# STATE OF NEW YORK

7115

2023-2024 Regular Sessions

# IN ASSEMBLY

May 11, 2023

Introduced by M. of A. BENEDETTO -- read once and referred to the Committee on Education

AN ACT to amend the education law, in relation to establishing a school ventilation and energy efficiency assessment, repair and verification program

**The People of the State of New York, represented in Senate and Assembly, do enact as follows:**

Section 1. Legislative findings and intent. The legislature hereby finds and declares that:

a. The issue of ameliorating a school's air quality has gotten a lot of well-deserved attention during the spread of COVID-19 though ventilation and also with the increase of extreme heat conditions in the classrooms. Cleaner air is better for a school building's population and even helps with higher thinking/cognitive abilities. Although schools are now fully open, a school with an outdated or inadequate heating, ventilation, and air conditioning (HVAC) system, which controls the temperature, humidity, and air quality in school classrooms, leave many schools susceptible to harmful airborne particles and, therefore, vulnerable to any current or future contagion that plagues the state. It is important for the state to establish a program which provides for the safe ventilation and proper filtration of air throughout each school building, so they can operate with the confidence that they have safe and efficient HVAC systems in place.

b. The air ventilation and filtration process, essentially, seeks to bring outside air into the school building and then both condition (heat or cool) the outside air and remove any impure air particles as it enters the building (as well as recycling the indoor air). To maintain safety, air particles entering a school must meet minimum standards after going through air purifiers/filters (e.g., MERV 13 filter) and qualified testing personnel and engineers can assess and determine how well a filtration system is working and how safe the air is.

EXPLANATION--Matter in *italics* (underscored) is new; matter in brackets [-] is old law to be omitted.

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c. A program designed to ensure proper school air quality control must include professional assessment, repair and/or replacement of both the HVAC system, as well as carbon dioxide monitors so that any improvements to those systems meet the ventilation rates detailed in the national Uniform Mechanical Code. Reports generated from the continual monitoring of carbon dioxide monitors and maintenance of the HVAC system must also be made available to the public, electronically.

d. Approximately 41% of school districts across the United States of America need HVAC and carbon dioxide system improvements, repairs or updates. Safe air quality levels in public schools protect the health of students and staff, significantly reduce the risk of infectious airborne diseases, increase attendance and improve student performance. Funds allocated through the U.S. Department of Education's Elementary and Secondary Schools Emergency Relief (ESSER) Programs and the Governor's Emergency Education Relief (GEER) Programs and the Department of Health and Humans Services' Head Start and Child Care American Rescue Plan can support improvements to ventilation; repairs, upgrades, and replacements in Heating, Ventilation, and Air Conditioning (HVAC) systems; purchase of MERV 13 air filters, portable air purifiers, and upper-room germicidal ultraviolet irradiation systems; as well as implementation of other public health protocols and CDC guidance.

§ 2. The education law is amended by adding a new section 409-n to read as follows:

**§ 409-n. School ventilation and energy efficiency assessment, repair and verification program. 1. For purposes of this section, the following terms shall have the following meanings:**

**(a) "ANSI" means American National Standards Institute, or its successor.**

**(b) "ASHRAE" means American Society of Heating, Refrigeration and Air Conditioning Engineers.**

**(c) "Certified TAB technician" means a technician certified to perform testing, adjusting, and balancing of HVAC systems by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing, Adjusting and Balancing Bureau (TABB), or their successors.**

**(d) "HVAC" means heating, ventilation, and air conditioning.**

**(e) "Mechanical code" means the most recent version of the Mechanical Code of New York State or, for the City of New York, the most recent version of the New York City Mechanical Code.**

**(f) "Mechanical engineer" means a professional engineer licensed as a mechanical engineer by the state of New York and who has professional experience with heating, ventilation, and air conditioning systems.**

**(g) "MERV" means minimum efficiency reporting value, as established by ASHRAE Standard 52.2-2017 -- Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.**

