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Commercial Real Estate Owner Feedback

Please see attached.

Additional submitted attachment is included below.

I represent a commercial landlord with over $2.8M sf of real estate across 30 buildings in California. We have aggressive efficiency and decarbonization targets, including net zero operational carbon by 2050 (scope 1, 2, and 3). I also have deep experience with building performance standards in other U.S. markets. Please include in the record, the 20-Point Policy Guide, "Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS)," in Docket 24-BPS-01. This Policy Guide was released last fall by The Real Estate Roundtable (www.rer.org). [I served as a peer reviewer for this guide.] The Policy Guide provides the regulated community's perspectives to develop rational, science-based, data-driven, flexible, and cost-effective BPS laws. It addresses all components of "Required Analysis" as CEC set forth in the slide deck ("Presentation 1" here, slides 7-8), for its kick-off workshop in July 2024, relevant to the "BEPS Strategy Report" to be adopted before July 1, 2026.

Also, please include in Docket 24-BPS-01 the attached slide presentation from the ENERGY STAR program of the U.S. Environmental Protection Agency (US-EPA), prepared in January 2025. The presentation is entitled, "ENERGY STAR Taxonomy – A Proven Strategy for Improving Commercial Building Efficiency." This presentation sets forth the suite of U.S. government data sets, calculators, high performance building certifications, and other tools relevant to the California BEPS process – particularly regarding the "compliance flexibility" and "process for alternative compliance" components of CEC's "Required Analysis." I recommend that CEC include EPA's ENERGY STAR program going forward.

I have included both documents in the following PDF document.

Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS)

20-Point Policy Guide

October 2024

The Real Estate Roundtable

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Part I: Introduction

(1) Policymakers Should Reduce Conflict in the Confusing Nationwide "Patchwork" of BPS Laws to Assist Multi-Jurisdictional Compliance and Accelerate Progress to Address Climate Change

- Has the jurisdiction explained which BPS "approach"– cycle-based, fixed limits, or trajectory – it is using and why? Have regulated building owners in the state or locality considered a preferred approach to recommend to the jurisdiction?
- In developing its own BPS, did the jurisdiction consider similar laws from other jurisdictions? If yes, which one(s)? Does it coordinate with the U.S. government and sister jurisdictions to align their respective BPS laws on key issues such as compliance deadlines, target levels, and performance metrics?
- Is the BPS state or local jurisdiction a member of the National BPS Coalition?
- Has the jurisdiction received monetary or other support from US-DOE or another federal agency, to develop, adopt, or implement BPS laws and regulations? Has it received federal funds for the purpose to help building owners comply with BPS laws and regulations?
- Does the jurisdiction's BPS framework consider the points in this primer to help achieve consistency across different frameworks?

Part II: Prerequisite Studies and Data to Support BPS Frameworks

(2) BPS Policymakers Should Study and Show How Much Energy Use and Emissions are Caused Directly by Building Occupants, and Real Estate Generally Compared to Other Industry Sectors, in Their Jurisdictions

- Is the jurisdiction aware that most energy consumed in a building is caused directly by renter households, business tenants, and visitors – and is not controlled by building owners? Does the jurisdiction have plans to change or affect the energy consumption behaviors of building occupants as part of its regulatory efforts to address climate change?
- Has the jurisdiction studied how much energy within its community is consumed by single-family, multi-family, and commercial buildings – compared to the electric power, transportation, and industrial sectors?
- Does the jurisdiction have programs in place to make all of these sectors more energy efficient – or is it primarily focusing just on buildings through BPS laws?
- What is the jurisdiction's progress in making the electrical sector more efficient so that power losses during transmission and distribution are cut significantly?
- Has the jurisdiction studied how much greenhouse gas (GHG) emissions are directly attributable to single-family, multi-family, and commercial buildings within its community – compared to direct emissions from the electric power, transportation, and industrial sectors?
- How is the jurisdiction measuring progress in those other sectors and when does it forecast they will be decarbonized?
- Is the jurisdiction fostering successful collaborations and partnerships across ***all*** industry sectors to address climate change?

(3) Jurisdictions Should Ensure Their BPS Laws Will Not Undermine Housing Affordability Goals, or Efforts to Revitalize Struggling Buildings and Communities

- Has the BPS jurisdiction considered the impact of its law on housing affordability? Will building performance mandates affect creation of new housing supplies, increase home prices, and/or exacerbate rental burdens borne by tenant households?
- Does the BPS jurisdiction have rent control or stabilization laws in place? Has the state or locality assessed whether limits on rental income will restrict available capital for residential building owners to finance retrofits necessary for BPS compliance?
- Has the jurisdiction studied and shown that its BPS laws do not undermine corollary policies to support commercial-to-housing property conversions?
- If a vacant or under-utilized building changes to a more productive, profitable use with higher occupancy rates – which also bring higher energy consumption and emissions – does the BPS law offer relief or a variance to account for the greater environmental impacts that may accrue to the building in its improved condition?

(4) Jurisdictions Should Conduct an Economic Impact Analysis of Their BPS Laws

- Has the BPS jurisdiction conducted an economic impact report including an assessment of the size of the building retrofit market caused by the law, and whether sufficient financing sources will be available to support that market?
- Does the BPS economic impact report consider whether compliance costs affect an owner's ability to manage mortgage debt, pay property taxes, and cover the costs for other building operating expenses?
- Has the jurisdiction considered whether the costs to comply with a BPS might affect a building's underlying asset values? Would loans taken to meet performance mandates over-leverage a building?
- Has the jurisdiction considered whether its community banks are generally under stress and pulling back on real estate lending and financing? Do these banks have capacity to lend to building owners to help finance greater investments necessary for BPS compliance?
- Has the jurisdiction studied whether its BPS mandates are so expensive that they may drive real estate owners, lenders, retailers, and capital providers to other markets with more reasonable and practicable climate-related performance limits on buildings?

(5) Jurisdictions Should Conduct a "Stress Test" Showing the Grid's Capacity to Sustain Extra Loads from Electric Buildings

- Has the state or locality conducted a "grid stress test" showing that the electric grid can handle all of the extra loads from building electrification prompted by a BPS law?
- Are investments in grid resilience necessary to accommodate BPS electrification goals? How much will it cost communities and families, and will it increase their utility bills?
- Do BPS jurisdictions have the right policies, building codes, zoning laws, and incentives in place to support owners' installation of renewable energy battery storage and accelerate change at the "grid edge" to enable "grid-interactive" buildings?

(6) Jurisdictions Should Provide an Opinion That Their BPS Law, Natural Gas Ban, and/or or Gas "Use Tax" Meets Federal Constitutional Preemption and Other Legal Requirements

- Has the chief legal officer for the jurisdiction prepared an opinion that the BPS law is legal under relevant case law on federal preemption and other matters?
- Is that legal opinion publicly available for stakeholder review and comment?
- Does any attempt at a fossil fuel ban carve-out an exception allowing emergency back-up power generation reliant on diesel, oil, or gas?

- Has the jurisdiction's chief legal officer prepared an opinion affirming the legality of any "use tax" imposed on building owners for natural gas consumption – considering that owners do not "use" gas consumed by tenants in leased spaces? If the jurisdiction attempts to prohibit building tenants from paying their fair share of a gas consumption tax, does the legal officer affirm that government's approach does not interfere with a lease agreement between private parties – where tenants contractually agree to pay their own natural gas and other utility bills?

(7) Jurisdictions Should Ensure Owners Have Access to "Whole-Building" Tenant-Level Energy Data

- Does the jurisdiction have laws and policies in place requiring utilities to provide owners with access to "whole-building" energy usage data, including energy used by tenants in leased spaces?
- How effective are these data access laws, and how frequently do they provide owners with "whole-building" data?
- Does the jurisdiction consider "triple net leasing" and other arrangements where tenants pay utilities directly – leaving owners without data on leased space energy consumption that is generally required for BPS compliance?
- If "whole-building" data access laws are not in place, then why is the jurisdiction considering or enforcing a BPS law with "whole-building" performance mandates?

(8) Jurisdictions Should Assess Whether American-Made Equipment is Available for Buildings to Meet BPS Mandates – Or Whether Overseas Imports are Necessary.

- Has the jurisdiction studied whether there is sufficient supply for all of the building systems, equipment, and components that must be installed to meet performance mandates?
- With regard to heat pumps in particular, has the BPS jurisdiction considered global market availability and that most heat pumps are manufactured in China and other foreign nations?
- Does the BPS jurisdiction offer or amplify incentives for building owners to buy American-made heat pumps and other components?

(9) At Least 3-5 Years of Data Collected From a "Benchmarking" Law is Essential to Develop Performance Targets in a BPS Law

- Has the jurisdiction collected at least 3-5 years of data under a "benchmarking" law, regarding the actual energy and emissions performance of buildings within its borders?
- Has the jurisdiction explained how it is using benchmarking data in its methods and calculations to set BPS performance levels?
- Does the jurisdiction account for the fact that certain types of real estate – such as retail enclosed malls and strip centers – lack reliable sets of energy benchmarking data? Is the jurisdiction open to engage with owners on adjusting BPS and related benchmarking requirements where a particular building asset class lacks a reliable data set on the category's overall energy and emissions performance?

Part III: Energy Efficiency and Emissions Performance Deadlines, Targets, and Metrics

(10) Jurisdictions Should Encourage Feasible "Life Cycle" Equipment Investments – and Avoid Hard and Fast, "One Size Fits All" Deadlines That Compel Owners to Destroy Existing, Functioning Systems by a Specific Date

- Does the BPS law require existing buildings – by a specific date – to switch-out equipment that relies on natural gas or fuel oil and replace it with electric equipment?
- Does the BPS allow electrification and other "retrofits" to occur only after functioning equipment reaches the end of its useful life?

- Does the BPS law recognize the importance of "life-cycle" investments that integrate equipment replacements into the owners' regularly scheduled capital expenditure planning? Does the jurisdiction defer to owners' business expertise to reduce payback periods with energy savings from new equipment, and manage tax depreciation rules for cost recovery of investments over a number of years?
- If the BPS law requires a retrofit before functioning equipment reaches the end of its useful, has the jurisdiction considered the negative "embodied carbon" impacts of that approach?
- Does the BPS law allow some relief or waiver from any electrification mandate because the retrofit will displace current tenants, limit rental income, or is impractical due to the building's design?

(11) Jurisdictions Should Avoid "Double Regulations" From Energy Codes and BPS Efficiency Targets

- If a jurisdiction has an energy code that applies to new construction and major retrofits, then why does it need a separate BPS efficiency target for those same assets – if equipment is code-complaint and properly installed to begin with?
- If the jurisdiction has separate energy codes and BPS efficiency targets, does it assure new construction that "meets code" categorically "meets BPS"? Otherwise, has the state or locality created an improper conflict in it laws?

(12) "Site EUI" Efficiency Targets Should be Data-Driven and "Normalized" for a Wide Range of Building Types, Operational Characteristics, and Weather Conditions

- Does the BPS jurisdiction endorse US-EPA's Portfolio Manager as the tool used by the majority of building types to gauge compliance with performance targets?
- Does the BPS law set different "Site EUI" performance targets that correspond to the full range of building types categorized by US-EPA?
- Does the BPS jurisdiction explain how it established "median" Site EUIs for specific building types?
- Has the BPS jurisdiction used data it collected, from a corollary building benchmarking law, to reflect "median" Site EUI for the range of building types in its region? If not, what other data set does it use to set the "median"?
- Does the BPS jurisdiction "normalize" for variables in building operations, as well as weather and climate fluctuations, so real estate assets are on a level playing field to meet Site EUI performance targets?
- Has the jurisdiction consulted with US-EPA regarding its "normalization" guidance for building operations and weather conditions?

(13) The "Fuel Mix" That Powers the Electric Grid is a Critical Data Point to Assess the Fairness and Effectiveness of BPS Emissions Targets

- What is the BPS jurisdiction's eGRID subregion, designated by US-EPA?
- What is the relative "mix" of fossil fuels vs. clean power for the grid that provides electricity in the BPS jurisdiction, shown on US-EPA's "Power Profiler"? How heavily does the jurisdiction's grid rely on fossil fuel combustion?
- Do BPS targets aim to reduce "direct" Scope 1 emissions at the building site – such as by favoring heat pumps and other building electrification components instead of equipment that uses gas or oil?
- Does the BPS jurisdiction understand that reducing Scope 1 "direct" emissions results in higher electricity consumption – which in turn increases "indirect" Scope 2 emissions due to off-site electricity generation at the power plant source?
- How does the BPS jurisdiction address this Scope 1 versus Scope 2 "trade-off"?
- If a building misses a BPS emissions target, is it because the electric grid is too reliant on fossil fuels with the effect of increasing Scope 2 emissions from occupants' electricity use?

(14) Buildings Can't Fully Decarbonize Unless the Grid Also Decarbonizes – and Building Owners Can't Control the Latter

- Does BPS jurisdiction have a renewable portfolio standard (RPS) to decarbonize its electricity grid?
- How much does the jurisdiction think it will cost to decarbonize its electric grid under the RPS, and how does it plan to raise capital for investments to clean its power infrastructure?
- Is the RPS making progress quickly enough to reduce the grid's reliance on fossil fuels for electricity generation?
- Do the RPS's goals and target dates to decarbonize the electric grid correlate to the goals and target dates in a BPS to decarbonize buildings? Are plans for grid decarbonization and building decarbonization synchronized and proceeding at equivalent pace?

(15) If a BPS Makes Buildings Responsible for Off-Site Grid Emissions, Then Owners Must Have the Chance to Comply by Purchasing Off-Site Clean Energy

- If a BPS establishes targets that effectively require buildings to control emissions from the grid or other off-site sources, does it allow compliance through the purchase of renewable energy certificates (RECs) and/or carbon offsets? If no, why not?
- Does the BPS jurisdiction adopt US-EPA's principles from the Green Power Partnership to support credible claims for the purchase and sale of high-quality RECs?
- Does the BPS jurisdiction adopt the Biden-Harris Administration's joint principles to support viable markets for carbon offsets that can result in tons of emissions reductions?
- Does the BPS jurisdiction avoid restricting purchases of RECs and other market-based climate solutions to a specific geography where the building is located?
- If the jurisdiction imposes such a geographic restriction, does it assure that sufficient quantities of RECs are available for building owners to procure within the region at issue?

(16) Jurisdictions Should Explain the "Emissions Factors" They Use to Convert Fuel Sources to Emissions

- Does the BPS jurisdiction rely on US-EPA's standard factors to set emissions targets relative to fossil fuels combusted in boilers, furnaces, ovens, and other building equipment? If no, what factors does the BPS use to measure emissions from stationary building sources?
- Does the BPS jurisdiction use "location-based" eGRID carbon factors as the ***default*** coefficients for building owners to calculate emissions from electricity use? If no, what default factors for electricity emissions does the jurisdiction use?
- Does the BPS jurisdiction regularly update their laws to adopt the latest eGRID default coefficients to ensure they reflect any progress made by the electric grid to decarbonize?
- Does the BPS jurisdiction allow an ***option*** to use "market-based" emissions factors that apply to specific contractual arrangements for electricity procured by a building owner from an electricity provider?
- If the jurisdiction relies on steam infrastructure to heat its buildings, has it coordinated with the operator of the district energy system to provide a factor for steam generation?

Part IV: Compliance, Enforcement, and Incentives

(17) Jurisdictions Should Prepare Compliance Resources Showing What Kinds of Building Projects are Necessary to Meet Current and Future BPS Targets

- Does the jurisdiction have the workforce, software, data, and agency capacity it needs to enforce a BPS?
- Does the jurisdiction have compliance assistance guides to support owners so they can plan for building capital outlays to meet current and future performance levels?

- If the jurisdiction does not provide forward-looking compliance resources, then why is it setting building regulatory targets decades into the future?

(18) BPS Laws Must Establish Fair and Effective Remedies to Encourage Compliance – Not Punishment

- Does the jurisdiction provide advanced written notice to a real estate owner that a building may not meet a BPS performance target, with a fair and reasonable opportunity to cure the issue and bring the asset into compliance?
- Does the jurisdiction allow a process for building owners to eliminate potential BPS violations by explaining the infraction is not caused by matters within an owner's control, but is rather due to the carbon intensity of the offsite electricity grid that relies heavily on fossil fuel combustion?
- Does the jurisdiction deposit BPS fines into a special account, earmarked for the purpose of helping owners meet current and future BPS targets?
- Does paying a fine cost less than underwriting the costs for a project that a building must pursue to achieve BPS compliance? If yes, how does the jurisdiction justify this scenario, and will it re-adjust its performance levels to favor compliance as opposed to penalties?

(19) Jurisdictions Should Allow BPS Compliance Pathways Based on Federal EPA and DOE Standards

- Does the BPS law allow a compliance option for buildings that are US-EPA ENERGY STAR "NextGen" certified? If no, why not?
- Does the BPS law allow a compliance option for buildings that meet US-DOE's National Definition of a Zero Emissions Building ("ZEB")? If no, why not?

(20) Jurisdictions Should Evaluate and Offer Actual, not Theoretical, Incentives to Help Buildings Comply with BPS Targets

- Has the BPS jurisdiction surveyed local, state, and federal incentives for building retrofit projects that improve energy efficiency and lower emissions?
- Does the BPS jurisdiction merely list ***potential*** financial programs that may be available – or does it provide ***actual*** data on building owners that have in fact accessed low-interest loans, rebates, tax credits and other incentives to help finance retrofit expenses?
- Does the jurisdiction have a plan to advocate for policy changes that will make building financial incentives more usable and accessible for property owners trying to comply with BPS performance levels?

About the 20-Point BPS Guide

On August 27, 2024, the U.S. Department of Energy (US-DOE) announced $240 million in federal grants to states and localities to develop and implement Building Performance Standards (BPS). More rounds of U.S. government funding are expected to support performance mandates that regulate energy use and emissions associated with real estate assets. Non-governmental organizations advocate that governmental bodies should address climate change by limiting buildings' energy consumption and emissions through regulatory or market pressures. Meanwhile, groups based overseas attempt to shape the availability of global capital depending on whether real estate assets and portfolios meet certain numeric targets for energy- and emissions-related performance.

This policy guide provides a high-level overview of issues at the fore of international, national, state, and local BPS trends. The Real Estate Roundtable frequently offers the points raised in this guide to federal and NGO policymakers as they undertake efforts to support, design, and enforce performance mandates on buildings. These issues may also resonate with policymakers in states, cities, and localities that are increasingly adopting BPS laws.

Like bills before the U.S. Congress or standards promulgated by federal agencies, BPS enactment and enforcement requires advocates to navigate legislative and regulatory processes in state houses, city/county councils, and local regulatory bodies. No matter where these discussions are taking place, BPS policies provide an opportunity for collaboration and compromise regarding energy and climate performance standards on real estate. A range of constituents should have a seat at the table to develop whole-of-economy solutions that are impactful, attainable, and assess costs and benefits. The community's public officials, residents, businesses, utilities, grid operators, and other industry sectors all play a significant part to help address global warming.

Government policymakers and "think tanks" are accountable to develop well-reasoned and reasonable BPS frameworks. They must conduct the research, hold the hearings, accept the comments, sponsor the studies, and assemble the data necessary to support a factual and legal record that justifies building performance mandates. Advocates can shape fair and reasonable BPS policies by urging points covered in this guidebook.

