RESOURCE CONSULTING ENGINEERS

New York State Environmental Health Program

IAQ Summer School: Preparing for a Successful School Year

June 2, 2026

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ASHRAE Board of Directors - Director-At-Large
Centers of Excellence for IEQ and Building Decarbonization

Consider Your Source

- ASHRAE (current):
  - Board of Directors, Director-At-Large
  - Center of Excellence for Building Decarbonization
  - Center of Excellence for IEQ
  - Environmental Health Committee, BOD ExO
  - Technology Council, Member
    - Special Projects Subcommittee Chair
  - Technical Activities Committee, BOD ExO
  - Treasurer's Advisory Committee, Member
- ASHRAE (past):
  - TC 9.7 – Educational Facilities, Past-Chair
  - Epidemic Task Force – Schools Team Lead
  - Conferences and Expositions Committee, Chair
  - Chapter Technology Transfer Committee, Chair

Learning Objectives

UNDERSTAND WHY INDOOR AIR QUALITY (IAQ) IS IMPORTANT FOR STUDENTS AND EDUCATORS

CONSIDER DEFINITIONS OF INDOOR IAQ AND KEY FACTORS ASSOCIATED WITH IAQ

IDENTIFY RELEVANT RESOURCES SUCH AS STANDARDS, GUIDELINES, AND OTHER PUBLICATIONS ALONG WITH IMPORTANT TOOLS OR INFORMATION IN EACH

REVIEW STRATEGIES FOR IMPROVING IAQ IN THE BUILT ENVIRONMENT, WITH A FOCUS ON K-12 SCHOOLS

Why Does Indoor Air Quality (IAQ) Matter?

We're indoors… A LOT

- 80-90%[1] of time indoors where pollutants are regularly 2 to 5 times higher than outdoors[2]

Lots of Contaminants – Generally not Good for People:

- Particulate Matter (PM 2.5 or smaller), Volatile Organic Compounds (VOCs), Infectious Particles (bacterial or viral), Mold, Ozone, Radon, Carbon Monoxide (CO), Pollen, Refrigerants, …

Student Impacts

- Poor IAQ contributes to nearly 14 million missed school days annually due to asthma-related complications and a 15% increase in asthma-related hospital visits among students.*

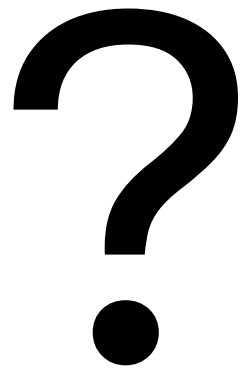
*Ezeamii VC, Egbuchiem AN, Obianyo CM, Nwoke P, Okwuonu L. Air Quality Monitoring in Schools: Evaluating the Effects of Ventilation Improvements on Cognitive Performance and Childhood Asthma. Cureus. 2025 May 1;17(5):e83306. doi: 10.7759/cureus.83306. PMID: 40452678; PMCID: PMC12126171.
Retrieved from: https://pmc.ncbi.nlm.nih.gov/articles/PMC12126171/#ref-list1

Why Does Indoor Air Quality (IAQ) Matter?

IAQ Impacts on Occupants:

- Positive or negative impacts on occupant well-being (health and comfort)
- Positive or negative impacts on learning/performance
- Better IAQ = Better Outcomes
- Many studies – hard to quantify benefit
  - Values identified, but difficult to isolate exact benefits

Definition of IAQ



Definition of IAQ

US EPA:

- Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.[3]

ASHRAE Standard 62.1-2022/Guideline 42-2024:

- Air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities and with which a substantial majority (80% or more) of the people do not express dissatisfaction.

ASHRAE Guideline 42-2023 definition of Enhanced IAQ:

- Air quality that has been improved or has been prevented from becoming degraded to (or exceeds) minimum acceptable indoor air quality.

ASHRAE IAQ Position Document:

- "… no universally accepted definition of "good" IAQ, there are three widely accepted approaches to improving IAQ in buildings:
  - Source control
  - Ventilation
  - Air cleaning and contaminant removal

IAQ is Important: What do We Do About It?

- Stop and take a breath…
- Define your known issues
  - Make a prioritized list
- Review your preventative maintenance schedule(s) and procedures
- Consider upcoming opportunities and limitations
  - Planned building improvements
  - Staffing
  - Technical capabilities
  - Others?
- Define achievable objectives

Stop and Take a Breath…

Define Your Known Issues

- Lack of ventilation/outdoor air?
- Temperature control issues?
- Moisture/humidity control issues?
- Filtration issues?
- Equipment operational issues?
- Control Issues?
- Equipment accessibility issues?
- Replacement part issues?
- Building envelope issues (roofs, windows, walls, etc.)?
- Staffing issues?
- Limited technical capabilities?
- Others?

Prioritize Your Known Issues

- Which issues have the greatest risks, and which issues have the greatest potential opportunities?
- Does it matter if equipment is accessible if you don’t have the staff to maintain it?
- Are there solutions that may solve multiple problems?

Preventative Maintenance Schedule(s) and Procedures

- Do you have a full list of equipment requiring maintenance?
- What tools are you using for tracking?
- How was your process developed?
  - Operation and Maintenance Manuals?
  - Maintenance Standards?
  - Service contractors?
  - Other?
- How well does the current plan work?
  - Are the scheduled checks and tasks being completed?
  - Do you have the right staff?
  - Do you have the right partners?

Consider Upcoming Opportunities

- Are there buildings that will have major updates or system replacements?
  - Can improvements in one area address other issues (can energy efficiency/decarbonization, IAQ/IEQ, water use, etc. all be addressed)?
- Are there opportunities to make significant improvements without major updates?
  - e.g., Improved control sequences, added points, or IAQ sensors
- What improvements can you, your staff, or your partners handle?
  - Do you have enough staff or the right partners?
  - Will some systems be too complex to operate?
  - Do you have capacity to respond to additional identified issues from improved control or monitoring systems?

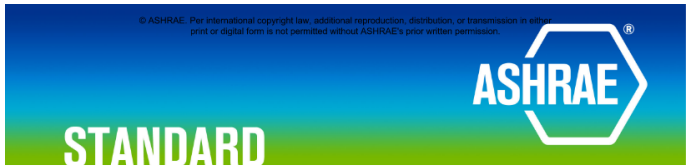
Define Achievable Objectives

- Full building retrofits or large scale improvements (not this summer)
- Limited scale improvements (this summer?)
  - Control system improvements
  - Retrocommissioning
  - Filter upgrades or installation improvements
  - …
- Add staff?
- New partners?
- Develop a roadmap (or update it)

Develop a Roadmap

Ezeamii VC, Egbuchiem AN, Obianyo CM, Nwoke P, Okwuonu L. Air Quality Monitoring in Schools: Evaluating the Effects of Ventilation Improvements on Cognitive Performance and Childhood Asthma. Cureus. 2025 May 1;17(5):e83306. doi: 10.7759/cureus.83306. PMID: 40452678; PMCID: PMC12126171. Retrieved from: https://pmc.ncbi.nlm.nih.gov/articles/PMC12126171/#ref-list1

Operations and Maintenance – ASHRAE Resources



ANSI/ASHRAE Standard 62.1-2025
(Supersedes ANSI/ASHRAE Standard 62.1-2022)
Includes ANSI/ASHRAE addenda listed in Appendix Q

Ventilation and Acceptable Indoor Air Quality

See Appendix Q for approval dates by ASHRAE and the American National Standards Institute.

This Standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Standard. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

The latest edition of an ASHRAE Standard may be purchased from the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 180 Technology Parkway, Peachtree Corners, GA 30092. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

 ISSN 1041-2336

PDF includes hyperlinks for convenient navigation. Click on a reference to a section, table, figure, or equation to jump to its location. Return to the previous page via the bookmark menu.

Includes online access to Ventilation Rate Procedure (VRP) and Indoor Air Quality Procedure (IAQP) calculators and more.

ASHRAE Guideline 42-2023

Enhanced Indoor Air Quality in Commercial and Institutional Buildings

Approved by ASHRAE on November 30, 2023.

This Guideline is under continuous maintenance by a Standing Guideline Project Committee (SGPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Guideline. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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ANSI/ASHRAE/ACCA Standard 180-2018
(Supersedes ANSI/ASHRAE/ACCA Standard 180-2012)

Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems

Approved by ASHRAE on June 11, 2018; by the Air Conditioning Contractors of America on May 13, 2018; and by the American National Standards Institute on June 11, 2018.

ASHRAE® Standards are scheduled to be updated on a five-year cycle; the date following the Standard number is the year of ASHRAE approval. The latest edition of an ASHRAE Standard may be purchased on the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide) or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

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Operations and Maintenance – Standard 62.1

Table 8-1 Minimum Inspection, Verification, and Validation Activity and Frequency for Ventilation Systems and Associated Components

Task No.*	Related Section	Inspection, Verification, Validation Task	Frequency
1a	4.1 6.1.4	Verify that the building is located in an area not designated as a nonattainment area. If the area has been designated as a nonattainment area, prepare and implement a plan to comply with the requirements of Section 6.1.4.	Annually
2a	5.1.2	Inspect piping and ductwork insulation system in accessible areas for integrity and signs of moisture or biological growth and repair as needed.	Annually
3a	5.4.1	Verify that no modifications to the HVAC system or the facility have been made that impact separation distances. If deficiencies are identified, document the deficiencies and undertake and document corrective actions.	Annually
4a	5.4.3 5.4.4 5.4.5	Inspect outdoor air intakes and exhaust openings, bird screens, louvers, dampers, and other attached components and ducting for rain intrusion, snow entrainment, pest intrusion, and physical condition, including the following: a. Indication of biological growth b. Indication of corrosion c. Buildup of dirt and debris d. Indication or presence of birds, insects, or other animals e. Integrity Clean and repair as needed; determine root cause and corrective actions.	Semiannually
5a	5.5 5.9	Verify air filtration fit, function, and performance. a. Verify efficiency and particulate matter rating meets or exceeds minimum requirements. b. Verify filters are correct thickness, fit, and size for housing assembly. c. Verify seal integrity so that airflow cannot bypass the filter(s). d. Verify filter scheduled replacement frequency per the O&M manual. e. Replace filters that exceed the maximum pressure drop of the filter per the O&M manual. f. Verify electronic air cleaning devices are operating in accordance with manufacturer's instructions. Repair, replace, or clean filters or assembly components as needed.	Quarterly or at scheduled replacement if sooner
6a	5.7.1 5.7.2 5.7.3 5.7.4 7.2.3	Inspect drain pans, seals, traps, pumping systems, drains and drain piping within air handling equipment, ducting, and plenums. a. Verify drain pan is positioned under water producing devices. ***Informative Note:*** The operator may check sizing per Sections 5.7.4 and 7.2.3. b. Verify drain pan slope is in direction of drain outlet. c. Inspect for biological growth, corrosion, or other debris that would prevent intended drain operation. d. Verify water drains freely out of pan and through attached drain piping. e. Verify traps, seals, and priming devices are wet and operational. f. Verify pumps are operational. g. Inspect for signs of overflow or water carryover. h. Validate shutoff devices or alarms function as intended. Clean and repair as needed; determine root cause and make corrective actions.	Semiannually

Notes:
1. Task numbers labeled "a" are intended as verifications (see Note 2). Task numbers labeled "b" are intended as validations (see Note 3).
2. "Verify" shall mean checking a condition through means such as visual inspection, review of documentation, reading gages, using telltales, viewing local displays, or analyzing live or trend data in a building automation system (BAS). These tasks are intended to be accomplished without special tools or specialized instrumentation and by persons without specialized training, knowledge, certifications, or licenses.
3. "Validate" shall mean taking action that requires specific tools, calibrated instrumentation, adjustments, and changes in operation and that is performed by persons needing specialized training, knowledge, certifications, or licenses.
4. If the desired results of a task cannot be verified, as described in Note 2, then the task shall be validated as described in Note 3, regardless of listed minimum frequency.

Table 8-1 Minimum Inspection, Verification, and Validation Activity and Frequency for Ventilation Systems and Associated Components *(Continued)*

Task No.*	Related Section	Inspection, Verification, Validation Task	Frequency
7a	5.8	Inspect humidifiers and dehumidifiers. a. Verify drain components function as intended. b. Verify water feed components function as intended. c. Inspect for biological growth, corrosion, or other debris on units or associated ducting as an indication of improper operation. d. Verify humidity, dew point, or other moisture measurements are within designed ranges and associated sensors are functional. e. Verify operation of desiccant dehumidifiers per manufacturer's instructions. Clean and repair as needed; determine root cause and make corrective actions.	Semiannually
7b	5.8	Validate that humidity, dew point, and other sensors that measure moisture are calibrated and function as intended.	Every 3 years
8a	5.9.1 5.9.2	Verify operation and condition of electrical air-cleaning devices and ultraviolet devices. a. Verify operation of air-cleaning devices per manufacturer's instructions. b. Inspect for indication of lamp malfunction or ineffectiveness and determine root cause and corrective action. c. Clean lamps in accordance with manufacturer's instructions. d. Replace lamps per manufacturer's schedule or upon lamp failure.	Quarterly
9a	5.10.1 5.21.1 5.21.2 5.21.3 7.2.2	Verify that space and access is provided and is maintained unobstructed for the following areas: a. All areas necessary for air balancing, verification, and measurement of *ventilation* by Section 7.2.2 b. All other areas that require routine maintenance and inspection by Section 8.2 c. All components and equipment that require verification by Section 8.5 d. All sensors, instruments, and ventilation system components, controls, and equipment e. All access doors and panels i. Verify access doors and panels are functional and correctly seal when not open for testing, inspection, or maintenance. Clean, repair, and provide access as needed.	Semiannually
10a	5.10.2 5.11.1 7.2.4	Inspect floor, ceiling, or mechanical room plenum systems and ductwork. a. Verify that there is no biological growth, corrosion, or indication of insects or other animals. b. Verify chemicals, cleaning products or equipment, or other materials are not kept in air-handling spaces or plenums. Clean and remove foreign objects; determine root cause and make corrective actions.	Annually

