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Institute for Market Transformation - CEC Building Energy Performance Strategy Report

Additional submitted attachment is included below.

June 26, 2024
To: California Energy Commission
From: Institute for Market Transformation
Re: Docket NO. 24-BPS-01
Via Electronic Commenting System

DOCKET NO. 24-BPS-01 REQUEST FOR INFORMATION (RFI) RE: California Building Energy Performance Strategy Report

From: Institute for Market Transformation (IMT), in partnership with Rocky Mountain Institute (RMI), and U.S. Green Building Council (USGBC)

1.1 Names & email addresses of public contacts for you and your organization.

- Cliff Majersik, Institute for Market Transformation (IMT), cliff@imt.org
- Charlotte Matthews, Rocky Mountain Institute (RMI), charlotte.matthews@rmi.org
- Maria Balzer-Pisciotta, U.S. Green Building Council (USGBC), mbpisciotta@usgbc.org

1.2. What are your areas of interest in this report development process?

- Equity, tenant protection, decarbonization, effectiveness, fairness

1.3. Description of your organization and the constituency you represent.

- Coalition

1.4. What is the best way to outreach and engage with your constituency?

- Depends

Thank you for the opportunity to comment on the California Building Energy Performance Strategy Report. Please find our responses to the proposed questions below.

Building Benchmarking and Performance

2. What building performance metrics (such as site energy use intensity, carbon dioxide equivalent emissions, or peak electric demand) should be considered in a building performance strategy? What building performance metrics could be used to trigger building-level interventions (such as enforcement, incentives, etc.)?

Both the choice of building performance metrics and the setting of specific values for performance targets are important. We recommend following the "trajectory approach," which can be found in the IMT BPS Implementation Guide. This method involves three stages:

- Sorting all covered properties into property types and sometimes also climate zones
- Setting a final performance standard for each property type and each performance metric
- Calculating each building's individual interim performance standards by drawing a straight line from the building's performance in the baseline year to the final standard for its property type, for each performance standard

Although the final performance standard is the same for covered properties in the same property type, the trajectory to achieve the standard varies for each individual property and reflects the property's baseline performance. Properties must meet their individual interim performance standards at regular intervals to ensure that they make progress toward the final standard. Intervals are often set at five years to align with building owners' typical capital planning cycles.

Multiple BPS metrics

While most adopted BPS include only one metric against which building performance is measured, two jurisdictions (Maryland and Vancouver) have taken the best practice of adopting BPS with multiple metrics to holistically deliver on multiple commitments. The IMT Full Model BPS law, IMT Short Model BPS law (well-suited for states) and IMT BPS Implementation Guide include all of the performance metrics recommended below.

For reasons detailed below, our key recommendations are that the state:

1. Include a time-sensitive energy performance metric. One option would be a total greenhouse gas metric that accounts for hourly GHG variability in grid electricity.
2. Even in nation-leading California, the metering, information technology, and utility infrastructure are not yet fully in place to support building owners in receiving and responding to time-of-use signals. If that remains the case when California

adopts a BPS, then the BPS could initially use a combination of (1) normalized site EUI and (2) an Onsite+District Greenhouse Gas emissions metric using fixed, annual GHG conversion factors for these emissions. Conversion factors should account for upstream losses and efficiencies. The state should move as quickly as possible to put in place the needed infrastructure, and when appropriate, the state should adopt a time-sensitive performance metric in place of the site EUI and Onsite+District Greenhouse Gas emissions metrics.
3. Include a water use efficiency metric.
4. Include an indoor air quality (IAQ) and/or ventilation performance metric.
5. Consider including a coincident peak demand metric.

CEC should be the implementing agency for the BPS as a whole and should write all rules for all energy-related performance metrics.

Hourly/8760 Greenhouse Gas Emissions or Other Time of Use Metric

CEC should strongly consider incorporating as a BPS performance metric that incorporates both onsite GHG emissions and time-dependent emissions from consumption of grid electricity (perhaps calculated based on hourly conversion factors) or another time-sensitive energy metric. California still has much work to do, but has a head start on the rest of the U.S. in putting in place the infrastructure needed for:

1. Utilities to provide real-time and predicted peak electric demand information to building operators.
2. To enable building operators to monitor their usage in real-time.
3. To enable all large buildings to quickly respond to fluctuations in electric demand and supply.

California could put in place a BPS performance metric that looks at hourly GHGs retrospectively without providing real-time grid data to building operators, but doing so would not maximize behavior change and would be viewed as unfair by many building operators. Instead, we recommend that prior to putting into force an hourly GHG BPS metric or other robust time-sensitive BPS metric, California requires its utilities to put in place the above infrastructure and strongly incent building owners to put in place infrastructure for real-time monitoring and response.

Real-time energy monitoring by building operators offers several key advantages:

1. **Immediate Feedback and Adjustment:** Real-time data allows building managers to see the impact of their actions almost instantaneously. This enables them to make quick adjustments to HVAC settings, lighting, and other energy-consuming operations to reduce emissions.

2. **Enhanced Operational Efficiency:** By monitoring real-time emissions, building operators can identify inefficiencies or equipment malfunctions that contribute to higher emissions. Addressing these issues promptly can improve overall building efficiency.
3. **Improved Occupant Engagement:** Providing real-time emissions data to building occupants can increase awareness and encourage behavior changes that contribute to emission reductions. Behavior change is fundamental to all the strategies necessary for CEC to carry out SB 48 implementation.
4. **Integration with Smart Building Technologies:** Real-time GHG emissions data can be integrated with other smart building technologies, such as automated building management systems (BMS) and Internet of Things (IoT) devices. This integration allows for automated adjustments based on emissions data, further optimizing building performance.

From the State's perspective, a time-sensitive BPS metric provides additional benefits:

1. **Supporting appropriately timed renewable production and onsite storage**: Any energy or GHG metric that does not account for time of use could exacerbate California's "duck curve". In particular, as discussed below, a net site EUI metric would allow buildings to over-produce during the day to reduce their overall annual net site EUI, even if that electricity is not needed at that time by the grid. An annual GHG metric would also have this problem. An hourly GHG metric would incentivize onsite storage and help mitigate the duck curve.
2. **Leadership and alignment with other climate policies**: California is a national leader on renewable energy and has set aggressive goals for decarbonizing electricity generation. Moreover, many large users are starting to attempt to purchase and use 24/7 carbon-free electricity; these leaders should be rewarded.

No other government has either the level of need to incorporate real-time emissions as California, or the data needed to make this happen. Incorporating hourly emissions would align California's BPS with California's other policies, support the use of onsite energy storage, spur continued investment in clean energy where and *when* it is needed, and position the state as a national leader.

Implementation Considerations:

- **Alignment with Portfolio Manager:** ENERGY STAR Portfolio Manager (ESPM) does not support any data with granularity less than 1 day. (This may change in the future but that update is uncertain in both end result and timing.) Currently, hourly emissions would require additional reporting outside of Portfolio Manager. This is not a blocking factor, but may be a reason to phase in hourly GHGs over time.

