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Comments on the CEC Draft BPS Recommendations

Additional submitted attachment is included below.

August 6, 2026

California Energy Commission
Docket Unit, MS-4
Docket No. 24-BPS-01
715 P Street
Sacramento, California 95814

CALIFORNIA BUILDING ENERGY PERFORMANCE STRATEGY REPORT COMMENTS TO THE DRAFT REPORT

Dear Commissioners,

I appreciate the opportunity to comment on the California Energy Commission's draft Building Performance Standards (BPS) report.

I have been a vocal critic of many Building Performance Standards proposals. That should not be interpreted as opposition to the concept of BPS itself. Rather, my criticism is directed at the specific policies that have been proposed and implemented to date. In my view, they have consistently failed to achieve their climate policy objectives because they omit significant portions of the greenhouse gas emissions associated with the built environment, use flawed methodology, rely on self-reported data, regulate buildings which we have limited sample sizes of to understand how they use energy and fines which do not scale to the building size or level of non-compliance among other issues.

For more than a decade, I have argued that building climate policy should be grounded in whole-life carbon assessments rather than a narrow focus on operational energy. In 2012 while at NRDC, David B. Goldstein and I co-authored a paper presented at the ACEEE Summer Study¹ advocating that whole-life carbon emissions should become the foundation of building energy and climate policy, which was written in response to the CPUC Zero Net Energy Action Plan that I was a member. Ignoring these emissions inevitably leads to sub-optimization by excluding major contributors to the built environment's overall climate impact.

Unfortunately, California's draft Building Performance Standards appears to continue down the same path seen in many jurisdictions across the country.

1. Building Performance Standards Have Yet to Demonstrate Their Effectiveness

Most Building Performance Standards adopted around the United States have not been built upon nationally recognized standards such as ASHRAE Standard 100. Instead, they have largely been assembled from draft model language produced by organizations such as the Institute for Market Transformation (IMT), resulting in a collection of policy experiments rather than a consistent national framework.

Many of these early BPS programs have stalled because of shortcomings in their rulemaking processes, stakeholder engagement, and implementation strategies. As of the summer of 2026, relatively few have actually gone into effect², and almost none have accumulated sufficient implementation history to demonstrate that they are effective tools for reducing greenhouse gas emissions from existing buildings. And yet during the CEC

¹ A New Net Zero Definition: Thinking Outside the Box, 2012 ACEEE Summer Study

² NYU The Implementation of Local Building Performance Standards: An Analysis of Progress to Date and Guide for Future Policy March 2026

workshop on July 29, 2026, the CEC referred to BPS as “established policy”. If by “established” the CEC means promulgated and rewritten and postponed, then sure. BPS has been *established* but remains *unproven*.

Denver and Colorado are case studies which the CEC should review and analyze as examples to avoid and not what to do. A few months after The Energize Denver Task Force on BPS issued its recommendations report, the city council passed CB 21-1310. Then a mere few weeks later Denver’s Office of Climate Action, Sustainability & Resiliency (CASR) issued its first draft regulations for Energize Denver on December 14, 2021. Those draft regs were finalized and promulgated less than an hour into the first public hearing on them four weeks later on January 13, 2022³. They were set to go into effect in the 2024 reporting year. They took no comments—including mine—when doing so. They then reopened the rulemaking and revised the regulations in November 2022, then July 2023 and again in April 2025 and even this month CASR is currently holding a webinar and new open comment period on a revised set of rules next week on August 10, 2026⁴. And with each revision of the draft regulations CASR has shifted the implementation timeframe from 2024, then 2025, then 2026 and most recently on March 11, 2025, CASR announced 2028 would be the new timeline for the first reporting period and fines could come out quarter 2 of 2029. Will the 2028 timeline change again? Call in next week and ask them.

California should take note that Denver did not get here alone; they had help. IMT⁵ and New Buildings Institute (NBI)^{6, 7} assisted them achieve this along with the local firm Group 14.

Colorado’s Regulation 28 has not been a shining example either. CO HB21-1286 saw several revisions before passing. Even during that period SWEEP and the Colorado Energy Office (CEO) resisted comments from advocacy and Colorado promulgated a critically flawed BPS. Most recently, the CEO supported CO HB25-1269 to help fix some elements of Reg 28. I testified in the Capitol on while it was an improvement, it still was not addressing all the issues with the current BPS.

Colorado and Denver’s BPS each remain a work in progress which has not amounted to much beyond annual benchmarking to date.