Notes:
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3. "Validate" shall mean taking action that requires specific tools, calibrated instrumentation, adjustments, and changes in operation and that is performed by persons needing specialized training, knowledge, certifications, or licenses.
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Operations and Maintenance – Standard 62.1 (continued)

Table 8-1 Minimum Inspection, Verification, and Validation Activity and Frequency for Ventilation Systems and Associated Components *(Continued)*

Task No.*	Related Section	Inspection, Verification, Validation Task	Frequency
11a	5.10.3 7.2.2	Perform air balance verification. a. If occupancy or space utilization has changed, determine if airflow rates meet the requirements of this standard. i. Review design documents, most recent testing, adjusting, and balancing (TAB) report, and current requirements. ii. Determine if reported airflows meet design intent. b. When airflow is displayed: i. Verify outdoor airflows meet design requirements of this standard. ii. In spaces that require exhaust by Table 6-2, verify exhaust airflow is greater than supply airflow. c. Verify dynamic reset and outdoor airflow per Task No. 14a of this table. Verify CO_2 sensor calibration date and CO_2 *DCV* setup. a. When the time elapsed since the previous CO_2 sensor calibration date is beyond manufacturer's calibration frequency, have the sensor calibrated. b. Determine space type and design occupancy and verify maximum CO_2 limit is correctly set. c. Verify when the space is unoccupied that *ventilation* for the building component ventilation rate is provided or the space is in occupancy standby.	Annually
11b	5.10.3 5.19 6.2.5 6.2.6 7.2.2	Perform TAB air balance validation. a. Measure outdoor airflows of all units and adjust as necessary. i. Spot check space level airflows at outlets and inlets at a minimum of 20% of all zones. ii. Rebalance as necessary to achieve compliance with the design intent and this standard. iii. If occupancy or space utilization has changed and airflows no longer meets design intent or this standard, rebalance all zone and space level airflows. b. Rebalance exhaust airflows to maintain supply and exhaust relationship and pressurization requirements. c. Validate CO_2 sensor calibration date and CO_2 *DCV* setup. i. When CO_2 sensor calibration date is beyond manufacturer's calibration frequency, calibrate in accordance with manufacturer's instructions. d. Validate, maintain, and calibrate ventilation sensors. i. Calibrate static and differential pressure transducers used to control fan pressure, room pressure, VAV boxes, airflow, and filters. ii. Validate airflow rates of airflow sensors. Clean and calibrate airflow sensors per manufacturer's instructions.	Every 3 years
12a	5.12	Verify cooling systems maintain indoor conditions below humidity limits as referenced in Section 5.12. Make corrective actions.	Annually
13a	5.14 5.18 6.5.1.4	Verify directional airflow and building pressurization. a. Verify that zones are pressurized positively or negatively per design and that flow moves toward the exhaust. b. Verify operation of any pressure indication or measurement sensors.	Annually

Notes:
1. Task numbers labeled "a" are intended as verifications (see Note 2). Task numbers labeled "b" are intended as validations (see Note 3).
2. "Verify" shall mean checking a condition through means such as visual inspection, review of documentation, reading gages, using telltales, viewing local displays, or analyzing live or trend data in a building automation system (BAS). These tasks are intended to be accomplished without special tools or specialized instrumentation and by persons without specialized training, knowledge, certifications, or licenses.
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4. If the desired results of a task cannot be verified, as described in Note 2, then the task shall be validated as described in Note 3, regardless of listed minimum frequency.

Table 8-1 Minimum Inspection, Verification, and Validation Activity and Frequency for Ventilation Systems and Associated Components *(Continued)*

Task No.*	Related Section	Inspection, Verification, Validation Task	Frequency
14a	5.19 6.2.5 6.2.6	Verify ventilation system with variable load or dynamic reset controls. a. Inspect and test damper assemblies and adjust and repair as needed. i. Verify seals are intact, linkages and dampers operate smoothly, dampers operate full range, actuator clamps are tight on shaft, dampers close tight, and actuators modulate as intended and fail-safe on power loss. b. Inspect fan assemblies for the following. Clean, lubricate, adjust, and repair as needed. i. Belt tension and wear, sheave alignment, bearing operation ii. Fan balance, tightness, and cleanliness iii. Electrical connections, motor controllers, variable frequency drives, and other speed modulating devices c. For *ventilation zones* with airflow sensors, verify that zone level controls reset to changing conditions. i. Verify that zone air ventilation rates are maintained during supply fan turn-down and other reduced load conditions. ii. Verify that demand control *ventilation zones* respond to changes in occupancy. d. Verify that occupancy controls shut off the zone *ventilation* when the space is either unoccupied or in occupied standby.	Every 2 years
15a	5.22	Verify *Legionella* plan is implemented and maintained.	Annually
16a	6.3.1 6.3.3.2 7.3	For systems designed per the *Indoor Air* Quality Procedure (IAQP), verify if changes to occupancy, changes to space utilization, new procedures, new components, refurbishments, or renovations have been made. If so, see Task No. 16b. ***Informative Notes:*** 1. New procedures or components in the space such as new furniture, printers, computers, cleaning chemicals, or other additions could increase the compounds listed in Table 6-5. 2. Refurbishment of carpets, paint, tiles, windows, or other additions could increase the compounds listed in Table 6-5.	Every 2 years
16b	6.3.1 6.3.3.2 7.3	For systems designed per the IAQP, validate that *concentrations* of *design compounds* (*DCs*) and *PM2.5* remain less than the design limits (DLs) per Section 6.3.1. a. Perform objective evaluation per Section 7.3.1 to verify DLs continue to be met. i. If any limit is exceeded, perform root cause analysis to determine if flow rates need adjustment or air-cleaning equipment needs repair or replacement. b. Conduct subjective evaluation of occupants per Section 7.3.2. i. Address concerns of occupants.	As required
17a	6.4.3	Verify *natural ventilation* controls and accessibility. a. Verify that occupant-operated natural ventilation openings are functional and accessible. b. Verify control sequences and instrumentation that automate natural ventilation openings operate during occupied periods. Validate that openings cannot be closed except during unoccupied periods or when mechanical ventilation system is active. c. Verify controls and sequences for *mechanical ventilation* operate when conditions for *natural ventilation* are inadequate.	Annually

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4. If the desired results of a task cannot be verified, as described in Note 2, then the task shall be validated as described in Note 3, regardless of listed minimum frequency.