- **Appropriate targets:** Substantial technical analysis would need to be done to set appropriate standards based on hourly data, especially as building benchmarking data, and other reference data sources used in other BPS approaches, are all annualized. CEC would need to contract or partner to undertake complex analysis on targets–again, not a blocking factor, but perhaps a reason to phase in hourly GHGs over time.
- **Data Collection and Management:** Implementing real-time GHG emissions monitoring requires robust data collection and management systems. This includes sensors and meters capable of measuring emissions accurately and software platforms that can analyze and visualize the data in real-time.
- **Training and Support:** Building operators and facility managers will require training and ongoing support to effectively use hourly and real-time emissions data. This includes understanding how to interpret data, make operational adjustments, and troubleshoot any issues that arise.

Tracking and reporting GHG emissions in real-time and incorporating it into a BPS provides a powerful tool for optimizing energy use, reducing emissions, and enhancing operational efficiency. By offering immediate feedback and supporting dynamic adjustments, real-time monitoring helps building operators and occupants contribute more effectively to the state's goals. This approach aligns with the growing emphasis on proactive and responsive management of building performance to meet climate objectives.

We recommend against adjusting greenhouse gas emissions to reflect the purchase of renewable energy certificates, virtual power purchase agreements, or the purchase of other off site green attributes especially if they do not account for the hour of generation. This is for the following reasons:

1. Doing so adds complexity and uncertainty for both the implementing government and building owners
2. Doing so may result in owners simply procuring offsite renewables and neglecting opportunities to improve their buildings
3. Energy efficiency can alleviate grid constraints and lower overall energy costs; neglecting efficiency may threaten broader policy goals like electrification
4. Offsite renewables are less likely to create jobs in California if they are generated out of state, and so can create a flow of capital out of the community
5. Offsite renewables do not improve the comfort, indoor environmental quality, or building safety for occupants
6. Offsite renewables may not reduce energy bills for energy-burdened tenants
7. Offsite renewables do not improve property values

8. Building owners and occupants rightly prefer to be held accountable for what they can control, and they cannot control the rules, availability, and prices of off site renewables
9. The Greenhouse Gas Protocol requires governments to report location-based emissions, which are unaffected by renewable energy purchased from beyond California's borders
10. Renewable portfolio standards (RPS), utility rate design, and other utility regulations are more effective means of driving construction of off site renewables
11. As the grid decarbonizes, it will be increasingly important to focus on the time of energy use and generation. Adopting long-term renewable regulations that are not 24/7 would lock a government on the wrong path to achieve ambitious climate commitments

See also our response to RFI question #8.

Potential Short-Term Metrics for Use Prior to Using a Time-Sensitive Metric

Again, even in nation-leading California, the metering, information technology, and utility infrastructure are not yet fully in place to support building owners in receiving and responding to time-of-use signals. If that remains the case when California adopts a BPS, then the BPS could initially use a combination of (1) normalized site EUI and (2) an Onsite+District Greenhouse Gas emissions metric using fixed, annual GHG conversion factors for these emissions.

Normalized Site EUI

Normalized Site energy use intensity (EUI) has been the performance metric most frequently included in recently adopted BPS laws. It requires buildings to improve their efficiency. Because it does not apply a site-to-source multiplier to electricity usage, site EUI gives a boost to beneficial electrification without excessively encouraging inefficient electrification.

In deciding whether and how to normalize EUI for operating characteristics, IMT recommends following "EPA Recommended Metrics and Normalization Methods for Use in State and Local Building Performance Standards". Determining if and how to normalize site EUI to account for operating characteristics is a complex decision. For each building type, it is important to weigh the value of normalization against the added complexity that it entails. In many cases, normalization for operating characteristics may not be necessary, and therefore doesn't warrant the added complexity. This will be the case for building types whose operating characteristics don't vary widely and/or don't significantly impact the energy use of the building. An example might be police or fire

stations. These buildings typically operate 24 hours a day, 7 days a week, making operating hours irrelevant in assessing energy use.

BPS should be designed and implemented such that there is no option for buildings to use renewable energy procurement as an alternative for bold action on energy efficiency, electrification, and demand management. Under ESPM rules, site EUI is not impacted by onsite or offsite renewable energy. This approach ensures that the BPS will incentivize owners to improve actual building performance, which is critical to achieving climate commitments and will often in turn create local jobs. The easiest and usually best option for governments is to stay aligned with ESPM by using ESPM site EUIs in their BPS and using means other than BPS to incent renewables (e.g. RPS with local carve outs, subsidies, and utility tariff design). For several reasons laid out in its statement, EPA strongly recommends that governments align with ESPM rather than using "net site EUI". IMT agrees–and in California specifically, absent some other metric to encourage appropriately *timed* renewable energy generation and use, a net Site EUI metric will only exacerbate the duck curve.

Onsite and District Thermal GHG Emissions

An onsite and district thermal greenhouse gas (GHG) emissions metric is intended to reduce and ultimately eliminate fossil fuel use in buildings and district energy systems. It does not include GHG from the consumption of electricity generated off site. This metric complements an EUI metric by sending a strong and unambiguous message to move away from local fossil fuel use. Use of both performance metrics is aligned with the aggressive climate targets of influential groups such as California State University. IMT generally recommends against using an onsite emissions metric without safeguards against significant inefficient electrification (like installing electric resistance heat) as doing so will frequently aggravate the split incentive problem, and result in increased energy burden on residential tenants. One safeguard against inefficient electrification is building into the BPS a second performance metric, like site energy use intensity, to incent efficiency. See IMT's BPS Housing Affordability policy brief for further discussion of the effects that inefficient electrification would have on residential energy burden.

Significant GHG emissions result from the extraction, processing and distribution ("upstream emissions") of fossil fuels including gas, fuel oil, and propane. The largest component of these emissions is the release of uncombusted gas into the atmosphere. The main component of "natural" gas is methane, which has a global warming potential 30 times higher than carbon dioxide (CO_2) over 100 years and 83 times higher over 20 years. Failure to account for upstream emissions would significantly undercount the global warming impact of fuel consumption.

CEC should strongly consider factoring in upstream GHG emissions by weighing the benefits and costs. Accounting for upstream GHG emissions will add some complexity, and require calculations outside of ESPM, but will more accurately reflect buildings' true climate impact and better align with climate realities the BPS law sends to building owners. The carbon dioxide equivalent (CO_2e) from upstream emissions can be added to the CO_2e from all other sources to calculate each building's total onsite and district emissions. Ideally, CEC will incorporate estimates to account for all upstream emissions. CEC should multiply estimated gas leakage by Global Warming Potential to convert it into CO_2e. CEC can calculate buildings' onsite emissions by capturing the buildings' weather normalized fuel use from ESPM, multiplying it by factors that account for both combustion emissions and upstream emissions, to convert it to total onsite emissions as measured in CO_2e. For buildings served by a district energy system, CEC should also add the emissions resulting from buildings' share of the system's fuel use, applying the same combustion and the same or similar upstream emissions factors. Most California buildings' only source of onsite emissions will be their consumption of gas. CEC will have to perform the above calculations outside of ESPM (preferably in an automated process) because ESPM does not account for upstream emissions or district energy in their calculation of "direct emissions."

If CEC has reliable gas leakage estimates for its gas utilities, then those estimates should be used to estimate leakage attributable to each therm of consumed gas. Where such estimates are not available, the Gas Index is one potential source for regional gas leakage data. CEC should update gas leakage rate estimates as new reliable data becomes available. Doing so will incent gas utilities to measure and reduce their leakage rates. CEC should recognize that utility gas leakage is outside of building owner control. This makes it crucial for CEC to consult with owners, and consider giving owners one or more years of notice before updating leakage rates.