BPS policymakers must prioritize their vision for how real estate can reach performance targets while being profitable; sustain debt and equity investments with responsible leverage relative to asset values; and meet the energy needs of households and business tenants that lease space in buildings. Jurisdictions and other BPS designers can further all of these objectives if they conduct analyses and engage with stakeholders on matters set forth in this guide.

US-DOE hosts a "BPS Library" of resources on its website that provide "an overview of BPS policy components and the process for establishing these types of policies." Technical briefs, fact sheets, model laws, and reports developed by the agency, national laboratories, and NGO advocacy organizations are all available on US-DOE's website. To date, there are no resources available on the Department's webpage explaining BPS policy issues from the perspective of the real estate community. The Real Estate Roundtable requests US-DOE to include this 20-point policy guide as a key resource in the agency's online "BPS Library."

- This guide suggests 20 policy points that stakeholders may raise to policymakers as they develop statutory and regulatory mandates on buildings' climate-related performance.
- Designing a BPS law and implementing regulations are complex, technical endeavors. Industry advocates and other stakeholders will not have all the answers to the *"Questions for BPS policymakers"* raised throughout this document. However, elected officials, legislators, regulators, and NGOs should undertake the research to respond to these questions to build broad constituent support for any BPS policies.
- This guide includes hyperlinks and footnotes featuring websites and sources to help ensure that BPS frameworks are data-driven, fact-based, and assess cost-benefit impacts on families, households, businesses, and building owners.
- The U.S. Department of Energy should include this 20-point guide in its online "BPS Library" of resources.

Part I: Introduction

(1) Policymakers Should Reduce Conflict in the Confusing Nationwide "Patchwork" of BPS Laws to Assist Multi-Jurisdictional Compliance and Accelerate Progress to Address Climate Change

BPS frameworks generally set mandates on new and existing residential and commercial buildings to meet annual limits on how much energy they can use, and how much greenhouse gases (GHGs) they can emit. Common shorthand phrases for these building performance restrictions are "energy efficiency targets" and "emissions targets."

BPS targets ratchet-up over time to impose ever-tightening standards. Policymakers turn to these frameworks as their main strategy for buildings to approach "net zero" emissions around the middle of this century, with intermediate levels established along the way. The premise of a number of BPS laws and programs rests on an allowable "budget" of energy use and emissions. As the budget decreases over time to approach net zero levels, performance targets for real estate asset classes become stricter and stricter, requiring buildings to continually use less energy and emit less GHGs. Non-compliance may bring heavy fines or penalties if a building fails to meet a current or future BPS target.

Bills have been introduced in recent sessions of Congress proposing a national BPS law.[1] International organizations also aim to drive global investment capital to U.S. buildings that are on a "pathway" to achieve "net-zero" emissions performance.[2] In the United States, much of the attention to BPS policies to date concerns the growing number of states, cities, and local governments that are developing and enforcing building performance mandates on properties within their respective jurisdictions. The points in this guide are offered to help stakeholders consider issues that may drive more effective, consistent, and fair building performance targets contemplated by government officials and other BPS policymakers.

The global real estate company JLL reports that state and local BPS laws enacted to date cover about 25% of all U.S. buildings.[3]

Source: US-DOE, IMT (map as of August 2024)

[1] E.g., H.R. 9586, "Creating Low-cost, Efficient and Net-zero Emissions Resilient Buildings Act" (117th Congress, 2d session).
[2] See letter from The Real Estate Roundtable to U.S. Treasury Secretary Janet Yellen, U.S. Energy Secretary Jennifer Granholm, and U.S. EPA Administrator Michael Regan (July 16, 2024).
[3] JLL, "Future-proof your investments: Embrace Building Performance Standards for enhanced asset value and reduced real estate risks" (July 15, 2024).

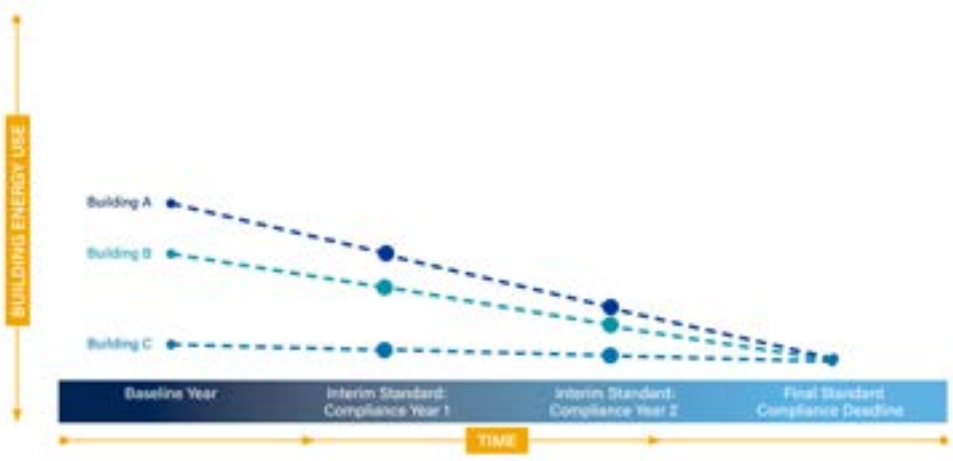
Each jurisdiction with a BPS policy seems to be doing its own thing. A confusing patchwork has emerged across the nation with laws that vary and conflict in their respective energy and emissions targets, compliance deadlines, and even the types and sizes of buildings that might be subject to or exempt from these mandates. Navigating this BPS maze is burdensome and complicated. Regulated property owners with assets in multiple cities must stay abreast of each jurisdiction's unique standards.

The U.S. Department of Energy (US-DOE) keeps a matrix that provides a summary of diverse BPS requirements. Building performance requirements generally follow one of three approaches:

(1) ***A "cycle-based" approach*** (e.g., Washington D.C., Washington State), where the law sets initial performance restrictions which remain in effect until the jurisdiction updates or establishes new ones later. Under this approach, standards may be re-calculated and re-set every few years based on how buildings are performing thus far, and the extent of further energy use and emissions reductions still needed to reach the jurisdiction's long-term goals.

(2) ***A "fixed limits" approach*** (e.g., NYC, Boston), where the law establishes initial numeric performance levels that apply immediately after enactment, as well as subsequent specific limits that stretch into the future and become more difficult to meet. These numeric limits are "locked in" the legislation itself. Modifying them would likely require statutory changes.

(3) ***A "trajectory approach"*** (e.g. Denver) that may follow a model ordinance developed by the Institute for Market Transformation (IMT), a non-profit group.[4] Under this approach, a building must show it is making progress over time in lowering energy use and/or emissions along a trajectory that slopes downward from the asset's starting point baseline performance until it reaches a final, codified standard. The building meets interim targets that depend on its own trajectory from baseline to the deadline for achieving the ultimate BPS standard at some future date.



Example of a trajectory-based building performance standard. Source: IMT

Jurisdictions may not have reflected on these various BPS approaches and why it may choose one type of framework over another. Policymakers should assess what laws have been enacted elsewhere, what approaches have (and have not) worked in other jurisdictions, and what approach might dovetail best with federal, state, and local incentives and financial support.

The U.S. Congress has not authorized a federal level BPS on privately-owned buildings.[5] However, the Biden-Harris Administration launched a National BPS Coalition of state and local governments committed to enacting

[4] The Institute for Market Transformation (IMT) offers BPS resources to states and localities, including its model BPS ordinance first developed in 2021. IMT "work[s] closely with all jurisdictions that have passed or are considering a BPS." See IMT's website. IMT did not establish its model BPS ordinance through a formal consensus-based process like the one used by ICC or ASHRAE for building codes, but it did ask selected groups to comment on its model as proposed. The Real Estate Roundtable ("RER") provided comments to IMT's model BPS in April 2021. See RER's website.

[5] In 2022, the U.S. government's Office of Sustainability issued the first-ever performance standard for buildings owned by the federal government (Federal Buildings BPS).

and implementing building performance policies on new and existing properties. US-DOE provides technical assistance and a resources library to help jurisdictions develop BPS mandates.

Moreover, US-DOE has tens of millions of dollars to disburse as grants and other support to states and localities for the purpose of developing, implementing, and enforcing BPS laws. On August 27, 2024, it announced that 19 BPS jurisdictions across the United States have been selected to receive a total of $240 million in "Round 1" funding, to advance laws imposing performance mandates on buildings. The chosen jurisdictions must go through a negotiation process with US-DOE before the agency releases funds. During their negotiations, US-DOE and the potential state/local grant recipients should address the points in this primer. These matters are important to substantiate and explain how and why real estate owners are subject to complex regulations that will fundamentally change their building investment and operational strategies.

US-DOE's grant negotiation process provides a prime opportunity to align divergent BPS targets, metrics, and deadlines. The federal government is best postured to guide overlapping jurisdictions to adopt more harmonious rules and standards. Ameliorating the challenges associated with multi-jurisdictional BPS compliance should be a prime goal when US-DOE awards grants.

Questions for BPS policymakers:

- Has the jurisdiction explained which BPS "approach"– cycle-based, fixed limits, or trajectory – it is using and why? Have regulated building owners in the state or locality considered a preferred approach to recommend to the jurisdiction?
- In developing its own BPS, did the jurisdiction consider similar laws from other jurisdictions? If yes, which one(s)? Does it coordinate with the U.S. government and sister jurisdictions to align their respective BPS laws on key issues such as compliance deadlines, target levels, and performance metrics?
- Is the BPS state or local jurisdiction a member of the National BPS Coalition?
- Has the jurisdiction received monetary or other support from US-DOE or another federal agency, to develop, adopt, or implement BPS laws and regulations? Has it received federal funds to help building owners comply with BPS laws and regulations?
- Does the jurisdiction's BPS framework consider the points in this primer to help achieve consistency across different frameworks?

Part II: Prerequisite Studies and Data to Support BPS Frameworks

No matter which approach a jurisdiction pursues for a BPS framework, it must ensure any performance mandates are data-driven and backed by key technical analyses, studies, and laws. To foster understanding and support for complex and costly BPS mandates, foundational research must explain the policy's economic impacts on residents and businesses in the community. Government and NGO policymakers should also report their conclusions that an intended BPS law will achieve its ultimate goal: to reduce emissions that cause climate change, through performance limits on buildings that provide a proportionate local regulatory response to a global problem.

Part II describes data, studies, and corollary laws that jurisdictions should have in place before enacting or implementing performance mandates. These prerequisites should provide the basic, foundational underpinnings of any BPS law and implementing rules.

A "checklist" of BPS prerequisites includes:

- ✓ A study from the jurisdiction showing how much energy consumption and emissions are directly attributable to: (1) the residential and business tenants who occupy buildings in leased spaces beyond an owner's ability to control; and (2) the real estate sector generally compared to the climate impacts caused by the power grid and other industry sectors within its borders;
- ✓ A housing impact report that, among other things, provides assurance that heightened energy and climate building performance levels will not make it harder to increase supplies of affordable homes for economically disadvantaged and working class households; will support programs to re-imagine struggling assets and convert them to more productive uses (such as office-to-housing conversions); and assesses whether rent control laws limit income available for residential building owners to help pay for retrofits;
- ✓ An economic impact analysis that, among other things, addresses the BPS law's impact on real estate asset values and property tax streams generated to provide essential local government services; estimates the costs of retrofit projects and availability of financing and capital to underwrite them; and considers whether performance mandates could be so strict to drive economic development and real estate investments to other jurisdictions;
- ✓ A "grid stress test" showing the region's electric grid can sustain all of the extra loads from widespread building electrification that the BPS law might intend or cause;
- ✓ An opinion from the jurisdiction's chief legal officer that the BPS law avoids preemption problems under the U.S. Constitution;
- ✓ Corollary laws that ensure property owners have access from utilities and tenants to "whole-building" energy data that are necessary for BPS compliance;
- ✓ An assessment of whether there is sufficient domestic supply of "made in the U.S.A." equipment for all of the building projects that must be BPS compliant – or whether items like heat pumps must be imported from China and other foreign markets; and
- ✓ At least 3-5 years of high-quality building energy data collected previously from a separate "benchmarking" law, to provide the factual and statistical bases for setting and adjusting BPS targets.

(2) BPS Policymakers Should Study and Show How Much Energy Use and Emissions are Caused Directly by Building Occupants, and Real Estate Generally Compared to Other Industry Sectors, in Their Jurisdictions

Addressing the climate crisis requires a "whole-of-economy" approach. Real estate has an important role to play but focusing just on regulating commercial and residential buildings will not solve the problem.

A "global, data-driven" assessment recently published in *Science* by Mercator Research Institute analysts identified policies that have proved to be the most effective in lowering emissions.[6] It concluded that regulations – like BPS laws – focusing on a specific industry sector "rarely worked to reduce emissions unless they were combined with [incentives and] price-based strategies aimed at changing consumer and corporate behavior."[7] This policy guide does not consider the merits of ideas like carbon pricing or taxes on energy use. However, the *Science* study drives the point that regulations singling-out buildings and their owners alone will not meaningfully address climate change. Policymakers from a particular city or state should demonstrate a comprehensive strategy to cut energy use and slash GHG emissions beyond owners of real estate assets.

Building performance mandates will achieve limited success because, as the *Science* study explains, they do not affect "consumer behavior" or align regulatory requirements with who controls the most energy use in a building and causes the most emissions. Building owners do not set the thermostats in apartment units, individual office suites, or hotel rooms. They do not turn off the medical equipment in hospitals or laboratories, the computers in classrooms, the lights in retail showrooms, the electricity in data centers, or the gas in restaurants. Owners do not control the use of power in leased areas of private sector buildings occupied by government agencies.

Rather, residential households, business tenants, and visitors control the vast majority of energy consumed in a building. Jurisdictions that seek whole-building reductions in energy usage and emissions should acknowledge a major inherent limitation regarding the effectiveness of most BPS frameworks to date: they do not regulate who primarily consumes power or try to affect the consumptive behaviors of tenants and other occupants.

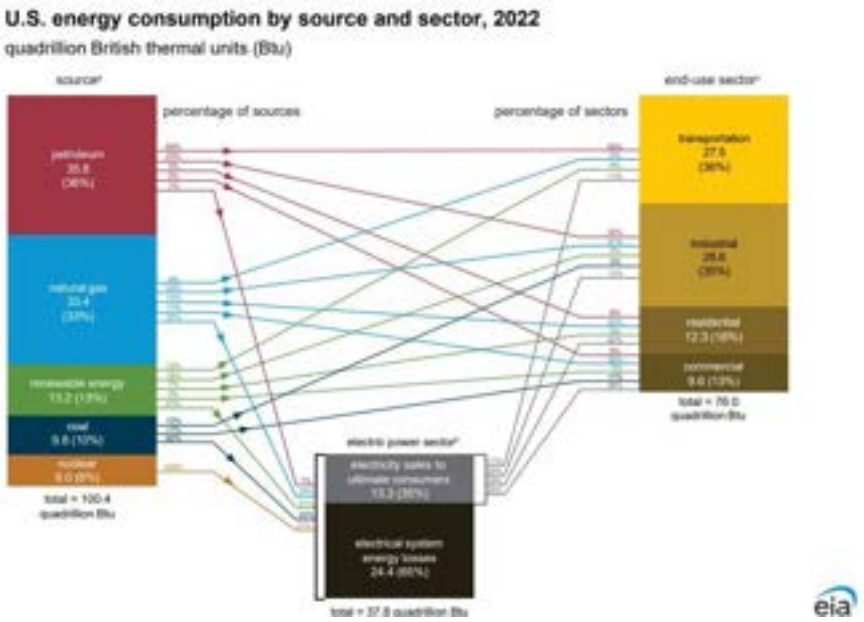
Questions for BPS policymakers:

- Is the jurisdiction aware that most energy consumed in a building is caused directly by renter households, business tenants, and visitors – and is not controlled by building owners? Does the jurisdiction have plans to change or affect the energy consumption behaviors of building occupants as part of its regulatory efforts to address climate change?

In addition to understanding how occupants within a building control a specific asset's energy usage and emissions, BPS jurisdictions should gain a "big picture" sector-to-sector understanding of the climate impacts from real estate compared to other industries within their borders.

[6] Annika Stechemesser, Nicholas Koch, et al, "Climate Policies that achieved major emission reductions: Global evidence from two decades," Science (Aug. 22, 2024). The study "assessed 1500 climate policy measures implemented over the past 2 decades across 41 countries from six continents."
[7] Eric Niiler, "Most Climate Policies Don't Work. Here's What Science Says Does Reduce Emissions," Wall Street Journal (Aug 23, 2024).

Energy Use by Industry Sector **(source: U.S. Energy Info. Admin.)**



The graphic above depicts federal data for "Energy Use by Industry Sector." In relative terms the transportation (36%), and industrial (35%) sectors use much more energy nationally compared to commercial (13%) or residential (16%) buildings. Yet, the regulatory scope of BPS laws is on energy use and emissions ***from buildings***, the smallest industry cohort in terms of its comparative contributions to nationwide energy use. These statistics will vary from jurisdiction to jurisdiction.

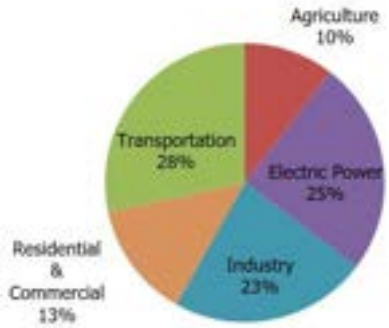
BPS laws set energy usage "targets" on buildings that may ***not*** be the biggest users of energy in the state or locality at issue. If reducing energy use is one of the jurisdiction's main goals, it will have limited success unless it also has policies to improve efficiency in other economic sectors – particularly the electric power sector. The graphic above also shows that the nation's electrical system loses 65% of energy after it is generated at a power plant due to inefficiencies during transmission, distribution, and sale of electricity to commercial, residential, and industrial customers. Building owners, of course, have no ability control directly power transmission losses or whether the community's electricity infrastructure performs efficiently.

Questions for BPS policymakers:

- Has the jurisdiction studied how much energy within its community is consumed by single-family, multi-family, and commercial buildings – compared to the electric power, transportation, and industrial sectors?
- Does the jurisdiction have programs in place to make all of these sectors more energy efficient – or is it primarily focusing just on buildings through BPS laws?
- What is the jurisdiction's progress in making the electrical sector more efficient so that power losses during transmission and distribution are cut significantly?

Total US GHG Emissions by Sector in 2022 **(source: US-EPA)**

Direct Emissions by Sector:



Emissions by Sector After Accounting for Electricity Use:

The relatively lesser climate impacts from buildings are even more telling when considering the amount of GHG emissions across sectors. Consider the pie charts above. Advocates for BPS and other climate-related regulations frequently assert that buildings account for about 1/3 or more of total emissions (the "pie" on the right). That statistic warrants closer analysis.

