

- **Proposal Number 11-4-2018** – Consider revising Sections C401.2, C403.7 and C403.8.
Proponent: Brenden Giza-Sisson, *Mass Save*
- **Proposal Number 11-5-2018** – Consider revising Sections C401.2 and C405.2.3.
Proponent: Brenden Giza-Sisson, *Mass Save*
- **Proposal Number 11-6-2018** – Consider revising Sections C401.2, C405.4 and C406.3.
Proponent: Brenden Giza-Sisson, *Mass Save*
- **Proposal Number 11-7-2018** – Consider revising Section C405.
Proponent: Brenden Giza-Sisson, *Mass Save*
- **Proposal Number 11-8-2018** – Consider revising Section C405.3.2.
Proponent: Brenden Giza-Sisson, *Mass Save*
- **Proposal Number 11-9-2018** – Consider revising Section C405.2.2.1.
Proponent: Glenn Heinmiller, *International Association of Lighting Designers*
- **Proposal Number 11-10-2018** – Consider revising Section C406.4.
Proponent: Glenn Heinmiller, *International Association of Lighting Designers*
- **Proposal Number 11-11-2018** – Consider revising Section C503.1.
Proponent: Glenn Heinmiller, *International Association of Lighting Designers*

Change Proposals Relating to Swimming Pool Code Requirements

- **Proposal Number 11-12-2018** – Consider revising Section 305 of the *International Swimming Pool & Spa Code* (ISPSC).
Proponent: Tom Moberg, Town of Acton

Change Proposals Relating to Residential Code Requirements Large Additions

- **Proposal Number 11-13-2018** – Consider Sections R313.2, AJ102.3 and add AJ102.3.2.
Proponent: Fire Prevention\Fire Protection (FPFP) Committee

Editorial Change Proposals Relating to Varied Code Sections

These changes have identified by code users as requiring correction.

- **Proposal Number 11-14-2018** – Consider correcting Sections 305.2 and 308.6.1 having to do with day care age requirements.
Proponent: OPSI Building Inspectors Gordon Bailey & David Holmes
- **Proposal Number 11-15-2018** – Consider correcting Sections AF103.4.2 and 103.4.3 having to do with radon control requirements.
Proponent: Mike Grover, City of Cambridge

- **Proposal Number 11-16-2018** – Discuss meaning of Section 501.1 Note 3 pertaining to construction requirements for hospitals and nursing homes.

Proponent: Mark Hughes, Town of Framingham

Regular Meeting

1. **Review\Vote** approval of October 9, 2018 BBRS draft meeting minutes.
2. **Review\Vote** approval of September 19, 2018 BOCC draft meeting minutes.
3. **Discuss** locking arrangements and associated hardware installed to protect against active shooter or other threatening situations in a building\structure.
4. **Discuss** progress relating to the next edition of 780 CMR.
5. **Discuss Code Change Proposal Number 5-7-2018** – Regarding developing a swimming pool installers license\certification based on the *Association of Pool & Spa Professionals* (APSP) standards.
6. **Discuss** Advisory Committee make-up.
 - a.) Cannabis
 - b.) Geotechnical
 - c.) Fire Prevention\Fire Protection (FPFP)
 - d.) Others
7. **Discuss** progress of Manufactured Buildings Study Group.
8. **Discuss** approval of 135 new CSLs issued in the month of September, 2018.
9. **Discuss\Vote**
CSL Average Passing Score\Medical\Military\Age or Continuing Education Requirements.
10. **Discuss** 2019 meeting dates.
11. **Discuss** BCAB and full Board Training.
12. **Discuss** other matters not reasonably anticipated 48 hours in advance of meeting.

11-4-2018



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 Department of Public Safety
 Board of Building Regulations and Standards
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 Boston, Massachusetts 02108-1618

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Matthew Moran
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Richard Crowley
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MASSACHUSETTS STATE BUILDING CODE – CODE AMENDMENT FORM

Impacted code:	<input checked="" type="checkbox"/> 10 th Edition Base Code <input type="checkbox"/> 10 th Edition Residential Code	State Use Only	
Date Submitted:	10/12/18	Date Received:	
Code Section:	C401.2, C403.7, C403.8	Code Change Number:	11.4.2018
Name of proponent:	Brendan Giza-Sisson		
Company / Organization represented, if any:	Mass Save	Check <input type="checkbox"/> if representing self	
Address (number, street, city, state, ZIP):	Mass Save is a collaborative of Massachusetts' natural gas and electric utilities and energy efficiency service providers, including Berkshire Gas, Blackstone Gas Company, Cape Light Compact, Columbia Gas of Massachusetts, Eversource, Liberty Utilities, National Grid and Unitil.		
Telephone number:	781-441-3781		
Email address:	david.giza-sisson@eversource.com		