Some governments may have existing utility policies that allow users to purchase biogas, also known as "renewable natural gas (RNG)." When purchased through the gas grid, this RNG is conceptually similar to "green power" or REC purchases. IMT strongly recommends against California designing BPS to treat RNG differently than other gas–and no U.S. jurisdiction has done so in their BPS. Doing so poses many of the same risks as does treating off site renewable electricity differently from other electricity. As far as IMT knows, in every government that has studied RNG, the total potential recoverable RNG in the region is a tiny fraction of the gas currently being consumed. Thus, this RNG should be reserved for its highest and best use: manufacturing, high temperature applications, and other processes for which substituting alternatives to gas is more difficult than in buildings. Lastly, ESPM does not

allow reporting of RNG use, which adds to the burden that special treatment of RNG would place on CEC and building owners.

For district energy systems, IMT recommends using system-specific GHG factors that account for the fuel(s) used in the district energy system, and the total efficiency of the system from energy sourcing to delivery to a building. District energy systems can vary wildly in their emissions intensity. Theses differences are a result of: the energy source(s) used; the energy delivery medium, such as steam, high-temperature hot water, low temperature hot water, etc.; whether the system is a cogeneration system; whether the system has heat recovery; and uses ground or water energy storage. Because ESPM is designed to apply national factors, its GHG assumptions for district energy are based on national averages, and average the efficiency of cogeneration and non-cogeneration systems. This approach does not encourage the decarbonization of local district energy systems, as buildings are unable to claim the benefits of emissions reductions of local plant operators. For this reason, IMT does not recommend using generic emission factors for district energy. Other governments with any significant district energy presence have set local or system-specific factors for district energy (NYC, Boston, Maryland, Vancouver).

In many cases, the best, least difficult, most effective, and least expensive means of decarbonizing buildings served by district energy systems will be to decarbonize those district systems rather than the alternative: each owner electrifying each of its buildings served by the systems. As part of the process of developing California's BPS, CEC should convene the operators of the district energy systems that serve the community and the systems' customers to devise a plan for decarbonizing the systems. The investment to make these upgrades will typically have to come from the systems' customers (directly or indirectly through increased district energy prices). In many cases, these investments will be accomplished by customers signing or amending long-term contracts with the district systems. A BPS is a uniquely powerful tool to align the incentives of district energy systems and their customers and to provide the urgency needed to drive collective action among many building owners to finance major investments to decarbonize district systems. Using system-specific GHG factors engages the system operator as a partner in decarbonization, and ensures that campuses and multi-user DE systems get equal credit. Appendix E of the IMT BPS Implementation Guide includes detailed recommendations for district energy emissions,including how to handle co-generation systems.

Water Use

Given California's current and projected vulnerability to drought, CEC should adopt a water use performance metric. Water use in buildings also has implications for the

state's greenhouse gas emissions, as utility water usage consumes energy and indirectly generates GHG emissions, although these impacts vary greatly among water and wastewater systems.

The IMT Model BPS law defines "water use" as "the total gallons of water used annually inside or outside of buildings by a COVERED PROPERTY." IMT recommends CEC set a single metric for the total water used both indoors and outdoors, because few buildings meter outdoor water use separately, and requiring buildings to meter separately would entail significant costs that often could not be justified by the benefits. CEC should consider setting a single final standard calculated by summing two distinct water budgets: one for total (not per square foot) indoor water consumption and one for total (not per square foot) outdoor water consumption, to reflect the different environmental and occupant needs of those sources of water demand.

As with other performance standards, interim water intensity standards should be set using the trajectory approach. A water budget per square foot of gross floor area should be set for each building typology relying on local building benchmarking data when available. In most cases, the indoor budget will need to be set as gallons of water per year per square foot multiplied by total building square footage. The lowest water consuming quartile or decile for a typology can be used as a starting place for setting the final indoor performance standard. CEC should follow the process EPA lays out for site EUI to determine whether it is appropriate to account for one or more operating characteristics when setting each building's final water performance standard. EPA's binning and appeals approaches are options for all property types, but will likely need to rely on operating characteristic inputs not found in ESPM. Only multifamily buildings are eligible for EPA's 1-100 Water Score, and so CEC has the option to use a modified version of EPA's ENERGY STAR Score Normalization Method for multifamily buildings and for no other property type. EPA's Water Score uses historic weather factors and does not adjust year to year to normalize for observed weather.

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

Water use intensity standards should be adjusted to reflect changes in the square footage of landscaped area or building area. Increases in building or landscaped areas (e.g. due to replacing parking with vegetation) should result in increases in a property's

performance standard. Decreases in areas should result in proportional decrease to performance standards. To calculate how much to increase the standards, a consumption per square foot representing current best practice for landscaping and for each property type should be set for the baseline year. The actual adjustment will depend on when the landscaping change or construction occurs, by using the trajectory approach to draw a straight line from the baseline performance to the final performance standard.

Ventilation and Indoor Air Quality (IAQ)

Addressing indoor air quality problems is a critical priority for many communities, particularly Justice40 communities that have already been overburdened with pollution, poor outdoor air quality, and underinvestment in the building stock. Initially, IMT recommends that CEC use carbon dioxide concentration as the sole performance metric for indoor air quality. While there are many pollutants that impact indoor air quality, the technology to measure carbon dioxide is widely available and relatively inexpensive, and carbon dioxide serves as a good overall indicator of how much outside air reaches occupants–a critical factor in reducing the spread of airborne illness and exposure to pollutants.

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

In 2021, IMT and International WELL Building Institute published a Building Performance Standard Module: Ventilation and Indoor Air Quality Policy Brief. The brief lays out in greater detail the case for BPS to address IAQ. It discusses the mechanics of how to do so, including detailed recommendations regarding how governments can gradually strengthen IAQ requirements by adding in performance requirements for additional air pollutants. The brief also provides links to useful technical resources. IMT recommends that CEC works with communities to understand their priorities as it relates to IAQ and to set high-level IAQ goals. To deliver on these goals, CEC should formally or informally convene volunteer IAQ experts to develop rules, schedules, and training materials. CEC should also consider hiring an IAQ expert to staff the volunteer process and to lead in production of deliverables.

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

CEC will need to provide detailed rules for how and where to sample indoor air to demonstrate compliance. They will need to set separate sampling and testing rules for continuous monitoring and third-party performance tests. CEC should look to building certifications like RESET Air as a starting point for developing these rules. CEC should work with experts and stakeholders to strike a balance of protecting public health while minimizing costs and paperwork and assuring that the expert workforce serving buildings in California has, or will have, adequate capacity to enable buildings to comply. Johns Hopkins has created a Model State Indoor Air Quality Act that we recommend CEC use for reference.

3. What building specific conditions and circumstances (such as vintage, climate zone, orientation, etc.) should be included in a building performance strategy?

We recommend that California's BPS follow the structure of the IMT Model BPS law and that all buildings over 50,000 square feet of gross floor area should be covered, with only extreme edge-case properties being exempt. Coop and condominium buildings of that size should be covered. Affordability status should not exempt buildings, but should be taken into consideration in terms of performance strategy, by building in compliance flexibility, such as extending performance deadlines and structuring implementation resources to put affordable housing first in line. If affordable buildings are exempt, they may be further left behind in the clean energy transition.