2. Lack of Specifics in Draft Reports and Recommendations

California has an opportunity to improve upon these earlier efforts by other jurisdictions rather than repeat their mistakes. But the CEC’s recent draft report has the same sins of omission as its predecessors like Energize Denver’s Task Force report⁸ or Colorado’s BPS Task Force report⁹. Neither of these got into specifics on what percentile to set the final targets, how adjustments could be made—if any, how their fines would be set, which building types represented in CBECS would be covered among other nuances. This made it challenging for organizations to take a stand for or against the mere notion of a BPS without any specifics. It was not until the draft rules became published along with the lack of stakeholder engagement when organizations began to form positions on the policies. Jurisdictions have mistaken silence for support—otherwise we are merely counting hypothetical support for a notional BPS, without telling them what’s really at stake. California has not given its citizens and building owners a clear indication of where it wants further legislation to and regulation to go.

³ <https://denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Denver-Climate-Regulations/Energize-Denver-Building-Performance-Policy/Energize-Denver-Policy-Timeline>

⁴ <https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Denver-Climate-Regulations/Energize-Denver-Building-Performance-Policy>

⁵ <https://imt.org/news/denver-passes-building-performance-standard/>

⁶ <https://newbuildings.org/denver-shows-leadership-with-net-zero-energy-plan/>

⁷ City and County of Denver Building Typology and EUI Targets December 17, 2021 by Group 14

⁸ <https://www.denvergov.org/files/assets/public/v/1/climate-action/documents/cpf/climate-action-task-force/edtf-recommendations-8-31-final.pdf>

⁹ https://energyoffice.colorado.gov/sites/energyoffice/files/documents/BPS%20Recs%20Press%20Release_%2010-11-22.pdf

3. The Draft Continues to Omit Major Sources of Greenhouse Gas Emissions

The draft report continues the longstanding omission of significant greenhouse gas emissions from the built environment.

Whole Life Carbon: BS EN 15643 - 2021

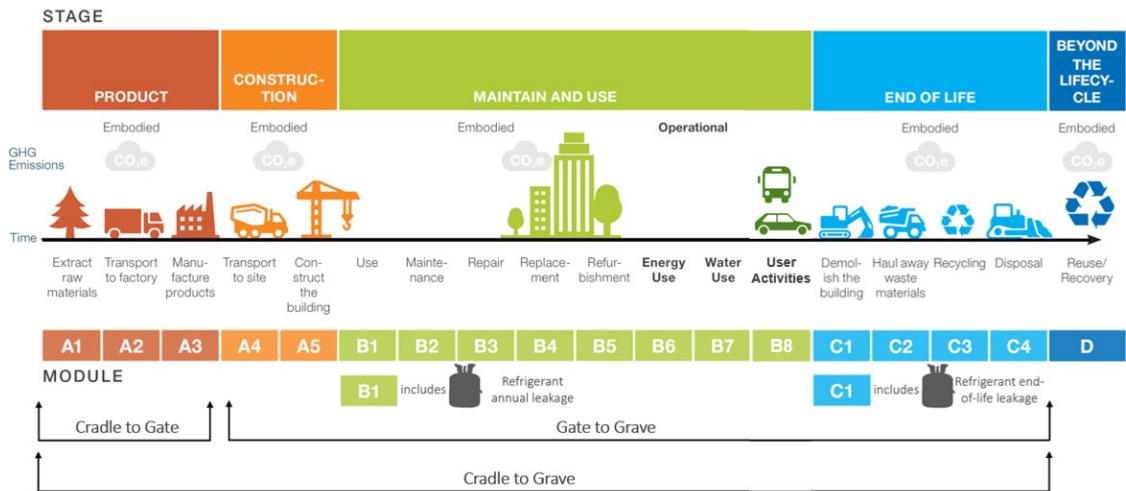


Figure 1: Whole Life Carbon framework and nomenclature

3.1 Operational emissions from energy consumption grid emissions and interactions (Module B6)

Most notably, the draft report focuses almost exclusively on on-site combustion. The framework evaluates fossil fuels burned on-site, such as natural gas equipment and presumably fuel cells and microturbines used for electricity production.

The proposed on-site GHGi metric excludes the relationship between buildings and the electric grid. Electricity-related impacts include:

- Grid-related emissions—both average or marginal
- District energy systems
- Demand response
- Energy storage

Modern building decarbonization extends beyond reducing direct fuel combustion. Buildings increasingly provide demand flexibility, load shifting, thermal storage, and electrification strategies that interact with grid conditions.

A metric focused solely on on-site combustion ignores whether a building increases or decreases stress on the electrical system and fails to recognize contributions toward managing California's well-known evening ramp "duck curve".

Future performance standards should incorporate metrics that recognize operational flexibility and grid-responsive buildings as part of an integrated decarbonization strategy.