Operations and Maintenance – Guideline 42

Table 11 Example of Minimum Maintenance Activities and Frequency for Ventilation System Equipment and Associated Components

Inspection/Maintenance Task	Minimum Frequency[a]	Recommended IAQ Frequency
Investigate system for water intrusion or accumulation. Rectify as necessary.	As necessary	Monthly
Verify that the space provided for routine maintenance and inspection of open cooling tower water systems, closed cooling tower water systems and evaporative condensers is unobstructed.	Monthly	Monthly
Open cooling tower water systems, closed cooling tower water systems, and evaporative condensers shall be treated to limit the growth of microbiological contaminants including *Legionella sp.*	Monthly	Monthly, verified daily, or continuous via BAS/Web
Verify that the space provided for routine maintenance and inspection of equipment and components is unobstructed.	Quarterly	Monthly
Check pressure drop and scheduled replacement date of filters and air-cleaning devices. Clean or replace as necessary to ensure proper operation.	Quarterly	Monthly
Check ultraviolet lamp. Clean or replace as needed to ensure proper operation.	Quarterly	Monthly to quarterly
Visually inspect dehumidification and humidification devices. Clean and maintain to limit fouling and microbial growth. Measure relative humidity and adjust system controls as necessary.	Quarterly	Monthly
Maintain floor drains and trap primer located in air plenums or rooms that serve as air plenums to prevent transport of contaminants from the floor drain to the plenum.	Semiannually	Quarterly or part of monthly PM
Check ventilation and IAQ-related control systems and devices for proper operation. Clean, lubricate, repair, adjust, or replace as needed to ensure proper operation.	Semiannually	Quarterly or part of monthly PM
Check P-traps in floor drains located in plenums or rooms that serve as air plenums. Prime as needed to ensure proper operation.	Semiannually	Quarterly or part of monthly PM
Check fan belt tension. Check for belt wear and replace if necessary to ensure proper operation. Check sheaves for evidence of improper alignment or evidence of wear and correct as needed.	Semiannually	Quarterly or part of monthly PM
Check variable-frequency drive for proper operation. Correct as needed.	Semiannually	Quarterly or part of monthly PM
Check for proper operation of cooling or heating coil for damage or evidence of leaks. Clean, restore, or replace as required.	Semiannually	Quarterly or part of monthly PM
Visually inspect outdoor air intake louvers, bird screens, mist eliminators, and adjacent areas for cleanliness and integrity. Clean as needed. Remove all visible debris or visible biological material observed, repair physical damage to louvers, screens, or mist eliminators if such damage impairs the item from providing the required outdoor air entry.	Semiannually	Quarterly or part of monthly PM; could be weekly depending on location
Visually inspect natural ventilation openings and adjacent areas for cleanliness and integrity. Clean as needed. Remove all visible debris or visible biological material observed, repair physical damage to louvers and screens, if such damage impairs the item from providing the required outdoor air entry. Manual and/or automatic opening apparatus shall be physically tested for proper operation and repaired or replaced as necessary.	Semiannually	Quarterly or part of monthly PM; could be weekly depending on location
Verify operation of the outdoor air ventilation system and any dynamic minimum outdoor air controls.	Annually	Quarterly or part of monthly PM
Check air filter fit and housing seal integrity. Correct as needed.	Annually	Quarterly or part of monthly PM
Check control box for dirt, debris, and/or loose terminations. Clean and tighten as needed.	Annually	Quarterly or part of monthly PM
Check motor contactor for pitting or other signs of damage. Repair or replace as needed.	Annually	Quarterly or part of monthly PM
Check fan blades and fan housing. Clean, repair, or replace as needed to ensure proper operation.	Annually	Quarterly or part of monthly PM

a. Minimum frequencies may be increased or decreased if indicated in the O&M manual.

Table 11 Example of Minimum Maintenance Activities and Frequency for Ventilation System Equipment and Associated Components *(Continued)*

Inspection/Maintenance Task	Minimum Frequency[a]	Recommended IAQ Frequency
Check integrity of all panels on equipment. Replace fasteners as needed to ensure proper integrity and fit/finish of equipment.	Annually	Quarterly or part of monthly PM
Assess field serviceable bearings. Lubricate if necessary.	Annually	Quarterly or part of monthly PM
Check drain pans, drain lines, and coils for biological growth. Check adjacent areas for evidence of unintended wetting. Repair and clean as needed.	Annually	Monthly–quarterly, part of monthly PM
Check for evidence of buildup or fouling on heat exchange surfaces. Restore as needed to ensure proper operation.	Annually	Monthly–quarterly, part of monthly PM
Inspect unit for evidence of moisture carryover from cooling coils beyond the drain pan. Make corrections or repairs as necessary.	Annually	Monthly–quarterly, part of monthly PM
Check for proper damper operation. Clean, lubricate, repair, replace, or adjust as needed to ensure proper operation.	Annually	Quarterly
Visually inspect areas of moisture accumulation for biological growth. If present, clean or disinfect as needed	Annually	Quarterly
Check condensate pump. Clean or replace as needed.	Annually	Quarterly or part of monthly PM
Visually inspect exposed ductwork and external piping for insulation and vapor barrier for integrity. Correct as needed.	Annually	Quarterly or part of monthly PM
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 control ventilation. 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 ANSI/ASHRAE Standard 41.2[111] or Standard 111.[112]	5 years	Annually
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, ± a 10% balancing tolerance, confirm the measured rate does not conform with the provisions of this standard and adjust or modify the air-handler components to correct the airflow deficiency. Ventilation systems shall be balanced in accordance with ANSI/ASHRAE Standard 111[112], or 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.	5 years	Two years, no exceptions on size of unit
Periodic inspection of building entrances to check building pressurization, walk-off mats, ETS, and patterns of travel. Intended to identify potential sources of air quality issues. Develop a list of deficiencies and report to owner/maintenance.	—	Daily
Implement housekeeping/janitorial quality control inspections based on space use, frequency, and criticality of function of space.	—	Quarterly

a. Minimum frequencies may be increased or decreased if indicated in the O&M manual.