Adjusting final performance standards for climate zones may or may not be necessary to some extent. ESPM does normalize EUI (but not emissions) for weather, and does so based on local weather stations, not climate zones. (Local weather stations are far more granular.) Some variation in final performance standards by climate zone may be important for equity and for palatability. However, it is not clear that all 16 climate zones used in the California state code need to be addressed–and the granularity of these zones could complicate implementation. We recommend CEC undertake an analysis of variation in energy use in existing buildings by climate zone, and use the minimum number of different standards needed (e.g., several of the 16 CA zones could share the same standard, or the ASHRAE climate zones could be used instead). In addition,

some climate zones may have few or no buildings subject to the BPS, and thus may not need unique standards.

We recommend CEC conduct analysis to see if vintage is an issue that needs to be addressed, though we doubt it. No jurisdiction has yet adjusted its BPS for building vintage, and studies have shown little to no correlation between building age and performance among large buildings. However, given the stringency of Title 24, different standards for new buildings may be appropriate, and the possibility should be analyzed.

4. How should building benchmarking data be used to prioritize building upgrades and incentives?

The question can be interpreted in two ways – how data should be used to prioritize building upgrades and incentives from a building owner perspective or from a policy development perspective in terms of designing incentives. Addressing both perspectives is important as explained below.

Building Owner Perspective

From the perspective of building owners, benchmarking data is invaluable in identifying and prioritizing upgrades. The following steps can be taken:

1. **Identify Top GHG Emitters**: Utilize benchmarking to determine which buildings are the highest greenhouse gas (GHG) emitters. This allows building owners to focus on the buildings that have the greatest potential for emissions reductions and prioritize resources accordingly.
2. **Classify Buildings by Type and Class**: Analyze data by building type (residential, commercial, industrial) and class (A, B, or C). Class A buildings are typically newer with more advanced systems, whereas Class B and C buildings are older and may have outdated systems that require more significant upgrades.
3. **Consider Equity Factors**: Incorporate equity considerations into the investment prioritization process. This involves identifying buildings in under-resourced or frontline communities that may benefit the most from upgrades in terms of energy savings and improved living conditions. Coordinate with the CEC's Informational Proceeding, 24-OIIP-03 (proceeding to determine methodologies to integrate non-energy benefits and social costs into the CEC's resource planning and investment decision-making processes). Also, coordinate with the Disadvantaged Communities Advisory Group (DACAG), to ensure that disadvantaged communities benefit from a BPS and any other building decarbonization strategies CEC designs and implements.

4. **Align with Leasing and Financing Cycles**: Prioritize upgrades based on the building's leasing stage, financing cycle, and the life cycle of existing equipment. For instance, plan major upgrades during tenant turnover periods or when financing options are most favorable.
5. **Utilize Retrofit Playbook Steps**: Refer to the Retrofit Playbook for a comprehensive understanding of the steps involved in assessing and prioritizing building upgrades. This resource provides detailed guidance on evaluating building performance and planning retrofit projects.

Policy Development Perspective

From a policy development perspective, benchmarking data can be used to design targeted incentives and support programs that drive building performance improvements. The following approach can be taken:

1. **Establish Baseline Performance**: Use benchmarking data to establish baseline performance for all covered buildings. This helps identify buildings that are lagging in terms of energy efficiency and emissions reductions.
2. **Design Targeted Incentives**: Create incentives that are specifically tailored to the needs of different building types and classes.
3. **Incorporate Equity and Health Metrics**: Overlay benchmarking data with equity and health indicators, such as socioeconomic status, energy burden, asthma rates, and urban heat islands. This helps in designing incentives to prioritize buildings where upgrades will have the greatest co-benefits for vulnerable communities. Coordinate with the CEC's Informational Proceeding, 24-OIIP-03 (proceeding to determine methodologies to integrate non-energy benefits and social costs into the CEC's resource planning and investment decision-making processes). Again, CEC should coordinate with DACAG on these matters.
4. **Identify High-Impact Buildings**: Design financial incentives, technical assistance, and other support and outreach to focus on buildings that are furthest from meeting performance standards and have the highest potential for energy savings and emissions reductions.
5. **Support Policy Compliance**: Ensure that benchmarking data is used to inform compliance pathways and support building owners in meeting regulatory requirements. This can include providing resources, training, and technical assistance to help owners achieve their performance targets.

First and foremost, benchmarking data should be used to establish each covered building's baseline performance, from which its interim performance targets are then set using the IMT trajectory approach. Buildings that are furthest away from meeting their interim or final performance standards are prime candidates for prioritized upgrades and

incentives. Targeting these buildings will result in the greatest energy savings and emissions reductions. Financial incentives, technical assistance, and other support can help put these buildings on track, especially if they are resource-constrained. Additionally, analyzing benchmarking data across the entire building stock can reveal trends about which building types have the lowest average performance and will require the most support. These insights can inform the design of sector-specific incentive programs and educational resources.

While poor energy performance is the primary metric for prioritization, benchmarking data should be overlaid with other key indicators. An equity analysis that maps benchmarking data with socioeconomic and demographic data can highlight low-performing buildings that serve frontline communities. These buildings should be first in line for upgrades and incentives. For example, the Building Innovation Hub is planning an equity data overlay of BPS-covered properties to prioritize buildings in underserved communities.

Other metrics like energy burden (the percentage of income spent on energy bills), asthma rates, and urban heat islands, could also be mapped against benchmarking data to reveal buildings where upgrades would have the greatest non-energy benefits. Under-resourced housing and buildings that serve frontline communities should be targeted not only for energy upgrades, but also for health, safety, and resilience improvements.

Finally, CEC, utilities, Regional Energy Networks, or their contractors should analyze benchmarking data to identify any unusual cases where a building is consuming far more energy than is typical for its size and property type. This could indicate malfunctioning equipment, leaks, or operational issues. Notifying these outlier buildings and connecting them with technical assistance can spur corrective action.

5. What types of support and resources would be necessary to help building owners meet building performance targets?

Financial Support and Considerations

To meet building performance targets, some building owners require access to various financial resources and support mechanisms and assistance to navigate them. Key financial considerations include:

1. Incentives and Rebates:
    - **Utility Rebates**: California utilities offer energy-efficiency rebates.

- **Tax Incentives**: Federal and state tax incentives can reduce the cost of energy-efficient upgrades. The Federal Investment Tax Credit (ITC) provides a 26% tax credit for solar energy systems installed on commercial properties. Other Federal incentives, such as the 179D tax deduction, can be used by building owners as means to offset the cost of building performance improvements they would need to make to comply with a BPS.

2. Grants and Subsidies:
    - **State and Federal Grants**: Programs like CEC's EPIC (Electric Program Investment Charge) provide grants for innovative retrofits, energy efficiency, electrification, energy reliability and resilience projects.
    - **Local Government Subsidies**: Cities and counties may offer subsidies to support improvements in buildings, particularly in under-resourced communities.
3. Low-Interest Financing:
    - **Property Assessed Clean Energy (PACE) Financing**: The state's PACE programs allow building owners to finance energy efficiency and renewable energy projects through property tax assessments. These assessments are repaid over time as part of the property tax bill, with terms typically ranging from 10 to 20 years.
    - **Green Bonds**: Municipalities and private entities can issue green bonds to finance environmentally friendly projects, including building upgrades. And, California has issued green bonds to fund various sustainable infrastructure projects.
    - **The U.S Energy Department's Financing Navigator** enables owners to weigh the pros and cons of a long list of financing options.
4. Energy Service Agreements (ESAs):
    - **Performance-Based Contracts**: Building owners can enter into ESAs with Energy Service Companies (ESCOs), which design, implement, and finance energy efficiency projects. The ESCO is paid based on the energy savings achieved, ensuring that building owners do not bear upfront costs.
5. Indirect Cost Savings:
    - **Reduced Insurance Costs**: Making energy efficiency improvements can be aligned with other resiliency measures, which may qualify for reduced insurance costs. Taking time to implement structural retrofits, at the same time as insulation improvements are made, can lead to insurers offering to lower premiums, making insurance more affordable.