This omission is significant. California's estimated 50,000-60,000 covered commercial and multifamily buildings will receive little policy guidance regarding how retrofits should interact with an increasingly decarbonized electric grid. Unless the Commission assumes that these issues will be addressed elsewhere through Title 24, Long-Term

System Cost (LSC) metrics, or Title 20, this represents a substantial missed opportunity to assist buildings incorporate demand response, distributed generation and other grid interactions. Future versions of Title 24 need to be in alignment with the future BPS.

The draft provides no discussion regarding how on-site renewable energy will interact with compliance. California should avoid creating a building performance standard that unintentionally favors lower-density development over compact urban buildings.

It should not be lost, that adding battery storage increases energy use intensity (EUI) in the hopes of offsetting energy emissions or reducing marginal impacts. The proposed dual metrics will not inherently reward or encourage review of grid emissions.

But these are just another facet of operational energy-related carbon emissions. BPS regulations historically omit any transit-related emissions, embodied carbon emissions, refrigerant leakage emissions, water and wastewater conveyance emissions.

3.2 User Activities - Transportation Carbon emissions (Module B8)

If a BPS were to be placed on commercial properties in San Francisco, a case could be made that all locations in the city's compact 7 mi x 7 mi footprint are all similarly location efficient. That is any given block in San Francisco has homogenous access to public transportation, bike lanes and walking. If so, then a BPS in SF could potentially ignore transportation-related emissions to simplify the regulations. But in many CA towns with building >50,000 SF, there is not uniform location efficiency. Focusing solely on building energy use and emissions which are approximately 24% of CA's GHG inventory¹⁰ ignores the state's massive transportation related emissions which are >28% from passenger vehicles alone. Buildings which are connected to existing bus lines and such should be rewarded and incentivized to remain in use. Whereas buildings in the same town which are car-dependent are unlikely to be able to change by things within the building owners control. The state's Transit-Oriented Development (TOD) policies should be reflected in its BPS.

Denver's BPS is actually anti-density. It provides on-site solar a credit against its metered energy use not merely on a 1:1 basis but instead at 1:1.5 basis. Denver eases compliance for owners of low-rise buildings without shaded roofs which have sizable roof areas to their overall floor areas. In other words, Denver rewards compliance for low density neighborhoods which buildings downtown cannot leverage as their roofs are shaded, insignificant in size compared to their total floor area to get them to their top 15th percentile target and thus they need to find energy efficiency measures to reach their compliance targets. California and other jurisdictions should reward buildings in walkable neighborhoods.

3.3 Embodied Carbon (Modules A1-A5)

California is a leader in national policy on regulating emissions from embodied carbon in materials with CALGreen. These are largely focused on new construction projects. With the CA BPS, only existing buildings will be covered. All newly constructed buildings will become existing buildings once they have 12 months of energy use data. This means the BPS will need to deal with 1-yr old buildings and 100-yr old buildings. The CEC and stakeholders will have to keep a watchful eye on any straw proposals which devalue existing buildings to the point which they are deemed functionally obsolete and razed. CA has a housing shortage. Virtually all of its existing MF residential properties will be incentivized to invest in retrofits which per the CEC's guidance have pass-through penalty prohibitions. The CEC's draft recommendations imply the final targets can be as aggressive as desired, and owners will find monies and technology to achieve them.

Denver recently added a bonus for adaptive reuse in its BPS. Most BPS regulations ignore the materials already in the building or new materials added to meet the requirements. Existing buildings with unrealistic targets and draconian fines jeopardize the long-term operations of these buildings. If our BPS push owners to sell and possibly demolish these buildings in favor of new construction erected to comply with a BPS, then we've lost. The

¹⁰ <https://ww2.arb.ca.gov/ghg-inventory-graphs>

point of a BPS should be to reduce their GHGs while encouraging them while not triggering the amount of embodied carbon seen in new construction.

BPS policies are still in their infancy—just how aggressive can targets be compared to their fines is an unknown before owners opt to sell and move out.

3.4 Water and Wastewater-Related Emissions (Module B7)

As I noted in my 2012 ACEEE Summer Study paper, “California and much of the Southwest are prime conditions for evaporative cooling—both indirect and direct.” By not including water-related emissions and only EUI, the CEC is promoting water-cooled equipment. This could result in more water usage in the state, which is already dealing with water shortages. Water and wastewater-related emissions are quite small relative to all the other Whole Life Carbon emissions stages and modules. B7 emissions barely showed up in my 2012 paper, my 2022 Greenbuild presentation¹¹ in San Francisco or the upcoming MEP 2040 Whole Life Carbon Pilot Findings report. That said, we are still talking about water and do not want to incentivize more consumption of a limited resource to shave kilowatt-hours on EUI.