As the left "pie" shows, commercial and residential buildings combined account for only about 13% of ***direct*** GHG emissions, such as from gas, oil, or other fossil fuels combusted onsite to heat and cool buildings. The electric power sector accounts for 25% of direct emissions – but that sector is deleted from the right "pie," which only depicts emissions from electricity as allocated to "end users." Necessarily, if emissions diminish at the electric power source – that is, the nation's electricity generation plants – the overall amount of emissions will drop significantly. ***That*** is what BPS and other climate regulators should focus on – controlling emissions from the biggest emitters. In any given jurisdiction, the biggest direct emitter is likely ***not*** real estate.

A theme throughout this primer is that buildings cannot fully "decarbonize" – or lower their reliance on fossil fuels – unless the electric grid also decarbonizes. Policymakers developing building performance mandates must not lose sight of this larger picture. Legislatures, councils, and other bodies pursuing BPS laws should explain their plans and progress to reduce energy use and emissions from ***other*** industry sectors as well, particularly from the electric power sector.

If we focus just on buildings, we will not address the climate crisis adequately or effectively. Controlling emissions significantly and proportionately from ***all*** sectors is essential.

Questions for BPS policymakers:

- Has the jurisdiction studied how much greenhouse gas (GHG) emissions are directly attributable to single-family, multi-family, and commercial buildings within its community – compared to direct emissions from the electric power, transportation, and industrial sectors?
- How is the jurisdiction measuring progress in those other sectors and when does it forecast they will be decarbonized?
- Is the jurisdiction fostering successful collaborations and partnerships across *all* industry sectors to address climate change?

(3) Jurisdictions Should Ensure Their BPS Laws Will Not Undermine Housing Affordability Goals, or Efforts to Revitalize Struggling Buildings and Communities

Regulatory efforts addressing the climate crisis must strike balance with policies addressing the housing affordability crisis. There is a significant dearth of residential supply in communities across the nation, prompting policymakers to prioritize the need to build millions more new and renovated units.[8] Meanwhile, recent U.S. Census Bureau data show "[t]he cost of rent and utilities in 2023 rose faster than home values for the first time in a decade," confirming that a "supercharged rental market is squeezing people who can't afford to buy."[9]

Jurisdictions should study the impacts of BPS laws on families who rent or own homes, and whether building performance mandates will help stabilize housing markets. How short is the jurisdiction on housing units, especially for lower- and middle-income households? Will BPS laws hinder the mission to build new and retrofitted homes? For multifamily buildings, is there an impact on rent prices from extra compliance costs to meet performance mandates?

Efficiency and emissions targets striving for "net zero" housing might be forecasted to help reduce utility bills paid each month. But what are the more immediate, upfront impacts on family budgets? Will added costs from BPS compliance make it harder to assemble a down payment and inequitably "price out" home buyers from the market? What about effects on renters? Will increased capital costs on apartment owners to comply with BPS laws result in fewer units available to lease? Will electrifying a multifamily building and installing the highest performing equipment exacerbate the financial burden on renters to pay more than one-third of their income on housing costs, thereby exceeding the federal government's well-accepted affordability threshold?[10] Jurisdictions should consider these and similar questions as part of a comprehensive BPS economic impacts study.

Insofar as apartments and other leased housing is concerned, rental income from tenants may not provide a significant monetary stream to support expensive energy and climate investments. Many markets with or entertaining BPS mandates also have rent control laws in place.[11] Jurisdictions should study whether their rent control laws impede BPS goals by diminishing financing resources for building retrofits. States and cities should explain what policies they will deploy to accommodate two compelling government interests: where owners must pay for BPS retrofits on the one hand, yet on the other hand rent restrictions limit the income available for owners to finance those very same retrofits.

Questions for BPS policymakers:

- Has the BPS jurisdiction considered the impact of its law on housing affordability? Will building performance mandates affect creation of new housing supplies, increase home prices, and/or exacerbate rental burdens borne by tenant households?
- Does the BPS jurisdiction have rent control or stabilization laws in place? Has the state or locality assessed whether limits on rental income will restrict available capital for residential building owners to finance retrofits necessary for BPS compliance?

Since COVID-19, public and private sector leaders have heightened their attention on programs to re-use diminished buildings and make them productive again – such as by converting under-utilized offices into apartments.

[8] For example, the Biden-Harris administration has a goal to add at least two million units to the nation's housing stock See White House fact sheet (Aug. 13, 2024). The Harris-Walz campaign has announced a need for three million more affordable housing units. Harris-Walz Campaign press release, "Vice President Harris Lays Out Agenda to Lower Costs for American Families" (Aug. 16, 2024).
[9] Rachel Siegel, "Rent, utilities rose faster than home values for the first time in a decade," *The Washington Post* (Sept. 12, 2024).
[10] US-HUD website, Office of Policy Development and Research, "Rental Burdens: Rethinking Affordability Measures."
[11] See National Multifamily Housing Council, Rent Control Map; National Apartment Association website (U.S. map showing "Rent Control Laws by State").

Many jurisdictions, including those with BPS mandates,[12] are adopting plans and incentives to prioritize property conversions from office, hotel, retail, and government buildings to increase much-needed supplies of affordable housing. The U.S. Department of Housing and Urban Development ("HUD") recognizes that property conversions "are both logistically and financially challenging."[13] Leading architecture firms (e.g., Gensler, Perkins+Will) describe the considerable design, permitting, zoning, regulatory, and financial challenges attendant to many real estate conversions.

BPS laws must not add more ballast that make it harder to get adaptive re-use projects off the ground. A vacant or under-utilized asset in its pre-conversion state will likely use more energy per square foot and demand more electricity after it is improved. Ironically, it might be easier for a diminished asset to satisfy BPS mandates but harder after it is adapted to a better, more productive use.

Jurisdictions must ensure that their BPS laws do not undermine parallel efforts to support recovery of business districts, downtown communities, and provide adequate supplies of affordable housing. Building performance mandates must not dampen markets trends that shift excess, unused office space to residential uses in high demand.

Questions for BPS policymakers:

- Has the jurisdiction studied and shown that its BPS laws do not undermine corollary policies to support commercial-to-housing property conversions?
- If a vacant or under-utilized building changes to a more productive, profitable use with higher occupancy rates – which also bring higher energy consumption and emissions – does the BPS law offer relief or a variance to account for the greater environmental impacts that may accrue to the building in its improved condition?

[12] To name a few, Austin, Boston, Chicago, Denver, Detroit, Los Angeles, Minneapolis, Montgomery County (MD), New York City, Philadelphia, Phoenix, Raleigh, San Diego, San Francisco, Seattle, St. Louis, and Washington, D.C.
[13] HUD User, Office of Policy Research & Development, "Office to Residential Conversions" (Fall 2023).

(4) Jurisdictions Should Conduct an Economic Impact Analysis of Their BPS Laws

BPS policymakers must consider the fiscal consequences of their actions. They should complete a "BPS economic impact report" and solicit feedback from the community's real estate owners, housing advocates, lenders, and capital providers before adopting or enforcing climate-related regulations on buildings.

BPS targets require real estate owners to bear increased costs for new construction and retrofit projects. For example, one analysis predicts that compliance with New York City's BPS, Local Law 97, will require $14.8-$21.6 ***billion*** to support all of the retrofits needed to meet strict performance limits that take effect in 2030.[14] How much of this sum will derive from taxpayer investments in government programs, versus debt and equity capital markets, versus domestic or international financing sources, versus owners' capital expenditure budgets to improve their buildings? States or localities that create BPS laws should estimate the size of the retrofit market they anticipate – and assess whether public and private funding sources will be available to meet the demands for capital caused by their laws.

Question for BPS policymakers:

- **Has the BPS jurisdiction conducted an economic impact report including an assessment of the size of the building retrofit market caused by the law, and whether sufficient financing sources will be available to support that market?**

BPS policies impose heightened expenses in a challenging post-pandemic environment where real estate owners face economic headwinds. Many office buildings are struggling to maintain asset values, minimize tenant vacancies, and remain profitable. As the White House Council of Economic Advisers explains,[15] communities across the nation are still trying to recover fully from the fallout of COVID-19. Work-from-home and hybrid work practices have become the new normal. Office space occupancy in many markets will not foreseeably return to pre-pandemic levels.

The Harvard Business Review explains that commercial real estate management expenses have "skyrocketed" in terms of escalating costs of construction labor and materials, increased property insurance premiums, "dated electricity grids," and the "uneven energy transition" that inflates prices to provide electricity and other power.[16] High interest rates, reduced office rental demands, and falling property values all exacerbate inflation in property management expenses. Moreover, over $2 trillion of real estate debt is scheduled to mature in the next few years.[17] These loans originated during an era of historically low interest rates mandated by the Federal Reserve and will mature in a markedly different era of elevated interest benchmark and mortgage rates.

This economic environment is intensifying risks that borrowers will be challenged to refinance existing CRE loans when they come to term. Borrowers will be faced with refinancing maturing loans at sharply higher mortgage rates on potentially lesser performing CRE assets whose income cash flow may be sharply lower than when the loan was originated.[18] "Hundreds of small- and midsize commercial banks" that serve the nation's communities are "overexposed" as borrowers may "becom[e] delinquent or default[]."[19] Government leaders and building owners share paramount objectives to ensure that owners maintain healthy "debt-to-income" ratios on their properties at levels to avoid loan defaults and foreclosures.[20] No one benefits when outstanding debt on a building exceeds the

[14] Urban Green Council, "Retrofit Market Analysis" (June 18, 2019).
[15] The White House, Council of Economic Advisers, "Commercial-to-residential Conversion: Addressing Office Vacancies" (Oct. 27, 2023).
[16] Dana M. Peterson, "U.S. Commercial Real Estate is Headed Toward a Crisis," Harvard Business Review (July 23, 2024).
[17] Mortgage Bankers Association, *2023 Commercial/Multifamily Loan Maturity Volumes*; CoStar news, "As $2 Trillion in Property Loans Come Due, Firms Advise Lenders Turned Unintended Owners" (August 11, 2024).
[18] Written statement of Jeffrey D. DeBoer, President and CEO, The Real Estate Roundtable, to the Health Care and Financial Services Subcommittee of the Committee on Oversight and Accountability, U.S. House of Representatives (April 30, 2024) ("[B]ase interest rates have risen nearly 500 basis points in 24 months ....")
[19] Peterson, supra note 9.
[20] Cushman & Wakefield, "Market Matters: Exploring Real Estate Investment Conditions & Trends" (July 24, 2024) ("Negative leverage conditions ... remain a significant hindrance to velocity. While some investors have stomached negative leverage over

asset's value. BPS policymakers must evaluate whether their laws cause higher compliance costs that may push buildings over the brink of unprofitability – with cascading effects that leave assets "underwater" and banks holding loans that exceed underlying property values.

Green Street, a leading real estate analytics firm, reports that many U.S. cities with BPS mandates are "approaching a European-like framework" to climate regulations that could drive real estate investments to other markets with lower regulatory exposure.[21] Jurisdictions should conduct a thoughtful, balanced economic analysis of their BPS laws that considers whether complex performance mandates have an unintended consequence impelling investments to other cities with less costly regulations. Real estate companies might bring their businesses, retailers, property tax payments, and jobs to markets where they can more efficiently realize returns on their cap ex spending while lowering emissions and energy use in their buildings.

Questions for BPS policymakers:

- Does the BPS economic impact report consider whether compliance costs affect an owner's ability to manage mortgage debt, pay property taxes, and cover the costs for other building operating expenses?
- Has the jurisdiction considered whether the costs to comply with a BPS might affect a building's underlying asset values? Would loans taken to meet performance mandates over-leverage a building?
- Has the jurisdiction considered whether its community banks are generally under stress and pulling back on real estate lending and financing? Do these banks have capacity to lend to building owners to help finance greater investments necessary for BPS compliance?
- Has the jurisdiction studied whether its BPS mandates are so expensive that they may drive real estate owners, lenders, retailers, and capital providers to other markets with more reasonable and practicable climate-related performance limits on buildings?

the last several years … many have taken to the sidelines to wait for prcies to correct enough such that cap rates become more amenable.")

[21] Daniel Ismail and Evan Lustick, Green Street, "Property Insights" (Nov. 28, 2023).

(5) Jurisdictions Should Conduct a "Stress Test" Showing the Grid's Capacity to Sustain Extra Loads from Electric Buildings

Policymakers must prepare, and make available for public comment, a "grid stress test" showing that the power grid in its jurisdiction is resilient enough to support a BPS law.

The aim of many state and local officials is to drive "electrification" of buildings. An asset can reduce on-site emissions, for example, by swapping out a furnace that combusts natural gas with an electric heat pump to heat and cool the structure. Jurisdictions must study whether the power grid serving its region can handle the extra loads generated by fleets of electrified properties throughout the state or locality.

The transition to a digital economy raises serious concerns about electricity reliability and availability. "AI could soon need as much electricity as an entire country"[22] as "[v]ast swaths of the United States are at risk of running short of power … leaving utilities and regulators grasping for credible plans to expand the nation's creaking power grid."[23] What happens if we add electrified data centers and other buildings to the mix, along with the tens of millions of ports to charge EVs?[24]

Will this all place too much strain on the grid? Will homes, schools, care centers, and businesses stay up and running when the next major storm or heat wave strikes? Are electricity generators, transmission lines, substations, and other power infrastructure resilient enough to avoid widespread blackouts consistent with a BPS's goals for electrified buildings? Will the community need to construct new "peaker" power plants – which "often have higher GHG emission levels"[25] – to meet escalating demands for electricity? What is the impact on consumers? If homes and buildings are electrified, and taxpayer resources are devoted to grid investments to handle extra loads, will that increase energy prices for families and businesses? Jurisdictions should answer these and similar questions in a "grid stress test."

Deploying batteries at building sites can help make the grid more resilient. Battery technologies have the potential to store energy generated during off-peak hours and save it for use later when demand spikes. For example, energy captured by solar panels on hot summer days could be stored in batteries to provide air conditioning at night when families return home from work and school. However, sizeable policy and economic barriers persist that prevent most jurisdictions from deploying batteries in buildings at a large scale. Property owners must obtain local permits and meet fire and other code requirements for battery installations; utilities must allow buildings to connect to the grid; and stakeholders must decide what price should be paid for stored energy returned to the grid.[26] Zoning laws may need to be changed to accommodate commercial battery installations throughout the jurisdiction. These hurdles to transform the "grid edge" and enable grid-interactive buildings are surmountable. But they require complex negotiations, public ratepayer proceedings, and policy compromises among policymakers, regulatory commissions, utilities, residential and business customers, and real estate owners.

Questions for BPS policymakers:

- Has the state or locality conducted a "grid stress test" showing that the electric grid can handle all of the extra loads from building electrification prompted by a BPS law?
- Are investments in grid resilience necessary to accommodate BPS electrification goals? How much will it cost communities and families, and will it increase their utility bills?
- Do BPS jurisdictions have the right policies, building codes, zoning laws, and incentives in place to support owners' installation of renewable energy battery storage and accelerate change at the "grid-edge" to enable "grid-interactive" buildings?

[22] "AI Could Soon Need as Much Electricity as an Entire Country," *New York Times* (Oct. 10, 2023).
[23] "Amid explosive power demand, America is running out of power," Washington Post (March 7, 2024).
[24] US-DOE website, "By 2030, the US will need 28 million EV charging ports to support 33 million EVs" (March 18, 2024).
[25] Sandia National Laboratories, Issue Brief, "Energy Storage to Replace Peaker Plants" (Nov. 2020).
[26] Patrick Murphy, "As contentious net metering debates persist across the US, Connecticut and Hawaii show a way forward," *Utility Dive* (June 3, 2022).

(6) Jurisdictions Must Provide a Legal Opinion That Their BPS Law, Natural Gas Ban, and/or Gas "Use Tax" Meets Federal Constitutional Preemption and Other Legal Requirements

Related to BPS and electrification mandates are state and local laws that may outright ban equipment in buildings that combust natural gas or other fossil fuels. These laws would prohibit use of gas-fired furnaces, water heaters, stoves, fireplaces, ovens, and fryers, for example. They might even be so onerous that they ban emergency generators frequently powered by diesel, necessary to keep buildings up and running when the grid fails.

Seventy-six percent of restaurants use natural gas, according to the National Restaurant Association, prompting that industry to bring a successful federal court challenge against a local gas ban. A 2023 decision from the Ninth Circuit Court of Appeals decided that a Berkeley, CA ordinance prohibiting installation of gas piping in new buildings violated the U.S. Constitution's federal preemption clause. The *Berkeley* case has been settled with a commitment from the city not to enforce the ban.

Legal controversies surrounding natural gas bans have prompted some state legislatures to pass laws that are a "ban on bans." Other jurisdictions might try to restrict natural gas usage not via overt bans, but by directing buildings to install air-source heat pumps, induction cooktops, tankless water heaters, and other electric equipment. Or, policymakers might not impose an overt ban but significantly restrict natural gas usage by setting a BPS limit that is so stringent in practice that compels buildings to electrify as the only means to achieve an emissions target.

Advocates pushing building electrification will assert the reasoning in *Berkeley* does not apply outside the specific context of an ordinance directly banning gas appliances. However, alternative approaches to a direct gas ban might raise similar constitutional problems addressed in the *Berkeley* case. State and local policymakers should explain their position that any overt or implied prohibitions on gas equipment they impose are constitutional and otherwise legal.

Considering the preemption problems with gas equipment bans, jurisdictions might pursue an alternative response to impose a "use tax" on natural gas consumption in buildings. For example, with its gas ban ordinance struck, the City of Berkeley proposed a ballot initiative to be considered in the November 5, 2024 election.[27] Berkeley's voters will decide whether to approve a special tax on natural gas consumption in residential (greater than 4 units) and commercial buildings, of 15,000 square feet or larger, with exemptions for affordable housing and government-owned buildings.[28] The proposed ordinance states that the tax is imposed on building owners – and no amounts can be passed through to tenants.[29]

This approach raises questions that the jurisdiction's chief legal officer should consider in a public opinion for stakeholders. Building owners do not "use" gas that tenants consume in their leased spaces, and thus the legality of a "use" tax may be questionable where the levy is imposed on a non-user of the fuel at issue. Furthermore, prohibiting tenants from paying their fair share of a gas consumption tax may interfere with contractual leasing arrangements. In "triple net leases" (discussed next in Point [7]), tenants exercise significant market leverage in negotiations to pay their own utility bills for the power they consume, along with their share of building operational expenses such as property taxes and insurance. If a jurisdiction imposes a gas use tax on building owners that cannot be assumed proportionately by tenants – but the lease requires tenants to pay their own utility bills and a portion of property taxes – then arguably the ordinance interferes with a contract between private parties. It would behoove the jurisdiction to address these matters for the community's residential renter households, small businesses, other tenants, and building owners.

[27] See memo from City of Berkeley City Manager to Mayor and City Council of Berkeley (July 9, 2024).
[28] See InsideEPA, "Berkeley Natural Gas Tax Initiative Aims to Skirt Hook-Up Ban Court Loss" (Sep. 5, 2024).
[29] City of Berkeley proposed natural gas use tax ordinance, § 7.77.110 ("Prohibited Conduct … [T]he Owner of a Taxable Residential Building shall not pass on the tax imposed by this Chapter to tenants in the form of rent increases or in any other manner.")