Operations and Maintenance – Standard 180

Table Number	*Equipment*/System
5-1	Air Distribution Systems
5-2	Air Handlers
5-3	Boilers
5-4	Chillers—Absorption
5-5	Chillers—Air-Cooled
5-6	Chillers—Water-Cooled
5-7	Coils and Radiators
5-8	Condensing Units
5-9	Control Systems
5-10	Cooling Towers and Evaporative-Cooled Devices
5-11	Dehumidification and Humidification Devices
5-12	Economizers—Air-Side
5-13	Engines—Microturbines
5-14	Fans (e.g., Exhaust, Supply, Transfer, Return)
5-15	Fan Coils—Hot-Water and Steam Unit Heaters
5-16	Furnaces—Combustion Unit Heaters
5-17	HVAC Water Distribution Systems
5-18	Indoor Section Duct-Free Splits
5-19	Outdoor-Air Heat-Exchanging Systems
5-20	Package Terminal Air Conditioners/ Heat Pumps (PTAC/PTHP)
5-21	Pumps
5-22	Rooftop Units
5-23	Steam Distribution Systems
5-24	Terminal and Control Boxes (e.g., VAV, Fan-Powered, Bypass)
5-25	Water-Source Heat Pumps

Table 5-1 Air Distribution Systems

	Normative	Normative	Normative	Informative
	Inspection Task	***Maintenance Task***	**Frequency***	**Recommended *Corrective Action***
a	Check control system and devices for evidence of improper operation.	Clean, lubricate, repair, adjust.	Semiannually	Replace components to ensure proper operation.
b	Inspect grilles, registers, and diffusers for dirt accumulation.	Clean as needed to remove dirt build up.	Semiannually	Replace if missing or damaged.
c	Check damper for *condition*, setting, and operation.	Clean, lubricate, repair, replace, or adjust as needed to ensure proper operation.	Semiannually	Replace if missing or damaged.
d	Inspect areas of moisture accumulation for biological growth.	If present, clean.	Annually	Disinfect as needed.
e	Inspect exposed ductwork for insulation and vapor barrier integrity.	Record damage locations.	Annually	Replace or repair if needed.
f	Inspect internally lined ductwork until the first turn or up to 20 ft (6.1 m) from a potential moisture source, such as a supply plenum, from air handler, outdoor air damper, humidifier, etc. for water damage and/or biological contamination.	Determine and record source of moisture.	Annually	Eliminate moisture source. Repair/replace wet insulation. Remove biological contamination and disinfect surfaces.

*Refer to Section 4.3.2.2 for procedure to modify frequency.

Table 5-2 Air Handlers

	Normative	Normative	Normative	Informative
	Inspection Task	***Maintenance Task***	**Frequency***	**Recommended *Corrective Action***
a	Check for particulate accumulation on filters.	Clean or replace as needed to ensure proper operation.	Quarterly	Evaluate frequency of change requirement.
b	Check ultraviolet lamp.	Clean and verify that it is functioning.	Quarterly	Replace as needed to ensure proper operation.
c	Check P-trap.	Prime as needed to ensure proper operation.	Quarterly	Replace damaged P-trap.
d	Check drain pan, drain line, coil, and other areas of moisture accumulation for visible signs of biological growth.	Clean, and verify proper operation.	Quarterly	Disinfect as needed.
e	Check steam system traps, pumps, strainers, and controls.	Clean, and verify proper operation.	Semiannually	Repair or replace as needed to ensure proper operation.
f	Check control system and devices for evidence of improper operation.	Clean, lubricate, adjust.	Semiannually	Repair or replace components as needed to ensure proper operation.
g	Check fan-belt tension, check for belt wear, and check sheaves for evidence of improper alignment or evidence of wear.	Correct tension and sheave alignment.	Semiannually	Replace belts and sheaves as needed to ensure proper operation.
h	Check variable-frequency drive for proper operation.	Correct as needed. Clean housing, and tighten connections as needed. Clean or replace air filter.	Semiannually	Repair, replace, or restore as needed to ensure proper operation.

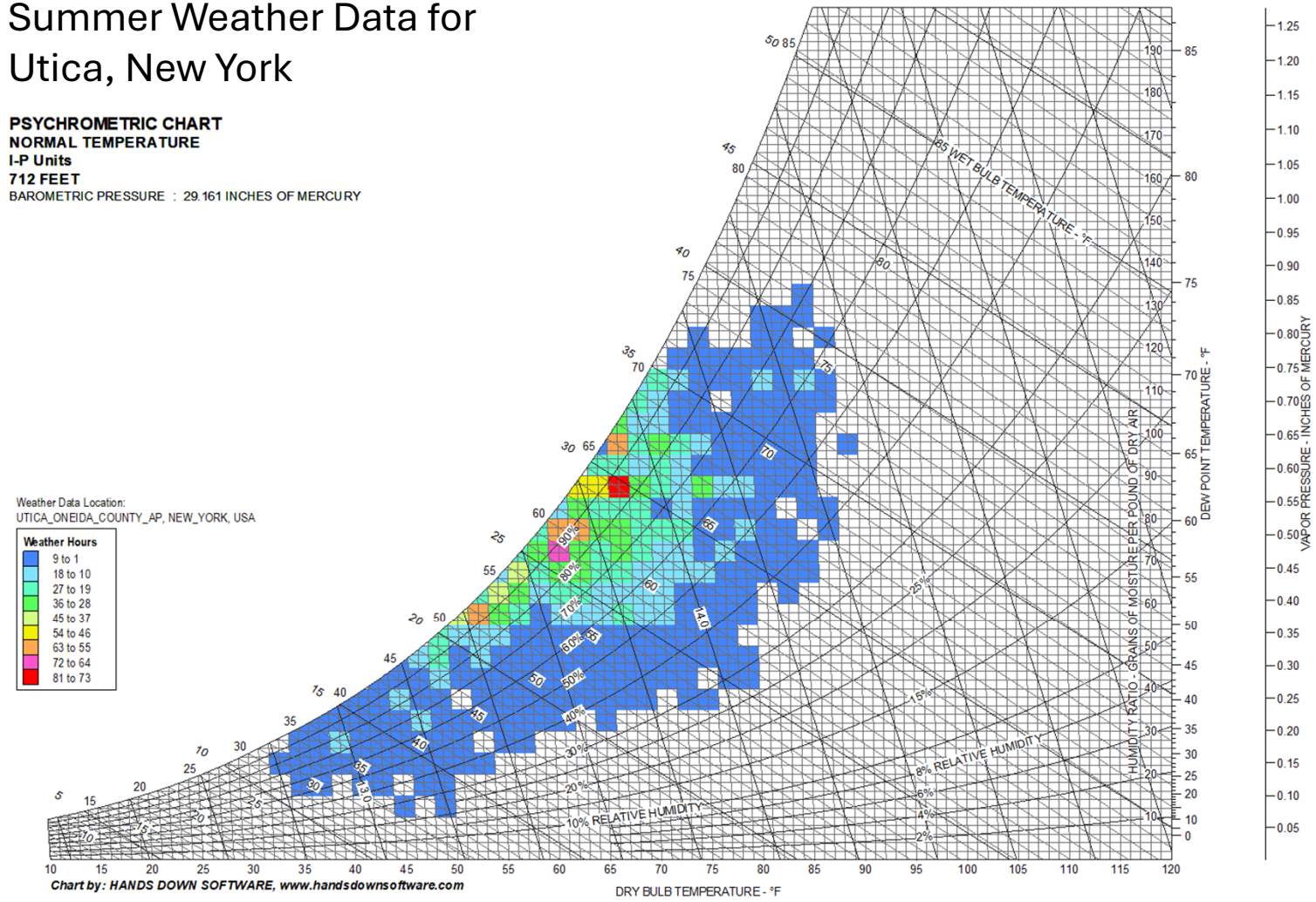
*Refer to Section 4.3.2.2 for procedure to modify frequency.

