

DOCKETED

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Comments on draft Marin County local energy standard (green code)

Additional submitted attachment is included below.

FARBER ENERGY DESIGN

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April 9, 2018

To: California Energy Commission Docket: 16-BSTD-07

From: Gary Farber

RE: Comments Regarding Marin County Proposed Local Energy Standard

ALL PROJECTS: GREEN BUILDING REQUIREMENT: The draft ordinance says that it is mandatory to comply with any one of two or three listed programs, depending on building type. All of these programs include special energy efficiency requirements. However this draft ordinance also appears to indicate that some building types (e.g. new residential all-electric; new nonresidential all-electric) are not subject to special energy requirements. The ordinance should clarify this seeming discrepancy.

RESIDENTIAL NEW SINGLE-FAMILY < 4,000 SQ. FT. CFA: Clarify that projects without solar, and projects with solar, are “mixed-fuel” projects.

RESIDENTIAL NEW SINGLE-FAMILY \geq 4,000 SQ. FT. CFA: Because the current energy code only provides a relatively minor compliance “credit” in the Performance calculations for including PV systems, the proposed 35% efficiency requirement (20% if all-electric) is excessive – and may very well not be achievable.

I recommend the following alternatives:

- Mixed-fuel: 15% more efficient than the energy code, plus maximum EDR rating of 20.
- All-electric: 10% more efficient than the energy code, plus maximum EDR rating of 30.

Note: The EDR requirements I list above are based on the 20 value contained in the draft ordinance. I have no practical experience with the EDR ratings. Please consult with CEC staff for recommendations of EDR values that would align with the energy goals you are trying to achieve.

RESIDENTIAL SINGLE-FAMILY ALTERATIONS & ADDITIONS: The draft ordinance does not require special energy efficiency requirements unless the alteration/addition area exceeds 750 sq. ft. floor area. It is exceedingly difficult to exceed the energy code by more than a small margin when there are no new mechanical systems. Conversely, when there are new mechanical systems, it becomes easier to exceed the energy code.

Some projects that exceed 750 sq. ft. will not include new mechanical systems, and some projects smaller than 750 sq. ft. will include new mechanical systems. Therefore, the county ought to consider the following definitions and requirements for residential alterations and additions:

- Both space conditioning systems and domestic water heating systems are “Mechanical Systems”. For the purposes of this ordinance, new space conditioning, regardless of the number of system components, will count as one mechanical system. New domestic water heating, regardless of the number of new heaters, will count as one mechanical system.
- For any alteration and/or addition project that does not include a new mechanical system, there is no requirement to exceed Title 24 energy code energy efficiency.
- Any alteration and/or addition project that includes one new mechanical system shall exceed Title 24 energy code efficiency by 5% (compliance under the Performance approach)
- Any alteration and/or addition project that includes two new mechanical systems shall exceed Title 24 energy code efficiency by 10% (compliance under the Performance approach)

MULTIFAMILY ALTERATIONS & ADDITIONS: As stated above under Single-Family Alterations & Additions, instead of dictating energy efficiency requirements based on the floor area of the project, I recommend basing energy efficiency requirements on the extent to which new mechanical systems are part of the alteration/addition project.

NONRESIDENTIAL BUILDINGS, NEW AND ALTERATIONS/ADDITIONS: The Title 24 energy code’s envelope requirements are recognized as very stringent. It is very difficult to procure glazing systems with energy factors more than a very small margin better than the Prescriptive requirements. Thermal insulation requirements are also stringent – where even most wood frame assemblies are required to have insulative sheathing in order to meet Prescriptive compliance.

Therefore, where building permits only cover the building envelope – whether new or altered – the ordinance should not require efficiency greater than the Title 24 energy code.

Under the Performance approach, for most new buildings¹, the standard energy budget is based on a central VAV with hydronic reheat HVAC system. This system type is impractical for a large number of buildings, based on AC loads, equipment availability, and/or equipment costs. When the standard system is a VAV system, and the proposed system is not a VAV system, under the Performance approach the proposed energy budget will typically much exceed the standard energy budget, usually making Performance compliance impossible when mechanical compliance is included. However, the energy code does not require mechanical systems to comply with the Performance approach, even when other building systems are complying with the Performance approach. And the Prescriptive compliance approach does not require VAV systems.

Therefore, where building permits only cover the building envelope and mechanical systems – whether new or altered – the ordinance should not require efficiency greater than the Title 24 energy code. There also should be no special energy requirements for projects that include envelope and mechanical compliance, plus only common area indoor lighting.

¹ Standard HVAC system is package VAV with reheat for all multi-story buildings, and all buildings with greater than 10,000 sq. ft. conditioned floor area.

For nonresidential new buildings, and for large additions, where the energy compliance includes lighting for the entire, or a substantial portion of, the project area, projects should be allowed to meet either of the energy requirements listed below:

- Where envelope, indoor lighting and mechanical systems are modeled under the Performance approach: Exceed Title 24 efficiency by 10%.
- Where envelope and indoor lighting are modeled under the Performance approach: Exceed Title 24 efficiency by 13%. In this case, mechanical systems shall comply with the Title 24 Prescriptive approach.

MIXED-USE BUILDINGS (buildings including both residential and nonresidential occupancies):

- For low-rise buildings, residential and nonresidential areas shall each comply with their own provisions of the Title 24 energy code. Where this ordinance includes requirements for either or both occupancies, those portions of the building shall meet the respective requirements for their occupancy type.
- For high-rise buildings, where residential and nonresidential occupancies are modeled together for Title 24 energy compliance, the entire building shall meet the energy efficiency requirement of the majority occupancy type (measured by floor area).

Mixed-Use Building Notes:

- a) Low-rise and High-rise, as defined by the Title 24 energy code.
- b) For this provision, ‘occupancy type’ refers to ‘residential’ or ‘nonresidential’.
- c) Hotel/motel occupancies shall be subject to the ‘nonresidential’ requirements of this ordinance.

NONRESIDENTIAL TENANT IMPROVEMENTS:

- Envelope-only alterations: No special requirements
- Mechanical-only alterations: No special requirements
- Indoor lighting-only alterations: Exceed Title 24 efficiency by 10% Note: Applies to lighting in both conditioned and in unconditioned spaces.
- Outdoor lighting-only alterations: Exceed Title 24 efficiency by 10%
- Envelope and indoor lighting alterations (regardless of whether there are mechanical alterations): Exceed Title 24 efficiency by 5% Note: Projects where the quantity of new luminaires will be less than 50% of the total number of luminaires in the project area are exempt.

LEED: LEED compliance is a program compliance option. The ordinance ought to clearly state whether the LEED documentation is to be provided to USGBC for certification, or provided to the county for review (some jurisdictions that require LEED do not require that the projects be USGBC certified – thus reducing the amount of design team documentation time, although likely at the expense of a lower aggregate compliance rate).

2019 ENERGY CODE: The 2019 energy code's indoor lighting power allowances are more stringent than those in the current energy code. The efficiency levels I recommend above for nonresidential buildings and lighting tenant improvements may not be practical under the 2019 code.

TYPOS: In the Multi-Family section, the term "home" is used, when the appropriate word is "building".