**(h) "ppm" means parts per million.**

**(i) "Qualified adjusting personnel" means either of the following:**

**(i) A certified TAB technician; or**

**(ii) A skilled and trained workforce under the supervision of a certified TAB technician.**

**(j) "Qualified testing personnel" means either of the following:**

**(i) A certified TAB technician; or**

**(ii) A person certified to perform ventilation verification assessments of heating, ventilation and air conditioning systems from an organization that has been accredited under the ISO/IEC 17024 Personnel Certification standard in ventilation verification assessments.**

(k) "Registered apprenticeship program" means an apprenticeship program registered with the department of labor.

(l) "School" shall include but not be limited to a school district, public school, board of cooperative educational services, special act school district as defined in section four thousand one of this chapter, approved preschool special education program pursuant to section forty-four hundred ten of this chapter, schools and programs authorized by articles eighty-one and eighty-nine of this chapter, state-supported schools in accordance with article eighty-five of this chapter, or any public, private or charter primary, secondary education school.

(m) "Skilled and trained workforce" means a workforce where at least sixty percent of the construction workers are graduates of or registered in and attending a registered apprenticeship program for the applicable occupation.

(n) "TAB" means testing, adjusting, and balancing of a HVAC system.

2. Each school shall comply with the procedures set forth in subdivisions three, four, five, six and seven of this section for all occupied buildings under the school's control. These procedures shall be completed within twenty-four months after the effective date of this section and at least once every five years thereafter, as part of the school's building condition survey required pursuant to section four hundred nine-d of this article.

3. Each school shall ensure that qualified testing personnel or qualified adjusting personnel performs the following assessments:

(a) Qualified testing personnel shall review system capacity and airflow to determine the highest minimum efficiency reporting value (MERV) filtration that can be installed without adversely impacting equipment, shall replace or upgrade filters where needed, and shall verify that such filters are installed correctly. Recommendations for additional maintenance in accordance with ASHRAE Standard 62.1- 2022 Section 8 and Table 8--1, frequency of filter replacement, replacement, or upgrades to allow for more protective filtration shall be recorded in the HVAC Assessment Report where filtration meeting or exceeding the protection of MERV 13 filters cannot be met in the current system.

(b) Qualified testing personnel shall assess the ventilation rates in the facility classrooms, auditoriums, gymnasiums, nurses' offices, kitchen or cafeteria areas, restrooms, and other occupied areas to determine whether they meet the minimum ventilation rate requirements set forth in the mechanical code for new construction. Assessment shall include, but not be limited to, the following:

(i) Calculation of the estimated minimum outside air ventilation rates for each occupied area based on the anticipated maximum occupant density, occupancy category, and square footage and the minimum required ventilation rate per occupant. Calculations shall be based on maximum anticipated classroom or other occupied area occupancy rates and determined by the required ventilation rates set forth in the mechanical code for new construction;

(ii) Measurement of outside air, and verification of whether the system provides the minimum outside air ventilation rates calculated in subparagraph (i) of this paragraph;

(iii) Verification of coil velocities and unit discharge air temperatures required to maintain desired indoor conditions and to avoid moisture carry over from cooling coils;

(iv) Verification that separation between outdoor air intakes and exhaust discharge outlets meet the requirements of the mechanical code;

(v) Confirmation that the air handling unit is bringing in outdoor air and removing exhaust air as intended by the system design; and

(vii) Measurement of exhaust air volume for exhaust fans, including restrooms, and verification that exhaust air volume meets system design and the requirements of the mechanical code.

(c) For systems with economizers, qualified testing personnel shall test system economizer dampers for proper operation. Economizer dampers and controls that are not properly functioning shall be repaired by a skilled and trained workforce. Recommendations for additional maintenance, replacement or upgrades shall be recorded in the HVAC assessment report.

(d) If installed, demand control ventilation systems shall be verified by qualified testing personnel for proper operation. Demand control ventilation systems that are not properly functioning shall be repaired by a skilled and trained workforce. If the demand control ventilation system is recommended to be disabled or is unable to provide recommended ventilation rates, the HVAC system must be configured to meet the minimum ventilation rate requirements without use of the demand control ventilation and tested and adjusted to achieve design minimum outside air value. Recommendations for additional maintenance, replacement or upgrades shall be recorded in the HVAC assessment report.

(e) (i) Qualified testing personnel shall: (A) perform survey readings of inlets and outlets to verify all ventilation is reaching the served zone and that there is adequate distribution; (B) verify if inlets and outlets are balanced within tolerance of the system design; and (C) document read values and deficiencies. If the original system design values are not available, qualified testing personnel shall document available information and note unavailability of system design values in the HVAC assessment report.

(ii) Qualified testing personnel shall verify building and space pressure to ensure:

(A) Pressure differential is within tolerance of design, if known.

(B) Building is not over or under pressurized.

(C) If applicable, rooms designated for temporary occupation by sick students or staff shall maintain a negative pressure, or as otherwise designed.

(f) Qualified testing personnel shall verify coil condition, condensate drainage, cooling coil air temperature differential (entering and leaving dry bulb), heat exchanger air temperature differential (entering and leaving dry bulb), and drive assembly condition. Recommendations for additional maintenance in accordance with ASHRAE Standard 62.1- 2022 Section 8 and Table 8--1, replacement or upgrades shall be recorded in the HVAC assessment report.

(g) Qualified testing personnel shall review control sequences to:

(i) verify systems will maintain intended ventilation, temperature, and humidity conditions during school operation; and

(ii) verify a daily flush is scheduled per applicable local or state guidance.

(h) (i) Verification that all classrooms, assembly areas and office spaces intended for more than ten permanent occupants are equipped with a carbon dioxide monitor that:

(A) Is hardwired, plug-in, or battery-operated and mounted to the wall between three and six feet above the floor and at least five feet away from the door and operable windows;

(B) Displays the carbon dioxide readings to the teacher through a display on the device or other means such as a web-based application or cell phone application;

(C) Notifies the teacher and other appropriate school personnel through visual indicator on the monitor (e.g., indicator light) or other alert such as e-mail, text, or cell phone application, when the carbon dioxide levels in the classroom have exceeded 1,100 ppm;

(D) Maintains a record of previous data which includes at least the maximum carbon dioxide concentration measured;

(E) Has a range of 1-5000 ppm; and

(F) Is certified by the manufacturer to be accurate within 75 ppm at 1,000 ppm carbon dioxide concentration and is certified by the manufacturer to require calibration no more frequently than once every five years.

(ii) The technical specifications for carbon dioxide monitors set forth above may be amended by regulation as necessary to reflect available technology and to achieve the intent of this subdivision.

(iii) Classrooms, assembly areas, kitchen or cafeteria areas, and office spaces intended for more than ten permanent occupants that are not equipped with a carbon dioxide monitor meeting the above requirements shall be retrofitted to include such a monitor as part of this assessment.

(iv) Where an existing carbon dioxide monitor is more than five years old, a qualified testing technician shall verify that the carbon dioxide monitor is accurate within 75 ppm at 1,000 ppm carbon dioxide, and shall recalibrate or replace the carbon dioxide monitor where needed to meet the required accuracy.

(i) In facilities where there is limited or no existing mechanical ventilation, the assessment shall focus on documenting existing conditions and providing the mechanical engineer with the information needed to provide mechanical ventilation upgrade recommendations if needed to ensure proper ventilation and indoor air quality. Classrooms or other rooms being occupied within a school with limited or no existing mechanical ventilation shall be required to comply with the requirement to install carbon dioxide monitors.

4. (a) A qualified testing personnel or qualified adjusting personnel shall prepare an HVAC assessment report for review by a mechanical engineer. The HVAC assessment report shall be documented utilizing the sample ventilation verification test sheets listed in the prerequisite section, additional guidance, of ASHRAE Technical Committee 9.7, Educational Facilities Design Guidance for Education Facilities: Prioritization for Advanced Indoor Air Quality, 2023 publication.

(b) The HVAC assessment report shall include, but not be limited to, the following information:

(i) Name and address of school facility and person or contractor preparing and certifying the assessment report;

(ii) Description of assessment, maintenance, adjustment and repair activities and outcomes;

(iii) Documentation of HVAC equipment model number, serial number, general condition of unit, and any additional information that could be used to assess replacement and repair options given potential for increased energy efficiency benefits;

(iv) Either verification that filters that meet or exceed the protection of MERV 13 filters have been installed or verification that the maximum MERV-rated filter that the system is able to effectively handle has been installed and what that MERV-rating is;

(v) Verification that all requirements of the program have been satisfied, including installation of carbon dioxide monitors;

(vi) The verified ventilation rates for facility classrooms, auditoriums, kitchen or cafeteria areas, gymnasiums, nurses' offices, restrooms, offices, and other occupied areas, and whether those rates meet the requirements set forth for new construction in the mechanical code;

(vii) The verified exhaust for facility classrooms, auditoriums, gymnasiums, nurses' offices, restrooms, and other occupied areas and whether those rates meet system design and the requirements of the mechanical code;

(viii) Documentation of system deficiencies and recommendations for additional maintenance in accordance with ASHRAE Standard 62.1- 2022 Section 8 and Table 8--1, replacement or upgrades to improve energy efficiency, safety, or performance, if any; and

(ix) Verification that all work has been performed by qualified personnel, including the provision of the contractor's name, qualified testing personnel or qualified adjusting personnel name or names and certification number or numbers, and verification that all construction work has been performed by a skilled and trained workforce.

5. (a) A mechanical engineer shall review the HVAC assessment report, verify or adjust the estimated minimum outside air ventilation rates and determine what, if any, additional adjustments, repairs, upgrades or replacements would be necessary to meet the minimum ventilation and filtration requirements and provide a cost estimate for all recommended work.

(b) If the mechanical engineer's cost estimate for additional adjustments, repairs, upgrades, or replacements necessary to meet minimum ventilation and filtration requirements exceeds two hundred thousand dollars, the mechanical engineer shall also provide a recommendation for adjustments, repairs, upgrades or replacements that would best improve ventilation and filtration conditions at a cost not to exceed two hundred thousand dollars.

6. (a) All HVAC repairs, upgrades, or replacements shall be performed by a skilled and trained workforce. All HVAC adjustments shall be performed by qualified adjusting personnel.

(b) Adjustments, repairs, upgrades, or replacements recommended by the mechanical engineer shall be completed to the extent the cost does not to exceed two hundred thousand dollars. If recommended adjustments, repairs, upgrades, or replacements exceed two hundred thousand dollars in costs to ensure classrooms meet minimum ventilation and filtration requirements, the school may authorize expenditure of additional available funds and/or shall seek additional funds, if necessary, to make the recommended adjustments, repairs, upgrades, or replacements.

7. (a) The school shall prepare an HVAC verification report within thirty days of completion of all work pursuant to this section.

(b) The HVAC verification report shall include, but not be limited to, the following information:

(i) Name and address of school and each building;

(ii) Name of person or contractor preparing and certifying the report;

(iii) Description of assessment, maintenance, adjustment, repair, upgrade, and replacement activities and outcomes;

(iv) Verification that all requirements of this section have been met;

(v) Verification that either filters meeting or exceeding MERV 13 protection have been installed or verification that the maximum MERV-rated filter that the system is able to effectively handle has been installed and what that MERV-rating is;

(vi) The verified ventilation rates for facility classrooms, assembly areas, kitchen or cafeteria areas, offices, restrooms, and other occupied areas and whether those rates meet the requirements set forth for new construction in the mechanical code. If ventilation rates do not meet these requirements, then an explanation for why the current system is unable to meet those rates shall be provided;

(vii) The verified exhaust for facility classrooms, auditoriums, gymnasiums, nurses' offices, kitchen or cafeteria areas, restrooms, and other occupied areas and whether those rates meet system design and the requirements of the mechanical code;

(viii) Documentation of repairs, upgrades or replacements performed pursuant to the HVAC assessment report and mechanical engineer recommendations, including all work performed;

(ix) Documentation of recommendations for additional maintenance in accordance with ASHRAE Standard 62.1- 2022 Section 8 and Table 8--1, repairs, replacement, or upgrades to improve energy efficiency, safety, or performance;

(x) Documentation of initial operating verifications, adjustments, and final operating verifications, and document any adjustments or repairs performed;

(xi) Verification of installation of carbon dioxide monitors, including the number verified and installed, make, and model of monitors; and

(xii) Verification that all work has been performed by qualified personnel, including the provision of the contractor's name, qualified testing personnel or qualified adjusting personnel name or names and certification number or numbers, and verification that all construction work has been performed by a skilled and trained workforce.

(c) The school shall maintain a copy of the HVAC verification report for a minimum of five years and make it available to any member of the public, electronically, upon request.

8. (a) At least once every five years following initial inspection in accordance with ASHRAE Standard 62.1- 2022 Section 8 and Table 8--1, a qualified testing personnel shall perform the assessment, maintenance, adjustment, controls, carbon dioxide monitoring and verification pursuant to subdivisions three, four, five, six and seven of this section.

(b) Upon conclusion of the periodic inspection, qualified testing personnel who performed the periodic inspection shall offer onsite training with appropriate school staff on the findings of the inspection. The training shall include equipment identification and operations, safety protocols, review of periodic inspection findings, and preventative maintenance recommendations. School HVAC system technicians or similarly titled school staff or staff who volunteered to be trained and certified in HVAC maintenance, and who are under any collective bargaining agreement, are required to create a preventative maintenance plan in accordance with ASHRAE 180 and ASHRAE 62.1, chapter 8. Qualified adjusting personnel shall perform adjustments and measurements within the preventative maintenance plan. Nothing in this section shall be deemed to supersede or diminish the terms, rights, privileges, or remedies of any employee under any collective bargaining agreement or employment contract.

(c) (i) If a classroom, auditorium, gymnasium, nurses' office, kitchen or cafeteria areas, restroom, office, and other occupied area's carbon dioxide concentration alarm set point is exceeded for more than fifteen minutes more than four times in a month, the classroom, auditorium, gymnasium, nurses' office, kitchen or cafeteriia areas, restroom, office, and other occupied area's ventilation rates shall be adjusted or

a direct outside airflow measurement device installed and its accuracy verified, to ensure peak carbon dioxide concentrations in the classroom, auditorium, gymnasium, nurses' office, kitchen or cafeteria areas, restroom, office, and other occupied area remains below the set point. Adjustments shall be performed by qualified adjusting personnel as defined in paragraph (i) of subdivision one of this section.

(ii) Each school shall record incidents where the set point was exceeded for more than fifteen minutes more than four times in a month. Five years of such records shall be kept for each classroom, auditorium, gymnasium, nurses' office, kitchen or cafeteria areas, restroom, office, and other occupied area and made available to the public at least on a quarterly basis.

9. The commissioner shall promulgate rules and regulations as may be necessary and appropriate to implement the provisions of this section.

§ 3. Severability. If any provision of this act, or any application of any provision of this act, is held to be invalid, that shall not affect the validity or effectiveness of any other provision of this act, or of any other application of any provision of this act, which can be given effect without that provision or application; and to that end, the provisions and applications of this act are severable.

§ 4. This act take effect immediately.