PLEASE CHECK OFF THE TYPE OF AMENDMENT PROPOSED

- Change existing section language Add new section Delete existing section and substitute
 Delete existing section, no substitute Other, Explain: _____

PLEASE TYPE THE PROPOSED AMENDMENT BELOW. If you propose to change a section, please copy the original text from either the relevant model code and/or MA amendment. Indicate, with a strikethrough, the text that you propose to delete. Please also indicate any new text in both *italic* and **red** font. Finally, for each proposal submitted, please provide the justification items requested below. Completed code amendment forms may be emailed to Felix Zemel, Director of Code Development and Manufactured Buildings at felix.zemel@state.ma.us. Please attach additional pages as necessary.

Existing language and Proposed changes:

- 1) Revise Section C401.2 as follows:

C401.2 Application. Commercial buildings shall comply with one of the following:

1. The requirements of ANSI/ASHRAE/IESNA 90.1-2013, as modified by C401.2.2 if following APPENDIX G and **otherwise** by **C403.7.8, C403.8.6** and C406.1.

- 2) Revise Section C403.7 as follows:

C403.7 Ventilation and exhaust systems. In addition to other requirements of Section C403 applicable to the provision of ventilation air or the exhaust of air, ventilation and exhaust systems shall be in accordance with Sections C403.7.1 through C403.7.7**8**.

- 3) Add new section as follows:

C403.7.8 Laboratory and Process Facility Exhaust Systems (Mandatory).

C403.7.8.1 Airflow Reduction Requirements. *For buildings with laboratory exhaust systems where the occupied circulation rate to comply with code, accreditation standards, or facility Environmental Health & Safety department is 6 ACH or greater, the design exhaust airflow shall be capable of reducing zone exhaust and makeup airflow rates to the regulated minimum circulation rate, or the minimum required to maintain pressurization requirements, whichever is larger. Variable exhaust and makeup airflow shall be coordinated to achieve the required space pressurization at varied levels of demand and fan system capacity.*

Exceptions:

1. *Laboratory exhaust systems serving zones where constant volume is required by the Authority Having Jurisdiction, facility Environmental Health & Safety department or other applicable code.*
2. *New zones on an existing constant volume exhaust system.*

- 4) Add **Exception 3** to Section C403.8.1 as follows:

3. **Facilities for which C403.8.6 applies.**

- 5) Add new section C403.8.6 as follows:

C403.8.6 Allowable Fan Power for Laboratory and Process Facility Exhaust Systems. *All newly installed fan systems for a laboratory or process facility exhaust system greater than 10,000 CFM shall meet the following requirements:*

1. *System shall meet all discharge requirements in ANSI Z9.5-2012.*
2. *The allowable exhaust fan system power demand shall not exceed 0.85 watts per cfm of exhaust air. Exhaust fan system power demand equals the sum of the power demand of all fans in the exhaust system that are required to operate at normal occupied design conditions in order to exhaust air from the conditioned space to the outdoors. Exhaust air does not include entrained air, but does include all exhaust air from fume hoods, hazardous exhaust flows, or other manifolded exhaust streams. The exhaust fan system, including fan, nozzle, stack and wind band*

shall be licensed to bear the AMCA ratings seal for air performance (AMCA 210) or AMCA ratings seal for induced flow fan high plume dilution blowers (AMCA 260).

Exceptions

1. The volume flow rate at the stack shall vary based on the measured 5 minute averaged wind speed and wind direction obtained from at least two calibrated local anemometer installed in a location and at a height that is outside the wake region of nearby structures and experiences similar wind conditions to the free stream environment above the exhaust stacks. Look-up tables will be used to define the required volume flow rate as a function of at least eight wind speeds and eight wind directions, to maintain downwind concentrations below health and odor limits for all detectable chemicals. Wind speed/direction sensors shall be certified by the manufacturer to be accurate within plus or minus 40 fpm (0.2 m/s) and 5.0 degrees when measured at sea level and 25°C, factory calibrated, and certified by the manufacturer to require calibration no more frequently than once every 5 years. Upon detection of sensor and/or signal failure, the system shall provide a signal which resets to exhaust the quantity of air needed to achieve the aforementioned criteria at the worst-case wind conditions.
2. The volume flow rate at the stack shall vary based on the measured contaminant concentration in the exhaust plenum from a calibrated contaminant sensor installed within each exhaust plenum. A contaminant-event threshold shall be established based on maintaining downwind concentrations below health and odor limits for all detectable chemicals at the worst-case wind conditions. Contaminant concentration sensors shall be Photo Ionization Detectors (PID) certified by the manufacturer to be accurate within plus or minus 5% when measured at sea level and 25°C, factory calibrated, and certified by the manufacturer to require calibration no more frequently than once every 6 months. Upon detection of sensor and/or signal failure, the system shall provide a signal which resets to exhaust the quantity of air needed to achieve the aforementioned criteria at the worst-case release of any contaminant at the worst-case wind conditions.
3. The exhaust fan shall be designed to modulate the exit area to maintain the required discharge velocities as the system's required airflow changes.