The CEC should study EUI targets and the potential compliance by adding new water-cooled vs air-cooled equipment. Then the CEC should work with regional water boards to review capacity concerns. After assessing the complexity of setting water use metrics, the B7 emissions could be tabled.

3.5 Fugitive Emissions from Refrigerants (Module B1.2)

Post-Kigali refrigerant options make newer installations less of a GHG concern than their predecessors. That said not all new refrigerants are equal in terms of global warming potential (GWP). So new refrigerants have GWPs <10 and some a fraction of that, but many are still >500 GWP. And some of these higher GWP refrigerants are used in leak-prone HVAC systems with field-installed line sets.

The CEC should work with CARB to ensure existing buildings with CFCs, HCFCs and HFCs dispose of them properly and encourage lower GWP options.

4. Unrealistic Assumptions Behind Fixed EUI Targets

IMT has continued to promote an overly simplistic “trajectory” model that has remained essentially unchanged since its 2021 model ordinance¹². It is still in their current model ordinance for jurisdictions to download which has not been updated since October 2021.

IMT’s theory assumes that every building within a particular occupancy type and possibly climate zone can ultimately achieve the same EUI target if only owners have sufficient motivation. This is not supported by research or data; it is a simple family of lines drawn against two axes. I echo Energy Solutions comments that “the goal should not be to get all buildings of the same type to meet the same goals. The objective must be to improve a building’s performance against its own potential.”¹³ The CEC’s workshop last week repeated this image of trajectory approaches on multiple slides¹⁴.

While it is reasonable to expect poor-performing buildings to improve toward the median, many jurisdictions have not established targets near the median. Instead, they have adopted increasingly aggressive thresholds such as the median (DC) the top 35th percentile (St Louis), or in Denver’s case, the top 15th percentile.

¹¹ Hidden Carbon Footprint of Water, Greenbuild 2022, San Francisco Nov 3, 2022

¹² <https://imt.org/resources/model-ordinance-for-building-performance-standards/>

¹³ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=262944&DocumentContentId=99615>

¹⁴ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=271836&DocumentContentId=109487>

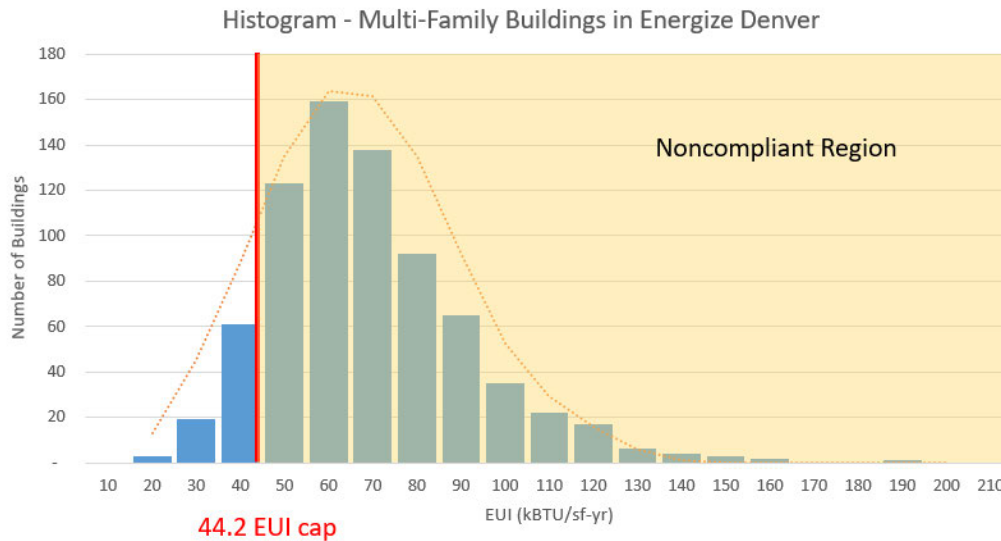


Figure 2: The author's January 2022 public review comments of Energize Denver's draft regs

This assumes that every building within an occupancy category can ultimately achieve a fixed EUI target regardless of:

- Age
- Design
- Operating hours
- Operating seasons
- Plug and process loads
- Occupancy characteristics
- Functional differences

All that is needed are sufficient financial penalties to provide incentives for owners to achieve these targets, provided they have limited payback because the owners cannot recoup capital improvement costs from tenants. To label it overly simplistic would be an understatement.

