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Gabel Energy's Comments on 2028 Presentation - Existing Building Performance HVAC Upgrades & Commissioning

Thank you for the clarifying presentation. Attached is a letter with Gabel Energy's comments on the presentation.

Additional submitted attachment is included below.

July 17, 2026

To CEC Staff,

Topic: Session -6/23/26: Existing Building Performance: HVAC Upgrades and Commissioning

After attending the pre-rulemaking staff workshop on the 2028 Energy Code on Day 1 (6/23/26), I have the following concerns:

1. DDC Upgrades



DDC Upgrades

Proposed Code Changes shown in underlined text

Summary of Additions/Alterations Requirements in Table 401.2-D

- Requirements for nonresidential buildings covered in **Section 100.3**
 - **Exceptions:** Healthcare, Hotel/Motel
- DDC to the zone per **Table 401.2-D**
 - Additions/Alterations modified
 - **Exceptions:** Chiller plant upgrades CZ 1, 3, 5, 16
 - **Exceptions:** Boiler plant upgrades CZ 6, 7
- **Section 401.2.2.12:** HVAC hot water temperature
 - Design for HHW supply temp $\leq 130^{\circ}\text{F}$
 - New/replacement terminal units designed for existing HHW supply temp, capable of operating at HHW supply temp $\leq 130^{\circ}\text{F}$

Zone terminal units (VAV boxes)	Any new/replaced terminal unit <u>If $> 50\%$ of terminal units served by AHU are DDC, provide DDC at AHU</u>
AHU or FCU	Capacity ≥ 150 kBtu/h <u>Any capacity existing AHU/FCU served by same CHW, or HHW systems with DDC</u>
New AHU + zones	Capacity ≥ 150 kBtu/h Zones > 3 New zones $> 75\%$ of all zones <u>When $> 85\%$ of zones are new, DDC to all zones</u>
CHW Plant	Capacity ≥ 300 kBtu/h <u>When $\geq 50\%$ of capacity new, DDC for entire plant, including pumps</u>
HHW Plant	Capacity ≥ 300 kBtu/h <u>When $\geq 50\%$ of capacity new, DDC for entire plant, including pumps</u>

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In my experience, these proposed changes will cause issues with scope costs, feasibility of changing controls for only parts of the built-up system, and enforceability. I suggest confirming none of the following will limit the savings desired by this measure.

- a. **Scope Cost:** The client will typically make changes to their current HVAC design for two reasons, something is not working, or they are remodeling parts of the building. Dictating that the scope of the project to extend beyond the features being altered will cause clients to either walk away from the project (we lose any energy savings associated with improving what is there); walk away from pulling a permit (we lose the ability to have the equipment scope desired meet the Energy Code and lose the testing opportunities for energy savings and improved ventilation); communicate with the Authority Having Jurisdiction (AHJ) that meeting the Energy Code requirements will cost too much and ask for leniency (of which I have found most AHJ's will agree to this if within reason).
- b. **Feasibility of changing controls for only parts of the built-up system:** I am not a mechanical engineer nor a mechanical designer, but I have heard from many that not all systems can

speak to these new control systems. This means we are putting in expensive controls that are not working as designed, or that the project will require more changes than required just so the system features can be controlled with the new DDC controller.

- c. **Enforceability:** Building permit applications supports a specific scope of work. The proposed changes would require the project to make changes beyond the scope of the permit. This is often not understood by the designers, permit applicants, nor the AHJ.

2. Commissioning for Existing Buildings

Commissioning for Existing Buildings

Proposed Code Changes shown in underlined text – General Requirements



- **Section 401.3.4.1 Heating and cooling loads**
 - When sizing new/replacement space-conditioning equipment for nonres alteration, existing HVAC energy use/trend data used in load calculations and submitted to AHJ
 - **Exceptions:** Healthcare, Hotel/Motel
- **Section 401.5.2.2.1.3 & 401.5.2.2.2.3 Existing Building Commissioning**
 - Requires EBCx performed according to Section 1001.5.2.1.1
 - **Exceptions:** Healthcare, Hotel/Motel
- **Section 1001.5.2 Alterations**
 - Alterations to components of existing nonresidential comply
 - **Exceptions:** Healthcare, Hotel/Motel
 - EBCx in accordance with ASHRAE Standard 230
 - EBCx results documented in EBCx report, delivered to owner/rep prior to final inspection
 - Expected remaining useful life and replacement schedule for chillers, boilers, AHUs > 150 kBtu/h, packaged RTUs
 - Benefits of installing devices for pneumatic to DDC interface
 - Compatibility/capability for ASHRAE Guideline 36 sequences (2025 JA18)
 - List of identified issues and corrective actions taken

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Commissioning for Existing Buildings

Proposed Code Changes shown in underlined text – Equipment Specific Requirements



Summary of Equipment Specific Requirements in Table 1001.5-A

Equipment	EBCx Evaluation	EBCx Strategies
Zone terminal units (VAV boxes) served by same AHU	Zone heating/cooling overlap between central and perimeter systems, implement deadband	Occupancy based schedules Occupancy based temp setpoint resets
AHU/RTU or FCU > 150 kBtu/h	Outdoor air ventilation per 401.2.1.2 Visually inspect outdoor air/economizer dampers and linkages for restrictions	Occupancy based schedules Occupancy based temp setpoint resets Supply air temp reset Static pressure reset
CHW Plant > 300 kBtu/h	<u>For all AHU/RTUs or FCUs served by plant:</u> Outdoor air ventilation per 401.2.1.2 Visually inspect outdoor air/economizer dampers and linkages for restrictions	CHW supply temp reset CW temp reset Pump differential pressure reset
HHW Plant > 300 kBtu/h	Capability of plant to meet zone heating loads at HHW supply temp down to 130°F <u>For all AHU/RTUs or FCUs served by plant:</u> Outdoor air ventilation per 401.2.1.2 Visually inspect outdoor air/economizer dampers and linkages for restrictions	HHW supply temp reset Pump differential pressure reset

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- a. 401.3.4.1 Heating and cooling loads: I feel this is outside the scope of the Building Code and may have privacy concerns. I also feel there are major roadblocks for AHJ's in terms of enforcing this code requirement. If this is a "like for like" replacement with no changes to the ductwork, load calculations are not typically applicable since the existing distribution system is designed to the loads supported by the equipment being replaced.

- b. 401.5.2.2.1.3, 401.5.2.2.3 Cx requirements: I have concerns about the cost and effort to complete a commissioning process for just replacing one piece of equipment, but even more so when only updating the ducting of an existing system. I see this as being a barrier to compliance, in which again, people will either walk away from the project, do it without a permit, or not be enforced by the AHJ.
- c. 1001.5.2 Alteration: Please do not reference a procedure not written within the Energy Code itself. This will require everyone to buy this standard (which is \$92), just to see what is involved. I feel this is codifying the mechanical contractor to expand the project scope for profit with little oversight because of the vague nature of this proposed code language.
- How will the commissioning process be documented?
 - Who will be allowed to do the Commissioning?
 - Who will know how to enforce it?
 - Additionally, how is someone to determine “Remaining useful life” in a way that is enforceable?
 - Who will determine “benefits” and “compatibility” of installing equipment that is not part of the scope of the project.
 - Who will take the “corrective” actions without taking the risk of liability, breaking, or not supporting how the building owner desires to have this existing equipment function?
 - What if the “strategies” in Table 1001.5-A are not appropriate or desired? How can they be enforced?

Please feel free to reach out if you have any questions or require clarification regarding the matters raised in this filing.

Sincerely,



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