

*Comment Received From: Home Ventilating Institute (HVI)*  
*Submitted On: 11/17/2023*  
*Docket Number: 22-BSTD-01*

**HVI Comments - Title 24-2025 Pre-rulemaking 11172023**

*Additional submitted attachment is included below.*



17 November 2023

California Energy Commission  
Docket Unit, MS-4  
Docket No. 22-BSTD-01  
715 P Street  
Sacramento, California 95814

Re: Title 24-2025 Pre-Rulemaking Express Terms

Dear CEC Staff:

HVI is an ISO 17065 compliant certification body and a trade association representing over 100 manufacturers located in North America, South America, Asia, and Europe. Our manufacturer members provide the residential and light commercial ventilating products that deliver essential indoor air quality to homes and businesses. HVI's Certified Product Database contains listings for heat and energy recovery ventilators (HRVs and ERVs), bath/utility room exhaust fans, kitchen exhaust fans, dryer exhaust duct power ventilators, in-line supply and exhaust fans, whole-house fans, duct termination fittings, and soffit vents, among other products.

HVI appreciates the opportunity to present comments on the Title 24-2025 Pre-Rulemaking Express Terms. HVI supports the development of codes and standards that encourage the specification and use of energy efficient ventilation systems in support of indoor air quality. Following are several comments developed by an HVI workgroup which are offered to improve the express terms and to support CEC's objective of advancing energy efficiency in building design.

Please direct any questions to Josh Lynch, HVI's Engineering Director ([compliance@hvi.org](mailto:compliance@hvi.org)).

Kind regards,

A handwritten signature in blue ink that reads "Jacki Donner". The signature is written in a cursive, flowing style.

Jacki Donner, CEO/Secretary

*Advancing the Value of Residential Ventilation for Healthier Living®*

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1. **ASHRAE 62.2.** The express terms propose to adopt the 2019 version of ASHRAE 62.2, with two addenda. Typically, CEC adopts the most recent version of 62.2 with associated addenda, which is ASHRAE 62.2-2022 with addenda d, e, i, k, and m. HVI encourages CEC to adopt the most recent version with all published addenda, in alignment with CEC’s prior practice. Improvements contained in the addenda to the 2019 and 2022 versions include:<sup>1</sup>
  - a. 2019 Addendum b: Disentangles the requirements of ventilation rate, control, and operation to make the standard easier to follow, enforce, and maintain over time.
  - b. 2019 Addendum d: Replaces the current definition of “readily accessible” with a new definition from the 2020 National Electrical Code (NEC) intended to be less ambiguous and more compatible with building codes. Addendum d also adds a new definition of “accessible.”
  - c. 2019 Addendum e: Addendum e makes the air leakage rate for compartmentalization in multifamily dwellings more stringent. [This provision can be overridden at CEC’s discretion and as CEC has proposed for this code cycle.]
  - d. 2019 Addendum f: Updates the references used for rating ventilation equipment, allowing for ratings that better reflect installed performance and allowing for improved performance metrics to be used in the future.
  - e. 2019 Addendum g: Deletes the reference to ASHRAE Guideline 24. Guideline 24 was withdrawn by ASHRAE.
  - f. 2019 Addendum h: Improves consistency in terminology, improves organization, and better accommodates multifamily applications. Removes definitions for unused terms.
  - g. 2019 Addendum i: Consolidates the operation requirements of the standard into one section, adds a requirement for systems to be maintained, and clarifies that operations and maintenance instructions must be provided via a manual meeting minimum requirements.
  - h. 2019 Addendum v: Updates normative references.
  - i. 2019 Addendum x: Clarify the requirements for installation and operation.
  - j. 2019 Addendum y: Requires a supply or balanced mechanical ventilation system where new multifamily dwelling units are accessed by an enclosed common corridor. [Note: This provision is consistent with CEC’s proposed requirement for multifamily dwelling units to be provided with a supply or balanced mechanical ventilation system. HVI supports this provision and the retention of CEC’s proposed language in Section 160.2(b)2Aivb1.]
  - k. 2022 Addendum d: Clarifies the intent of Section 6.6, “Air Inlets,” and modifies terminology to be more consistent with that used by industry and by building codes.
  - l. 2022 Addendum e: To address concerns for odor and bioaerosols associated with human waste, removes the option of providing an openable window in place of mechanical exhaust within toilet rooms for new construction.
  - m. 2022 Addendum i: Establishes minimum requirements for ozone emissions of air cleaning systems that incorporate ultraviolet light or the creation of charged particles, ions, or free radicals.
  - n. 2022 Addendum k: Clarifies that the standard may address any measure that affects acceptable IAQ in individual dwelling units. Clarifies that the standard does not address IAQ outside of dwelling units (e.g., in common spaces within multifamily buildings). Clarifies that the standard may stipulate filtration requirements for outdoor air prior to introduction in a dwelling unit.
  - o. 2022 Addendum m: Increases the designated minimum efficiency of certain filters from MERV 6 to MERV 11. [Note: CEC’s MERV 13 requirement will trump this addendum.]
2. **IAQ Filter and HERV Accessibility.** The language proposed by CEC regarding attic access requires an integrated ladder to be provided with a compliant attic access door. This requirement is reasonable for attic access hatches that provide access through a ceiling, but it is not necessary for attic access doors that open through a wall. For reference, Section N1102.2.4 (R402.2.4) of the International Residential Code/International Energy Conservation Code refers to attic “hatches” and “doors.” To clarify that vertical