This top-down assumption has never been adequately demonstrated. Even Denver's City Energy Project building awardees and Energize Denver project awardees for outstanding retrofits only had a pass rate of 27% versus the city's 15% pass rate when originally promulgated in January 2022.

These draft policies are not bottom-up studies of the maximum technology EUI potential reductions or cost effective retrofits. They are instead often a number based on self-reported data of buildings and an EUI threshold which helps reach a climate policy objective. When Denver analyzed the potential costs to retrofit to its proposed 15th percentile targets, Group 14 estimated it to be \$17/sf¹⁵ whereas many of the regulated properties have operating costs of \$1/sf. CASR, IMT and VEIC found that costs for BPS were "generally in the range of \$10-\$20/sf"¹⁶, but it should also be noted that the percentile targets varied across the study. Anyone who has lived through a major retrofit or has audited an older building knows, unexpected items surface. The presumed costs of replacing a single piece of major HVAC equipment might trigger 1-5x in other upgrades because building codes

¹⁵ Penalty Cost Analysis June 23, 2022 by Laura Dyas, Group 14

¹⁶ Lessons from the Ground: Implementing Building Performance Standards, IMT, VEIC, CASR ACEEE SS 2024

are triggered where something no longer meets code. The CEC should solicit feedback from the industry which performs major retrofits including ESCOs.

5. Putting the Cart before the Horse - Starting with Existing Buildings vs New Construction

The draft report and its chosen metrics want existing buildings in CA to electrify and decarbonize. While noble, I want to point out that Title 24, Part 6 (T24) still allows gas boilers along with other gas-burning equipment. As an industry we have not solved every fossil fuel use in buildings and some product offerings are still in development. New construction is the place to start. Designers, contractors and manufacturers can solve these design hurdles and then codes and standards enhancement (CASE) authors can study them for inclusion in future editions of T24. Foisting the burden onto existing building owners to solve for themselves is unfair and unequitable. This will trigger numerous soft costs to existing building owners and educational learning curves for all stakeholders. Which systems can comply? Which can be installed given the site constraints? Who can design it? How much will it cost? How much can be passed on? How can it be funded? How much contingency should be allocated? (Sidenote: It was not that long ago when variable refrigerant flow (VRF) was seen as the one-size-fits-all approach to decarb and we are witnessing some of those being ripped out along with their R-410a refrigerants) This is not trivial. To be effective policy, owners will need resources and contractors who reliably and knowledgeably can configure kit-of-parts solutions from off-the-shelf products to deal with the infinite possibilities they will face in the field. New construction is the place to start. These owners are hiring qualified engineers, architects and contractors to develop cost effective solutions for their new construction projects. These lessons learned should then inform the retrofit community—not vice versa. That might throw a wrench in the time horizon California wants for its BPS, but that is part of the reality it cannot ignore.

6. Climate Zone Adjustments

The draft contains no discussion of climate zone normalization.

California encompasses an extraordinary range of climatic conditions, from alpine environments in the Sierra Nevadas to hot desert climates and temperate coastal regions. Building performance targets should reflect these differences. Colorado Regulation 28 provides an example of what to avoid. CO has EUI and GHGi targets which have zero distinction to climate zones for the over 70 building types covered. Hotels located at high-elevation ski resorts and those located along the Front Range despite dramatically different heating requirements are given the same EUI targets. The myth that all buildings can perform the same regardless of location, vintage and occupant loads has metastasized to all aspects of BPS thinking.

ASHRAE Standard 100-2024 provides a technical foundation for climate-adjusted performance targets and should be considered during program development.

7. Normalization of Energy Use

The draft provides no discussion of how EUI targets will be normalized for differences in occupancy, operating schedules, utilization, or functional characteristics.

ENERGY STAR addresses many of these variables for eligible building types¹⁷ through statistical normalization¹⁸. However, many more commercial buildings are not eligible for ENERGY STAR Scores, requiring alternative approaches. The CEC could merely exempt all building types not eligible for an ENERGY STAR Score until it has

¹⁷ <https://www.energystar.gov/buildings/benchmark/understand-metrics/property-types/eligible-score>

¹⁸ <https://portfoliomanager.energystar.gov/pdf/reference/ENERGY%20STAR%20Score.pdf>

a clear evidence-based means of levelizing them, or the CEC could assign them target below the median to encourage owners to begin assessing their facilities.

Heated-only schools operating only nine months each year versus air-conditioned schools open year-round with after-hours programs should not have the same EUI. Our goal should never be to limit the utilization of our existing building stock. Almost every building type in DOE's Commercial Buildings Energy Consumption Survey (CBECS) and California's own Commercial End-Use Survey (CEUS) warrants consideration on how each building type's operational energy fingerprint is influenced by age, HVAC system type(s), envelopes, number of stories, usage patterns, occupant density and other characteristics which the EPA reviews for correlations to predict energy use.