Example Navigator Programs

1. **The DC Sustainable Energy Utility (DCSEU)**: Offers technical assistance, financial incentives, and training to help building owners in Washington, D.C., meet energy performance standards. DCSEU provides rebates for energy-efficient equipment and supports energy audits.
2. **New York City's Retrofit Accelerator**: Provides free advisory services to building owners to help them comply with Local Law 97, which sets GHG emission limits for buildings. The program offers technical assistance, connects owners with financing options, and helps navigate regulatory requirements.
3. **Seattle Clean Buildings Accelerator**: A free coaching program that helps building owners and managers meet the requirements of Washington's Clean Buildings Standards and Seattle's Building Emissions Performance Standard. It provides one-on-one coaching, educational workshops, and resources to help participants improve energy efficiency.
4. **Toronto's Taking Action on Tower Renewal (TATR) Program**: Toronto's Tower Renewal Program focuses on improving the energy efficiency and living conditions of older high-rise residential buildings. The program provides technical support, funding, and resources for building retrofits that enhance energy performance and resident comfort.
5. **Massachusetts Leading by Example (LBE) Program**: The LBE program in Massachusetts sets energy and sustainability targets for state government operations. It provides technical assistance, funding opportunities, and recognition to state facilities that achieve significant energy savings and environmental benefits. It is important that the State of California also leads by example with regard to buildings.

Helping owners to meet building performance targets requires a multifaceted approach, combining financial incentives, technical assistance, and regulatory flexibility. Providing robust support and resources, including financial considerations such as grants, rebates, and low-interest financing, can help owners to improve their buildings and achieve sustainability goals.

Providing Flexibility for Edge-Case Buildings

The Building Performance Action Plan (BPAP) is a feature of the IMT Model BPS law that provides additional flexibility to owners facing exceptional challenges in meeting their designated interim or final performance standards. It enables owners to submit customized improvement plans for their buildings to the implementing department (CEC), which either approves, recommends amendments, or rejects them. An approved BPAP constitutes a binding agreement between the owner and CEC. An owner is

deemed compliant with the BPS as long as they abide by the terms of the plan, even if the property does not meet the originally assigned interim or final performance standards.

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

A well-designed BPS should result in only a small number of properties—those with exceptional circumstances—seeking compliance through a BPAP. To help ensure this, CEC should write regulations that set a high bar for BPAP eligibility and strictly adhere to them when screening submissions. This is important because reviewing each BPAP submission requires significant staff time, and there is a risk of creating an overwhelming administrative burden if BPAPs are defined in a manner that is too lax, or performance standards are overly ambitious. The bar should be much lower for subsidized affordable housing to be able to adjust compliance timelines, especially to align with refinancing periods, which are often their only opportunity to access the type of capital needed for deep energy retrofits. Generous subsidies should be provided to affordable housing to assist with preparing and submitting BPAP proposals.

There are two main ways that CEC can use the BPAP process to provide flexibility for meeting BPS requirements:

1. Extending the deadline for an interim or final performance standard.
2. Adjusting a building's performance requirements. Extending deadlines is usually preferable, as this ensures that owners are incentivized to make improvements and reach goals, rather than their interim or final performance target changing. Extending deadlines is also less administratively burdensome for CEC than adjusting performance targets.

<u>High Performance Building Hub</u>

We strongly recommend that CEC also invest in a high-performance building hub (Hub). A "Hub" is a centralized location where all real estate stakeholders in California can access critical guidance, technical assistance, and/or access to available incentives to building owners, designers, contractors, and operators. Hubs are nonexclusive aggregators of the information that can help covered property owners

comply with policies, including but not limited to the BPS, that lead to the achievement of California's climate goals. A Hub's goal is to remove obstacles that prevent the implementation of high-performance building strategies by both spotlighting good practices of local market leaders and aiding those who may not have the necessary resources—be it information, expertise, or finances—to act to improve their buildings' performance.

The creation of a Hub can seem like a daunting undertaking. However, IMT and its partners have already launched several Hubs in various locations across the nation and are forming a network of Hubs called the Building Performance Partnership. Drawing from this experience, Chapter 8 of IMT's Building Performance Standard Implementation Guide summarizes best practices and lessons learned to stand up a Hub in a time-efficient and cost-effective manner.

The building industry has benefitted from resources and programs produced by Hubs based on local market needs to support BPS compliance including:

- **Policy compliance checklists and FAQs:** Simple, easy-to-use resources describing BPS (and other policy) compliance pathways.
- **Playbooks and templates for implementing improvement strategies:** Guidance related to constructing and retrofitting primary building systems (envelope, ventilation, heating/cooling, domestic hot water, plugs and process loads), strategies for new construction to go above the energy code to comply with the BPS, implementing low-cost strategies to decrease energy-related operating costs, and assessing high-performance building technology solutions.
- **Contract templates and toolkits:** Guidance to enable building owners to support sustainability and equitable decarbonization through leasing and procurement processes. This could include RFP templates, a recommended process for high-road contracting, sample contract language, and sample leasing provisions that overcome the split incentive between landlords and tenants.
- **Case studies:** Promoting peer-to-peer learning, showcasing best practices, and minimizing perception of risk.
- **Funding and financing guides:** A regularly-updated directory of available financial incentives, grants, tax abatements, and utility rebate programs to help property owners fund improvements.
- **Help desk:** A phone number and email address that building owners can use to get answers to their questions regarding the BPS requirements.

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

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

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

- **One-on-One compliance consulting services:** Hub staff and advisors could provide tailored support to covered property owners, particularly those whose properties serve frontline communities, who need direct, individualized assistance to comply with BPS. The DC Building Innovation Hub conducted a pilot program in 2021 that connected 20 under-resourced affordable multifamily housing owners with resources and assistance to help them comply with BPS requirements. This pilot reached 2,700 residential units or 17% of all non-compliant affordable multifamily housing buildings in the District.
- **Workforce development programs:** Following the adoption of BPS, the market for high performing building services should experience significant growth. After New York City adopted Local Law 97, Urban Green estimated that the new law would create a $20 billion retrofit market and 141,000 new jobs by 2030, a 13-fold increase from baseline. Hubs should align with existing workforce development programs or even create programs of their own to equip students with skills that will be in demand because of the BPS. Programs such as small and medium disadvantaged business accelerators or matching services that connect vendors and customers present opportunities for Hubs to address inequity by preparing members of frontline communities to compete for contracts and jobs resulting from the BPS.
- **Funding source:** Where resources permit, Hubs could administer dedicated funding or financing for building performance improvements. CEC may consider setting aside a portion of such funding for specific social equity purposes including support for under-resourced buildings serving frontline communities.