Questions for BPS policymakers:

- Has the chief legal officer for the jurisdiction prepared an opinion that the BPS law is legal under relevant case law on federal preemption and other matters?
- Is that legal opinion publicly available for stakeholder review and comment?
- Does any attempt at a fossil fuel ban carve-out an exception allowing emergency back-up power generation reliant on diesel, oil, or gas?
- Has the jurisdiction's chief legal officer prepared an opinion affirming the legality of any "use tax" imposed on building owners for natural gas consumption – considering that owners do not "use" gas consumed by tenants in leased spaces? If the jurisdiction attempts to prohibit building tenants from paying their fair share of a gas consumption tax, does the legal officer affirm that government's approach does not interfere with a lease agreement between private parties – where tenants contractually agree to pay their own natural gas and other utility bills?

(7) Jurisdictions Should Ensure Owners Have Access to "Whole-Building" Tenant-Level Energy Data

BPS targets for energy use and emissions are usually at the "whole-building" level. That is, a building is required to reduce energy use throughout and across the ***entire*** square footage of an asset. Whole-building mandates make owners responsible to not only measure and reduce energy used in common areas, but also in spaces leased by residential and business tenants that owners do not control.

BPS mandates put building owners in a difficult situation. These laws require owners to reduce whole-building energy consumption – but typically fail to ensure that owners have access to tenants' energy usage data that is necessary for whole-building BPS compliance.

Moreover, state and local mandates for whole building energy reductions do not comport with common U.S. leasing practices. As the U.S. Energy Department explains, "triple net leases" ("NNN") are negotiated contracts where tenants agree to pay monthly base rent plus their own utility bills and their share of other building operating expenses (such as property taxes and insurance). Under a NNN lease, the building owner or landlord is not responsible for paying the electricity, gas, or other utility bills related to operations in leased spaces. As a result, many owners have little or no insight into whole-building energy usage because they lack visibility to tenant-level data.[30]

Three federal Cabinet leaders recognize the problem regarding owner's inability to access whole- building energy data. In January 2024, the U.S. Secretaries of Energy, Housing, and the US-EPA Administrator signed an open letter to the utility industry, stating:

> "[P]roperty owners need access to complete energy use data for their buildings – something which is typically not available to owners of multifamily [and commercial] properties (because individual residents [and business tenants] often have their own utility accounts). Therefore, we are asking [utilities to] take action to make whole-building utility data available to owners seeking to improve the efficiency of their properties …."

No jurisdiction should enact whole-building BPS mandates unless it also directs utilities to give owners access to tenant-level energy data. US-EPA maintains an interactive map showing which utilities provide owners with whole-building energy data. As the map shows, vast swaths of the U.S. have no policies for owners to access utility data.

US-EPA offers off-the-shelf IT solutions, software, and technical assistance to utilities to get whole-building energy data in the hands of building owners. IMT and the Regulatory Assistance Project (RAP) also offer a model "data access" law that can be used to start discussions on a statutory fix for this problem.[31] BPS jurisdictions should instruct utilities and their regulatory commissions to use US-EPA's resources and consider other policy solutions (including legislation) to provide owners with whole-building energy data.

[30] "Green lease" clauses can contractually require tenants to provide their landlords with leased-space energy data. See "Green Lease Leaders" website (an initiative of IMT and US-DOE). However, these practices are not yet so engrained or predominant across markets to address the widespread conundrum that owners lack full access to tenant-level energy data – yet they are mandated to take actions under local laws as if they had that data readily in hand.

[31] See IMT and Regulatory Assistance Project (RAP), *Model Utility Data Access Law (Annotated)* (Nov. 2023).

Questions for BPS policymakers:

- Does the jurisdiction have laws and policies in place requiring utilities to provide owners with access to "whole-building" energy usage data, including energy used by tenants in leased spaces?
- How effective are these data access laws, and how frequently do they provide owners with "whole-building" data?
- Does the jurisdiction consider "triple net leasing" and other arrangements where tenants pay utilities directly – leaving owners without data on leased space energy consumption that is generally required for BPS compliance?
- If "whole-building" data access laws are not in place, then why is the jurisdiction considering or enforcing a BPS law with "whole-building" performance mandates?

(8) Jurisdictions Should Assess Whether American-Made Equipment is Available for Buildings to Meet BPS Mandates – Or Whether Overseas Imports are Necessary.

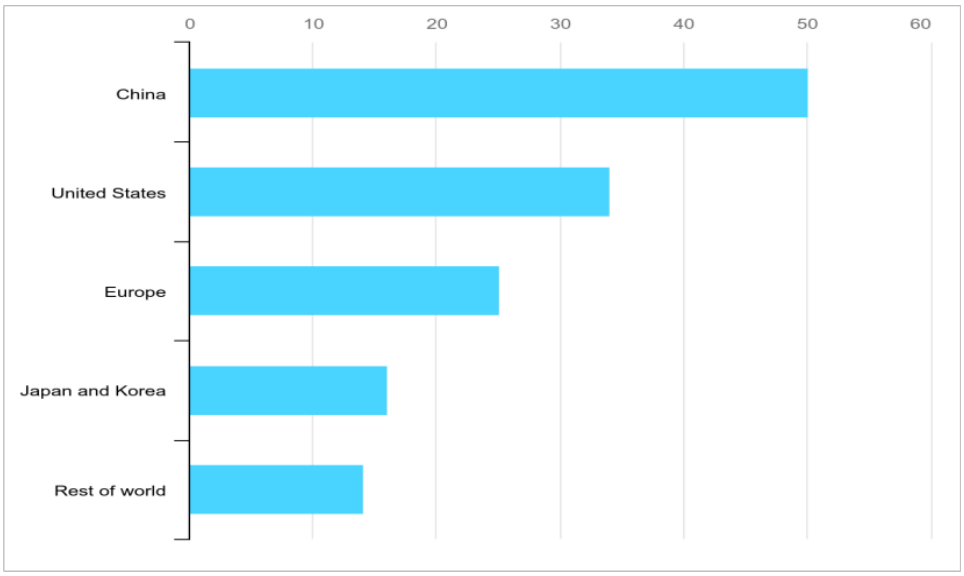
The International Energy Agency (IEA) estimates that retrofitting 20% of existing buildings is an "ambitious but necessary" milestone to achieve net zero emissions by 2030.[32] That translates to a renovation rate of over 2.5% annually, according to IEA. Similar aspirations likely motivate BPS jurisdictions. They should estimate how many buildings and square feet in their borders require upgrades to satisfy their legislated climate goals.

An analysis of New York City's Local Law 97 predicts that nearly 80 percent of its "covered buildings" must be retrofitted, which includes 1.4 billion square feet of residential area and 1.18 billion square feet of commercial space.[33] All of these retrofits will require a marketplace that offers ample quantities of high performance windows, insulation, heat pumps, lights, water heaters, and other components. Will equipment supplies meet BPS-induced demands, in time to align with regulatory deadlines? Is enough product made in the United States to meet state and local emissions targets? How much must be imported?

BPS jurisdictions should conduct a market availability analysis for the equipment that their laws will impel. For example, IEA reports that China leads the world in electric heat pump manufacturing. It produced around 35% of all heat pumps sold worldwide in 2022. China, Europe, Japan, and Korea dominate heat pump manufacturing and produced equipment providing a combined capacity of 90 gigawatts of electricity. The U.S. manufactured heat pumps providing 35 gigawatts.[34]

Heat Pump Manufacturing Capacity Per Region, 2022

(in gigawatts) (last updated 15 March 2024) (Source: International Energy Agency)



The upshot is that a building owner buying a heat pump most likely needs to import it – probably from China or elsewhere overseas. Stakeholders should understand that building performance and electrification policies may worsen equipment shortages for domestic equipment and cause demands that that will boost electric heat pump manufacturing and labor markets abroad.

Inquiries regarding domestic vs. global market supplies of building equipment will inform the availability of incentives provided by the U.S. government to support energy efficient real estate. Low-interest loans from US-DOE

[32] IEA report, *Renovation of near 20% of existing building stock to zero-carbon-ready by 2030 is ambitious but necessary* (Sept. 2022)
[33] Urban Green Council, *"Retrofit Market Analysis"* (June 18, 2019).
[34] IEA report, *The Future of Heat Pumps in China* (March 2024).

generally require construction with "made in the U.S." components.[35] Federal tax incentives can reach "bonus" levels if owners and developers satisfy "Buy American" standards for their projects.[36]

BPS jurisdictions should waive performance targets and/or extend compliance dates until domestically manufactured heat pumps and other components predominate markets for readily available building equipment. At a minimum, BPS policymakers must combine electrification mandates with financial incentives for building owners to purchase heat pumps made in the U.S.A.

Questions for BPS policymakers:

- Has the jurisdiction studied whether there is sufficient supply for all of the building systems, equipment, and components that must be installed to meet performance mandates?
- With regard to heat pumps in particular, has the BPS jurisdiction considered global market availability and that most heat pumps are manufactured in China and other foreign nations?
- Does the BPS jurisdiction offer or amplify incentives for building owners to buy American-made heat pumps and other components?

[35] US-DOE website, "Build America-Buy America" requirements.
[36] U.S. Department of the Treasury, Press Release, "Treasury Department Releases Guidance to Boost Domestic Clean Energy Manufacturing" (May 12, 2023) (*Inflation Reduction Act* tax incentives like the 179D tax deduction and the 45L tax credit increase in amount if energy efficient building projects satisfy "Buy American" standards); Internal Revenue Service website, "Domestic Content Bonus."

(9) At Least 3-5 Years of Data Collected From a "Benchmarking" Law is Essential to Develop Performance Targets in a BPS Law

A necessary precursor to a BPS law is a building "benchmarking" law. Benchmarking laws focus on data collection and disclosure, not performance mandates. They require owners to annually gather, report, and publicly disclose how much energy their buildings use. IMT publishes a map on benchmarking laws across the nation.

Source: IMT

BPS laws must be data-driven and fact-based on actual building performance. That is where benchmarking laws come in. Statistics disclosed from benchmarking and reporting laws must ground current and future targets for energy use and emissions.

In fact, states and localities with BPS laws already have building benchmarking laws on the books. However, legislative bodies should not pass these laws simultaneously or on the heels of each other. Jurisdictions should possess at least 3-5 years of high-quality benchmarking data as the basis for realistic and attainable performance levels on buildings. Further, policymakers have the burden to explain how they are using benchmarking data in their BPS methods and calculations to set regulatory limits. They should also commit to review benchmarking information regularly to assess whether the latest data warrants adjustments to future BPS levels.

US-EPA said it best in their toolkit for states and localities:

> "Most BPS policies currently enacted rely on benchmarking data to help set BPS goals as the best-in-class resource for understanding the actual performance of buildings within a jurisdiction … State and local governments can couple benchmarking data with other data and analysis to ***identify achievable decarbonization pathways by building type, groundtruthing whether their BPS goals are realistic for building owners to achieve, or if their policies need to be revised."*** [37]

While building benchmarking data are foundational to establish BPS performance levels, government-backed efforts to gather reliable and robust energy usage data has eluded certain real estate asset classes for years. For example, no uniformly accepted, random sample national data set has ever

[37] US-EPA, *Building Performance Standards: Overview for State and Local Decisionmakers* (Feb. 2021).

been compiled to reflect energy consumption for enclosed malls and shopping "strip centers." US-EPA has long acknowledged this perpetual data gap, and unfortunately to date has been unable to create a national ENERGY STAR rating for enclosed malls and strip centers (although individual stores may qualify).[38] BPS policymakers must be aware of these data nuances when establishing performance mandates. Jurisdictions must engage with owners of retail malls and other building categories that have historically lacked widespread data on energy consumption to develop fair and reasonable performance mandates for these asset classes.

Questions for BPS policymakers:

- Has the jurisdiction collected at least 3-5 years of data under a "benchmarking" law, regarding the actual energy and emissions performance of buildings within its borders?
- Has the jurisdiction explained how it is using benchmarking data in its methods and calculations to set BPS performance levels?
- Does the jurisdiction account for the fact that certain types of real estate – such as retail enclosed malls and strip centers – lack reliable sets of energy benchmarking data? Is the jurisdiction open to engage with owners on adjusting BPS and related benchmarking requirements where a particular building asset class lacks a reliable data set on the category's overall energy and emissions performance?

[38] See US-EPA website, "ENERGY STAR Score for Retail Stores and Supermarkets."

Part III: Energy Efficiency and Emissions Performance Deadlines, Targets, and Metrics

"What must I do to comply with a BPS?" "By when?" "How much will it cost?" "Will BPS laws be effective in halting the worst effects from climate change?"

Part III keeps these questions front of mind by raising points that jurisdictions must address regarding a BPS's substantive mandates on building performance.

The primary actions forced by BPS laws are replacements of older systems with equipment that is more efficient and does not rely on fossil fuels to operate. For example, performance targets aim to drive projects that install new windows and roofs with better insulation and switch out gas-fired boilers or chillers with heat pumps that run on electricity. Such retrofits should be supported through capital budgeting based on "life cycle investment" strategies. In this regard, BPS policymakers must eschew setting strict deadlines that require buildings to retire functioning equipment by inflexible dates. Owners know best how to manage capital expenditure plans, establish responsible investment horizons, and follow tax depreciation rules to recover costs of their property over a number of years. Policymakers should defer to this expertise and avoid setting rigid compliance deadlines to meet energy and emissions targets.

Stakeholders should also seek clarity on the following issues that arise frequently during debates over BPS policies. States and localities should:

- Avoid duplication or conflicts with existing building energy code requirements;
- Develop performance levels that correspond to different asset types, and further account for nuances in a particular building's operational characteristics and weather conditions;
- Understand that owners can take actions to reduce emissions on-site, within property boundaries – but those efforts may result in greater emissions from electricity generated off-site by power plants, which building owners cannot control;
- Recognize that buildings will not be able to fully decarbonize unless the electric grid also decarbonizes – but transitioning the grid away from fossil fuels will come at high costs to families, businesses, power providers, and government coffers;
- Allow owners to comply with BPS performance levels through investments in clean power purchases that help increase renewable energy that supplies the electric grid; and
- Explain what "emissions factors" are used in BPS laws to convert various fuel sources to emissions.

More detail on these key issues follows.

(10) Jurisdictions Should Encourage Feasible "Life-Cycle" Equipment Investments – and Avoid "One Size Fits All" Deadlines That Compel Owners to Destroy Existing, Functioning Building Systems by a Specific Date

State and local officials must consider the significant constraints their BPS policies pose to ***existing*** buildings. The very design of older, standing assets could make retrofits with electrification and other equipment technically impossible and cost impracticable.

A group offering compliance assistance with Washington, D.C.'s BPS law recommends "life-cycle" investment analysis that must temper strict deadlines for electrification and other deep retrofits requiring years of capital planning, building re-designs, and permit approvals:

> "Newer systems and appliances within buildings that are less than 10 years old do not need to be electrified until they are at least 15–20 years old or have reached the end of their useful life. Newer buildings should instead investigate opportunities for increased energy efficiency within the existing building systems."[39]

It does not make sense to rip-out functioning systems and replace them with new electric equipment. That would be wasteful and generate considerable environmental impacts – such as by increasing a building's "embodied carbon" footprint from emissions that occur during product manufacturing of new electric components, transporting them to the site, and premature disposal of equipment (that still works) in landfills.[40]

BPS lawmakers should further recognize that life-cycle capital expenditure budgeting is a longstanding business "best practice" backed by US-DOE research and grounded in tax planning. The Lawrence Berkeley National Lab provides tools to quantify the beneficial economic impacts of product life-cycle budgeting in terms of payback periods to recoup the costs of high performance equipment from accruing energy bill savings.[41] Tax professionals and accountants guide investments based on varying depreciation periods to recover costs for different property categories according to rules of the Internal Revenue Service.[42] In short, sound environmental and business reasons should compel policymakers to eschew strict equipment replacement deadlines and instead support life-cycle building investments in any BPS law.

Moreover, existing building designs can be a significant impediment to electrification. Boiler rooms and closets may not be capable of re-design to allocate all of the space needed to install new electric systems. Deep retrofits can reach every corner of a building, requiring rewiring and upgrades to breaker panels throughout the structure. Will such a retrofit disturb residential and business tenants? Would occupants, including patients and elderly residents, need to be relocated during an electrification retrofit? If the building loses revenue during a retrofit because spaces cannot be leased during re-construction, what is the impact on rental income streams – and the owner's ability to pay local property taxes? BPS policymakers should consider such questions.

It is one thing to encourage building owners and managers to develop cap ex plans that may accommodate long-term investments in electric equipment and replace gas-fired systems when they no longer function properly. Regulations should not, however, direct owners to retire their building systems from service by a specific date, without consideration of project costs or feasibility. BPS policymakers must be aware of these constraints and allow exceptions for infeasible and cost-prohibitive retrofits.

[39] Building Innovation Hub website, Building Electrification Considerations in DC."
[40] See Carbon Leadership Forum, "Introduction to Life Cycle Assessment of Buildings."
[41] See Berkeley Lab website, "Product Lifecycle Cost and Payback Period Analysis."
[42] U.S. Department of the Treasury, Internal Revenue Service, Publication 946, "How to Depreciate Property."

Questions for BPS policymakers:

- Does the BPS law require existing buildings – by a specific date – to switch-out equipment that relies on natural gas or fuel oil and replace it with electric equipment?
- Does the BPS law allow electrification and other "retrofits" to occur only after functioning equipment reaches the end of its useful life?
- Does the BPS law recognize the importance of "life-cycle" investments that integrate equipment replacements into the owners' regularly scheduled capital expenditure planning? Does the jurisdiction defer to owners' business expertise to reduce payback periods with energy savings from new equipment, and manage tax depreciation rules for cost recovery of investments over a number of years?
- If the BPS law requires a retrofit before functioning equipment reaches the end of its useful, has the jurisdiction considered the negative "embodied carbon" impacts of that approach?
- Does the BPS law allow some relief or waiver from any electrification mandate because the retrofit will displace current tenants, limit rental income, or is impractical due to the building's design?

(11) Jurisdictions Should Avoid "Double Regulations" From Energy Codes and BPS Efficiency Targets

Stakeholders must understand the relationship between BPS laws and building energy codes. They both set energy efficiency requirements on buildings. They differ however, in terms of their regulatory scope and substantive requirements.

In terms of ***regulatory scope***: Energy codes apply only to new construction and substantial retrofits of existing buildings. In contrast, BPS laws apply energy and emissions performance levels to new buildings – and existing buildings, whether or not they are or have ever been retrofitted.

In terms of ***substantive requirements***: Energy codes typically prescribe minimum levels of efficiency for a building's particular systems (e.g., roofs, windows, insulation, electrical, HVAC, and water heating). BPS laws differ. They do not set efficiency levels for specific building equipment. Rather, BPS laws set ***performance*** targets for an ***entire*** building to reduce energy use and emissions, achievable through new equipment installations and/or changes in how a building is managed.