ASHRAE Standard 100-2024 provides some EUI multipliers based on operating schedules, while not perfect, it begins to address some of the deference needed in a BPS target to adjust against hours of operation.

Policies should not discourage beneficial building utilization. For example, a museum that rents space for community events or fundraising should not be penalized by EUI simply because the building is serving the public more intensively. Maximizing the useful life and utilization of existing buildings often produces lower whole-life carbon emissions than constructing new buildings, when one can serve multiple purposes.

EUI targets should not encourage owners to relocate loads off-site such as a hotel with on-site laundry. Hotels could eliminate that in favor of driving linens to an off-site location which then increases traffic. This is not the objective and allowances should be made for various amenities and differences rather than mandating all operate the same with the same budget.

Similarly buildings with commercial kitchens should not be penalized for the number of meal services offered. Examples abound with the nuances between two potentially identical buildings with merely two different tenants, their loads and hours of operation. Grace Rink, the former executive director of CASR, when presented with this scenario indicated the higher EUI building would be forced to make energy upgrades to reach the lower EUI of its twin building¹⁹. ENERGY STAR adjusts for these differences rather than setting a single source EUI for both. California will need to find similar statistical correlations from its own data sets.

8. The Draft Does Not Identify Which Building Types Will Actually Be Regulated

The report estimates that approximately 50,000-60,000 buildings will eventually fall under the regulation but provides almost no discussion of the individual building categories involved. This omission is important because California inherits many of the same building classification problems found within CBECS, EPA ENERGY STAR, and CEUS.

Many building categories are combined into broad groups that mask enormous differences in actual energy use.

For example, public assembly buildings²⁰ often combine:

- Bowling alleys
- Museums
- Theaters
- Casinos
- Community centers
- Libraries
- Recreation centers
- Convention centers

¹⁹ Building Change Summit with The Colorado Forum and ULI-CO at DMNS May 20, 2022

²⁰ <https://www.eia.gov/consumption/commercial/building-type-definitions.php>

- Funeral homes
- Transportation terminals
- and others

Likewise, educational buildings combine elementary schools, middle schools, high schools, universities, daycare centers, vocational schools, adult education facilities, and religious education.

These facilities often have dramatically different operating characteristics yet are represented by a single combined statistical category and EUI. We lack a means to disaggregate the data which is presently commingled, which is the next topic.

9. California Does Not Have Sufficient Specific Building-Type Data

Because California has replicated the federal building classifications²¹, it suffers from many of the same data limitations.

ENERGY STAR itself demonstrates this limitation²². Only roughly twenty building types are eligible for an ENERGY STAR score because those are the only categories for which EPA possesses sufficient statistical data to construct reliable regression models which can reliably predict energy use based on a survey questions responses.



Technical Reference

U.S. National Median Reference Values for All Portfolio Manager Property Types

Broad Category	Primary Function	Further Breakdown (where needed)	Source EUI (kBtu/ft²)	Site EUI (kBtu/ft²)	Reference Data Source - Peer Group Comparison
Banking/Financial Services	Bank Branch *		209.9	88.3	CBECs - Bank/Financial
	Financial Office*		116.4	52.9	CBECs - Office & Bank/Financial
Education	Adult Education		110.4	52.4	CBECs - Education
	College/University		180.6	84.3	CBECs - College/University
	K-12 School*		104.4	48.5	CBECs - Elementary/Middle & High School
	Pre-school/Daycare		131.5	64.8	CBECs - Preschool
	Vocational School		110.4	52.4	CBECs - Education
	Other - Education		110.4	52.4	CBECs - Education
	Other - Education		110.4	52.4	CBECs - Education
Entertainment/Public Assembly	Convention Center		109.6	56.1	CBECs - Social/Meeting
	Movie Theater		112.0	56.2	CBECs - Public Assembly
	Museum		112.0	56.2	
	Performing Arts		112.0	56.2	
	Recreation	Bowling Alley	112.0	50.8	CBECs - Recreation
		Fitness Center/Health Club/Gym	112.0	50.8	
		Ice/Curling Rink	112.0	50.8	
		Roller Rink	112.0	50.8	
		Swimming Pool	112.0	50.8	
		Other - Recreation	112.0	50.8	
	Social/Meeting Hall		109.6	56.1	CBECs - Social/Meeting

Figure 3: ENERGY STAR Technical Reference EUIs

²¹ Emails with Mohsen Abrishami at CEC, August 2021

²² <https://portfoliomanager.energystar.gov/pdf/reference/US%20National%20Median%20Table.pdf>

The roughly 50 remaining building types simply do not have enough quality data to support comparable benchmarking.