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

6. What enforcement mechanisms should be considered for both benchmarking and a potential building performance requirement? Which similar programs are known to achieve high compliance rates?

Alternative Compliance Payments (ACPs)

We recommend that CEC use the term “alternative compliance payments” rather than “fines” or “penalties” because many commercial lease agreements do not allow building owners to pass them through to commercial tenants. The ability to pass through helps align the incentives of both commercial tenants and building owners. This consideration does not apply to multifamily leases because the term used has no bearing on an owner’s ability to pass costs through to residential tenants.

ACPs should be set high enough to create a strong incentive for covered properties to comply through improved performance, while not creating undue burden that may impact an owner’s ability to operate. At the same time, ACPs should reflect both the magnitude and the duration of non-compliance so that those who are close to achieving compliance or are only marginally late in doing so, are required to make relatively lower payments. The first factor that should determine an ACP is the property’s actual performance relative to the performance target, with ACPs increasing with the gap between the two. So, ACPs would be higher for missing a target badly, and properties that narrowly miss their targets would incur lower ACPs. This should be the case regardless of the performance metrics used. Similarly, the ACP should reflect the duration of non-compliance: the longer a property is out of compliance, the higher the ACP should be. Lastly, if the BPS has multiple performance metrics–such as energy and water consumption, or carbon and air quality–each ACP should be calculated separately, with the owner responsible for paying the total of all of the ACPs.

Other Fines and Fees

The ACP should be the primary enforcement mechanism for BPS. In practice though, there may be owners that refuse to comply with BPS either through meeting the standards or paying the ACP. Ideally, these situations will be very rare, but CEC should possess the authority and willingness to administer serious consequences for such cases. Consequences may include severe fines or penalties beyond the limits of the ACP. California must be willing to pursue these penalties through requisite legal processes, which may need to be streamlined. In some cases, a sister agency like the Attorney General will be responsible for enforcing such penalties.

Proactive Outreach and In-person Training (via Network of Regional Entities/"Hubs")

Washington D.C. found that it needed to go beyond written notices to building owners of BPS requirements, to achieve high BPS compliance. It contracted with the Building Innovation Hub to call and conduct site visits, demonstrating to building owners and property teams the reality of its BPS and connecting owners to resources that help them make the first steps towards compliance. The Building Innovation Hub conducted outreach over the phone to all owners who were not in compliance. Many owners reported that without this direct outreach and having a real person to talk to on the phone to explain in plainspeak the technical aspects of the policy, they would not have met the deadline. In addition, other cities have found that conducting in-person ENERGY STAR benchmarking training is an essential part of a strategy to achieve high benchmarking compliance rates.

Programs and Resources to Close Market Gaps

Beyond building owner and property management team comprehension of benchmarking/BPS requirements, and technical understanding to complete the policy requirements, market conditions can also contribute to high or low BPS compliance rates. Since BPS goes beyond benchmarking to set stricter performance targets over a certain amount of years, this requires engaging the building industry to support an energy audit, design a retrofit and compliance plan, engage the financial team or build a capital plan, and then manage and implement the plan in the required set of years. Many Class B and C building owners/teams have never implemented such a comprehensive retrofit based on energy/carbon reduction goals and do not have the technical expertise to carry this out. Additionally, outside of Chula Vista, most of California's building industry lacks experience with a BPS. It will take them time to become proficient in the policy and incorporate the expertise their discipline will need to contribute into their business practices and offerings.

With IMT's help, Building Performance Hubs around the country have conducted needs assessments and identified barriers to BPS compliance that are unique to that region's market conditions, technical understanding, workforce expertise or other aspects. From these gaps or barriers, the Hubs have then launched programming and resources to specifically close these gaps including workforce development programs, training by industry need, vendor matchmaking / connections, funding and financing databases, performance-based leasing, and under-resourced building support programs.

Example resources:

- An overview of the Building Energy Performance Standards (BEPS) in DC: Answers to top questions in FAQ format.

- Final BEPS Standards and Rules: Up-to-date plain-speak article on BEPS including how this intersects with the Benchmarking requirements.
- BEPS Compliance Wizard
- BEPS vs. Code Tearsheet
- BEPS Tearsheet
- Decarbonization Tearsheet
- Getting Started with Performance-Based Leasing: Primer provides a high-level introduction to the concept of performance-based leases, which adjust traditional lease structures to resolve split incentives currently preventing landlords and tenants from increasing building performance (and thus complying with forthcoming legislation).
- Priority Action Playbook / Industry playbooks: Outline a list of actions each discipline involved in building design, construction, and operation can deploy to prioritize energy efficiency, with an eye on working across disciplines for maximum impact.
- What are building emissions? Primer to learn the role buildings play in decarbonization.

7. What other steps can the CEC take to help building owners comply with existing building benchmarking requirements?

CEC should analyze and hire local organizations, including community based organizations, to support benchmarking outreach and develop benchmarking training programs, based on levels of compliance and barriers to benchmarking by region.

Load Flexibility and Resiliency

8. Given the time and location dependance of both the cost and greenhouse gas emissions of electricity, how can building performance strategies be structured to incorporate load flexibility benefits?

Key points:

- California is uniquely positioned to incorporate load variability and real-time emissions into its BPS–few jurisdictions have either the data capacity to do this or, just as importantly, as much need to do so.
- We recommend structuring both BPS and electricity tariff design to encourage owners to shift their buildings' electric load.
- Thermal and battery storage can help buildings be more grid-interactive.
- Building owners could get credit for reducing demand during grid peaks.
- Time-varying emissions factors could be incorporated into GHG metrics and electricity tariff designs.
- Programs should align with utility time-of-use rates and demand response.

To date, New York City's Local Law 97 is the only one of the 13 existing BPS in the U.S. to incorporate time of use. And, LL97 merely permits building owners to use hourly rather than annual electricity-to-GHG conversion factors, which few to no owners have so far opted to do. California leads the way in intermittent renewable electricity generation and its consequences, including the duck curve as well as in technology for measuring and warehousing interval utility consumption data. California is positioned to be the first government to implement robust time-of-use components into its BPS.

Ideally, a BPS should include metrics and mechanisms that encourage and credit building owners for shifting electricity use to times when grid power is cleaner and less expensive. This can help optimize building-grid interactions. There are four categories of BPS strategies to accomplish this:

1. **A time-of-use based BPS performance metric** can be used to motivate owners to minimize their electric usage when the grid is most strained and carbon-intensive. Owners should be rewarded for reducing peak demand including through use of technologies like smart controls, thermal storage, and batteries. Usually, it is best for BPS performance metrics to be based purely on performance and not to prescribe technology. One such BPS metric is coincident peak demand (the building's demand during the grid's highest demand hours). It is important to focus on coincident peak and not just an individual building's peak since coincident peak is a much larger driver of cost and reliability challenges. A more advanced metric would also factor in variability in cost and GHG on the supply side to match the intermittent nature of solar and wind power generation. Another possibility is to adapt the CPUC's avoided cost calculator to generate a time-sensitive BPS performance metric.
2. **Greenhouse gas emissions metrics could incorporate time-varying emissions factors** to reflect the fact that the carbon intensity of electricity varies considerably by time of day and season based on the generation mix. This would incentivize owners to shift usage to lower-carbon hours. CEC should use location-specific hourly marginal emissions rates (available in tools like WattTime) for these calculations rather than annual average emissions rates. To effectively use this in a performance metric however, building owners need to be able to access the data in real-time and see estimates ahead of time, so they can make decisions accordingly–a metric that only looks at hourly GHGs retrospectively would be accurate but would not drive decision making and change.
3. **Aligning building performance incentives and penalties with utility time-of-use rates** would send a price signal to motivate load shifting. To ensure

fair assessment across the state, the BPS should use time-sensitive "shadow rates" in cases where local utilities do not yet offer sufficient time-of-use rates.