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<sup>1</sup> The text from these bullets is primarily copied from the forewords to ASHRAE 62.2’s published addenda.

doors do not require ladders, please modify the exception to Section 150.01Civa and Section 160.2(b)2Axia as follows:

**Exception to Section 150.0(o)1Civa:** Systems that require servicing from inside the attic shall have the following:

1. An Fault Indicator Display (FID) meeting the requirements of Reference Appendix JA17;
2. An attic access door located in a wall or, where attic access is provided through a ceiling, An attic access door hatch that includes an integrated ladder; and
3. A walkway from the attic access door to the HRV/ERV.

**Exception to Section 160.2(b)2Axia:** Systems that require servicing from inside the attic shall have the following:

1. An Fault Indicator Display (FID) meeting the requirements of Reference Appendix JA17;
2. An attic access door located in a wall or, where attic access is provided through a ceiling, An attic access door hatch that includes an integrated ladder; and
3. A walkway from the attic access door to the HRV/ERV.

3. **Multifamily Alterations.** The proposed language in Section 180.2(b)5Bia permits any type of ventilation system to be specified, regardless of whether a previous permit required a specific type of system to be specified. This is a deviation from the rest of Section 180.2(b)5Bi, which has conditional requirements for altered ventilation systems, based on requirements associated with previous building permits (these are shown in **yellow highlight** below). To maintain consistency with the rest of the section and to ensure that the minimum performance is maintained throughout the life of the building, please modify Section 180.2(b)5B as follows:

**B. Altered ventilation systems.** Altered ventilation system components or newly installed ventilation equipment serving the alteration shall comply with Section 160.2(b)2 as applicable subject to the requirements specified in Subsections i and ii below.

**i. Whole-dwelling unit mechanical ventilation.**

- a. **Whole-dwelling unit ventilation strategy.** The whole-dwelling unit ventilation system shall comply with the 160.2(b)2Aivb requirements for ventilation system type.

**Exception to Section 180.2(b)5Bia:** Dwellings that were not required by a previous building permit to have a supply ventilation system or balanced ventilation system. The altered ventilation system shall be an exhaust, supply, or balanced ventilation system.

- b. **Whole-dwelling unit airflow.** If the whole-dwelling ventilation fan is altered or replaced, then one of the following Subsections 1 or 2 shall be used for compliance as applicable.

1. **Dwellings that were required by a previous building permit** to comply with the whole-dwelling unit airflow requirements in Section 160.2(b)2, 120.1(b) or 150.0(o) shall meet or exceed the whole-dwelling unit mechanical ventilation airflow specified in Section 160.2(b)2Aiv or 160.2(b)2Av as confirmed through field verification and diagnostic testing in accordance with the applicable procedures specified in Reference Appendix RA3.7 or NA2.2.
2. **Dwellings that were not required by a previous building permit** to have a whole-dwelling unit ventilation system to comply with Section 160.2(b)2, 120.1(b) or 150.0(o) shall not be required to comply with the whole-dwelling unit ventilation airflow specified in Section 160.2(b)2Aiv or 160.2(b)2Av.

- c. **Replacement ventilation fans.** Whole-dwelling unit replacement ventilation fans shall be rated for airflow and sound in accordance with the requirements of ASHRAE 62.2 Sections 7.1 and 7.2. Additionally, when conformance to a specified whole-dwelling unit airflow rate is required for compliance, the replacement fans shall be rated at no less than the airflow rate required for compliance.

- d. **Air filters.** If the air filtration device for a whole-dwelling unit ventilation system is altered or replaced, then one of the following Subsections 1 or 2 shall be used for compliance.

1. **Dwellings that were required by a previous building permit** to comply with the ventilation system air filtration requirements in Section 160.2(b)1, 120.1(b)1 or 150.0(m)12 shall comply with the air filtration requirements in Section 160.2(b)1.
2. **Dwellings that were not required by a previous building permit** to comply with the ventilation system air filtration requirements in Section 160.2(b)1, 120.1(b)1 or 150.0(m)12 shall not be required to comply with the air filtration requirements specified in Section 160.2(b)1.