	New Construction	Major Retrofits	Existing Buildings	Substantive Requirements
Energy Codes	Yes	Yes	No	Specific building systems (lighting, windows, roofs, insulation, HVAC, hot water)
BPS Laws	Yes	Yes	Yes	Whole-building performance (targets for energy use and emissions)

For new construction and major retrofits, jurisdictions must avoid "double regulations" from energy codes and BPS efficiency targets. Any new build or substantial rehab that "meets code" must also, by definition, meet any BPS efficiency target – assuming the equipment is properly installed, maintained, and operated as the code requires. States and localities must assure no circumstance that the only way to satisfy a BPS efficiency target is by installing equipment that stretches "above" the applicable code – for that would create a conflict in their laws.

No jurisdiction with an energy code needs a separate BPS efficiency target for new construction or major rehabs. The state or locality must assure that compliance with its energy code – which governs new builds and major retrofits – likewise achieves compliance with BPS levels for those assets.

Questions for BPS policymakers:

- If a jurisdiction has an energy code that applies to new construction and major retrofits, then why does it need a separate BPS efficiency target for those same assets – if equipment is code-complaint and properly installed to begin with?
- If the jurisdiction has separate energy codes and BPS efficiency targets, does it assure new construction that "meets code" categorically "meets BPS"? Otherwise, has the state or locality created an improper conflict in it laws?

(12) "Site EUI" Efficiency Targets Should be Data-Driven and "Normalized" for a Wide Range of Building Types, Operational Characteristics, and Weather Conditions

US-EPA recommends site energy usage intensity ("Site EUI") as a preferred metric for setting a BPS efficiency target. Site EUI compares a building's total annual energy use to its size to express how much energy the property consumes per square foot. It is calculated by dividing the building's total energy used in a year (including tenant energy) by its total gross floor area.

The real estate industry's standard way to measure Site EUI (and other building-related sustainability metrics) is through Portfolio Manager, US-EPA's free online software. "Nearly 25% of U.S. commercial building space" actively uses Portfolio Manager to gauge climate-related performance. BPS laws must endorse Portfolio Manager as ***the*** platform for BPS compliance and avoid some other measurement tool for regulatory purposes.

Certain types of buildings and tenants require more energy per square foot – and have higher Site EUI – to fulfill their very function. Data centers that power the Internet and AI platforms use more electricity per square foot than most other buildings. Medical buildings and laboratories devoted to patient care usually have higher Site EUI than buildings with typical office tenants. Refrigerated warehouses that store perishables have higher Site EUI than warehouses that store dry goods. Energy used per square foot in a multifamily building with numerous apartments is bound to differ compared to Site EUI in a building with business tenants coming to the office only a few days each week or compared to hotels that have transient visitors.

"One size does not fit all" when setting building performance standards. Jurisdictions must follow well-accepted categories curated by US-EPA as essential for different Site EUI targets that correspond to different real estate asset classes.

Questions for BPS policymakers:

- Does the BPS jurisdiction endorse US-EPA's Portfolio Manager as the tool used by the vast majority of building types to gauge compliance with performance targets?
- Does the BPS law set different "Site EUI" performance targets that correspond to the full range of building types categorized by US-EPA?

Policymakers must explain how they select particular numeric Site EUI levels. Generally, BPS frameworks set standards with reference to "median" EUI for various building categories. Performance regimes direct buildings to meet or exceed the median. As with any statistical analysis, deriving "median" depends on analysis of multiple data points. The BPS jurisdiction should explain what data set it uses – unique to its own climate and weather conditions – to calculate median Site EUIs by building category.

In this regard, states and localities pursuing a BPS policy must ***first*** have a law in place for buildings to "benchmark" their energy use (as discussed in Point 9, above). At least 3 to 5 years of high- quality data collected from a benchmarking law are prerequisite to define "median" Site EUI in the jurisdiction.[43]

[43] For example, a technical reference (updated Aug. 2023) from US-EPA lists "median" source and site EUIs across a wide spectrum of building categories. EPA's "median" is a national reference point based on data collected from a survey on energy used by buildings across the nation. BPS jurisdictions should follow the format of EPA's reference document to list "median site EUIs" for broad building categories – but the specific BPS median for each building category should be calculated based several years' worth of energy data use gathered from benchmarking laws unique to the state or locality at issue (not nationwide data).

Questions for BPS policymakers:

- Does the BPS jurisdiction explain how it established "median" Site EUIs for specific building types?
- Has the BPS jurisdiction used data it collected, from a corollary building benchmarking law, to reflect "median" Site EUI for the range of building types in its region? If not, what other data set does it use to set the "median"?

Regulatory Site EUI targets must also depend on methods to "normalize" for a building's operations across key variables. Normalization is important because it allows "apples-to-apples" comparisons of the same types of buildings. Office buildings do not have the same numbers of workers. Some stores are open longer than others. Data centers and labs do not have the same numbers of computers. More workers, opening hours, and computers can all increase a building's energy consumption, so normalizing for these variables is essential to help put buildings on a level playing field when it comes to establishing Site EUI levels.

Normalization of building energy use is also required for a given asset's climate and weather conditions. A building of similar type and operations will use different amounts of energy depending on its geography and latitude. For example, owners might need to provide more cooling for the comfort of tenants in a state's humid coastal regions, but provide extra days of heating in northern, mountainous environments. Also, the weather in any given year may be hotter or colder than average conditions. Policymakers must allow for buildings to adjust regulatory EUI levels based on such fluctuations in weather and climate.

US-EPA provides excellent resources explaining how to normalize energy use in light of buildings' varying operational characteristics and weather conditions.[44] BPS jurisdictions should deploy these federal guidelines for purposes of Site EUI targets.

Questions for BPS policymakers:

- Does the BPS jurisdiction "normalize" for variables in building operations, as well as weather and climate fluctuations, so real estate assets are on a level playing field to meet Site EUI performance targets?
- Has the jurisdiction consulted with US-EPA regarding its "normalization" guidance for building operations and weather conditions?

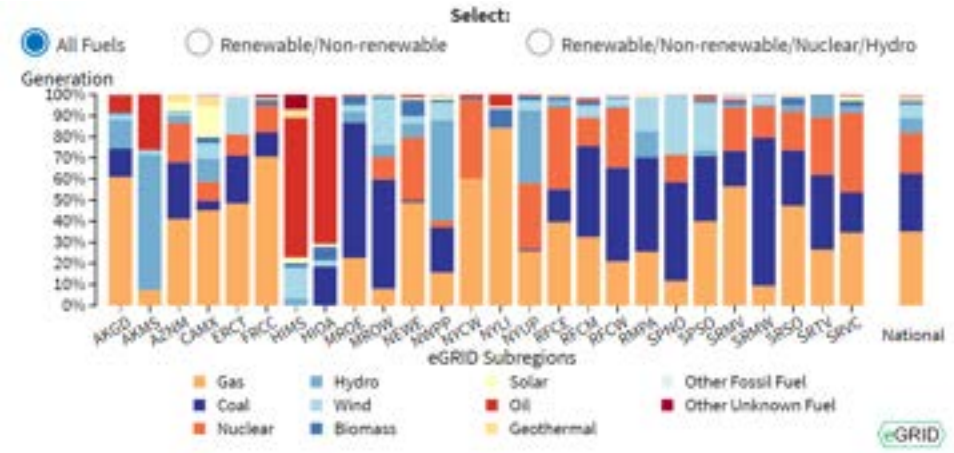
[44] US-EPA, *Recommended Metrics and Normalization Methods for Use in State and Local Performance Standards* (updated Nov. 30, 2022); US-EPA, *Technical Reference – ENERGY STAR Score* (section on "Normalizing for Operation") (April 2021); US-EPA, *Portfolio Manager Technical Reference: Climate and Weather* (Feb. 19, 2021).

(13) The "Fuel Mix" That Powers the Electric Grid is a Critical Data Point to Assess the Fairness and Effectiveness of BPS Emissions Targets

In addition to Site EUI targets, BPS laws may also impose greenhouse gas (GHG) emissions limits.

Data regarding the mix of different fuels used by the jurisdiction's power plants are critical to assess the fairness and effectiveness of BPS emissions targets. Electric grids rely heavily on fossil fuels, and BPS laws typically place excessive regulatory burdens on building owners by making their real estate assets responsible for carbon emitted by electricity generation. To reduce the jurisdiction's overall emissions, governments must prioritize cutting GHGs from electricity grids and other power sources – not just buildings.

The grid's "carbon intensity" refers to the extent that electricity and other power generation relies on combustion of fossil fuels (gas, oil, coal), relative to "clean" sources that do not emit GHGs (solar, wind, nuclear, hydropower, geothermal, and biofuels). Federal data and tools provide key information on the grid's carbon intensity. US-EPA maintains the Emissions & Generation Resources Integrated Database ("eGRID") and the Power Profiler tool (pictured below), which breaks down the "fuel mix" for electricity generation region-by-region across the U.S. (map below).



According to eGRID, the Pacific Northwest ("NWPP") has the "cleanest" grid in the lower 48 states. It is the only region reliant on a majority of clean fuels (primarily hydropower) to generate electricity. Even then, 41.1% of NWPP's electricity derives from fossil fuels. Every other grid region (except one in Alaska) relies predominantly on fossil fuels for electricity. For example, New York City's grid ("NYCW") depends almost entirely on natural gas combustion.[45]

Data for Selected eGRID Subregions
(Source: US-EPA Power Profiler)

eGRID Subregion	Includes	% Electricity Sourced to Fossil Fuels	% Electricity Sourced to Renewable Energy
NWPP	Pacific Northwest	41.1%	58%
CAMX	California	58.2%	41.8%
MROW	Minneapolis	54.7%	45.3%
HIMS	Honolulu	66.5%	33.5%
RMPA	Denver	60.3%	39.7%
ERCT	Texas	72%	28%
AZNM	Phoenix	78.7%	21.3%
NEWE	New England	82.5%	17.5%
SRSO	Atlanta	90.1%	9.9%
SRVC	Virginia, Carolinas	90.5%	9.5%
RCFW	Chicago, Milwaukee	92.1%	7.9%
RFCE	DC, Philadelphia	96.1%	3.9%
NYCW	New York City	99.4%	--

When a state or locality adopts a BPS to control building emissions it must also have other laws in place to cut emissions generated at the source of electrical power. Of course, building owners do not control the fuel mix that powers the electric grid, so for a jurisdiction to achieve its climate policy objectives, it must work with utilities to cut grid-based emissions and transition the community's power infrastructure away from fossil fuel combustion. The most onerous BPS mandates – with aggressive targets for the ultimate goal of "net zero emissions" buildings – will not solve the climate crisis unless the electric grid is on a comparable path to provide carbon-free power.

Questions for BPS policymakers:

- What is the BPS jurisdiction's eGRID subregion, designated by US-EPA?
- What is the relative "mix" of fossil fuels vs. clean power for the grid that provides electricity in the BPS jurisdiction, shown on US-EPA's "Power Profiler"? How heavily does the jurisdiction's grid rely on fossil fuel combustion?

BPS emissions targets usually aim to reduce how much natural gas, oil, or other fossil fuels are combusted on-site – within the structure itself and the property's boundaries – by a building's systems and occupants. On-site emissions can be reduced, for example, by retiring a gas-fired boiler or oil-fired furnace and installing an electric heat pump instead. Fuel switching in this manner – from natural gas to electric – would lower the fossil fuels that a building ***directly*** emits. Similarly, open air retail owners can reduce emissions by installing solar panels on rooftops

[45] NYCW's carbon intensity spiked due to the final closure in 2021 of a nuclear plant that served the region.

and in parking lots (for appropriate sites) to provide clean power for equipment that relies on fossil fuels. These direct emissions are known as "Scope 1 emissions" and they are generally controllable by building owners.

What owners cannot fully control are indirect "Scope 2 emissions," or emissions attributed to electricity used by building occupants, because these depend on the fuel sources combusted at a power plant that serves the region. Lowering Scope 1 emissions by installing an electric heat pump necessarily means the building's residential and business tenants need more electricity for the pump to operate. Using more electricity at the building may lower ***on-site*** emissions – but conversely generate greater Scope 2 emissions attributable to ***off-site*** fuel combustion at the source of the power plant (as EPA's Power Profiler depicts). Furthermore, jurisdictions may also require real estate owners to provide stations for electric vehicle charging – which can further drive-up electricity consumed within the building's boundaries and increase Scope 2 emissions.

Lowering Scope 1 ***direct*** emissions results in a "trade-off" that means greater Scope 2 ***indirect*** emissions from carbon intensive electricity grids. The BPS jurisdiction will not achieve its ultimate goal to reduce GHGs in the atmosphere by ramping down on Scope 1 at the building site, unless the power grid is also getting cleaner at the source to reduce Scope 2 impacts. If electricity used in zero- or low- emissions buildings comes from electric grids that predominantly burn fossil fuels, emissions are still occurring – they are just moved on a spreadsheet from the Scope 1 column over to the Scope 2 column. BPS policies should not simply institute GHG accounting practices that provide no overall emissions reductions. They must lower emissions ***inclusively***.

Questions for BPS policymakers:

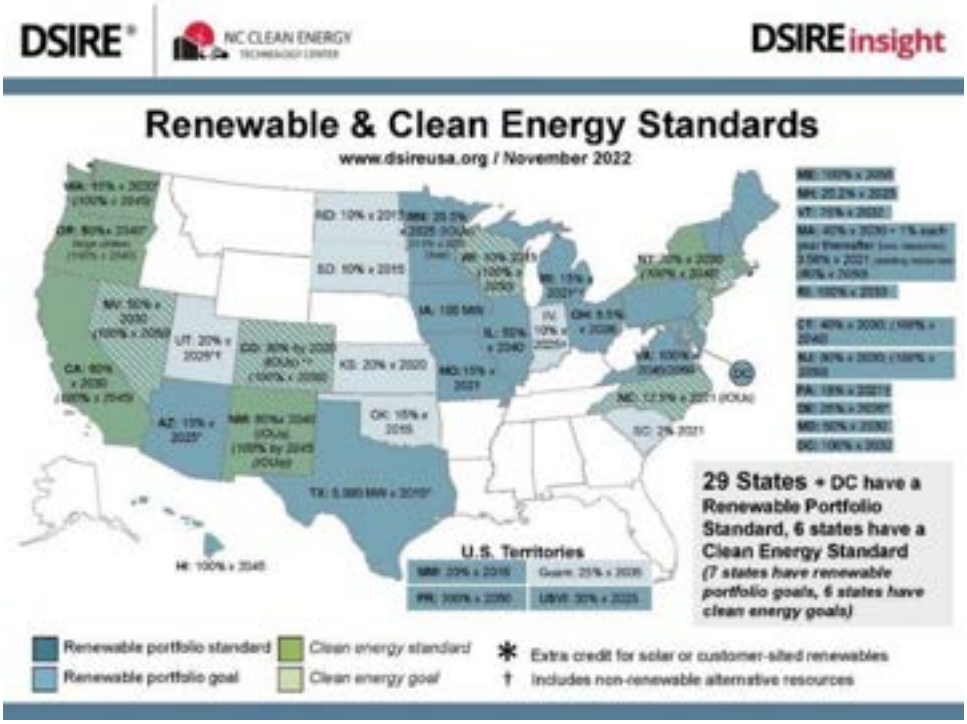
- Do BPS targets aim to reduce "direct" Scope 1 emissions at the building site – such as by favoring heat pumps and other building electrification components instead of equipment that uses gas or oil?
- Does the jurisdiction understand that reducing Scope 1 "direct" emissions results in higher electricity consumption – which in turn increases "indirect" Scope 2 emissions due to off-site electricity generation at the power plant source?
- How does the BPS jurisdiction address this Scope 1 versus Scope 2 "trade-off"?
- If a building misses a BPS emissions target, is it because the electric grid is too reliant on fossil fuels with the effect of increasing Scope 2 emissions from occupants' electricity use?

(14) Buildings Can't Fully Decarbonize Unless the Grid Also Decarbonizes – and Building Owners Can't Control the Latter

A jurisdiction may try to address the Scope 1 vs. Scope 2 "trade-off" through separate state laws known as renewable portfolio standards ("RPS"). These policies aim to reduce carbon emissions from electricity generation over time.

What BPS is to the buildings sector, RPS is to the electric power sector. Just as there is currently no federal BPS, there is no federal RPS. Most state-level RPS policies usually establish "targets" for electric power to rely increasingly on solar, wind, or other renewable sources in the coming years. The actual rate of grid decarbonization under RPS laws should reflect the rate of progress that buildings are expected to make under BPS laws.

Source: Database of State Incentives for Renewables and Efficiency (Dec. 2023)



RPS regimes represent political and policy choices made by legislators, energy regulatory commissions, and owners of power infrastructure. Decarbonizing the grid will require hundreds of billions of dollars from federal, state, local, taxpayer, utility customer, and private sector investments.[46] Making the grid cleaner will also likely drive-up electricity prices, a challenge for policymakers balancing the need to address climate change while keeping utility bill inflation in-check for families and businesses.[47] PJM Interconnection, the grid operator that supplies electricity for 13 states from Chicago to the Mid-Atlantic, estimates an eight-fold increase in contract prices it will pay to power generators based on bids it has received for wholesale electricity sourced increasingly to renewable energy. The wholesale price paid by PJM will translate into an additional $14.7 billion increase borne by retail customers at the household and business level.[48]

[46] A 2022 study by the National Renewable Energy Labs (NREL) concluded, "[d]ecarbonizing the power grid by 2035 could total $330 billion to $740 billion in additional power system costs, depending on restrictions on new transmission and other infrastructure development."
[47] *E.g.*, "States have big hopes for clean energy. Get ready to pay for it," *POLITICO* (Aug. 22, 2023).
[48] "Skyrocketing PJM Power Reflects Grid Troubles," *E&E News* (Aug. 1, 2024).

Meaningful emissions reductions will not occur from BPS laws alone. If megawatts of electricity sourced to fossil fuels are maintained or increased, then emissions reductions from buildings will be nullified and BPS mandates will have been for naught.[49]

Meeting the climate challenge depends heavily on the success of laws like RPS frameworks that increase renewable energy supplies for electricity. The policy and political challenges are considerable, but effective BPS policies to decarbonize buildings depend on demonstrable and quantifiable progress from RPS policies that move at an equivalent tempo to decarbonize electricity.

Questions for BPS policymakers:

- Does the BPS jurisdiction have a renewable portfolio standard (RPS) to decarbonize its electricity grid?
- How much does the jurisdiction think it will cost to decarbonize its electric grid under the RPS, and how does it plan to raise capital for investments to clean its power infrastructure?
- Is the RPS making progress quickly enough to reduce the grid's reliance on fossil fuels for electricity generation?
- Do the RPS's goals and target dates to decarbonize the electric grid correlate to the goals and target dates in a BPS to decarbonize buildings? Are plans for grid decarbonization and building decarbonization synchronized and proceeding at equivalent pace?

[49] As a former director of the White House National Economic Council (NEC) explained, "[t]he 20th-century utility model doesn't encourage … innovation. Instead, it defaults toward simply building more fossil-fuel-burning plants. As a result, consumers get a less reliable product at higher prices, and [grid] decarbonization takes a back seat." Brian Deese, "The Next Front in the War Against Climate Change," *The Atlantic* (May 24, 2024).