4. **BPS policies should be designed to work in concert with utility demand response programs**, so buildings get credit for shedding load during peak events when called upon. Two-way data exchange (e.g. via Green Button Connect) between utilities and buildings can facilitate this. CEC has developed significant infrastructure to support implementation of demand flexibility across California, both through development of the MIDAS database as well as through implementation of appliance standards and common communication protocols. CEC should build upon this infrastructure to ensure that building owners and demand response aggregators have the tools and information necessary to modify the load used at their buildings in response to a TOU-based BPS standard.

CEC will need to ensure buildings have adequate metering and information technology infrastructure and work with utilities on data access to implement these load-shifting aspects of a BPS. IMT and RAP worked with dozens of stakeholders to write a model utility data access law for use by all 50 states. It goes beyond and complements AB802's provision of whole building data access for building owners. CEC should evaluate the efforts of the existing Energy Data Access Committee, and identify any gaps that would inhibit the ability to develop a BPS standard based on data access. CEC should make recommendations to agencies and / or the legislature for how to improve data access to support BPS implementation. We note with approval that CEC is participating in a pending IMT-led funding proposal to the US Department of Energy to establish a statewide collaborative of utilities, agencies, building owners, community based organizations, local governments, and other stakeholders to recommend policy changes to improve access to utility data, including accessing whole building data for buildings with multiple tenants.

Strategically incorporating load flexibility into BPS is key to supporting the transition to a clean, reliable, affordable grid. IMT's BPS implementation guide recommends a gradual, phased approach, as these elements are more complex than basic energy and emissions metrics. Because the adjustment to using time-of-use GHGs or coincident peak demand would take time (and because ENERGY STAR Portfolio Manager does not yet incorporate data at granularities less than 1 day), it may be necessary to phase these elements into the policy–starting with them as optional alternative compliance measures (as in NYC), with a clear timeline to shifting to mandatory time of use/emissions performance standards.

Cost Effectiveness

9. How should measured cost effectiveness be incorporated into building performance strategies or requirements? How should cost effectiveness be determined?

Designing BPS to provide building owners with long-term predictability for BPS requirements will increase cost-effectiveness by enabling owners to integrate BPS compliance into their capital plans, including equipment replacement schedules, aligning with financing opportunities (including mortgage refinancing), and with tenant turnover and lease renewal.

BPS differ significantly from building codes, in that the cost of compliance with a BPS will vary greatly from building to building. We do believe a technical feasibility and cost-benefit or lifecycle cost study could be used to inform the setting of final BPS performance standards. However, given the fact that final BPS performance standards typically have deadlines 15+ years out, that costs are difficult to predict so far out, and the variability of existing buildings, we doubt that cost-effectiveness (calculated such that it does not account for secondary and societal costs and benefits) should be the final determinant in setting standards. Rather, it is important to set standards that are cost-effective when considering secondary and societal costs and benefits, then (1) ensure that the non-compliance payment is structured to outweigh the cost of compliance for typical buildings and (2) provide financial, technical, and other assistance to ensure building owners can comply with socially cost-effective policy.

Secondary and societal costs and benefits incorporated into total cost effectiveness analysis could align with metrics used in Title 24 cost-effectiveness analysis. They could also develop over time to include improvements in the state of the art, including additional human health and climate impact costs and benefits.

We would recommend alignment and access to any/all CA financial resources (with a simplified process as feasible) that would make building upgrades more cost effective and motivate action. California should prioritize limited funding to benefit and assist with BPS compliance for frontline communities (which are affected first and worst by the impacts of climate change) and for those communities or building types that face the most challenges with upgrading their buildings (for example, tenant occupied residential and small commercial). The buildings that house, serve, and are owned by frontline communities often have the least readily available capital to invest in building improvements, therefore these should be the primary target of funding from CEC and other CA agencies.

While a BPS is a mandate, despite traditional additionality concerns, it is best practice for utility energy efficiency and demand response incentive programs to remain available for buildings taking action to comply with a BPS and to be aligned with the BPS, at least in the short-to-medium term. This is critical for providing funding to buildings to get the work done as well as for ensuring political and utility support. AB802's demand side management provisions provide a California precedent for this.

One place cost-effectiveness is particularly important for a BPS is in the context of decarbonization planning and alternative compliance pathways. Buildings with unusual circumstances may need alternative BPS compliance pathways that allow the building to shift when they do the work, and what work they do, to better align with capital planning and engineering realities. Cost-effectiveness is most relevant in the question of *when a building should be required to make improvements*. The BPAP in the IMT Model BPS law is designed to allow this sort of flexibility. The concept also overlaps with related decarbonization planning initiatives, including the Strategic Decarbonization Assessment developed by San Francisco, and the resource-efficient decarbonization approach used in New York's Empire Building Challenge.

To take a more specific example, for the Empire Building Challenge, New York's State Energy Office (NYSERDA) created an Economic & Financial Analysis Guide to assist building owners to determine the best path forward to decarbonize their properties. The objective of the financial analysis is to evaluate the cost-effectiveness of distinct decarbonization pathways and implementation timelines. This guide demonstrates that the overall cost-effectiveness of the decarbonization plan will be determined by the technical approach, the alignment with the broader capital plan and asset management approach, as well as the phasing and implementation of interventions. This guide can provide more details on how to incorporate cost effectiveness into building performance strategies. "Cost effectiveness is about more than simple payback calculations. It is about finding the most cost-effective pathway to decarbonization, not just 'combining [energy conservation measures] (ECMs) to find payback.' Finding the most cost-effective pathway to decarbonization entails identifying the ECMs necessary to decarbonize and then the development of a realistic plan that accounts for real estate disruptions, existing equipment end of useful life, and CapEx/OpEx financing realities to identify an ECM phasing schedule that balances change and asset continuity."

10. For future building performance policies, how can the state manage and minimize administrative costs to the state and local governments while maximizing building performance improvements?

California can minimize government and building owner costs by seeking to harmonize BPS within and beyond California. ESPM is a free tool that is widely voluntarily used

and well regarded by building owners. Every BPS and benchmarking and transparency law in North America (including local laws and AB 802, 2015) relies on ESPM as the reporting and compliance platform. California should reduce costs for itself, local governments, and building owners, by doing the same–though as noted below, ESPM does not currently support hourly data, or locally-specific GHG factors. Either EPA will need to make improvements, or CEC may need to require additional reporting to supplement reporting via ESPM.

Coordination between state and local governments can maximize benefits and reduce administrative costs. One approach could be to mirror AB 802, wherein CEC certifies local benchmarking laws as meeting or exceeding AB 802 and then deems owners complying with the certified benchmarking laws in their localities to also be automatically in compliance with AB 802. However, while defining whether a benchmarking law "exceeds" the CEC requirements is a matter of which buildings are covered, a BPS is far more complicated, with a vast number of points that can vary in stringency–so the AB 802 model would likely need to require that a local BPS meet a series of criteria to align with the state program.

