FINAL GENERIC ENVIRONMENTAL IMPACT STATEMENT

for the Adoption of an Amended
New York State Uniform Fire Prevention & Building Code
and State Energy Conservation Construction Code

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TABLE OF CONTENTS

CHANGES TO THE DRAFT EIS *1*

EXECUTIVE SUMMARY *2*

Summary of Changes **3**

Uniform Code 4

Energy Code 8

SECTION 1.0: INTRODUCTION *13*

1.0 Introduction to the Proposed Actions **13**

1.2 Description of the Proposed Actions **13**

1.3 Organization of Document **14**

1.4 Legal Authority **14**

Uniform Code 15

Energy Code 17

SECTION 2.0: ENVIRONMENTAL SETTING *19*

2.1 General **19**

2.2 International Model Codes 2024 edition and 2022 Edition of ASHRAE 90.1 ..... **19**

2.3 Code Council Action **22**

2.4 Policy Setting **28**

SECTION 3.0: PROCEDURAL HISTORY *30*

SECTION 4.0: GENERAL ENVIRONMENTAL IMPACTS OF THE CHANGES TO THE UNIFORM AND ENERGY CODE *32*

4.1 Introduction **32**

4.2 Potential environmental impacts of adopting the 2024 NYS Code Books **33**

Increased Construction Activity 34

Impact on Farmland 35

Impact on Reuse of Existing Structures 37

Impact on Historic Structures 38

Open Space Preservation 40

Impact on Wetlands....44
Impact on Water Resources....46
Impact on Human Health and Safety....49
Socio-Economic Impacts....52
SECTION 5.0: ENVIRONMENTAL IMPACTS OF SPECIFIC CHANGES MADE TO THE UNIFORM CODE....62
5.1 Discussion of Adopted Changes: 2024 RCNYS....62
5.1.1 Residential Sprinklers....62
5.2 Discussion of Adopted Changes: 2024 EBCNYS....66
5.2.1 Temporary use of buildings in emergencies....66
5.3 Discussion of Adopted Changes: 2024 FCNYS....69
5.3.1 Powered micromobility devices.....69
5.3.2 Inflatable amusement devices....72
5.4 Discussion of Adopted Changes: Multiple Code Books....74
5.4.1 Coordinating pool and hot tub provisions with industry standards and ICC's International Swimming Pool and Spa Code....74
5.4.2 DEC Flood Provisions....76
5.4.3 A2L Refrigerants....79
5.4.4 Mass Timber....81
5.4.5 Accessible building feature language updates....84
5.4.6 Lithium batteries....86
5.4.7 Energy Storage Systems....87
5.4.8 Occupiable roofs provisions....90
5.4.9 Adult changing station provisions....91
5.4.10 Shipping container construction....93
5.4 Cumulative Environmental Impacts from Significant Changes....95
SECTION 6.0: ENVIRONMENTAL IMPACTS OF THE SIGNIFICANT CHANGES TO THE ENERGY CODE....97

6.1 Discussion of Adopted Changes: Commercial and Residential Buildings 97
6.1.1 Fossil-Fuel Equipment and Building Systems Prohibition in New Buildings 97
6.1.2 More Restrictive Building Thermal Envelope Requirements 101
6.1.3 Eight Counties That Were Previously in Climate Zone 6 are now in Climate Zone 5. ... 103
6.1.4 Additional Efficiency Credits Buildings Following Prescriptive Compliance Path. 105
6.1.5 Limits on the Use of Electric Resistance Space Heating 107
6.2 Discussion on Adopted Changes: Commercial Code 109
6.2.1 Renewable Energy for Commercial Buildings 109
6.2.2 Thermal Bridge Mitigation and Documentation of Energy Loss 114
6.2.3 Increased Minimum Efficiency Requirements for Gas-Fired Water Heaters, Hot Water Boilers, Air Conditioning, and Refrigeration Equipment as Mandated by Federal Standards. 117
6.2.4 Increased Equipment Efficiency for Elevators and Escalators 118
6.3 Discussion of Adopted Changes: Residential Buildings 120
6.3.1 Energy Recovery Ventilation (ERV) Required for Residential Buildings 120
6.3.2 Separate Electric Metering for Low-Rise Multi-Family Buildings 124
6.4 Cumulative Environmental Impacts from Significant Changes to the Energy Code 126
APPENDICES 128
Appendix A: Final Scoping Document for the GEIS 128
Appendix B: Regulatory Impact Statement for the Uniform Code 128
Appendix C: Regulatory Impact Statement for the Energy Code 128
Appendix D: Response to Public Comments 128

CHANGES TO THE DRAFT EIS

Compared to the DGEIS issued in March 2025, the following changes were made: 1) revisions to Section 3 Procedural History to add events that occurred after the acceptance of the DGEIS, 2) addition of Appendix D: Response to Public Comments, and 3) a correction to a legal citation on page 24.

Final Generic Environmental Impact Statement
on the Adoption of an amended Uniform Fire Prevention and Building Code
and State Energy Conservation Construction Code
in New York State

EXECUTIVE SUMMARY

On July 26, 2024, the State Uniform Fire Prevention and Code Council ("Code Council"), statutorily housed in the New York Department of State (DOS), declared itself Lead Agency for purposes of environmental review under the New York State Environmental Quality Review Act (SEQRA) and issued a positive declaration requiring preparation of a Draft Generic Environmental Impact Statement (DGEIS) for the rule making actions of repealing the current and adopting the new versions of the Uniform Fire Prevention and Building Code ("Uniform Code") and the State Energy Conservation Construction Code ("Energy Code") in New York State. The principal purpose of the rulemakings is to update the Uniform Code and Energy Code to incorporate amendments to New York State laws and the updates in the Model Codes since the 2020 rulemakings, which were primarily based on the 2018 International Code Council's (ICC) Model Codes and the 2016 edition of ASHRAE Standard 90.1: Energy Standard for Buildings except Low-Rise Residential Buildings (ASHRAE 90.1) developed and published by the American Society of Heating, Refrigerating, and Air-Conditioning engineers. This change is also necessary for New York State to remain consistent with the rest of the nation in matters involving building construction and to provide a sufficient level of building safety to its residents.

The Code Council has not identified any significant adverse environmental impacts from the proposed amendments. However, the Code Council has chosen to use a Generic Environmental Impact Statement (GEIS) as the means to discuss the objectives and the rationale for the proposed regulations, present alternative measures which are under consideration, and provide the maximum opportunity for public participation. The GEIS serves as an environmental assessment and planning tool authorized under the SEQRA.

The changes being proposed are significant in nature in that both the code changes from the ICC's

2021 and 2024 Model Codes, as well as changes to ASHRAE 90.1-2019 and 2022, are being incorporated. Additionally, several significant New York legislative bills impacting the Uniform Code and Energy Code were passed and signed by the Governor into law from 2020 through 2024. Selected provisions in the existing Uniform Code and Energy Code which are not contained in the ICC Model Codes will be maintained. These provisions will not be discussed here as they do not represent changes from the existing code. However, where there are significant or substantive differences in building or safety requirements between the old and new versions of the Codes, this GEIS will analyze the environmental impacts of such changes.

The Uniform Code rulemaking would repeal the current version of the Uniform Code, which is based primarily upon the 2018 editions of the eight (8) individual model codes developed and published by the ICC, and adopt new text based primarily upon the 2024 editions of the same eight (8) individual model codes developed and published by the ICC. The Energy Code rulemaking would repeal the current version of the Energy Code, which is based primarily on the 2018 edition of the International Energy Conservation Code (IECC) developed and published by the ICC and the 2016 edition of ASHRAE 90.1, and adopt new text based primarily upon the 2024 edition of the IECC developed and published by the ICC and the 2022 edition of ASHRAE 90.1. This GEIS identifies in detail each of the code books which are proposed for adoption in New York State [*2024 Building Code of New York State (2024 BCNYS), 2024 Fire Code of New York State (2024 FCNYS), 2024 Plumbing Code of New York State (2024 PCNYS), 2024 Mechanical Code of New York State (2024 MCNYS), 2024 Fuel Gas Code of New York State (2024 FGCNYS), 2024 Property Maintenance Code of New York State (2024 PMCNYS), 2024 Existing Building Code of New York State (2024 EBCNYS), 2024 Residential Code of New York State (2024 RCNYS), 2024 Energy Conservation Construction Code of New York State (2024 ECCCNYS), and 2024 New York State ASHRAE 90.1 (2024 NYS ASHRAE 90.1*. Changes made to the existing Codes are described in detail as to scope and content and compared to the current New York State code provisions which they are proposed to replace. A statement is included concerning the environmental impact of these differences as compared to the current New York Uniform and Energy code requirements.

SUMMARY OF CHANGES

The following is a list of provisions which represent significant changes from the current code:

Uniform Code

2024 RCNYS

Residential Sprinklers

Section R309, Appendix BO 106.71

This code amendment expands the installation of automatic fire sprinkler systems in all new townhouse units that are served by a municipal water supply system. This proposal also adds language to Appendix BO – Existing Buildings and Structures (formerly Appendix J), requiring automatic sprinkler systems to be installed in townhouse units in which an addition increases the floor area by more than 50% and that are served by a municipal water supply system.

2024 EBCNYS

Temporary use of buildings in emergencies

Appendix E (New).

This code amendment adds a new appendix that details provisions on the temporary safe and proper use of a building for emergency purposes. The primary purpose of the appendix is to provide guidance for designers, engineers, architects, and fire and building code officials to allow for temporary use of existing buildings during a declared state of emergency with respect to the minimum code requirements.

2024 FCNYS

Powered micro mobility devices

Sections 202, 322

This code amendment established charging and storage locations for powered micromobility

devices. This code amendment also addresses hazards associated with charging through provisions on listings, separation requirements, and use of detection systems.

Inflatable amusement devices

Sections 202, 3101.1, 3106.

This code amendment is to include the ICC language for requiring an operating permit for inflatable amusement devices. This code amendment also includes provisions relating to the proper flame-resistant materials, anchoring, support, and installation of inflatable amusement devices.

2024 Multiple Code Books

Coordinating pool and hot tub provisions with industry standards and specific provisions from ICC's International Swimming Pool and Spa Code

RCNYS: Section R328

BCNYS: Sections 3109

This code amendment involves coordinating the pool and hot tub provisions with industry standards and ICC's International Swimming Pool and Spa Code. This code amendment includes barrier exceptions for hot tubs, modified provisions for suction outlets, alignment with the Virginia Graeme Pool and Spa Safety Act (VGBA) requirements, fencing mesh sizing, alarms for second-story windows, and pool latch type and locations. In addition, Executive Law §378(14), as amended by Chapter 292 of the Laws of 2024, removes the requirement that the latch handle for gates be located within the enclosure at least 40 inches above grade and adds the requirement that the release mechanism standards shall be developed by the Code Council based on internationally recognized standards.

New York State Department of Environmental Conservation (DEC) flood provisions

BCNYS: Sections 202, 1108.7.5, 1612.2, 1612.2.1, 1612.3.1, 1612.3.2, 1612.4

RCNYS: Sections R202, R301.2.4, R306,

EBCNYS: Sections 202, 502.3, 1103.3, 1201.4. 1303.1.3

This code amendment includes recommendations from consultation with the DEC. DEC's recommendations include provisions for 18 inches of sea level rise over the currently required flood elevation in tidal areas, extending the current freeboard elevation to the 500-year floodplain, and other improvements to existing language for buildings built in flood hazard areas.

A2L refrigerant

RCNYS: Sections M1411.2, M1411.3, M1411.4, M1411.5, M1411.6, M1411.7

FCNYS: Section 608.14, 608.18, Table 608.18.2

MCNYS: Sections 1101.2.1, Table 1103.1, 1104.3.1, 1104.3.2, 1106.4, Table 1106.4.2, 1109.2

This code amendment is to add language pertaining to the use of A2L refrigerants allowed pursuant to the United States Environmental Protection Agency's (EPA) significant new alternatives policy to implement 42 U.S.C 7671k.

Mass Timber

BCNYS: Sections 202, Table 504.3, Table 504.4, Table 506.2, 508.4.4.1, 509.4.1.1, Table 601, 602.4-602.4.4.3, 703.6, 703.7, Table 705.5, 718.2.1., 722.7, 1705.5.3, 1705.20, 2304.10.1, 2304.11

FCNYS: Section 3312.1

This code amendment is to expand the use of mass timber per the 2024 ICC language to allow for taller wood buildings.

Accessible building feature language updates, including updated reference and coordination with ICC A117.1 to the 2017 version

BCNYS: Sections 1009.2.2, 1013.4, 1023.11, 1108.5.1.1, 1108.5.1.2, 1108.5.2.1, 1108.5.4, 1108.6.2.2.1, 1110.2.2, 1110.18, 1112.6

FCNYS: Sections 1009.2.2, 1013.4, 1023.11

EBCNYS: Section 306.7

PCNYS: Section 410.3.2

This code amendment removes the "Type B plus" language of the current Uniform Code and replacing it with the 2024 IBC "Type A Unit" language. In doing so, a number of added or revised accessibility provisions are to be updated, including increasing wheelchair area dimension and turning radius, and revised requirements for accessible water closets, grab bars, flush controls, dispensers, roll in showers, and clearances. This code amendment also includes provisions for assisted toileting and bathing facilities.

Lithium batteries

BCNYS: Sections 304.1, 306.2, 311.2, 903.2.2.2, 903.2.4, 903.2.7.3, 903.2.9, 903.2.9.1, 903.3.1.1.3, 907.2.2.2, 907.2.4.1, 907.2.7.2, 907.2.10.2

FCNYS: Sections 203.10.3, 320, 403.10.6, 903.2.2.2, 903.2.4, 903.2.7.3, 903.2.9, 903.2.9.1, Table 903.2.11.6, 903.3.1.1.3, 907.2.2.2, 907.2.4.1, 907.2.7.2, 907.2.10.2, Table 3203.8

This code amendment includes the addition of storage requirements and collection requirements for lithium batteries. The requirements are intended to cover all types of lithium-ion batteries and lithium metal batteries, used batteries being collected for recycling or disposal, and batteries at recycling and disposal facilities.

Energy Storage System

BCNYS: Sections 202, Table 414.5.1, 716.2.5.4.1, 716.3.2.1.1.1, 903.2.4, 1604.5.2

RCNYS: Sections R202, R330

FCNYS: Sections 1107, 1207, Table 1105.4

This code amendment includes provisions as recommended by the Energy Storage System (ESS) Inter-Agency Fire Safety Working Group. The provisions recommended by the Fire Safety Work Group include adopting the 2024 International Fire Code language for ESS, adopting the 2023 version of NFPA 855, and requiring peer review for all ESS installations.

Occupiable Roofs

BCNYS: Sections 202, 503.1.4, 1004.7, 1006.3, 1009.2.1, 1607.14.2

FCNYS: Sections 202, 1004.7, 1006.3, 1009.2.1

EBCNYS: Sections 202, 502.1, 804.14.2, 804.5.1.1, Table 804.5.1.1(1), Table 804.5.1.1(2), 902.1, 1011.5.1, 1011.5.2, 1101.7, 1302.1.3

This code amendment is an ICC change that adds a new definition of occupiable roof to the BCNYS, FCNYS, and the EBCNYS as well as new provisions addressing the egress, accessibility, additions, or alterations for occupiable roofs.

Adult changing stations

BCNYS: Sections 1110.2.1.2, 1110.4

EBCNYS: Section 306.7.15

MCNYS: Section Table 403.3.1.1

This code amendment includes the locations where adult changing stations are required to be installed and the accessibility provisions for adult changing stations.

Shipping container construction

BCNYS: Sections 202, 3114

RCNYS: Sections R202, R301.1.4

This code amendment adds a definition of intermodal shipping container to the BCNYS and the RCNYS, and adds the new Section 3114 to the BCNYS, which includes provisions to regulate the use of shipping containers in building construction.

Energy Code

2024 ECCCNYS: Commercial and Residential Buildings

Fossil-fuel equipment and building systems prohibition in new buildings (with corresponding provisions set forth in the Uniform Code)
19 NYCRR Section 1240.6.

This code amendment prohibits the installation of fossil-fuel equipment and building systems, with some exceptions, in any new building: (a) not more than seven stories above grade plane height or any commercial or industrial building with one hundred thousand square feet or less in conditioned floor area, for which a substantially complete building permit application is submitted on or after December 31, 2025; or (b) for which a substantially complete building permit application is submitted after December 31, 2028. [Energy Law §11-104(6)(b),(7)]

More restrictive building thermal envelope requirements.
Commercial: C402, C402.1.2, C402.1.3, C405.5,
Residential: R402, R402.1.2, R402.1.3.

This code amendment increases energy efficiency for assembly U-Factors, R-Values, and Fenestration efficiency. Provides a new mandatory air leakage testing requirements for certain commercial buildings consistent with the provisions of residential buildings.

Eight counties that were previously in Climate Zone 6 are now in Climate Zone 5.
Commercial: C301.1
Residential: R301.1

This code amendment is based on recent climate data recording consistently higher temperatures. Climate Zone designations have been corrected and the following counties that were previously in Climate Zone 6 are now in Climate Zone 5: Allegany, Broome, Cattaraugus, Schoharie, Schuyler, Steuben, Tompkins, and Wyoming.

Additional efficiency credits for new buildings and existing buildings following the prescriptive compliance path.
Commercial: C406

Residential: R408

This code amendment requires additional efficiency credits for new buildings and existing buildings chosen from a list of options: new commercial buildings and substantial alterations (e.g. 50 percent of market value) must earn a minimum number of credits, based on climate zone, occupancy, and size, with 50% of the required credits applying to additions; and new residential buildings must earn a minimum of 10 or 15 credits, depending on size, additions must earn a minimum of 5 credits, and alterations that are substantial improvements (e.g. 50 percent of market value) must earn 3 credits.

Limits on the use of electric resistance space heating

Commercial: C403.1.3

Residential: R403.7.1.

This code amendment limits the use of electric resistance space heating to 2.0 kW for detached one- and two-family dwellings and townhouses three stories or less in height and limits the use of electric resistance space heating for commercial buildings based on size and total heating system capacity, with exceptions.

2024 ECCCNYS: Commercial Buildings

Renewable energy for commercial buildings

Section C405.15.

This code amendment requires new minimum prescriptive requirements for on-site renewable electricity generation systems with a power rating of not less than 0.75 watts per square foot with an alternative compliance path through power purchase agreements for small buildings, buildings with limited roof space, and other situations where solar PV installations would be impractical.

Thermal bridge mitigation and documentation of energy loss associated with thermal bridges in commercial buildings
Section C402.7.

This code amendment requires documentation and mitigation of energy losses associated with structural and physical interruptions in the building thermal envelope of commercial buildings. Requires a reduction of heat transfer through building elements by utilization of materials and methods that reduce thermal conductivity and include prescriptive and performance-based provisions for mitigating thermal bridge losses in above-grade walls, balconies, floor decks, parapets, structural members penetrating thermal envelope, and for vertical fenestration.

Increased minimum efficiency requirements for gas-fired water heaters, hot-water boilers, air conditioning, and refrigeration equipment as mandated by federal standards.
Section C403.3.2.

This code amendment updates the minimum efficiency requirements for federally preempted equipment under the Energy Policy and Conservation Act (EPCA) by; (1) adding minimum thermal efficiencies and maximum water return temperature for gas hot-water boilers with a system input capacity between 1 and 10 million Btu/h with exceptions, (2) providing new efficiency requirements for gas-fired water heaters that have an input capacity over 1,000,000 Btu/hr and (3) requiring new minimum standards for combustion air positive shut-off, fan motor, and oxygen concentration control for some boiler systems based on input capacity and nameplate rating.

Increased equipment efficiency for elevators
Section C405.10.3.

This code amendment increases equipment efficiency for new traction elevators with a rise of 75 feet or more in commercial buildings.

2024 ECCCNYS: Residential Buildings

Energy recovery ventilation (ERV) required for residential buildings in Climate Zone 6.
Section R403.6.1

This code amendment requires a heat recovery or energy recovery ventilation (HRV or ERV) system in residential buildings for dwelling units in Climate Zone 6. Previously, an HRV or ERV was only required in Climate Zones 7 and 8, which are not present in NYS, but this provision was modified in the 2024 IECC.

Separate electric metering for low-rise multi-family buildings
Section R404.7.

This code amendment requires separate electric metering for all dwelling units in multi-family buildings three stories or less, consistent with existing requirements for multi-family buildings four stories or more.

SECTION 1.0: INTRODUCTION

1.0 INTRODUCTION TO THE PROPOSED ACTIONS

The Code Council, the Lead Agency under SEQRA, is proposing to repeal the existing text and replace the regulations that implement the Uniform Code set forth in 19 NYCRR Parts 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, and 1229 and the Energy Code set forth in 19 NYCRR Part 1240.

The Code Council, which is housed within the DOS, issued positive declarations for the Short Environmental Assessment Forms requiring preparation of a draft and final GEIS regarding the rulemakings to repeal and replace the Uniform Code and the Energy Code (collectively the "Codes rulemakings").

1.2 DESCRIPTION OF THE PROPOSED ACTIONS

The Uniform Code applies to all buildings and structures in New York State, except for those located within the City of New York. The Energy Code applies to all buildings and structures in the State, including the City of New York.

The Code Council proposes to base the next update to the Uniform Code and Energy Code upon the 2024 versions of the nine (9) ICC Model Codes and the 2022 version of ASHRAE 90.1. Generally, the Codes consist of the following individual New York State specific code books:

- 2024 Building Code of New York State
- 2024 Fire Code of New York State
- 2024 Residential Code of New York State
- 2024 Plumbing Code of New York State
- 2024 Mechanical Code of New York State
- 2024 Fuel Gas Code of New York State

- 2024 Property Maintenance Code of New York State
- 2024 Existing Building Code of New York State
- 2024 Energy Conservation Construction Code of New York State
- 2024 New York State ASHRAE 90.1: Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

The ICC model codes from 2024 and ASHRAE 90.1-2022 will generally form the basis of the New York versions of the code books to be incorporated by reference within the proposed regulations except where the Code Council chose to retain existing standards in the Uniform Code and Energy Code or to adopt separate provisions applicable to conditions in New York State. The Uniform Code and Energy Code also include many national reference standards which are incorporated by reference within the proposed regulations, including but not limited to the Uniform Code Provisions for Rail Stations incorporated by reference within Part 1228.

1.3 Organization of Document

This document is intended to address the environmental significance of the actions by means of a discussion and evaluation of the specific matters which have been modified from the existing regulations. This section introduces the proposed actions. Section 2.0 contains a description of the environmental setting. Section 3.0 discusses the procedural history of the SEQRA process. Section 4.0 discusses the general environmental impacts of the Uniform Code and Energy Code. Section 5.0 discusses the general environmental impacts of the significant changes to the Uniform Code. Section 6.0 discusses the general environmental impacts of the significant changes to the Energy Code. Finally, Section 7.0 contains the appendices of this document, including a Regulatory Flexibility Analysis (RFA) and a Regulatory Impact Statement (RIS) for each of the Codes rulemakings.

1.4 Legal Authority

Uniform Code

Article 18 of the New York State Executive Law (§370-383), entitled the New York State Uniform Fire Prevention and Building Code Act, establishes the Code Council and authorizes it to formulate a Uniform Code.

Executive Law §377 directs that the Uniform Code shall provide reasonably uniform standards and requirements for construction and construction materials for public and private buildings, including factory manufactured homes, consonant with accepted standards of engineering and fire prevention practices.

Executive Law §378 provides that the Uniform Code shall address, among other matters, the following subjects:

1) standards for the construction of all buildings or classes of buildings, or the installation of equipment therein, including standards for materials to be used in connection therewith, and standards for safety and sanitary conditions;
2) standards for the condition, occupancy, maintenance, conservation, rehabilitation and renewal of certain existing buildings, structures and premises and for the safeguarding of life and property therein and thereabout from the hazards of fire, explosion or release of toxic gases arising from the storage, handling or use of combustible or hazardous substances, materials or devices;
3) standards for passenger elevators to promote uniformity and ease of use for the handicapped;
4) standards for emergency planning and preparedness for high rise buildings to address the needs of individuals with disabilities;
5) standards for areas of public assembly;
6) standards for hotels, motels and lodging houses, requiring that a notice be posted in a prominent place in each guest room;
7) standards for installation of carbon monoxide detectors;
8) standards for installation of single station smoke detecting alarm devices;

9) standards for inspections of solid fuel burning heating appliances; chimney and fuels;
10) standards for the use of lead in water supply systems constructed or portions added on or after January 1, 1992;
11) standards for hotels, motels and lodging houses requiring portable smoke-detecting alarm devices for the deaf and hard of hearing of audible and visual design;
12) standards for buildings housing senior citizens;
13) standards for assistive listing systems for new construction commenced after 1991;
14) standards for bed and breakfast dwellings;
15) standards for hospice residences;
16) standards for abandonment or removal of heating oil storage tanks and related piping in connection with the conversion of liquid fuel burning appliance to alternative fuel;
17) standards for temporary swimming pool enclosures;
18) standards for installation and maintenance of diaper changing stations, decks, tables or similar amenity;
19) standards for grease traps or inceptors;
20) standards providing that required gates in enclosures surrounding swimming pools be self-closing and self-latching with the latch at least forty inches above grade; and
21) prohibition on the installation of fossil-fuel equipment and building systems in new buildings after certain dates.

Executive Law §377(1) provides that the Code Council shall periodically review the entire Uniform Code to assure that it effectuates the purposes of Article 18 of the Executive Law, and the specific objectives and standards set forth in such article. Executive Law §377(1) also provides that the Code Council may from time to time amend particular provisions of the Uniform Code.

The current version of the Uniform Code is based on international model codes developed and published by the ICC. This rule making would repeal the current version of the Uniform Code, which is based upon the 2018 editions of eight (8) individual model codes developed and published by the ICC, and adopt new text based primarily upon the 2024 editions of model codes developed and published by the ICC.

Energy Code

Article 11 of the Energy Law established the State Energy Conservation Construction Code Act. The Energy Code regulates the construction of all buildings in the State, including buildings within the City of New York, for the purposes of protecting the health, safety, and security of the people of the State and to assure a continuing supply of energy for future generations and that such code mandate that economically reasonable energy conservation techniques be used in the design and construction of all public and private buildings in the State.

Energy Law §11-104 provides that the Energy Code shall be designed to satisfy specific criteria, including the following:

1) the Energy Code's standards and requirements, so far as may be practicable, shall be formulated in terms of performance objectives;
2) to the fullest extent feasible, use of modern technical methods, devices and improvements which tend to minimize consumption of energy and utilize to the greatest extent practical solar and other renewable sources of energy without affecting reasonable requirements for the health, safety and security of the occupants or users of buildings shall be permitted;
3) as far as may be practicable, the improvement of energy conservation construction practices, methods, equipment, materials and techniques shall be encouraged;
4) the Energy Code shall provide reasonable uniform standards and requirements for construction and construction materials for the improvement of energy conservation construction practices;
5) the Code Council, in consultation with the Commissioner of the Department of Parks, Recreation and Historic Preservation, is authorized to adopt exemptions to such uniform standards and requirements for historic buildings as defined in section 11-102 of this article, to the extent that the uniform standards and requirements would threaten, degrade, or destroy the historic form, fabric, or function of such historic buildings;
6) to the fullest extent feasible, the standards for construction of buildings in the code shall be designed to help achieve the State's clean energy and climate agenda, including but not limited to greenhouse gas reduction, set forth within chapter 106 of the laws of 2019 also

known as the New York State Climate Leadership and Community Protection Act (the "Climate Act"), and as further identified by the New York State Climate Action Council (CAC) established pursuant to section 75-0103 of the environmental conservation law; and

7) to support the goal of zero on-site greenhouse gas emissions and help achieve the State's clean energy and climate agenda, including but not limited to greenhouse gas reduction requirements set forth within Chapter 106 of the Laws of 2019, the Climate Act, the Energy Code shall prohibit the installation of fossil-fuel equipment and building systems, in any new building not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, on or after December 31, 2025, and the Energy Code shall prohibit the installation of fossil-fuel equipment and building systems, in all new buildings after December 31, 2028, with certain exceptions.

Energy Law §11-103 authorizes the Code Council to review and amend the Energy Code from time to time as it deems appropriate provided such amendments are consistent with the purposes of Article 11 of the Energy Law and that the code remains cost effective with respect to building construction in the State. The current version of the Energy Code is based on the 2018 version of the International Energy Conservation Construction Code (IECC) developed and published by ICC and the 2016 edition of ASHRAE 90.1. This rulemaking would repeal the current version of the Energy Code and adopt new text based primarily upon the 2024 edition of the IECC developed by the ICC and the 2022 edition of ASHRAE 90.1.

SECTION 2.0: ENVIRONMENTAL SETTING

2.1 GENERAL

The Uniform Code regulates the construction of all buildings and structures in the State outside of the City of New York. The Energy Code regulates reasonable uniform standards and requirements for the construction and construction materials for the improvement of energy conservation construction practices throughout the state, including the City of New York. It has been four years since any comprehensive update of the Uniform Code or Energy Code has taken place. In that period of time, many innovative construction methods and materials have emerged on the market. Accordingly, the Uniform Code and Energy Code need to be updated to keep up with the advancements in technological changes in materials, systems, and equipment.

2.2 INTERNATIONAL MODEL CODES 2024 EDITION AND 2022 EDITION OF ASHRAE 90.1

The ICC Model Codes are the most widely used and adopted set of building safety codes in the world.[1] The ICC Model Codes are a coordinated set of model codes that provide requirements for the design, construction, operation, and maintenance of new and existing buildings.[2] The primary purpose of the ICC Model Codes is to establish the minimum requirements to protect life safety and reduce property damage up to a design event, a defined risk threshold.[3] The purpose is achieved by promoting the construction of hazard-resistant buildings. The ICC Model Codes, which serve as the basis for the New York State code books that comprise the Uniform Code, are developed through a government consensus process organized by the ICC that allows all interested

[1] *Codes Save*, International Code Council, available at https://www.iccsafe.org/CodesSave/
[2] *Introduction to the Code Council's Regulatory Publications and Support Documents*, International Code Council, available at https://www.iccsafe.org/wp-content/uploads/22
21040_CORP_Intro_to_Regulatory_Docs_FLR_FINAL_HIRES.pdf
[3] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. ES-3; *Natural Hazard Mitigation Saves*, National Institute of Building Sciences 2019 p. 29.

parties to recommend changes.[4] The ICC Model Code which serves as the basis for the New York State code book that comprises the Energy Code is developed through the consensus standard development process organized by the ICC.[5] The final outcomes are voted on by state and local government officials that are administering, formulating, implementing, or enforcing regulations related to public health, safety and welfare in their communities.[6] The ICC Model Codes are updated every three years.[7] The ICC develops fifteen (15) separate codes that are comprehensive, coordinated and compatible with each other, and reference consensus standards developed by Standard Developing Organizations.[8] There are seventeen (17) ICC Committees that are a representation of interests and include consumers, regulators, builders, contractors, manufacturers, academia, designers, research labs, and product certifiers.[9]

All aspects of the ICC Code Development process are regulated by published procedures that are approved by the ICC Board of Directors.[10] The process consists of a deadline to submit code changes, committee action hearings, public comment hearings, and governmental consensus vote.[11] A code change can be submitted by anyone and includes the proposed language along with reasons,

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[4] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p.1-4; *Codes Save*, International Code Council, available at https://www.iccsafe.org/CodesSave/; *Introduction to the Code Council's Regulatory Publications and Support Documents*, International Code Council, available at https://www.iccsafe.org/wp-content/uploads/22-21040_CORP_Intro_to_Regulatory_Docs_FLR_FINAL_HIRES.pdf;

[5] *Update on the 2021 IECC (IRC Chapter 11) to the 2024 Edition*, International Code Council, available at https://cdn-www-v2.iccsafe.org/wp-content/uploads/ICC_IECC_Standards_INFO-12821.pdf

[6] *Codes Save*, International Code Council, available at https://www.iccsafe.org/CodesSave/; *ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf; *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 1-4.

[7] *Codes Save*, International Code Council available at https://www.iccsafe.org/CodesSave/; *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. ES-3, 1-3, 1-4.

[8] *ICC Code Development Process*, International Code Council, July 2018 available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf; *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 1-3.

[9] *ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf.

[10] *ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf.

[11] *ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf.

supporting documentation, and cost impact information and substantiation.[12] The committees decide whether to approve as submitted, approve as modified, or disapprove the code change.[13] After the committee's decision, anyone can submit a comment disagreeing with the committee action or propose revisions to the code that are within the scope of the original proposal and include reasons, documentation, and cost impact information and substantiation.[14] A public hearing is held to vote on each code change that receives a public comment or a successful assembly action.[15]

For the 2024 ICC Model Code process, the ICC separated the IECC from the remaining International Code books development process with the anticipation that this will allow for more in-depth scientific and economic deliberations, a quicker process to meeting public and private sector goals, and the development of a broader consensus to support wider application and adoption.

The 2021 and 2024 IECC introduces several significant changes to the previous versions of the codes.[16] Some of the new changes include increased energy efficiency requirements, a focus on envelope commissioning to ensure the building envelope is energy-efficient, use of more efficient lighting systems, and new provisions for on-site renewable energy systems.[17]

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) is a global professional society that has been around for over a century. ASHRAE is an industry leader

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[12] *ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf.*; Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 1-4; *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 1-7.

[13] *ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf.

[14]*ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf

[15] *ICC Code Development Process*, International Code Council, July 2018, available at https://www.iccsafe.org/wp-content/uploads/ICC-Code-Development-Process_July_2018.pdf

[16] *Which States Are Transitioning to the 2021 & 2023 IECC Building Codes? Who Will Be Impacted? Why is it Important?* Integrity Timber Frame, available at https://www.integritytimberframe.com/building-energy-codes-2023/

[17] *Which States Are Transitioning to the 2021 & 2023 IECC Building Codes? Who Will Be Impacted? Why is it Important?* Integrity Timber Frame, available at https://www.integritytimberframe.com/building-energy-codes-2023/

in research, standard writing, publishing, certification and continuing education. ASHRAE 90.1 has been the standard for commercial building energy codes in the United States for decades.[18] The ASHRAE 90.1 standard provides the minimum requirements for energy-efficiency requirements for design of most sites and buildings, except low rise residential buildings (under three stories). The most recent version of ASHRAE 90.1 is the 2022 edition, which contains over 80 addenda to the 2019 edition. Among these changes are (i) a minimum prescriptive requirement for on-site renewable energy, (ii) an optional Mechanical System Performance Path allowing HVAC system efficiency tradeoffs based on the new total system performance ratio (TSPR) metric, and (iii) new requirements to address the impacts of thermal bridging.[19]

2.3 CODE COUNCIL ACTION

Uniform Code

The Code Council is empowered to amend provisions of the Uniform Code and to review the entire Code to ensure that it effectuates the purposes contained in Article 18. Executive Law §371 was amended in 2023 by section 2 of Part RR of Chapter 56 of the Laws of 2023 to provide that the Uniform Code shall enable the State's clean energy objectives.[20] Executive Law §371 and §378 were amended in 2022 by Chapter 831 of the Laws of 2022 and Chapter 19 of the Laws of 2023 to provide that the Code Council and the Uniform Code should establish standards to safeguard life and property from future physical climate risk due to sea level rise, storm surges, and flooding.

Section 24 of Chapter 374 of the Laws of 2022 ("Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022) provided that a building code may not prohibit the use of a substance allowed pursuant to the United States Environmental Protection Agency's (EPA) significant new alternatives policy to implement 42 U.S.C. 7671k, provided that such substance the refrigeration or air condition system or other equipment or products utilizing such

[18] For more information, see Standard 90.1 (ashrae.org)
[19] For more information, see Standard 90.1 (ashrae.org)
[20] Part RR of Chapter 56 of the Laws of 2023 also amended Executive Law §378 relating to prohibition of fossil-fuel equipment and building systems which will be addressed in further detail in the Energy Code section below.

substance are designed, installed, and used in accordance with nationally recognized published standards that protect building occupant safety and reduce fire risks.

Energy Code

The Code Council is empowered to amend provisions of the Energy Code from time to time as it deems appropriate provided such amendments are consistent with the purposes of Article 11 of the Energy Law and that the Energy Code remains cost effective with respect to building construction in the State.

Energy Law §11-104 was amended in 2023 by section 1 of part RR of Chapter 56 to require the Energy Code to (1) prohibit the installation of fossil-fuel equipment and building systems on or after December 31, 2025, in new buildings not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, with certain exceptions, and (2) prohibit the installation of fossil-fuel equipment and building systems in all new buildings after December 31, 2028, with certain exceptions.

Energy Law §11-103 was amended by section 4 of Chapter 374 of the Laws of 2022 to require the Code Council, when determining whether the Energy Code remains cost effective, to consider: (i) whether the life-cycle costs for a building will be recovered through savings in energy costs over the design life of the building under a life-cycle cost analysis performed under methodology as established by the New York State Energy Research and Development Authority (NYSERDA) in regulations[21] which may be updated from time to time, and (ii) secondary or societal effects, such as reductions in greenhouse gas emissions, as defined in regulations. Prior to the passage of Chapter 374, the Code Council had to consider whether the cost of materials and their installation to meet its standards would be equal to or less than the present value of energy savings that could be expected over a ten-year period in the building in which such materials were installed.

[21] Part 510 of Title 21 of the Official Compilations of Codes, Rules and Regulations of the State of New York

Additionally, section 4 of Chapter 374 of the Laws of 2022 amended Energy Law §11-103 to require commercial buildings, the Energy Code shall meet or exceed the then most recently published ASHRAE 90.1 or achieve equivalent or greater energy savings. Also, when adopting the first amended version of the Energy Code following the effective date of the chapter (July 5, 2022) and any subsequent codes, the Code Council must use its best efforts to adopt provisions for residential buildings that achieve energy savings greater than energy savings achieved by the then most recently published IECC and to adopt provisions for commercial buildings that achieve energy savings greater than energy savings achieved by the then most recently published ASHRAE 90.1, both at levels recommended by NYSERDA, provided that the Code Council determines that such advanced energy savings can be achieved while still meeting the cost-effectiveness considerations. Prior to the amendment, for commercial buildings, the Energy Code had to meet or exceed ASHRAE 90.1 - 2007 or achieve equivalent or greater energy savings.

Furthermore, Energy Law §11-104 was amended by section 5 of Chapter 374 of the Laws of 2022 to authorize the Code Council, in consultation with the Commissioner of the Department of Parks, Recreation and Historic Preservation to adopt exemptions to such uniform standards and requirements for historic buildings to the extent the uniform standards and requirements would threaten, degrade, or destroy the historic form, fabric, or function of such historic buildings. Prior to the amendment, the Code Council was required to exempt from such standards and requirements any historic building.

Finally, Energy Law §11-104 was amended to require to the fullest extent feasible, the standards of construction of buildings in the Energy Code shall be designed to help achieve the State's clean energy and climate agenda, including but not limited to greenhouse gas reduction, set forth under the Climate Leadership and Community Protection Act (CLCPA).

Code Development Process

The code development process for this Code Update began in June 2019. At the June 2019 Code Council meeting, a Workgroup was created by the Code Council to focus on thirteen particular items and whether those items have been updated in the 2021 ICC Model Codes and any resulting

impact. The thirteen items included the following:

1. Fire Code Section 903.2.11.3 of sprinkler pipe of 55' vs 30'
2. Heat detection and alarm connection for multiple-station smoke alarms for attached garages vs 45-minute separation
3. Deletion of emergency responder radio coverage in existing buildings
4. Deletion of mobile fueling operations
5. Deletion of several exceptions in ICC language about fire partitions when they are and are not required
6. Changes to fire command center sizing charts
7. Updating to the current sprinkler standards for NFPA 13, 13R, 13D, 14, 20, 24, and 72
8. Updating to the 2019 versions as opposed to versions currently in the code.
9. Townhouse sprinkler discussion
10. Sprinkler provisions for new bed and breakfasts
11. The use of 10-year battery backups in smoke detectors
12. Interconnection of new smoke alarms using wireless technology
13. Updating reference standard NFPA 72 to use 7th edition of UL 217 regarding smoke alarms and 8th edition of UL 268 regarding smoke detectors Performance Code

The Workgroup met monthly from February 2020 through November 2021. The Workgroup finalized the report and presented it to the Code Council at the March 4, 2022, Code Council meeting.

At the March 5th, 2021 Code Council meeting, DOS staff presented the notable changes based on the 2021 ICC Model Codes, which included a high-level look at the significant changes document published by the ICC and notable changes specifically for New York State. Additionally, DOS staff recommended that the Code Council not take any immediate action on updating the Uniform Code or Energy Code until the pending legislation and the CLCPA goals have been finalized, as these would have a significant impact on the direction of the Uniform Code and Energy Code. Staff indicated that by that time, the 2024 versions of the International Code Council (ICC) Codes

would be established, which would allow the Code Council to do a single update that can incorporate the 2024 ICC code changes, meet CLCPA goals, and comply with any legislative requirements. The Code Council members decided to plan the next update to the Uniform Code and Energy Code based on the 2024 ICC model codes.

Beginning in March 2022 and continuing through July 2024, the Code Council received summaries of the notable changes in the 2021 and 2024 ICC Model Codes. Staff indicated that a Notice of Rule in Development (NRD), which is the first step in the code adoption process, would summarize the code changes and highlight modifications, including changes from the ICC code development process, legislative directives, and public comments.

The Code Council was informed by DOS staff about the CLCPA Climate Action Council process. At the March 5th, 2021 Code Council meeting, DOS staff informed the Code Council that an Energy Efficiency and Housing advisory panel for the Climate Action Council was established, and DOS staff were part of the staff workgroup supporting the panel.

At the June 25th, 2021 Code Council meeting, DOS staff indicated that the Energy Efficiency and Housing advisory panel issued its recommendations to the Climate Action Council regarding energy efficiency to enable New York Climate Action goals.

At the September 16th, 2021 Code Council meeting, DOS staff indicated that the CLCPA Climate Action Council finalized the draft Scoping Plan including recommendations to adopt code updates sooner.

At the December 3rd, 2021 Code Council meeting, DOS staff informed the Code Council that the CLCPA Climate Action Council's draft Scoping Plan was in progress, and there appeared to be no change in the impact on the building sector.

At the March 4th, 2022, Code Council meeting, DOS staff informed the Code Council that the Climate Action Council released its draft Scoping Plan on January 1, 2022; the public comment period for the draft Scoping Plan lasted for 120 days, or until May 1, 2022, and there were at least

six public hearings scheduled across the State during the 120-day public comment period.