For decades we have lacked separate statistical datasets for many building types including:

- Natatorium,
- Swimming pools
- Bowling alleys
- Museums
- Convention centers
- Exhibit halls
- Indoor recreation facilities

Nevertheless, many jurisdictions have established identical EUI targets for these building types despite clear differences in their operational characteristics.

The building types ineligible for an ENERGY STAR Score simply do not have enough quality data to support comparable benchmarking.

CEUS follows many of these same federal classifications and therefore does not solve this underlying problem.

Compounding this issue, California no longer provides public analytical tools comparable to those previously available through the CEUS portal or CAL-ARCH, making it considerably more difficult for building owners to understand where their buildings fall relative to comparable facilities.

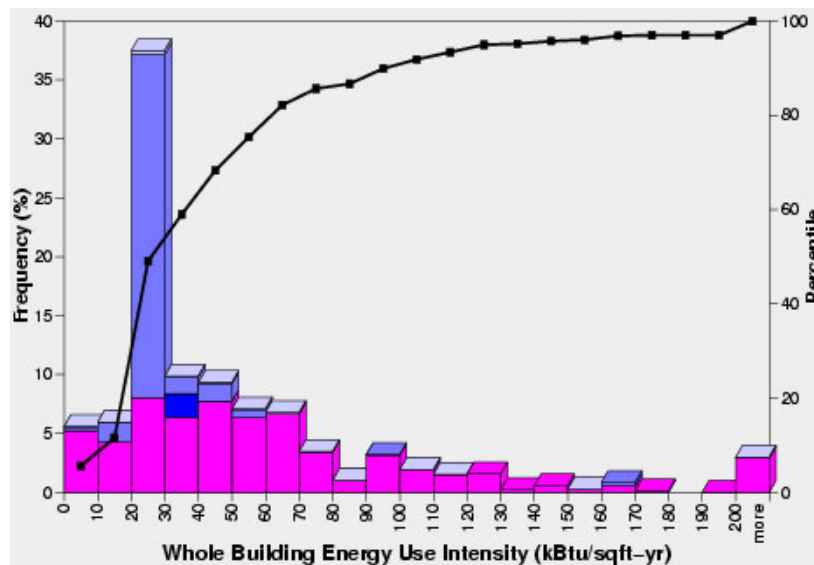


Figure 4: Circa 2000 version of CAL-ARCH's benchmarking portal

Without reliable benchmarking data, it is difficult to establish fair or technically defensible Building Performance Standards.

10. Building Floor Area Data Is Often Inaccurate

Another issue common to Building Performance Standards nationwide—and not addressed in the draft report—is the quality of reported floor area.

Many jurisdictions establish EUI targets to the nearest tenth of a kBtu per square foot per year, implying an extraordinary level of precision.

However, the underlying floor area data frequently contains substantial errors.

Examples include:

- Reporting rentable rather than gross floor area
- Combining structured parking with conditioned space
- Confusing conditioned floor area with total gross floor area
- Inconsistent treatment of mechanical areas

These reporting errors can result in areas 20% too low and in some cases approaching 100% too large.

Group 14's work in Denver demonstrated that many recently constructed buildings required large corrections before they could even be categorized properly for projects built in the past decade.