Summer 2026: Prerequisites

- Consider building needs for summer
  - Energy savings is important – good intentions can have unintended consequences – off may not be the right approach
- Monitor temperature, relative humidity, and general space conditions (temperature alone is not good enough)
  - If you walk in and it feels damp, muggy, clammy, humid… - do something right away – solutions can be HVAC systems, portable dehumidifiers, etc.
- Moisture issues can lead to MOLD, buckled floors, swelling doors, and other problems
  - EPA Document on Moisture, Mold and Mildew
- The first step in improving IAQ is to not make it worse

Summer 2026: Prerequisites

Summer Weather Data for Utica, New York



Summer 2026: Prerequisites

- Set Realistic Goals and Prioritize Steps
  - Limited staff and resources likely requires some prioritization
  - Look at prioritized list of known issues and start there
- Focus on areas with greatest potential for impact
  - Critical issues should be priority
  - Higher occupancy spaces should be next priority

Summer 2026: Basic Inspection (Applies to Everyone)

- General inspection of equipment condition and operation capabilities
  - For IAQ, focus on filtration, OA system operation, and contamination sources
- Look for water/moisture issues
- Look for signs of operational issues
- Consider aligning with preventative maintenance
  - Belt replacement, lubrication, etc.
- Repair/mitigate identified issues

Summer 2026: Basic Inspection (Applies to Everyone)

Table 11 Example of Minimum Maintenance Activities and Frequency for Ventilation System Equipment and Associated Components

Inspection/Maintenance Task	Minimum Frequency[a]	Recommended IAQ Frequency
Investigate system for water intrusion or accumulation. Rectify as necessary.	As necessary	Monthly
Verify that the space provided for routine maintenance and inspection of open cooling tower water systems, closed cooling tower water systems and evaporative condensers is unobstructed.	Monthly	Monthly
Open cooling tower water systems, closed cooling tower water systems, and evaporative condensers shall be treated to limit the growth of microbiological contaminants including *Legionella sp.*	Monthly	Monthly, verified daily, or continuous via BAS/Web
Verify that the space provided for routine maintenance and inspection of equipment and components is unobstructed.	Quarterly	Monthly
Check pressure drop and scheduled replacement date of filters and air-cleaning devices. Clean or replace as necessary to ensure proper operation.	Quarterly	Monthly
Check ultraviolet lamp. Clean or replace as needed to ensure proper operation.	Quarterly	Monthly to quarterly
Visually inspect dehumidification and humidification devices. Clean and maintain to limit fouling and microbial growth. Measure relative humidity and adjust system controls as necessary.	Quarterly	Monthly
Maintain floor drains and trap primer located in air plenums or rooms that serve as air plenums to prevent transport of contaminants from the floor drain to the plenum.	Semiannually	Quarterly or part of monthly PM
Check ventilation and IAQ-related control systems and devices for proper operation. Clean, lubricate, repair, adjust, or replace as needed to ensure proper operation.	Semiannually	Quarterly or part of monthly PM
Check P-traps in floor drains located in plenums or rooms that serve as air plenums. Prime as needed to ensure proper operation.	Semiannually	Quarterly or part of monthly PM
Check fan belt tension. Check for belt wear and replace if necessary to ensure proper operation. Check sheaves for evidence of improper alignment or evidence of wear and correct as needed.	Semiannually	Quarterly or part of monthly PM
Check variable-frequency drive for proper operation. Correct as needed.	Semiannually	Quarterly or part of monthly PM
Check for proper operation of cooling or heating coil for damage or evidence of leaks. Clean, restore, or replace as required.	Semiannually	Quarterly or part of monthly PM
Visually inspect outdoor air intake louvers, bird screens, mist eliminators, and adjacent areas for cleanliness and integrity. Clean as needed. Remove all visible debris or visible biological material observed, repair physical damage to louvers, screens, or mist eliminators if such damage impairs the item from providing the required outdoor air entry.	Semiannually	Quarterly or part of monthly PM; could be weekly depending on location
Visually inspect natural ventilation openings and adjacent areas for cleanliness and integrity. Clean as needed. Remove all visible debris or visible biological material observed, repair physical damage to louvers and screens, if such damage impairs the item from providing the required outdoor air entry. Manual and/or automatic opening apparatus shall be physically tested for proper operation and repaired or replaced as necessary.	Semiannually	Quarterly or part of monthly PM; could be weekly depending on location
Verify operation of the outdoor air ventilation system and any dynamic minimum outdoor air controls.	Annually	Quarterly or part of monthly PM
Check air filter fit and housing seal integrity. Correct as needed.	Annually	Quarterly or part of monthly PM
Check control box for dirt, debris, and/or loose terminations. Clean and tighten as needed.	Annually	Quarterly or part of monthly PM
Check motor contactor for pitting or other signs of damage. Repair or replace as needed.	Annually	Quarterly or part of monthly PM
Check fan blades and fan housing. Clean, repair, or replace as needed to ensure proper operation.	Annually	Quarterly or part of monthly PM
Check integrity of all panels on equipment. Replace fasteners as needed to ensure proper integrity and fit/finish of equipment.	Annually	Quarterly or part of monthly PM
Assess field serviceable bearings. Lubricate if necessary.	Annually	Quarterly or part of monthly PM
Check drain pans, drain lines, and coils for biological growth. Check adjacent areas for evidence of unintended wetting. Repair and clean as needed.	Annually	Monthly–quarterly, part of monthly PM
Check for evidence of buildup or fouling on heat exchange surfaces. Restore as needed to ensure proper operation.	Annually	Monthly–quarterly, part of monthly PM
Inspect unit for evidence of moisture carryover from cooling coils beyond the drain pan. Make corrections or repairs as necessary.	Annually	Monthly–quarterly, part of monthly PM
Check for proper damper operation. Clean, lubricate, repair, replace, or adjust as needed to ensure proper operation.	Annually	Quarterly
Visually inspect areas of moisture accumulation for biological growth. If present, clean or disinfect as needed	Annually	Quarterly
Check condensate pump. Clean or replace as needed.	Annually	Quarterly or part of monthly PM
Visually inspect exposed ductwork and external piping for insulation and vapor barrier for integrity. Correct as needed.	Annually	Quarterly or part of monthly PM
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 control ventilation. 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 ANSI/ASHRAE Standard 41.2[111] or Standard 111.[112]	5 years	Annually
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, ± a 10% balancing tolerance, confirm the measured rate does not conform with the provisions of this standard and adjust or modify the air-handler components to correct the airflow deficiency. Ventilation systems shall be balanced in accordance with ANSI/ASHRAE Standard 111[112], or 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.	5 years	Two years, no exceptions on size of unit
Periodic inspection of building entrances to check building pressurization, walk-off mats, ETS, and patterns of travel. Intended to identify potential sources of air quality issues. Develop a list of deficiencies and report to owner/maintenance.	—	Daily
Implement housekeeping/janitorial quality control inspections based on space use, frequency, and criticality of function of space.	—	Quarterly

a. Minimum frequencies may be increased or decreased if indicated in the O&M manual.