At the December 9th, 2022 Code Council meeting, DOS staff informed the Code Council that the final Scoping Plan from the Climate Action Council was expected in early 2023, with chapter 12 focusing on recommendations relating to buildings. The Climate Action Council voted to approve the final Scoping Plan at the December 19, 2022, meeting of the Climate Action Council, which was made available to the public and submitted to the Governor and Legislature by January 1, 2023.[22]

At the June 23rd, 2023 Code Council meeting, a presentation on automatic sprinkler systems was provided to the Code Council by the State Fire Administrator.[23] The presentation covered the following items: increased lethality of modern fires, discriminatory nature of modern-day hose fires, 2011 adoption of fire sprinklers in the International Residential Code, effectiveness of sprinkler systems, and benefits of sprinklers for firefighters. The presentation also included the possible objections to sprinkler systems, such as the cost of residential sprinklers, new homes are safe misconception, the potential for water damage, and smoke alarms being adequate for life safety misconception.

Throughout the Code development process, DOS staff have coordinated and worked with other State agencies such as the Department of Health (DOH), NYSERDA, Department of Public Service (DPS), and the New York State Office of Parks, Recreation and Historic Preservation (OPRHP), concerning historic buildings provisions in the Energy Code. The DOS staff also worked with DEC on improvements to flood plain language, multiple accessibility advocacy groups for updates to evacuation notices for high rise buildings, State Education Department on code impacts to New York State schools, the New York State troopers on New York State school lockdown procedures and requirements, and Metropolitan Transportation Authority (MTA) on updates to the rail station provisions.

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[22] For more information, see https://climate.ny.gov/resources/scoping-plan/
[23] For more information, see https://dos.ny.gov/state-fire-prevention-and-building-code-council-post-meeting-documents

At the July 26th, 2024 Code Council meeting, DOS staff informed the Code Council that the final recommendations of the New York State Inter-Agency ESS Fire Safety Working Group were released, and staff incorporated the recommendations into the Uniform Code.[24]

At the June 28th, 2024 Code Council Meeting, DOS staff presented the provisions for the fossil-fuel prohibition contained within Article 11 of the Energy Law and Section 378 of the Executive Law and posted the NRD for those proposed changes on the DOS's website.

At the July 26th, 2024 Code Council meeting, the final NRD documents were prepared for the Uniform Code and Energy Code books, presented to the Code Council, and posted on the DOS's website. The DOS accepted public comments on the draft language for the fossil-fuel prohibition provisions and the Uniform Code and Energy Code books through to September 24, 2024.

2.4 POLICY SETTING

The Uniform Code rulemaking will meet the public policy objectives of Executive Law Article 18 by providing for a basic level of protection from hazards of fire through the addition of the stated townhouse sprinkler provisions. This rulemaking will meet the public policy objective of requiring new and existing buildings alike to keep pace with advances in technology concerning fire prevention and building construction by including provisions on energy storage systems (ESS), mass timber, powered micromobility devices, lithium batteries, shipping container construction, and industry standards for pools and hot tubs. This rulemaking will address the public policy objective of safeguarding life and property from future physical climate risk due to sea level rise, storm surges, and flooding by including provisions incorporating DEC's recommendations on flood provisions. This rulemaking will address the public policy objectives set forth in the Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022 by adding provisions regarding A2L refrigerants.

[24] *New York's Inter-Agency Fire Safety Working Group*, available at https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group

The Energy Code rulemaking will meet the public policy objectives of Energy Law Article 11 by assuring a continuous supply of energy for future generations under a code that mandates that economically reasonable energy conservation techniques be used in the design and construction of all public and private buildings in the State. This rulemaking will enable the State's clean energy and climate objectives, including but not limited to greenhouse gas reduction as set forth in the Climate Act by adding provisions on fossil-fuel equipment and building systems prohibition and renewable solar energy for commercial buildings.

In terms of regulating construction through the adoption and application of building codes, public safety traditionally has been, and continues to be the primary, overarching consideration. However, several significant societal issues also weigh into the on-going development and adoption of such codes:

- The environmental impact of construction and the building codes effect on the State's greenhouse gas emissions under the Climate Act;
- Energy usage and the impact on the State's electrical grid;
- Housing supply and costs; and
- Supply shortages.

Establishing the requisite balance - promoting economic development and minimizing adverse environmental impact without sacrificing public health and safety - requires the ability to readily gain access to scientific and technological advances, the results of studies and tests, and the rest of the ever-advancing body of knowledge which underlies the constant evolution of modern building codes.

The State of New York believes that this balance can best be achieved through adoption of updated New York State specific code books based on the 2024 ICC Codes and ASHRAE 90.1-2022, which are updated through an ongoing code development process.

SECTION 3.0: PROCEDURAL HISTORY

Prior to the release of this GEIS document, the Code Council conducted the following steps in accordance with the applicable SEQRA regulations.

- During the meeting on July 26, 2024, the Code Council moved to:
  - Designate the Code Council as the Lead Agency for the purpose of environmental review and for the DOS to act administratively on behalf of the Code Council to file, post, and publish any supporting documents;
  - Request the DOS to file positive declarations for the Short Environmental Assessment Forms for both the Uniform Code and Energy Code update rule makings; and
  - Request the DOS to publish on the Department's website as well as in the Environmental Notice Bulletin (ENB) the Draft Scope and Notice of Intent to Prepare Draft Generic Environmental Impact Statement (DGEIS) for Proposed Amendment of the Uniform Code and Energy Code and to receive public comments to the Draft Scope through to September 6, 2024.
- On August 7, 2024, the Notice of Draft Scope appeared in the ENB.[25]
- During the Code Council meeting on September 27, 2024, the Code Council moved to:
  - Request the DOS to publish the Final Scope on the Department's website and publish notice of the Final Scope in the ENB; and
  - Direct the DOS to prepare the DGEIS for Proposed Amendment of the Uniform Code and Energy Code in accordance with the Final Scope.
- On October 9, 2024, the Notice of Final Scope appeared in the ENB.[26]
- During the February 28, 2025 Code Council meeting, the Code Council moved to:
  - Accept the Draft Generic Impact Statement (Draft GEIS).

[25] For more information, see https://dec.ny.gov/news/environmental-notice-bulletin/2024-08-07/seqr/statewide-amendment-of-the-new-york-state-uniform-fire-prevention-and-building-code-and-the-state-energy-conservation-construction-code

[26] For more information, see https://dec.ny.gov/news/environmental-notice-bulletin/2024-10-09/seqr/statewide-proposed-amendment-of-the-new-york-state-uniform-fire-prevention-and-building-code-and-the-state-energy-conservation-construction-code

  - Request that the Department publish on the Department's website as well as in the Environmental Notice Bulletin the Draft GEIS.
  - Request that the Department conduct an in-person and virtual hearing on May 16, 2025 on the Draft GEIS.
  - Request that the Department publish notice of the public hearing on the Department's website and in the Environmental Notice Bulletin and State Register.
- On March 19, 2025, the Notice of Acceptance of the Draft GEIS and the Notice of Public Hearing appeared in the Environmental Notice Bulletin. The Notice of Public Hearing also appeared in the State Register on March 19, 2025.
- An in-person and virtual hearing to receive public comments on the Draft GEIS was held on May 16, 2025. The Department did not receive any oral comments. Public comments on the Draft GEIS were accepted through May 27, 2025. The Department received 2 written comments
- During the June 27, 2025 Code Council meeting, the Code Council moved to:
  - Accept the Final Generic Environmental Impact Statement (Final GEIS).
  - Request that the Department publish on the Department's website as well as in the Environmental Notice the Final GEIS.

SECTION 4.0: GENERAL ENVIRONMENTAL IMPACTS OF THE CHANGES TO THE UNIFORM AND ENERGY CODE

4.1 INTRODUCTION

The Code Council has proposed the adoption of a new Uniform Code and Energy Code modeled in large measure on the 2024 version of the ICC Codes and the Standard ASHRAE 90.1, both with New York State modifications. The Uniform Code regulates the construction of all buildings and structures in the State, outside of the City of New York. The Energy Code applies throughout the State. This new set of regulations will have a wide application to future construction activities.

Some states and local jurisdictions in the nation have adopted or are in the process of adopting the 2021 or 2024 versions of the ICC Codes.[27] One of the reasons for updating the Uniform Code and the Energy Code is to remain consistent with the rest of the nation in matters involving building construction, to provide a sufficient level of building safety, and to pursue, to the fullest extent feasible, the use of modern technical methods, devices and improvements that tend to minimize consumption of energy[28]. It is also necessary if New York State wishes to keep pace with evolving technology concerning fire prevention and building construction and to have a building and fire prevention code which is consistent with nationally accepted model codes. Additionally, the updates to the Uniform Code will better account for the current state of construction technology, allow for greater flexibility in design, provide for safety and efficiency, and encourage the environmentally sound use of non-renewable and renewable resources in construction. By removing obstacles to current construction technology and allowing greater flexibility through performance-based standards, the updates to the Uniform Code will serve to promote greater utility and durability in new buildings, as well as greater opportunities for rehabilitation and reuse of existing buildings. The 2024 ICC Codes address new technology, such as powered micro-mobility devices (more commonly known as lithium battery-powered bikes, scooters, etc.), lithium

[27] *International Codes -Adoption by State*, International Code Council (January 2024) available at https://www.iccsafe.org/wp-content/uploads/Master-I-Code-Adoption-Chart-1.pdf
[28] Energy Law, Article 11, §11-104 (2).

batteries, and energy storage systems. The 2024 ICC Codes also add new requirements for the use of mass timber, adult changing stations, shipping container construction, occupiable roofs, and inflatable amusement devices, topics discussed further below.

The new Energy Code is expected to result in more energy-efficient structures, further reducing the consumption of non-renewable energy resources. The new Energy Code will continue to protect the health, safety, and security of the people of New York State while assuring a continuing supply of energy for future generations. The new Energy Code will also mandate that economically reasonable energy conservation techniques be used in the design and construction of all new public and private buildings in New York. These techniques include renewable energy for commercial buildings, increased minimum efficiency requirements for gas-fired water heaters, hot-water boilers, air conditioning and refrigeration equipment as mandated by federal standards, additional efficiency credits for new buildings and existing buildings following the prescriptive compliance path, more restrictive building thermal envelope requirements, and a prohibition on fossil-fuel equipment and building systems in new buildings, among other proposals.

4.2 POTENTIAL ENVIRONMENTAL IMPACTS OF ADOPTING THE 2024 NYS CODE BOOKS

This GEIS is part of the adoption process of the new Uniform Code and Energy Code. A substantial portion of the effort involves recodifying existing regulations in New York. As a rulemaking, the regulations will have a wide application to future construction activities, indirectly affecting the environment through the regulated use of products when creating new structures or retrofitting existing structures. As noted, the Uniform Code regulates the construction of all buildings and structures in the State outside of the City of New York. The State Energy Code applies throughout the State.

Incorporating the nine 2024 versions of ICC Codes as the principal part of the Uniform Code and Energy Code will enable New York to participate on a national level with an on-going system of support and technological assistance. The 2024 versions of ICC Codes would allow for: advances in technology concerning fire prevention and building construction; a statewide approach to the training and qualification of personnel engaged in the administration and enforcement of the

Uniform Code, except in New York City which enforces its own code; and a consistent set of requirements throughout the U.S. for code enforcement officials, architects, engineers, designers, and contractors.

Increased Construction Activity

Construction and operation of buildings and structures will continue in New York State, with or without Uniform Code or Energy Code modifications. In general, adopting the proposed Uniform Code and Energy Code will not cause significant adverse environmental impacts.

Land use planning and zoning practices are appropriate, proven, and effective mechanisms for minimizing or preventing development in ecologically valuable lands, with or without the proposed changes to the Uniform Code and Energy Code.

In New York State, local governments, such as counties, cities, towns, and villages, are granted broad home rule powers to regulate the quality of life in their communities. Article IX of the NYS Constitution affirmatively provides local governments with the power to adopt and amend local laws relating to their "property, affairs or government." For cities, towns, and villages, this includes the decision whether to control land use and, if so, to determine the nature of the controls. Through control of land use and development, each community can develop and display the most desirable physical features of the community. This power is exercised through a variety of available authorizations and regulatory mechanisms.

The purpose of zoning is to carry out the planning objectives of a local government. It operates prospectively because it allows a community to plan how the land within it will be developed in the future. The municipality can specify what kind of construction and uses will be allowed into certain areas within the community and which uses will be prohibited. Many aspects of a building’s design are regulated through standards for siting, orientation, density, height, and setback within a local government's zoning code. Zoning can assist in promoting wise comprehensive development and adaptive reuse of existing buildings instead of expanding into aesthetically important open areas.

In addition, the SEQRA applies to all State agencies and local governments when they propose to undertake an "action," including approving or funding projects proposed by private owners. (Environmental Conservation Law Article 8; 6 NYCRR Part 617). The intent of SEQRA is to review the environmental impacts of a proposed project and to take those impacts into account when deciding whether to undertake, approve, or fund it. This includes zoning approval actions. Impacts that cannot be avoided through modification of the project should be mitigated by conditions imposed on such a project.

SEQRA review can serve to supplement local controls when the scope and environmental impacts of a project exceed those anticipated by existing land use laws. SEQRA is a far-reaching statute that can provide a local government with critical information about the impacts of a land development project, so that a more informed decision may be made on the project. The SEQRA review process also helps to establish a clear record of environmental decision-making.

Recent amendments to SEQRA will be discussed further in the section on Disadvantaged Communities. For this reason, any new development activity engendered by the adoption of the new Uniform Code and Energy Code would necessarily be constrained by zoning and other land development controls and reviewed for its environmental impacts under SEQRA. Local land use laws and ordinances are not altered by the adoption of the new Uniform Code and Energy Code, except as it relates to code administration and enforcement.

Impact on Farmland

Construction and operation of buildings and structures will continue in New York State, with or without Uniform Code or Energy Code modifications. Agriculture in this State is an important activity and often results in preservation of open space. Agriculture is a major driver of New York's economy, contributing billions of dollars in sales annually.[29] Traditionally, agricultural

[29] *Helping to Protect and Grow Businesses*. NYS Department of Agriculture and Markets, available at https://agriculture.ny.gov/business-development

uses are part of large lot, low-density zoning districts.

Section 4 of Article 14 of the New York Constitution declares it the policy of the state to encourage the development and improvement of the State's agricultural lands for the production of food and other agricultural products. To that end, the State Legislature was directed to provide for the protection of agricultural lands.

Article 25-AA of the Agriculture and Markets Law was enacted to conserve and protect agricultural land for agricultural production and as a valued natural and ecological resource.[30] Under this statute, territory can be designated as an agricultural district.[31] To be eligible for designation, the county must certify an agricultural district for participation in the State program.[32] Once a district is designated, participating farmers within it can receive reduced property assessments[33] and relief from local nuisance claims and certain forms of local regulation.

Agricultural district designation under Article 25-AA does not generally prescribe land uses. Local governments can exercise their powers to enact local laws, ordinances, rules, or regulations applicable to farm operations in an agricultural district in a manner which does not unreasonably restrict or regulate farm operations within agricultural districts unless it can be shown that the public health or safety is threatened.[34] Additionally, local governments must evaluate and consider the possible impacts of certain projects on the functioning of nearby farms.[35] Projects that require "agricultural data statements" include certain land subdivisions, site plans, special use permits, and use variances.[36] Therefore, to the extent that the new Uniform Code and Energy Code encourage new development in farming areas, State law protects such areas from the intrusion of new development. The existing regulations continue to protect farmland, notwithstanding the adoption

[30] *See* NY AGRI & MKTS § 300
[31] *See* NY AGRI & MKTS § 303
[32] *See* NY AGRI & MKTS § 303; *see also* https://agriculture.ny.gov/land-and-water/about-agricultural-districts
[33] *See* NY AGRI & MKTS § 305
[34] *See* NY AGRI & MKTS § 305-a(1); Town Law §283-a(1); Village Law §7-739(1); *see also* https://agriculture.ny.gov/land-and-water/section-305-review-restrictive-laws
[35] *See* Town Law §283-a(2)-(4); Village Law §7-739(2)-(4).
[36] *See* Town Law §283-a(2)-(4); Village Law §7-739(2)-(4).

of the new Uniform Code and Energy Code provisions.

Farm operations within agricultural districts also enjoy a measure of protection from proposals by state agencies, public benefit corporations, or local governments to acquire land or an interest in land within the agricultural district[37] or to construct infrastructure such as water and sewer systems, which are intended to serve non-farm structures.[38] Under Section 305 of the Agriculture and Markets Law, the state agency, public benefit corporation, or local government must file a notice of intent with both the Commissioner of New York State Department of Agriculture and Markets (AGM Commissioner) and the county agricultural and farmland protection board at least 65 days prior to such acquisition, construction or advance of public funds.[39] The notice must detail the plans and the potential short-term and long-term effects of the plans on agricultural operations.[40] If, on review at either the county or State levels, the AGM Commissioner determines that there would be an unreasonable adverse effect on the continuing viability of a farm enterprise or enterprises within the district or state environmental plans, policies, and objectives, the AGM Commissioner may issue an order delaying construction for an additional 60 day period; review the proposed action to determine whether any reasonable and practicable alternatives exist which would minimize or avoid the adverse impact on agriculture; and may hold a public hearing on the issue.[41] If construction eventually goes forward, the municipality must make adequate documented findings that all adverse impacts on agriculture will be minimized or avoided to the maximum extent practicable.[42]

Impact on Reuse of Existing Structures

[37] In limiting the exercise of eminent domain and other public acquisitions, and on the advance of public funds, Agriculture & Markets Law, §305(4) (a) states "provided that the acquisition from any one actively operated farm within the district would be in excess of one acre or that the total acquisition within the district would be in excess of ten acres".
[38] *See* Agriculture & Markets Law, §305(4); *see also* https://agriculture.ny.gov/land-and-water/notice-intent-requirement
[39] *See* Agriculture & Markets Law, §305(4)(a), (b).
[40] *See* Agriculture & Markets Law, §305(4)(b).
[41] *See* Agriculture & Markets Law, §305(4)(d), (e)
[42] *See* Agriculture & Markets Law, §305(4)(f)

The current Uniform Code and Energy Code encourage the reuse of existing structures, including historic buildings. The Uniform Code and Energy Code provisions may offset any incentives to construct new structures in or near undeveloped areas. A primary reason is the EBCNYS and Appendix BO of the RCNYS, as well as Chapters R6 and C6 of the Energy Code, allow for greater flexibility in and impose less stringent standards for rehabilitation of existing structures than for new construction. They establish alternative standards for compliance while maintaining safety and allow a limited amount of discretion on the part of code enforcement officials for approving alternative means of meeting safety standards.

The proposed code changes are expected to continue to increase opportunities for rehabilitation, renovation, and use of existing structures. However, the particular characteristics of an existing building may make renovation less cost effective at some sites. This will not automatically lead to new development in open space areas. In some cases, there will be alternative, existing structures that are better suited to the type of renovation precluded at the original site. In other cases, the added value associated with the history, architecture, or location of the existing structure will provide impetus for undertaking a rehabilitation despite added costs. Therefore, the proposed code changes are expected to have a positive impact, as they will provide incentives for rehabilitation and reduce the pressure to construct new buildings in greenfields. Additionally, as mentioned in the Summary of Changes and further discussed in Section 5.11, the proposed code changes include a new appendix that details provisions for the temporary safe and proper use of a building for emergency purposes when a State or Federal emergency declaration has been issued.

Impact on Historic Structures

One aspect of the reuse of existing structures is the renovation of historic buildings and structures. The EBCNYS, Appendix BO of RCNYS, and Chapters R6 and C6 of the Energy Code make it significantly easier and less costly to rehabilitate an existing structure, thus encouraging renovation. In particular, the historic buildings provisions in those codes. This aids in the preservation of such buildings and reduces the need to construct new ones elsewhere. From the perspective of ensuring quality communities, maintenance of historic structures can be key to revitalizing Main Streets and downtowns.

In collaboration with the State Historic Preservation Office, the exemption for historic buildings in the Energy Code has been modified to protect, not the entirety of the historic building, structure, or district but, the character-defining features that contribute to the historic building, structure, or district's form, fabric, or function of such building or district. However, the integrity of the historic and architectural appearance of buildings is protected to varying degrees at the federal, state, and local levels. The historical importance of a building is often recognized at the state and national level through listing on the State or National Register of Historic Places. These listings are managed, respectively, by OPRHP, and the Federal Department of the Interior, in cooperation with the property owner and local municipality.[43] Listing on the National and State Register of Historic Places constitutes an important recognition of a property or an area's historic and cultural significance. Designation makes the property eligible for grants and loans and, possibly, federal and state tax credits.[44] Additionally, registered properties receive a measure of protection from the effects of federal and/or state agency sponsored, licensed, or assisted projects through a notice, review, and consultation process.[45] However, the designation does not place restrictions on the ability of private owners of registered properties to sell, alter, or dispose of such properties.[46]

Only a locally adopted historic preservation law can protect a structure from the owner's interest in redesigning or demolishing the historic structure. General Municipal Law § 96-A[47] expressly authorizes local governments "to provide, by regulations, special conditions and restrictions for the protection, enhancement, perpetuation, and use of places, districts, sites, buildings, structures, works of art, and other objects having a special character or special historical or aesthetic interest or value." Often, a community chooses to link historic preservation controls with local architectural regulations focusing on the design of new buildings and alterations to other non-contributing structures within historic districts.

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[43] For more information, see https://parks.ny.gov/shpo/national-register/
[44] For more information, see https://parks.ny.gov/shpo/national-register/
[45] *See* Parks, Recreation & Historic Preservation Law §14.09; *see also* https://parks.ny.gov/shpo/national-register/; https://parks.ny.gov/shpo/environmental-review/
[46] For more information, see https://parks.ny.gov/shpo/national-register/
[47] As added by section 3 of the chapter 513 of the laws of 1968.

Open Space Preservation

Open space is public or private land not intensively developed for residential, commercial, industrial, or institutional use.[48] It includes farms and forests, coastal and estuarine lands, scenic lands, parks, preserves, and water bodies such as lakes and bays.[49] Open space is also defined partly by its surroundings.[50] A vacant lot or small marsh can be open space in a city. A walking or bicycling path surrounded by developed areas can be an open space.[51] Development of open space lands can promote sprawl, extend transportation infrastructure, and result in diminished viewsheds and polluted road runoff. The current Codes and the 2024 revisions to the Codes are not expected to increase development in open space areas. The decision about where to locate development remains the province of State and local governments, which can apply non-Code related land use controls- such as zoning and natural resource protection laws- to protect against over-development. Once construction is permitted in a particular location, however, the new Codes will determine how buildings will be constructed. The State and many communities recognize that "open space", i.e., vacant land and land without significant structural development, is valuable to a quality community. Open spaces can support outdoor recreation, scenic views, tourism, and ecological values.

The State has developed an Open Space Conservation Plan, updated periodically, to describe current open space conservation goals, actions, tools, resources, and programs administered by state and federal agencies and conservation nonprofits.[52] The Open Space Conservation Plan

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[48] *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 2, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf;
[49] *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 2, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf;
[50] *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 2, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf; *see also* Environmental Conservation Law § 52-0101 (defines open space as "open or natural land in or near urban or suburban areas necessary to serve the scenic or recreation needs thereof);
[51] *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 2, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf;
[52] *2016 open space conservation plan*. Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space/2016-open-space-conservation-plan; *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 2, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf

serves as the blueprint for the State's land conservation efforts and provides four overarching objectives to direct priorities, policies and actions:

- Promote outdoor recreation;
- Address climate change;
- Ensure clean water, air and land for a healthy public and vibrant economy; and
- Protect, use and conserve our natural resources and cultural heritage.[53]

The Open Space Conservation Plan is developed with the assistance of nine Regional Advisory Committees composed of representatives of county governments and representatives selected by New York State DEC and OPRHP and all knowledgeable in open conservation.[54] Additionally, DEC, OPRHP, DOS, Department of Agriculture and Markets, and Department of Transportation are involved in the Open Space Conservation Plan development.[55] Each Regional Advisory Committee submits a report containing recommended priority conservation projects in their region.[56] The report also includes advice and recommendations on conservation policies and priorities; further studies and assessments; economic impacts of projects and ecological value of projects.[57] The last Open Space Conservation Plan was issued in 2016[58] and the next one is currently being developed.[59]

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[53] *Open Space,* Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space
[54] *2016 open space conservation plan*. Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space/2016-open-space-conservation-plan; *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 6, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf;
[55] *2016 open space conservation plan*, Department of Environmental Conversation, available at https://dec.ny.gov/nature/open-space/2016-open-space-conservation-plan; *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 6, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf;
[56] *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 6, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf;
[57] *Conserving Open Space in New York State New York State Open Space Conservation Plan Summary* 2016 at p. 6, available at https://extapps.dec.ny.gov/docs/lands_forests_pdf/ospsummary.pdf;
[58] *2016 open space conservation plan*, Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space/2016-open-space-conservation-plan
[59] *Open Space,* Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space

In 2022, the State has committed to conserving 30 percent of its lands and water by 2030.[60] Under the initiative, the DEC, in consultation with the Commissioner of OPRHP, must develop strategies and a methodology to achieve the goal, including, but not limited to,

1) coordination with the state land acquisition plan;
2) prioritizing protections of water resources and sole source aquifers, including wetland protections;
3) expanding equitable outdoor access;
4) increasing climate resilience, including reducing risk from extreme weather events including cooling urban landscapes and natural solutions to prevent erosion and flooding; and
5) protections and restoration projects for preserving and increasing biodiversity, including habitat restoration, with a focus on habitats of endangered and threatened species including resilient and connected lands and corridors providing means for wildlife migration and habitation.[61]

In July 2024, DEC and OPRHP released the New York State 30x30 Draft Strategies and Methodology for public comment and accepted public comments through August 30, 2024.[62] At public meetings held on July 25 and August 14, 2024, DEC and OPRHP presented a summary of the strategies and methodology.[63] Once the strategies and methodology are finalized, they will be implemented, incorporated into the Open Space Conservation Plan and their progress will be reported annually.[64]

On November 8, 2022, New Yorkers approved a ballot proposition, known as the Clean Water,

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[60] Environmental Conservation Law §49-0113(1); *see also* https://dec.ny.gov/sites/default/files/2024-09/30x30presentation.pdf
[61] *See* Environmental Conservation Law §49-0113(2)
[62] *30x30: Conserving 30% of New York's Lands and Waters by 2030*, Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space/30x30
[63] *30x30: Conserving 30% of New York's Lands and Waters by 2030*, Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space/30x30
[64] *30x30: Conserving 30% of New York's Lands and Waters by 2030*, Department of Environmental Conservation, available at https://dec.ny.gov/nature/open-space/30x30

Clean Air, and Clean Jobs Environmental Bond Act of 2022 (2022 Environmental Bond Act), to make $4.2 billion available for environmental and community projects.[65] At least 300 million of the 2022 Environmental Bond Act money will go toward open space land conservation projects.[66] Open space land conservation project is defined under the statutory provisions implementing the 2022 Environmental Bond Act as "purchase of fee title or conservation easements for the purpose of protecting lands or waters and/or providing recreational opportunities for the public that (i) possess ecological, habitat, recreational or scenic values; (ii) protect the quality of a drinking water supply; (iii) provide flood control or flood mitigation values; (iv) constitute a floodplain; (v) provide or have the potential to provide important habitat connectivity; (vi) provide open space for the use and enjoyment of the public; or (vii) provide community gardens in urban areas."[67]

Municipalities play the most significant role in the preservation of open space lands through their land use planning efforts. A municipality seeking to protect its open space resources may well produce an open space plan or include an assessment of open space resources as part of its comprehensive plan. Once a community has identified its open space resources, it can develop policies to protect them. The open space policies of the comprehensive plan can be implemented through the municipality's land use controls. As discussed earlier in this section, zoning is an effective device for controlling the location of and opportunities for new development. Appropriate use, density, siting, and design standards can even protect scenic resources by such methods as limiting the height of buildings or fences in important scenic areas, clustering subdivisions with retention of open areas or utilizing the Transfer of Development Rights to execute a conservation easement to protect an open area. Notwithstanding any cost incentives in the new Codes which encourage new construction, local land use policies will continue to determine whether and where any new development is sited.

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[65] *Clean Water Clean Air and Green Jobs Environmental Bond Act*, Department of Environmental Conservation, available at https://dec.ny.gov/about/clean-water-clean-air-and-green-jobs-environmental-bond-act; https://environmentalbondact.ny.gov/; *see also* Environmental Conservation Law Article 58

[66] For more information, see https://environmentalbondact.ny.gov/pages/funding-overview. See the Current Projects Interactive Map for more details on projects funded by the 2022 Environmental Bond Act available at https://environmentalbondact.ny.gov/pages/projects.

[67] See Environmental Conservation Law § 58-0101(10).

Impact on Wetlands

Construction under the new Codes, like that under the old, will be guided by applicable State and local laws. The concern associated with the intrusion of new development in wetland areas because of the Code changes must be tested against the reality that resource protection measures will continue to be in effect after the new Codes are adopted. Wetlands are not expected to see additional losses because of the new Code text, as it is city, town, and village exercise of land use controls that determines where to build, whereas the construction codes determine how to build.

Wetlands (swamps, marshes, bogs, and similar areas) are areas where water covers the soil or is present either at or near the surface of the soil all year long or for varying periods of time of the year, including during the growing season.[68] There are two general categories of wetlands: 1) coastal or tidal wetlands, and inland or freshwater wetlands.[69] Tidal wetlands are located around Long Island, New York City, and up the Hudson River to the Troy Dam.[70] Under the Environmental Conservation Law (ECL), DEC shares concurrent jurisdiction with local governments to regulate tidal wetlands. Freshwater wetlands are found on river and lake floodplains across the state.[71] Besides providing wildlife habitat, wetlands also provide habitat protection, recreational opportunities, water supply protection, and provide open space, and scenic beauty that can enhance local property values. Wetlands also serve as storage for stormwater runoff, thus reducing flood damage and filtering pollutants. In coastal communities, they also serve as a buffer against shoreline erosion. The preservation of wetlands can go a long way toward protecting water quality; increasing flood protection; supporting hunting, fishing, and shell fishing; providing opportunities for recreation, tourism, and education; and enhancing scenic beauty, open space and property values.[72]

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[68] For more information, see https://www.epa.gov/wetlands/what-wetland; see also, https://dec.ny.gov/nature/waterbodies/wetlands
[69] For more information, see https://www.epa.gov/wetlands/what-wetland; see also, https://dec.ny.gov/nature/waterbodies/wetlands
[70] For more information, see https://dec.ny.gov/nature/waterbodies/wetlands
[71] For more information, *see* https://dec.ny.gov/nature/waterbodies/wetlands
[72] For more information on the benefits of wetlands *see* https://dec.ny.gov/nature/waterbodies/wetlands; also *see* 6 NYCRR 664.3(b)

The Freshwater Wetlands Act (ECL Article 24) was enacted in 1975 to preserve, protect, and conserve freshwater wetlands and their benefits, consistent with the state's general welfare and beneficial economic, social, and agricultural development.[73] On April 9, 2022, through Chapter 58 Part QQ Section 19 of the Laws of 2002, amendments to the Freshwater Wetlands Act were adopted that expanded protections to previously unprotected wetlands throughout the State.[74] The 2022 amendments to the Act provide increased protections for wetlands that will help the State adapt to increased flooding risk associated with the changing climate and conserve critically important natural resources, including threatened and endangered species and the wetlands that they inhabit.[75] The 2022 amendments require that on January 1, 2025 small wetlands of unusual importance will be regulated if they meet one of 11 newly established listed criteria .[76] It further provides that on January 1, 2028, the default size of regulated wetlands will decrease from 12.4 acres to 7.4 acres.[77]

Currently DEC wetland regulations, 6 NYCRR Part 664, protect freshwater wetlands greater than 12.4 acres (1 acre in the Adirondack Park).[78] A wetland smaller than this can be protected if it is considered unusual local importance.[79] Around every wetland is an 'adjacent area' of 100 feet that is also regulated to provide protection.[80] The State has established adjacent wetland buffer zones, prohibiting or restricting certain activities within such areas, and has established standards for permit issuance.[81]

DEC recently amended 6 NYCRR Part 664, Freshwater Wetlands Maps and Classification regulations, to implement amendments to the Freshwater Wetlands Act that took effect January 1,

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[73] *See* Environmental Conservation Law §24-0103; also see https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program
[74] For more information, *see* https://dec.ny.gov/sites/default/files/2024-07/wetlands_ris_pt664.pdf
[75] For more information, *see* https://dec.ny.gov/sites/default/files/2024-07/wetlands_ris_pt664.pdf
[76] For more information, *see* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program
[77] For more information, *see* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program
[78] *See* 6 NYCRR 664.2(f); *see also* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program
[79] *See* 6 NYCRR 664.2(f); *see also* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program
[80] *See* 6 NYCRR 664.2(b); *see also* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program
[81] *See* 6 NYCRR 664; *see also* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program

2025.[82] The rule making would define key terms, improve the freshwater wetland classification system, establish criteria for the identification of Wetlands of Unusual Importance, and establish procedures related to jurisdictional determinations.[83]

The United States Government, through the Army Corps of Engineers, also regulates federally defined wetlands through Section 404 of the Clean Water Act of 1972. The Corps does not, however, map wetlands in advance of development proposals. When a proposal is made that may impact a wetland falling within federal definitions, the Corps will make a permit determination and impose appropriate conditions protective of the wetland. The adoption of the new code is not expected to result in any disruption of these state and federal regulations.

Impact on Water Resources

One of New York's greatest resources is its abundant water supply. Protecting its water resources is desirable for many reasons: to protect municipal and private drinking water supplies from disease causing microorganisms, to protect fishery resources, to enhance recreational opportunities, to prevent erosion and harmful sedimentation, and to protect the environmental quality of adjacent land. Failure to adequately protect drinking water supplies can result in public health hazards and lead to the need for treatment of drinking water at great expense to municipalities.

The Federal Safe Drinking Water Act Amendments of 1996 established stringent water-supply capacity and quality standards for all public drinking water sources eligible for Federal assistance or otherwise coming within Federal regulatory jurisdiction. In addition, pursuant to the Federal Clean Water Act, stormwater discharge permits are required for construction activities that disturb acres of land. An owner or operator of a construction project that will involve soil disturbance of one or more acres must obtain coverage under the State Pollutant Discharge Elimination System (SDPES) General Permit for Stormwater Discharges from Construction Activity (Construction

[82] *See* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program.
[83] *See* https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program.

General Permit).[84] In the New York City East of Hudson watershed, this requirement also applies to construction projects disturbing more than 5,000 square feet to one acre of land.[85] To obtain coverage under the Construction General Permit, the owner or operator of a construction project must submit an electronic Notice of Intent to DEC, a signed certification from the preparer of its Stormwater Pollution Prevention Plan (SWPPP) indicating the SWPPP meets the requirements of the Construction General Permit, and a signed certification from the project owner acknowledging the requirements of the Construction General Permit.[86] A SWPPP is a project specific report that describes the construction activity, identifies the potential sources of pollution at the construction site, describes the stormwater controls that will be used to control the pollutants and identifies procedures the owner or operator of the construction project will implement to comply with the term and conditions of the Construction General Permit.[87] Once coverage is obtained, the owner or operator of the construction project must implement the SWPPP and meet the requirements of the Construction General Permit to maintain authorization of its discharge.[88] When the construction project is complete, the owner or operator of the construction project must send a notice of termination to the DEC.[89]

In addition to the Construction General Permit, the proposed Code contains provisions which regulate the collection and conveyance of stormwater related to building construction. The land use controls, discussed above, will prevent also unregulated build-out in ecologically sensitive areas and on other natural resources.

Municipalities often adopt laws to protect groundwater recharge areas, watersheds, and surface

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[84] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/stormwater/construction-activity-permit
[85] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/stormwater/construction-activity-permit
[86] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/stormwater/construction-activity-permit
[87] New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges From Construction Activity, Permit No. GP-0-20-001 p. 46, available at https://extapps.dec.ny.gov/docs/water_pdf/constgp020001.pdf
[88] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/stormwater/construction-activity-permit
[89] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/stormwater/construction-activity-permit

waters. Local Sanitary Codes are also adopted to regulate land use practices that have the potential to contaminate water supplies. Sanitary Codes can address the design of storm water drainage systems, the location of drinking water wells, and the design and placement of on-site sanitary waste disposal systems. Water resources can be further protected through the adoption of land use laws that prohibit certain potentially polluting land uses in recharge areas, watersheds and near surface waters. Site plan review, local laws and ordinances, and other land use controls may also be used to minimize the amount of impervious surfaces, and to require that stormwater systems be designed to protect water supplies.

A multi-agency initiative called the Drinking Water Source Protection Program (DSWSP2) led by DEC and New York State Department of Health (DOH), in collaboration with AGM and DOS, empowers local governments to take critical actions to improve and protect their public drinking water sources and the surrounding environment.[90] Local governments accepted into the program will work with free technical assistance providers to develop and implement community-specific drinking source water protection plan.[91] The technical assistance providers will provide assistance throughout the entire plan development process, help to update source water maps, and identify potential contaminant sources, protection and management methods, and applicable funding sources for implementation.[92] Local governments also have authority under the Public Health Law to enact regulations for the protection of their water supplies, even if located outside of the municipality's territorial boundaries. Such regulations must be approved by the New York State Department of Health. Also, under state statutes, "realty subdivisions" those containing five or more lots which are five acres or less in size–must undergo approval of their water supply and sewerage facilities by the local health department.[93]

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[90] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/dwsp2; *see also* https://dec.ny.gov/sites/default/files/2024-09/dwsp2overview.pdf

[91] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/dwsp2/guide-for-municipalities; *see also* https://dec.ny.gov/sites/default/files/2024-09/dwsp2overview.pdf

[92] For more information, *see* https://dec.ny.gov/environmental-protection/water/water-quality/dwsp2/guide-for-municipalities; *see also* https://dec.ny.gov/sites/default/files/2024-09/dwsp2overview.pdf

[93] *See* Pub. Health Law, Art. 11, Title II; Environmental Conservation Law. Art. 17, Title 15; *see also* https://www.health.ny.gov/environmental/water/drinking/regulations/realty_subdivision_seqr.htm; https://www.health.ny.gov/regulations/public_health_law/article_11/title_2/

Impact on Human Health and Safety

Construction and operation of buildings and structures will continue in New York State, with or without Code modifications. Adopting new Codes will not cause significant adverse health or safety risks.

Adoption of the 2024 Uniform Code will increase fire safety, reduce property loss, and mitigate personal injury during fire or weather events. The Building Code applies to all buildings except detached one- and two-family dwellings and townhouses up to three stories. The Building Code provides minimum requirements to safeguard the public health, safety and general welfare of the occupants of new and existing buildings and structures. The Building Code addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility and life safety in regard to new and existing buildings, facilities and systems. The 2024 Building Code includes new provisions to protect buildings from tornados and updates to provisions providing protection against wind, earthquakes, and snow.

The Residential Code establishes the minimum requirements for one- and two-family dwellings and townhouses that are at most three stories above grade plane. The Residential Code covers all components for a house or townhouse including structural components, fireplaces, chimneys, thermal insulation, mechanical systems, fuel gas systems, plumbing systems, and electrical systems. The Residential Code addresses new technologies and construction practices that have become common.

The Fire Code contains regulations to safeguard life and property from fires and explosion hazards. Topics include general precautions, emergency planning and preparedness, fire department access and water supplies, automatic sprinkler systems, fire alarm systems, special hazards, and the storage and use of hazardous materials. The 2024 Fire Code addresses fire and safety risks from energy storage systems, lithium-ion batteries, powered micromobility devices, A2L refrigerants, inflatable amusement devices, and storage of distilled spirits and wines.

The Mechanical Code regulates the design and installation of mechanical systems, appliances,

appliance venting, duct and ventilation systems, combustion air provisions, hydronic systems, and solar systems. The purpose of the Mechanical Code is to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the installation and operation of mechanical systems. The Mechanical Code also protects the personnel that install, maintain, service and replace the systems and appliances that are addressed within it.

The Fuel Gas Code addresses the design and installation of fuel gas systems and gas fired appliances. The definition of fuel gas includes natural, liquefied petroleum and manufactured gases and mixtures of these gases. The purpose of the Fuel Gas Code is to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the storage, distribution, and usage of fuel gases and the byproducts of combustion of such fuels. The Fuel Gas Code also protects the personnel that install, maintain, service, and replace the systems and appliances addressed within it.

The Plumbing Code regulates the design and installation of plumbing systems in all types of building except for detached one- and two-family dwellings and townhouses that are not more than three stories above grade in height. The Plumbing Code addresses general plumbing regulations, fixture requirements, water heater installations and systems for water distribution, sanitary drainage, special wastes, venting, storm drainage, and medical gases. The purpose of the Plumbing Code is to establish the minimum acceptable level of safety to protect life and property from the potential dangers associated with supplying potable water for plumbing fixtures and outlets and the conveyance of bacteria-laden wastewater from fixtures. The Plumbing Code sets forth the minimum requirements for providing safe water to a building as well as a safe manner in which waste is carried away from a building.

The Property Maintenance Code establishes the minimum requirements for the maintenance of existing buildings. The Property Maintenance Code provides requirements for continued used and maintenance of building elements, site conditions, swimming pools, plumbing, mechanical, electrical and fire protections systems in existing residential and nonresidential structures. The Property Maintenance Code establishes the minimum maintenance standards for basic equipment, light ventilation, heating, sanitation, and fire safety. The Property Maintenance Code provides for

the regulation and safe use of existing structures in the interest of social and economic welfare of the community.

The Existing Building Code encourages the use and reuse of existing buildings while requiring reasonable upgrades and improvements. The Existing Building Code covers repair, alteration, addition and change of occupancy for existing buildings and historic buildings, while achieving appropriate levels of safety without requiring full compliance with the new construction requirements contained in the other Codes within the Uniform Code. The Existing Building Code allows for options for controlled departure from full compliance with the other Codes within the Uniform Code dealing with new construction while maintaining basic levels for fire safety, structural and life safety features of the rehabilitated building. The 2024 Existing Building Code addresses the safety associated with occupiable roofs, storm shelters, and temporary emergency uses of existing buildings.

