering BPS because of the urgent climate mitigation needs and to meet Minnesota's stated climate goals. As such, the earlier buildings improve performance and reduce carbon, the stronger the overall impact to the climate. Early adopter incentives aim to accomplish just that: motivate building owners and managers to act ahead of the first compliance deadline. Beyond the benefit of overall fewer emissions, early adopters can accelerate building out the BPS support structure. The earlier that is solidified and the more

practice resource providers and building owners and managers get evaluating building performance and making improvements, the sooner kinks in the system are identified and resolved.

The first type of early adopter incentive is timing based. For example, in St. Louis, MO, buildings that meet their first target plus an additional 20% reduction from the building's 2018 EUI by the first compliance deadline satisfy the Early Adopter requirements and can skip the second compliance deadline. Similarly, buildings that meet their first target plus an additional 50% reduction by the first deadline are considered in compliance for all future deadlines. Along with the St. Louis example, stakeholders also discussed an option in which early achievement of a slightly lower performance target would count as compliance for the first deadline. Stakeholders most concerned about climate impacts liked the opportunity to avoid more cumulative emissions. However, they expressed some worries about incentives that relaxed later target requirements. Building owners generally reacted favorably toward additional flexibility in compliance options.

Stakeholders expressed greater preference for a second type of early adopter incentives, ones that are financially based. They shared that rewards for early actions would be motivating for individual buildings. Another idea discussed to spur early action is to direct incentives toward district energy systems, as energy and/or carbon reduction efforts can have a large-scale impact on many buildings. Further, given the complexity of district systems and the likely long lead times to develop and implement retrofit projects relative to individual building systems, it could be advantageous to prioritize early adopter incentives for district systems. Overall, stakeholders emphasized the need for incentives to be commensurate to the energy or greenhouse gas reduction required. Examples of such incentives are below.

- Washington State's Early Adopter Incentive Program provides $0.85 per square feet for the largest buildings (Tier 1 buildings). The pot of $75 million is paid out by utilities. Utilities can reduce their state tax responsibility by paying out these funds. The first-come, first-served nature of the program aims to compel buildings to act early (Washington State Department of Commerce, 2023).
- Seattle's Clean Buildings Accelerator began as a technical support program to support the Washington State BPS. In 2024, the program announced $4.5 million for capital improvements and engineering services for building owners. Buildings that serve frontline communities will be prioritized, and the program is engaging with stakeholders to develop further program details (Seattle Office of Sustainability and Environment, 2022).
- Puget Sound Energy's Clean Buildings Accelerator helps buildings leverage additional utility energy-management and incentive programs (Pudget Sound Energy, 2024).

Compliance Pathways

Buildings have always had the opportunity to voluntarily improve performance, and many have done so. However, it's clear that the pace and scale of voluntary improvement does not match

the rate needed to meet the State's climate goals. As BPS require set levels of building performance, compliance mechanisms are needed to ensure those requirements are met.

Standard Compliance

The most common compliance mechanism leverages the reporting of energy benchmarking. With benchmarking, buildings annually submit whole-building performance data via ENERGY STAR Portfolio Manager. This data is calculated from utility consumption and building characteristics, which the building owner or manager supplies. In the case of BPS, the submitted data for the building for an interim or final compliance deadline year is compared to the designated performance target. Those that meet or exceed the target with lower energy or carbon consumption are deemed compliant.

Alternative Compliance Pathways

Alternative compliance pathways can include options in which exemption requirements are met or progress toward the climate goals are demonstrated. Stakeholders asked that the following concerns and opportunities be considered for alternative compliance pathways.

- Credit for incremental improvements
- Impact on renters/tenants
- Hardship such as financial distress or low occupancy
- Planned building decommissioning
- Changes in building use (such as law office becomes medical clinic)
- Time of use rates
- Planned capital improvements that will allow the building to meet the end target but may miss interim targets
- Portfolio-level compliance
- Other unique individual building circumstances

The selected BPS metric can also impact the available alternative compliance pathways. If an energy-based metric is chosen, an alternative option could include an electrification requirement, which can support progress toward climate goals but in a different way than energy efficiency. Electrification, especially given the 2040 clean electricity law, can reduce carbon emissions on the energy supply side rather than on the consumption side of the energy equation. Today, electrification may not result in the lowest energy emissions. However, the fast decarbonization pace required by the clean electricity law means that technology installed today will likely still be in operation as the grid becomes cleaner. Thus, electrification will eventually lead to a net reduction in emissions. When presented with this pathway idea, some stakeholders expressed the lost opportunity of lower energy waste and operational costs. An electrification pathway could also compel utilities to be more actively involved in addressing supply infrastructure and there was some caution regarding impacts to ratepayers. Other stakeholders suggested that even without an explicit compliance pathway, building electrification is a likely trend that BPS may accelerate.