Summer 2026: Verification and Calibration (Applies to Many)

- More detailed review, including calibration of sensors and measuring devices
  - Airflow measuring devices, CO_2 sensors, etc.
- Verification of proper operation of components beyond visual inspection
  - Check controls and observe operation

Summer 2026: Verification and Calibration (Applies to Many)

Table 11 Example of Minimum Maintenance Activities and Frequency for Ventilation System Equipment and Associated Components *(Continued)*

Inspection/Maintenance Task	Minimum Frequency[a]	Recommended IAQ Frequency
Check integrity of all panels on equipment. Replace fasteners as needed to ensure proper integrity and fit/finish of equipment.	Annually	Quarterly or part of monthly PM
Assess field serviceable bearings. Lubricate if necessary.	Annually	Quarterly or part of monthly PM
Check drain pans, drain lines, and coils for biological growth. Check adjacent areas for evidence of unintended wetting. Repair and clean as needed.	Annually	Monthly–quarterly, part of monthly PM
Check for evidence of buildup or fouling on heat exchange surfaces. Restore as needed to ensure proper operation.	Annually	Monthly–quarterly, part of monthly PM
Inspect unit for evidence of moisture carryover from cooling coils beyond the drain pan. Make corrections or repairs as necessary.	Annually	Monthly–quarterly, part of monthly PM
Check for proper damper operation. Clean, lubricate, repair, replace, or adjust as needed to ensure proper operation.	Annually	Quarterly
Visually inspect areas of moisture accumulation for biological growth. If present, clean or disinfect as needed	Annually	Quarterly
Check condensate pump. Clean or replace as needed.	Annually	Quarterly or part of monthly PM
Visually inspect exposed ductwork and external piping for insulation and vapor barrier for integrity. Correct as needed.	Annually	Quarterly or part of monthly PM
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 control ventilation. 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 ANSI/ASHRAE Standard 41.2[111] or Standard 111.[112]	5 years	Annually
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, ± a 10% balancing tolerance, confirm the measured rate does not conform with the provisions of this standard and adjust or modify the air-handler components to correct the airflow deficiency. Ventilation systems shall be balanced in accordance with ANSI/ASHRAE Standard 111[112], or 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.	5 years	Two years, no exceptions on size of unit
Periodic inspection of building entrances to check building pressurization, walk-off mats, ETS, and patterns of travel. Intended to identify potential sources of air quality issues. Develop a list of deficiencies and report to owner/maintenance.	—	Daily
Implement housekeeping/janitorial quality control inspections based on space use, frequency, and criticality of function of space.	—	Quarterly

a. Minimum frequencies may be increased or decreased if indicated in the O&M manual.

Table 8-1 Minimum Inspection, Verification, and Validation Activity and Frequency for Ventilation Systems and Associated Components *(Continued)*

Task No.*	Related Section	Inspection, Verification, Validation Task	Frequency
11a	5.10.3 7.2.2	Perform air balance verification. a. If occupancy or space utilization has changed, determine if airflow rates meet the requirements of this standard. i. Review design documents, most recent testing, adjusting, and balancing (TAB) report, and current requirements. ii. Determine if reported airflows meet design intent. b. When airflow is displayed: i. Verify outdoor airflows meet design requirements of this standard. ii. In spaces that require exhaust by Table 6-2, verify exhaust airflow is greater than supply airflow. c. Verify dynamic reset and outdoor airflow per Task No. 14a of this table. Verify CO_2 sensor calibration date and CO_2 *DCV* setup. a. When the time elapsed since the previous CO_2 sensor calibration date is beyond manufacturer's calibration frequency, have the sensor calibrated. b. Determine space type and design occupancy and verify maximum CO_2 limit is correctly set. c. Verify when the space is unoccupied that *ventilation* for the building component ventilation rate is provided or the space is in occupancy standby.	Annually
11b	5.10.3 5.19 6.2.5 6.2.6 7.2.2	Perform TAB air balance validation. a. Measure outdoor airflows of all units and adjust as necessary. i. Spot check space level airflows at outlets and inlets at a minimum of 20% of all zones. ii. Rebalance as necessary to achieve compliance with the design intent and this standard. iii. If occupancy or space utilization has changed and airflows no longer meets design intent or this standard, rebalance all zone and space level airflows. b. Rebalance exhaust airflows to maintain supply and exhaust relationship and pressurization requirements. c. Validate CO_2 sensor calibration date and CO_2 *DCV* setup. i. When CO_2 sensor calibration date is beyond manufacturer's calibration frequency, calibrate in accordance with manufacturer's instructions. d. Validate, maintain, and calibrate ventilation sensors. i. Calibrate static and differential pressure transducers used to control fan pressure, room pressure, VAV boxes, airflow, and filters. ii. Validate airflow rates of airflow sensors. Clean and calibrate airflow sensors per manufacturer's instructions.	Every 3 years
12a	5.12	Verify cooling systems maintain indoor conditions below humidity limits as referenced in Section 5.12. Make corrective actions.	Annually
13a	5.14 5.18 6.5.1.4	Verify directional airflow and building pressurization. a. Verify that zones are pressurized positively or negatively per design and that flow moves toward the exhaust. b. Verify operation of any pressure indication or measurement sensors.	Annually

Notes:
1. Task numbers labeled "a" are intended as verifications (see Note 2). Task numbers labeled "b" are intended as validations (see Note 3).
2. "Verify" shall mean checking a condition through means such as visual inspection, review of documentation, reading gages, using telltales, viewing local displays, or analyzing live or trend data in a building automation system (BAS). These tasks are intended to be accomplished without special tools or specialized instrumentation and by persons without specialized training, knowledge, certifications, or licenses.
3. "Validate" shall mean taking action that requires specific tools, calibrated instrumentation, adjustments, and changes in operation and that is performed by persons needing specialized training, knowledge, certifications, or licenses.
4. If the desired results of a task cannot be verified, as described in Note 2, then the task shall be validated as described in Note 3, regardless of listed minimum frequency.

Consider select steps as appropriate

Summer 2026: Limited TAB or RetroCx (Applies to Some)

- Strongly consider for longer operating facilities
- Confirm proper operation of systems to maintain IAQ
  - Air side systems
  - Hydronic or refrigerant systems for heating/cooling
  - Cooling towers
- May also help with energy efficiency and reliability

Summer 2026: Limited TAB or RetroCx (Applies to Some)

Table 8-1 Minimum Inspection, Verification, and Validation Activity and Frequency for Ventilation Systems and Associated Components *(Continued)*

Task No.*	Related Section	Inspection, Verification, Validation Task	Frequency
11a	5.10.3 7.2.2	Perform air balance verification. a. If occupancy or space utilization has changed, determine if airflow rates meet the requirements of this standard. i. Review design documents, most recent testing, adjusting, and balancing (TAB) report, and current requirements. ii. Determine if reported airflows meet design intent. b. When airflow is displayed: i. Verify outdoor airflows meet design requirements of this standard. ii. In spaces that require exhaust by Table 6-2, verify exhaust airflow is greater than supply airflow. c. Verify dynamic reset and outdoor airflow per Task No. 14a of this table. Verify CO_2 sensor calibration date and CO_2 *DCV* setup. a. When the time elapsed since the previous CO_2 sensor calibration date is beyond manufacturer's calibration frequency, have the sensor calibrated. b. Determine space type and design occupancy and verify maximum CO_2 limit is correctly set. c. Verify when the space is unoccupied that *ventilation* for the building component ventilation rate is provided or the space is in occupancy standby.	Annually
11b	5.10.3 5.19 6.2.5 6.2.6 7.2.2	Perform TAB air balance validation. a. Measure outdoor airflows of all units and adjust as necessary. i. Spot check space level airflows at outlets and inlets at a minimum of 20% of all zones. ii. Rebalance as necessary to achieve compliance with the design intent and this standard. iii. If occupancy or space utilization has changed and airflows no longer meets design intent or this standard, rebalance all zone and space level airflows. b. Rebalance exhaust airflows to maintain supply and exhaust relationship and pressurization requirements. c. Validate CO_2 sensor calibration date and CO_2 *DCV* setup. i. When CO_2 sensor calibration date is beyond manufacturer's calibration frequency, calibrate in accordance with manufacturer's instructions. d. Validate, maintain, and calibrate ventilation sensors. i. Calibrate static and differential pressure transducers used to control fan pressure, room pressure, VAV boxes, airflow, and filters. ii. Validate airflow rates of airflow sensors. Clean and calibrate airflow sensors per manufacturer's instructions.	Every 3 years
12a	5.12	Verify cooling systems maintain indoor conditions below humidity limits as referenced in Section 5.12. Make corrective actions.	Annually
13a	5.14 5.18 6.5.1.4	Verify directional airflow and building pressurization. a. Verify that zones are pressurized positively or negatively per design and that flow moves toward the exhaust. b. Verify operation of any pressure indication or measurement sensors.	Annually

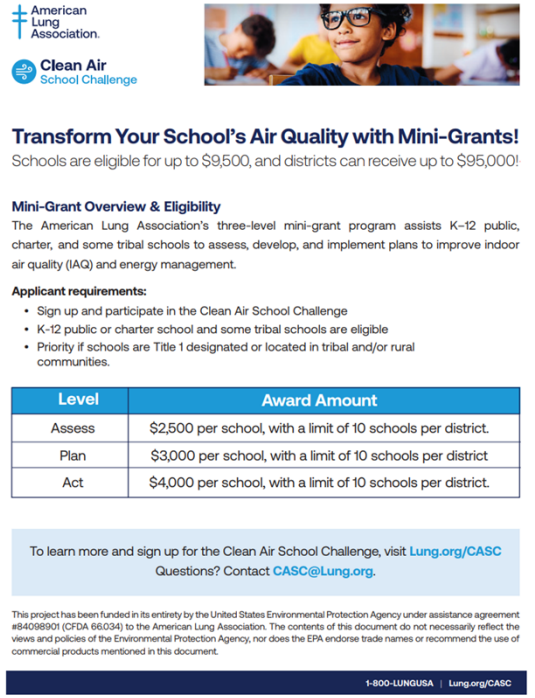
Notes:
1. Task numbers labeled "a" are intended as verifications (see Note 2). Task numbers labeled "b" are intended as validations (see Note 3).
2. "Verify" shall mean checking a condition through means such as visual inspection, review of documentation, reading gages, using telltales, viewing local displays, or analyzing live or trend data in a building automation system (BAS). These tasks are intended to be accomplished without special tools or specialized instrumentation and by persons without specialized training, knowledge, certifications, or licenses.
3. "Validate" shall mean taking action that requires specific tools, calibrated instrumentation, adjustments, and changes in operation and that is performed by persons needing specialized training, knowledge, certifications, or licenses.
4. If the desired results of a task cannot be verified, as described in Note 2, then the task shall be validated as described in Note 3, regardless of listed minimum frequency.

Summer 2026: Minor System Upgrades (Applies to Some)

- Possible Physical (Hardware) System Improvements
  - New airflow measuring devices
  - New outdoor air quality monitoring devices (T, H, PM2.5 and PM10)
  - New indoor air quality monitoring devices (BAS or separate)
    - Temp and Humidity, CO_2 where appropriate/useful
- Possible Control Programming Updates
  - New sequences to improve relative humidity/moisture control
  - New demand-controlled ventilation sequences
  - Sequences to address adverse OA conditions
  - Automated fault detection and diagnostics
  - ???

Extra Credit

- Get creative with long-term plans
  - Major Projects: Federal incentives
    - IRA/OBBBA geothermal credits
  - Smaller Steps: Grant programs
    - American Lung Association Clean Air School Challenge



American Lung Association.

Clean Air School Challenge

Transform Your School's Air Quality with Mini-Grants!

Schools are eligible for up to $9,500, and districts can receive up to $95,000!

Mini-Grant Overview & Eligibility

The American Lung Association's three-level mini-grant program assists K–12 public, charter, and some tribal schools to assess, develop, and implement plans to improve indoor air quality (IAQ) and energy management.

Applicant requirements:

- Sign up and participate in the Clean Air School Challenge
- K-12 public or charter school and some tribal schools are eligible
- Priority if schools are Title 1 designated or located in tribal and/or rural communities.

Level	Award Amount
Assess	$2,500 per school, with a limit of 10 schools per district.
Plan	$3,000 per school, with a limit of 10 schools per district
Act	$4,000 per school, with a limit of 10 schools per district.

To learn more and sign up for the Clean Air School Challenge, visit Lung.org/CASC
Questions? Contact CASC@Lung.org.

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Questions?