Background and rationale:

It is well documented that exhaust energy is a significant part of a lab's overall energy consumption. What is less well documented is that currently laboratory exhaust design is often based on rules of thumb that may not adequately prevent reentrainment of contaminated air during certain above design events like periods of high winds. Recent advancements in technology allow exhaust airflow rates to vary based on real-time conditions rather than using conservative but uniform rules of thumb. The proposed code amendment aims both to reduce lab exhaust energy usage while also to improve the environmental health and safety in and around the building. California's Energy code recently [adopted similar language](#) for laboratory and Process exhaust. During the adoption process this measure was shown to achieve both of the stated goals while maintaining cost effectiveness. Some of the compliance paths are climate dependent, so the MA PA's hired a third party consultant familiar with lab construction in both CA and MA to assess how the energy impacts may differ between the two states, **see the attached memo entitled "VAV Lab Exhaust Controls"**. One key difference between the two states is that MA labs are more often found in urban areas than labs in CA, which actually increases the energy savings of the proposed language because of the type of exhaust that is used in an urban setting. For this reason, among others, we believe it is conservative to assume the proposed measure would save approximately 3kwh/sf of lab area per year in MA. To put that in some perspective this is roughly equivalent to a reducing the lab's EUI by 10 kbtu/sf, or about 5% of the lab's total energy usage. Given the relatively high ratio of labs in MA's building stock this is an important proposal for MA as it continues to work towards its emissions targets.

Pros of the proposed change: Improves health and safety and reduces energy usage. Aligns IECC and ASHRAE's fan power requirements for certain projects.

Cons of the proposed change: Designers may have to adjust their design practice based on the compliance they choose, which may increase consulting fees. Maintenance costs including training required to operate these systems may increase.

Estimated impact on life safety: Currently labs utilizing induction exhaust fans are typically designed for exhaust velocities 3000fpm, which maintains required plume heights at winds up to 22 miles/hr. Above this wind speed, however, it is possible that recommended plume heights are not met making reentrainment of contaminated air possible. This code proposal will help reduce this occurrence, and therefore, improve life safety.

Estimated impact on cost: The California CASE study upon which this code proposal is fundamentally based prepared incremental first cost information.

11-5-2018



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MASSACHUSETTS STATE BUILDING CODE – CODE AMENDMENT FORM

Impacted code:	<input checked="" type="checkbox"/> 10 th Edition Base Code <input type="checkbox"/> 10 th Edition Residential Code	State Use Only	
Date Submitted:	10/12/18	Date Received:	
Code Section:	C401.2, C405.2.3	Code Change Number:	11-5-2018
Name of proponent:	Kevin Rose		
Company / Organization represented, if any:	Mass Save	Check <input type="checkbox"/> if representing self	
Address (number, street, city, state, ZIP):	Mass Save is a collaborative of Massachusetts' natural gas and electric utilities and energy efficiency service providers, including Berkshire Gas, Blackstone Gas Company, Cape Light Compact, Columbia Gas of Massachusetts, Eversource, Liberty Utilities, National Grid and Unitil.		
Telephone number:	781.907.3595		
Email address:	Kevin.Rose@nationalgrid.com		

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Existing language and Proposed changes:

- 1) Revise Section C401.2 (as previously amended for the Mass. 9th edition) as follows:

C401.2 Application. Commercial buildings shall comply with one of the following:

1. The requirements of ANSI/ASHRAE/IESNA 90.1-2013, as modified by C401.2.2 if following APPENDIX G and **otherwise** by **C405.2.3** and C406.1.