If the BPS uses a carbon-based metric, other options become available. Renewable energy sourced exclusively for the building, such as rooftop solar, could count toward meeting a target. Carbon or renewable energy credits (RECs) in various forms could become options.

Stakeholders discussed these with some participants expressing a need for extreme caution regarding the validity of RECs and establishing strong requirements to ensure accurate accounting of carbon or renewable energy. Some stakeholders also advised that carbon or renewable energy credits are not a substitute for energy efficiency, implying that such credits should be limited as an alternative compliance pathway.

Nearly all existing BPS provide alternative compliance options. Table 5 shows a diversity of examples.

Table 5. Examples of existing BPS alternative compliance pathways

Alternative Compliance Pathway	Jurisdiction	Description
Compliance through a portfolio	Boston[2]	The portfolio of buildings is compliant if their combined performance meets the combined target.
Compliance through blended emissions standards	Boston[2]	The building is compliant if blended emissions standards are used across building functions (in contrast to a whole-building standard).
Compliance through scheduled emission reductions	Boston[2]	The building is compliant if it achieves a 50% reduction in GHG emissions by 2030 and 100% reduction by 2050 (with a 2018 or later baseline).
Exemption due to hardship	Boston[2], Cambridge[3]	The building is compliant if it has a hardship exemption that is approved by the review board.
Compliance through renewable energy credits	Boston[2], Cambridge[3], Colorado[6], Maryland[9], Montgomery County[10], New York City[11]	The building is compliant if it applies renewable energy credits towards a set portion of the target.
Compliance through electrified energy load	Colorado[6]	The building is compliant if 80% or more of its energy load has been retrofitted for electric power.
Exemption due to hardship	Colorado[6]	The building is compliant if it has a target or timeline adjustment due to financial hardship.
Exemption due to building type	Maryland[9]	The building is exempt if it is a historic property, elementary school, secondary school, manufacturing building, or agricultural building.
Compliance through distributed energy resources	New York City[11]	The building is compliant if it purchases greenhouse gas offsets or uses distributed energy resources.
Exemption due to building type or hardship	Oregon[12]	The building is exempt if it is primarily a manufacturing, industrial, or agricultural building, has no certificate of occupancy or low occupancy, less than 35,000 gross

		square feet of fully conditioned space, or has financial hardship.
Conditional compliance through required activities	Oregon[12]	The building is conditionally compliant if it completes the prescribed activities from the state agency.
Compliance through investment criteria	Washington[15]	The building is compliant if it maximizes the energy savings from a bundle of energy efficiency measures. Savings are considered maximized to the point that the savings-to-investment ratio does not become less than one.
Temporary compliance through energy reduction strategies	Washington[15]	The building is temporarily compliant if energy use reduction strategies have been implemented, but the full EUI target has not been achieved yet.

Although common for new construction regulation, prescriptive pathways are essentially nonexistent in existing BPS. BPS prescriptive pathways contain only process strategies rather than a checklist of measures. For example, a building owner must conduct an energy assessment and accomplish a certain number of the recommended measures.

Penalties

Buildings that fall short of the target or of the alternative compliance pathways are deemed non-compliant. Jurisdictions with existing policies have taken several approaches in these situations, the most straightforward of which is often called alternative compliance payments (ACPs), also known as fines or financial penalties.

Table 6 shows how existing policies structure their ACPs. The ACPs are often set at levels in some way equal to or greater than what it might cost to retrofit a building and comply with the target. For example, BPS in New York City and Boston use a cost of carbon metric. At a national level, in late 2023 the U.S. Environmental Protection Agency released its *Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances*, estimating a new social cost of greenhouse gas table that includes ranges from $140 to $380 per metric ton of carbon dioxide in 2030 (U.S. Environmental Protection Agency, 2023). A different approach in Denver calculated the equivalent cost to install and generate solar energy. If the aim is to set an ACP relative to the cost of retrofits, a study can be commissioned to examine the local retrofit market and estimate such costs, as was done in New York City and Denver. Some stakeholders highlighted the importance of linking the ACP amount to the decarbonization goals. Others suggested that ACPs could somehow be based on the assessed value of the building as a sort of indication for a building owner's ability to pay.

Table 6. Examples of BPS penalties for noncompliance

Noncompliance Penalty	Jurisdiction	Noncompliance Penalty
Fine by gap to target	Boston[2]	$234 per metric ton of CO2e in excess of target (partial noncompliance)
Fine by building size/type	Boston[2]	$1,000 per day of violation based on building size and type (full noncompliance)
Fine by gap to target	Cambridge[3]	$234 per metric ton of CO2e in excess of target (partial noncompliance)
Fine by time	Cambridge[3]	$300 per day of violation (full noncompliance)
Fine by violation	Chula Vista[4]	Up to $2,250 per violation
Fine by violation	Colorado[6]	Up to $5,000 per violation
Fine by gap to target	Denver[7]	Up to $0.70 per kbtu in excess of target per year
Fine by gap to target	Maryland[9]	$230 per metric ton of CO2e in excess of target (beginning 2030)
Fine by violation	Montgomery County[10]	$1,000 criminal penalty, or $500 civil penalty, or up to 6 months imprisonment (Class A violation) to the building owner for noncompliance *and* an unaccepted building performance improvement plan
Fine by gap to target	New York City[11]	Civil penalty based on the gap between building's annual reported emissions and the target, multiplied by $268
Fine by time and building size	Oregon[12]	Up to $5,000 with additional fee based on time and building size
Fine by gap to target	Seattle[13]	Up to $2,500 *or* fee based on count and cost of metric tons of CO2e and time (partial noncompliance)
Fine by building size/type	Seattle[13]	Up to $10 per square foot based on building type and size (full noncompliance)
Fine by time and building size	Washington[15]	Up to $5,000 with additional fee of $1/sq. ft. based on time and building size

Stakeholders recognized the purpose of ACPs in motivating retrofit actions and compliance. However, they stressed that no BPS design should incentivize the State to penalize buildings. In fact, they emphasized the wish for flexibility and a grace period in reporting before any penalty incurs. Some wondered if there was another mechanism for a type of payment penalty besides a direct fine, such as through the tax code. Overall, stakeholders were wary of strict penalty definitions in statute, as that can be difficult to adjust if needed.

Generally, stakeholders agreed that any funds collected from BPS compliance should be reinvested into the program and allocated to buildings to support progress toward targets. ACPs collected should not enter the State's general fund. A minority wanted funds to be earmarked for use by the building that incurred the ACP. Others suggested funds should be allotted to a specific category or identified group of disadvantaged buildings. Another group stressed the

need for equity in fund allocation and for all people to have a seat at the table in shaping who receives the benefits. Yet another idea was to use the money for a revolving loan fund. In all, accountability mechanisms for the distribution process of the funds are important to stakeholders. Other BPS have established review boards to serve that purpose such as Boston's Equitable Emissions Investment Fund and Review Board and Montgomery County's Building Performance Improvement Board.

Enforcement

Here we define enforcement as the State's approach to indicating whether a building is in or out of compliance. Building owners again emphasized flexibility, and that intention should make a difference during enforcement. On the other hand, other stakeholders underlined that enforcement that is too lax, particularly with the first deadline, risks setting a poor precedent that makes future enforcement more difficult. Still other participants noted that the more uniquely buildings are treated, the more enforcement time and State implementation funding may be needed. Regardless, all stakeholders supported the enforcing agency to set clear guidance and expectations for buildings and to provide direction to retrofit resources as appropriate. Some building owners also expressed the importance of clear appeals processes in the case of disputed enforcement.

Implementation

Any good policy requires adequate resources to implement it. For a BPS, that means having the technology and staffing necessary to communicate the policy, manage compliance, and direct enforcement for thousands of buildings. A Minnesota BPS covering the same buildings as the 2023 benchmarking policy would include an estimated 5,000 private buildings plus an additional 2,000 publicly owned buildings. Existing jurisdictions with BPS are employing client management systems designed particularly for BPS. Some jurisdictions have developed their own in-house compliance tracking systems, while others use outside tools. DOE offers free, open-source tools such as the Standard Energy Efficiency Data (SEED) Platform, which is a central database for covered buildings. Two other tools include the Unique Building Identifier (UBID), which identifies and establishes identification numbers for buildings from two-dimensional building footprint data, and the Audit Template, which provides a standardized platform for collecting energy audit information (US Department of Energy, 2024). Proprietary solutions such as the Building Energy Analysis Manager (BEAM), Touchstone, IQ, and Maalka often connect with DOE tools and are other options for implementation. ENERGY STAR Portfolio Manager also recently announced the development of new features to track BPS applicability and progress toward targets.

Regarding staffing, many existing jurisdictions are still developing their BPS implementation structures, but some of the more established offices have as many as 7–10 staff. The number of staff required can vary based on the number of buildings. Some stakeholders stressed the need for BPS compliance staff to have a certain degree of building science knowledge. They reasoned that such knowledge of the viability of certain energy-related projects would be necessary to adequately judge the need for compliance flexibility.

Regarding a BPS implementing agency, there were discussions whether the Department of Commerce or the Department of Labor and Industry would be most appropriate. The Department of Labor and Industry regulates new construction and significant renovations through the building code. They have established regular processes for code adoption, and stakeholders such as developers, labor, and trade groups are familiar with those processes. Meanwhile, the Department of Commerce regulates energy benchmarking. They also regulate and execute other State and utility programs that relate to energy and decarbonization. For that reason, stakeholders generally supported the idea of housing BPS within the Department of Commerce.

CONCLUSION AND RECOMMENDATIONS

BPS is a promising policy to drive energy and carbon reductions in existing buildings to meet Minnesota's climate goals. Although stakeholders we engaged expressed varied concerns about the potential impact of a BPS on specific buildings and tenants, many acknowledged the need to collectively achieve major savings. Stakeholders noted that BPS can cause building owners to dig into benchmarking data, i.e., building performance data, at a level they would not otherwise.

As the Minnesota Legislature considers BPS, we present the following conclusions from stakeholder engagement. We provide the following recommendations where there is broad agreement on an aspect of BPS and note the topics that may need further examination and discussion.

Overall Structure and Relation to Existing Policy: Stakeholders by and large prefer a state-level approach to any potential BPS. A BPS should also be designed in a way that is responsive to the new construction codes. A key strategy for this is to ensure that the performance targets generally lag energy efficiency advancements required of new construction. With regards to the benchmarking policy, BPS requirements should follow benchmarking requirements by at least a few years. Overall, a BPS should aim for simplicity, alignment, and to be coordinated with existing policies and programs wherever possible.

Covered Buildings: Buildings subject to BPS should include publicly owned and private commercial and multifamily buildings 50,000 square feet and greater with the same geographic and utility criteria as the benchmarking policy. Specific building types such as affordable housing, hospitals, museums, lab buildings, data centers, and historic buildings, among others, may warrant special considerations regarding the policy's implementation. Such considerations may include the aggressiveness of targets, compliance flexibility, timeline extensions, and prioritization for technical and financial resources.

Metrics: The building performance metric should create fair market signals that reduce building-related carbon emissions. EUI and/or GHGi are the most common metrics used in other BPS jurisdictions to achieve that. Stakeholders discussed the distinct advantages and disadvantages of each and were equally split in preferences.

Targets: BPS should align with the State's climate goals and performance targets. Those goals should be used to set sector-wide targets in any BPS legislation to guide the development of individual building performance targets. The State should leverage expert analyses such as that from the DOE and EPA BPS Technical Assistance Network to inform targets. Stakeholders understand that setting individual building performance targets is nuanced and complex, and they want to be involved in their development. A State BPS commission or equivalent body should be established to facilitate that engagement. The body should create recommendations for an official State rulemaking process.

Timeline: Stakeholders emphasized that a BPS timeline should balance the need to meet climate goals with the feasibility of planning, financing, and implementing retrofit projects. This implies that a likely first target deadline should occur in the late 2020s to early 2030s. If the government is to require performance standards of private buildings, stakeholders emphasized that publicly owned buildings should be the first to demonstrate meeting performance standards. Target deadlines for private buildings should subsequently be phased in cohorts. Doing so is valuable to spread the retrofit workload more evenly over time for the building energy improvement workforce and the implementing agency.

Resources: The success of a BPS is enhanced when financial incentives and technical resources are available for building improvements. A BPS hub or some equivalent should be developed to provide education and technical assistance, as well as guidance and support in accessing financial tools. Resources should prioritize disadvantaged buildings. Further, the more that State, City, and utility program offerings can be streamlined to align and support BPS, the better. Stakeholders supported the idea that utilities' ability to claim savings from utility programs should not be impeded by a BPS. Including such an affirmation in BPS legislation would ensure buildings can leverage utility programs.

Compliance: To comply with a BPS, a building should meet the appropriate performance target based on its characteristics. Alternative compliance options should be available to building owners to provide flexibility, acknowledge the various circumstances and abilities of a diverse covered building set, and ensure continued progress toward the building performance goals. In the case of noncompliance, an alternative compliance payment or penalty should be a tool available for enforcement. Collected fines should stay with the program and be used as financial incentives to support performance retrofits.

Implementation: Because the Department of Commerce houses energy benchmarking along with utility and other State programs for existing buildings, it is logical for the Department of Commerce to also implement a BPS policy. A successful BPS requires adequate staffing levels and technology systems to manage compliance for the expected approximately 2000 publicly owned and 5,000 private covered buildings.

These conclusions and recommendations should be seen as a first phase of research and engagement in the development of BPS in Minnesota. As BPS are still relatively new policies in the United States, best practices will take time to form. It is not uncommon for the process from initial policy concept through rulemaking to take a few years, with legislation providing foundational structure in the beginning or middle of that journey. Minnesota should continue monitoring and learning from policies in other jurisdictions. Further, BPS modeling analysis using Minnesota data and deeper stakeholder engagement would help ensure a BPS design that best meets the needs of Minnesota buildings and their owners, tenants, and users. Such further activities are important for a BPS approach for that works for Minnesota.

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