The Energy Code addresses energy efficiency and clean energy features. The Energy Code addresses energy conservation requirements for all aspects of energy use in both commercial and residential construction, including heating and ventilating, lighting, water heating, and power usage for appliances and building systems. The Energy Code sets forth minimum requirements for exterior envelope insultation, duct insulation, lighting and power efficiency, and water distribution insulation. The Energy Codes contains two separate sets of provisions, one for commercial buildings and one for residential buildings. The commercial provisions apply to all buildings except for residential buildings three stories or less in height. The residential provisions apply to detached one-and two-family dwellings and multi single-family dwelling and residential buildings (Groups R-2, R-3, and R-4) three stories or less in height.

The prohibition against installation of fossil fuel equipment and building systems in the new Energy Code will have a positive impact on human health and safety. Gas stoves can emit harmful pollutants, such as nitrogen dioxide, into the air. These pollutants may cause asthma in some people who have more sensitive airways. A study published in the Internation Journal of Environmental Research and Public Health titled Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States concluded 12.7% of current childhood asthma nationwide is attributed

to gas stove use.[94] Replacing gas stoves with electric or induction stoves should reduce the number of children with asthma.

The 2024 Energy Code will lead to a decrease in greenhouse gas emissions (GHG). The development of policy to mitigate GHG emissions and adapt to the changing climate will provide direct and indirect public health benefits.[95] Direct benefits will result from mitigating GHG emissions and adapting to global climate change by reducing the many public health impacts associated with climate change. Indirect health benefits will occur when initiatives to mitigate GHG emissions also result in other beneficial outcomes such as reducing air pollutant emissions (co-pollutants), encouraging active transport (such as walking and cycling), and reducing home health risks through building energy efficiency retrofit interventions.[96] Improved air quality will reduce premature mortality and incidences of asthma and cardiovascular disease.[97] Cardiovascular disease is the leading cause of death nationally and in New York, with almost 44,000 New Yorkers dying of cardiovascular disease every year.[98] Asthma is a major health problem nationally, and in New York 1.4 million adults and 315,000 children suffer from this disease.[99]

Socio-Economic Impacts

A GEIS must assess the public need and benefits of a project including social and economic considerations. As part of the environmental setting, community character including demographics and socio-economic information and infrastructure may be discussed in EISs. In deciding whether to approve a rule making, social and economic considerations are weighed against the potential

[94] For more information, *see* Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States – PMC
[95] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[96] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[97] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[98] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[99] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf

environmental harm in the agency findings.

While SEQR gives lead, involved, and interested agencies ample opportunity to raise and analyze issues with substantial environmental equity implications, the environmental equity issue, as a whole, has implications in addition to SEQR and is addressed in such laws as the federal Fair Housing Act and Americans for Disabilities Act.

Impacts on People with Disabilities

Chapter 11 of the Building Code contains specific requirements to allow use and access to a building for persons with disabilities. Chapter 11 contains provisions for accessibility of buildings and their associate sites and facilities for people with physical disabilities. The scoping requirements address the conditions under which accessibility is not required in terms of exceptions to the general accessibility mandate. The scoping provisions for accessibility in Chapter 11 of the Building Code detail the what, where, and how many. The ICC A117.1 titled Accessible and Usable Buildings and Facilities, is the reference standard for the technical provisions or in other words the how to.

Additionally, there are some accessibility requirements in the Building Code that will benefit both people with disabilities and those without. Those accessibility requirements are considered mainstream and are included in other chapters of the Building Code. For example, visible alarms are located in Chapter 9 and accessible means of egress and ramp requirements are addressed in Chapter 10.

The provisions of the 2024 Building Code are discussed further in Section 5.4.5 on accessible building feature language updates including updated reference and coordination with ICC A117.1 to the 2017 version and Section 5.4.9 on adult changing station provisions.

Impacts on Affordable Housing

The purpose of Appendix J of the 2020 Residential Code is to regulate the alteration of residential

buildings in urban areas. The Residential Code allows existing buildings to retain non-conforming construction in any portion which is not affected by remodeling. The lack of upgrading in the un-rehabilitated portions of a building will reduce costs and make renovation more affordable.

The primary benefit of Appendix J is the promotion of cost-effective rehabilitation and re-use of existing residential buildings, and maintenance of a standard of safety consistent with their function and use. Appendix J utilizes an incremental application of supplemental safety requirements, depending on the scope of work which is voluntarily undertaken by a building owner.

Appendix J has some potentially beneficial cumulative impacts. Appendix J provides significant opportunities for cost effective rehabilitation and reuse of existing buildings, including historic buildings, consistent with maintenance of a minimum standard of safety. Appendix J also provides design flexibility, enhanced feasibility for rehabilitation of existing buildings, and reduced need for code variances, increasing the likelihood that existing structures can be reused, preserving historically and culturally important structures and maximizing use of existing infrastructure.

In the 2024 Residential Code, Appendix J will become Appendix BO. Appendix BO will continue to provide the same benefits as Appendix J.

As already mentioned, the Existing Building Code applies to the repair, renovation, alteration, reconstruction, change of occupancy, and movement of existing structures, including multi-family dwellings such as apartments. Other residential occupancies three stories and less in height, including but not limited to one- and two-family dwellings, townhouses, and bed and breakfasts, are regulated by the Residential Code.

The primary benefit of the Existing Building Code is the promotion of cost-effective rehabilitation and re-use of existing buildings, and maintenance of a standard of safety consistent with the hazards imposed by their function and use. The Existing Building Code utilizes an incremental application of supplemental safety requirements, depending on the scope of work which is voluntarily undertaken by a building owner. The Existing Building Code will help encourage the

rehabilitation of existing buildings in areas already developed and for which infrastructure already exists. As a result of the adaptive reuse of existing buildings, multifamily housing should remain and perhaps become more affordable.

Effects on Disadvantaged Communities

"Disadvantaged Communities" is defined in the Climate Leadership and Community Protection Act (Climate Act)[100] as "communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high-concentrations of low- and moderate- income households, as identified pursuant to section 75-0111 of [the Environmental Conservation Law]."[101] The Climate Act requires all State agencies to prioritize reductions of GHGs and co-pollutants in Disadvantaged Communities (DACs) and must not disproportionately burden DACs when considering and issuing administrative approvals and decisions.[102] The DOS does not anticipate that either the Uniform Code or the Energy Code rule makings will cause or increase a disproportionate burden on any DACs. The Uniform Code applies to the entire state with the exception of New York City and the Energy Code applies to the entire state, including New York City so the codes are equally applied between DACs and non-DACs.

The NYS Climate Justice Working Group, which consists of representatives from environmental justice groups across the State and representatives from State agencies, voted on March 27, 2023 on final criteria to identify DACs to help guide the implementation of the Climate Act. The Climate Justice Working Group used 45 indicators to identify 35 percent of New York as DACs.[103] Some of the indicators the Working Group took into account were the communities' proximity to remediation sites, proximity to active landfills, proximity to power generation facilities, extreme

[100] Chapter 106 of the Laws of 2019.
[101] *See* Environmental Conservation Law § 75-0101(5)
[102] L.2019, ch.106, section 7; *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 58, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[103] *New York State's Disadvantaged Communities Criteria Fact Sheet*, Climate Justice Working Group, available at https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3_acc.pdf

heat projections, low vegetative cover, agricultural lands, benzene concentration and wastewater discharge, among others.[104] New York City has the highest concentration of DACs at 44% of tracts within region identified as DACs, followed by the Mid-Hudson region at 42% and Finger Lakes and Central New York at 35%.[105] The North Country and Long Island have the lowest concentration of DACs at 14% each.[106] Map of disadvantaged communities can be found at: http://climate.ny.gov/resources/disadvantaged-communities-criteria/.

The updated codes are not anticipated to have a disproportionate burden on DACs. The prohibition on fossil-fuel equipment and building systems in new buildings and the requirement of renewable energy (solar) for commercial buildings should reduce GHG emissions and pollutants, which disproportionally impact DACs. Reducing fossil natural gas combustion in buildings results in improved indoor air quality and healthier living spaces.[107]

Impact of actions upon DACs were also added to SEQRA. Environmental Justice Siting Law (EJSL), Chapter 840 of the Laws of 2002, as amended by Chapter 49 of the Laws of 2023, amended SEQRA (ECL § 8-0109(2)(k)) to require that an EIS must include starting December 30, 2024, the effects of any proposed action on DACs, including whether the action may cause or increase a disproportionate pollution burden on a DAC. Chapter 49 of the Laws of 2023 also amended SEQRA (ECL § 8-0113(2)(b)) to give DEC the authority to establish regulations on the criteria for determining whether or not a proposed action may cause or increase a disproportionate pollution burden on a DAC. On January 29, 2025, DEC proposed to amend the SEQR regulations, 6 NYCRR Part 617, to implement SEQR-related provisions of the EJSL.[108] In its proposed

[104] *New York State's Disadvantaged Communities Criteria Fact Sheet*, Climate Justice Working Group, available at https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3_acc.pdf
[105] *New York State's Disadvantaged Communities Criteria Fact Sheet*, Climate Justice Working Group, available at https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3_acc.pdf
[106] *New York State's Disadvantaged Communities Criteria Fact Sheet*, Climate Justice Working Group, available at https://climate.ny.gov/-/media/Project/Climate/Files/Disadvantaged-Communities-Criteria/LMI-daccriteria-fs-1-v3_acc.pdf
[107] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 96, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[108] Amendments to the Regulations (6 NYCRR Part 617) That Implement ECL Article 8 (State Environmental Quality Review Act) 47 NYS Reg. 9 (Jan. 29, 2025) https://dos.ny.gov/system/files/documents/2025/01/012925.pdf

rulemaking, DEC proposes to amend 6 NYCRR 617.9(b)(5) to indicated that a draft EIS must include impacts of any proposed action on a DAC, including whether the action may cause or increase a disproportionate pollution burden on a DAC. [109] To determine when a project causes or increases a disproportionate pollution burden on a DAC, DEC proposed to amend its full Environmental Assessment Form (EAF) to include questions to help identify specific types of impacts to a DAC. The proposed questions include whether the action: 1) may create new air emissions or increase existing air emissions within a DAC; 2) may create new wastewater treatment or discharges, or expand existing wastewater treatment or discharges, within a DAC; 3) creates or expands a solid or hazardous waste management facility, or involves the generation of solid or hazardous waste, within or near a DAC; 4) may increase traffic within a DAC; 5) affects or involves one or more of the following facility types: landfill, other industrial, manufacturing, or mining land uses; major oil or chemical bulk storage facility; municipal waste combustor; power generation facility; risk management plan site; remediation site; or scrap metal processor.

Additionally, DEC proposed to amend 6 NYCRR 617.19 to indicate that those projects that already have an accepted draft EIS on or before the effect date of the new regulations are subject to the prior regulation. The proposed Code Update would qualify as a project that would have an accepted draft EIS before the new SEQR regulations implementing EJSL are effective. However, an analysis under the new SEQR regulations will be provided.

As mentioned, the Uniform Code is applicable in all areas of the State, with the exception of the City of New York, and the Energy Code is applicable in all areas of the State, including the City of New York. Therefore, these rulemakings will also apply to any DAC identified based on the criteria developed by the Climate Justice Working Group of the State.[110]

The DOS does not anticipate that either the Uniform Code or Energy Code rulemakings will cause or increase a disproportionate pollution burden on any DAC, as the Uniform Code and Energy

[109]For more information, *See* https://dec.ny.gov/regulatory/regulations/proposed-emergency-recently-adopted-regulations/state-environmental-quality-review-act-regulatory-revisions
[110] For more information, *See* https://climate.ny.gov/resources/disadvantaged-communities-criteria/

Code equally apply throughout the State uniformly. The provisions of the Uniform Code and Energy Code apply to the State equally and are not based on where the building is located. The exception is the climatic factors such as seismic, wind, flood, rain, and the newly added tornado.

As to the five questions to be added to the full EAF on impacts to DACs, the action of the proposed rulemaking would not create new air emissions or increase existing air emissions within a DAC; 2) would not create new wastewater treatment or discharges, or expand existing wastewater treatment or discharges, within a DAC; 3) would not create or expand a solid or hazardous waste management facility, or involve the generation of solid or hazardous waste, within or near a DAC; 4) would not increase traffic within a DAC; 5) would not affect or involve one or more of the following facility types: landfill, other industrial, manufacturing, or mining land uses; major oil or chemical bulk storage facility; municipal waste combustor; power generation facility; risk management plan site; remediation site; or scrap metal processor.

The changes to the Uniform Code and Energy Code including in the 2024 code update rulemaking will benefit everyone. To the extent that the Energy Code rule making includes a prohibition against the installation of fossil-fuel equipment and building systems for the construction of new buildings, such requirement will reduce greenhouse gas emissions throughout the State, including within DACs. Overall, the Energy Code will have a beneficial impact on DACs.

Economic Effects

The average cost to build a new home in New York State is about $526,000.[111] In 2020, New York State had the fourth-largest construction sector in the nation.[112] The New York State construction industry employed 406,600 people in 2019.[113] The vast majority of the construction jobs are located in downstate New York, with the three downstate metro areas (NYC, Nassau-Suffolk, and

[111] *How Much Does It Really Cost to Build a House?*, Wallender, Lee, available at https://www.msn.com/en-us/money/realestate/how-much-does-it-really-cost-to-build-a-house/ar-BB1kuDos?ocid=BingNewsVerp
[112] *The Construction Industry in New York City: Recent Trends and Impact of COVID 19,* Office of the NYS Comptroller, p.1 available at https://www.osc.ny.gov/files/reports/osdc/pdf/report-3-2021.pdf.
[113] *The Construction Industry in New York City: Recent Trends and Impact of COVID 19,* Office of the NYS Comptroller, p.2 available at https://www.osc.ny.gov/files/reports/osdc/pdf/report-3-2021.pdf.

Orange-Rockland-Westchester) representing more than 70 percent of the jobs in 2019.[114]

For the year 2023, 11,230 building permits were issued in New York State, and 48,807 units were authorized.[115]

Since the adoption of the 2024 Codes is expected to reduce energy consumption and many residential and non-residential construction costs, as well as to continue to foster rehabilitation of existing buildings, there will be positive economic benefits and savings.

Greenhouse Gas Emission Impact

Greenhouse gases (GHG) are gases that trap heat in the atmosphere, such as carbon dioxide, methane, nitrous oxide, and fluorinated gases.[116] Carbon dioxide is the primary GHG emitted through human activities and accounts for 80% of all United States GHG emissions from human activities.[117] The main human activity that emits carbon dioxide is the combustion of fossil fuels such as coal, natural gas, and oil for the purposes of energy and transportation.[118] Methane accounts for 12% of all U.S. GHG emissions from human activities.[119] Such human activities include leaks from natural gas systems and the raising of livestock.[120]

According to both the U.S. Global Change Research Program and the Intergovernmental Panel on Climate Change, substantial reductions in greenhouse gas emissions will be required by mid-century to limit the global average increase in temperature to no more than 2°C (and ideally 1.5°C),

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[114] *The Construction Industry in New York City: Recent Trends and Impact of COVID-19*, Office of the NYS Comptroller, p.2 available at https://www.osc.ny.gov/files/reports/osdc/pdf/report-3-2021.pdf.
[115] 2023 Annual Building Permits. Census.gov
[116] *Overview of Greenhouse Gases*. Environmental Protection Agency, available at https://www.epa.gov/ghgemissions/overview-greenhouse-gases
[117] *Overview of Greenhouse Gases*. Environmental Protection Agency, available at https://www.epa.gov/ghgemissions/overview-greenhouse-gases
[118] *Overview of Greenhouse Gases*. Environmental Protection Agency, available at https://www.epa.gov/ghgemissions/overview-greenhouse-gases
[119] *Overview of Greenhouse Gases*. Environmental Protection Agency, available at https://www.epa.gov/ghgemissions/overview-greenhouse-gases
[120] *Overview of Greenhouse Gases*. Environmental Protection Agency, available at https://www.epa.gov/ghgemissions/overview-greenhouse-gases

thus minimizing the risk of severe impacts from climate change.[121] A fundamental objective of New York's Climate Act is to reduce the State's GHG emissions. The Climate Act requires New York to reduce economy wide GHG emissions by 40% by 2030 and no less than 85% by 2050 from 1990 levels.[122]

It is anticipated the proposed changes to the Energy Code will lower the dependence on fossil-fuel equipment and building systems in buildings across the State. Energy Savings and Cost-Effectiveness Analysis of the 2024 New York State Energy Conservation Construction Code, Residential Provisions prepared for NYSERDA by Resource Refocus LLC (R. David, N. Heckman, N. Low, S. Naby, and A. LaRue), dated November 2024, concluded the updated model code would lead to a GHG reduction of 82 percent in residential buildings.

The societal effects of avoided GHG emissions were monetized, and a more detailed breakdown can be found in the Regulatory Impact Statement. Avoided GHG emissions were calculated by multiplying the annual building electricity and gas savings by GHG emissions factors published by NYSERDA. The avoided GHG emissions were then converted to annual dollars by following guidance published by DEC's *Establishing a Value of Carbon, Guidelines for Use by State Agencies*. A 2 percent discount rate was used, and the value of avoided GHG emissions was added to the annual cash flow.

Use and Conservation of Energy

Energy Law §3-101(2) states that it shall be the energy policy of the State "to encourage conservation of energy and to promote the clean energy and climate agenda, including but not limited to greenhouse gas reduction, set forth within [Chapter 106] of the laws of [2019], also known as the [Climate Act], in the construction and operation of new commercial, industrial, agricultural and residential buildings, and the rehabilitation of existing structures, through heating,

[121] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 2, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[122] *See* Environmental Conservation Law §75-0107

cooling, ventilation, lighting, insulation and design techniques and the use of energy audits and life-cycle costing analysis."

The Resource Refocus analyses concluded the updated model code will increase energy efficiency in residential buildings, and residential buildings meeting the 2024 ECCCNYS (compared to the previous 2020 ECCCNYS) are expected to incur a 43 percent site energy savings.

NORESCO prepared a report for NYSERDA titled *Energy Savings and Cost-Effectiveness Analysis of the 2024 New York State Energy Conservation Construction Code Commercial Provisions* (B. Edwards, J. Arent, F. Yousefi and R. Athalye), dated November 2024. The NORESCO report concluded, overall, the proposed 2024 ECCCNYS us expected to yield 19.5 percent site energy savings.

SECTION 5.0: ENVIRONMENTAL IMPACTS OF SPECIFIC CHANGES MADE TO THE UNIFORM CODE

The following is a list of provisions of the Uniform Code which represent significant changes from current code governing the construction and rehabilitation of buildings in New York State. For each, an analysis is provided as to their potential effects on the environment and whether these effects are adverse.

5.1 DISCUSSION OF ADOPTED CHANGES: 2024 RCNYS

5.1.1 Residential Sprinklers

Description of Proposal

This code change expands the requirement for the installation of automatic fire sprinkler systems regulated by the residential code.[123] These requirements consist of expanding the requirement for the installation of automatic fire sprinkler systems in all new townhouse units that are served by a municipal water supply system. This proposal also adds language to Appendix BO (formerly Appendix J) requiring automatic sprinkler systems to be installed in townhouse units in which an addition increases the floor area by more than 50% and that are served by a municipal water supply system. Currently, in the 2020 Residential Code of New York State (2020 RCNYS), only new one- and two-family dwellings and townhouses having a height of three stories above grade plane or more, and some instances in existing buildings where alterations and additions are added require an automatic fire sprinkler system. Manufactured homes are not required to have an automatic sprinkler system installed under the 2020 RCNYS, and this provision is unchanged by the proposed amendment. The 2020 RCNYS requires additional fire safety protections in townhouses, including proper fire separation and fire-resistant rated construction between the dwelling units; a separate

[123] The following buildings not more than three stories above grade plane in height are regulated under the Residential Code: one- and two-family dwellings, townhouses, bed and breakfast dwellings, live/work units, and owner-occupied lodging houses having five or fewer guestrooms.

means of egress for each dwelling unit; and open space on at least two sides. Fire-resistant construction of townhouses is covered under Section R302.2 of the 2020 RCNYS, which requires the walls separating the individual dwelling units of townhouses to be either two 1-hour rated assemblies or a common wall. Where the townhouse is provided with a fire sprinkler system, the common wall must be not less than a 1-hour rated assembly.

Environmental Impacts

General

Sprinkler systems provide expanded fire safety and reduce demand on the water supply. A 2011 report indicated that an average of 340 gallons of water is used to extinguish the fires in sprinklered home incidents compared to an average of 5,974 gallons of water needed to extinguish fires in non-sprinklered homes.[124] The report also indicated that almost 18 times as much water was needed to extinguish fires in non-sprinklered homes as in sprinklered homes.[125] The average water output of a residential fire sprinkler is between 13 to 15 gallons per minute.[126] The average flow from a fire hose is 95 to 200 gallons per minute, under high pressure. However, a 2016 study by the National Fire Protection Association (NFPA) found that there were no identified impacts on water quality or supply in California and Maryland, where home sprinkler systems are mandatory.[127]

Additionally, a successful activation of the sprinkler system will reduce the use of chemical flame retardants. In reported home fires in which sprinklers were present, the fire was confined to the room of origin 97 percent of the time compared to 74 percent in homes with no sprinkler system.[128] The term home included multifamily homes like townhouses. Since the fire does not engulf as

[124] *Communities with Home Fire Sprinklers: The Experience in Bucks County Pennsylvania*, Home Fire Sprinkler Coalition November 2011 p. 4.
[125] *Communities with Home Fire Sprinklers: The Experience in Bucks County Pennsylvania*, Home Fire Sprinkler Coalition November 2011 p. 28.
[126] *Benefits of Residential Fire Sprinkler: Prince George's County 15-Year History*, Home Fire Sprinkler Coalition August 2009 p. 8.
[127] *Stakeholder Perceptions of Home Fire Sprinklers*, Fire Protection Research Foundation September 2016 p. 17-18; *Impact of Home Fire Sprinkler Requirements in California*, Fire Protection Research Foundation 2018 p. 3.
[128] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.

much of the house, if not the entire house, the pollutants released from the fire into the atmosphere will be reduced.

Short Term Impacts

While the adoption of a modified code has immediate applicability, the proposed changes will have a minimal initial impact. There will be some increase in the cost of the design and installation. As such, no short-term adverse environmental impacts have been identified to be associated with the adoption of the proposed code change.

Long Term Impacts

Over time, as building construction continues, the effects – both adverse and beneficial – will begin to be realized. The primary long-term environmental benefit would be the conservation of water resources if the reliance on fire suppression results in less use of water through immediate suppression by sprinkler systems, eliminating the response time associated with traditional fire apparatus.

Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new Code change, the Code Council has, pursuant to Executive Law § 377, the authority to further amend the Uniform Code. Therefore, The Code Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Given the intent to provide rules that balance all the environmental, social, and economic impacts to the benefit of the residents of New York State, many foreseeable long-term adverse effects have been mitigated through the process of preparing such rules.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources. Natural resources will be consumed in the construction materials for adding sprinklers to townhouse units, but they will be countered by the reduction of water resources.

Conservation of Energy

The adoption of this code change anticipates that construction undertaken with the adopted change will result in the conservation of energy in the long term. A decrease in the frequency or severity of fires will decrease the use of energy needed to fight fires, including the energy required to purify and transport water supplies. Minimizing losses of property helps save energy by reducing the replacement of lost or damaged structures, saving virgin natural resources and fuel for transportation and construction activities.

Alternatives

One alternative is not to adopt the ICC language and instead keep the 2020 RCNYS sprinkler requirements. However, this alternative does not address the risks and hazards associated with residential fires in townhouses. In the United States, homes, including townhouses are where the vast majority of structure fire deaths occur.[129] For this reason, this alternative was rejected.

Another alternative is to limit the requirement to install automatic sprinkler systems to specific locations within the dwellings regulated by the Residential Code. However, fires can start in any area of a dwelling, and new technologies (such as those utilizing lithium-ion batteries) can be located in many parts of the dwelling, presenting possible fire hazards throughout the dwelling. Installing sprinklers only in certain areas of a dwelling would not create the level of fire protection described in the needs and benefits section above. Additionally, much of the cost of installing a sprinkler system is constant regardless of system size, so further limiting requirements to only certain areas may not significantly decrease costs and would not achieve the ultimate goal of life safety.

A third alternative is to require all new one- and two-family dwellings to install automatic sprinkler systems as proposed in the Notice of Rule in Development. However, the Department's Division of Building Standards and Codes received comments and input indicating that the fire hazards in

[129] *Communities with Home Fire Sprinklers: The Experience in Bucks County, Pennsylvania*, Fire Planning Associates, Inc. November 2011 at p. 3.

townhouses are greater in multi-family townhouse structures than one- and two-family dwellings and such fire hazards cannot be fully mitigated by townhouse construction or residents' behavior. The Department also received numerous public comments concerned with housing affordability due to the cost associated with requiring automatic sprinkler systems for all new one- and two-family dwellings. Since automatic sprinkler systems are not currently required in all residential homes in New York State, there is lower demand for contractors skilled in the installation of such systems, resulting in increased costs associated with such systems. Requiring sprinklers systems in townhouses will increase demand for such contractors, which will likely result in a decrease in cost resulting from an increase of contractors providing such services. Builders and developers are likely to become more familiar with the installation process for residential sprinkler systems, which may also reduce costs by streamlining the incorporation of sprinkler system installation into the overall construction process. Accordingly, the draft language in the Notice of Rule in Development was modified to require sprinkler systems in townhouses served with municipal water to accommodate both the fire safety concerns associated with this specific building type as well as overall housing affordability.

The last alternative is to require automatic sprinkler systems in townhouses not supplied by municipal water supply systems. However, the costs associated may be much higher for townhouses not supplied by municipal water systems because it may require the additional requirement of an onsite water storage tank and a pump. Due to the uncertainty of the on-site well parameters, including storage volume, depth, well refill rate, and water quality, which may drastically affect the cost of installing a sprinkler system for a townhouse, this alternative was rejected.

5.2 Discussion of Adopted Changes: 2024 EBCNYS

5.2.1 Temporary use of buildings in emergencies

Description of Proposal

This code amendment includes the International Existing Building Codes' (IEBC) new appendix

that details provisions for the temporary safe and proper use of a building for emergency purposes when a State or Federal emergency declaration has been issued. The main goal of this appendix is to provide guidance for designers, engineers, architects, and fire and building code officials, facilitating the temporary use of existing buildings while adhering to minimum code requirements.

This code change amendment is not expected to cause a change in the cost of construction. This appendix is only intended to provide a resource in emergency situations. Currently, no formal code requirements provide guidance on how to address emergency situations. This appendix provides a framework to make enforcement more consistent and aligned with the requirements of the ICC codes.

Environmental Impacts

General

The environmental impact of this rule is minimal, there could be an impact from encouraging or attracting a large number of people to a place or places for more than a few days, compared to the number of people who would come to such place absent the action. There also could be an impact to the community or neighbor character for temporary use of an existing building for a purpose other than the original intent of the existing building. For example, a school gym being used to house residents temporarily. The current code allows the use of temporary use of existing buildings and this is only streamlining requirements.

Short Term Impacts

No short term adverse environmental impacts have been identified to be associated with the adoption of this code change.

Long Term Impacts

Since the use of the buildings are temporary, significant adverse environmental impacts over the long term are not expected from the adoption of the proposed amendment. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change will not result in the irreversible and irretrievable commitment of resources. This appendix is only intended to provide a resource in emergency situations and will not increase construction.

Conservation of Energy

It is not anticipated that this code change will have any significant effect on the conservation of energy. Buildings are already allowed to be temporarily used for emergency situations; this is just streamlining requirements.

Alternatives

An alternative is to not adopt Appendix E for the temporary use of buildings in emergencies. However, this alternative would leave local governments without viable options to address certain types of emergency situations and could result in property owners having to individually seek variances on a property-by-property basis in order to function as another occupancy temporarily during an emergency. This will lead to a lack of uniformity and varying degrees of safety across the state. New York experienced this very issue during the COVID-19 pandemic, where the need for temporary uses was immediate and there was insufficient time to obtain variances. For these reasons, this alternative was rejected.

Another alternative is to limit the approved locations of those buildings temporarily used for emergencies. However, since there are approximately 1,600 local governments within New York State that cover a wide variety of geographic and environmental characteristics, creating location limitations which apply to all areas is very challenging. Such restrictions, if desired, are most appropriately enacted at a local level, where relevant local characteristics can be fully considered and included in the development process. For this reason, this alternative was rejected.

5.3 Discussion of Adopted Changes: 2024 FCNYS

5.3.1 Powered micromobility devices.

Description of Proposal

This code amendment added a new definition for powered micromobility devices and established charging and storage location requirements for powered micromobility devices. This code amendment also addresses hazards associated with charging through provisions for listing, separation requirements, and use of detection systems.

The New York State Division of Homeland Security and Emergency Services (DHSES) convened a multi-agency working group to examine the issue of lithium-ion battery fires, particularly as it relates to micromobility devices, and to develop recommendations to mitigate the risk of lithium-ion battery fires.[130] The New York State Lithium-ion Battery Working Group recommended to update the Uniform Code to specifically address the use of powered micromobility devices based on the 2024 IFC provisions.

Powered micromobility devices include any small, low-speed, electric-powered transportation devices, including electric-assist bicycles (e-bikes), electric scooters (e-scooters), and other small, lightweight, wheeled electric-powered conveyances.[131] Electric micromobility devices are usually powered by lithium-ion or lithium metal type batteries and are typically charged using common residential 120V AC outlets and charging time can range from 2.5 to 9 hrs., depending on battery type and charger.[132]

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[130] The New York State Lithium-ion Battery Working Group was comprised of DHSES, NYSERDA, DMV, DOS, DOT, DPS, DEC, ESD, and NYPA.

[131] *Micromobility: A Travel Mode Innovation*. U.S. Dept of Transportation Federal Highway Administration, available at https://highways.dot.gov/public-roads/spring-2021/02#:~:text=Building%20upon%20the%20Society%20of%20Automotive%20Engineers%20International%27s,scooters%20%28e-scooters%29%2C%20and%20other%20small%2C%20lightweight%2C%20wheeled%20conveyances.

[132] *Electric Mobility Basics*, U.S. Dept of Transportation, available at https://www.transportation.gov/urban-e-mobility-toolkit/e-mobility-basics/micromobility

Improper charging of these devices can lead to a thermal runaway incident, which can result in high temperatures, the release of potentially hazardous gases, fire, and explosions. Thermal runways can drastically increase the hazard of a fire event, and there have been significant fires due to these devices. The proposed amendment sets reasonable safety requirements for the indoor charging of these devices as well as includes the requirement for the device to be listed and labeled and for associated charging equipment to be compatible with the device and its battery and a prohibition on utilizing residential occupancy for operating a rental, sales, and service business for these devices.

Environmental Impacts

General

The environmental impact of this rule is minimal; there could be an impairment to historical or architectural resources. The proposed amendment may cause additional electrical receptacles to be installed in a building. The proposed amendment requires each charging device to be connected directly to an individual receptacle, which may increase the number of receptacles required to be installed depending on the number of devices to be charged. Additional square footage for charging areas may be necessary due to the proposed amendment's separation requirements and limitations on stacking during charging. The proposed amendment may also require the installation of a fire alarm system, if not already required. Retrofitting an existing structure to install additional receptacles or fire alarm system or add more square footage may impact the historical or architectural elements of an existing building.

Short Term Impacts

The initial impact may be to the interior historical or architectural elements of an existing building. However, such impact will be minimal and as such, no short-term adverse environmental impacts have been identified to be associated with the adoption of the proposed code change.

Long Term Impacts

The primary long-term environmental benefit would be the conservation of water resources. The proposed code change would cause less fires from the charging of power micro-mobility devices and less use of water to combat such fires.

Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources. Natural resources will be consumed in the construction materials for adding receptacles, fire alarm system or more square footage to new and existing buildings.

Conservation of Energy

The adoption of this code change anticipates that construction undertaken with the adopted change will result in the conservation of energy in the long term. A decrease in the frequency or severity of fires will decrease the use of energy needed to fight fires, including the energy required to purify and transport water supplies. Minimizing losses of property helps save energy by reducing the replacement of lost or damaged structures, saving virgin natural resources and fuel for transportation and construction activities.

Alternatives

An alternative is to not adopt any provisions addressing powered micromobility devices. This alternative does not address the fire safety issues of powered micromobility devices and does not adequately protect life and property. Fire incidents involving these devices have already occurred in New York State, and the number of such incidents may continue to grow as the devices gain further popularity. For these reasons, this alternative was rejected.

5.3.2 Inflatable amusement devices

Description of Proposal

This code amendment adds the new 2024 IFC definition for "inflatable amusement device" as a device made of flexible fabric or other combustible materials that is inflated by one or more air blowers providing internal air pressure to maintain its shape which are typically designed for recreational activities that allow occupants to bounce, climb, slide, negotiate an obstacle course, or participate in interactive play. This code amendment also includes provisions included in the 2024 IFC relating to construction with flame-resistant materials, anchoring, support, and installation of inflatable amusement devices. Amusement devices covered by this code amendment are used primarily in amusement, entertainment or recreational applications. Such applications include, but are not limited to, amusement parks, theme parks, water parks, family entertainment centers, rental companies, fitness centers, gyms, gymnastics facilities, jump centers, sports facilities, skate parks, camps, schools, shopping centers, temporary special events, carnivals, fairs, festivals and municipal parks.[133]

Environmental Impacts

General

The environmental impact of this rule is minimal, there could be an impact from encouraging or attracting of a large number of people to a place or places for more than a few days, compared to the number of people who would come to such place absent the action. There also could be an impact to the community or neighbor character for temporary use of a structure for a purpose other than the original intent of the area.

Short Term Impacts

Although the code change will have immediate applicability, the proposed change will have

[133] *Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices*, ASTM. (2024, June 25), available at www.astm.org. https://www.astm.org/f2374-22.html

minimal initial effects. There will be some increase in costs for design and manufacture for companies that are not currently complying with the ASTM F2374 standard, however this is the recognized industry standard amongst commercial inflatable device manufactures. As such, no short-term adverse environmental impacts have been identified to be associated with the adoption of the proposed code change.

Long Term Impacts

Since the use of the buildings are temporary, significant adverse environmental impacts over the long term are not expected from the adoption of the proposed amendment. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change will not result in the irreversible and irretrievable commitment of resources. Inflatable amusement devices are already being produced; this is just requiring all manufacturers to follow ASTM F2374.

Conservation of Energy

It is not anticipated that this code change will have any significant effect on the conservation of energy. Inflatable amusing devices are already allowed to be used; this proposal just conforms requirements with the industry standard.

Alternatives

An alternative is to not adopt any provisions addressing inflatable amusement devices. This alternative does not address the safety issues of inflatable amusement devices and does not adequately protect life and property. Currently, how these types of structures are regulated varies between municipalities resulting in inconsistent enforcement. For these reasons, this alternative was rejected.

5.4 Discussion of Adopted Changes: Multiple Code Books

5.4.1 Coordinating pool and hot tub provisions with industry standards and ICC's International Swimming Pool and Spa Code

Description of Proposal

This code amendment updated the New York specific provisions regarding swimming pools and hot tubs to conform to industry standard as well as the ICC's model codes as necessary. In addition, Executive Law §378(14), as amended by Chapter 292 of the Laws of 2024, removes the requirement that the latch handle for gates be located within the enclosure at least 40 inches above grade and adds the requirement that the release mechanism standards shall be developed by the Code Council based on internationally recognized standards.

The specific changes include a reduction in fence mesh size to match the requirements set forth in the ICC 2024 International Swimming Pool and Spa Code (ISPSC), clarification of the second-floor window alarms requirement, updated suction outlet protection to align with industry standards, and alignment with the Virginia Graeme Baker Pool and Spa Safety Act (VGBA) and internationally recognized standards.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal, there could be an impact to architectural or aesthetic resources. The proposed amendment may cause a difference in the aesthetics surrounding the swimming pool at a house. The proposed amendment may result in the chain link fences appearing different due to the smaller mesh size. The proposed amendment may result in changes in the appearance of the gate latches on pool barriers. The proposed amendment may cause a difference in the appearance of windows on a house. Some windows with direct access to the swimming pool will have latching devices and be restricted in opening so the windows could look different than those windows without direct access.

Short Term Impacts

No short term adverse environmental impacts have been identified to be associated with the adoption of this code change.

Long Term Impacts

Significant adverse environmental impacts over the long term are not expected from the adoption of the proposed amendment. Although no long-term adverse environmental impacts have been identified, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change will not result in the irreversible and irretrievable commitment of resources. This change is only meant to conform to industry standards and will not increase construction.

Conservation of Energy

It is not anticipated that this code change will have any significant effect on the conservation of energy. Pools are already allowed to be used; this is just streamlining requirements to the industry standard.

Alternatives

An alternative is to not adopt any provisions. Not adopting the proposed pool and hot tub provisions would fail to modernize pool safety requirements or conform with industry standards of practice and would also fail to comply with the recent legislative amendments to Executive Law §378(14), as amended by Chapter 292 of the Laws of 2024. For these reasons, this alternative was rejected.

5.4.2 DEC Flood Provisions

Description of Proposal

This code amendment includes recommendations resulting from consultation with the DEC, as required by as required by Executive Law § 378(1-a), as amended by Chapter 19 of the Laws of 2023, enacted by Governor Kathy Hochul on March 3, 2023. NYCRR Title 6 Part 490, Projected Sea Level Rise, which was updated in 2024 was also taken into consideration. The recommendations include provisions for 18 inches of sea level rise, extending the current required flood elevation into the floodplain with a 0.2 % annual chance of flooding (referred to as the 500-year floodplain), and other improvements to existing language for buildings built in flood hazard areas.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal, there could be an impact to architectural or aesthetic resources. The proposed amendment may cause a difference in the aesthetics of buildings in tidal coastal areas. An additional 18 inches of sea level rise may cause buildings in tidal coastal areas to appear taller. The extension of flood resistant construction requirements to the 500-year floodplain may cause new buildings in the 500-year floodplain to appear different than existing buildings in the area. Under the proposed amendment, additions are prohibited from creating or extending existing nonconformities in existing buildings to which the addition is being made. This proposed code change may result in existing buildings currently undergoing construction of an addition appearing differently than existing buildings that have undergone the construction of an addition.

Short Term Impacts

Making buildings more flood resistant will decrease the proportion of buildings exposed to damp conditions that can lead to mold growth. Flood resistant buildings will reduce short-term displacement from floods.

Long Term Impacts

The primary long-term environmental benefit would be in conservation of natural resources. The proposed code change would cause less property damage from flooding, thereby fewer natural resources being used to repair parts of building, rehabilitating a building or entirely reconstructing a collapsed or flooded building. Making buildings more flood resistant will reduce long-term displacement from floods. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources. Natural resources will be consumed in increasing the height of open foundations for flood resistance.

Conservation of Energy

The adoption of this code change anticipates that construction undertaken with the adopted change will result in the conservation of energy in the long term. Minimizing losses of property helps save energy by reducing the replacement of lost or damaged structures, saving virgin natural resources and fuel for transportation and construction activities.

Alternatives

One alternative is to not amend any flood provisions. This alternative does not comply with Executive Law §378(1-a), as amended by Chapter 19 of the Laws of 2023, to require that the Uniform Code address future physical climate risks due to sea level rise, storm surges, and flooding. Sea level rise will cause the existing freeboard requirement to provide less and less of a factor of safety over time, leading to increases in flood damages. For these reasons, this alternative was rejected.

Another alternative is to implement a sea level rise requirement that is higher than 18 inches. During consultation with DEC, it was decided that utilizing the medium sea level rise projections struck the best balance between providing sufficient protection against flood hazards while minimizing the increases in construction cost. Therefore, the alternative of adopting a sea level rise requirement greater than 18 inches was rejected.

A third alternative is to implement a sea level rise requirement that is less than 18 inches. However, during consultation with DEC, it was determined that adopting a sea level rise requirement less than the medium sea level rise projections would be inconsistent with the State Flood Risk Management Guidance, would not provide sufficient protection against flood hazards caused by sea level rise and would be inconsistent with the legislative intent behind the amendment to Executive Law § 378(1-a).

Another alternative involves not extending flood elevation requirements into the 500-year flood areas. However, sea level rise will cause not only higher flood elevations but will increase the size of areas affected by floods. The 500-year flood areas were found to be a reasonable approximation for this increase in anticipated area of flood effects and are a well mapped boundary that can be easily applied by code officials during the permitting process. If the areas required to be elevated are not adjusted to account for sea level rise, communities that fall within the expanded flood area will be at higher risk of flood damage. Moreover, even in inland areas, as described above, the increased frequency of extreme precipitation events has resulted in increased frequency of fluvial flooding. In some areas, such as the City of Ithaca, FEMA remapping has already resulted in significant portions of the former 500-year floodplain being mapped into the 100-year floodplain. In addition, the US Department of Housing and Urban Development (HUD) recently published a Final Rule in the Federal Register revising its floodplain management regulations. The new regulations will require all new HUD funded development be elevated to the Base Flood Elevation plus 2 feet of freeboard in both the mapped Special Flood Hazard Areas (1% floodplain) and in the areas that would be included in the area created by horizontally extending Base Flood Elevation plus 2 feet. As this trend of increasing flood risk is projected to continue, additional building elevation for new structures in the current 500-year floodplain will reduce the flood risk and future insurance premiums for many new structures built in the 500-year floodplain. For this reason, the

alternative of not extending floodplain requirements into the 500-year floodplain was rejected.

5.4.3 A2L Refrigerants

Description of Proposal

This code amendment is an ICC change that adds language pertaining to the use of A2L refrigerants allowed pursuant to the United States Environmental Protection Agency (EPA)'s programs enacted under the American Innovation and Manufacturing Act (AIM Act, 42 U.S. Code §7675) authorizing the EPA to "regulate the transition to next-generation refrigerants and implement a phasedown of the production and consumption of HFCs over the next 15 years".[134] As part of the EPA's Technology Transitions Program, a final EPA rule (40 CFR Part 84) was implemented to "restrict the use of high global warming potential (GWP) HFC refrigerants in air conditioning and heat pump products and equipment".[135]

Provisions expanding the use of A2L refrigerants in refrigeration systems were added to the 2021 International Building Code (IBC), the 2021 International Residential Code (IRC), the 2021 International Fire Code (IFC) and the 2021 International Mechanical Code (IMC). Use of such refrigerants has increased due to concerns over the global warming potential of traditional refrigerants. However, A2L refrigerants are mildly flammable, so safety provisions specific to these refrigerants are necessary.

Environmental Impacts

General

[134] Cika, J., & Lukasik, T. (2022, January 22). *Code changes on A2L refrigerants*. Building Safety Journal; International Code Council, available at https://www.iccsafe.org/building-safety-journal/bsj-technical/code-changes-on-a2l-refrigerants/

[135] Cika, J. (2024, August 15). EPA's Technology Transitions Program: A2L Refrigerants in the Built Environment - ICC. Building Safety Journal; International Code Council, available at https://www.iccsafe.org/building-safety-journal/bsj-technical/epas-technology-transitions-program-related-to-a2l-refrigerants-in-the-built-environment/

The environmental impact of this proposed amendment is significant. A2L refrigerants have less of a global warming potential than traditional refrigerants so expanding their use will contribute to the reduction of greenhouse gas emissions.

Short Term Impacts

The proposed amendment allows the use of A2L refrigerants in systems used for human comfort and other applications covered by the code. A commonly used traditional refrigerant, R-410A, is classified as a greenhouse gas. The replacement of traditional refrigerants with A2L refrigerants will reduce potential direct exposure to greenhouse gases from the leak of a refrigerant.

Long Term Impacts

While existing HVAC systems should not be impacted by the proposed amendment, but when such existing systems reach the end of their useful life, they will be replaced by a system that uses A2L refrigerants. The primary long-term environmental benefit would be in the reduction of greenhouse gas emissions. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change will not result in the irreversible and irretrievable commitment of resources.

Conservation of Energy

It is not anticipated that this code change will have any significant effect on the conservation of energy. The current code does not expressly prohibit the use of A2L refrigerants but limits its use based on whether it is listed in a table or deemed acceptable by the code official. The proposed amendment would expand the use of A2L refrigerants.

Alternatives

One alternative that was considered was to not implement the code change. Refraining from implementing any of the new provisions that expand the use of A2L refrigerants does not comply with the Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022. Section 24 of that act specified that building codes applicable to commercial or residential buildings may not prohibit the use of substances allowed under the United States Environmental Protection Agency's significant new alternatives policy to implement 42 U.S.C. 7671k (see Section 24 of Chapter 374 of the Laws of 2022).

NYS DOS Division of Building Standards and Codes Technical Bulletin TB-4001-MCNYS clarifies that the Uniform Code has never explicitly prohibited the use of A2L refrigerants, but it has limited their usage based on whether they are listed in Table 1103.1 or if they are deemed acceptable by the code official. The Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022 allows the use of alternative refrigerants, such as A2L types, provided they have lower Global Warming Potentials (GWPs). Currently, the commonly used A1 refrigerant, R-410A, has a high GWP and is classified as a greenhouse gas under new EPA regulations. Therefore, not adopting the updated provisions to include more A2L refrigerants with lower GWPs would be inconsistent with the intent of the statute. Moreover, without these updates, more efficient heating, refrigeration, and air conditioning systems will remain unavailable to New York State residents and businesses, hindering their ability to meet the state's new efficiency standards.

Additionally, choosing not to adopt these provisions could significantly undermine New York State's climate goals of reducing greenhouse gas emissions by 40% by 2030, posing a serious risk to our environmental commitments. For these reasons, this alternative was rejected.

5.4.4 Mass Timber

Description of Proposal

This code amendment modifies the provisions governing the use of mass timber to allow for taller

wood buildings, based on changes to the 2021 and 2024 I-Codes. Currently, wood structures are limited to six stories or 85 feet in height.[136] The proposed amendments expand the use of mass timber to allow tall wood buildings up to 18 stories in height.[137]

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal, there could be an impact to architectural or aesthetic resources. The proposed amendment may cause a difference in the aesthetics of taller buildings. Currently, tall buildings in the state are constructed of concrete and steel. This proposed amendment would allow for mass timber to construct taller buildings.

Short Term Impacts

The proposed amendment may lead to the use of prefabricated wood panels for construction and renovation projects. This, in turn, enables end-of-life disassembly and material repurposing that contributes to waste reduction and to extending the lifetime of carbon stored in these wood products.[138]

Long Term Impacts

The long-term environmental benefit of using mass timber for taller buildings is a reduction in greenhouse gases. Mass timber components can be mass-produced and pre-assembled off-site. Mass timber construction of taller buildings requires less construction traffic and less construction time than traditional construction.[139] The use of mass timber also leads to a reduction in material waste. All of these reductions lead to a reduced greenhouse gas process.[140] Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As

[136] *Mass Timber*, American Wood Council, available at https://awc.org/issues/mass-timber/
[137] *Mass Timber,* American Wood Council, available at https://awc.org/issues/mass-timber/
[138] *Mass Timber*, American Wood Council, available at https://awc.org/issues/mass-timber/
[139] *Mass Timber*, American Wood Council, available at https://awc.org/issues/mass-timber/
[140] *Mass Timber*, American Wood Council, available at https://awc.org/issues/mass-timber/

such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources. Natural resources will be consumed in constructing taller mass timber buildings.

Conservation of Energy

It is anticipated that adoption of this code change will result in the conservation of energy in the long term. An increase in the use of mass timber to construct taller buildings will decrease the use of energy needed to transport construction material and waste.

Alternatives

An alternative is to not adopt any provisions addressing mass timber. This alternative does not address the demands of mass timber proponents and removes a building design option that could be used to contribute towards New York State's climate goals to reduce greenhouse gas emissions by 40% by 2030. Promulgating regulations that promote construction related emission reductions is consistent with the Climate Leadership and Community Protection Act (see L.2019, ch.106, section 7). Mass timber construction has a lower carbon footprint than traditional steel and concrete and could reduce the emissions associated with building materials by 13% to 26.5%.[141] Mass timber also contributes towards carbon sequestration because trees used to make mass timber products retain some of that carbon stored and thereby preventing its release into the atmosphere.[142] For these reasons, this alternative was rejected.

[141] *Building Sustainably: Mass Timber (September 2023),* Environmental and Energy Study Institute, p. 1 available at https://www.eesi.org/files/FactSheet_Mass_Timber_2023.pdf

[142] *Building Sustainably: Mass Timber (September 2023),* Environmental and Energy Study Institute, p. 1, available at https://www.eesi.org/files/FactSheet_Mass_Timber_2023.pdf

5.4.5 Accessible building feature language updates, including updated reference and coordination with ICC A117.1 to the 2017 version

Description of Proposal

This code amendment removes the "Type B plus" language of the current Uniform Code and replacing it with the 2024 IBC "Type A Unit" language. In doing so, a number of added or revised accessibility provisions are to be updated, including accessibility provisions for electric vehicle chargers, increasing wheelchair area dimension and turning radius, and revised requirements for accessible water closets, grab bars, flush controls, dispensers, roll in showers, and clearances. This code amendment also includes provisions for assisted toileting and bathing facilities.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal, there could be an impact to architectural or aesthetic resources. While most of the requirements for this code change are taking place inside of a building, there are requirements for on-street parking, parking facilities, and electric vehicle charging stations. Even so, no significant adverse environmental impacts are projected to result from the adoption of this rule.

Short Term Impacts

The initial impact may be to the interior historical or architectural elements of an existing building. However, such an impact will be minimal and as such, no short-term adverse environmental impacts have been identified to be associated with the adoption of the proposed code change.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change, particularly a significant increase in public safety. Although no long-term adverse environmental impacts have been identified to be associated with the adoption of this code change, the Codes Council has, by law, the ability to propose further modifications. As such, the Codes Council can

mitigate any future unforeseen adverse effects through further modification.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources including municipal services to the extent that development results for such services beyond what those have already been provided.

Conservation of Energy

It is not anticipated that this code change will have any significant effect on the conservation of energy. This code change is done for life safety reasons and will not impact energy consumption.

Alternatives

One alternative is to maintain the accessibility provisions within the Uniform Code without any amendments. If the 2020 Uniform Code provisions remain unchanged, the new edition of ICC A117.1 will mandate that nearly all units in multi-family housing comply with the newly increased turning radii and doorway width standards. Additionally, not adopting the new edition of the ICC ANSI A117.1 reference standard means that accessibility issues for individuals with disabilities would not be adequately addressed. For instance, the new standard requires 67" turning radii and larger door clearances to accommodate oversized wheelchairs, which are increasingly used by disabled individuals. These dimensional and clearance adjustments also provide the necessary space for caregivers assisting individuals with disabilities during activities such as toileting or changing, particularly where adult changing stations are available. Furthermore, under this alternative, electric vehicle (EV) charging stations would not be required to be accessible, thereby limiting access for disabled owners of electric vehicles. Additionally, Type A dwelling units offer greater accessibility than Type B Plus dwelling units, enhancing the quality of life for residents who need accessible building designs. Not adding requirements for Type A units would reduce the number of residents who could benefit from this improved quality of life. Finally, failing to update A117.1 would prevent compliance with the new federal public right-of-way accessibility guidelines issued by the U.S. Access Board. These guidelines require that facilities used by pedestrians in the public right-of-way are readily accessible and usable by individuals with

disabilities. For these reasons, this alternative was rejected.

5.4.6 Lithium batteries

Description of Proposal

This code amendment adds collection and storage requirements for lithium batteries. These requirements apply to all types of lithium-ion batteries and lithium metal batteries, including used batteries collected for recycling or disposal and batteries stored at recycling and disposal facilities. The proposed amendment includes requirements to regulate the collection and storage of these batteries so as to reduce the probability of a fire event and mitigate adverse impacts on the safety of the facility and the public.

Environmental Impacts

General

There are some potential environmental impacts associated with the proposed code change. The primary environmental issues associated with the proposed fire protection provisions are increased development, and water consumption. The change incorporates more fire protection restrictive requirements for facilities that house and/or recycle lithium batteries, which includes the requirement for the installation of automatic sprinkler systems in townhouses served with municipal water. This will increase the cost of construction for these types of facilities. The collection and storage requirements could result in the construction of buildings that store lithium-ion batteries which may require a change to the community's preapproved land use or overall planning. Even so, no significant adverse environmental impacts are projected to result from the adoption of this rule.

Short Term Impacts

While the adoption of a modified code has immediate applicability, the initial effect state-wide will be minimal. Short term impacts will be those associated with the retraining and education of code officials as well as fire personnel and emergency responders. There will be some increase in

the cost of the design and installation. The impacts of the proposed changes, either detrimental or beneficial, are expected to accrue primarily over the long term.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change, particularly a significant increase in public safety and reduction of property losses. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources including municipal services to the extent that development results for such services beyond what those have already been provided.

Conservation of Energy

The adoption of this code change anticipates that this will result in the conservation of energy in the long term. A decrease and severity of the fires from lithium will decrease the use of energy needed to fight fires, including transporting water supplies.

Alternatives

An alternative is to not adopt any provisions addressing lithium batteries. However, lithium batteries present new and increasing fire safety hazards that are not adequately addressed by the existing codes. As such, this alternative was rejected.

5.4.7 Energy Storage Systems

Description of Proposal

This code amendment includes provisions recommended by the Energy Storage System (ESS) Inter-Agency Fire Safety Working Group (Fire Safety Working Group). Following a series of fires at three battery ESS locations across New York State in 2023, Governor Kathy Hochul convened the Fire Safety Working Group to address safety concerns around lithium-ion battery ESS.[143]

The Fire Safety Working Group consisted of state agency officials from Division of Homeland Security and Emergency Services (DHSES), Office of Fire Prevention and Control (OFPC), New York State Energy Research and Development Authority (NYSERDA), Department of Environmental Conservation (DEC), Department of Public Service (DPS), Department of State (DOS), and nation-leading battery ESS safety industry experts.[144] The Fire Safety Working Group was formed to investigate recent fires, inspect current installations, identify gaps in codes and industry best practices and develop recommendations for the Code Council proposing revisions and enhancements to the Fire Code.[145] In July 2024, the Fire Safety Working Group released its Fire Code Recommendations, which consisted of proposed updates and additions to the Fire Code, as well as additional considerations.[146] The recommendations from the Fire Safety Working Group include: adopting the 2024 International Fire Code language for ESS, adopting the 2023 version of NFPA 855, and requiring peer review for all ESS installations.

Environmental Impacts

General

[143] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024, p. 2, available at https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group

[144] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024, p. 2, available at https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group

[145] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024, p. 2, available at https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group

[146] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024, p. 4, available at https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group

There are some potential environmental impacts associated with the implantation of this code change. While there are environmental concerns regarding the use of ESS for energy storage, this proposed change is intended to address safety concerns. Construction requirements, emergency plans, security provisions, system requirements and provisions setting standards for storage of ESS's will have an impact on the potential release of contamination into the environment, either directly or by fire. The increased fire safety provisions could potentially remove the deterrent that some local jurisdictions have against these types of systems being installed which could result in more ESS installations. Therefore, this code change will have a beneficial effect on the environment.

Short Term Impacts

While the adoption of a modified code has immediate applicability, the initial effect state-wide will be minimal. Short term impacts will be those associated with the retraining and education of code officials as well as fire personnel and emergency responders. The impacts of the proposed changes, either detrimental or beneficial, are expected to accrue primarily over the long term.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change, particularly a significant increase in public safety and reduction of property losses.

Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources including municipal services to the extent that development results for such services beyond what those have already been provided.

Conservation of Energy

The adoption of this code change anticipates that this will result in the conservation of energy in the long term. A decrease and severity of the fires from ESS will decrease the use of energy needed to fight fires, including transporting water supplies. Additionally, improving the safety of ESS's will increase the use of them for energy storage, conserving energy over time.

Alternatives

An alternative is to not adopt updated provisions addressing ESS. This alternative does not address the fire safety issues associated with ESS that prompted the formation of the Fire Safety Working Group and does not adequately protect life and property. This alternative also fails to integrate the recommendations from this work group. For these reasons, this alternative was rejected.

5.4.8 Occupiable roofs provisions

Description of Proposal

This code amendment is an ICC change that adds a new definition of occupiable roof to the BCNYS, FCNYS, and the EBCNYS as well as new provisions addressing the egress, accessibility, additions, or alterations for occupiable roofs.

Environmental Impacts

General

The environmental impact of this rule is minimal, there could be an impact to architectural or aesthetic resources. While occupiable roofs exist in the current code, the proposed change adds regulations on consistent design and construction.

Short Term Impacts

No short term adverse environmental impacts have been identified to be associated with the adoption of this code change.

Long Term Impacts

Although no long-term adverse environmental impacts have been identified to be associated with the adoption of this code change, the Codes Council has, by law, the ability to propose further modifications. As such, the Codes Council can mitigate any future unforeseen adverse effects through further modification.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change will not result in the irreversible and irretrievable commitment of resources. The change will not increase or decrease the cost of construction and is only a clarification and an attempt to streamline the regulations.

Conservation of Energy

It is not anticipated that this code change will have any significant effect on the conservation of energy.

Alternatives

An alternative is to not adopt any provisions addressing occupiable roofs. This alternative does not address the fire safety issues associated with occupiable roofs and does not adequately protect life and property. Occupants of such roofs could face insufficient or non-accessible egress, and thus be at higher risk of injury or death due to fire events. For these reasons, this alternative was rejected.

5.4.9 Adult changing station provisions

Description of Proposal

This code amendment includes the locations where adult changing stations are required to be installed and the accessibility provisions for adult changing stations. An adult changing station contains a changing table large enough to accommodate an adult-sized person that is located in

proximity to sanitary facilities, such as lavatories and trash disposal. Without such facilities, severely disabled people who cannot use toilets because of their disability suffer from severe isolation because they and their caregivers must return home to be changed. This lack of access has a profound impact not only on the person with a disability, but on their caregivers who are often their immediate family members. Normal activities outside the home such as shopping, entertainment, and travel must be curtailed because of a lack of safe and sanitary places to change. On occasion, caregivers report they have no option other than to change the adults for whom they care on restroom floors. Aside from the obvious sanitation concerns, which are far from minimal, this practice raises serious questions about how we as a community afford people with significant disabilities a measure of human dignity and protect their right to privacy.

Environmental Impacts

General

The application of this provision will not appreciably alter patterns of development or levels of safety, nor will it result in an increased cost of construction. However, there also could be impact on the community or neighbor character for a purpose other than the original intent. Even so, no significant adverse environmental impacts are projected to result from the adoption of this rule.

Short Term Impacts

While the adoption of a modified code has immediate applicability, the proposed changes will be minimal. There will be some increase in the cost of the design and installation. As such, no short-term adverse environmental impacts have been identified to be associated with the adoption of the proposed amendment.

Long Term Impacts

Over time and as construction continues, the effects - both adverse and beneficial - will begin to be realized. Although no long-term adverse environmental impacts have been identified to be associated with the adoption of this code change, the Codes Council has, by law, the ability to propose further modifications. As such, the Codes Council can mitigate any future unforeseen adverse effects through further modification.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources. Natural resources will be consumed in the construction materials for adding receptacles, or more square footage to new and existing buildings.

Conservation of Energy

It is not anticipated that this code change will have any significant effect on the conservation of energy.

Alternatives

An alternative option is to not adopt any provisions for adult changing stations. However, this option does not improve the lives of individuals with disabilities. It also limits their access to publicly accessible buildings throughout the State. This can make planning activities at and traveling to these buildings challenging if adequate facilities for toileting and bathing are limited or not available. Public bathrooms often provide an undignified and unsanitary experience, where open-floor space is the only option for changing. This presents risks to the individuals and their caregivers. Transferring the individual from their wheelchair to the floor can be hazardous to both; in some instances, for healthcare professionals, such transfers can be non-compliant with the NYS Safe Patient Handling Law. For these reasons, this alternative was rejected.

5.4.10 Shipping container construction

Description of Proposal

This code amendment adds a definition of intermodal shipping container to the BCNYS and the RCNYS and adds a new Section to the BCNYS, which includes provisions to regulate the use of shipping containers in construction. Constructing houses out of one or more intermodal shipping containers has gained popularity in recent years. This code change was added to the 2024 IBC to ensure consistent application of code requirements and to address minimum safety requirements

without duplicating existing code provisions.

Environmental Impacts

General

The application of this provision will not appreciably alter patterns of development or levels of safety, nor will it result in an increased cost of construction. However, there also could be impact on the community or neighbor character for a purpose other than the original intent. Even so, no significant adverse environmental impacts are projected to result from the adoption of this rule.

Short Term Impacts

The initial impact may be to the interior historical or architectural elements of an existing building. There will be some increase in the cost of the design and installation. However, such an impact will be minimal and as such, no short-term adverse environmental impacts have been identified to be associated with the adoption of the proposed code change.

Long Term Impacts

The primary long-term environmental benefits expected from the Code change are improved construction costs and a renewed interest in the repurposing of existing structures. Significant adverse environmental impacts over the long term are not expected from the adoption of the proposed amendment. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The purpose of this amendment is to reduce the irreversible and irretrievable commitment of resources. While open spaces may be consumed for building construction purposes, the purpose of shipping container construction is the sustainable reuse of existing resources. Shipping containers are considered a waste object that can be used as building components thus avoiding

the use of steel from other processes or extraction of virgin materials during the product stage.

Conservation of Energy

There is no anticipated conversation of energy with this code amendment. While sustainable, shipping containers are not considered energy efficient, especially in warm weather. However, shipping container construction already exists under the current code, and the purpose of this amendment is to clarify how to design, permit, and inspect shipping containers that are being repurposed. It will have an impact on the actual construction of the buildings, not any potential energy efficiency.

Alternatives

One alternative considered is not to adopt any provisions addressing the use of shipping containers in building construction. However, the use of intermodal shipping containers in building construction is already being done in New York State under the alternative means and methods process. This alternative does not address the demands of shipping container proponents, nor does it afford regulatory compliance tools to municipalities that choose to respond to those demands. Additionally, the use of alternative means and methods process may result in uneven enforcement throughout the state, which is contrary to the stated objective of the legislation establishing the Uniform Code. For these reasons, this alternative was rejected.

5.4 Cumulative Environmental Impacts from Significant Changes made to the Uniform Code

Cumulative impacts occur when multiple actions affect the same resource. The cumulative effects of an action may be undetectable when viewed in the individual context of direct and even indirect effects, but nevertheless can eventually lead to a measurable environmental change. Cumulative impacts can result from a single action or from two or more individually minor but collectively significant actions taking place over time.

Significant changes proposed with the adoption of Uniform Code, when taken together, may have cumulative impacts on the natural, social, and economic environment of New York State. It is anticipated that the impacts of the action will be mostly beneficial.

Changes proposed with the adoption of the uniform code, when taken together, may have the following potentially beneficial cumulative impacts:

- Increased public health and safety through improved building design and better fire protective systems; and
- Building design alternatives which afford opportunities for increasing operational efficiency.

Changes proposed with the adoption of the uniform code, when taken together, may have the following potentially adverse cumulative impacts:

- Increased construction costs; and
- Increased consumption of natural resources.

SECTION 6.0: ENVIRONMENTAL IMPACTS OF THE SIGNIFICANT CHANGES TO THE ENERGY CODE

The following is a list of provisions of the Energy Code, which represent significant changes from the current code governing the construction and rehabilitation of buildings in New York State. For each, an analysis is provided as to their potential effects on the environment and whether these effects are adverse.

6.1 DISCUSSION OF ADOPTED CHANGES: COMMERCIAL AND RESIDENTIAL BUILDINGS

6.1.1 Fossil-Fuel Equipment and Building Systems Prohibition in New Buildings

Description of Proposal

This code change prohibits the installation of fossil-fuel equipment and building systems, with some exceptions, in new buildings; (a) not more than seven stories above grade plane height or any commercial or industrial building with one hundred thousand square feet or less in conditioned floor area, for which a substantially complete building permit application is submitted for the initial construction on or after December 31, 2025: or (b) for which a substantially complete building permit application is submitted for the initial construction after December 31, 2028. Such prohibition shall not apply to buildings existing prior to the effective date of the applicable prohibition, including to: (i) the repair, alteration, addition, relocation, or change of occupancy or use of such buildings; and (ii) the installation or continued use and maintenance of fossil fuel equipment and building systems, including as related to cooking equipment, in any such buildings.

Environmental Impacts

General

The environmental impact of this proposed amendment is significant, there will be a change in type of energy used in buildings from fossil-fuel to electricity. It is anticipated this proposal will

reduce greenhouse gas emissions and improve air quality because buildings will be powered by cleaner sources of energy in synergy with an increasingly cleaner grid. The proposal will improve indoor air quality by removing pollutants associated with burning fossil fuel indoors.

Buildings are the largest source of greenhouse gas emissions in New York State, responsible for 32% of emissions statewide.[147] Electrification of buildings is critical to meet the State's greenhouse gas emissions limits under the Climate Act. Electrification is the primary proven strategy to decarbonize space heating, water heating and several other common home energy needs. Electrification of space and water heating with high-efficiency heat pumps is a viable approach to decarbonizing operations for nearly all types of buildings in New York. Modern heat pumps that work in very cold weather are commercially available and able to keep homes and businesses safe and comfortable year-round, as long as they are properly chosen, sized, installed by appropriately trained workers, and paired with an energy-efficient building envelope and HVAC system design.[148]

Gas stoves can emit harmful pollutants, such as nitrogen dioxide, into the air. These pollutants may cause asthma in some people who have more sensitive airways. A study published in the Internation Journal of Environmental Research and Public Health titled Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States concluded 12.7% of current childhood asthma nationwide is attributed to gas stove use.[149] Replacing gas stoves with electric or induction stoves should reduce the number of children with asthma and decrease school and work absenteeism.[150]

Indirect health benefits will occur when initiatives to mitigate GHG emissions also result in other beneficial outcomes such as reducing air pollutant emissions (co-pollutants), encouraging active

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[147] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 175, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[148] *Scoping Plan Full Report*, New York State Climate Action Council, December 2022, p. 176.
[149] *Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States*. Int J Environ Res Public Health. 2022, p.75
[150] *About Asthma,* NYS Department of Health, available at https://www.health.ny.gov/statistics/environmental/public_health_tracking/about_pages/asthma/about_asthma

transport (such as walking and cycling), and reducing home health risks through building energy efficiency retrofit interventions.[151] Improved air quality will reduce premature mortality and incidences of asthma and cardiovascular disease.[152] Cardiovascular disease is the leading cause of death nationally and in New York, with almost 44,000 New Yorkers dying of cardiovascular disease every year.[153] Asthma is a major health problem nationally, and in New York 1.4 million adults and 315,000 children suffer from this disease.[154]

Short Term Impacts

The short-term impact of this proposal is improved indoor air quality due to the prohibition of fossil-fuel equipment and building systems in new buildings. As stated above, there are health concerns with gas stoves and other fossil-fuels burning in areas where people live and work.

Long Term Impacts

In addition to the health and productivity benefits mentioned above, the long-term impact of this proposal is a reduction on the dependence of fossil-fuel sources of energy in new buildings, which will lead to lower greenhouse gas emissions. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources.

The adoption of this code change could result in the irreversible and irretrievable commitment of resources. It is anticipated this proposal will lead to a decrease in the demand of fossil-fuel

[151] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[152] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[153] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf
[154] *New York State Climate Action Council Scoping Plan*, New York State Climate Action Council. 2022. Pg 99, available at NYS-Climate-Action-Council-Final-Scoping-Plan-2022 (18).pdf

equipment and building systems. It is also anticipated this proposal will decrease the demand for fossil-fuel sources of energy, such as natural gas, propane, and oil. Due to new buildings installing heat pumps instead of fossil-fuel equipment and building systems, it is anticipated there will be an increase in electricity consumption.

Conservation of Energy

The adoption of this code change anticipates that this will result in the conservation of energy in the long term. It is anticipated this proposal will result in more energy-efficient buildings, lower utility bills, and building owners installing heat pumps to heat and cool their buildings. Heat pumps are often at least three times more energy efficient than their fossil-fuel counterparts.

Alternatives

An alternative is to not adopt any provisions addressing the fossil-fuel equipment and building systems prohibition in new buildings. This alternative does not comply with Energy Law §11-104, as amended by Part RR of Chapter 56 of the Laws of 2023, which requires that the Energy Code shall prohibit the installation of fossil-fuel equipment and building systems in any new building not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, on or after December 31, 2025, and prohibits the installation of fossil-fuel equipment and building systems, in all new buildings after December 31, 2028, with certain exceptions.

Another alternative considered was to delay implementation of the prohibition until a later date. This alternative does not comply with Energy Law§11-104, as amended by Part RR of Chapter 56 of the Laws of 2023, which contains specific prohibition dates of December 31, 2025 for any new building not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, and December 31, 2028 for all new buildings, with certain exceptions. Absent a statutory amendment or other legal mandate, DOS and the Code Council are not authorized to delay the prohibition dates set forth in the Energy Law.

Another alternative considered was to exempt campuses that are powered by thermal energy

networks. District energy systems are characterized by one or more central plants producing hot water, steam, and/or chilled water, which then flows through a network of insulated pipes to provide hot water, space heating, and/or air conditioning for nearby building. However, Energy Law §11-104 does not exempt new buildings, as noted above, due to the presence or use of energy networks from the prohibition against the installation of fossil-fuel equipment and building systems.

6.1.2 More Restrictive Building Thermal Envelope Requirements

Description of Proposal

This code change increased energy efficiency for opaque building thermal envelope assemblies and fenestration. It also imposes new mandatory air leakage testing requirements for certain commercial buildings consistent with the provisions of residential buildings.

Environmental Impacts

General

It is anticipated this proposal would result in a major change in the use or quantity of energy and improved indoor air quality. More restrictive building thermal envelope requirements will lead to better energy efficiency. Additionally, failure to meet the thermal envelope requirements of the energy code can lead to ice damming (in colder climates), mold and moisture problems, and indoor air quality issues.

Short Term Impacts

There are no short -term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. It is

anticipated a long-term impact will be better indoor air quality, which will provide health benefits to those individuals who occupy such buildings. Although no long-term adverse environmental impacts have been identified to be associated with the adoption of this code change, the Codes Council has, by law, the ability to propose further modifications. As such, the Codes Council can mitigate any future unforeseen adverse effects through further modification.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible and irretrievable commitment of resources associated with the implementation and continuing compliance of this proposal.

Conservation of Energy

The adoption of this code change anticipates that this will result in the conservation of energy in the long term. Building thermal envelopes are the most critical aspect of the energy code with a longest useful life span. Failure to meet the thermal envelope requirements of the energy code can lead to ice damming (in colder climates), mold and moisture problems, and indoor air quality issues. Meeting the requirements of the code can increase durability of the building envelope, increase indoor air quality, lower energy bills, improve the ability to remain in the building during extreme weather events, and assists design and construction professionals in complying with health/life safety codes.[155]

Alternatives

An alternative is to retain without increasing the building thermal envelope efficiency values of the current code. This alternative was rejected because without improved efficiency, the burden to the State to update the Energy Code and the burden to regulated parties to adapt to the new code is unmitigated and would not comply with Energy Law §11-103(2)(a).

[155] *Building Energy Codes: Creating Safe, Resilient, and Energy-Efficient Homes*. Institute for Market Transformation, July 2013. pg.3

Another alternative is to increase minimum stringency required. This alternative was rejected because it would impose unreasonable requirements on regulated parties and was not proven to be cost-effective as required pursuant to Energy Law §11-103(2).

A third alternative is to decrease minimum stringency required. This alternative was rejected, not only for the reasons stated in the first alternative but also, because it would be a less restrictive requirement than the model codes, placing the State at a competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the U.S. DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

The last alternative considered was to include different thermal envelope requirement based upon building use classification. This alternative was rejected because it deviates fundamentally from how both model codes (IECC and ASHRAE 90.1) develop and establish these requirements. These requirements are based on recorded weather data, material properties and their tested efficiencies, and other data. Space conditioning mechanisms are in place to account for interior heat sources and occupant needs providing flexibility in different occupancies. There currently is no well established and reliable data to suggest that the material properties and associated efficiencies of building materials will yield different energy efficiencies in different occupancies or use classifications.

6.1.3 Eight Counties That were Previously in Climate Zone 6 are now in Climate Zone 5.

Description of Proposal

This code change will make changes to the climate zone designation in Tables C301.1 and R301.1 of the Energy Code. Based on recent climate data recording consistently higher temperatures, Climate Zone designations have been corrected and the following counties that were previously in Climate Zone 6 are now in Climate Zone 5: Allegany, Broome, Cattaraugus, Schoharie, Schuyler, Steuben, Tompkins, and Wyoming.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal. It is not anticipated this proposal would result in a major change in the use or quantity of energy.

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. As the climate continues to change, counties will be placed in different climate zones and the energy efficiency of buildings located within those counties will be affected by changes to the Energy Code. Although no long-term adverse environmental impacts have been identified to be associated with the adoption of this code change, the Codes Council has, by law, the ability to propose further modifications. As such, the Codes Council can mitigate any future unforeseen adverse effects through further modification.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible and irretrievable commitment of resources associated with the implementation and continuing compliance of this proposal.

Conservation of Energy

There is no conservation of energy associated with the implementation and continuing compliance of this proposal. The main direct impact of this change is more lenient minimum building thermal envelope requirements in these counties than historically required; however, the thermal envelope requirements are modeled in response to the recorded climatic conditions in each zone and the demand for energy in those buildings is expected to diminish.

Alternatives

An alternative is to retain the current climate zone designations, leaving Allegany, Broome, Cattaraugus, Schoharie, Schuyler, Steuben, Tompkins, and Wyoming counties in Climate Zone 6. This alternative was rejected because it would result in the climate zone designations being out of alignment with recent climate data and imposing stricter requirements in those counties that are not supported by current weather data.

6.1.4 Additional Efficiency Credits for New Buildings and Existing Buildings Following Prescriptive Compliance Path.

Description of Proposal

This change proposes additional efficiency credits for new buildings and existing buildings chosen from a list of options. New commercial buildings and substantial alterations (e.g. 50 percent of market value) must earn a minimum number of credits, based on climate zone, occupancy, and size, with 50% of the required credits applying to additions. New residential buildings must earn a minimum of 10 or 15 credits, depending on size, additions must earn a minimum of 5 credits, and alterations that are substantial improvements must earn 3 credits.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal. It is anticipated this proposal would result in a major change in the use or quantity of energy due to the additional energy efficiency requirements.

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. The long term impact of this proposal is more energy efficient new buildings. Buildings are the largest source of greenhouse gas emissions in this State, reducing their emissions will help reduce the State's overall emissions and will help the State reach its emission mandates under the Climate Act. Although no long-term adverse environmental impacts have been identified to be associated with the adoption of this code change, the Codes Council has, by law, the ability to propose further modifications. As such, the Codes Council can mitigate any future unforeseen adverse effects through further modification.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible and irretrievable commitment of resources associated with the implementation and continuing compliance of this proposal.

Conservation of Energy

It is anticipated that the additional efficiency credits will lead to a conservation of energy in buildings. For example, efficient space heating and cooling equipment results in a 10 percent efficiency improvement.

Alternatives

Three alternatives considered were (1) to not require additional efficiency credits, (2) to reduce the number of credits required, or (3) to require credits only for new buildings and not for substantial alterations to existing buildings. These alternatives were rejected because they would be less restrictive requirements than the model codes, placing the State at a competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the US DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

Another alternative is to require credits only for commercial buildings or only for residential buildings. This alternative was rejected for the same reasons noted above.

The last alternative is to increase the number of credits required. This alternative was rejected because an incremental approach for this requirement would impose a lower burden on regulated parties that allows for market adjustment before more stringent requirements are imposed.

6.1.5 Limits on the Use of Electric Resistance Space Heating

Description of Proposal

The proposed amendment includes limits on the use of electric resistance space heating for commercial buildings based on size and occupancy. The proposed amendment also includes limits on the use of electric resistance space heating to 2.0 kW for detached one-and two-family dwellings and townhouses three stories or less in height.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal. It is anticipated this proposal would result in a change in the use or quantity of energy by limiting the use of electric resistance space heating as a source of heat.

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. The long term impacts of this proposal are more energy efficient buildings. Buildings are the largest source of greenhouse gas emissions in this State, reducing their emissions will help reduce the State's overall emissions and will help the State reach its emission mandates under the Climate Act. Although no long-term adverse environmental impacts have been identified to be associated with

the adoption of this code change, the Codes Council has, by law, the ability to propose further modifications. As such, the Codes Council can mitigate any future unforeseen adverse effects through further modification.

Irreversible and Irretrievable Commitment of Resources

It is anticipated this proposal will result in an increased number of heat pumps being installed in commercial buildings. This should not have an irreversible and irretrievable commitment of resources because the demand for heat pumps has already increased across the country and thus, they are already being manufactured and produced at large numbers.

Conservation of Energy

Alternatives to electric resistance heat regardless of whether fossil-fuel based, or heat pumps can cut electricity usage for home heating by half on average,[156] and therefore, cut greenhouse gas emissions. It is anticipated that his proposal will lead to an increase in the use of heat pumps, which are more energy efficient than electric resistance heat.[157] Heat pumps extract heat from cold air to produce warm air and exhaust air that is even colder than what is outdoors.[158] Heat pumps are considered two-way air conditioners.[159]

Alternatives

An alternative is to not limit the use of electric resistance space heating. This alternative was rejected because while electric resistance heat carries the lowest cost for initial installation, it results in the greatest energy consumption for the life of the equipment. This imposes unreasonable burdens, not only on the ratepayers, but also on the supply of electricity, straining the utility

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[156] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p. iii.
[157] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p.1 .
[158] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p.1 .
[159] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p.1.

companies' ability to provide the electricity required to implement the regulation prohibiting the use of fossil-fuel equipment and building systems. Prioritizing initial costs over long-term costs to this extreme degree creates a split incentive between building owners or developers and tenants, where the long-term cost is simply passed on to parties that have no input on the design process or the ability to implement efficiency retrofits later on. This split incentive is most burdensome for tenants of affordable housing and disadvantaged communities.

Another alternative is to increase the limit on the use of electric resistance space heating. This alternative was rejected for the same reasons noted above.

The last alternative is to decrease the limit on the use of electric resistance space heating. This alternative was rejected because a lower threshold would impose an undue burden for buildings with areas that are difficult to condition by other means. A lower threshold would make the installation of heat pumps and heat pump water heaters infeasible in some areas and climate zones.

6.2 Discussion on Adopted Changes: Commercial Code

6.2.1 Renewable Energy for Commercial Buildings

Description of Proposal

This code change adds a new minimum prescriptive requirement for on-site renewable energy generation systems with a power rating of not less than 0.75 watts per square foot. Additionally, for applicants pursuing the ECCCNYS compliance option, it provides an alternative compliance path through power purchase agreements for small buildings, buildings with limited roof space, and other situations where PV installations would be impractical. This change also includes definitions for financial renewable power purchase agreement and physical renewable energy power purchase agreement which closely align with language both in ASHRAE Standard 228P, The Standard Method of Evaluating Zero Energy Building Performance, and in ASHRAE Standard 189.1.

This proposed amendment has the potential of saving a significant amount on building energy costs because buildings will be generating their own energy through on-site renewable generation systems.[160] A recent analysis, commissioned by a distributed solar and storage trade group, has found that California's nation-leading 17 gigawatts of rooftop solar have saved customers about $2.3 billion on their utility bills in 2024 alone.[161] The code change will also allow building owners to hedge against financial risks associated with the price volatility of fossil-fuel energy sources.[162] The code change will improve supply reliability of the electric grid by providing commercial buildings with another source of electrical power.[163] On-site renewable energy generation systems have fewer interconnections (e.g., transmission substations), so electricity from these sources is likely to have higher power quality than electricity delivered through the grid from fossil-fuel sources.[164] While the proposed change is technology-agnostic providing flexibility of implementation, the most likely means of compliance is the installation of a solar photovoltaics systems with the additional benefit of harnessing energy from sunlight, an infinite source of energy, unlike fossil-fuel sources, such as oil and natural gas.

Environmental Impacts

General

The environmental impact of this proposed amendment is significant. This proposal would result in a change in the type of energy used in buildings from fossil fuel or electricity to renewable energy sources. The proposal would result in improved air quality because buildings will rely on cleaner sources of energy, such as solar and geothermal systems. The proposed change affects only

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[160] *On-Site Renewable Energy Generation*, Environmental Protection Agency (2014) p. 2. available at https://www.epa.gov/sites/default/files/2017-06/documents/onsiterenewables508.pdf

[161] *California's rooftop solar is a benefit, not a cost, to the state.* Canary Media, available at https://www.canarymedia.com/articles/solar/californias-rooftop-solar-is-a-benefit-not-a-cost-to-the-state

[162] *On-Site Renewable Energy Generation*, Environmental Protection Agency (2014) p. 1. available at https://www.epa.gov/sites/default/files/2017-06/documents/onsiterenewables508.pdf

[163] *On-Site Renewable Energy Generation*, Environmental Protection Agency (2014) p. 3. available at https://www.epa.gov/sites/default/files/2017-06/documents/onsiterenewables508.pdf

[164] *On-Site Renewable Energy Generation,* Environmental Protection Agency (2014) p. 3. available at https://www.epa.gov/sites/default/files/2017-06/documents/onsiterenewables508.pdf

new commercial buildings, causing minimal to no impact on the character or quality of important historical, archeological, architectural, or aesthetic resources of existing community or neighborhood character.

Short Term Impacts

It is anticipated that this proposal will lessen the demand of energy from fossil-fuel sources which should lead to a decrease in greenhouse gas emissions from new commercial buildings.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. It will increase production of clean energy which should decrease the use of fossil fuel as a source of electricity generation. About 20% of buildings with onsite renewable energy systems use the energy generated to meet more than half of their total electricity consumption.[165]

It is anticipated that this proposal will decrease the amount of land needed in order to produce clean renewable energy by taking advantage of under-utilized roof areas. As the State transitions to a clean energy future, large swaths of land across the State will need to be dedicated to solar energy production. Every megawatt generated of solar energy typically requires between five and eight acres.[166] The Climate Act recommends generation of 6,000 megawatts of solar energy by 2025, which means the State will need to dedicate between 30,000 and 42,000 acres of land to the development of solar farms.[167] Additionally, farmland is typically the most desirable land to build a solar farm because it is clear of trees and vegetation and is oftentimes flat. It is anticipated this proposal would offset the demand for farmland across the State for solar farms by instead using the rooftop, parking areas, or the underground[168] areas of commercial properties for such energy generation.

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[165] *Commercial Buildings and Onsite Renewable Energy*, Energy Star, Environmental Protection Agency (Sept. 2020) p. 8.
[166] Lovinger, Joe. *The Upstate Land Grab Behind the Solar Power Boom*. The Real Deal. November 29, 2021.
[167] Lovinger, Joe. *The Upstate Land Grab Behind the Solar Power Boom*. The Real Deal. November 29, 2021.
[168] *Geothermal System for St. Patrick's Cathedral Restoration,* PWGC Environmental Engineering & Consulting. available at https://pwgrosser.com/blog/geothermal-system-st-patricks-cathedral/

This proposal will increase the number of solar panel installations across the State that will need to be disposed or recycled of at their end of their useful life (solar panel lifespan is 20-25 years). It is estimated that eight million metric tons of decommissioned solar panels could accumulate globally by 2030, and that number could increase to 80 million metric tons by 2050.[169] Solar panels are made of silicon, metal, glass and plastic and often times it is cheaper to discard them than it is to recycle them – only about 10% of panels in the United States are recycled.[170] There are several companies across the country that are trying to make it easier to recycle and refurbish old panels to cut down on the waste the panels produce at the end of their lives.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change could result in the irreversible and irretrievable commitment of resources. It is anticipated this proposal will lead to an increase in the demand and production of solar panels. Solar panels are made of silicon, metal, glass, and plastic. It is also anticipated this proposal could decrease the demand for solar farms on farmland across the State.

Conservation of Energy

There is potential for conservation of energy associated with the implementation and continuing compliance of this proposal by eliminating approximate 6% of electricity lost in transmission and distribution.[171] It is also anticipated the proposal will lead to an increase of clean energy production.

Alternatives

An alternative is to not require renewable energy for commercial buildings. This alternative was

[169] Crownhart, Casey. S*olar Panels are a Pain to Recycle. These Companies are Trying to Fix That.* MIT Technology Review. August 19, 2021.
[170] Crownhart, Casey. S*olar Panels are a Pain to Recycle. These Companies are Trying to Fix That.* MIT Technology Review. August 19, 2021.
[171] *Lost In Transmission: How Much Electricity Disappears Between A Power Plant And Your Plug?* Inside Energy, available at https://insideenergy.org/2015/11/06/lost-in-transmission-how-much-electricity-disappears-between-a-power-plant-and-your-plug/

rejected because it would be a less restrictive requirement than the model codes, placing the State at competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the US DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

Another alternative is to increase the minimum requirement above 0.75 watts per square foot. While this alternative would provide the benefit of an economy of scale, this alternative was rejected because an incremental approach for this new requirement would impose a lower burden on regulated parties that allows for market adjustment before more stringent requirements are imposed.

A third alternative is to reduce the minimum requirement below 0.75 watts per square foot. This alternative was rejected because without an economy of scale, the provision would likely not be cost effective.

The fourth alternative is to provide a blanket exception for some buildings instead of the optional compliance path through power purchase agreements. This alternative was rejected because the blanket exception is available for those pursuing the optional ASHRAE compliance path.

The fifth alternative was to limit the 0.75 W/SF requirement (or PPA alternative) to structures with flat membrane roofs or sloped standing seam roofs over 5,000 SF. This alternative was rejected because the provisions allow for flexibility in terms of the type of renewable energy provided and exceptions for buildings where rooftop solar installations are infeasible.

The last alternative was to credit the addition or allocation of renewable energy (solar) assets that are part of a district system which serves the subject building in lieu of rooftop solar. This alternative was rejected because, firstly and as mentioned above, the ASHRAE compliance path provides a blanket exception where a PV solar system is infeasible. Secondly, for those pursuing the ECCCNYS compliance path, without a separate power purchase agreement for each building, there is no practical mechanism to tie the assets to the specific building.

6.2.2 Thermal Bridge Mitigation and Documentation of Energy Loss Associated with Thermal Bridges in Commercial Buildings

Description of Proposal

This code change requires documentation and mitigation of energy losses associated with structural and physical interruptions in the building thermal envelope of commercial buildings. Additionally, it includes the reduction of heat transfer through building elements by utilization of materials and methods which reduce thermal conductivity, as well as prescriptive provisions for mitigating thermal bridge losses in above-grade walls, balconies, floor decks, parapets, structural members penetrating thermal envelope, and for vertical fenestration.

Thermal bridging has generally been unregulated, except where they occur due to framing members within assemblies. Thermal bridging occurs when a relatively small area of a wall, floor or roof loses much more heat than the surrounding area.[172] The effects of thermal bridging may include increased heat loss, occupant discomfort, unanticipated expansion or contraction, condensation, freeze-thaw damage, and related moisture and/or mold problems for materials susceptible to moisture.[173]

This change seeks to take a small step towards recognizing and accounting for thermal bridges that are typically present in conventional construction. It seeks to recognize and account for current design and construction practices, not to drive a large change in construction practices. This is a good step to move building thermal envelope performance through intentional design and construction practices.

Environmental Impacts

[172] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1. available at https://www.masonryandhardscapes.org/resource/tek-06-13b/
[173] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1. available at https://www.masonryandhardscapes.org/resource/tek-06-13b/

General

The environmental impact of this proposed amendment is significant. It is anticipated this proposal will result in a major change in the use or quantity of energy. Currently, unregulated thermal bridging can account for 20-70% of heat flow through a building's opaque envelope.[174] Thermal bridge mitigation can significantly improve the building thermal envelope performance.

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. Mitigation of energy loss associated with structural and physical interruptions in the building thermal envelope will result in a decrease in heat loss through the wall, leading to lower operating costs, decrease in cold or hot spots on the interior and exterior at the thermal bridge locations, leading to more comfort for the building's occupants and less freeze-damage to the exterior of the building.[175] The continuity of a thermal barrier across the entire building envelope is fundamental to good thermal performance, reducing energy consumption, increasing thermal comfort and helping to prevent condensation.[176]

Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

It is not anticipated that the adoption of this code change will result in the irreversible and

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[174] *Thermal Bridging Small Details with a Large Impact & Getting Ready for New Codes*, Crandell, Jay, page 44
[175] *Thermal Bridges in Wall Construction*, Concrete Masonry & Hardscapes Association p. 1.
[176] *Thermal Bridging: Observed Impacts and Proposed Improvement for Common Conditions,* Love, Andrea and Charles Klee, p. 11.

irretrievable commitment of resources.

Conservation of Energy

Conservation of energy is expected with this proposed code change. Mitigating thermal bridging should lead to the mitigation of energy loss associated with structural and physical interruptions in the building thermal envelope, which will lead to a decrease in heat loss and conservation of energy. The continuity of a thermal barrier across the entire building envelope is fundamental to good thermal performance, reducing energy consumption, increasing thermal comfort and helping to prevent condensation.[177]

Alternatives

An alternative is to not require thermal bridge mitigation and documentation of energy loss associated with thermal bridges in commercial buildings. This alternative was rejected because it would be a less restrictive requirement than the model codes, placing the State at competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the US DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

Another alternative is to require documentation only, as an interim measure to provide for market adjustment, without an energy efficiency advantage. This alternative was rejected for the same reasons as the first alternative. Further, the cost of documentation wouldn't be offset by energy savings.

[177] *Thermal Bridging: Observed Impacts and Proposed Improvement for Common Conditions,* Love, Andrea and Charles Klee, p. 11.

6.2.3 Increased Minimum Efficiency Requirements for Gas-Fired Water Heaters, Hot Water Boilers, Air Conditioning, and Refrigeration Equipment as Mandated by Federal Standards.

Description of Proposal

This proposed code change increases minimum efficiency for federally preempted equipment under Energy Policy and Conversation Act (EPCA). The proposed amendment adds minimum thermal efficiencies and maximum water return temperature for gas hot-water boilers with a system input capacity between 1 and 10 million Btu/h, with exceptions. It also includes new efficiency requirements for gas-fired water heaters that have an input capacity over 1,000,000 Btu/hr. The proposed amendment includes new minimum standards for combustion air positive shut-off, fan motor, and oxygen concentration control for some boiler systems based on input capacity and nameplate rating.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal. However, it is anticipated this proposal would result in a major change in the use or quantity of energy due to the increased efficiency requirements for federally preempted equipment and thermal efficiencies and maximum water return temperature for gas hot-water boilers. Most commercially available equipment already conforms to the most recent minimum federal equipment efficiency standards.

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

There are no long-term impacts associated with the implementation and continuing compliance of this proposal. Although no long-term adverse environmental impacts have been identified as being

associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change will not result in the irreversible and irretrievable commitment of resources.

Conservation of Energy

The adoption of this code change anticipates the conservation of energy in the long term. It is anticipated that the higher minimum efficiency standards will lead to a conservation of energy when this equipment is in use and over its useful life.

Alternatives

An alternative is not to increase the minimum efficiency requirements for gas-fired water heaters, hot-water boilers, air conditioning, and refrigeration equipment as mandated by federal standards. This alternative was rejected because the federally mandated increase in minimum efficiency requirements applies to equipment sold in the US regardless of the State code update. Producing a state code out of compliance with EPCA and inconsistent with the model code updates would only cause confusion in implementation.

Another alternative is to impose stricter efficiency requirements. This alternative was rejected because, as it applies to federally regulated equipment, the State would need to secure approval from DOE that, even if granted, would delay the implementation of this rule.

6.2.4 Increased Equipment Efficiency for Elevators and Escalators

Description of Proposal

This proposed amendment includes increased equipment efficiency for some elevators in commercial buildings. The proposed amendment applies to new traction elevators with a rise of 75 feet or more and requires a power conversion system, efficiency requirements for elevator motors and transmissions; and capture and reuse of energy released by elevators during motion.

Environmental Impacts

General

The environmental impact of this proposed amendment is minimal. It is anticipated this proposal would result in a change in the use or quantity of energy because the proposal would lead to more efficient elevators.

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

There are no long-term impacts associated with the implementation and continuing compliance of this proposal. Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Code Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

The adoption of this code change will not result in the irreversible and irretrievable commitment of resources. This proposal does not require buildings have more elevators, only that they be more efficient.

Conservation of Energy

The adoption of this code change anticipates that this will result in the conservation of energy in

the long term. It is anticipated that this proposal will reduce the elevator's overall power consumption. Regenerative drives save energy by decreasing the elevator room's cooling requirements by as much as 50 percent.

Alternatives

An alternative is to not require an increase in efficiency for elevators and escalators. This alternative was rejected because this is an additional efficiency measure proposed by NYSERDA in accordance with Energy Law §11-103(2)(b).

6.3 Discussion of Adopted Changes: Residential Buildings

6.3.1 Energy Recovery Ventilation (ERV) Required for Residential Buildings in Climate Zone 6

Description of Proposal

This code change requires a heat recovery or energy recovery ventilation (HRV or ERV) system for dwelling units and residential buildings three stories or less in height in Climate Zone 6. Previously, an HRV or ERV was only required in Climate Zones 7 and 8, which are not present in NYS, but this provision was modified in the 2024 IECC.

An ERV is a type of heat exchanger that either pre-heats or pre-cools incoming outdoor air, significantly reducing the demand on heating and cooling equipment.[178] ERVs work by exchanging heat and moisture between two airstreams: one contained in exhausted, indoor air exiting the building and one incoming outdoor, supply air that is entering the building.[179] During

[178] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)*, Building Energy Exchange (June 2021) p. 2.
[179] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV),* Building Energy Exchange (June

colder weather, the ERV exhaust air warms and moistens the supply air from outdoors.[180] During warmer weather, the ERV exhaust air cools and dries the supply air from outdoors.[181]

Environmental Impacts

General

The environmental impact of this proposed amendment is significant. Air conditioning and ventilation systems are among the main sources of high indoor levels of air pollutants.[182] Conventional Heating, Ventilation and Air- Conditioning (HVAC) systems must fully temper fresh air before distributing it throughout the building.[183] Tempering fresh air can be an energy demanding process.[184] An ERV provides controlled and conditioned ventilation that improves indoor air quality and occupant health and comfort while saving energy and reducing greenhouse gas emissions.[185] Buildings that use an ERV are less likely to experience persistent odors, mold, dampness and other issues that trigger complaints and increase health risks.[186] The continuous

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2021) p. 2; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 2.*Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 1. D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3714.

[180] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 1; D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3714.

[181] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 1; D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3714.

[182] D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3713.

[183] *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings,* Building Energy Exchange (June 2021) p. 2.

[184] *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings,* Building Energy Exchange (June 2021) p. 2.

[185] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 2; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 2.

[186] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 2; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 2.

clean fresh filtered air supply from an ERV can eliminate irritants, allergens and air pollutants.[187] A home can have several appliances simultaneously exhausting air, including bath exhaust fans, kitchen hoods and clothes dryers.[188] When exhaust-only appliances operate and a home becomes depressurized, water vapor intrusion from outdoors could generate mold in the building envelope.[189] The operation of all these exhaust-only appliances in conjunction with the mechanical ventilation system raise significant issues related to (1) occupant comfort, health and safety and (2) building and equipment durability and reliability.[190] An ERV can provide a means to deliver make-up air and reduce the level of home pressurization to mitigate these issues.[191] An ERV requires a low level of maintenance.[192] An ERV should typically be inspected every three months and fully cleaned every 6 months.[193] The air filters within an ERV requires regular cleaning.[194]

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. It is anticipated this proposal will improve air quality in buildings. The improved air quality will

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[187] D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3715.
[188] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.
[189] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.
[190] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.
[191] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.
[192] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 4; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 4.
[193] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 4; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 4.
[194] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 4; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 4.

improve occupants' health and comfort, as discussed on the previous page.

Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

There are no irreversible and irretrievable commitment of resources associated with the implementation and continuing compliance of this proposal. HRVs and ERVs are already being manufactured and produced, and this proposal just requires their installation in residential buildings in Climate Zone 6.

Conservation of Energy

It is anticipated that this code change will have an effect on the conservation of energy.

Alternatives

An alternative is to not require an HRV or ERV in residential buildings in Climate Zone 6. This alternative is rejected because the cost of installing an HRV and ERV will be recovered through energy savings. Additionally, it would be a less restrictive requirement than the model codes, placing the State at competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the US DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

Another alternative is to expand the HRV or ERV requirement to residential buildings in all Climate Zones within New York State. This alternative is rejected because the provision is likely not cost-effective in Climate Zone 4 and the cost-effectiveness analysis for Climate Zone 5 was challenged by developers during the development of the 2024 IECC.

6.3.2 Separate Electric Metering for Low-Rise Multi-Family Buildings

Description of Proposal

This proposed amendment is to incorporate separate electric metering for all dwelling units in multi-family buildings three stories or less, consistent with existing requirements for multi-family buildings four stories or more.

In a master-metered building, the utility supplies electricity to the entire building.[195] One utility-owned meter serves the building.[196] The building receives one electric bill from the utility, often at a rate that results in a bill significantly lower than the retail residential rate.[197] Individual apartments are not metered, and actual apartment consumption cannot be determined or used as the basis for billing electric charges.[198] Submetering allocates the building's total apartment sector electric charges to the individual apartments in direct proportion to their individual usage.[199]

Environmental Impacts

General

The environmental impact of this proposed amendment is significant. It is anticipated this proposal will result in a change in the use or quantity of energy. Submetering allocates the building's total apartment sector electric charges to the individual apartments in direct proportion to their individual usage. Under this system, individual residents will have an incentive to conserve energy

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[195] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[196] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1; Thurgood, Allen and Lewis M. Kwit, *The Fairness Doctrine for Electric Submetering*, Cooperative Housing Bulletin (December 1996) p.1.
[197] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[198] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[199] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p.6.

in order to lower their utility bills.

Short Term Impacts

There are no short-term impacts associated with the implementation and continuing compliance of this proposal.

Long Term Impacts

Over the long term, environmental benefits are expected to result from this code change. Buildings that use submeters show 15 to 25 percent savings in energy use versus master-metered buildings of like construction. It is anticipated that submeters will lead to lower energy use because they incentivize residents to lower their utility bills by lowering their energy consumption. Whether utility bills decrease and by how much will depend on occupant behavior and energy prices, which fluctuate often.

Although no long-term adverse environmental impacts have been identified as being associated with the adoption of the new code change, the Code Council has, by law, the ability to propose further modifications. As such the Codes Council can respond and mitigate unforeseen adverse environmental impacts that may be identified in the future.

Irreversible and Irretrievable Commitment of Resources

There is no irreversible and irretrievable commitment of resources associated with the implementation and continuing compliance of this proposal. Submeters are already being manufactured and produced.

Conservation of Energy

The adoption of this code change anticipates that this will result in the conservation of energy in the long term. Submetering allocates the building's total apartment sector electric charges to the

individual apartments in direct proportion to their individual usage.[200] It provides a mechanism and incentive for individual residents to monitor and reduce their own monthly electric expense by practicing conservation. It is anticipated residents will decrease their energy consumption in order to lower their utility bills.

Alternatives

One alternative is to not require separate electric metering for low-rise multi-family buildings. This alternative was rejected because the benefits far outweigh the costs and provide a means to pursue, to the fullest extent feasible, the use of modern technical methods, devices and improvements which tend to minimize consumption of energy in accordance with Energy Law §11-104(2) and (4).

Another alternative is to require individual tenant monitoring only without separate billing at less than half the cost for the initial installation and no monthly fees. This alternative was rejected because it only provides the potential benefit of informed consumer energy use behavior without any direct financial benefit attached to those behavior modifications. Further, monitoring could be perceived as a tool to justify rent increases and foster distrust between tenants and building owners.

6.4 Cumulative Environmental Impacts from Significant Changes to the Energy Code

Resource Refocus prepared a report for NYSERDA titled Energy Savings and Cost-Effectiveness Analysis of the 2024 New York State Energy Conservation Construction Code, Residential Provisions (R. Davis, N. Heckman, N. Low, S. Naby, and A. LaRue), dated October 2024. The Resource Refocus Report concluded the GHG savings of the 2024 NYSECCC and Zero Emission

[200] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p.6.

New Construction ("ZENC") represent an 82% reduction from the 2020 ECCCNYS and current fuel mix in new construction.

The following table summarizes the societal effects of each building prototype in the NORESCO Report. Avoided GHG emissions were calculated by multiplying the annual building electricity and gas savings by GHG emissions factors published by NYSERDA. The avoided GHG emissions were then converted to annual dollars by following guidance from DEC's *Establishing a Value of Carbon, Guidelines for Use by State Agencies*. A 2 percent discount rate was used and the value of avoided GHG emissions was added to the annual cash flow.

Prototype	LCC savings - no societal benefits ($/sf)	First year emissions savings (lbs CO2e/sf)	Net present value of societal benefits savings ($/sf)	Cost-Effectiveness ($/sf)
NYC High Rise Apartment	$7.95	2.16	$1.38	$9.33
High Rise Apartment	$12.45	2.52	$1.51	$13.96
Midrise Apartment	$13.25	2.42	$0.69	$13.94
Large Hotel	$8.58	2.68	$1.42	$10.00
Standalone Retail	$18.96	3.37	$0.95	$19.91
Large Office	$19.99	1.38	$0.39	$20.38
Secondary School	$2.26	0.99	$0.34	$2.60
Warehouse	$1.75	1.16	$0.33	$2.08
Statewide Weighted Average Results	$10.42	2.17	$1.10	$11.52

APPENDICES

APPENDIX A: FINAL SCOPING DOCUMENT FOR THE GEIS

APPENDIX B: REGULATORY IMPACT STATEMENT FOR THE UNIFORM CODE

APPENDIX C: REGULATORY IMPACT STATEMENT FOR THE ENERGY CODE

APPENDIX D: RESPONSE TO PUBLIC COMMENTS

New York State Environmental Quality Review Act (SEQR)
Final Public Scoping Document

for

Generic Environmental Impact Statement
(GEIS)

on

Proposed Amendment of the
New York State Uniform Fire Prevention and Building Code
(19 NYCRR Parts 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228 and 1229)
and the State Energy Conservation Construction Code
(19 NYCRR Part 1240)

Lead Agency
New York State Fire Prevention and Building Code Council

September 2024

I. Overview

New York State Executive Law §377 and New York State Energy Law §11-103 authorize the State Fire Prevention and Building Code Council (Code Council), from time-to-time to review and amend the New York State Uniform Fire Prevention and Building Code (Uniform Code) and the New York State Energy Conservation Construction Code (Energy Code), or adopt new codes. The Code Council is currently in the process of updating the Uniform Code and the Energy Code from the 2020 versions of the Uniform Code and Energy Code.

Article 8 of the Environmental Conservation Law, State Environmental Quality Review Act (SEQR), and the implementing regulations under 6 NYCRR Part 617, establish a process to comprehensively and holistically consider potential environmental impacts of discretionary actions that are directly undertaken, funded, or approved by local governments, state agencies, and public corporations. SEQR establishes the requirements and processes for the development of environmental impact statements which are required where an action may have a potentially significant impact on the environment. A generic environmental impact statement (GEIS) is a type of environmental impact statement that is used to consider broad-based actions or related groups of actions that agencies may approve, fund, or directly undertake.

The first step in preparing the draft GEIS is for the New York State Department of State (DOS), on behalf of the Code Council, to prepare a "scope" or outline of its proposals. The scope refers to the outline of what the draft environmental impact statement will contain. The process of creating an outline is called "scoping" to develop a written outline or "scope" of topics and analyses of potential environmental impacts of an action that will be addressed in the draft GEIS and how they will be studied. The job of scoping is to narrow issues that will be addressed in the draft environmental impact statement to ensure that it will be a concise, accurate, and complete document that is adequate for public review.

DOS published a draft scope which appeared in the August 7, 2024 edition of the Environmental Notice Bulletin (ENB) and provided a 30-day period for the public to review and provide written comments, or until September 6, 2024. Release of the draft scope ensured an opportunity for public input. A response to those comments is included below. This final scope will serve as the outline of the GEIS.

II. Description of the Action & Environmental Setting

The New York State Department of State (DOS) proposes to repeal and replace the regulations that implement the Uniform Code set forth in 19 NYCRR Parts 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228 and 1229 and the Energy Code set forth in 19 NYCRR Part 1240. The Uniform Code applies to all buildings and structures in New York State except for those located within the City of New York. The Energy Code applies to all buildings and structures in New York State, including the City of New York. The principal purpose of the amendments is to update the Uniform Code and the Energy Code to incorporate revisions to New York State laws and the International Code Council's (ICC) Model Codes since the 2020 rulemakings. The changes being proposed are significant in nature, in that both the codes changes from ICC's

2021 and 2024 Model Codes are being incorporated. Additionally, several significant New York legislative bills impacting the Uniform Code and Energy Code were passed and signed by the Governor in 2020 through 2024.

DOS has not identified any significant adverse environmental impacts from the proposed amendments. However, DOS has chosen to use a GEIS as the means to discuss the objectives and the rationale for the proposed regulations, present alternative measures which are under consideration, and provide the maximum opportunity for public participation.

III. Summary of Proposed Amendments to the Uniform Code (19 NYCRR Parts 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229) and the Energy Code (19 NYCRR Part 1240)

Uniform Code
(19 NYCRR Parts 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228 and 1229)

- Department of Environmental Conservation (DEC) flood provisions;
- A2L refrigerant provisions;
- Residential sprinklers;
- Energy Storage System (ESS) Inter-Agency Fire Safety Working Group recommendations;
- Mass timber;
- Updated reference and coordination with ICC A117.1 to the 2017 version:
  - Accessibility provisions for electric vehicle (EV) chargers;
  - Wheelchair clear area dimension and turning radius increases;
  - Revised and added requirements for accessible water closets, grab bars, flush controls, dispensers, roll in showers, clearances; and
  - Assisted toileting and bathing facility provisions.
- Adult changing station provisions:
  - Locations where adult changing stations are required to be installed; and
  - Accessibility provisions.
- Powered micro-mobility devices:
  - Charging and storage locations; and
  - Addressing hazards associated with charging through:
    - Listings,
    - Separation requirements, and
    - Use of detection systems.
- Lithium batteries:
  - Storage requirements; and
  - Collection requirements.
- Shipping container construction;
- Temporary use of buildings in emergencies;
- Occupiable roofs provisions:
  - Egress,
  - Accessibility,
  - Additions, or
  - Alterations.

- Inflatable amusement devices; and
- Coordinating pool and hot tub provisions with industry standards and ICC's International Swimming Pool and Spa Code.

Energy Code
(19 NYCRR Part 1240)

- Fossil-fuel equipment and building systems prohibition in new buildings (with corresponding provisions set forth in the Uniform Code);
- Renewable energy (solar) with not less than 0.75 W/ft2 for commercial buildings;
- Documentation and mitigation of energy loss associated with thermal bridges in commercial buildings;
- More restrictive building thermal envelope requirements;
- Eight Counties that were previously in Climate Zone 6 are now in Climate Zone 5: Allegany, Broome, Cattaraugus, Schoharie, Schuyler, Steuben, Tompkins, and Wyoming;
- Additional efficiency credits for new buildings and existing buildings following the prescriptive compliance path;
- Energy recovery ventilation (ERV) required for residential buildings in Climate Zone 6;
- Limits on the use of electric resistance space heating in residential buildings;
- Increased minimum efficiency requirements for gas-fired water heaters, hot-water boilers; air conditioning, and refrigeration equipment as mandated by federal standards;
- Increased equipment efficiency for elevators and escalators; and
- Separate electric metering for low-rise multi-family buildings.

Uniform Code List

Objective and Rationale: DOS proposes to repeal and replace the Uniform Code to ensure the code continues to provide a basic minimum level of protection to all people of the State of New York, excluding the City of New York, from hazards of fire and inadequate building construction.

A second reason to update the Uniform Code is to incorporate the revisions to New York State laws since the 2020 Uniform Code update. Section 378 of the Executive Law was amended to require that the Uniform Code prohibit the installation of fossil-fuel equipment and building systems in certain new buildings (see Energy Code amendment below); and address future physical climate risks due to sea level rise, storm surges, and flooding. Section 24 of Chapter 374 of the Laws of 2022 ("Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022") states that a building code may not prohibit the use of a substance allowed pursuant to the United States Environmental Protection Agency's significant new alternatives policy to implement 42 U.S.C. 767lk, provided that such substance the refrigeration or air condition system or other equipment or products utilizing such substance are designed, installed, and used in accordance with nationally recognized published standards that protect building occupant safety and reduce fire risks.

In addition, the Uniform Code is being updated to incorporate recommendations from various work groups and State agencies such as adding residential sprinklers for one- and two-family dwellings and townhouses pursuant to the State Fire Administrator's recommendation to the Code Council at the June 2023 Code Council meeting and including proposed recommendations from

the Inter-Agency Fire Safety Working Group relating to Energy Storage Systems created by the Governor in July 2023.

Another reason for updating the Uniform Code is to incorporate both the ICC's 2021 and 2024 Model Codes. The 2021 and 2024 Model Codes address new technology such as powered micro-mobility devices, lithium batteries, and energy storage systems. The Model Codes also add new requirements for the use of mass timber, adult changing stations, shipping container construction, occupiable roofs, and inflatable amusement devices.

Energy Code List

Objective and Rationale: DOS proposes to repeal and replace the Energy Code to ensure the code continues to protect the health, safety, and security of the people of the State of New York and ensure a continuing supply of energy for future generations through economically reasonable energy conservation techniques used in the design and construction of buildings in the State.

A second reason for updating the Energy Code is to encourage energy conservation and clean energy features in buildings and structures. Energy conservation and clean energy features will lower buildings greenhouse gas emissions and result in energy savings for building owners. Additionally, proposed revisions to the code will permit buildings to better adapt to extreme cold and heat.

The updated Energy Code will comply with the fossil-fuel equipment and building systems prohibition in new buildings in accordance with Part RR of Chapter 56 of the Laws of 2023, codified in section 11-104(6)(b) of the Energy Law. Such chapter prohibits the installation of fossil-fuel equipment and building systems, with some exceptions, in:

- new buildings not more than seven stories above grade plane height or any commercial or industrial building with one hundred thousand square feet or less in conditioned floor area, for which a substantially complete building permit application is submitted on or after December 31, 2025; or
- new buildings for which a substantially complete building permit application is submitted after December 31, 2028.

However, the prohibition does not apply to the future replacement of fossil-fuel equipment and building systems in buildings existing prior to the effective date of the prohibition.

The updated Energy Code will comply with provisions of Chapter 374 of the Laws of 2022, including but not limited to for the Code Council to use its best efforts to adopt provisions for residential buildings that achieve energy savings greater than energy savings achieved by the then most recently published International Energy Conservation Code (IECC) and to adopt provisions for commercial buildings that achieve energy savings greater than energy savings achieved by the then most recently published ASHRAE 90.1.

The updated Energy Code will help New York State rapidly decarbonize its built environment to support the greenhouse gas emission reduction mandates under the CLCPA.

IV. **Potentially Significant Impacts**

The draft GEIS will discuss potentially significant adverse impacts on the environment relevant to the proposed changes to the Uniform Code and Energy Code such as impacts involving the use and conservation of energy.

The draft GEIS will assess significance indicators set out in 6 NYCRR Section 617.7.

V. **Alternatives**

The draft GEIS will discuss alternatives to the proposed changes to the Uniform Code and Energy Code, including the no action alternative. The goal of analyzing alternatives in a GEIS is to investigate means to avoid or reduce potentially adverse environmental impacts identified in the environmental impact statement.

The alternatives discussion may overlap or be consolidated with the discussion of avoidance, minimalization, and mitigation measures since the purpose of an alternative is to avoid or minimize impacts. The "no action" alternative must always be discussed to provide a baseline for evaluation of impacts and comparisons of other impacts of alternatives. The substance of the no action discussion should be a description of the likely circumstances if no governmental action is taken.

The alternatives also include considering maintaining the ICC Model Code language, making modifications to the ICC Model Code language, or adopting New York State specific language.

VI. **Description of Proposals**

In accordance with subdivision 1 of section 377 of the Executive Law, the Code Council may from time to time amend provisions of the Uniform Code and shall periodically review the entire code to assure that it effectuates the purposes of the New York Uniform Fire Prevention and Building Code Act (the Act) and the specific objectives and standards as set forth in the Act. The updated code will incorporate the revisions to New York State laws since the 2020 Uniform Code update, including a ban on fossil-fuel equipment in new buildings and to encourage additional energy conservation and clean energy features in buildings.

The draft GEIS will provide a detailed description of the proposed changes to the Uniform Code and Energy Code identified in Section II of this draft Scope.

<u>Uniform Code</u>

1. Department of Environmental Conservation (DEC) flood provisions.
   A. Description of Proposal:
      a. Include recommendations from consultation with DEC for the inclusion of provisions for 18-inches of sea level rise, extending the current freeboard elevation to the 500-year floodplain, and other improvements to existing language for buildings built in flood hazard areas [Executive Law §378(1-a)].
   B. Potentially significant impacts:
      a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.

C. Alternatives:
    a. No action alternative.
    b. Increase sea level rise requirements above 18 inches.
    c. Decrease sea level rise requirements below 18 inches.

2. A2L refrigerant provisions.
    A. Description of Proposal:
        a. Added language to include the use of A2L refrigerants allowed pursuant to the United States Environmental Protection Agency's significant new alternatives policy to implement 42 U.S.C. 767lk, provided that such substance and the refrigeration or air conditioning system or other equipment or products utilizing such substance are designed, installed, and used in accordance with nationally recognized published standards that protect building occupant safety and reduce fire risks [§24 of Chapter 374 of the Laws of 2022].
    B. Potentially significant impacts:
        a. Contribute to the reduction of greenhouse gas emissions.
        b. A major change in the use or quantity of energy.
    C. Alternatives:
        a. No action alternative.

3. Residential sprinklers.
    A. Description of Proposal:
        a. Include the ICC language, with some specific NYS modifications for existing buildings, requiring the installation of automatic fire sprinklers systems in dwellings regulated by the Residential Code.
    B. Potentially significant impacts:
        a. Place a demand on water supply.
    C. Alternatives:
        a. No action alternative.
        b. Limit sprinkler system installations to certain housing types.
        c. Limit sprinkler system installations to specific locations within the dwellings.

4. Energy Storage System (ESS) Inter-Agency Fire Safety Working Group recommendations.
    A. Description of Proposal:
        a. Include provisions as recommended by the Working Group for items such as, but not limited to, adoption of the 2024 International Fire Code language for ESS, adoption of the 2023 version of NFPA 855, and requiring peer review for all ESS installations.
    B. Potentially significant impacts:
        a. A major change in the use or the quantity of energy.
    C. Alternatives:
        a. No action alternative.

5. Mass timber.
    A. Description of Proposal:

a. Expand the use of mass timber per the 2024 International Code Council language to allow for taller wood buildings.

B. Potentially significant impacts:
   a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.

C. Alternatives:
   a. No action alternative.
   b. Limit the height or locations.

6. Updated reference and coordination with ICC A117.1 to the 2017 version.
   A. Description of Proposal:
      a. Add accessibility provisions for electric vehicle (EV) chargers; increase wheelchair area dimension and turning radius; revised and added requirements for accessible water closets, grab bars, flush controls, dispensers, roll in showers, clearances; and assisted toileting and bathing facility provisions.
   B. Potentially significant impacts:
      a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
   C. Alternatives:
      a. No action alternative.

7. Adult changing station provisions.
   A. Description of Proposal:
      a. Locations where adult changing stations are required to be installed and accessibility provisions.
   B. Potentially significant impacts:
      a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
   C. Alternatives:
      a. No action alternative.

8. Powered micro-mobility devices.
   A. Description of Proposal:
      a. Charging and storage locations and addressing hazards associated with charging through listings, separation requirements, and use of detection systems.
   B. Potentially significant impacts:
      a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
   C. Alternatives:
      a. No action alternative.

9. Lithium batteries.

A. Description of Proposal:
    a. Add storage requirements and collection requirements for lithium batteries.
B. Potentially significant impacts:
    a. The creation of a material conflict with a community's current plans or goals as officially approved or adopted.
C. Alternatives:
    a. No action alternative.

10. Shipping container construction.
    A. Description of Proposal:
        a. Add language to better regulate the use of shipping containers when constructing buildings.
    B. Potentially significant impacts:
        a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
    C. Alternatives:
        a. No action alternative.

11. Temporary use of buildings in emergencies.
    A. Description of Proposal:
        a. Add a new appendix that details provisions on the temporary safe and proper use of a building for emergency purposes.
    B. Potentially significant impacts:
        a. The encouraging or attracting of a large number of people to a place or places for more than a few days, compared to the number of people who would come to such place absent the action.
        b. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
    C. Alternatives:
        a. No action alternative.
        b. Limit the approved locations.

12. Occupiable roofs provisions.
    A. Description of Proposal:
        a. Add language to address the egress, accessibility, additions, or alterations for occupiable roofs.
    B. Potentially significant impacts:
        a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
    C. Alternatives
        a. No action alternative.

13. Inflatable amusement devices.

A. Description of Proposal:
    a. Include the ICC language for requiring an operating permit and provisions relating to proper flame-resistant materials, anchoring, support, and installation of inflatable amusement devices.
B. Potentially significant impacts:
    a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
    b. The encouraging or attracting of a large number of people to a place or places for more than a few days, compared to the number of people who would come to such place absent the action.
C. Alternatives:
    a. No action alternative.

14. Coordinating pool and hot tub provisions with industry standards and ICC's International Swimming Pool and Spa Code.
    A. Description of Proposal:
        a. Coordination to include subjects such as barrier exceptions for hot tubs, modified provisions for suction outlets, alignment with Virginia Graeme Baker Pool and Spa Safety Act (VGBA) requirements, fencing mesh sizing, alarms for second story windows, and pool latch type and locations.
    B. Potentially significant impacts:
        a. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
    C. Alternatives:
        a. No action alternative.

Energy Code

1. Fossil-fuel equipment and building systems prohibition in new buildings (with corresponding provisions set forth in the Uniform Code)
    A. Description of Proposal:
        a. Prohibits the installation of fossil-fuel equipment and building systems, with some exceptions, in: (a) new buildings not more than seven stories above grade plane height or any commercial or industrial building with one hundred thousand square feet or less in conditioned floor area, for which a substantially complete building permit application is submitted on or after December 31, 2025: or (b) new buildings for which a substantially complete building permit application is submitted after December 31, 2028. However, the prohibition does not apply to the future replacement of fossil-fuel equipment and building systems in buildings existing prior to the effective date of the prohibition. [Energy Law §11-104(6)(b),(7)]
    B. Potentially significant impacts:
        a. Change in the type of energy used in buildings from fossil fuel to electricity.
        b. Greenhouse gas emissions reduction and improved outdoor air quality because buildings will rely on cleaner sources of energy in synergy with increasingly cleaner grid.

c. Improved indoor air quality by removing pollutants associated with burning fossil fuels indoors.
d. Impact of the regulation on the use of thermal energy networks (TENs).
e. Impact on the resiliency and reliability of the electric grid.

C. Alternatives:
a. No action alternative.

2. Renewable energy (solar) for commercial buildings
A. Description of Proposal:
a. New minimum prescriptive requirement for on-site renewable electricity generation systems with a power rating of not less than 0.75 watts per square foot;
b. Optional compliance path through power purchase agreements for small buildings, buildings with limited roof space, and other situations where PV installations would be impractical.
B. Potentially significant impacts:
a. Change in the type of energy used in buildings from fossil fuel or electricity to renewable energy sources.
b. Improve air quality because buildings will rely on cleaner sources of energy such as solar.
c. The impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character.
C. Alternatives:
a. No action alternative.
b. Increase minimum requirement above 0.75 watts per square foot.
c. Reduce minimum requirement below 0.75 watts per square foot.
d. Provide a blanket exception for some buildings instead of the optional compliance path through power purchase agreements.
e. Allow thermal energy networks (TENs) as an alternative means for compliance.

3. Thermal bridge mitigation and documentation of energy loss associated with thermal bridges in commercial buildings
A. Description of Proposal:
a. Documentation and mitigation of energy losses associated with structural and physical interruptions in the building thermal envelope of commercial buildings. Reduction of heat transfer through building elements by utilization of materials and methods which reduce thermal conductivity.
b. Prescriptive and performance provisions for mitigating thermal bridge losses in above-grade walls, balconies, floor decks, parapets, structural members penetrating thermal envelope; and for vertical fenestration.
B. Potentially significant impacts:
a. A major change in the use or quantity of energy.
C. Alternatives:
a. No action alternative.

b. Require documentation only, as an interim measure to provide for market adjustment, without an energy efficiency advantage.

4. More restrictive building thermal envelope requirements
   A. Description of Proposal:
      a. Increased energy efficiency for assembly U-Factors, R-Values, and Fenestration efficiency.
      b. New mandatory air leakage testing requirements for certain commercial buildings consistent with the provisions of residential buildings.
   B. Potentially significant impacts:
      a. A major change in the use or quantity of energy.
      b. Improved indoor air quality.
      c. Reduction in required size of heating and air conditioning equipment.
   C. Alternatives:
      a. No action alternative.
      b. Increase minimum stringency required.
      c. Decrease minimum stringency required.
      d. Different thermal envelope requirement based upon building type.

5. Eight Counties that were previously in Climate Zone 6 are now in Climate Zone 5
   A. Description of the Proposal:
      a. Based on recent climate data recording consistently higher temperatures, Climate Zone designations have been corrected and the following counties that were previously in Climate Zone 6 are now in Climate Zone 5: Allegany, Broome, Cattaraugus, Schoharie, Schuyler, Steuben, Tompkins, and Wyoming.
   B. Potentially significant impacts:
      a. A major change in the use or quantity of energy.
   C. Alternatives:
      a. No action alternative - Retain current designations out of alignment with recent climate data.

6. Additional efficiency credits for new buildings and existing buildings following the prescriptive compliance path
   A. Description of Proposal:
      a. Additional efficiency credits for new buildings and existing buildings chosen from a list of options:
         i. new commercial buildings must earn a minimum number of credits, based on climate zone, occupancy, and size, with 15% of the required credits applying to additions and substantial alterations; and
         ii. new residential buildings must earn a minimum of 10 or 15 credits, depending on size, additions must earn a minimum of 5 credits, and alterations that are substantial improvements (e.g. 50 percent of market value) must earn 3 credits.
   B. Potentially significant impacts:
      a. A major change in the use or quantity of energy.
   D. Alternatives:
      a. No action alternative.

b. Increase number of credits required.
c. Decrease number of credits required.
d. Require credits for new construction only.
e. Require credits only for commercial buildings or only for residential buildings.

7. Energy recovery ventilation (ERV) required for residential buildings in Climate Zone 6
   A. Description of Proposal:
      a. A heat recovery or energy recovery ventilation system in residential buildings is required for dwelling units in Climate Zone 6.
   B. Potentially significant impacts:
      a. A major change in the use or quantity of energy.
      b. Improved air quality.
   C. Alternatives
      a. No action alternative.
      b. Expand the requirement to residential buildings in all NYS Climate Zones.

8. Limits on the use of electric resistance space heating
   A. Description of Proposal:
      a. Limits on the use of electric resistance space heating to 2.0 kW for detached one- and two-family dwellings and townhouses three stories or less in height.
      b. Limits on the use of electric resistance space heating for commercial buildings based on size and occupancy.
   B. Potentially significant impacts:
      a. A major change in the use or quantity of energy by limiting the use of an inefficient source of heat.
   C. Alternatives:
      a. No action alternative.
      b. Increase the limit on the use of electric resistance space heating.
      c. Decrease the limit on the use of electric resistance space heating.

9. Increased minimum efficiency requirements for gas-fired water heaters, hot-water boilers, air conditioning, and refrigeration equipment as mandated by federal standards
   A. Description of Proposal:
      a. Increased minimum efficiency for federally preempted equipment under Energy Policy and Conservation Act:
         i. Adds minimum thermal efficiencies and maximum water return temperature for gas hot-water boilers with a system input capacity between 1 and 10 million Btu/h with exceptions.
         ii. New efficiency requirements for gas-fired water heaters that have an input capacity over 1,000,000 Btu/hr.
         iii. New minimum standards for combustion air positive shut-off, fan motor, and oxygen concentration control for some boiler systems based on input capacity and nameplate rating.
   B. Potentially significant impacts:
      a. A major change in the use or quantity of energy.
   C. Alternatives:

a. No action alternative.
b. Stricter efficiency requirements.

10. Increased equipment efficiency for elevators and escalators
    A. Description of Proposal:
        a. Increased equipment efficiency for elevators and conveying systems in commercial buildings.
    B. Potentially significant impacts:
        a. A change in the use or quantity of energy.
    C. Alternatives:
        a. No action alternative.

11. Separate electric metering for low-rise multi-family buildings
    A. Description of Proposal:
        a. Separate electric metering for all dwelling units in multi-family buildings three stories or less, consistent with existing requirements for multi-family buildings four stories or more.
    B. Potentially significant impacts:
        a. A major change in the use or quantity of energy.
    C. Alternatives:
        a. No action alternative.
        b. Require individual tenant monitoring only without separate billing.

Response to Public Comments

The New York State Department of State (DOS) published a draft public scoping document for a Generic Environmental Impact Statement (GEIS) on proposals to repeal and replace the regulations that implement the New York State Uniform Fire Prevention and Building Code (Uniform Code) set forth in 19 NYCRR Parts 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228 and 1229 and the New York State Energy Conservation Construction Code (Energy Code) set forth in 19 NYCRR Part 1240 in August 2024. DOS provided a 30-day period for the public to review and provide written comments. The comment period was between August 7, 2024, and September 6, 2024. The following is a summary of comments and responses to those comments.

The public comments were focused on three provisions: (1) the fossil-fuel equipment and building systems prohibition in new buildings, (2) renewable energy (solar) for commercial buildings and (3) more restrictive building thermal envelope requirements.

Commenter Summary

1. Cornell University
2. Constantine Kontogiannis, Odyssey Energy Solutions, LLC.

Draft Public Scope Comments and Responses

Potential Significant Impacts

Comment 1 (Commenter 1): The GEIS should include as potentially significant impacts:

- The GHG impacts of disallowing continued connection to district thermal energy networks.
- Impact on electrical distribution infrastructure and readiness of energy supply, especially when coupled with the electrification of transportation.
- GHG impacts from shifting peaking demands from summer to winter as a result of the electrification of space conditioning (specifically during winter night/early morning periods) when solar generation is negligible.

Response 1: These potentially significant impacts will be considered as part of the overall discussion on potential significant impacts.

Comment 2 (Commenter 1): The GEIS should include as potentially significant impacts the impact of requiring inefficient, small-scale rooftop solar versus the utilization of high efficiency ground-mount systems, from which the energy produced can be allocated to individual buildings.

Response 2: The proposed requirement for renewable electricity generation systems with a power rating of not less than 0.75 watts per square foot stipulates "on-site renewable power generation." It is not limited to solar PV systems and it is not limited to rooftop installation. However, an alternate path is afforded due to roof area or building site limitations. See section C405.15 of ECCCNYS in the Notice of Rule in Development found on the Department of State's website at: https://dos.ny.gov/system/files/documents/2024/07/2024-07-26-proposed-changes-to-the-2020-ecccnys_com_final_draft.pdf.

Alternatives

Comment 3 (Commenter 1): The GEIS should include as an alternative a system to credit the addition or allocation of renewable energy (solar) assets that are part of a district system which serves the subject building in lieu of rooftop solar.

Response 3: This alternative will be considered as part of the overall discussion on potential alternatives.

Comment 4 (Commenter 1): The GEIS should include as an alternative different thermal envelope requirement based upon building type.

Response 4: This alternative will be considered as part of the overall discussion on potential alternatives.

Comment 5: (Commenter 2): The proposed action of fossil-fuel equipment and building systems prohibition in new buildings is premature and prohibition dates should be delayed.

Response 5: *Article 11 of the Energy Law and Article 18 of the Executive Law, as amended by Part RR of Chapter 56 of the Laws of 2023, statutorily prohibits fossil-fuel equipment and building systems in new buildings based on a certain timeline set forth in law. See Energy Law §11-104 and Executive Law §378(19).*

Comment 6 (Commenter 2): Limit the 0.75 W/SF requirement (or PPA alternative) to structures with flat membrane roofs or sloped standing seam roofs over 5,000 SF.

Response 6: The proposed requirement for renewable electricity generation systems with a power rating of not less than 0.75 watts per square foot stipulates on-site renewable power generation. It is not limited to solar PV systems and it is not limited to roof installation. However, an alternate path is afforded due to roof area or building site limitations. See section C405.15 of ECCCNYS in the Notice of Rule in Development found on the Department of State's website at: https://dos.ny.gov/system/files/documents/2024/07/2024-07-26-proposed-changes-to-the-2020-ecccnys_com_final_draft.pdf.

Other Comments

Comments were received in response to the Notice of Rule in Development for the Uniform Code that were environmental in nature. Since the comments did not concern provisions within the Draft Scope, they will be assessed as part of the Notice of Rule in Development for the Uniform Code. Such comments concerned expanding the provisions of the Uniform Code to regulate mobile fueling operations on waterbodies and the effects of open burning and indoor and outdoor solid fuel burning appliances on neighboring property.

REGULATORY IMPACT STATEMENT

(Uniform Code)

1. STATUTORY AUTHORITY

Article 18 of the Executive Law (§§ 370-383) establishes the State Fire Prevention and Building Code Council (hereinafter "Code Council") and authorizes such council to formulate a code to be known as the Uniform Fire Prevention and Building Code (hereinafter "Uniform Code").

Executive Law §377 provides that the Uniform Code shall "provide reasonably uniform standards and requirements for construction and construction materials for public and private buildings, including factory manufactured homes, consonant with accepted standards of engineering and fire prevention practices." Executive Law §372(3) defines "building" as "a combination of any materials, whether portable or fixed, having a roof, to form a structure affording shelter for persons, animals, or property." Included within the legislative findings and purposes for the Uniform Code in Executive Law §371(2)(b)(1) is that it shall "provide a basic minimum level of protection to all people of the [S]tate from hazards of fire and inadequate building construction" and to "reconcile the myriad of existing and potentially conflicting regulations which apply to different types of buildings and occupancies." Executive Law §377(1) also provides that the Code Council may, from time to time, amend particular provisions of the Uniform Code, as well as periodically review the entire Uniform Code to ensure that it effectuates the purposes of Article 18 of the Executive Law and the specific objectives and standards set forth in such article.

Executive Law §378 provides that the Uniform Code shall address the following subjects:

"1. Standards for the construction of all buildings or classes of buildings, or the installation of equipment therein, including standards for materials to be used in connection therewith, and standards for safety and sanitary conditions;"

"1-a. a. Standards for the construction of all new buildings and for the construction or renovation of existing buildings that undergo a substantial improvement, as defined by the council, located wholly or partially in an area designated on the applicable Federal Emergency Management ("FEMA") flood insurance rate map, as amended from time to time, as a Special Flood Hazard Area or Moderate Risk Flood Hazard Area, for the purposes of safeguarding life and property therein and thereabout from the hazards of sea level rise, flooding, saltwater corrosion, coastal or riparian erosion, storms, and other degradation that may arise out of characteristics of the coastal environment.

b. The standards in paragraph a of this subdivision shall (i) be developed to address future physical climate risk due to sea level rise, and/or storm surges and/or flooding, based on available data from nationally recognized sources or data produced by state agencies based on nationally recognized procedures, analysis, and studies predicting the likelihood of extreme weather events, including hazard risk analysis data if applicable, and after consultation with the department of environmental conservation, and (ii) if appropriate, provide for regular inspection, and repair, as necessary, of the interior structural elements of buildings."

"2. Standards for the condition, occupancy, maintenance, conservation, rehabilitation and renewal of certain existing buildings, structures and premises and for the safeguarding of life and property therein and thereabout from the hazards of fire, explosion or release of toxic gases arising from the storage, handling or use of combustible or hazardous substances, materials or devices;"

3. Standards for passenger elevators;

4. Standards for areas of public assembly;

5. Standards requiring the posting of certain notices in hotels, motels and lodging houses;

5-a. Standards for installation of carbon monoxide detectors in residential buildings;

5-b. Standards for installation of single station smoke detecting alarm devices;

5-c. Standards for inspections of solid fuel burning heating appliances, chimneys and flues;

5-d. Standards for installation of carbon monoxide detectors in commercial buildings;

6. Standards for the use of lead in water supply systems constructed or portions added on or after January first, nineteen hundred eighty-six;

7. “Standards for the construction of water supply systems which shall prohibit the use of asbestos cement pipe to convey potable water for any new or modified construction on or after January first, nineteen hundred ninety-two;”

8. Standards for hotels, motels and lodging houses requiring (in addition to any other requirement) portable smoke-detecting alarm devices for the deaf and hearing impaired of audible and visual design;

9. Standards requiring the posting of certain notices in certain buildings housing senior citizens;

10. Standards for assistive listening systems for new construction commenced after January first, nineteen hundred ninety-one requiring the installation of assistive listening systems at all places of public assembly;

11. Standards for buildings authorizing the installation of potable water heaters for all domestic uses, including space heating;

12. [as added by L. 1995, c. 132] Standards for fire safety for bed and breakfast dwellings;

12. [as added by L. 1995, c. 532] Standards for hospice residences;

13. Standards for the abandonment or removal of heating oil storage tanks and related piping in connection with the conversion of liquid fuel burning appliance to alternative fuel;

14. Standards for gates required to be provided in a swimming pool enclosure, standards for pool alarms for new or substantially modified swimming pools, and standards for hot tubs or spa safety covers;

15. Standards for temporary swimming pool enclosures used during the installation or construction of swimming pools;

16. Standards for the installation and maintenance of diaper changing stations in certain buildings; and

17. Standards requiring signs in certain buildings in which at least one diaper changing station is installed;

18. Standards for grease traps or interceptors located in places accessible to the public; and

19. Standards prohibiting the installation of fossil-fuel equipment and building systems in certain new buildings to support the goal of zero on-site greenhouse gas emissions and to help achieve the state's clean energy and climate agenda including the greenhouse gas reduction requirements set forth in the New York State Climate Leadership and Community Protection Act.

The current version of the Uniform Code is based on international codes developed and published by the International Code Council (hereinafter "ICC"). This rule making would repeal the current version of the Uniform Code, which is based primarily upon the 2018 editions of eight (8) individual model codes developed and published by the ICC, and adopt new text based primarily upon the 2024 editions of model codes developed and published by the ICC, but which incorporates New York State-specific requirements. The individual codes that would be included in the Uniform Code as proposed by this rule are as follows: the 2024 Residential Code of New York State (2024 RCNYS), the 2024 Building Code of New York State (2024 BCNYS), the 2024 Plumbing Code of New York State (2024 PCNYS), the 2024 Mechanical Code of New York State (2024 MCNYS), the 2024 Fuel Gas Code of New York State (2024 FGCNYS), the 2024 Fire Code of New York State (2024 FCNYS), the 2024 Property Maintenance Code of New York State (2024 PMCNYS), and the 2024 Existing Building Code of New York State (2024 EBCNYS). The Uniform Code includes many national reference standards which are incorporated by reference within the proposed rule, including but not limited to the Uniform Code Provisions for Rail Stations incorporated by reference within 19 NYCRR Part 1228, and a large number of National Fire Protection Association (NFPA) references such as the National Electric Code (NFPA 70) and various standards for the installation of sprinkler systems (NFPA 13, 13R, and 13D). The provisions set forth in 19 NYCRR Subpart 1229-2 for fossil-fuel equipment and building systems, as required

by Executive Law §378(19), are included for consistency with the amendments to the State Energy Conservation Construction Code ("Energy Code") set forth in the proposed rule making to amend 19 NYCRR Part 1240, as required by Energy Law §11-104(6)-(8).

Please note that the Energy Code will be the subject of a separate rule making. See the Regulatory Impact Statement for the Notice of Proposed Rule Making to amend 19 NYCRR Part 1240 for further detailed information.

2. LEGISLATIVE OBJECTIVES

Executive Law §371(2) states that it shall be the public policy of the State of New York to provide for the promulgation of a Uniform Code addressing building construction and fire prevention in order to provide a basic minimum level of protection to all people of the State from the hazards of fire and inadequate building construction. Executive Law §377(1) states that the Code Council is assigned the task of formulating the Uniform Code.

Executive Law §377 not only empowers the Code Council to amend provisions of the Uniform Code, but it also directs the Code Council to periodically review the entire Uniform Code to ensure that it effectuates the purposes, objectives, and standards set forth in Article 18 of the Executive Law. Further, Executive Law §371(2)(b)(5) provides that it is the policy of the State of New York to require new and existing buildings to keep pace with advances in technology concerning fire prevention and building construction.

Executive Law §371, as amended by Part RR of Chapter 56 of the Laws of 2023, provides that it is the policy of the State of New York to recognize that decarbonization of new and existing buildings is closely related to the State's clean energy and climate agenda as described in the New York Climate Leadership and Community Protection Act set forth in Chapter 106 of the Laws of 2019, and that the Uniform Code shall enable the State's clean energy objectives.

Executive Law §378, as amended by Chapter 831 of the Laws of 2022 and Chapter 19 of the Laws of 2023, indicates that the Uniform Code shall establish standards to safeguard life and property from future physical climate risk due to sea level rise, storm surges, and flooding.

Executive Law §378, as amended by Part RR of Chapter 56 of the Laws of 2023, provides that the Uniform Code shall, subject to stated exemptions, prohibit the installation of fossil-fuel equipment and building systems in certain new buildings.

Section 24 of Chapter 374 of the Laws of 2022 ("Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022) states that a building code applicable to commercial or residential buildings or construction may not prohibit the use of a substance allowed pursuant to the United States Environmental Protection Agency's significant new alternatives policy to implement 42 U.S.C. 7671k, provided that such substance and the refrigeration or air condition system or other equipment or products utilizing such substance are designed, installed, and used in accordance with nationally recognized published standards that protect building occupant safety and reduce fire risks.

Upon review of the current text of the Uniform Code, the Code Council has concluded that it would further the purposes, objectives, and standards of Article 18 of the Executive Law to propose this rule, which would repeal the current Uniform Code text and replace it with updated text based upon the 2024 RCNYS, 2024 BCNYS, 2024 PCNYS, 2024 FCNYS, 2024 MCNYS, 2024 FGCNYS, 2024 PMCNYS, and 2024 EBCNYS.

3. NEEDS AND BENEFITS GENERAL

The current version of the Uniform Code is based upon the 2018 editions of the ICC model codes with New York specific amendments to align the Uniform Code with New York State's statutes and special conditions. This rule making will repeal the current version of the Uniform Code and replace the text with the following New York specific code books based primarily upon the 2024 editions of the ICC model codes: 2024

RCNYS, 2024 BCNYS, 2024 FCNYS, 2024 PCNYS, 2024 MCNYS, 2024 FGCNYS, 2024 PMCNYS, and 2024 EBCNYS.

This change is necessary for New York State to remain consistent with the rest of the nation in matters involving building construction and to provide a sufficient level of building safety to its residents. It is also necessary if New York State wishes to keep pace with evolving technology concerning fire prevention and building construction and to have a building and fire prevention code which is consistent with nationally accepted model codes. The 2024 model codes address new technology, such as powered micro-mobility devices (more commonly known as lithium battery powered bikes, scooters, etc.), lithium batteries, and energy storage systems. The model codes also add new requirements for the use of mass timber, adult changing stations, shipping container construction, occupiable roofs, and inflatable amusement devices; topics discussed further below.

Adopting updated ICC model codes avoids a broad range of devastating losses[1] and saves money. The United States experiences a multitude of disasters each year.[2] The cost of cleaning up and rebuilding destroyed homes, businesses, and equipment and infrastructure is immense and growing.[3] A 2024 Climate Resiliency study found that each $1 of investment in resilience and disaster preparedness reduced a community's economic costs after an event by $7.[4] Additionally, every $1 invested in resiliency and disaster preparedness saves $13 in economic impact, damage, and cleanup costs after the event.[5] The resiliency and preparedness investments

[1] Natural disasters are responsible for a broad range of devastating losses: loss of life and injuries; damage to homes, businesses, infrastructure, and the environment; mental trauma; displacement; disruption of normal life; loss of income; and damage to local and regional economies. *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. ES-1.
[2] *The Preparedness Payoff: The Economic Benefits of Investing in Climate Resilience*, United States Chamber of Commerce 2024 p. 4.
[3] *The Preparedness Payoff: The Economic Benefits of Investing in Climate Resilience*, United States Chamber of Commerce 2024 p. 4.
[4] *The Preparedness Payoff: The Economic Benefits of Investing in Climate Resilience*, United States Chamber of Commerce 2024 p. 4, 8.
[5] *The Preparedness Payoff: The Economic Benefits of Investing in Climate Resilience*, United States Chamber of Commerce 2024 p. 4, 7.

analyzed in the 2024 study included adopting building codes to prevent or reduce damage from hazards.[6] A 2019 study by National Institute of Building Sciences (NIBS) found that adopting the latest building codes saves $11 per $1 invested.[7] The NIBS study also demonstrated how strengthened building codes for risk mitigation results in financial and economic benefits, which are expected to accrue over the life of buildings designed and constructed to updated ICC model codes.[8] Low-income housing built to updated ICC model codes reduces impacts to those least able to absorb them.[9] Buildings that are designed and constructed to the updated ICC model codes withstand the effects of natural hazard events, including flooding, high winds, and earthquakes, better than buildings that are not.[10] A logical way to help address affordable housing is to make the inventory hazard resilient, thereby extending the housing investment value for homeowners with limited resources to help absorb the acute shock of a disaster event.[11]

In addition, the Uniform Code is being updated based on discussions and recommendations from various work groups and State agencies, such as adding residential sprinklers for townhouses that are served by a municipal water supply system based on discussions by the Workgroup established by the Code Council at the June 2019 meeting, improvements to flood resistant construction language pursuant to recommendations by the New York State Department of Environmental Conservation (DEC), integrating other recommendations from the Code Council Workgroup including: emergency responder radio coverage in existing buildings, updating to the current NFPA sprinkler standards, the use of 10-year battery backups in smoke detectors, interconnection of new smoke alarms using wireless technology, updated versions of UL 217 (smoke alarms) and UL 268 (smoke

[6] *The Preparedness Payoff: The Economic Benefits of Investing in Climate Resilience*, United States Chamber of Commerce 2024 p. 20.
[7] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. ES-7. 1-1, 8-1; *Guide to Expanding Mitigation*, U.S. Federal Emergency Management Agency p. 3, 7.
[8] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 1-1.
[9] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. ES-7.
[10] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 1-1.
[11] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 7-14.

detectors), automatic sprinkler system provisions (55 feet vs 30 feet building height), and the Performance Code (previously incorporated through NYCRR Part 1205). Additionally, proposed recommendations from the Inter-Agency Fire Safety Working Group relating to Energy Storage Systems created by the Governor in July 2023 have been integrated, as discussed further below.

The significant changes to the existing Uniform Code are separately discussed below outlining the needs and benefits and any associated costs.

2024 RCNYS

Residential Sprinklers

2024 RCNYS: Section R309

Needs and Benefits:

This code amendment expands the requirements for the installation of automatic fire sprinkler systems in buildings regulated by the Residential Code.[12] These requirements consist of expanding the requirement for the installation of automatic fire sprinkler systems to include all new townhouse units that are served by a municipal water supply system. This proposal also adds language to Appendix BO (formerly Appendix J) requiring automatic sprinkler systems to be installed in new townhouse units added to existing townhouses, as well as townhouse units in which an addition increases the floor area by more than 50%. Currently, in the 2020 Residential Code of New York State (2020 RCNYS), only live/work units, owner-occupied lodging houses, and new one- and two- family dwellings and townhouse units having a height of three stories above grade plane or

[12] The following buildings not more than three stories above grade plane in height are regulated under the Residential Code: one- and two-family dwellings, townhouses, bed and breakfast dwellings, live/work units, and owner-occupied lodging houses having five or fewer guestrooms.

more and some instances in existing buildings undergoing alterations or additions, require an automatic fire sprinkler system.

Manufactured homes are not required to have an automatic sprinkler system installed under the 2020 RCNYS, and this provision is unchanged by the proposed amendment. The United States Department of Housing and Development (HUD) promulgates standards for the design and construction of manufactured homes. In 2024, HUD updated the "*Manufactured Home Construction and Safety Standards*" to allow up to four dwelling units to be included in a single manufactured home. Depending on configuration, separation between units, exit layouts, and other factors, single manufactured homes with 3 or 4 dwelling units may fall under the definition of "townhouse" in the Uniform Code. Consequently, the requirements for automatic sprinkler systems in townhouses has been updated to add an exception for manufactured homes.[13] As of the 2024 standard, HUD does not require automatic sprinkler systems in manufactured homes, and as such, this exception was added to prevent conflict between the Uniform Code and HUD standards.

In 2006, the International Residential Code (IRC) first included fire sprinkler systems as an optional appendix before moving them to the body of the code in 2009.[14] Additionally, the 2009 edition of the IRC included the requirement for fire sprinklers in new townhouses. This requirement has been retained in the 2012, 2015, 2018, 2021, and 2024 editions of the IRC. While only two states, California and Maryland, include requirements for sprinklers in one and two-family dwellings, currently nine states include a requirement for townhouse sprinklers.[15] This code amendment would align the New York State Residential Code more with the IRC and other states.

[13] Amendment 89 FR 75737 to 24 CFR Part 3280, published September 16, 2024, and effective March 17, 2025.
[14] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. 3.
[15] The nine states include California, Hawaii, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, Oklahoma, and Pennsylvania. *Fire Sprinkler Mandates: State by State Data*, National Association of Home Builders 2019 at p. 4, 6, 7, 8, 9.

At the June 2019 Code Council Meeting, a Workgroup was created to evaluate specific existing and proposed new code provisions related to the Uniform Code. One of the thirteen topics assigned to the Workgroup was a new requirement for townhouses that are served by a municipal/public water supply system to have automatic sprinkler system installed, regardless of the number of stories. The Workgroup was tasked with reviewing the technical feasibility and barriers to adding this new requirement. The Workgroup issued a summary of their review in November 2021.[16]

Townhouses are a unique structure regulated by the 2020 RCNYS in that, unlike many of the other buildings regulated under the 2020 RCNYS, they are one building containing three or more single family dwelling units called townhouse units. This structure gives the owner/occupant of a townhouse unit little to no control over the adjacent townhouse units' use and maintenance. To mitigate this concern from a fire safety perspective, the 2020 RCNYS requires additional protections, including proper fire separation and fire-resistant rated construction between the dwelling units; a separate means of egress for each dwelling unit; and open space on at least two sides. Fire-resistant construction of townhouses is covered under Section R302.2 of the 2020 RCNYS, which requires the walls separating the individual dwelling units of townhouses to be either two 1-hour rated assemblies or a common wall. Where the townhouse is provided with a fire sprinkler system, the common wall must be not less than a single 1-hour rated assembly; otherwise, without a sprinkler system, the common wall must be not less than a 2-hour rated assembly.

Installing a sprinkler system in townhouse units may result in several cost savings. There is a reduced construction cost when installing an automatic sprinkler system by opting for the 1-hour common wall under Section R302.2.2 (1) versus the 2-hour common wall or double-wall option. Other potential reductions in costs include increased fire hydrant spacing under Section 507.5 of the 2020 Fire Code of New York State and

[16] The summary can be found here https://dos.ny.gov/system/files/documents/2022/02/code-council-2020-21-workgroup-executive-summary-with-attachments.pdf

different fire-resistance rated construction requirements for exterior walls per Section R302.1 of the 2020 RCNYS.

The type of automatic sprinkler systems that would be required by the proposed change typically require a flow not much greater than the normal domestic demand already required by the Uniform Code (a range of 20 to 26 gallons per minute) and may only result in a slightly larger, but not uncommonly large service line, such as a one-inch service versus ¾-inch service. Additionally, the type of system is equated to the typical plumbing system already being installed within townhouses and would, therefore, not necessarily require another contractor but could be performed by the plumbing contractor already included with the construction.[17]

The proposed residential code provides several new construction reliefs that will reduce the cost of a townhouse unit with a sprinkler system. Section R302.2.2 allows for sprinkler pipes to be installed with the common wall cavity. This allows sprinklers pipes to be constructed within the conditioned space avoiding locating system components in an unconditioned attic, and therefore eliminating the need for a dry system or a system with anti-freeze. A new Exception 6 in Section R302.2.6 introduces another construction relief option. This exception allows a townhouse unit to be built without needing to be structurally independent from adjacent townhouse units, provided that a Section P2904 or NFPA 13D automatic sprinkler system is installed throughout the unit.

Sprinklers protect occupants and reduce the impact of fires.[18] Sprinklers reduce the risk of civilian and firefighter fatalities and injuries.[19] As mentioned, townhouses are a unique type of building in that they have

[17] There is no statewide license requirement for the installation of automatic sprinklers; NFPA 13D Section 4.5 states "The layout, calculation, and installation of sprinkler systems installed in accordance with this standard shall only be performed by people knowledgeable and trained in such systems." and Section 2904 requires that certain modifications to the system be approved by a fire protection specialist. The authority having jurisdiction will need to verify that the technician meets the requirements of the Uniform Code and the AHJ may do this through a local license program as some AHJs already require.
[18] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1, 12.
[19] *Benefit Cost Analysis of Residential Fire Sprinkler Systems*, U.S. Department of Commerce National Institute of Standards and Technology, Office of Applied Economics Building and Fire Research laboratory Sept. 2007 at p. iii, ES-1; *US Experience with*

three or more attached dwelling units in which fire can more easily spread from one unit to the next, resulting in more damage and chances of serious death or injury. An automatic sprinkler system could reduce the risk of fires easily spreading from one townhouse to another. Unlike detached homes, where an owner has direct control over personal safety, townhouses are multifamily structures that include many unrelated individuals and families living in attached units. There is no "owner's choice" argument in the case of townhouses because the fire safety of at least two other families relies on the behavior of someone else, i.e. a neighbor's accident, carelessness, or perhaps even unlawful activities, will impact an individual's safety, family's safety, pets' safety, and property. There have been many incidents where a fire in one townhouse unit had catastrophic consequences on neighbors who had nothing to do with the cause of the fire. Residential fire sprinklers prevent such tragedies by keeping fires contained to the unit of origin, either controlling the fire or extinguishing it altogether.

The National Fire Incident Reporting System codes townhouses as multifamily occupancies, separate from one- and two-family dwellings, recognizing that the risk associated with townhouse fires is that of a multifamily occupancy.[20]

Research conducted by the National Institute of Standards and Technology and Underwriters Laboratories on residential fire behavior and the value of residential fire sprinklers to firefighter and occupant safety provides support for this code amendment. Research shows that the rate of fire growth in modern residential structures has increased, partly attributed to an increased heat release rate and an increased heat of combustion associated with modern synthetic materials used in household goods and furnishings. Faster fire

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Sprinklers, National Fire Protection Association October 2021 at p. 1; *Benefits of Residential Fire Sprinkler: Prince George's County 15-Year History*, Home Fire Sprinkler Coalition August 2009 at 4; *Stakeholder Perceptions of Home Fire Sprinklers*, Fire Protection Research Foundation September 2016 at p. 1.

[20] *Determining Property Use at the Incident Location*, U.S. Fire Administration, https://www.usfa.fema.gov/nfirs/coding-help/property-use/

growth in a multifamily structure means that occupants of adjacent units will be endangered more quickly than was the case with legacy furnishings.

Townhouses also place significantly increased demand on fire service resources compared to detached dwellings. Townhouses increase the complexity of rescue operations, and firefighting is hampered because fire spread into adjacent units cannot be easily followed by firefighters from unit to unit. Openings in townhouse unit common walls are prohibited, which prevents firefighters from being able to cross between units without leaving the building.

From 2015 to 2019, in houses equipped with sprinkler systems, the civilian death rate per reported home fire was 88 percent lower, and the civilian injury rate per reported home fire was 28 percent lower when compared to fires in homes with no sprinkler systems.[21] The term home included multifamily homes like townhouses.[22] In studies of Scottsdale, Arizona, and Prince George's County, Maryland, it was shown that residences with sprinkler systems suffered fewer deaths, injuries, and property damages than those without.[23]

Sprinklers begin to control a fire when they activate, making the situation less dangerous for responding firefighters in addition to building occupants.[24] The rate of firefighter injuries was 78 percent lower in home fires where sprinklers were present than in homes with no sprinkler system.[25] The term home included multifamily homes like townhouses.[26]

[21] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.
[22] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1. n.i.
[23] *Benefit Cost Analysis of Residential Fire Sprinkler Systems*, U.S. Department of Commerce National Institute of Standards and Technology, Office of Applied Economics Building and Fire Research laboratory Sept. 2007 at p. 1.
[24] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 4.
[25] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.
[26] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1. n.i.

Sprinklers limit the spread of fires and are effective in extinguishing fires.[27] In buildings equipped with automatic sprinkler systems, fire data shows fire spread is usually confined to the object or room of origin.[28] In the United States, from 2015 to 2019, in structural fires large enough to activate sprinklers, sprinklers operated in 92 percent of such fires and when operational, were effective at controlling the fire in 96 percent of these incidents.[29] Overall, sprinkler systems operated and were effective in 88 percent of fires considered large enough to activate them.[30] In reported home fires in which sprinklers were present, the fire was confined to the room of origin 97 percent of the time compared to 74 percent in homes with no sprinkler system.[31] The term home includes multifamily homes like townhouses.[32]

While sprinkler systems designed to NFPA 13D or section P2904 of the RCNYS are only intended to provide for life safety, such sprinkler systems often protect property and reduce property loss.[33] Analysis of national fire data found that residents of single-family dwellings equipped with sprinkler systems experienced reductions in the risk of uninsured direct property losses and uninsured indirect costs.[34] Over the 2002 to 2005 nationwide study period, houses equipped with smoke alarms and a fire sprinkler system experienced 32 percent less direct property losses and indirect costs resulting from fire than houses equipped only with smoke alarms.[35] Indirect costs in one- and two-family dwellings include temporary shelter, missed work, extra food costs, legal

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[27] *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 12.
[28] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.
[29] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.
[30] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.
[31] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.
[32] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1. n.i.
[33] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1, 4. *Benefits of Residential Fire Sprinkler: Prince George's County 15-Year History*, Home Fire Sprinkler Coalition August 2009 at p 4, 8; *Stakeholder Perceptions of Home Fire Sprinklers*, Fire Protection Research Foundation September 2016 at p. 1; *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 4.
[34] *Benefit Cost Analysis of Residential Fire Sprinkler Systems*, U.S. Department of Commerce National Institute of Standards and Technology, Office of Applied Economics Building and Fire Research laboratory Sept. 2007 at p. iii, ES-1
[35] *Benefit Cost Analysis of Residential Fire Sprinkler Systems*, U.S. Department of Commerce National Institute of Standards and Technology, Office of Applied Economics Building and Fire Research laboratory Sept. 2007 at p. ES-1, 39.

expenses, transportation, emotional counseling, and child care.[36] From 2015 to 2019, the average property loss per home fire was 62 percent lower in reported fires where sprinklers were present compared to fires in homes with no sprinkler system.[37] The term home includes multifamily homes like townhouses.[38] The average property loss in the sprinklered-home fire incidents was $14,000, compared to an average loss of $179,896 in un-sprinklered home fire incidents.[39]

Water damage is a significant cause of property damage in home fires. The average water output of a residential fire sprinkler is significantly less than that of a typical fire hose, which means that the activation of a fire sprinkler will create far less water damage than a fire hose.[40] Since water damage is a major source of property damage in many fire incidents, having a lower water output will help reduce water damage and has the potential to significantly lower property losses.

Critics of home fire sprinklers claim that requiring sprinklers may impact home affordability, the cost of new homes, consumer choice, and owner rights.[41] However, in a 2018 California study and a 2009 Maryland study, no evidence was found of sprinklers impacting housing supply or cost.[42] The 2018 California study found that after the statewide requirement for home fire sprinkler systems was implemented in 2011, single-family building permit numbers increased across the state.[43] The study also showed that, from 1990 through 2016, when compared to state and county data, early adopter jurisdictions of the sprinkler ordinance experienced a

[36] *Benefit Cost Analysis of Residential Fire Sprinkler Systems*, U.S. Department of Commerce National Institute of Standards and Technology, Office of Applied Economics Building and Fire Research laboratory Sept. 2007 at p. 24.
[37] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1.
[38] *US Experience with Sprinklers*, National Fire Protection Association October 2021 at p. 1. n.i.
[39] *Communities with Home Fire Sprinklers: The Experience in Bucks County, Pennsylvania*, Fire Planning Associates, Inc. November 2011 at p. 4.
[40] *Benefits of Residential Fire Sprinkler: Prince George's County 15-Year History*, Home Fire Sprinkler Coalition August 2009 at p. 8; *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 21.
[41] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. ii; *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 24.
[42] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. 4.
[43] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. 8, 10.

similar increase and decrease in construction costs, indicating that the sprinkler requirement had very little to no impact.[44]

Cost:

Historically, the first and largest issue associated with the requirement for residential sprinkler systems is cost.[45] Fire sprinkler systems have become much more affordable over the past several decades.[46] The biggest costs associated with residential sprinklers are the initial purchase and installation of the system.[47]

A ten-year study of Scottsdale, Arizona, where a residential automatic sprinkler requirement was adopted in 1985 and fully implemented on January 1, 1986, found that the installation costs reduced dramatically from $1.14 square foot to $0.59 square foot after adoption of the sprinkler requirement.[48] The primary reasons behind the cost reduction were identified as: the mandatory requirement for the community, established standards identified for all builders, increased competition for the available business, better availability of quality materials, and an increase in the efficiency of those installing the systems, resulting in better and quicker installations.[49] A 2013 study by NFPA determined that the national average to install a home fire sprinkler system was $1.35 per square foot.[50] Looking solely at the two states (California and Maryland) that have statewide requirements for all new construction, the average cost drops to $1.16 per square foot.[51] This 2013 study illustrates that widespread adoption lowers the cost of the sprinklers.[52]

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[44] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. 4.
[45] *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 19.
[46] *Benefit Cost Analysis of Residential Fire Sprinkler Systems*, U.S. Department of Commerce National Institute of Standards and Technology, Office of Applied Economics Building and Fire Research laboratory Sept. 2007 at p. 26.
[47] *Benefit Cost Analysis of Residential Fire Sprinkler Systems*, U.S. Department of Commerce National Institute of Standards and Technology, Office of Applied Economics Building and Fire Research laboratory Sept. 2007 at p. iii, ES-1.
[48] *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 4, 9, 26
[49] *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 19, 26-27.
[50] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. 3.
[51] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. 3.
[52] *Impact of Home Fire Sprinkler System Requirements in California*, Fire Protection Research Foundation 2018 at p. 3.

The cost of sprinkler systems in townhouses can vary widely depending on a number of variables including geographic region, scale and size of installation, type of system, and features of the design and system that were included in the installation.

The Department of State Division of Building Standards and Codes received cost estimates that have varied widely from sources such as home builders, contractors, installers, the fire industry, and other jurisdictions who have implemented similar requirements. These costs have been between an average of $4,500 and $40,000 depending on water source, geographic location, system type, and other factors. This estimate is based on an average size single-family home of 2,500 square feet. As noted above however, based on other jurisdictions who have implemented this requirement, costs are anticipated to come down and stabilize over time. The dollar amount is estimated, as the information given is supplemented by comments received on the Notice of Rule in Development from multiple industry experts. The requirement for residential sprinkler systems for townhouse units are restricted to such townhouse units being connected to municipal/public water. This will remove costs associated with a private water supply, such as pumps, wells and need for water storage. As detailed cost estimates were not provided, reductions to the dollar amount have not been made to account for the unnecessary items.

The residential sprinkler system is very reliable and minimal maintenance is required once the system has been placed in service.[53] The individual homeowner can easily check the system for readiness.[54]

Alternatives:

One alternative is not to adopt the ICC language and instead keep the 2020 RCNYS sprinkler requirements as noted above. However, this alternative does not address the risks and hazards associated with

[53] *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 28.
[54] *Saving Lives, Saving Money Automatic Sprinklers A 10 Year Study: A detailed history of the effects of the automatic sprinkler code in Scottsdale, Arizona*, Home Fire Sprinkler Coalition 1997 at p. 28.

residential fires in townhouses. In the United States, homes including townhouses are where the vast majority of structure fire deaths occur.[55] In 2021 in the United States, an estimated 361,000 total residential structure fires caused 2,880 civilian deaths; 11,500 civilian injuries and $8.9 billion in direct property damage.[56] For this reason, this alternative was rejected.

Another alternative is to limit the requirement to install automatic sprinkler systems to specific locations within the dwellings regulated by the Residential Code. However, fires can start in any area of a dwelling, and new technologies (such as those utilizing lithium-ion batteries) can be located in many parts of the dwelling, presenting possible fire hazards throughout the dwelling. Installing sprinklers only in certain areas of a dwelling would not create the level of fire protection described in the needs and benefits section above. Automatic sprinkler systems designed to NFPA 13D or section P2904 of the RCNYS focus solely on life safety, not property protection, focusing on egress pathways and occupant evacuation. Any further reduction in sprinkler system coverage is likely to impact the life safety protection of the system. Additionally, much of the cost of installing a sprinkler system is constant regardless of system size, so further limiting requirements to only certain areas may not significantly decrease costs and would not achieve the ultimate goal of life safety.

A third alternative is to require all new one- and two-family dwellings to install automatic sprinkler systems as proposed in the Notice of Rule in Development. However, the Division of Building Standards and Codes received comments and input indicating that the fire hazards in townhouses are greater in multi-family townhouse structures than one- and two-family dwellings and such fire hazards cannot be fully mitigated by townhouse construction or residents' behavior. The Division also received numerous public comments concerned with housing affordability due to the cost associated with requiring automatic sprinkler systems for

[55] *Communities with Home Fire Sprinklers: The Experience in Bucks County, Pennsylvania*, Fire Planning Associates, Inc. November 2011 at p. 3.
[56] *Fire Loss in the United States During 2021*, National Fire Protection Association (NFPA) Sept. 2022 at p. 6.

all new one- and two-family dwellings. Since automatic sprinkler systems are not currently required in all residential homes in New York State, there is lower demand for contractors skilled in the installation of such systems, resulting in increased costs associated with such systems. Requiring sprinklers systems in townhouses will increase demand for such contractors, which will likely result in a decrease in cost resulting from an increase of contractors providing such services. Builders and developers are likely to become more familiar with the installation process for residential sprinkler systems, which may also reduce costs by streamlining the incorporation of sprinkler system installation into the overall construction process. Accordingly, the draft language in the Notice of Rule in Development was modified to require sprinkler systems in townhouses served with municipal water to accommodate both the fire safety concerns associated with this specific building type as well as overall housing affordability.

The last alternative is to require automatic sprinkler systems in townhouses not supplied by municipal water supply system. However, the costs associated may be much higher for townhouses not supplied by municipal water system because it may require the additional requirement of an onsite water storage tank and a pump. Due to the uncertainty of the on-site well parameters including: storage volume, depth, well refill rate, and water quality; that may drastically affect the cost of installing a sprinkler system for a townhouse, this alternative was rejected.

2024 EBCNYS

Temporary use of buildings in emergencies

2024 EBCNYS: Appendix E (New)

Needs and Benefits:

This code amendment includes the International Existing Building Codes' (IEBC) new appendix that details provisions for the temporary safe and proper use of a building for emergency purposes when a State or

Federal emergency declaration has been issued. The main goal of this appendix is to provide guidance for designers, engineers, architects, and fire and building code officials, facilitating the temporary use of existing buildings while adhering to minimum code requirements. During an emergency, the response must be immediate, so there is insufficient time for full plan review and inspection procedures that would be ordinarily required. Existing buildings may be used for occupancies other than those for which they were intended, and it may be necessary to erect temporary structures to address immediate needs. Nationwide examples include housing needs due to mass evacuations during west coast fires and the COVID-19 pandemic which overloaded many community health care systems, causing an urgent need for additional temporary medical facilities. This appendix is a guidance document for emergencies that exceed pre-planned emergency responses.

The proposed appendix includes a definition of emergency and temporary use in Section 102. Buildings and structures can be used in emergency situations temporarily for a period of up to 180 days without requiring a formal change of occupancy. Uses can include, but are not necessarily limited to, the functional designations of the occupancy group descriptions of Building Code Section 302.1: Assembly (A), Business (B), Educational (E), Factory & Industrial (F), High Hazard (H), Institutional (I), Mercantile (M), Residential (R), Storage (S), Utility and Miscellaneous (U). The appendix specifies requirements for:

1. submitting scoping documents and permit applications to code officials for review;
2. maintaining the building's structural strength, fire safety, means of egress, accessibility, light, ventilation, and sanitary requirements of the code as necessary to provide a reasonable level of safety, health, and general welfare;
3. compliance with overall general standards for the building relative to its emergency use such as maintaining building accessibility and connecting temporarily to utilities;
4. increased occupant loads beyond maximum allowable occupant load(s);
5. tiny or manufactured homes used as emergency housing; and temporary health occupancies.

Cost:

This code change amendment is not expected to cause a change in the cost of construction. This appendix is only intended to provide a resource in emergency situations. Currently, no formal code requirements provide guidance on how to address emergency situations. This appendix provides a framework to make enforcement more consistent and aligned with the requirements of the ICC codes.

A change of use or occupancy typically requires compliance with Chapter 10 of the EBCNYS, resulting in additional costs due to required alterations, such as adding sprinkler systems, increasing fire protection ratings, modifying means of egress, and improving building accessibility. Appendix E helps local governments, emergency management officials, and property owners promptly identify buildings for emergency use that can be evaluated by the code official for minimum code compliance with minimal cost implications to bring a facility online for its intended temporary use. For instance, if a vacant B-occupancy tenant space without a sprinkler system is being used temporarily as a school during an emergency, it may not require the new sprinkler system mandated by Chapter 10. This is because appendix E allows the code official to assess existing fire protection systems according to the NFPA 550 standard or to allow a fire watch instead of installing a sprinkler system.

Alternatives:

An alternative is to not adopt Appendix E for the temporary use of buildings in emergencies. However, this alternative would leave local governments without viable options to address certain types of emergency situations and could result in property owners having to individually seek variances on a property-by-property basis in order to function as another occupancy temporarily during an emergency. This will lead to a lack of uniformity and varying degrees of safety across the State. New York State experienced this very issue during the COVID-19 pandemic, where the need for temporary uses was immediate and there was insufficient time to obtain variances. For these reasons, this alternative was rejected.

Another alternative is to limit the approved locations of those buildings temporarily used for emergencies. However, since there are approximately 1,600 local governments within New York State that cover a wide variety of geographic and environmental characteristics, creating location limitations which apply to all areas is very challenging. Such restrictions, if desired, are most appropriately enacted at a local level, where relevant local characteristics can be fully considered and included in the development process. For this reason, this alternative was rejected.

2024 FCNYS

Powered micromobility devices

2024 FCNYS: Sections 202, 322

Needs and Benefits:

This code amendment added a new definition for powered micromobility devices and established charging and storage location requirements for powered micromobility devices. This code amendment also addresses hazards associated with charging through provisions for listing, separation requirements, and use of detection systems.

The New York State Division of Homeland Security and Emergency Services (DHSES) convened a multi-agency working group to examine the issue of lithium-ion battery fires, particularly as it relates to micromobility devices, and to develop recommendations to mitigate the risk of lithium-ion battery fires.[57] The New York State Lithium-ion Battery Working Group recommended to update the Uniform Code to specifically address the use of powered micromobility devices based on the 2024 International Fire Code (IFC) provisions.

[57] The New York State Lithium-ion Battery Working Group was comprised of DHSES, NYSERDA, DMV, DOS, DOT, DPS, DEC, ESD, and NYPA.

Powered micromobility devices include any small, low-speed, electric-powered transportation devices, including electric-assist bicycles (e-bikes), electric scooters (e-scooters), and other small, lightweight, wheeled electric-powered conveyances.[58] Electric micromobility devices are usually powered by lithium-ion or lithium metal type batteries and are typically charged using common residential 120V AC outlets and charging time can range from 2.5 to 9 hrs., depending on battery type and charger.[59] There has been a significant increase in the use of micromobility devices in the recent years. The Light Electric Vehicle Association, an industry group representing light electric vehicle retailers, dealers, distributors, manufacturers, and suppliers, estimates that about 880,000 e-bikes were imported to the U.S. in 2021, double the amount imported in 2020. The global lithium battery market size was valued at approximately $60 billion in 2022 and projected to reach over $300 billion by 2032.[60]

Improper charging of these devices can lead to a thermal runaway incident, which can result in high temperatures, the release of potentially hazardous gases, fire, and explosions. Thermal runaway can drastically increase the hazard of a fire event, and there have been significant fires due to these devices. The U.S. Consumer Product Safety Commission (CPSC) stated that there have been more than 200 incidents from 2021 through the first quarter of 2023 in which micromobility devices overheated or caught fire – leading to the deaths of 19 people.[61] From January 1, 2021 through November 28, 2022, CPSC received reports of at least 208

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[58] *Micromobility: A Travel Mode Innovation*. U.S. Dept of Transportation Federal Highway Administration. https://highways.dot.gov/public-roads/spring-2021/02#:~:text=Building%20upon%20the%20Society%20of%20Automotive%20Engineers%20International%27s,scooters%20%28e-scooters%29%2C%20and%20other%20small%2C%20lightweight%2C%20wheeled%20conveyances.

[59] *Electric Mobility Basics*. U.S. Dept of Transportation. https://www.transportation.gov/urban-e-mobility-toolkit/e-mobility-basics/micromobility

[60] *Lithium-Ion Battery Market is Slated to be Worth USD $307.8 Billion by 2032*. GlobeNewwire (February 28, 2023) https://www.globenewswire.com/en/news-release/2023/02/28/2617605/0/en/Lithium-Ion-Battery-Market-is-Slated-to-be-Worth-USD-307-8-Billion-by-2032-Market-Us.html#:~:text=The%20lithium%20ion%20battery%20market,18.3%25%20from%202023%20to%202032 (Last viewed Oct. 28, 2024)

[61] *What's driving the battery fires with e-bikes and scooters?* NPR (March 11, 2023) https://www.npr.org/2023/03/11/1162732820/e-bike-scooter-lithium-ion-battery-fires (Last viewed September 23, 2024)

micromobility fire or overheating incidents from 39 states, resulting in at least 19 fatalities, including five associated with e-scooters, 11 with hoverboards, and three with e-bikes.[62] In NYC specifically, the FDNY has reported at least 76 fires, 60 injuries, and 7 deaths associated with lithium-ion batteries in 2023 alone.[63] The proposed amendment sets reasonable safety requirements for the indoor charging of these devices. The proposed amendment includes the requirement for the device to be listed and labeled and for associated charging equipment to be compatible with the device and its battery. The proposed amendment includes a prohibition on utilizing residential occupancy for operating a rental, sales, and service business for these devices. Fire departments have reported instances of such residential usage.

Cost:

The proposed amendment may increase the cost of construction due to the requirements to install additional electrical receptacles, depending on the number of charged devices, and a fire alarm system, if not already required. Additional square footage for charging areas may be necessary due to separation requirements and limitations on stacking during charging, which would cause increased construction costs depending on the type of building.

The proposed amendment requires each charging device to be connected directly to an individual receptacle, which may increase the number of receptacles required to be installed depending on the number of devices to be charged. Based on RSMeans cost data, installing additional receptacles during new construction is

[62] CPSC Calls on Manufacturers to Comply with Safety Standards for Battery-Powered Products to Reduce the Risk of Injury and Death. U.S. Consumer Product Safety Commission (Dec. 20, 2022) https://www.cpsc.gov/Newsroom/News-Releases/2023/CPSC-Calls-on-Manufacturers-to-Comply-with-Safety-Standards-for-Battery-Powered-Products-to-Reduce-the-Risk-of-Injury-and-Death#:~:text=From%20January%201%2C%202021%20through%20November%2028%2C%202022%2C,e-scooters%2C%2011%20with%20hoverboards%20and%20three%20with%20e-bikes. (Last viewed Sep. 23, 2024)

[63] *2 critically injured in NYC fire have died as FDNY confirms blaze sparked by lithium battery.* New York Post (May 9, 2023) https://nypost.com/2023/05/09/2-critically-injured-in-nyc-fire-die-fdny-confirms-lithium-battery-cause/. (Last viewed Oct. 28, 2024)

estimated to cost between $70 to $200 per receptacle.[64] Retrofitting an existing structure to install additional receptacles is estimated to cost $100 to $400 per receptacle.

The proposed amendment requires installation of a fire alarm system which, if not already required based on the occupancy type, will result in a cost increase. Installation of a fire alarm system is estimated to cost between $2 to $12 per square foot depending on type and complexity of the system.

Alternatives:

An alternative is to not adopt any provisions addressing powered micromobility devices. This alternative does not address the fire safety issues of powered micromobility devices and does not adequately protect life and property. Fire incidents involving these devices have already occurred in New York State, and the number of such incidents may continue to grow as the devices gain further popularity. For these reasons, this alternative was rejected. Another alternative considered was to regulate lawncare equipment and other battery-powered devices, however this alternative was rejected to remain consistent with the ICC model code provisions which specifically target micromobility devices due to the safety concerns associated with their use and storage and in light of recent incidents throughout the State.

Inflatable amusement devices

2024 FCNYS: Sections 202, 3101.1, 3106

Needs and Benefits:

This code amendment adds the new 2024 IFC definition for “inflatable amusement device” as a device made of flexible fabric or other combustible materials that is inflated by one or more air blowers providing internal air pressure to maintain its shape which are typically designed for recreational activities that allow

[64] www.rsmeansonline.com (2024)

occupants to bounce, climb, slide, negotiate an obstacle course, or participate in interactive play. This code amendment also includes provisions included in the 2024 IFC relating to construction with flame-resistant materials, anchoring, support, and installation of inflatable amusement devices. Amusement devices covered by this code amendment are used primarily in amusement, entertainment or recreational applications. Such applications include, but are not limited to, amusement parks, theme parks, water parks, family entertainment centers, rental companies, fitness centers, gyms, gymnastics facilities, jump centers, sports facilities, skate parks, camps, schools, shopping centers, temporary special events, carnivals, fairs, festivals and municipal parks.[65] However, there is an exception to these requirements for inflatable amusement devices operated on private property where use is not open to the public.

There have been numerous reported incidents of accidents and injuries involving inflatable amusement devices, otherwise known as "bounce houses," caused by weather events such as wind gusts and improper setup, anchorage, or use, where the "bounce house" is uplifted, carried away, and/or overturned with children or adults inside. Between the years 2000 to 2001, there were at least 479 documented injuries and at least 28 deaths from wind-related bounce house incidents worldwide.[66] With the update and inclusion of ASTM F2374 (Standard Practice for Design, Manufacture, Operation, And Maintenance of Inflatable Amusement Devices) in the IFC, a new Section 3106 was added by ICC which includes basic fire and electrical safety requirements for the design, anchorage, operation, placement and maintenance of inflatable amusement devices.

Cost:

This code amendment may lead to increased manufacturing costs for inflatable amusement device manufacturers to comply with regulations. These products are currently minimally regulated in New York State.

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[65] ASTM. (2024, June 25). *Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices.* www.astm.org. https://www.astm.org/f2374-22.html

[66] *Wind-Related Bounce House Incidents in Meteorological, Regulatory, and Outreach Contexts*. Bull. Amer. Meteor. Soc., 103, E2323–E2340, https://doi.org/10.1175/BAMS-D-21-0160.1.

For example, the New York State Department of Labor's Industry Inspection Bureau issues permits for amusement devices and inspects inflatable amusement devices at carnivals, fairs, and amusement parks for compliance with applicable safety regulations.[67] Manufacturers will now be required to ensure the materials used for the devices undergo some fire testing.

After researching various US-based inflatable amusement device manufacturers and their product owners' manuals, product data sheets, and installation instructions, it was found that ASTM F2374 is a recognized industry standard amongst commercial inflatable device manufacturers. Compliance with this standard is noted throughout the documentation found. Therefore, it is anticipated that manufacturers who already fabricate devices complying with the ASTM standard may not incur additional costs upon adoption of this code amendment.

The proposed code amendment will impact suppliers and manufacturers who do not currently provide ASTM F2374-compliant products and those that do not properly install them. The impacts may include higher costs, such as purchasing NFPA 701-compliant materials, upgrading equipment to meet the electrical requirements of FCNYS Section 3106, and paying for NFPA 701 testing of existing non-compliant materials used for fabrication.

Consumers looking to rent inflatable amusement devices may also experience increased costs, as these expenses may be included in rental fees by amusement device suppliers. A potential cost can be reflected in a comparison of two vinyl fabric suppliers' products, who offer fire retardant and non-fire retardant 18 oz. vinyl polyester fabrics in 100-yard rolls. Supplier 1[68] offers an NFPA 701-compliant fire-retardant fabric at a unit cost of $966.95 per 100-yard roll, while Supplier 2[69] provides a non-fire-retardant fabric at a unit cost of

[67] https://dol.ny.gov/industry-inspection-bureau
[68] *18 oz Fire Retardant Vinyl Coated Poly Fabric by the Roll.* (2024). Tarps Now. https://www.tarpsnow.com/18-oz-vinyl-coated-fr-61-x-100-yd.html?srsltid=AfmBOorrIA6zswtpbv9yvDKRSTH0rIa0iiBvSPhEms2xoIB9xZIO2DIT
[69] *Sigman 18 oz Vinyl Coated Polyester Fabric - 61*. (2018). MyTarp.com. https://www.mytarp.com/products/sigman-18-oz-vinyl-coated-polyester-fabric-61-wide?variant=31746369257508

$710.57 per 100-yard roll. This results in a cost increase of approximately 27% to 30% for fire-retardant fabric compared to the non-fire-retardant option.

This cost increase is a part of doing business in the inflatable amusement device industry, and the code amendment is formalizing practices that the industry is and should have been already following. Marginal cost increases may be expected for those suppliers who improperly rented or anchored/installed these devices previously.

Alternatives:

An alternative is to not adopt any provisions addressing inflatable amusement devices. This alternative does not address the safety issues of inflatable amusement devices and does not adequately protect life and property. Currently, how these types of structures are regulated varies between municipalities resulting in inconsistent enforcement. For these reasons, this alternative was rejected.

2024 Multiple Code Books

The following is a summary of proposed changes that affect multiple code books:

Coordinating pool and hot tub provisions with industry standards and specific provisions from ICC's International Swimming Pool and Spa Code

2024 RCNYS: Section R328

2024 BCNYS: Sections 3109

Needs and Benefits:

This code amendment updated the New York specific provisions regarding swimming pools and hot tubs to conform to industry standard as well as the ICC's model codes as necessary. In addition, Executive Law

§378(14), as amended by Chapter 292 of the Laws of 2024, removes the requirement that the latch handle for gates be located within the enclosure at least 40 inches above grade and adds the requirement that the release mechanism standards shall be developed by the Code Council based on internationally recognized standards.

The specific changes include a reduction in fence mesh size to match the requirements set forth in the ICC 2024 International Swimming Pool and Spa Code (ISPSC), clarification of the second-floor window alarms requirement, updated suction outlet protection to align with industry standards, and alignment with the Virginia Graeme Baker Pool and Spa Safety Act (VGBA) and internationally recognized standards.

RCNYS Section R328.2 and BCNYS Section 3109.2 include the addition of definitions for suction fittings and suction outlet. RCNYS Sections R328.3.1 and R328.3.2 and BCNYS Section 3109.1.1 include the most current standards for in-ground and above-ground pool design and construction. This change will ensure that the most current standard is referenced. The current safety vacuum release system requirements (SVRS) predate the comprehensive VGBA, which fully and successfully address all suction entrapment hazards for various pumps, pipe sizes, and flow rates. The current SVRS standards limit certifying tests to two-inch pipes and two specific flow rates, which are outdated and may compromise safety in some pool designs. The proposed amendments to the SVRS align with the VGBA, ISPSC, and the dominant construction and design methodology nationwide. The approach taken in the proposed amendments offers superior safety against entrapment by including federal law requirements accompanied by engineering solutions tailored to specific pool configurations.

The current code allows for standard mesh size chain link fence to be used as an acceptable barrier around pool. The proposed amendments align with the current industry shift to a 1 ¾ inches (44 mm) mesh size to provide even more protection against accessing the pool.

Under the current code, operable windows in the wall of a building which is used as a part of the pool enclosure are required to have a latching device, an alarm, and have restrictions on maximum opening

dimensions. The proposed amendment clarifies that windows with a direct access to the swimming pool need a latching device and have opening restrictions. For example, a window that opens onto a second story deck with a stairway leading to a swimming pool must have a latch and can only open to a maximum of 4 inches. Windows located on the second floor (or above) that do not open on to an exterior surface that provides access to the ground level are clarified to not be considered to provide direct access (due to the fall hazard that exists as a deterrent).

Pool barrier gate latch release mechanism provisions were amended to conform to the requirement of Executive Law §378(14), as amended by Chapter 292 of the Laws of 2024 that the release mechanism standards be based on internationally recognized standards. The release mechanism provisions were revised to align with the requirements in the ICC 2024 ISPSC. This change provides greater flexibility during design of such gates, allowing the use of many commercially available gate latching mechanisms which were previously not permitted under the 2020 Uniform Code based on the Executive Law prior to the above noted amendment.

Cost:

The proposed amendments to the SVRS will not have any cost impact to contractors or homeowners because both SVRS and dual drain engineered anti-entrapment systems are part of the existing standards in pool design and equipment production. Contractors and homeowners will likely see a reduction on costs based on the new language removing a potentially redundant system.

The proposed amendments to the fence mesh size will not have a significant cost impact because the fencing industry produces a chain link fencing that meets the proposed fence mesh size and is readily available. Utilizing cost data from several manufacturers, the smaller mesh size costs, on average, $0.33 more per square foot of fencing.

The proposed amendments to the gate latch release mechanism provisions will potentially decrease the cost of construction. Many commercially available gate latching mechanisms were previously not allowed

under the 2020 Uniform Code, and depending on project requirements, there may be a reduction in costs by utilizing newly allowed mechanisms and/or eliminating the need for customized mechanisms. Gate latching mechanisms that are currently allowed under the 2020 code are also allowed under the proposed amendments. Therefore, there will be no increase in costs as this change merely expands the allowable mechanism types.

The proposed amendments to provisions for windows in building walls used as barriers for pool enclosures may lower construction costs by allowing some windows to be exempt from latching, alarm provisions, and maximum opening provisions.

Alternatives:

Not adopting the proposed pool and hot tub provisions would fail to modernize pool safety requirements or conform with industry standards of practice, and would also fail to comply with the recent legislative amendments to Executive Law §378(14), as amended by Chapter 292 of the Laws of 2024. For these reasons, this alternative was rejected.

New York State Department of Environmental Conservation (DEC) flood provisions

BCNYS: Sections 202, 1108.7.5, 1612.2, 1612.2.1, 1612.3.1, 1612.3.2, 1612.4

RCNYS: Sections R202, R301.2.4, R306,

EBCNYS Sections 202, 502.3, 1103.3, 1201.4. 1303.1.3

Needs and Benefits:

This code amendment includes recommendations resulting from consultation with the New York State Department of Environmental Conservation (DEC), as required by Executive Law § 378(1-a), as amended by Chapter 19 of the Laws of 2023, enacted by Governor Kathy Hochul on March 3, 2023. Climate change increases risks of flooding from heavy rainfall, more intense storms, and rising sea levels which is likely to increase the proportion of buildings exposed to damp conditions that can lead to mold growth. Mold growth can

grow in just two or three days after a storm or flood on carpets, drywall, paper, furniture, etc. in exposed buildings. Flooding frequently causes short-term displacement; however, communities with limited resources and existing vulnerabilities are more likely to experience long-term displacement. The proposed code amendments are based on DEC's recommendation and in consideration of NYCRR Title 6 Part 490, Projected Sea Level Rise, which was updated in 2024. The recommendations include provisions for 18 inches of sea level rise, extending the current required flood elevation into the floodplain with a 0.2 % annual chance of flooding (referred to as the 500-year floodplain), and other improvements to existing language for buildings built in flood hazard areas.

In both the Residential Code and Building Code, provisions for sea level rise in tidal coastal areas were added that increased the required flood elevation by adding an additional 18 inches in tidal areas over current code requirements, based on recommendations from DEC. This provision is based on the Title 6 Part 490 Projected Sea Level Rise medium sea level rise scenario projections for the 2050s.[70] Sea level rise increases the required flood elevation in tidal coastal areas that are at risk of increased flooding due to climate change.

Additionally, the definition of flood hazard areas was expanded to include the 500-year floodplain. Base flood elevations continue to be determined using a 100-year flood event, but construction requirements have been expanded to include areas within the 500-year floodplain to provide increased resilience and account for possible effects of sea level rise. Due to the increased flood elevations caused by sea level rise, such flood events are likely to affect larger areas than were previously determined to be at risk. The 500-year flood areas were found to provide a good approximation for this increase in anticipated area of flood effects and provide a well mapped boundary that can be easily applied by code officials during the permitting process. Extending the flood elevation requirements into the 500-year floodplain also creates an equal level of protection between

[70] 6 NYCRR Part 490 (Sept. 25, 2024), available at https://dec.ny.gov/sites/default/files/2024-09/part490expressterms.pdf.

buildings in these areas and buildings in the 100-year floodplain and removes the discrepancy in the level of safety provided to such buildings by the requirements. The 500-year flood is only used to determine the boundaries of the flood hazard areas; the base flood elevation is still determined using a 100-year flood event.

The proposed amendment also contains requirements for building additions in flood hazard areas. Under the proposed amendment, additions are prohibited from creating or extending existing nonconformities in existing buildings to which the addition is being made.

Currently, the Uniform Code provides for a two-foot freeboard requirement. However, this requirement does not specifically address the additional flood hazard that will occur because of climate change. Sea level rise and increasingly heavy precipitation events have been documented and will continue with climate change, resulting in additional flood hazard, including increasingly severe combination flooding, in which heavy precipitation occurs simultaneously with sea level rise-enhanced storm surge.[71] The frequency of extreme precipitation events (events with the top one percent of daily precipitation accumulations) has increased by about 60 percent in the Northeast United States, with trends suggesting in increase in the frequency of the most extreme precipitation events (days with more than 5 inches of precipitation), leading to increased risk of severe flooding.[72]

Areas on the coastal plain, defined as Long Island, New York City, lands near the southern Hudson River, and small portions of southeastern Westchester County, are at risk from rising sea levels and enhanced coastal flooding.[73] Sea levels in coastal New York are rising at rates faster than the global average.[74] Rising sea level along coastal New York State has increased the magnitude and frequency of coastal floods.[75] In some

[71] *New York State Climate Change Projections Methodology Report*, New York State Climate Impacts Assessment, p. 12, 15.
[72] National Climate Assessment https://nca2023.globalchange.gov/chapter/21/#key-message-1
[73] *New York State Climate Change Projections Methodology Report*, New York State Climate Impacts Assessment, p. 15.
[74] *New York State Climate Change Projections Methodology Report*, New York State Climate Impacts Assessment, p. 15.
[75] *New York State Climate Change Projections Methodology Report*, New York State Climate Impacts Assessment, p. 15.

locations, flooding now occurs at times of high astronomical tides, even in the absence of coastal storms.[76] When coastal storms do occur, they now flood larger areas and feature deeper—and thus more damaging and dangerous—water.[77]

Roughly 90% of New York State's population lives along lakes, rivers, streams, or the ocean, making many New Yorkers vulnerable to flood impacts.[78] New York State has lost at least $26 billion in damages to flooding in the past decade.[79] The costs of not being prepared for future flood-related events are significant and increasing: one estimate states that not addressing coastal storm and flood-related events will cost the State $55 billion in the next decade.[80]

In September 2024, DEC amended 6 NYCRR Part 490, Projected Sea Level Rise, using science-based State sea level rise projections.[81] As mandated by Executive Law §378(1-a), DOS consulted with DEC and developed Uniform Code provisions based on medium sea level rise projections. Freeboard is an additional height above the base flood elevation (BFE) to which buildings must be elevated.[82] Base flood elevation is defined as the elevation to which floodwater is anticipated to rise during the base flood. Freeboard is a factor of safety expressed in feet above a flood level, which is intended to compensate for uncertainties in the determination of flood elevations due to unknown factors, such as wave action, bridge openings, or debris.[83] However, this safety factor does not account for the additional flood hazard that will occur due to projected sea level rise, and using the freeboard to account for sea level rise reduces the safety factor available should such

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[76] *New York State Climate Change Projections Methodology Report*, New York State Climate Impacts Assessment, p. 15.
[77] *New York State Climate Change Projections Methodology Report*, New York State Climate Impacts Assessment, p. 15.
[78] *Flood Damage in New York State,* https://mitigateny.org/hazards_of_concern/flood.
[79] *Flood Damage in New York State,* https://mitigateny.org/hazards_of_concern/flood.
[80] *Flood Damage in New York State,* https://mitigateny.org/hazards_of_concern/flood.
[81] *Projected Sea Level Rise*, 6 NYCRR Part 490, p. 1; *Regulatory Impact Statement Summary*, 6 NYCRR Part 490, p. 2.
[82] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 4-1. *Natural Hazard Mitigation Saves*, National Institute of Building Sciences 2019 p. 145.
[83] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 4-1; *Natural Hazard Mitigation Saves*, National Institute of Building Sciences 2019 p. 70, 142; *Glossary: Freeboard*, U.S. Federal Emergency Management Agency.

unknown factors occur. If sea level rise is not included in required flood elevation provisions, the factor of safety provided by freeboard will decrease as sea level rise continues.

Additional freeboard can mitigate against risk associated with error or uncertainty in flood risk maps and risk associated with climate change, making building more likely to withstand a particularly severe flood.[84] Freeboard acts as an indicator of above-minimum flood resistant design.[85] Freeboard has been included in the International Building Code (IBC) for some IBC structure types since 2000 and for most IBC structure types since 2006.[86] In 2007, the two-foot freeboard requirement was first introduced in the RCNYS. In the 2017 NYS Uniform Code Supplement, provisions requiring two feet of freeboard were added to the BCNYS, matching the RCNYS provisions. This proposal does not remove freeboard requirements, it merely adds an additional sea level rise elevation requirement for tidal coastal flood hazard areas. The existing required freeboard (two feet) is still required in all flood hazard areas. Tidal coastal flood hazard areas are at higher risk due to sea level rise, so in these areas, an additional sea level rise elevation (18 inches) will be added to the freeboard requirement, for a total required elevation of forty-two inches over the base flood elevation.

The impacts of hurricanes and floods are expected to increase, particularly during the useful life of much existing and most new infrastructure.[87] Average Annual Losses Avoided (AALA) are a statistical measure of the benefits due to adoption of building codes with flood, hurricane wind, and earthquake provisions.[88] Average Annual Loss (AAL) is the expected loss per year for a range of hazard events of different probabilities.[89] It is a key metric in insurance premium models and can be included in life cycle cost analysis and return on investment calculations.[90] Losses avoided are determined by comparing damages to a building that uses a

[84] *Natural Hazard Mitigation Saves*, National Institute of Building Sciences 2019 p. 147.
[85] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 4-3.
[86] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 4-3.
[87] *Natural Hazard Mitigation Saves*, National Institute of Building Sciences 2019 p. 26.
[88] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 2-3.
[89] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 2-3.
[90] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 2-3.

hazard-resistant building code to damages that would likely have been caused by the same hazard events prior to that code.[91] In a 2020 study by the U.S. Federal Emergency Management Agency (FEMA), the total AALA for structures constructed using freeboard was approximately $484 million or about $1,200 per structure, and New York State had the fourth highest flood AALA, with $24 million.[92] Several FEMA studies, in 2006, 2008, 2013, and 2014, have found that adding freeboard is one of the most effective ways to reduce losses in the most hazardous flood zones.[93]

Although DEC has recommended use of the medium sea level rise projection, its proposed Part 490 update includes high (90th-percentile) projections of 41 to 48 inches by the 2080s and high projections of 60 to 69 inches along the State's tidal coast by 2100. [94] Twenty-four inches of freeboard (the current Uniform Code requirement) would rapidly disappear under any scenario even approaching these conditions.

Cost:

Construction costs increase 1.2 to 1.7 percent per foot of additional required elevation.[95] Costs for increasing the height of open foundations for flood resistance mostly involve the cost of additional material, and generally do not increase labor costs by a significant amount.[96]

Alternatives:

One alternative is to not amend any flood provisions. This alternative does not comply with Executive Law §378(1-a), as amended by Chapter 19 of the Laws of 2023, to require that the Uniform Code address future physical climate risks due to sea level rise, storm surges, and flooding. Sea level rise will cause the existing

[91] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 2-3.
[92] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 2-3.
[93] *Natural Hazard Mitigation Saves*, National Institute of Building Sciences 2019 p. 146, 154.
[94] *Projected Sea Level Rise*, 6 NYCRR Part 490, p. 3-4.
[95] *Building Codes Save: A Nationwide Study*, U.S. Federal Emergency Management Agency November 2020 p. 1-6.
[96] *Natural Hazard Mitigation Saves*, National Institute of Building Sciences 2019 p. 315.

freeboard requirement to provide less and less of a factor of safety over time, leading to increases in flood damages. For these reasons, this alternative was rejected.

Another alternative is to implement a sea level rise requirement that is higher than 18 inches. During consultation with DEC, it was decided that utilizing the medium sea level rise projections struck the best balance between providing sufficient protection against flood hazards while minimizing the increases in construction cost. Therefore, the alternative of adopting a sea level rise requirement greater than 18 inches was rejected.

A third alternative is to implement a sea level rise requirements that is less than 18 inches. However, during consultation with DEC, it was determined that adopting a sea level rise requirement less than the medium sea level rise projections would be inconsistent with the State Flood Risk Management Guidance, would not provide sufficient protection against flood hazards caused by sea level rise and would be inconsistent with the legislative intent behind the amendment to Executive Law § 378(1-a).

Another alternative involves not extending flood elevation requirements into the 500-year flood areas. However, sea level rise will cause not only higher flood elevations but will increase the size of areas affected by floods. The 500-year flood areas were found to be a reasonable approximation for this increase in anticipated area of flood effects and are a well mapped boundary that can be easily applied by code officials during the permitting process. If the areas required to be elevated are not adjusted to account for sea level rise, communities that fall within the expanded flood area will be at higher risk of flood damage. Moreover, even in inland areas, as described above. the increased frequency of extreme precipitation events has resulted in increased frequency of fluvial flooding. In some areas, such as the City of Ithaca, FEMA remapping has already resulted in significant portions of the former 500-year floodplain being mapped into the 100-year floodplain. In addition, the US Department of Housing and Urban Development (HUD) recently published a Final Rule in the Federal Register revising its floodplain management regulations. The new regulations will require all new

HUD funded development be elevated to the Base Flood Elevation plus 2 feet of freeboard in both the mapped Special Flood Hazard Areas (1% floodplain) and in the areas that would be included in the area created by horizontally extending Base Flood Elevation plus 2 feet. As this trend of increasing flood risk is projected to continue, additional building elevation for new structures in the current 500-year floodplain will reduce the flood risk and future insurance premiums for many new structures built in the 500-year floodplain. For this reason, the alternative of not extending floodplain requirements into the 500-year floodplain was rejected.

A2L refrigerant

2024 RCNYS: Sections M1411.2, M1411.4, M1411.5, M1411.6, M1411.7

2024 FCNYS: Section 608.14, 608.18, Table 608.18.2

2024 MCNYS: Sections 1101.2.1, Table 1103.1, 1104.3.1, 1104.3.2, 1106.4, Table 1106.4.2, 1109.2, 1109.3

Needs and Benefits:

This code amendment is an ICC change that adds language pertaining to the use of A2L refrigerants allowed pursuant to the United States Environmental Protection Agency (EPA)'s programs enacted under the American Innovation and Manufacturing Act (AIM Act, 42 U.S. Code §7675) authorizing the EPA to "regulate the transition to next-generation refrigerants and implement a phasedown of the production and consumption of HFCs over the next 15 years".[97] As part of the EPA's Technology Transitions Program, a final EPA rule (40 CFR Part 84) was implemented to "restrict the use of high global warming potential (GWP) HFC refrigerants in air conditioning and heat pump products and equipment."[98]

[97] Cika, J., & Lukasik, T. (2022, January 22). *Code changes on A2L refrigerants*. Building Safety Journal; International Code Council. https://www.iccsafe.org/building-safety-journal/bsj-technical/code-changes-on-a2l-refrigerants/

[98] Cika, J. (2024, August 15). *EPA's Technology Transitions Program: A2L Refrigerants in the Built Environment - ICC*. Building Safety Journal; International Code Council. https://www.iccsafe.org/building-safety-journal/bsj-technical/epas-technology-transitions-program-related-to-a2l-refrigerants-in-the-built-environment/

Provisions expanding the use of A2L refrigerants in refrigeration systems were added to the 2021 IBC, the 2021 IRC, the 2021 IFC, and the 2021 International Mechanical Code (IMC). Use of such refrigerants has increased due to concerns over the global warming potential of traditional refrigerants. However, A2L refrigerants are mildly flammable, so safety provisions specific to these refrigerants are necessary.

The 2022 versions of ASHRAE 34 and ASHRAE 15 in conjunction with the 4th edition of UL 60335-2-40 (2022) define A2L refrigerants as a new UL flammability subclass 2L, for flammability class 2 refrigerants with a lower toxicity and lower burn velocity and include additional safety requirements to accommodate A2L refrigerants.[99] The proposed amendments to the Uniform Code include updates for ASHRAE 34, ASHRAE 15, and various UL standards, such as UL 60335-2-40 and UL 60335-2-89. These standards include provisions that protect building occupant safety, reduce fire risks, and ultimately provide that such refrigerants can be used in a manner that complies with the intent and requirements of the Uniform Code.

The refrigerant classifications are determined by ASHRAE 34. One of the proposed amendments updates the refrigerant table, Table 1103.1, in the MCNYS, incorporating the new refrigerants added to Standard 34 since the last code cycle.

The requirements in Sections 1104.3.1 and 1104.3.2 of the 2020 MCNYS are based on previous editions of ASHRAE 15. ASHRAE 15 has been updated since the last Uniform Code update. The revision to Section 1104.3.1 is consistent with Section 7.5.2 of ASHRAE 15. ASHRAE 15 lists the refrigerants prohibited whereas the proposed amendment lists the refrigerants required to be used. The language in current Section 1104.3.2 that is removed from the proposed revision to Section 1104.3.2 is addressed in the proposed revision to Section 1104.3.1. The remaining text of proposed revision to Section 1104.3.2 is consistent with the requirements in Section 7.5.3. of ASHRAE 15. Table 1104.3.2 was removed from proposed revision to Section 1104.3.2 to be

[99] Factsheet. (2022). *ASHRAE's Numbering System Update on New Refrigerants Designations and Safety Classifications*. ASHRAE. https://www.ashrae.org/file%20library/technical%20resources/bookstore/factsheet_ashrae_english_november2022.pdf

consistent with ASHRAE 15. Additionally, the table is no longer necessary with the change to ammonia refrigerant requirements during the last two ICC model code cycles and with the proposed change adding the exceptions to Section 1104.3.1.

Cost:

The proposed amendment to Table 1103.1 will not increase or decrease the cost of construction. Updating the table of refrigerants that are permitted to be used in systems as an option does not add labor or material costs because the choice of refrigerant is up to the owner and designer.

The proposed amendments to Sections 1104.3.1 and 1104.3.2 will impact construction costs. The updated requirements specify that Group A1 and A2L refrigerants must be used in high-probability systems used for human comfort, which are air conditioning systems where a refrigerant leak is likely to directly enter an occupied area due to its design or component placement. Group A2 and B2 refrigerants are not permitted in those systems, and A3 and B3 refrigerants can only be used with approval.

Equipment costs may increase as manufacturers are redesigning and creating new systems to comply with the EPA rule for residential and light commercial HVAC systems banning the manufacture and import of HVAC products (i.e. window air conditioning units and packaged terminal air conditioning units) and the installation of new HVAC systems (i.e. split system air conditioners and mini-split air conditioners) containing refrigerants with Global Warming Potentials (GWP) greater than 700, starting on January 1, 2025.[100] The commonly used A1 refrigerant, R-410A, has a GWP of 2,088, classifying it as a greenhouse gas under the EPA rule and will be non-compliant in 2025.[101] This shift is expected to lead to higher residential and commercial construction costs as supply chains and manufacturers adjust to the new requirement and A2L refrigerant

[100] Cika, J. (2024, August 15). *EPA's Technology Transitions Program: A2L Refrigerants in the Built Environment - ICC*. Building Safety Journal; International Code Council. https://www.iccsafe.org/building-safety-journal/bsj-technical/epas-technology-transitions-program-related-to-a2l-refrigerants-in-the-built-environment/

[101] Miller, M. (2024, September 2). *Navigating the Government-Mandated Switch to A2L Refrigerants – How it impacts HVAC costs.* Carolina HVAC. https://www.carolina-hvac.com/post/a2l-refrigerant-switch-hvac-costs-budget-impact

becomes more readily available. For instance, a 20-pound tank of R-32 refrigerant, a viable A2L replacement for R-410A refrigerant, costs approximately $400, while a 25-pound tank of R-410A refrigerant has a lower cost of $280, indicating a 30% price difference.

A2L refrigerants should not affect existing HVAC system maintenance and component replacement costs. However, costs can increase when the systems are replaced at the end of their useful life. Certain types of work classify an existing system as a new HVAC system.[102] According to the EPA rule, increasing the existing system's BTU per hour cooling capacity, installing a new HVAC system for the first time using new or used components, or replacing 75 percent or more of evaporators and 100 percent of the compressor racks, condensers, and connected evaporator loads of an existing system, and charging the systems to full charge all require products and components compatible with A2L refrigerant.[103]

Alternatives:

Refraining from implementing any of the new provisions that expand the use of A2L refrigerants does not comply with the Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022. Section 24 of that act specified that building codes applicable to commercial or residential buildings may not prohibit the use of substances allowed under the United States Environmental Protection Agency's significant new alternatives policy to implement 42 U.S.C. 7671k (see Section 24 of Chapter 374 of the Laws of 2022).

NYS DOS Division of Building Standards and Codes Technical Bulletin TB-4001-MCNYS clarifies that the Uniform Code has never explicitly prohibited the use of A2L refrigerants, but it has limited their usage

[102] Cika, J. (2024, August 15). *EPA's Technology Transitions Program: A2L Refrigerants in the Built Environment - ICC*. Building Safety Journal; International Code Council. https://www.iccsafe.org/building-safety-journal/bsj-technical/epas-technology-transitions-program-related-to-a2l-refrigerants-in-the-built-environment/

[103] Cika, J. (2024, August 15). *EPA's Technology Transitions Program: A2L Refrigerants in the Built Environment - ICC*. Building Safety Journal; International Code Council. https://www.iccsafe.org/building-safety-journal/bsj-technical/epas-technology-transitions-program-related-to-a2l-refrigerants-in-the-built-environment/

based on whether they are listed in Table 1103.1 or if they are deemed acceptable by the code official. The Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022 allows the use of alternative refrigerants, such as A2L types, provided they have lower Global Warming Potentials (GWPs). Currently, the commonly used A1 refrigerant, R-410A, has a high GWP and is classified as a greenhouse gas under new EPA regulations. Therefore, not adopting the updated provisions to include more A2L refrigerants with lower GWPs would be inconsistent with the intent of the statute. Moreover, without these updates, more efficient heating, refrigeration, and air conditioning systems will remain unavailable to New York State residents and businesses, hindering their ability to meet the state's new efficiency standards.

Additionally, choosing not to adopt these provisions could significantly undermine New York State's climate goals of reducing greenhouse gas emissions by 40% by 2030, posing a serious risk to our environmental commitments. For these reasons, this alternative was rejected.

Mass Timber

2024 BCNYS: Sections 202, Table 504.3, Table 504.4, Table 506.2, 508.4.4.1, 509.4.1.1, Table 601, 602.4-602.4.4.3, 703.6, 703.7, Table 705.5, 718.2.1., 722.7, 1705.5.3, 1705.20, 2304.10.1, 2304.11

2024 FCNYS: Section 3312.1

Needs and Benefits:

This code amendment modifies the provisions governing the use of mass timber to allow for taller wood buildings, based on changes to the 2021 and 2024 I-Codes.

Mass timber buildings are constructed with large pre-manufactured, multilayered, solid wood panels resulting in solid timber floors and walls typically ranging from 5 to 12 inches in thickness.[104] Typical mass timber products include cross-laminated timber (CLT), nail-laminated timber, glued-laminated timber (glulam), and structural composite lumber—all renewable and sustainable engineered wood products.[105] Currently, wood structures are limited to six stories or 85 feet in height.[106] The proposed amendments expand the use of mass timber to allow tall wood buildings up to 18 stories in height.[107]

Studies show that building with mass timber can accelerate construction time and improve project safety.[108] The use of prefabricated wood panels makes for efficient construction and renovation and enables end-of–life disassembly and material repurposing, which contributes to waste reduction and to extending the lifetime of carbon stored in these wood products.[109] Developers of a 25 story mass timber building in Milwaukee found that mass timber construction required 90 percent less construction traffic and was 25 percent faster than traditional construction.[110] All of these reductions led to reduced emissions associated with the construction process.[111] Using mass timber was found to reduce the total duration of the project by five months compared to building with conventional materials.[112] Assembling roof and wall components on the ground, as is done in mass timber construction, significantly reduces the risk of worker falls.[113]

Mass timber is now explicitly defined as encompassing both the large wood building elements historically recognized as Heavy Timber (now Type IV-HT) construction and three new construction types: IV-

[104] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[105] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[106] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[107] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[108] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[109] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[110] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[111] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[112] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[113] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/

A, IV-B, and IV-C. Amendments have been made to the tables for "Allowable Height in Feet," "Allowable Height in Stories," "Fire-Resistance Rating Requirements for Building Elements," "Allowable Building Area," and "Exterior Wall Ratings" to incorporate these new construction types. It is noteworthy that mass timber elements segregating occupancies in Type IV-B and IV-C construction must be safeguarded with gypsum board. Notably, lightweight wood products, including fire-retardant-treated wood, are prohibited for interior framing in these new construction types.[114] ICC introduced new sections to address the fire protection of structural connections and to enhance building safety for the new construction types. For instance, while Type IV-HT permits concealed spaces in floors and roof decks, mass timber buildings exceeding 120 feet in height necessitate dual water supplies and fire pumps.[115]

The proposed amendments include three new/revised definitions in Section 202 of the BCNYS for load-bearing wall, mass timber, and noncombustible protection (for mass timber). The revision to the definition of load-bearing wall is to include mass timber as a category equivalent to that of masonry or concrete. Research by the wood trade associations indicated that mass timber walls can support the minimum 200 pounds per linear foot vertical load requirement. The new term "mass timber" represents the legacy heavy timber (Type IV construction) and the three new construction types. The new term "mass timber" also establishes a single term to represent these various sawn and engineered timber products and differentiate them from traditional wood-frame construction. The new term "noncombustible protection (for mass timber)" was created to address the passive fire protection of mass timber. Mass timber may be fire-resistance rated by itself or through a combination of mass timber fire-resistance plus protection by non-combustible materials as defined in Section 703.5.

[114] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/
[115] *Mass Timber*, American Wood Council, https://awc.org/issues/mass-timber/

As mentioned, the proposed amendments include establishing three new construction types: IV-A, IV-B, IV-C. Sections 602.4 through 602.4.4.3 contain the requirements for the new proposed types of construction.

Type IV-A is mass timber construction which is completely protected by noncombustible materials (e.g. gypsum panel products) on all sides. The protection requirements are given in the new Section 722.7 and are required for the floor surface, all wall and ceiling surfaces, inside roof surfaces, undersides of floor surfaces, and shafts. Testing shows that mass timber protected with noncombustible protection, primarily multiple layers of 5/8-inch Type X gypsum board, can survive a complete burnout of a residential fuel load without engaging the mass timber in fire. Type IV-A construction is proposed to have the same fire resistance rating requirements as the existing Type I-A construction, which requires 2-hour and 3-hour structural elements. However, the proposed allowable heights for Type IV-A construction are lower than those for Type I-A construction.[116]

Type IV-B is mass timber construction which is semi-protected, consisting of some exposed wood surfaces on walls, ceilings, columns and beams. The amount of exposed surface permitted to be installed and the separation between unprotected portions is specified to limit the contribution of the structure in an interior fire. Testing shows that a predictable char layer develops on mass timber in the same fashion as traditional sawn lumber. The allowable unprotected area on the ceiling is proposed to be 100 percent based upon research conducted at the Research Institutes of Sweden (RISE). In Type IV-B construction, concealed spaces, shafts, and other specified areas are required to be fully protected. Type IV-B construction is proposed to have the same base fire resistance requirements as the existing Type I-B construction, which requires 2-hour structural elements. In contrast to Type I-B construction, where Section 403 of the Building Code allows for a reduction

[116] *ICC Ad Hoc Committee on Tall Wood Buildings Responds to Concerns Raised on Code Proposals Addressing Tall Wood Buildings*, August 1, 2018, https://www.iccsafe.org/wp-content/uploads/TWB-Response-to-Concerns-Raised-at-Hearings_8_1_18-_Posted.pdf; *ICC Ad Hoc Committee on Tall Wood Buildings Responds to Concerns Raised During the Public Comment Period*, https://www.iccsafe.org/wp-content/uploads/TWB-responds-to-public-comment-issues.pdf.

in the fire-resistance rating of building elements, the fire-resistance rating for building elements in Type IV-B construction remains unchanged in high-rise buildings.[117]

Type IV-C consists of unprotected mass timber construction. Type IV-C construction requires a two-hour fire-resistance rating, but concealed spaces, shafts, elevator hoistways, and interior exit stairway enclosures are required to be fully protected with noncombustible construction. Type IV-C will have the same height limitations as existing Heavy Timber (HT) construction and only allows an increased number of stories in lower hazard occupancies.

Tables 601 and 602 have been modified to include performance requirements for the three new types of construction. Tables 504.3, 504.4, and 506.2 have been modified to include allowable building heights (in both feet and stories) and allowable building areas for Type IV-A, IV-B, and IV-C construction. Type IV-C construction achieves its fire resistance by performance of the mass timber itself so Tables 504.3 and 504.5 have been modified to greatly reduce permitted height, in both feet and stories.

Section 508.4.4.1 was modified, and Section 509.4.1.1 was added to include requirements for mass timber building elements serving as fire barriers or horizontal assemblies in buildings of Type IV-B or IV-C construction. Section 718.2.1 was amended to include requirements on the use of mass timber building elements for fireblocking. As mentioned, a new Section 722.7 was added to include requirements for the fire resistance rating of mass timber elements, minimum required protection, and gypsum board attachment.

Chapter 17 of the BCNYS was modified to require special inspections of mass timber construction of the structural elements, sealants and adhesives.