(15) If a BPS Makes Buildings Responsible for Off-Site Grid Emissions, Then Owners Must Have the Chance to Comply by Purchasing Off-Site Clean Energy

BPS mandates can overreach by saddling owners with responsibilities to control emissions from the power grid or other sources beyond the physical boundaries of their buildings. Those BPS frameworks must allow compliance by giving building owners opportunities to increase off-site clean energy supplies. Owners cannot control grid emissions, but at least they can control their investment decisions to help decarbonize the grid.

The Clean Energy Buyers Association (CEBA) assists policymakers and companies with clean energy purchases that reduce GHG impacts from buildings, the grid, and other sources that rely on fossil fuels. These market-based solutions can be relevant for BPS compliance purposes. If a building exceeds an emissions target, compliance must be permitted through off-site clean energy procurements that have the net effect to lower emissions overall so the building falls under or meets the target.

Many resources discuss and explain market-based clean energy procurement strategies. BPS policy advocates should gain an understanding of two strategies in particular: renewable energy certificates ("RECs") and "carbon offsets." US-EPA's fact sheet, "Offsets and RECs – What's the Difference?" provides a good summary.

RECs allow companies to choose green power for their electricity. These certificates mitigate Scope 2 emissions because they document electricity generation that is sourced to renewable energy, such as solar or wind power. The purchase of one REC supports 1,000 kilowatt hours (or one megawatt hour) of renewable electricity development. According to federal data, the average U.S. office building consumes 234,000 kilowatt hours of electricity per year.[50] Also assume that the electricity is sourced to a grid that combusts mostly natural gas. Generally, the purchase of 234 RECs – that invests in 1,000 new kilowatt hours from an offsite solar or wind farm – would mitigate the building's annual Scope 2 emissions attributable to its 234,000 kilowatt hours.

By comparison, one carbon offset is equal to one metric tonne of CO2 (or CO2 equivalent). Carbon offsets can include reforestation projects that plant trees, or projects that capture or store carbon to prevent its release to the atmosphere. These measures may offset Scope 1 direct emissions, such as from the fossil fuels combusted on-site by a building's furnaces and boilers. They can also offset so-called "Scope 3" emissions, or emissions from sources in a company's supply chain over which the company lacks control. Emissions from employee travel or commuting, or "embodied" emissions that occur during the manufacturing of building products, are examples of Scope 3 emissions. Assuming a company measures or estimates its supply chain emissions, it may decide to reduce Scope 3 impacts by purchasing carbon offsets.

Market-Based Measure	Emissions	Unit	Quality Control Criteria
RECs	Address Scope 2 emissions only	1 REC = 1000 kilowatt hours = (KWh) = One megawatt hour (MWh) of electricity	US-EPA Green Power Partnership Requirements
Carbon Offsets	Address Scope 1 or Scope 3 emissions	1 offset = 1 metric tonne of CO2 or equivalent	White House Carbon Markets Joint Policy Statement and Principles Carbon Offset Guidance from the U.S. Commodity Futures Trading Comm'n

RECs – and especially carbon offsets – are not universally endorsed by environmental organizations. Their position is unpersuasive when regulators require reductions of indirect Scope 2 (or Scope 3) emissions from sources that regulated companies cannot control or immediately influence. If BPS and other frameworks impose numeric

[50] Commercial Building Energy Consumption Survey (CBECS) 2018, Table C14, "Electricity Consumption and Expenditure Intensities 2018)" (released Dec. 2022). This table also provides annual electricity consumption statistics for other property types.

limits on buildings to reduce emissions from off-site sources, then it is only fair to allow owners to pursue off-site climate mitigation through purchases of RECs and offsets.

High-quality RECs and carbon offsets should be subject to principles that ensure their integrity to create new renewable energy supplies, and demonstrably capture or avoid carbon emissions. US- EPA's Green Power Partnership sets forth guidelines for "Credible Claims" that endorse certified and authenticated RECs. Likewise, the Biden-Harris administration released a Joint Policy Statement and Principles supporting voluntary carbon markets as necessary to reach climate policy goals through private sector investments. As the White House explained in their principles, carbon offsets can "channel a significant amount of private capital to support the energy transition and combat climate change, with the right incentives and guard rails in place."

Questions for BPS policymakers:

- If a BPS establishes targets that effectively require buildings to control emissions from the grid or other off-site sources, does it allow compliance through the purchase of renewable energy certificates (RECs) and/or carbon offsets? If no, why not?
- Does the BPS jurisdiction adopt US-EPA's principles from the Green Power Partnership to support credible claims for the purchase and sale of high-quality RECs?
- Does the BPS jurisdiction adopt the Biden-Harris Administration's joint principles to support viable markets for carbon offsets that can result in tons of emissions reductions?

Some jurisdictions allow purchases of RECs for BPS compliance purposes but may place undue restrictions on ***where*** that clean power must be created. They might limit RECs to solar arrays, wind farms, or other carbon-free power generated within the state, city, or grid region where the building is located. Stakeholders must check these regulatory impulses. The BPS jurisdiction at issue might not have adequate supplies of RECs available for building owners to purchase because the market for these certificates can be highly competitive. Utilities purchase RECs to meet their own emissions limits under from RPS laws (see Point 14, above), just as building owners may consider RECs to comply with BPS laws. Electric utilities and grid operators might procure RECs in such large quantities to mitigate their own carbon emissions that little or nothing remains for building owners to buy in the grid region or other geography at issue.

Climate change is a global problem because GHG emissions know no boundaries. Their impacts are atmospheric and reach beyond regional, state, or national borders. In this regard, building owners' investments in renewable energy are significant ***wherever*** additional, demonstrable sources of clean power are located. As long as RECs, offsets, and related measures meet federal quality control principles discussed above, BPS jurisdictions must avoid encumbering these market-based solutions with unwarranted geographic limitations.

Questions for BPS policymakers:

- Does the BPS jurisdiction avoid restricting purchases of RECs and other market-based climate solutions to a specific geography where the building is located?
- If the jurisdiction imposes such a geographic restriction, does it assure that sufficient quantities of RECs are available for building owners to procure within the region at issue?

(16) Jurisdictions Should Explain the "Emissions Factors" They Use to Convert Fuel Sources to Emissions

Various fuel sources do not have the same impact on climate change. Burning coal, for example, generates more GHG emissions and has greater "global warming potential" compared to natural gas. Similarly, electricity generation is not equal in its carbon impact. Emissions from electricity vary by U.S. region because segments of the nation's grid depend more heavily on fossil fuels than others (as discussed in Point 13).

Policymakers account for the differing environmental impacts attributed to fuels through a numeric gage known as an "emissions factor" (aka, "emissions coefficient"). These values are key to emissions targets in BPS laws and regulations. Wind, solar, and other zero emissions sources have a factor of "0" or close to it. Otherwise, experts can differ in how they derive these measures. The federal government provides the most well-accepted, standard coefficients. US-EPA's GHG Emissions Factor Hub is widely consulted by legislators, regulators, academics, and companies that set voluntary corporate emissions inventories.

Sample US-EPA Emissions Factors (Table 1, Stationary Combustion) (last modified June 5, 2024)

Fuel Type	Emissions Factor (kg CO2 per mmBtu)	More Emissions ↓ Less Emissions
Bituminous Coal	93.28	
Propane (petroleum-based)	62.86	
Fuel Gas	59.00	
Natural Gas	53.06	

When it comes to BPS targets, EPA's factors for "stationary combustion" are relevant to convert the "direct" Scope 1 emissions that derive from boilers, furnaces, ovens, and other equipment that combust gas, oil, propane, or other fossil fuels for heating, cooking, and other building functions. States and cities should default to EPA's factors for stationary sources in buildings because they provide the most common standard – or otherwise explain why they use a different coefficient.

Question for BPS policymakers:

- Does the BPS jurisdiction rely on US-EPA's standard factors to set emissions targets relative to fossil fuels combusted in boilers, furnaces, ovens, and other building equipment? If no, what factors does the BPS use to measure emissions from stationary building sources?

Things get a bit more complicated regarding factors for electricity. EPA provides default electricity coefficients for specific eGRID subregions. A BPS jurisdiction should generally allow the "location-based" electricity factor provided by US-EPA for its corresponding eGRID subregion (with an important caveat discussed immediately below).

Sample US-EPA eGRID "Location-Based" Factors (at Table 6) (last modified June 5, 2024)

eGRID Subregion	Includes	CO2 Factor (lb CO2 / MWh)	More Emissions
RMPA	Denver	1,124.9	
RCFW	Chicago, Milwaukee	1000.1	
SRSO	Atlanta	893.3	
NYCW	New York City	885.2	
ERCT	Texas	771.1	
RFCE	DC, Philadelphia	657.4	
SRVC	Virginia, Carolinas	623.0	
NWPP	Pacific Northwest	602.1	
NEWE	New England	536.4	Less Emissions

To ensure that BPS laws evaluate emissions reduction improvements that building owners can control, states and cities must regularly update their implementing rules to reflect eGRID factors, so they are aligned with any progress on the electric grid toward decarbonization. Electricity coefficients must be reviewed and revised at regular intervals to inform imminent and future BPS performance levels. If jurisdictions fail to take this key step, they will shoulder real estate owners with excessive burdens to reduce emissions without accounting for the nature of the offsite fuel mix that provides electricity consumed by tenants, businesses, and other building occupants.

Aside from eGRID "default" factors, as discussed in Point 15 (above), building owners may purchase RECs to mitigate their Scope 2 emissions from electricity use. Owners may also enter into power purchase agreements (PPAs), which are contractual obligations to purchase electricity from a specific generating facility located at, near, or remotely from the building site. RECs can be "bundled" with a PPA, or "unbundled" where the certificates are purchased separately from electricity. In any event, these arrangements to purchase electricity from a specific source will typically have a "market-based" electricity emissions factor attached to that procurement. As US-EPA explains, purchased RECs will have an "emissions factor … based on the specific source that the certificate represents," and with a PPA, "the contract itself carries the emissions factor associated with the generation facility."[51]

If a building owner purchases RECs, the utility or power producer selling the certificates will supply the owner with a factor for that specific electricity generation. Accordingly, for purposes of an emissions target in a BPS law, the jurisdiction should provide the option for building owners to use a customized "market-based" coefficient to calculate emissions from specific sources of electricity they procure.

Factors that calculate emissions from steam generation warrant consideration. A number of cities and specific facilities in northern climates (e.g., hospitals, college campuses) rely on networks of pipes and tunnels that deliver steam to heat (and sometimes cool) buildings.[52] If a BPS jurisdiction relies on district steam, the system operator should provide a specific conversion steam factor for purposes of any emissions target.

[51] US-EPA, Center for Corporate Climate Leadership, *Greenhouse Gas Inventory Guidance – Indirect Emissions from Purchased Electricity*, § 3.3.2, "Market-Based Electricity Emission Factors" (Dec. 2023).
[52] International District Energy Association website, "District Heating."

Questions for BPS policymakers:

- Does the BPS jurisdiction use "location-based" eGRID carbon factors as the *default* coefficients for building owners to calculate emissions from electricity use? If no, what default factors for electricity emissions does the jurisdiction use?
- Does the BPS jurisdiction regularly update their laws to adopt the latest eGRID default coefficients to ensure they reflect any progress made by the electric grid to decarbonize?
- Does the BPS jurisdiction allow an *option* to use "market-based" emissions factors that apply to specific contractual arrangements for electricity procured by a building owner from an electricity provider?
- If the jurisdiction relies on steam infrastructure to heat its buildings, has it coordinated with the operator of the district energy system to provide a factor for steam generation?

(17) Jurisdictions Should Prepare Compliance Resources Showing What Kinds of Building Projects are Necessary to Meet Current and Future BPS Targets

State and local bodies must assure they have adequate capacity for detailed analyses of building technologies, climate science, emissions calculations, data evaluation, and electric grid characteristics needed to implement a BPS law. Enforcement and implementation can present significant technical and staffing challenges for local regulatory agencies. A US-DOE guidebook for BPS implementation explains:

> "The startup costs and ongoing work of managing a BPS can easily overwhelm jurisdictions that don't plan for it .... Otherwise, the resulting bottlenecks and confusion could inhibit the goals of the jurisdiction, in addition to damaging public perception and political support for these types of policies."[53]

US-DOE's guidebook further cautions: ***"Jurisdictions must consider whether they have the staff, software, and funding (both startup and operational) to manage the policy long-term."*** This caveat especially pertains to resources showing how owners can comply with BPS mandates.

Achieving and enforcing BPS performance levels are especially complex endeavors. They depend on regulatory standards that reach well into the future and shift over time, demanding compliance with building performance targets that ramp-up and become increasingly stringent in the coming decades. BPS policymakers have a responsibility to show their future targets are not abstract "pie in the sky" aspirations. States and localities must provide resources explaining how performance levels are actually attainable and practicable.

The table below depicts the fluctuating nature of various BPS mandates enacted to date. A regulated owner may need to comply with 2025 emissions levels but cannot stop there. They must also plan continual capital spending on their assets to meet 2030 levels, 2040 levels, and beyond. A building that achieves an initial target may fall out of compliance as deadlines for higher standards govern in later years.

	GHG Reduction Goals	
	Initial Goal	**Long-Term Goal**
Colorado	26% by 2025; 50% by 2030	90% by 2050
District of Columbia	45% by 2030	95% by 2050
Maryland	60% by 2031	Net Zero by 2045
Oregon	45% by 2035	80% by 2050
Washington State	--	95% by 2050
Boston, MA	50% by 2030	Net Zero by 2050
Chula Vista, CA	57% by 2030	Net Zero by 2045
Denver, CO	40% by 2025; 65% by 2030	100% by 2040
Montgomery County, MD	80% by 2027	100% by 2035
New York, NY	40% by 2030	85% by 2050
Reno, NV	28% by 2025	--
St. Louis, MO	25% by 2020	80% by 2050
Seattle, WA	58% by 2030	Net Zero by 2050

Source: **Pacific Northwest National Lab, US-DOE**

What kinds of adjusting investment and technology scenarios does Denver suggest will be necessary in a multifamily, office, or hotel asset, to reduce emissions 40% by 2025, then 65% by 2030 – and eventually to eliminate

[53] US-DOE, Office of Energy Efficiency and Renewable Energy, *Implementing a Building Performance Standard: A Guide to Mitigating Risk in Your Jurisdiction* (Nov. 2023).

all emissions by 2040? Can policymakers in Montgomery County, MD identify compliance methods to show how buildings might achieve 60% emissions reductions by 2031, on the path to "net zero" by 2045? Do BPS jurisdictions offer any resources to explain how building capital expenditures must iterate over time to comply with increasingly stringent performance targets?

Officials who assume the burden of BPS enactment also bear accountability to provide emissions and energy modeling platforms and protocols that forecast compliance. Jurisdictions should provide examples of packages of technologies that a building might deploy to meet current and future targets – and estimate how much it will cost.

Property owners should not have to guess, now or later, how to avoid BPS violations. State and local policymakers are obliged to explain how regulated owners should project, plan, and budget for future compliance under performance standards that become increasingly difficult to meet.

Questions for BPS policymakers:

- Does the jurisdiction have the workforce, software, data, and agency capacity it needs to enforce a BPS?
- Does the jurisdiction have compliance assistance guides to support owners so they can plan for building capital outlays to meet current and future performance levels?
- If the jurisdiction does not provide forward-looking compliance resources, then why is it setting building regulatory targets decades into the future?

(18) BPS Laws Must Establish Fair and Effective Remedies to Encourage Compliance – Not Punishment

The uncertainties and risks inherent to future BPS compliance should inform how jurisdictions determine violations and impose penalties. From the perspective of many regulated building owners, their obligations to meet these targets are not clear cut or predictable.

States and localities should acknowledge these difficulties by incorporating "fair notice" and "opportunity to cure" provisions in their laws. BPS enforcers should provide advance written notice that a particular building may be non-compliant and give owners a reasonable chance to correct the situation before imposing fines or other punishment.

Regulated building owners must have the ability to make the operational and investment decisions necessary to attain BPS levels. This is an issue especially in the context of emissions reduction targets. As explained throughout this primer, progress toward building decarbonization must align with grid decarbonization. Real estate owners do not control the offsite fuel sources of electricity consumed by their tenants, businesses, and other occupants. Accordingly, no jurisdiction should deem a building in violation of a BPS target due to GHG emissions caused directly by the electricity grid. If a building owner is notified of a possible BPS infraction, the jurisdiction must provide a fair and reasonable process allowing the owner to avoid liability upon showing that the reason for target non-compliance is because the electric grid serving the asset relies too heavily on fossil fuel combustion.

If monetary penalties ***are*** levied, they should not be a disguised tax deposited in the jurisdiction's general revenue fund. Rather, states and localities should channel any fines to government budget accounts established for the specific purpose to support BPS compliance – and help owners avoid infractions altogether.

BPS laws can be so technical, onerous, and expensive that sometimes the costs to pay a fine are less than the costs to retrofit an asset to bring it into compliance. For example, a study by the New York City Mayor's Office assessed the ability of owners to attain the standards of Local Law 97 for "government operations" and the "even stricter emission reduction targets … for private sector buildings."[54] New York City concluded the following about its own BPS law:

> "***The cost of paying penalties is far less than the cost of compliance.*** These commercial buildings might decide to only do low-effort energy efficiency work, which will pay for itself over time."[55]

This is the wrong message for any BPS jurisdiction to send to its regulated community of building stakeholders. It should not be easier to just write a check and pay a fine as opposed to achieving the law's emissions reduction goals. Such an irrational outcome should motivate requests that monetary penalties must be directed to a special purpose fund to help buildings underwrite investments necessary to achieve BPS compliance.

[54] The City of New York, Mayor Eric Adams, *Getting 97 Done – A Plan to Mobilize New York City's Large Buildings to Fight Climate Change* (Sept, 2023), at 2.
[55] *Id.* at 15.

Questions for BPS policymakers:

- Does the jurisdiction provide advanced written notice to a real estate owner that a building may not meet a BPS performance target, with a fair and reasonable opportunity to cure the issue and bring the asset into compliance?
- Does the jurisdiction allow a process for building owners to eliminate potential BPS violations by explaining the infraction is not caused by matters within an owner's control, but is rather due to the carbon intensity of the offsite electricity grid that relies heavily on fossil fuel combustion?
- Does the jurisdiction deposit BPS fines into a special account, earmarked for the purpose of helping owners meet current and future BPS targets?
- Does paying a fine cost less than underwriting the costs for a project that a building must pursue to achieve BPS compliance? If yes, how does the jurisdiction justify this scenario and will it re-adjust its performance levels to favor compliance as opposed to penalties?

(19) Jurisdictions Should Allow BPS Compliance Pathways Based on Federal EPA and DOE Standards

If anything is clear from reading this primer, it's that BPS laws are highly technical and complicated measures to craft and implement. Understanding and evaluating all of the issues policymakers must consider is a challenging, lengthy, and data-intensive endeavor.

The U.S. government has already done a lot of the heavy-lifting. US-EPA and US-DOE have developed standards, metrics, data sources, and other tools to calculate energy use and emissions in commercial and residential buildings. There is no compelling reason for BPS policymakers to reinvent the wheel. A state or locality intent on enforcing a BPS law should turn to the federal agencies' programs and use those standards backed by the U.S. government.