- 2) Amend Section C405.2.3 as follows

C405.2.3 Daylight-responsive controls. *Daylight-responsive controls* complying with Section C405.2.3.1 shall be provided to control the electric lights within *daylight zones* in the following spaces:

1. Spaces with a total of more than ~~100~~150 watts of *general lighting* within sidelit zones complying with Section C405.2.3.2. *General lighting* does not include lighting that is required to have specific application control in accordance with Section C405.2.4.
2. Spaces with a total of more than ~~100~~150 watts of *general lighting* within toplit zones complying with Section C405.2.3.3.

Background and rationale: In 2017, New Buildings Institute (NBI) developed a set of 21 measures that, if adopted as a set, would decrease design energy use of new commercial buildings by 20% compared to ASHRAE 90.1-2013 (and approximately similar savings over the IECC 2015 baseline). This [NBI 20% Stretch Code](#) was validated by rigorous modeling work performed by Pacific Northwest National Laboratory (PNNL) -- the same group that calculates the relative efficiency increase for each new version of the national model codes:

Mass Save screened these 21 measures for appropriateness in the Massachusetts new construction market. Specifically, Andelman and Lelek Engineering, a long-time vendor of our C&I New Construction program, considered each of these measures relative to the 90.1-2016/2018 IECC. Daylight responsive controls were one of six measures identified by Andelman and Lelek in August 2018 as being both impactful in saving energy, provided full compliance is achieved, and feasible for inclusion into the Massachusetts energy code:

Code Category	Daylight Responsive Control Function
Amendment	Daylighting could be expanded by reducing the the lighting wattage that exempts a space from the requirement for daylighting (currently at 150 W)
Applicable Sectors	Mostly enclosed offices
Size of Market	Med.
How technically / practically feasible?	Practical
Typical Payback	short

Pros of the proposed change: Reduced electricity cost to building occupant/owner by leveraging daylight in more spaces.

Cons of the proposed change: Increased first cost to developer due to increased controls.

Estimated impact on life safety: Academic research has found a strong relationship between workplace access to natural light and improved health and well-being for office workers, such as improved sleep quality ([example](#)). Such positive outcomes could contribute to a reduction of life safety issues.

Estimated impact on cost: As indicated by Andelman and Lelek, this is a short payback measure that is mostly standard practice.

11-6-2018



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MASSACHUSETTS STATE BUILDING CODE – CODE AMENDMENT FORM

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Name of proponent:	Brendan Giza-Sisson		
Company / Organization represented, if any:	Mass Save	Check <input type="checkbox"/> if representing self	
Address (number, street, city, state, ZIP):	Mass Save is a collaborative of Massachusetts' natural gas and electric utilities and energy efficiency service providers, including Berkshire Gas, Blackstone Gas Company, Cape Light Compact, Columbia Gas of Massachusetts, Eversource, Liberty Utilities, National Grid and Unutil.		
Telephone number:	781-441-3781		
Email address:	david.giza-sisson@eversource.com		

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Existing language and Proposed changes:

- 1) Revise Section C401.2 as follows:

C401.2 Application. Commercial buildings shall comply with one of the following:

1. The requirements of ANSI/ASHRAE/IESNA 90.1-2013, as modified by C401.2.2 if following APPENDIX G and ~~otherwise~~ by **C405.4** and C406.1.

- 2) Revise Section C405.4 as follows:

C405.4 Exterior lighting power requirements (Mandatory). The total connected exterior lighting power calculated in accordance with Section C405.4.1 shall be ~~not greater~~ **less than 90 percent of the total** exterior lighting power allowance calculated in accordance with Section C405.4.2.

- 3) Amend Table C405.4.2(1) as follows:

**TABLE C405.4.2(1)
EXTERIOR LIGHTING ZONES**

LIGHTING ZONE	DESCRIPTION
1	Developed areas of national parks, state parks, forest land, and rural areas
2	Areas predominantly consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use and residential mixed-use areas
3	All other areas not classified as lighting zone 1, 2 or 4
4	High-activity commercial districts in major metropolitan areas as designated by the local land use planning authority and approved by the code official

- 4) Revise Section C406.1 (as previously amended for the Mass. 9th edition) as follows:

Delete Exception 2 without replacement

- 5) Revise Section C406.3 as follows:

C406.3 Reduced lighting power. The total connected interior lighting power calculated in accordance with Section C405.3.1 shall be less than 90 percent of the total lighting power allowance calculated in accordance with Section C405.3.2. ***The total connected exterior lighting power calculated in accordance with Section C405.4.1 shall be less than 80 percent of the total lighting power allowance calculated in accordance with Section C405.4.2.***

NOTE: We are proposing a separate amendment which also affects section C406.3. If both proposals are adopted the final language would read: