

# 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 Assem-  
bly, do enact as follows:

1 Section 1. Legislative findings and intent. The legislature hereby  
2 finds and declares that:  
3 a. The issue of ameliorating a school's air quality has gotten a lot  
4 of well-deserved attention during the spread of COVID-19 though venti-  
5 lation and also with the increase of extreme heat conditions in the  
6 classrooms. Cleaner air is better for a school building's population  
7 and even helps with higher thinking/cognitive abilities. Although  
8 schools are now fully open, a school with an outdated or inadequate  
9 heating, ventilation, and air conditioning (HVAC) system, which controls  
10 the temperature, humidity, and air quality in school classrooms, leave  
11 many schools susceptible to harmful airborne particles and, therefore,  
12 vulnerable to any current or future contagion that plagues the state. It  
13 is important for the state to establish a program which provides for the  
14 safe ventilation and proper filtration of air throughout each school  
15 building, so they can operate with the confidence that they have safe  
16 and efficient HVAC systems in place.  
17 b. The air ventilation and filtration process, essentially, seeks to  
18 bring outside air into the school building and then both condition (heat  
19 or cool) the outside air and remove any impure air particles as it  
20 enters the building (as well as recycling the indoor air). To maintain  
21 safety, air particles entering a school must meet minimum standards  
22 after going through air purifiers/filters (e.g., MERV 13 filter) and  
23 qualified testing personnel and engineers can assess and determine how  
24 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.

LBD10932-01-3

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

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

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

24 § 409-n. School ventilation and energy efficiency assessment, repair  
25 and verification program. 1. For purposes of this section, the following  
26 terms shall have the following meanings:

27 (a) "ANSI" means American National Standards Institute, or its succes-  
28 sor.

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

31 (c) "Certified TAB technician" means a technician certified to perform  
32 testing, adjusting, and balancing of HVAC systems by the Associated Air  
33 Balance Council (AABC), National Environmental Balancing Bureau (NEBB),  
34 or the Testing, Adjusting and Balancing Bureau (TABB), or their succes-  
35 sors.

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

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

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

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

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

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

48 (i) A certified TAB technician; or

49 (ii) A skilled and trained workforce under the supervision of a certi-  
50 fied TAB technician.

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

52 (i) A certified TAB technician; or

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

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

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

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

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

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

23 3. Each school shall ensure that qualified testing personnel or quali-  
24 fied adjusting personnel performs the following assessments:

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

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

41 (i) Calculation of the estimated minimum outside air ventilation rates  
42 for each occupied area based on the anticipated maximum occupant densi-  
43 ty, occupancy category, and square footage and the minimum required  
44 ventilation rate per occupant. Calculations shall be based on maximum  
45 anticipated classroom or other occupied area occupancy rates and deter-  
46 mined by the required ventilation rates set forth in the mechanical code  
47 for new construction;

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

51 (iii) Verification of coil velocities and unit discharge air temper-  
52 atures required to maintain desired indoor conditions and to avoid mois-  
53 ture carry over from cooling coils;

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

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

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

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

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

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

30 (ii) Qualified testing personnel shall verify building and space pres-  
31 sure to ensure:

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

33 (B) Building is not over or under pressurized.

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

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

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

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

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

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

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

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

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

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

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

11 (F) Is certified by the manufacturer to be accurate within 75 ppm at  
12 1,000 ppm carbon dioxide concentration and is certified by the manufac-  
13 turer to require calibration no more frequently than once every five  
14 years.

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

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

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

28 (i) In facilities where there is limited or no existing mechanical  
29 ventilation, the assessment shall focus on documenting existing condi-  
30 tions and providing the mechanical engineer with the information needed  
31 to provide mechanical ventilation upgrade recommendations if needed to  
32 ensure proper ventilation and indoor air quality. Classrooms or other  
33 rooms being occupied within a school with limited or no existing mechan-  
34 ical ventilation shall be required to comply with the requirement to  
35 install carbon dioxide monitors.

36 4. (a) A qualified testing personnel or qualified adjusting personnel  
37 shall prepare an HVAC assessment report for review by a mechanical engi-  
38 neer. The HVAC assessment report shall be documented utilizing the  
39 sample ventilation verification test sheets listed in the prerequisite  
40 section, additional guidance, of ASHRAE Technical Committee 9.7, Educa-  
41 tional Facilities Design Guidance for Education Facilities: Prioritiza-  
42 tion for Advanced Indoor Air Quality, 2023 publication.

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

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

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

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

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

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

2  
3 (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;

4  
5  
6  
7 (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;

8  
9  
10  
11 (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

12  
13  
14  
15 (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.

16  
17  
18  
19  
20 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.

21  
22  
23  
24  
25  
26 (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.

27  
28  
29  
30  
31  
32  
33 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.

34  
35  
36 (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.

37  
38  
39  
40  
41  
42  
43 7. (a) The school shall prepare an HVAC verification report within thirty days of completion of all work pursuant to this section.

44  
45  
46 (b) The HVAC verification report shall include, but not be limited to, the following information:

47  
48 (i) Name and address of school and each building;

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

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

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

52  
53 (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;

54  
55  
56

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

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

11 (viii) Documentation of repairs, upgrades or replacements performed  
12 pursuant to the HVAC assessment report and mechanical engineer recommen-  
13 dations, including all work performed;

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

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

21 (xi) Verification of installation of carbon dioxide monitors, includ-  
22 ing the number verified and installed, make, and model of monitors; and

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

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

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

36 (b) Upon conclusion of the periodic inspection, qualified testing  
37 personnel who performed the periodic inspection shall offer onsite  
38 training with appropriate school staff on the findings of the  
39 inspection. The training shall include equipment identification and  
40 operations, safety protocols, review of periodic inspection findings,  
41 and preventative maintenance recommendations. School HVAC system techni-  
42 cians or similarly titled school staff or staff who volunteered to be  
43 trained and certified in HVAC maintenance, and who are under any collec-  
44 tive bargaining agreement, are required to create a preventative mainte-  
45 nance plan in accordance with ASHRAE 180 and ASHRAE 62.1, chapter 8.  
46 Qualified adjusting personnel shall perform adjustments and measurements  
47 within the preventative maintenance plan. Nothing in this section shall  
48 be deemed to supersede or diminish the terms, rights, privileges, or  
49 remedies of any employee under any collective bargaining agreement or  
50 employment contract.

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

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

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

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

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

21 § 4. This act take effect immediately.