

Public Review Draft

Proposed Addendum k to Standard 189.1-2023

Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review (January 2025)
(Draft Shows Proposed Changes to Current Standard)

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Foreword

This Addendum modifies portions of section 10 dealing with outdoor air monitoring in the maintenance plan. It simplifies the requirements and eliminates duplication by relying on requirements in Standard 62.1.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum k to 189.1-2023

Modify Section 3 as follows:

~~**maintenance plan:** see **maintenance program** in ANSI/ASHRAE/ACCA Standard 180.~~

Modify Section 10.9.8 as follows:

10.9.8 Maintenance Plan. A ~~maintenance plan~~ maintenance plan shall be developed for mechanical, electrical, plumbing, and fire protection systems. The plan shall include the following:

- a. The plan shall be in accordance with ASHRAE/ACCA Standard 180 for HVAC systems in all buildings within the scope of Standard 180.
- b. The plan shall describe required inspection and maintenance tasks and frequency for electrical and plumbing systems.
- c. *Outdoor air* delivery monitors required by Section 8.3.2.2 shall be visually inspected at least once each quarter and cleaned or repaired, as necessary, and calibrated at the manufacturer's recommended interval or not less than once per year, whichever is more frequent.

Exception to 10.9.8 c. Systems qualifying for the exception to Section 8.3.2.2

~~d. For systems with a damper indicator and with less than 2000 cfm (1000 L/s) of supply air, the system components that control the minimum outdoor airflow shall be visually inspected every two years. Records of this inspection shall be~~

~~maintained on-site either in electronic or written form.~~

~~ed.~~ Documentation of the plan and of completed maintenance procedures shall be maintained on the building site at all times in either:

1. Electronic format for storage on the building energy management system, building management system (BMS), computerized maintenance management system (CMMS), or other computer storage means, or
2. Maintenance manuals specifically developed and maintained for documenting completed maintenance activities.

Modify Section 10.10 as follows:

10.10.1 Operation and Maintenance (O&M) Manual. An O&M manual shall be prepared that complies with ASHRAE Standard 62.1, Section 8.2, with the following modification:

Table 8-1 lines “ad” (sensor calibration) and “ae” (outdoor air verification) shall be performed at intervals of not more than two years.

10.10.2 Outdoor Airflow Faults Monitoring. ~~The procedures for a regular outdoor airflow monitoring program after building occupancy shall be specified and shall comply with the following subsections.~~

~~**10.10.2.1** For each mechanical ventilation system, including direct outdoor airflow measurement as required by Section 8.3.2.2, and all 100% outdoor air systems, operation and calibration procedures and schedules shall be provided. Records shall be maintained for operation checks and recalibration efforts and shall be reported at intervals of not more than three months. Records of verifications and recording of minimum outdoor airflow required by Section 8.3.1 shall be provided.~~

~~Exception to 10.10.2.1. Systems qualifying for the exception to Section 8.3.2.2 that are not 100% outdoor air systems~~

~~10.10.2.2 For each constant volume system with supply airflow greater than 2000 cfm (1000 L/s) with damper indicators as permitted by the exception to Section 8.3.2.2, procedures to verify and record the minimum outdoor airflow required by Section 8.3.1 shall be provided. Such procedures shall use methods specified in ANSI/ASHRAE Standard 111 and implemented at intervals of not more than two years.~~

~~10.10.2.3 For each mechanical ventilation system, procedures shall be provided to respond to notification of an outdoor air fault condition or to indications that the outdoor air damper is out of position.~~

The rest of the language shown is considered below the line, considered informative for the review and ineligible for comment.

Note to reviewers. 10.10.1 above requires that the O&M manual comply with **Standard 62.1, Section 8.2**. See below from 62.1-2022. There is a draft Addendum h to 62.1-2022 that changes this table. Therefore, future versions of 189.1 section 10.10.1 may need further revision to reference the revised table.

8.2 O&M Manual. An O&M manual, either written or electronic, shall be developed and maintained on site or in a centrally accessible location for the working life of the applicable ventilation system equipment or components. This manual shall be updated as necessary. The manual shall include the O&M procedures, ventilation system operating schedules and any changes made thereto, final design drawings, maintenance schedules based on manufacturer instructions, and the maintenance requirements and frequencies provided in Table 8-1.

Excerpt from Table 8.1 from 62.1-2022 that is invoked by reference to 8.2 O&M Manual.

<p>ad. Verify the accuracy of permanently mounted sensors whose primary function is outdoor air delivery monitoring, outdoor air delivery verification. or dynamic minimum outdoor air control such as flow stations at an air handler and those used for demand controlled ventilation, including CO2 sensors. A sensor failing to meet the accuracy specified in the O&M manual shall be recalibrated or replaced. Performance verification shall include output comparison to a measurement reference standard consistent with those specified for similar devices in ASHRAE Standard 41.2 or ASHRAE Standard 111.</p>	<p>5 years</p> <hr/>	
<p>ae. Verify the total quantity of outdoor air delivered by air handlers set to minimum outdoor air mode. If measured minimum airflow rates are less than the design minimum rate documented in the O&M manual, +/- 10% balancing tolerance, (1) confirm the measured rate does not conform with the provisions of this standard and (2) adjust or modify the air-handler components to correct the airflow deficiency. Ventilation systems shall be balanced in accordance with ASHRAE Standard 111 or its equivalent, at least to the extent necessary to verify conformance with the total outdoor airflow and space supply airflow requirements of this standard. Exception: Units under 2000 cfm (1000 L/s) of supply air are exempt from this requirement.</p>	<p>5 years</p> <hr/>	

Note to reviewers: See exception to 8.3.2.2, below, that is referenced in Section 10.

8.3.2.2 Monitoring Requirements. Each mechanical ventilation system shall have a permanently installed device to measure the minimum outdoor airflow that meets the following requirements:

- a. The device shall employ methods described in ANSI/ASHRAE Standard 111.
 - b. The device shall have an accuracy of ±10% of the minimum outdoor airflow. Where the minimum outdoor airflow varies, as in demand control ventilation (DCV) systems, the device shall maintain this accuracy over the entire range of occupancy and system operation.
 - c. The device shall be capable of notifying the building operator, either by activating a local indicator or sending a signal to a building monitoring system, whenever an outdoor air fault condition exists. Manual reset of the notification shall be required.
- Exception to 8.3.2.2: Constant-volume air supply systems that do not employ DCV, that have a minimum outdoor airflow not exceeding 750 cfm (350 L/s), and that use an indicator to confirm that the intake damper is open to the position needed to maintain the design minimum outdoor airflow as determined during system startup and balancing.