Federal programs that merit attention are US-EPA's ENERGY STAR "Next Gen" certification for low-carbon commercial and multifamily buildings, and US-DOE's "National Definition of a Zero Emissions Building" ("ZEB"). As with BPS frameworks, both NextGen criteria and the ZEB definition set energy efficiency and emissions performance levels for buildings. US-EPA's and US-DOE's standards are voluntary recognition efforts at the federal level developed for the nation's highest performing buildings in their asset classes.

US Government Policy	Energy Efficiency	Renewable Energy Use	On-Site Emissions Reductions
EPA's NextGen	ENERGY STAR Score >75 (Top 25%)	30% of energy use (either on-site measures or through RECs)	GHG emission intensity target, based on building's specific climate zone/heating degree days
DOE's ZEB	ENERGY STAR Score >75 (Top 25%)	100% of energy use (either on-site measures or through RECs)	No on-site emissions allowed

Any "top of class" building that is Next Gen certified or ZEB compliant should meet state or local BPS mandates. These federal programs reflect the best performing real estate assets in the United States as recognized by the federal government. If a Next Gen or ZEB building is not also BPS compliant, then state and local performance levels are too strict. Moreover, US-EPA's and US-DOE's programs for "class leaders" are relatively simpler and easier to follow compared to the pages of laws and complicated regulations and calculations that accompany most BPS laws.

States and localities have a responsibility to simplify the "patchwork" of BPS laws discussed at the beginning of this policy guide. At a minimum, they can help achieve a uniform, rational system of performance mandates by allowing optional BPS compliance routes based on NextGen or ZEB criteria.

Questions for BPS policymakers:

- Does the BPS law allow a compliance option for buildings that are US-EPA ENERGY STAR "NextGen" certified? If no, why not?
- Does the BPS law allow a compliance option for buildings that meet US-DOE's National Definition of a Zero Emissions Building ("ZEB")? If no, why not?

(20) Jurisdictions Must Evaluate and Offer Actual, not Theoretical, Incentives to Help Buildings Comply with BPS Targets

Local, state, and federal incentives may help building owners defray the high costs of projects needed to achieve performance mandates. Policymakers usually tout the availability of rebates, low-interest loans, and tax incentives to assist BPS compliance. However, "availability" does not mean these taxpayer-funded programs are ample, broadly accessible, or easy to claim. For example:

- ***Equipment Rebates***: Many utilities offer rebates for the purchase and installation of energy efficient equipment. The DSIRE website and EPA's ENERGY STAR website identify commercial rebate opportunities across the country. Small surcharges on customers' utility bills typically fund these programs. However, demand usually eclipses available resources and incentive dollars frequently run out. To date, rebate programs have not provided deep retrofit financing opportunities at such a scale to support systemic BPS compliance.

- ***Commercial Property Assessed Clean Energy (C-PACE) Loans:*** Many jurisdictions have authority to issue low-interest C-PACE loans, as the DSIRE website shows. C-PACE programs can help finance retrofits through loans secured by a tax lien on the underlying building. The tax lien occupies a "senior position" relative to existing debt on the asset, so it may be difficult to obtain consent from a bank that already has a prime collateral interest on the property to secure a pre- existing mortgage. It is possible to obtain consent from a "first in time" mortgage lender to allow a subsequent C-PACE lien on a given asset, but the process is transaction-specific, frictional, and time consuming.

- ***Federal Tax Incentives:*** The landmark *Inflation Reduction Act* passed by Congress in 2022 revised the federal tax code to create and revise dozens of credits and deductions to spur private investments in clean energy projects. In the BPS context, the most relevant incentives are the 179D tax deduction for energy efficient commercial and multifamily buildings, and the 45L tax credit for energy efficient new homes and significant rehabs.[56] 179D and 45L require key statutory revisions to make them more broadly usable for the U.S. real estate industry.[57] For example, neither of these incentives can be optimally used by real estate investment trusts (REITs) and other property owners with limited appetite to benefit from tax credits or deductions. Improvements by Congress to the federal tax code, allowing private sector owners to "allocate" 179D and "transfer" 45L to unrelated third parties, would have a major impact to spur energy efficiency investments in U.S. buildings.[58] In their current form, however, these tax incentives will not make a significant dent to help finance all of the private sector commercial and multifamily retrofits subject to BPS regulations.

- ***Property Tax Abatements:*** An underutilized but potentially effective financial support strategy is building tax abatements covering the amount of project costs necessary to meet performance targets. Enacting the laws to create property tax abatements is within the authority of the same jurisdictions that promulgate BPS regimes, and each measure should be enacted at the same time. Tax abatements mean less revenue to government coffers to pay for critical government services. However, if the BPS jurisdiction intends to address climate change with a local focus on the buildings in its borders, then tax abatement strategies are fair regional responses to a global problem and merit strong consideration.

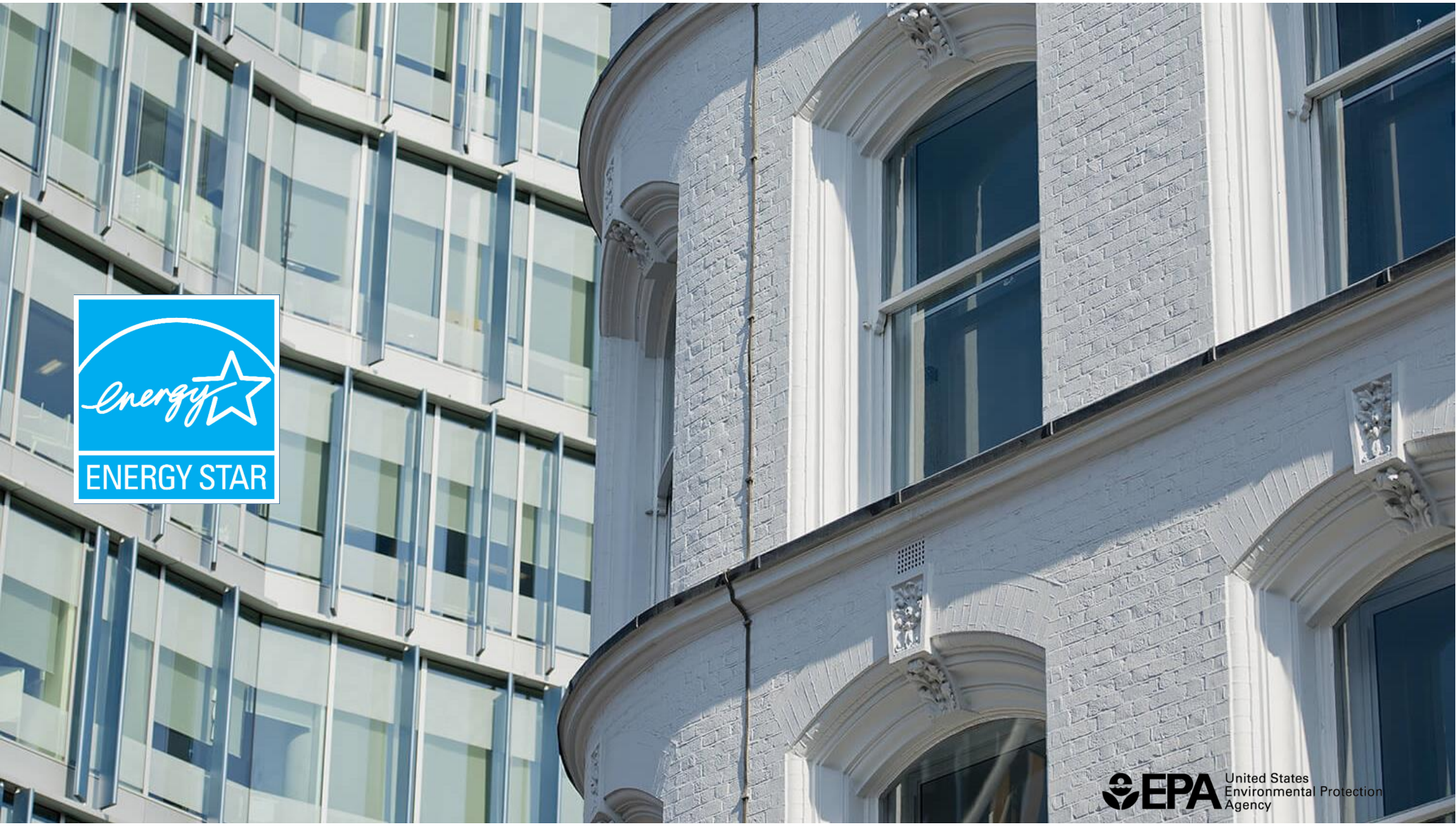
Jurisdictions that mandate expensive building performance requirements should understand the extent to which rebates, C-PACE loans, tax credits, property tax abatements, and other related incentives are actually available and used in the marketplace. BPS policymakers must undertake a realistic assessment of how many building owners in their jurisdictions have actually claimed "green building" incentives – and commit to policy improvements to make these financial programs more accessible for real estate assets.

[56] See The Real Estate Roundtable, Fact Sheet, *Inflation Reduction Act of 2022 – Clean Energy Tax Incentives Relevant to U.S. Real Estate* (July 31, 2023).
[57] See letter from The Real Estate Roundtable to U.S. Department of the Treasury and U.S. Internal Revenue Service (Oct. 30, 2023).
[58] *Id.* (RER letter advocating for legislative changes to 26 U.S.C. § 6418 ["transfers"] and § 179D(d)(3) ["allocation"] allowing private sector real estate owners to access the 45L credit and 179D deduction, respectively).

Questions for BPS policymakers:

- Has the BPS jurisdiction surveyed local, state, and federal incentives for building retrofit projects that improve energy efficiency and lower emissions?
- Does the BPS jurisdiction merely list *potential* financial programs that may be available – or does it provide *actual* data on building owners that have in fact accessed low-interest loans, rebates, tax credits and other incentives to help finance retrofit expenses?
- Does the jurisdiction have a plan to advocate for policy changes that will make building financial incentives more usable and accessible for property owners trying to comply with BPS performance levels?

# # #


energy
ENERGY STAR
EPA
United States
Environmental Protection
Agency

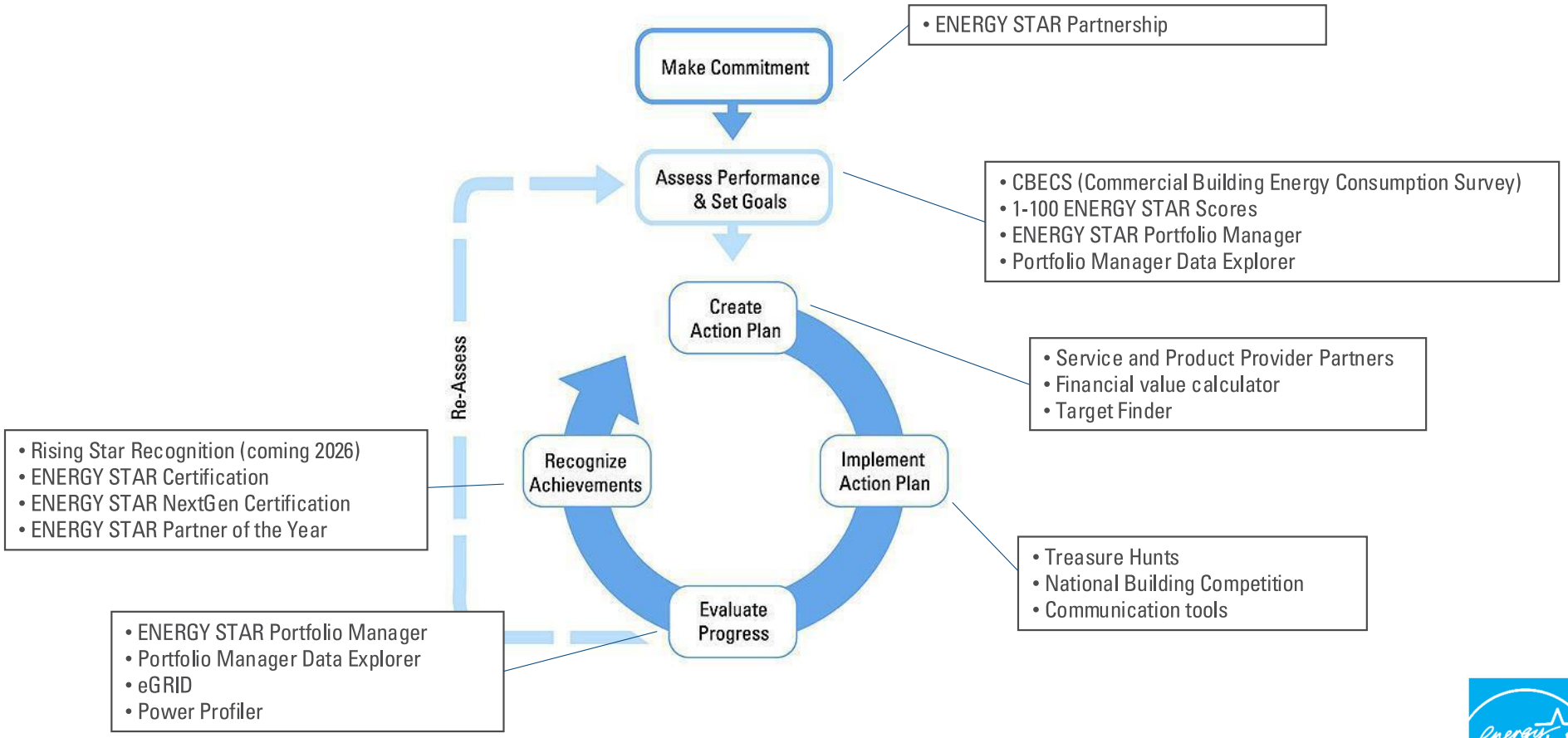
Proven Strategy to Move the Market Forward

- ENERGY STAR developed and implements a proven strategy borne out over decades of experience.
- Each step of the strategy is supported by tools and resources available to all building owners free-of-charge.
- The tools and resources equip organizations to continuously pursue efficiency and chart a path toward zero emissions buildings.

Creating a Standardized Framework

- A standardized framework enables consistent, comparable measurement, evaluation, and recognition of performance across organizations and buildings.
- It also provides a foundation for use by organizations of all types to leverage in implementing their energy efficiency programs.
- All of ENERGY STAR's tools and resources work in tandem to provide this standardized framework.

ENERGY STAR Guidelines for Energy Management – A Standardized Framework for Continuous Improvement



www.energystar.gov/guidelines

ENERGY STAR® Portfolio Manager®

Free. Online. Secure.

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ENERGY STAR® Portfolio Manager®

Management Tool

- Assess whole building energy use, water use, waste generation, emissions
- Track changes in energy, water, waste, emissions, and cost over time
- Track green power purchases
- Create custom reports
- Share/report data with others
- Apply for ENERGY STAR recognition

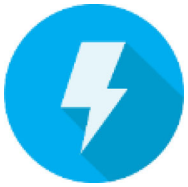
COMING IN 2026 - Refrigerant tracking and emissions forecasting!!!

Providing Actionable Information

- Building owners need information that is easy to understand and linked to actions.
- Standardized indicators of performance help to assess where the greatest opportunities lie.
- EPA tools provide building owners with insights into how their performance compares with others, and how much room there is for improvement. For example:
  - Standardized EUI and other metrics in Portfolio Manager
  - ENERGY STAR 1-100 Scores/CBECS
  - Portfolio Manager Data Explorer
  - eGRID/Power Profiler

ENERGY STAR® Portfolio Manager®

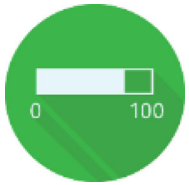
Hundreds of metrics, including:



Energy use
Source, site, weather normalized, demand

Water use
Water use intensity, Water Score (for Multifamily)

Waste & Materials
Waste intensity, diversion rate



1-100 ENERGY STAR score

GHG emissions
Indirect, direct, total, avoided

ENERGY STAR

ENERGY STAR® Portfolio Manager®

Emissions Estimation

- In Portfolio Manager today
  - Annual "location-based" estimates.
  - Calculations rely on EPA's Emission Factors Hub (which includes eGRID factors), updated annually.
- Coming later in 2025
  - Annual "market-based" estimates, which reflect green power purchases
- Coming in 2026
  - Future Estimates: Based on a building's projections for efficiency improvement, changes in fuel mix, and changes in emissions factors.
  - Refrigerant Use and Emissions: Refrigerant added; leakage rate; refrigerant cost. Trackable separately for HVAC, refrigeration, other uses.

The 1–100 ENERGY STAR Score

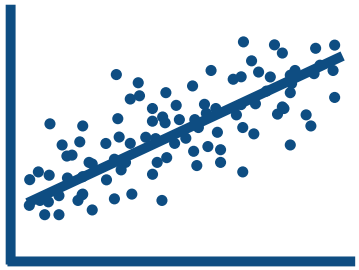
One simple number understood by ALL stakeholders.