4. **Multifamily HERV Requirements.** HVI supports the proposed mandate for a balanced or supply ventilation system for multifamily dwelling units in Section 160.2(b)2Aivb1. This mandate provides for outdoor air to be delivered directly to the dwelling unit, instead of relying on makeup air (which is an unknown mixture of outdoor air and transfer air from adjacent spaces) to be introduced through an exhaust-only system. HVI also supports the prescriptive path HERV requirements proposed for climate zones 1, 2, 4, 11-14, and 16 in Section 170.2(c)3B, which were shown to be cost-effective by CASE’s Multifamily Indoor Air Quality report.<sup>2</sup> Because HERVs are required in the prescriptive path for these climate zones, they should also be the system specified for the standard building design in these climate zones within Table 170.2-K Mechanical Component Package. This recommendation aligns with the Nonresidential and Multifamily ACM Reference Manual’s requirements in Section 6.1, as follows: “The energy budget for the multifamily standard design is the energy that would be used by a building similar to the proposed design if the proposed building met the requirements of the prescriptive standards.” To comply with the ACM, please update this table to align with the proposed prescriptive path requirements for HERVs.

TABLE 170.2-K MECHANICAL COMPONENT PACKAGE – Multifamily Standard Building Design

Multifamily			Climate Zone															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Unitary (serving one dwelling unit)	If Balanced Ventilation System <sup>1</sup>	HRV or ERV Sensible Recovery Efficiency	0.67	0.67	NR	NR	NR	NR	NR	NR	NR	NR	0.67	0.67	0.67	0.67	0.67	
		HRV or ERV Fan Efficacy (W/cfm)	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.6	0.6	0.6	0.6	0.6
		Non-ERV or Non-ERV Fan Efficacy (W/cfm)	NR	NR	NR	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	NR	NR	NR	NR	NR
	If Heat Pump, HSPF <sub>2</sub> /HSPF <sub>2</sub> <sup>2</sup>		MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN
	If Dual-Fuel Heat Pump, AFUE		MIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MIN
	Refrigerant Charge Verification or Fault Indicator Display		NR	REQ	NR	NR	NR	NR	NR	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	NR
	SEER/SEER <sub>2</sub>		MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN
Central (serving multiple dwelling units)	If Balanced Ventilation Systems <sup>1</sup>	Sensible Recovery Efficiency or Effectiveness	0.67	0.67	NR	NR	NR	NR	NR	NR	NR	NR	0.67	0.67	0.67	0.67	0.67	
		Bypass Function	REQ	REQ	NR	NR	NR	NR	NR	NR	NR	NR	REQ	REQ	REQ	REQ	REQ	REQ
Central System Air Handlers	Central Fan Integrated Ventilation System Fan Efficacy		REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	
Duct Insulation	Ducts in Unconditioned Space		R-8	R-8	R-6	R-8	R-6	R-6	R-6	R-8	R-8	R-8	R-8	R-8	R-8	R-8	R-8	
Water Heating	All Buildings		System Shall meet Section 170.2(d)															

Footnotes to TABLE 170.2-K:

1. Requirements only apply when using Balanced Ventilation to meet 160.2(b)2Aivb.
2. HSPF<sub>2</sub> means "heating seasonal performance factor."
3. A supplemental heating unit may be installed in a space served directly or indirectly by a primary heating system, provided that the unit thermal capacity does not exceed 2 kilowatts or 7,000 Btu/hr and is controlled by a time-limiting device not exceeding 30 minutes.

5. **Single-Family HERV Requirements.** On July 31, 2023, HVI submitted a measure proposal to CEC that proposed prescriptive path requirements for HERVs (filed as TN251382 in the docket to 22-BSTD-01). Using CEC’s criteria, this proposal demonstrated cost-effectiveness for single-family HERVs in several climate zones. Despite meeting CEC’s cost-effectiveness criteria, however, the proposal was disapproved by staff, was not workshopped, and was not included in the express terms. While this outcome was disappointing, HVI was encouraged by CEC’s suggestion that this measure be revisited in the next cycle. In

<sup>2</sup> Goebes et al. 2023. Multifamily Indoor Air Quality. Revised October, 2023.

advance of the next cycle, HVI respectfully requests CEC to provide clear, objective, published guidance regarding the criteria that must be met by unsolicited measure proposals to be included in CEC's workshops and express terms.

6. **Appendices' Links to HVI's-Certified Products Directory.** Please update the link for the HVI-Certified Products Directory in Sections RA3.7.4.3, RA3.7.4.4, NA2.2.4.1.4, and NA2.2.4.1.5 to the following: <https://www.hvi.org/hvi-certified-products-directory/>.