Another option is to create one or more ambitious "stretch BPS" that each locality could choose to adopt. The Massachusetts Green Communities Act and CAL Green created statewide stretch building codes. Massachusetts and California localities respectively can opt into the codes making them mandatory portions of their building codes. In Massachusetts, localities opting in receive small payments from the state. The approaches standardize terms and constrain variation of codes across jurisdictions. So, an owner of buildings in ten different California localities will not have to comply with ten very different BPS.

There is also room for the state and local governments to share management and enforcement resources to reduce costs. This can be done by delegating authority and/or by sharing resources. The delegation model exists in many statewide building codes, where the state sets the code but enforcement is carried out by localities–a good match for BPS, since localities know their buildings far better than the state, but often lack the capacity to administer a BPS on their own. Regardless of whether authority is shared, there are still opportunities to pool resources. For example, with partial support from the state and philanthropy, Hennepin County in Minnesota contracted with a firm that created and maintains a centralized database, staff support function, and administrative infrastructure for use by cities across Minnesota to implement their own benchmarking laws. The contractor provides additional support on an a-la-carte basis paid for by the cities. These services realize economies of scale that are out of reach for cities acting

alone. CEC and/or Regional Energy Networks could provide similar services and economies of scale.

11. What considerations or protections should the CEC be aware of to ensure minimal impacts to housing affordability and other potential disruptions for multifamily tenants that may result from a statewide building performance standard?

Affordable housing, both subsidized and unsubsidized, face real challenges in meeting BPS, including prior disinvestment in the buildings, low available reserves, low rent revenue, financing restrictions imposed by subsidy sources, strict refinance timelines due to tax credit structures, and more. The residents living in these buildings equally deserve a safe, efficient, and healthy home and environment. Some affordable housing developers have found creative ways to lead in this space. Simply excluding affordable housing from requirements leaves behind their residents and so is not the preferred solution. Instead, when possible, buildings serving frontline communities should be held to the same standards, but given additional resources and flexibility to assist them in complying with BPS. This topic is covered in more detail in IMT's Housing Affordability and BPS policy brief.

Policies can accommodate affordable housing challenges while mitigating displacement and ensuring the benefits of a building performance policy reach all residents. Recommendations include:

- **Center community engagement**. Having a robust process, starting (and definitely not ending) with this RFI, that provides space for representatives of frontline communities and those who serve them, including community based organizations, affordable housing owners, residents, tenant advocates, and more to work together to identify solutions that work best for the California context. The CEC should consider establishing an Advisory Board or oversight group, or working with an existing group such as the Disadvantaged Communities Advisory Group, to provide ongoing support for an evaluation of the BPS implementation in frontline communities.
- **Evaluate existing housing stock analyses** completed through the Building Energy Action Plan process, the Residential Appliance Saturation Survey, and the Commercial End Use Survey to identify missing information. Complete if necessary an updated housing stock analysis identifying current and future strengths, weaknesses, opportunities, and threats as well as funding needs.
- **Provide flexibility for affordable housing within BPS**. This can be through deadline extensions, through the BPAP process or through other alternative compliance processes, or other areas of flexibility within the regulations. Align BPS with existing housing affordability goals, housing energy programs, and

building performance goals and requirements, such as any green certifications required through the LIHTC Qualified Allocation Plan process. Doing so could simplify compliance and administration for the owner and for the state.

- **Ensure the policy encourages *efficient* decarbonization and energy cost savings**. Requirements must include energy efficiency to ensure energy cost burdens and the split incentive problem are not made worse, for example through owners switching to inefficient electric resistance baseboard heating paid for by tenants. The combination of an EUI and a GHG metric can help address this issue.
- **Structure enforcement equitably**. Consider adding progressivity to non-compliance fees by tying the fees to some measure of ability to pay. CEC is encouraged to evaluate which factors could make sense, including the annual revenue of the building, net operating income, the location of a building within a Disadvantaged Community, or the percentage of tenants receiving rental assistance.
- **Regulate cost-pass-throughs**. Compliance with a performance policy will require upfront costs from a building owner. Many owners will seek to pass these costs on to residents through increased rents. California already has some models to limit such pass throughs, such as limits within seismic retrofit ordinances in Beverly Hills or Chula Vista. West Hollywood has gone as far as banning pass-through costs, such as rent raises or other associated rental fees, for seismic retrofits, with a provision that allows landlords to petition for a rent increase if the property owner believes costs of completing the retrofit will exceed the net operating income for their property.
- **Establish a turnkey financial assistance program**. This program could draw from a number of funding resources and offer a range of services from revolving loan funds and on-bill financing to free assessment and consulting support. Robust participation in the program could also be treated as a path to compliance.
- **Provide implementation assistance**. A task force may be best positioned to identify the menu of assistance options needed in the market, and the best partners to deliver such services.
- **Align with complementary tenant protection policies**. California and local governments already have many tenant protections in place, but revisiting these policies to understand how they align with building performance requirements can help address displacement. The state can provide guidance to local governments on complementary policies that should be passed or updated. For example, narrowing the major renovation exemption in Just Cause Eviction ordinances and adding tenant protections can help ensure that retrofits are not used as a means of unfair eviction.

- **Evaluate the existing enforcement mechanisms for protecting tenants rights in California**, and the suitability for these existing mechanisms for enforcing tenants rights in the context of a BPS. CEC should make recommendations to the legislature regarding the appropriate agency to provide oversight and enforcement, and whether this enforcement is best performed at the state level (i.e. through the California Department of Justice) or at the local level (i.e., through Community Development Departments or Building Officials.)
- **Monitor the effects of the BPS on disadvantaged community-serving buildings and residential tenants over time**, with particular attention to whether protective policy features are having their intended effect. Some tenant-protective policy features have had unintended consequences in other contexts. For example, in administration of the Pennsylvania Whole Home Repair program, only grants over a certain size imposed a requirement on landlords not to raise rent for a set time period. Not only did landlords avoid requesting grants of this size, counties also often did not offer grants of that size due to the high administrative burden of enforcing the requirement. Consider policy and program innovation practices to actively monitor and iterate on program features to improve outcomes, including through ongoing listening sessions and geographically constrained pilots.
- See also Decarbonizing California Equitably: A Guide to Tenant Protections in Building Upgrades/Retrofits throughout the State by Chelsea Kirk of SAJE and the separate RFI response submitted by SAJE with support from IMT and other organizations.

Other Comments, Issues, and References

12. Please submit any additional comments, issues, references, models, recommendations, or other information that you believe is relevant to the development of the California Building Energy Performance Strategy Report.

As stated in our response to question 9 … While a BPS is a mandate, despite traditional additionality concerns, it is best practice for utility energy efficiency and demand response incentive programs to remain available for buildings taking action to comply with a BPS at least in the short-to-medium term. This is critical for providing funding to buildings to get the work done as well as for ensuring political and utility support. The demand side management provisions of AB802 of 2015 provide a California precedent for this. CEC should work with the Public Utility Commission to:

1. adjust the additionality test so that energy savings can continue to be fully attributed to utilities for a period of at least nine years from the date of BPS passage after which time attribution could begin to gradually sunset and

2. align utility DSM programs so that their design, implementation, marketing, and evaluation fully benefits from the availability of benchmarking data and they work hand-in-glove with the BPS to help owners comply and maximize decarbonization and market transformation.