Developing a 1–100 ENERGY STAR Score

Nationally representative survey

Data analysis

Statistical modeling



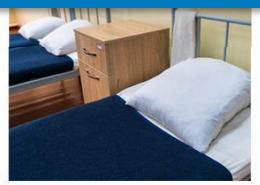
Comparison between actual energy data and the modeled estimate

ENERGY STAR

Property types with 1-100 ENERGY STAR scores

Scores based on CBECS data


Bank Branch


Barracks


Courthouses


Distribution Centers


Financial Offices


Hotels

K-12 Schools


Office Buildings


Residence Hall/Dormitory


Retail Stores


Supermarkets


Warehouses


Wholesale club/ Supercenters


Worship Facilities

Scores based on other survey data


Convenience Stores


Data Centers


Hospitals

Medical Offices


Multifamily Housing


Senior Living Communities


Single-Family Homes


Vehicle Dealerships

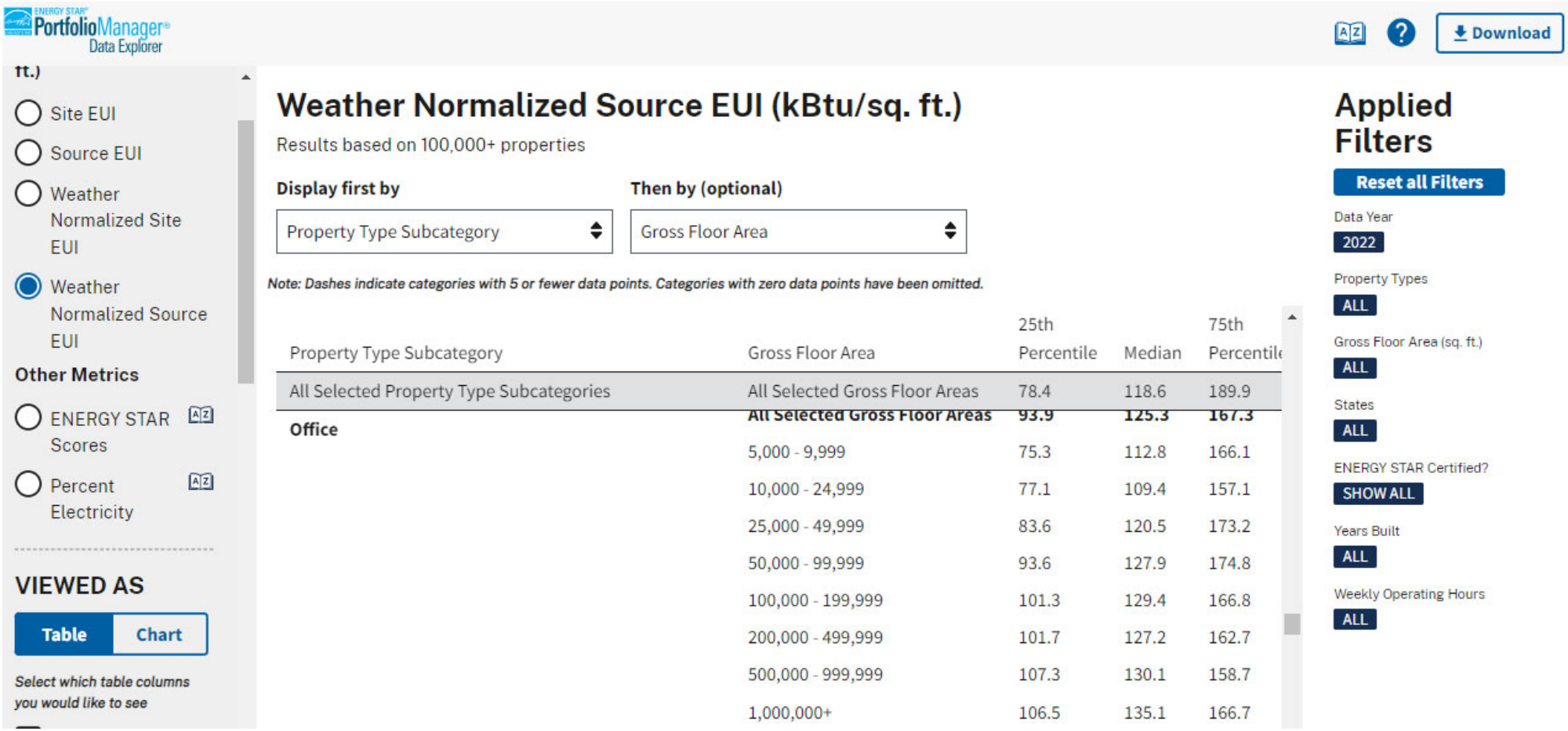

Wastewater Treatment Plants

Portfolio Manager Data Explorer

- Dive into energy use data from over 150,000 U.S. commercial and multifamily properties.
- Explore energy use intensities, ENERGY STAR scores, and percent electricity across a wide range of property types.
- Water use coming Spring 2025!!

www.energystar.gov/dataexplorer

Portfolio Manager Data Explorer



What is eGRID ?

"The Emissions & Generation Resource Integrated Database (eGRID) is a comprehensive source of data from EPA's Clean Air Power Sector Programs on the environmental characteristics of almost all electric power generated in the United States.

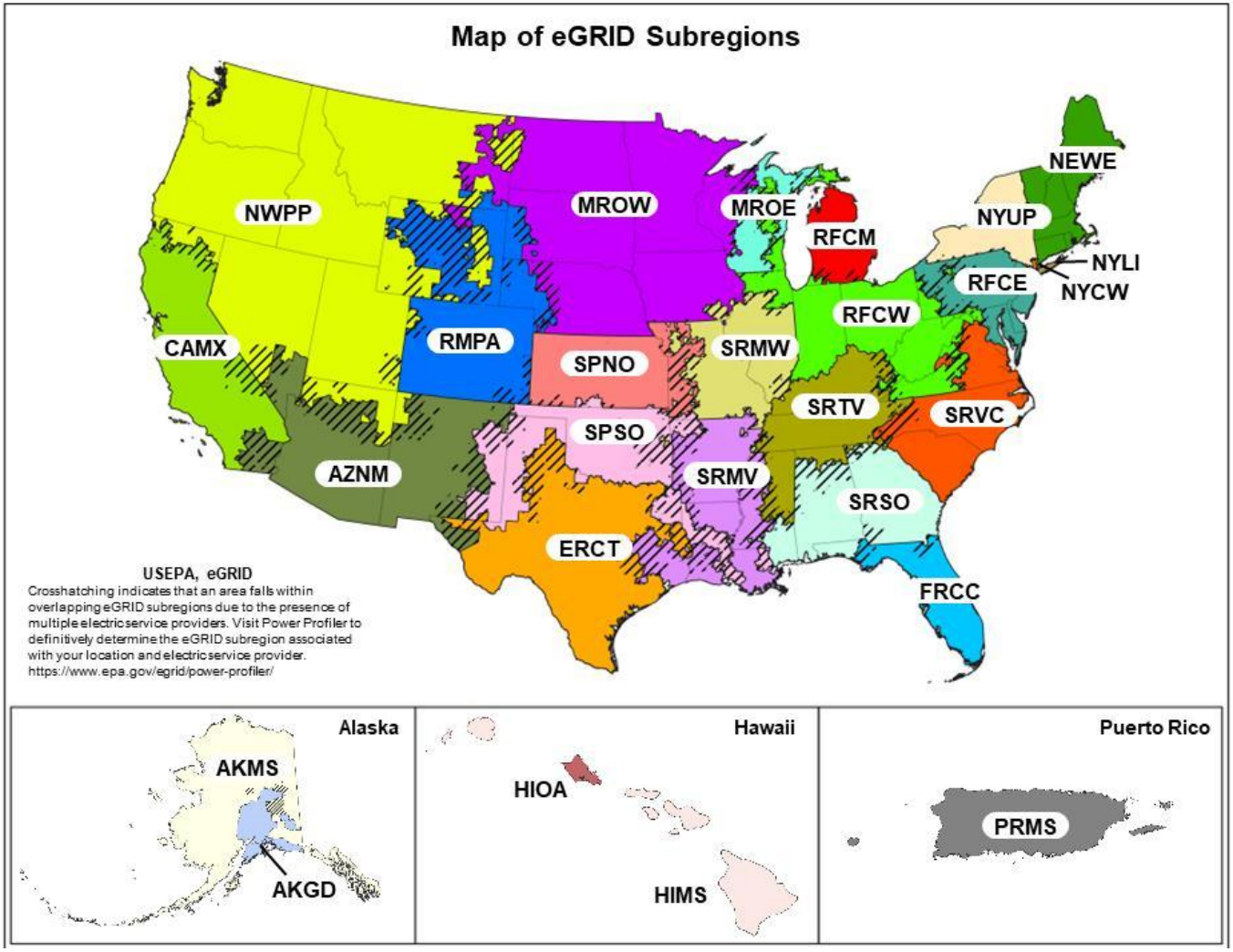
The data includes emissions, emission rates, generation, heat input, resource mix, and many other attributes. eGRID is typically used for greenhouse gas registries and inventories, carbon footprints, consumer information disclosure, emission inventories and standards, power market changes, and avoided emission estimates."

History

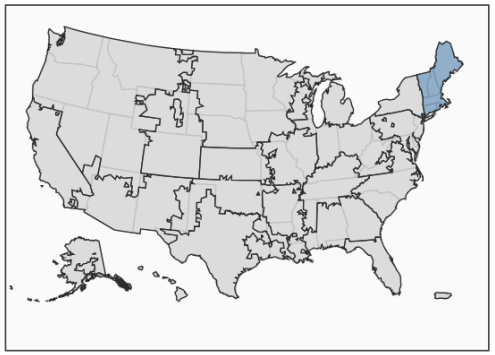
- First released in 1998 (with 1996 data)
- Current eGRID2023 is the 18th edition, released January 15, 2025

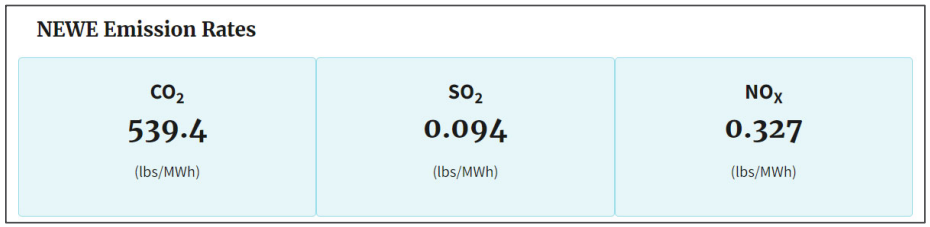
Production Timeline

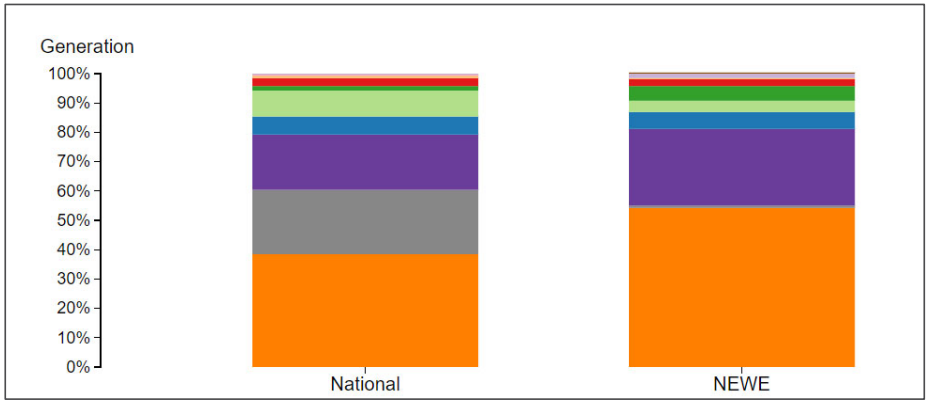
- About a year wait; eGRID2024 will be released in January 2026
- EIA data is finalized in September of following year
  - EIA 2024 data will be released in Sept 2025
  - Approximately 4 months for production


Map of eGRID Subregions
NWPP
MROW
MROE
NEWE
NYUP
RFCM
NYLI
RFCE
NYCW
RFCW
CAMX
RMPA
SPNO
SRMW
SRTV
SRVC
SPSO
AZNM
SRMV
SRSO
ERCT
FRCC
USEPA, eGRID
Crosshatching indicates that an area falls within overlapping eGRID subregions due to the presence of multiple electric service providers. Visit Power Profiler to definitively determine the eGRID subregion associated with your location and electric service provider.
https://www.epa.gov/egrid/power-profiler/
Alaska
AKMS
AKGD
Hawaii
HIOA
HIMS
Puerto Rico
PRMS

EPA's Power Profiler Tool







- Based on eGRID
- Enter your community's Zip Code to see your region's fuel mix and emission rates
- Compare your fuel mix and emission rates to other regions or national average

	Coal	Oil	Gas	Nuclear	Hydro	Biomass	Wind	Solar	Geothermal	Other Fossil	Other Unknown
National	21.9 %	0.6 %	38.4 %	18.9 %	6 %	1.3 %	9.2 %	2.8 %	0.4 %	0.5 %	0 %
NEWE	0.6 %	0.2 %	54.3 %	26.3 %	5.7 %	5.2 %	3.7 %	2.4 %	0 %	1.7 %	0.1 %

Motivating Market Leaders (and Others) with Recognition

- Rising Star

- Improvement against your own baseline to motivate improvement at all performance levels.
- Data Source: your energy data over time.
- Recognizes % improvement, not top performance.

- Top energy performance measured against similar buildings.
- Data Source: CBECS and other surveys.
- Available for building types with representative survey data.

- Top energy and on-site emissions performance, measured against similar buildings, plus use of renewable energy.
- Data Sources: CBECS, other surveys, and ENERGY STAR certified buildings.
- Available for building types with representative survey data.

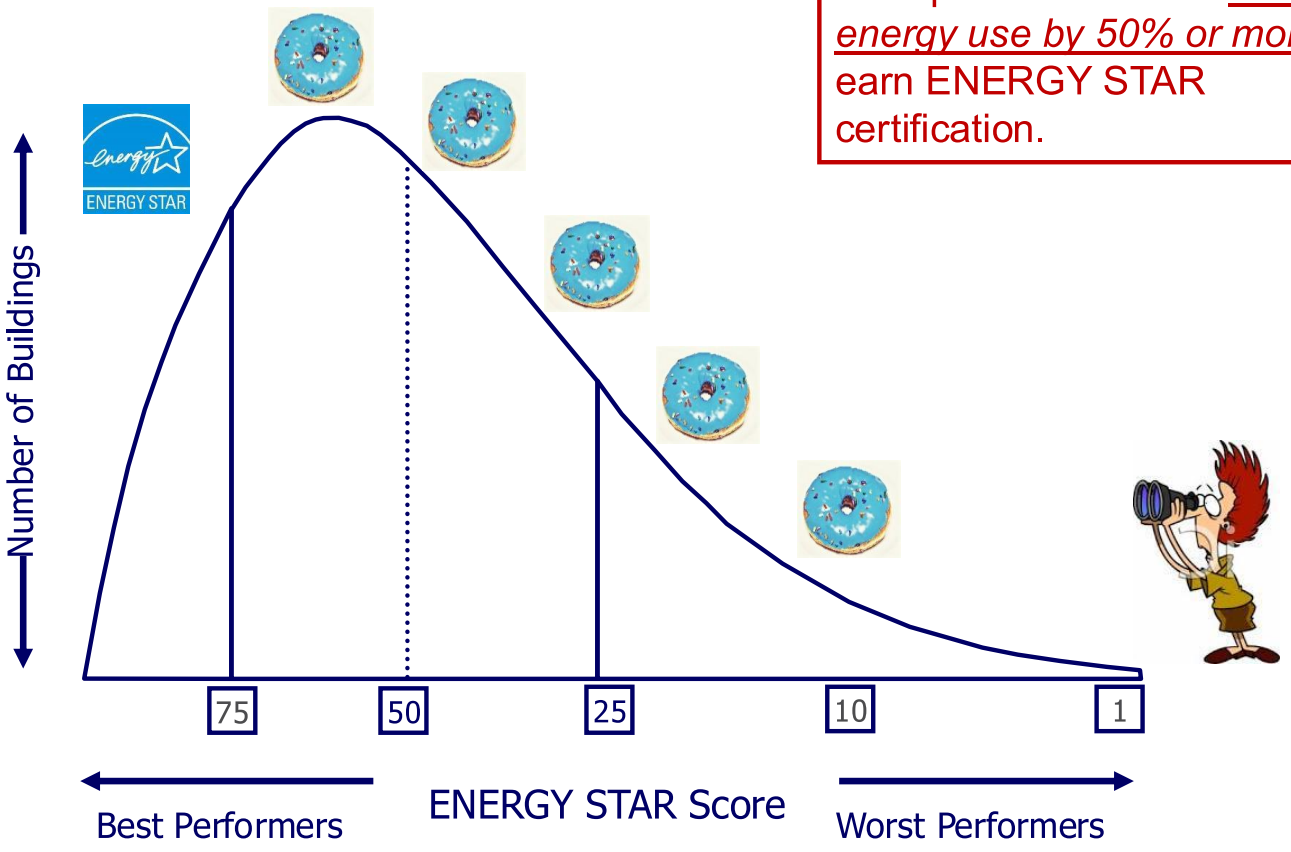
National Zero Emissions Building Definition

- Top energy performance, zero on-site emissions, 100% renewable energy.
- Data Sources: Variable.
- Details of application vary.

Rising Star Improvement Recognition

Incentivize Low-Performing Buildings to Take Action

Poor performers must *reduce energy use by 50% or more* to earn ENERGY STAR certification.



Rising Star Concept

- **Goals**
  - Set attainable targets to motivate and recognize lower performers for starting or moving further on their journey to energy efficiency.
  - Offer opportunity for ENERGY STAR-backed recognition to all building types, including those for which a 1-100 ENERGY STAR score isn't available.

- **Tentative Details**
  - 20% Reduction in Weather-Normalized Site EUI compared to building's own baseline.
  - Launch in 2026.
  - Initial baseline 2023 or later – baseline can't be more than 5 years before application.
  - Start over with new baseline each time Rising Star is earned.
  - Automated application and review with no 3rd party verification required. Random audits will be conducted.

ENERGY STAR® Certification

ENERGY STAR certification for commercial buildings

- Certification is available to buildings with an ENERGY STAR score of 75 or higher.
- Application must be verified by a licensed professional engineer or registered architect.

ENERGY STAR Certified Buildings

- More efficient than 75% of similar buildings
- Use 35% less energy (on average)
- Cause 35% fewer greenhouse gas emissions (on average)

ENERGY STAR® NextGen™ Certification

Objectives of ENERGY STAR® NextGen™ Certification for Buildings

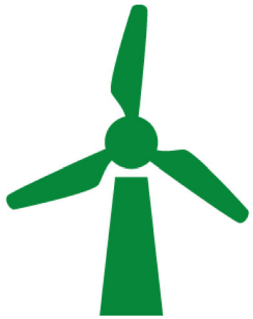
- Recognize efficient buildings **on the path to** zero carbon emissions
- Encourage the key actions building owners can take today
  - Achieve top energy performance.
  - Generate/procure renewable energy.
  - Reduce onsite emissions.
- Strive to keep it simple
- Leverage foundation of ENERGY STAR and Portfolio Manager
- Application must be verified by a licensed professional engineer or registered architect.

Applications accepted beginning February 24, 2025

ENERGY STAR NextGen Criteria

Efficiency

ENERGY STAR certification



Renewable Energy

Procure 30% of energy from renewable sources

Emissions

Meet target for onsite GHG emissions

www.energystar.gov/nextgenbuildings

National Zero Emissions Building Definition

ZEB Criteria

At a minimum, a building that achieves zero operational emissions from energy use meets the following criteria:

Energy Efficient

The building is among the most efficient.

- ENERGY STAR score of 75 or higher
- EUI 35% better than median
- EUI less than ASHRAE 100
- Pathways for new construction

Free of on-site emissions from energy use

The building's direct greenhouse gas emissions from energy use equal zero.

Powered solely from clean energy

All of the energy used by the building, both onsite and offsite, is from clean energy sources.

The ENERGY STAR Standard

Use	ENERGY STAR Resources Leveraged	Breadth of Use
Local and State Benchmarking and BPS Laws	Require Portfolio Manager for reporting; utilize ENERGY STAR score and other Portfolio Manager metrics.	More than 60 U.S. and Canadian local/state/provincial governments.
Local Audit and Upgrade Laws	Exemptions from audit and upgrade requirements for ENERGY STAR Certified buildings.	Multiple local and state governments.
Loan and Insurance Discounts	Interest rate and insurance premium discounts for ENERGY STAR Certified buildings.	Fannie Mae, HUD, multiple private insurers.
Green Building Certification Programs	Require use of Portfolio Manager for benchmarking; offer points/credits based on ENERGY STAR score/other metrics and ENERGY STAR certification.	LEED, Green Globes, BOMA Best, IREM Certified Sustainable Property, others.
Utility Data Access	Portfolio Manager API used to send energy use data directly into building owners' Portfolio Manager accounts.	More than 75 utilities across the U.S. and Canada.
Service Providers	Partner with ENERGY STAR to provide Portfolio Manager benchmarking services, ENERGY STAR certification services, and energy efficiency consulting leveraging ENERGY STAR resources.	More than 3,000 companies; more than 100 companies utilizing the Portfolio Manager API.

ENERGY STAR