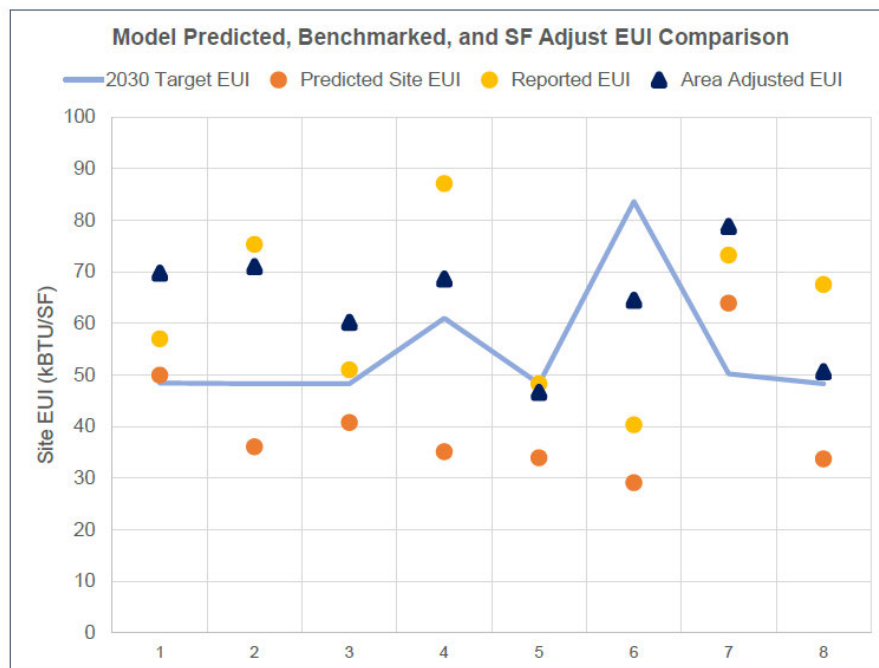


Figure 5: Group 14's analysis of self-reported data from owners vs data it had from energy modeling them while in design

Perhaps most alarming was that Denver when it worked with NBI to set its 15th percentile targets used unverified, self-reported data from its benchmarking database. That means the targets were set coincidentally about one standard deviation from the mean relying on data it did not confirm we actually real. It might be fair to assume that buildings closer to the median are real, but as properties fall into the extremes, these outliers should be regarded with higher levels of skepticism.

When floor area itself is uncertain by 20% or more, establishing compliance targets to the nearest tenth of a kBtu per square foot creates a false appearance of scientific precision. We are not gods; we need to stop the pretense

that we can predict how much energy a building uses or should use down to a fraction of a kBTU. In fact, we should be rounding these up at least to the nearest whole number—if not an even courser number.

The Commission should recognize these limitations before adopting fixed numerical targets that exceed the accuracy of the underlying data.

11. Penalty fines

No concrete terms on the penalty fines levied.

The draft indicates that penalties should exceed utility costs to encourage retrofits but provides no indication of how penalties will be calculated.

Colorado's experience demonstrates why this issue deserves careful consideration.

Colorado's BPS wrote this into their HB21-1286 which tied the hands of the Colorado Department of Public Health & Environment (CDPHE) and CEO from setting them. CO set it at \$5,000 per fine which no distinction if it was to be assessed daily, annually, or under another schedule. Denver's CB 21-1310 repeated this flaw and but made their penalty \$0.7/kBTU which is equal to \$2.39/kWh or 20x what Denverites pay Xcel Energy for electricity and 100x what we pay for natural gas. At least Denver's fines scale with the amount out of compliance and with building size. Colorado's Reg 28 does not.

While scaling penalties are preferable to a flat fine, such penalty levels can produce disproportionate financial consequences, even for relatively efficient buildings.

California should establish a transparent penalty methodology that is proportional, predictable, and economically rational.

Conclusions and Recommendations

California has an opportunity to develop a Building Performance Standard that improves upon the early generation of policies adopted elsewhere.

California is too large a market and market leader to flub the launch of its BPS. The BPS community has evolved into an echo chamber of the same parties making the same claims. Trust no one who does not provide open data of their BPS efficacy to date.

The CEC's proven T24 process and CASE development should serve as a template for a CA-specific BPS process. Start with ASHRAE Standard 100-2024, but do that knowing it too has shortcomings with its fixed fuel splits for gas and electricity for all building types in given climate zone. And know that it only provides the 25th percentile, 40th percentile and median data. The full distribution is not provided. Review its Informative Appendix J: Guidance For Locally Derived Building Performance Targets using data from CEUS and AB 802.

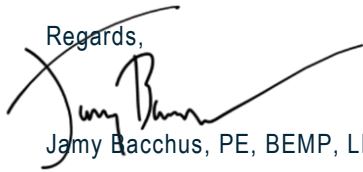
CA's GHG inventory is 28% transportation whereas only 24% is from buildings of which a subset of the potentially covered properties in the proposed BPS are within. How we get to and from our decarbonized buildings can have a bigger impact and our policies should not be siloed.

To accomplish this, the Commission should broaden its framework beyond on-site combustion, incorporate grid interaction and whole-building greenhouse gas impacts, acknowledge the limitations of existing building-type datasets, improve transparency regarding regulated building categories, and recognize the uncertainty inherent in existing benchmarking data.

Without addressing these issues, California risks repeating many of the shortcomings that have limited the effectiveness of Building Performance Standards implemented elsewhere while missing important opportunities to achieve greater greenhouse gas reductions from the built environment.

Thank you for considering these comments.

Regards,

A handwritten signature in black ink, appearing to read "Jany Bacchus", with a long, sweeping horizontal line extending to the right.

Jany Bacchus, PE, BEMP, LEED Fellow