Cost:

[117] *ICC Ad Hoc Committee on Tall Wood Buildings Responds to Concerns Raised on Code Proposals Addressing Tall Wood Buildings*, August 1, 2018, https://www.iccsafe.org/wp-content/uploads/TWB-Response-to-Concerns-Raised-at-Hearings_8_1_18-_Posted.pdf; *ICC Ad Hoc Committee on Tall Wood Buildings Responds to Concerns Raised During the Public Comment Period*, https://www.iccsafe.org/wp-content/uploads/TWB-responds-to-public-comment-issues.pdf.

This code amendment provides flexibility for design professionals when selecting the type of construction for a project. Accordingly, this is not a mandatory requirement of the Uniform Code and would pose no additional cost to regulated parties. If a design professional selected this type of construction, the average building cost would vary depending upon the region, application, size, and scope of each project but could result in higher overall costs but be a more cost-effective design choice over the building's lifespan. Oregon State University School of Civil and Construction Engineering researchers found in a recent cost analysis of an 18-story residential building that mass timber construction can be 6.4% more expensive than concrete and steel construction.[118] However, the potential for long-term savings can balance those higher costs. Mass timber components can be mass-produced and pre-assembled off-site. Lighter weight components result in lower material transportation costs and allow smaller building foundations that require less concrete. Other labor and material savings can be realized through other up-front costs like reduced crane and heavy equipment rental needs, lower interior finishing costs, and a significant reduction in material waste, contributing to a more sustainable construction process.[119]

Alternatives:

An alternative is to not adopt any provisions addressing mass timber. This alternative does not address the demands of mass timber proponents and removes a building design option that could be used to contribute towards New York State's climate goals to reduce greenhouse gas emissions by 40% by 2030. Promulgating regulations that promote construction related emission reductions is consistent with the Climate Leadership and Community Protection Act (see L.2019, ch.106, Section 7). Mass timber construction has a lower carbon footprint than traditional steel and concrete and could reduce the emissions associated with building materials

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[118] Gu, H., Liang, S., & Bergman, R. (2021). *Comparison of Building Construction and Life-Cycle Cost for a High-Rise Mass Timber Building with its Concrete Alternative*. Forest Products Journal, 70(4), 482–492. https://doi.org/10.13073/FPJ-D-20-00052

[119] Cheng, J. (2022, April 14). *Mass Timber in Construction - Big Buildings, Smaller Carbon Footprint*. Sustainalytics.com; Sustainalytics. https://www.sustainalytics.com/esg-research/resource/investors-esg-blog/mass-timber-in-construction

by 13% to 26.5%.[120] Mass timber also contributes towards carbon sequestration because trees used to make mass timber products retain some of that carbon stored and thereby preventing its release into the atmosphere.[121] For these reasons, this alternative was rejected.

Accessible building feature language updates, including updated reference and coordination with ICCA117.1 to the 2017 version

2024 BCNYS: Sections 1009.2.2, 1013.4, 1023.11, 1108.5.1.1, 1108.5.1.2, 1108.5.2.1, 1108.5.4, 1108.6.2.2.1, 1110.2.2, 1110.18, 1112.6

2024 FCNYS: Sections 1009.2.2, 1013.4, 1023.11

2024 EBCNYS: Section 306.7

2024 PCNYS: Section 410.3.2

Needs and Benefits:

This code amendment removes the "Type B plus" language of the current Uniform Code and replacing it with the 2024 IBC "Type A Unit" language. In doing so, a number of added or revised accessibility provisions are to be updated, including accessibility provisions for electric vehicle chargers, increasing wheelchair area dimension and turning radius, and revised requirements for accessible water closets, grab bars, flush controls, dispensers, roll in showers, and clearances. This code amendment also includes provisions for assisted toileting and bathing facilities.

[120] Environmental and Energy Study Institute. (2023). *Building Sustainably: Mass Timber (September 2023).* In *Environmental and Energy Study Institute* (p. 1). https://www.eesi.org/files/FactSheet_Mass_Timber_2023.pdf
[121] Environmental and Energy Study Institute. (2023). *Building Sustainably: Mass Timber (September 2023).* In *Environmental and Energy Study Institute* (p. 1). https://www.eesi.org/files/FactSheet_Mass_Timber_2023.pdf

The referenced version of the ICC A117.1 was changed from 2009 to 2017. ICC A117.1 is the standard referenced by the 2024 IBC for the design and construction of accessible buildings and facilities. It includes several new and revised technical requirements.

In the past, New York State has adapted the ICC model codes to create what is known as a "Type B plus unit." These units have enhanced accessibility features and are found in apartment houses, monasteries, and convents where there are four or more dwelling units or sleeping units intended for residential use within a single structure. In such cases, every dwelling and sleeping unit is required to be a "Type B plus unit" under the current Uniform Code. The entrance and other doors must meet the clear width and maneuvering clearances outlined in ICC A117.1, Sections 404.2.2 and 404.2.3. Additionally, at least one toilet and bathing facility within each unit must be constructed according to Section 1003.11 of ANSI A117.1.

The update to the newer version of the ICC model codes brings enhanced maneuverability dimensions, which includes a 67-inch turning diameter (increased from 60-inch), a 30-inch by 52-inch clear floor space (increased from 30 inches by 48 inches), and a 48-inch minimum wide exterior accessible route. These changes would affect all units required to be "Type B plus units" under the current Uniform Code and are likely to be seen as overly onerous on builders, property owners, and the public.

As such, the proposed amendment is to remove the "Type B plus" language in the current Uniform Code and add in the 2024 IBC "Type A Unit" language, which requires Group R-2 occupancies containing more than twenty (20) dwelling or sleeping units to include at least two percent, but not less than one unit, to be Type A units, while increasing the percentage from two percent (2024 IBC language) to 20 percent (proposed 2024 BCNYS language). The proposed amendment also includes adding the 2024 IBC provisions for Type B units - requiring all dwelling and sleeping units intended to be occupied as a residence to be Type B units in buildings where there are four or more dwelling units or sleeping units intended to be occupied as a residence in a single structure.

The proposed amendment also includes revising the new 2024 IBC section that states: "where two or more Type A units are provided, at least 5 percent but not less than one Type A Unit shall include a bathroom with a shower complying with ICC A117.1 for Type A Units" to specifically require a roll-in shower instead of simply a shower that allows for a transfer shower.

The proposed amendments will remove some of the existing "Type B plus" language that has historically been misunderstood and misinterpreted, and simplify the requirements for builders, designers, and building owners. It also provides for enhanced accessibility features over the ICC Model Codes and aligns New York State with other large jurisdictions such as Chicago, which currently requires 20 percent Type A units.

Other provisions of the 2017 ICC A117.1 reference standard are being updated to align with new federal "minimum guidelines for the accessibility of pedestrian facilities in the public right-of-way"[122] published by the Access Board under the Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA).[123] It addresses "access to sidewalks and streets, crosswalks, curb ramps, pedestrian signals, on-street parking, and other components of public right-of-way. These guidelines also review shared use paths, which are designed primarily for use by bicyclists and pedestrians for transportation and recreation purposes."[124] The guidelines "ensure that facilities used by pedestrians, such as sidewalks and crosswalks, constructed or altered in the public right-of-way by federal, state, and local governments are readily accessible to and usable by pedestrians with disabilities. ...compliance with those enforceable ADA and ABA accessibility standards is mandatory."[125]

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[122] U.S. Access Board. (2023, August 8). *Preamble to the Final Rule for Pedestrian Facilities in the Public Right-of-Way. Access-Board*.gov. https://www.access-board.gov/prowag/preamble.html

[123] Architectural and Transportation Barriers Compliance Board. (2023, August 8). *Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way*. Federal Register Vol. 88, No. 151. https://www.access-board.gov/files/prowag/2023-16149.pdf

[124] U.S. Access Board. (n.d.). *U.S. Access Board - About PROWAG*. Www.access-Board.gov. Retrieved November 4, 2024, from https://www.access-board.gov/prowag/

[125] U.S. Access Board. (2023, August 8). *Preamble to the Final Rule for Pedestrian Facilities in the Public Right-of-Way*. Access-Board.gov. https://www.access-board.gov/prowag/preamble.html

Some other examples of 2017 ICC A117.1 updates are three vehicle-related compliance requirements added new or amended for on-street parking, parking facilities, and electric vehicle charging stations. First, at EV charging stations, a 52-inch x 30-inch clear floor space must be provided, the height of all operable parts must be within a 46" - 48" maximum reach range of the ground or curb depending on approach, and the operation of all operable parts of a station must be operable with one hand and not require tight grasping, pinching, or twisting of the wrist.[126] An accessible route must be provided from the accessible parking space's access aisle to the EV station's clear floor space without being obstructed by the charging cable, and any protection bollards, curbs or wheel stops must be located so they do not obstruct the EV station's clear floor space or the accessible route. Second, at parking facilities, including surface parking lots and parking garages, accessible routes must be physically separated from vehicular traffic when they pass through those parking facilities, except for those routes crossing drive aisles, or from routes directly connected from accessible parking spaces and passenger loading zones to accessible entrances. Third, new provisions are added for on-street parking to align with the new federal public right-of-way accessibility guidelines (PROWAG). For example, "where the width of the sidewalk or available right-of-way exceeds 14 feet, the "wide sidewalk" provisions that require a 60-inch wide minimum access aisle for the full length of the parking space are to be applied. Having the parking space the width of the vehicle plus the width of the access aisle will allow vehicles to park at the curb or at the parking lane boundary. This allows the driver to park so that the access aisle can serve either the driver's side or passenger's side of the vehicle."[127]

Cost:

[126] International Code Council. (2017). *Chapter 3 Building Blocks - Section 309 - 2017 ICC A117.1*. Iccsafe.org; International Code Council. https://codes.iccsafe.org/content/icca117-12017/chapter-3-building-blocks#ICCA117.12017_Ch03_Sec309

[127] International Code Council. (2017a). *2017 Significant Changes To The ICC A117.1 Accessibility Standard*. Iccsafe.org; International Code Council. https://codes.iccsafe.org/content/icca117-12017sc/502-1-502-9-parking-spaces#ICCA117.12017SC_Ch30

The proposed code change aims to remove the confusing existing “Type B Plus” language. Its removal will enhance clarity for designers, builders, and code enforcement officials regarding the application of accessibility, quantity, and distribution requirements for Type A units versus Type B units in Type R-2 apartment houses, monasteries, and convents.

In general, a Type A dwelling unit costs more to construct than a “Type B Plus” dwelling unit due to the higher level of required accessibility features, which require specialized construction and materials, resulting in a higher overall cost. The square footage of Type A units will increase due to ICC ANSI A117.1’s new dimensional requirements, such as the larger turning radius and clear floor space. However, builders and developers may find that overall required building areas are not increased, as they only need to provide 20% Type A units throughout the building, leaving 80% of available dwelling units requiring a Type B-compliant design (not Type B Plus).

The cost differences can be seen when comparing Type A and Type B unit bathroom designs. For a Type A compliant bathroom, 75 square feet is needed to accommodate a fully accessible roll-in shower, toilet, lavatory, and out-swinging door with ICC A117.1 compliant door clearances. On the other hand, a Type B bathroom requires 60 square feet to support a transfer-type shower, toilet, sink with base cabinet, and a 32" door with conventional clearances. According to RS Means 2024 construction cost data, a 1–3 story apartment complex averages $220 - $575 per square foot (Gordian, 2024). Based on this data, the Type B bathroom total unit cost ranges from $8,800 - $23,000, while the Type A bathroom total unit cost ranges from $19,800 - $51,750, resulting in a 44% higher construction cost than a Type B bathroom. The current Uniform Code mandates that all dwelling units must be Type B Plus units, which require larger door clearances and at least one accessible toilet and bathing facility. These requirements result in significantly larger square footage compared to the building areas needed by the ICC model code. However, by eliminating the New York-specific Type B Plus requirements, the additional area requirements for the 20% required Type A units will be balanced

out by the significant reduction in required area for the remaining 80% of units, which are only required to be Type B. Depending on building layout and other factors, the total required building area may decrease when compared to current Uniform Code requirements. Potential cost savings are expected when comparing the 2020 BCNYS Type A versus Type B Plus bathroom requirements with the proposed 2024 BCNYS Type A versus Type B bathroom requirements for a hypothetical 25-unit R-2 apartment building, using the same 2024 RS Means square foot cost data. To facilitate comparison, assume that all dwelling units have one bathroom. The table below summarizes the costs for this scenario:

Basis-of-Design: **25 Unit Type R-2 Apartment Building**

Assumptions for calculations: **1 BR - 1 BA Apartment**

RS Means 2024 Avg SF Cost: **$ 220 - $ 575/sf for 1 - 3 story apartment complex**

2020 BCNYS Requirements

Dwelling Unit Bathroom Type	Quantity Req'd	x	Area per Unit (sf)	=	Total Area (sf)	x	Average Cost per SF	=	Total Cost	Avg Range
Type A	0	x	75	=	0	x	$ 220	=	$ -	MIN
(None for R-2 bldgs w/ 4+ units; all units must be Type B per 1107.6.2.2.2)						x	$ 575	=	$ -	MAX
Type B+	25	x	75	=	1875	x	$ 220	=	$ 412,500	MIN
(At least 1 bathroom per unit must be constructed like Type A)						x	$ 575	=	$ 1,078,125	MAX
2020 Total Required Bathroom SF				=	**1875**					

2024 Proposed BCNYS Requirements

Dwelling Unit Bathroom Type	Quantity Req'd	x	Area per Unit (sf)	=	Total Area (sf)	x	Average Cost per SF	=	Total Cost	Avg Range
Type A	5	x	75	=	375	x	$ 220	=	$ 82,500	MIN
(For bldgs of 20+ units, 20% of total # must be Type A)							$ 575	=	$ 215,625	MAX
Type B	20	x	60	=	1200	x	$ 220	=	$ 264,000	MIN
(For bldgs w/ 4+ units, all units must be Type B per 1108.6.2.2.2)							$ 575	=	$ 690,000	MAX
2024 Total Required Bathroom SF				=	**1575**					

Net Add'l SF Required	=	-300	x	$ 220	=	**$ (66,000)**	MIN
				$ 575	=	**$ (172,500)**	MAX

2020 Total Avg MIN Cost	=	$ 412,500
2024 Total Avg MIN Cost	=	$ 346,500
Difference	=	**$ (66,000)**
Decrease		-19%

2020 Total Avg MAX Cost	=	$ 1,078,125
2024 Total Avg MAX Cost	=	$ 905,625
Difference	=	**$ (172,500)**
Decrease		-19%

At electric vehicle (EV) charging stations, we expect that the only additional cost associated with the new accessibility requirements will be the installation of protection bollards to prevent impact damage to the charging units. According to the RS Means 2024 construction cost data for Albany, NY, the average cost for installing two 8" dia. x 4'-0" high steel pipe bollards, which are filled with concrete and painted, is approximately $1,234. The primary cost impact of the accessibility code amendments for restrooms will come from the increased turning radii, which necessitate larger compartments for accessible stalls. Plastic (HDPE) toilet partitions are priced at $1,530 for a standard cubicle, with an additional $162 for an accessible stall, bringing the total estimated cost to $1,692 per accessible unit.

Alternatives:

One alternative is to maintain the accessibility provisions within the Uniform Code without any amendments. If the 2020 Uniform Code provisions remain unchanged, the new edition of ICC A117.1 will mandate that nearly all units in multi-family housing comply with the newly increased turning radii and doorway width standards. Additionally, not adopting the new edition of the ICC ANSI A117.1 reference standard means that accessibility issues for individuals with disabilities would not be adequately addressed. For instance, the new standard requires 67" turning radii and larger door clearances to accommodate oversized wheelchairs, which are increasingly used by disabled individuals. These dimensional and clearance adjustments also provide the necessary space for caregivers assisting individuals with disabilities during activities such as toileting or changing, particularly where adult changing stations are available. Furthermore, under this alternative, electric vehicle (EV) charging stations would not be required to be accessible, thereby limiting access for disabled owners of electric vehicles. Additionally, Type A dwelling units offer greater accessibility than Type B Plus dwelling units, enhancing the quality of life for residents who need accessible building designs. Not adding requirements for Type A units would reduce the number of residents who could benefit from this improved quality of life. Finally, failing to update A117.1 would prevent compliance with the new

federal public right-of-way accessibility guidelines issued by the U.S. Access Board. These guidelines require that facilities used by pedestrians in the public right-of-way are readily accessible and usable by individuals with disabilities. For these reasons, this alternative was rejected.

Lithium batteries

2024 BCNYS:	Sections 304.1, 306.2, 311.2, 903.2.2.2, 903.2.4, 903.2.7.3, 903.2.9, 903.2.9.1, 903.3.1.1.3, 907.2.2.2, 907.2.4.1, 907.2.7.2, 907.2.10.2
2024 FCNYS:	Sections 203.10.3, 320, 403.10.6, 903.2.2.2, 903.2.4, 903.2.7.3, 903.2.9, 903.2.9.1, Table 903.2.11.6, 903.3.1.1.3, 907.2.2.2, 907.2.4.1, 907.2.7.2, 907.2.10.2, Table 3203.8

Needs and Benefits:

This code amendment adds collection and storage requirements for lithium batteries. These requirements apply to all types of lithium-ion batteries and lithium metal batteries, including used batteries collected for recycling or disposal and batteries stored at recycling and disposal facilities.

Lithium-ion and lithium metal batteries have been a contributing factor in a growing number of fire incidents for several years.[128] These batteries are being used in an ever-increasing number of products and applications and can create challenging fire hazards due to thermal runaway.[129] Lithium-ion and lithium metal batteries pose as a challenging fire hazards for multiple reasons: they are often contained within a metal housing, this makes it difficult for water to contact the batteries to cool the batteries allowing thermal runaway to continue; many lithium-ion technologies are capable of self-supporting fire, without the need for an external oxygen source or they may produce fire when submerged; during the initial stages of thermal runaway the batteries may release toxic and explosive hazardousness gases often leading to deflagration events; the batteries

[128] *The Science of Fire and Explosion Hazards from Lithium-Ion Batteries*, UL Fire Safety Research Institute, January 2023, p. 3.
[129] *The Science of Fire and Explosion Hazards from Lithium-Ion Batteries*, UL Fire Safety Research Institute, January 2023, p. 3 & 5.

may contain stored electrical energy that may pose as an additional risk to firefighters; once the batteries are extinguished they have a high propensity to re-ignite requiring additional supervision of the scene for a greatly extended time period; and during a fire or thermal runaway event cells may launch from the device causing the fire to spread rapidly. The proposed amendment includes requirements to regulate the collection and storage of these batteries so as to reduce the probability of a fire event and mitigate adverse impacts on the safety of the facility and the public. In the BCNYS, Group F-1 occupancies used to manufacture lithium-ion or lithium metal batteries, vehicles, and equipment containing lithium-ion or lithium metal batteries were added to the list of occupancies which require automatic sprinkler systems. Testing has shown automatic sprinkler systems to be effective in suppressing fires involving lithium-ion or lithium metal batteries and can mitigate some of the hazards presented by such batteries.[130]

In the 2024 FCNYS, the sprinkler systems section has been enhanced to include requirements for sprinklers in lithium-ion battery storage areas. In the 2020 FCNYS, Table 3206.2 lacks a commodity classification for lithium-ion and lithium metal batteries – this has been remedied by the proposed amendment. In addition to sprinkler requirements, the addition of this classification also allows the code official to regulate lithium-ion battery storage as high-piled storage when the storage height exceeds six feet.

Section 320.1 identifies the threshold quantities for batteries to be regulated by Section 320. Section 320 does not regulate lithium-ion and lithium metal batteries in products, devices, or vehicles; batteries in small retail packaging; or the temporary storage of batteries at manufacturing facilities or in transit. Section 320.3 requires a fire safety plan to be provided in accordance with new Section 403.10.6, which is specific to lithium-ion and lithium metal batteries and contains provisions for addressing thermal runaway.

[130] *Sprinkler Protection Guidance for Lithium-Ion Based Energy Storage Systems*, NFPA Fire Protection Research Foundation, p. 21.

Requirements for limited indoor battery storage in containers were added to Section 320.4.1. This proposed amendment is intended to provide requirements for containers intended to collect batteries for recycling or disposal. These types of containers can be found in many establishments, including mercantile and other occupancies. The proposed amendment includes limitations for individual containers to not exceed 7.5 cubic feet and for the total storage not to exceed 15 cubic feet. Indoor storage in excess of these values is regulated under Section 320.4.2 and are required to obtain an operating permit per Section 320.2.

Section 320.4.2.6 added provisions which allow the fire code official to waive specific protection requirements based on approval of the procedures used for limiting and verifying that the state of charge (SOC) will not exceed 30 percent. The procedures used to verify the SOC can be periodically checked as part of the operating permit. Lithium-ion batteries not exceeding 30 percent SOC have been shown to be less likely to undergo thermal runaway or fire propagation than fully charged batteries. Limiting the SOC to 30 is recognized by the United States Department of Transportation (DOT) and other transport agencies as providing an additional level of safety and is included in requirements for shipping such batteries by air transport.

Section 320.4.3 was updated to include requirements covering the outdoor storage of lithium-ion or lithium metal batteries. The proposed requirements include criteria for the location of storage in proximity to exposures, storage area size limits, and separation and fire detection requirements.

This amendment adds a new Section 403.10.6 which includes requirements for providing a fire safety plan and an evacuation plan to be prepared and maintained for occupancies involving battery related activities, storage, handling, and use. Emergency action plans and early mitigation are key elements in providing for occupant and facility safety and for reducing the size of an event. Section 403.10.6 identifies a broad range of occupancies, use and activities involving lithium-ion and lithium metal batteries which have potential to cause or contribute to a large fire event due to thermal runaway. Section 403.10.6 does not apply to storage and merchandizing of products containing lithium-ion or lithium metal batteries, or the storage and merchandizing

of small batteries in retail packaging. Additionally, Section 403.10.6 does not apply to personal use vehicle and devices in one- and two-family dwellings and townhouses. Section 403.10.6.1 requires fire safety and evaluation plans to consider mitigation planning for a thermal runaway event involving the lithium-ion and lithium metal batteries. Early mitigation is a key to preventing events and controlling the size of event should one occur.

Cost:

This code change will increase the cost of construction due to the addition of fire protection requirements for lithium-ion and lithium metal battery collection and storage areas.

The requirements for installation of automatic sprinkler systems are one of the major sources of cost increase for this amendment. A survey of fire protection supply companies suggests that automatic sprinkler systems in new commercial construction cost approximately $1-$4 per square foot. These costs vary based on the type of building – the cost for low-rise buildings is approximately $1-$2 per square foot. These costs may be offset by discounts in insurance costs, as many insurance companies offer lower rates for buildings with automatic sprinkler systems.

Another source of increased costs is provided by the operating permit provisions. Facilities with collection and/or storage of batteries exceeding certain limits will now be required to obtain operating permits, which presents an increased cost to the facility in preparing the permit application. However, depending on the current use(s) of the building, an operating permit requirement may already exist in the current code; therefore, for such facilities there would be no increased cost.

Similarly, new requirements for fire safety plans and the associated technical report detailing fire and explosion risks will cause increased costs. Affected occupancies will face increases in operational costs related

to writing and maintaining the fire safety and evacuation plans and employee training. However, many of these occupancies are already required to maintain fire response plans and provide employee training.

Alternatives:

An alternative is to not adopt any provisions addressing lithium batteries. However, lithium batteries present new and increasing fire safety hazards that are not adequately addressed by the existing codes. As such, this alternative was rejected.

Energy Storage System

2024 BCNYS: Sections 202, Table 414.5.1, 716.2.5.4.1, 716.3.2.1.1.1, 903.2.4, 1604.5.2

2024 RCNYS: Sections R202, R330

2024 FCNYS: Sections 1107, 1207, Table 1105.4

Needs and Benefits:

This code amendment includes provisions recommended by the Energy Storage System (ESS) Inter-Agency Fire Safety Working Group (Fire Safety Working Group). Following a series of fires at three battery ESS locations across New York State in 2023, Governor Kathy Hochul convened the Fire Safety Working Group to address safety concerns around lithium-ion battery ESS.[131] The Fire Safety Working Group consisted of State agency officials from Division of Homeland Security and Emergency Services (DHSES), Office of Fire Prevention and Control (OFPC), New York State Energy Research and Development Authority (NYSERDA), Department of Environmental Conservation (DEC), Department of Public Service (DPS), Department of State

[131] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 2.

(DOS), and nation-leading battery ESS safety industry experts.[132] The Fire Safety Working Group was formed to investigate recent fires, inspect current installations, identify gaps in codes and industry best practices and develop recommendations for the Code Council proposing revisions and enhancements to the Fire Code.[133] In July 2024, the Fire Safety Working Group released its Fire Code Recommendations, which consisted of proposed updates and additions to the Fire Code, as well as additional considerations.[134] The recommendations from the Fire Safety Working Group include: adopting the 2024 International Fire Code language for ESS, adopting the 2023 version of NFPA 855, and requiring peer review for all ESS installations.

Section 1207 of the IFC, which provides requirements for ESS, was revised and expanded in the 2024 IFC. New and updated provisions include: mobile ESS, fault conditions, hazard mitigation analysis, retrofitting lead-acid and nickel-cadmium batteries, fire suppression systems, and explosion control. Additionally, provisions for residential occupancies were revised and expanded regarding installation locations, fire detection, and special provisions for ESS located in garages, including vehicle impact protection. Many of these new or updated IFC provisions include notes stating they are based on the 2023 version of NFPA 855, which aligns with the workgroup recommendations.[135]

The 2024 IFC references the 2020 version of NFPA 855, which is changed in the proposed amendment to reference the 2023 version of NFPA 855 based on the workgroup recommendations. The 2020 version of NFPA 855, "Standard for the Installation of Stationary Energy Storage Systems," was initially released in 2019,

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[132] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 2.
[133] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 2.
[134] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 4.
[135] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 5.

and the 2023 edition is the first update to this standard since its release. This update provides many beneficial updates, and incorporates changes based on feedback from users of the initial 2020 version. The 2020 FCNYS, like the 2018 IFC, does not reference NFPA 855, since the standard was not available during the 2020 code update process. Inclusion of the 2023 edition of NFPA 855 will provide increased life safety and protection from the hazards presented by ESS systems.

The proposed amendment, as recommended by the workgroup, modifies Section 1207.1.8.1 to require hazard support personnel to respond to all fire (or other hazard) events, and adds a requirement for such personnel to arrive on-site within four hours. Previously, such personnel were dispatched "where required by the fire code official." This modification ensures that trained personnel will be on site to respond to any potential hazardous developments such as reignition, which is a known hazard for ESS fires.

Other implemented workgroup recommendations include: continuously attended system monitoring for ESS systems exceeding specified thresholds, video surveillance system monitoring for ESS systems exceeding specified thresholds, third party ESS safety inspections, and first-responder training and site-incident plans.

Another workgroup recommendation which is incorporated in the proposed amendment covers peer reviews. Currently, Section 1206.8 of the 2020 FCNYS gives authorities having jurisdiction (AHJs) the discretion to require that battery ESS developers pay for an independent peer review of the developer's permit application.[136] However, AHJs rarely utilize this discretion to require a peer review.[137] The proposed

[136] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 5.
[137] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 5.

amendment mandates peer reviews for all battery ESS installations exceeding energy capacity thresholds established for lithium-ion batteries in the FCNYS.[138]

AHJs often lack the resources or expertise to understand and interpret critical battery ESS permitting documents.[139] This gap in AHJ expertise has led to incomplete or inadequate applications that do not sufficiently meet the requirements of Section 1206 of the 2020 FCNYS.[140] Peer reviews by experts in the field can assist AHJs in their review and understanding of battery ESS permit applications and determining compliance with FCNYS requirements.[141]

The provisions for ESS in the RCNYS have also been extensively updated, including the requirements for installation locations, maximum energy ratings, fire detection, vehicle impact protection, labeling, and documentation.

Cost:

Peer review costs additional money for battery ESS applicants and based on a loaded rate between $250/hour and $350/hour for 30-45 hours, is estimated between $10,000 and $18,000 per installation plus $2,000 in administrative compliance expenses. NYSERDA plans to contract with qualified peer reviewers to provide peer reviews at no cost to those project developers receiving NYSERDA incentives as part of its Energy Storage Program.[142]

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[138] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 5.

[139]FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Groupp.5.

[140] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 5.

[141] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 5.

[142] FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group

Additional workgroup recommendations are included in this proposed amendment and were assessed for possible effects on costs. Specific estimated costs are detailed below for each identified provision.

One requirement specifies that qualified personnel must be available for dispatch within 15 minutes and able to arrive on scene within four hours to provide support to local emergency responders, which is expected to result in an initial cost increase for the owner, agent, or lessee of the ESS system of $19,000 - $26,900 per ESS project.[143] The potential cost includes annual training qualifying such employees as "Fire Mitigation Personnel," which amounts to 8 to 12 hours per year at a loaded rate of $250 to $350/hour plus certificate allowance, and an annual contracting fee between $15,000 and $20,000.[144]

Extending safety signage requirements beyond the ESS unit itself, to include perimeter fences or security barriers, is estimated to increase costs between $1,500 to $3,000 per facility.[145]

Staffing and operating a 24/7 network operations center for battery management system data monitoring is estimated to have an initial cost of $5,000 to $10,000 and an annual cost of $7,500 per site.[146]

Installation of video surveillance systems for continuous monitoring and post-event analysis purposes is estimated to cost between $15,000 and $24,000, which includes the equipment, installation, and initial setup for offsite storage, assuming a storage duration of 72 hours.[147]

Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 6.

[143] Appendix A: FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 23.

[144] Appendix A: FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 23.

[145] Appendix A: FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 23.

[146] Appendix A: FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 23.

[147] Appendix A: FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 23.

The requirement for an emergency response plan and annual local first responder training for every ESS installation is estimated to have an initial cost, per project, of $12,000 to $15,000 and an annual cost of $11,900, assuming coordination and training for 8 to 10 hours at a loaded rate of $250 to $350/hour.[148]

The proposed amendment requires monitoring of fire detection systems by a central station service alarm system to ensure timely, proper notification to the local fire department in the event of a fire alarm involves the design, permitting, procurement, and installation of the necessary equipment to ensure timely and proper notification to the local fire department. However, central station monitoring in accordance with NFPA 72 is already required under the 2020 Uniform Code, so there is no cost increase associated with the implementation of this provision.

Requiring periodic special inspections for ESS installations to ensure thorough safety and compliance is estimated to have an initial cost of $10,000 to $13,800, and an annual cost of approximately of $11,900 per project.[149] This estimate assumes a loaded rate of $250 to $350/hour, approximately 4-6 hours for the owner to provide access to the inspector(s), and spending 8-10 hours per site for a two-person team to perform the inspection and complete a standardized checklist/report. This estimate also includes $2,000 per site in travel expenses.

Alternatives:

An alternative is to not adopt updated provisions addressing ESS. This alternative does not address the fire safety issues associated with ESS that prompted the formation of the Fire Safety Working Group and does

[148] Appendix A: FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 24.
[149] Appendix A: FSWR Recommendations That Exceed the 2024 IFC Provisions of the New York State Interagency Fire Safety Working Group Fire Code Recommendations, July 2024 https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group p. 23-24.

not adequately protect life and property. This alternative also fails to integrate the recommendations from this work group. For these reasons, this alternative was rejected.

Occupiable Roofs

2024 BCNYS: Sections 202, 503.1.4, 1004.7, 1006.3, 1009.2.1, 1607.14.2

2024 FCNYS: Sections 202, 1004.7, 1006.3, 1009.2.1

2024 EBCNYS: Sections 202, 502.1, 804.14.2, 804.5.1.1, Table 804.5.1.1(1), Table 804.5.1.1(2), 902.1, 1011.5.1, 1011.5.2, 1101.7, 1302.1.3

Needs and Benefits:

This code amendment is an ICC change that adds a new definition of occupiable roof to the BCNYS, FCNYS, and the EBCNYS as well as new provisions addressing the egress, accessibility, additions or alterations for occupiable roofs.

The definition of occupiable roof is similar to the existing code definition for occupiable space. However, the new definition of occupiable roof is different in a few key ways. First, the list of uses contained within the definition of occupiable space has been left out. Additionally, the definition of occupiable roof clarifies that access for maintenance of rooftop mechanical equipment or other maintenance does not trigger assembly live load requirements or other provisions related to occupiable roofs. The third difference is the references to light and ventilation in the definition of occupiable space are left out because occupiable roofs are exterior spaces that do not require mechanical ventilation and only require lighting in those portions that constitute the means of egress.

The proper approach to dealing with occupiable roofs from the perspective of building height, number of stories, and installation of occupant notification features has been further clarified for a more consistent

application of the code's intent. Occupiable roofs were added to the existing Section 1009.2.1 of the BCNYS that requires an elevator at accessible floors four or more stories above or below the level of exit discharge.

As rooftops become a desirable amenity space, the FCNYS has added a provision to enhance egress from buildings with occupiable roofs, by requiring elevators for buildings with greater than three stories, two-way communication and door clearance to comply with A117.1.

Requirements for occupiable roof areas created by additions or alterations to comply with the requirements for new construction were added to several sections of the EBCNYS.

Cost:

The expanded means of egress requirements for occupiable roofs will increase construction costs by varying amounts depending on project scope.

For example, under the proposed amendment, an occupiable roof at the fourth story (or higher) of a building requires an elevator as one of the accessible means of egress. Existing Chapter 11 provisions require an elevator for all other building stories for accessible egress. Since this elevator is now required to also serve the roof, the cost of installing such elevator will be increased. Excluding elevator shaft construction, RSMeans 2024 Construction Cost Data estimates the total unit cost of a 4-stop, 2000 lb. capacity electric traction elevator in the Albany, NY region at $163,264. Dividing that cost by 4, the additional cost of adding one extra stop for the fourth-story occupiable roof on a three-story building would be approximately $40,816.

Another cost impact is due to code amendments to Tables 1006.3.3 and 1006.3.4 which increase the total occupant load and the minimum number of exits for occupiable roofs based on occupant load. Both can lead to variable additional costs for a project due to code-required adjustments needed for stairway width, door quantities, and sizes.

Alternatives:

An alternative is to not adopt any provisions addressing occupiable roofs. This alternative does not address the fire safety issues associated with occupiable roofs and does not adequately protect life and property. Occupants of such roofs could face insufficient or non-accessible egress, and thus be at higher risk of injury or death due to fire events. For these reasons, this alternative was rejected.

Adult changing stations

2024 BCNYS: Sections 1110.2.1.2, 1110.4

2024 EBCNYS: Section 306.7.15

2024 MCNYS: Section Table 403.3.1.1

Needs and Benefits:

This code amendment includes the locations where adult changing stations are required to be installed and the accessibility provisions for adult changing stations.

An adult changing station contains a changing table large enough to accommodate an adult-sized person that is located in proximity to sanitary facilities, such as lavatories and trash disposal. Without such facilities, severely disabled people who cannot use toilets because of their disability suffer from severe isolation because they and their caregivers must return home to be changed. This lack of access has a profound impact not only on the person with a disability, but on their caregivers who are often their immediate family members. Normal activities outside the home such as shopping, entertainment, and travel must be curtailed because of a lack of safe and sanitary places to change. On occasion, caregivers report they have no option other than to change the adults for whom they care on restroom floors. Aside from the obvious sanitation concerns, which are far from minimal, this practice raises serious questions about how we as a community afford people with significant disabilities a measure of human dignity and protect their right to privacy.

The proposed amendments provide that adult changing stations are required to be installed in assembly and mercantile occupancies that have family or assisted-use toilet or bathing facilities requiring an aggregate of six or more male and female water closets, Group B occupancies providing educational facilities where 12 or more male and female water closets are required to serve classrooms and lecture halls, rooms or spaces used for assembly purposes in Group E occupancies requiring an aggregate of six or more male and female water closets for the room or space, and in highway rest stops and service plazas.

In addition to location requirements, provisions were added requiring adult changing stations to be accessible in all occupancies wherever they are provided. They must also be located in a toilet room that only has one water closet and one lavatory, except when they are located in a family or assisted-use toilet room, and building occupants must have access to the adult changing station(s) at all times that the associated occupancy is occupied.

Cost:

The code proposal will increase the cost of construction. The additional costs include the cost of a changing table and the increase in room size. The costs have been minimized by piggybacking on the existing requirements for family or assisted-use toilet rooms.

In February 2019, the Department of State and the Office of General Services, released the Feasibility Study on Installing Adult Changing Stations for Persons with Disabilities in Public Buildings. This study was carried out under Part KK of Chapter 58 of the Laws of 2018. It concluded that the estimated cost for including an adult changing station in new construction would be approximately $20,000, and altering an existing family or assisted-use toilet room to add an adult changing station would cost around $24,000. The study also noted

that adding a new adult changing station bathroom as a building addition may cost around $400,000, or constructing the same facility as a new space within an existing building's footprint could be $250,000.[150]

Alternatives:

An alternative option is to not adopt any provisions for adult changing stations. However, this option does not improve the lives of individuals with disabilities. It also limits their access to publicly accessible buildings throughout the State. This can make planning activities at and traveling to these buildings challenging if adequate facilities for toileting and bathing are limited or not available. Public bathrooms often provide an undignified and unsanitary experience, where open floor space is the only option for changing. This presents risks to the individuals and their caregivers. Transferring the individual from their wheelchair to the floor can be hazardous to both; in some instances, for healthcare professionals, such transfers can be non-compliant with the NYS Safe Patient Handling Law. For these reasons, this alternative was rejected.

Shipping container construction

2024 BCNYS: Sections 202, 3114

2024 RCNYS: Sections R202, R301.1.4

Needs and Benefits:

This code amendment adds a definition of intermodal shipping container to the BCNYS and the RCNYS, and adds the new Section 3114 to the BCNYS, which includes provisions to regulate the use of shipping containers in building construction.

[150] See *Feasibility Study on Installing Adult Changing Stations for Persons with Disabilities in Public Buildings*, February 2019, prepared by Hyman Hayes Associates.

Constructing houses out of one or more intermodal shipping containers has gained popularity in recent years. This code change was added to the 2024 IBC to ensure consistent application of code requirements and to address minimum safety requirements without duplicating existing code provisions. Provisions referring back to the new section in the BCNYS were also added to the RCNYS.

The amendment adds the new Section 3114, which provides clarity on how to consistently design with, permit, and field inspect shipping containers that are repurposed for building construction. Under the current Uniform Code, use of repurposed intermodal shipping containers requires the building owner or design professional to demonstrate to the satisfaction of the code enforcement official that the proposed design meets code requirements, which may result in inconsistent application of code requirements between municipalities and requires additional design work.

A new definition of intermodal shipping containers is being proposed to separate the container from other sections which refer to, but intentionally do not define, shipping containers. Additionally, a new definition is proposed so that the shipping container provisions can be adequately enforced, and the definition of shipping container is not confused with the other multiple variety of definitions of containers currently in the market. In addition to design and construction provisions, Section 3114.1 also contains a list of exceptions to prevent application of other code sections which could be interpreted as applying to intermodal shipping containers under other applications, such as temporary storage, relocatable buildings, energy storage facilities, and listed equipment. Section 3114.2 also outlines the additional information regarding material requirements that must be included on the construction documents.

The proposed provisions of Section 3114.3 focus on the characteristics of the intermodal shipping container prior to it being repurposed. Section 3114.3 requires verification of the container's construction, condition and structural integrity to assist the structural engineer in evaluating the ability of the shipping

container to resist structural design loads. Section 3114.3 requires inspection by an approved agency and verification of the data plate found on the intermodal shipping container.

Sections 3144.4 through 3114.6 provide references to other sections concerning foundations, decay and termite control, crawlspace ventilation, roof assemblies, interior finishes, and joints or intersections. Section 3114.7 addresses interstitial spaces that may be created when multiple intermodal shipping containers are connected or stacked and ensures that concealed spaces between the containers are protected to prevent fire and hot gasses from passing between containers.

The proposed amendments include structural provisions unique to intermodal shipping containers and which do not duplicate existing structural requirements. These structural provisions, included in Section 3114.8, are divided into three categories: 1) general characteristics for all containers; 2) engineered structural design; and 3) simplified method for single-unit stand-alone container. Provisions include: securing containers to foundations or other structures, stacking containers, and welded connections. Section 3118.4 contains the structural provisions on the engineered structural design. The detailed engineered approach represents the general engineering practice allowed for all other types of building constructions. Section 3114.8.5 contains provisions which provide a simplified design and construction process allowed to be used for some structures.

Cost:

Under the current code, use of intermodal shipping containers in building construction requires the owner or design professional to demonstrate to the satisfaction of the code enforcement official that the proposed design meets the codes requirements without specific provisions, which can be quite costly. This process typically requires detailed design analysis and construction information to illustrate how the design satisfies the Uniform Code, which in some cases only provides prescriptive requirements. The proposed section provides a few new prescriptive requirements for informational data plates and shear walls, as well as several references to existing prescriptive code sections. Since prescriptive requirements are generally much cheaper

than performing engineering analyses, these changes present the potential for significant decreases in construction cost. This code amendment will decrease the cost of construction.

The requirement for installation of a data plate will not cause a significant cost increase, as all information to be included on the plate would likely be required to be included in the permit submission under the current code. The prescriptive shear wall provisions, which allow use of a table to determine allowable shear stresses on the shipping container, will likely decrease the cost of construction, as a detailed engineering analysis for shear will no longer be necessary.

The references to other prescriptive code sections will also decrease the cost of construction, as this new section allows application of some existing Uniform Code provisions. The design considerations addressed by these prescriptive requirements would, under the current code, require detailed engineering analyses.

Alternatives:

One alternative is to not adopt any provisions addressing the use of shipping containers in building construction. However, use of intermodal shipping containers in building construction is already being done in New York State under the alternative means and methods process. This alternative does not address the demands of shipping container proponents, nor does it afford regulatory compliance tools to municipalities that choose to respond to those demands. Additionally, use of the alternative means and methods process may result in uneven enforcement throughout the state, which is contrary to the stated objective of the legislation establishing the Uniform Code. For these reasons, this alternative was rejected.

4. COST

a. COST TO REGULATED PARTIES FOR THE IMPLEMENTATION OF, AND CONTINUING COMPLIANCE, WITH THE PROPOSED RULE

The new provisions of the Uniform Code will alter building and development costs, reducing some while increasing others. Although costs will vary based on the specifics of each construction or modification project, the Department of State does not expect significant differences from the costs associated with the current code. This rule introduces performance-based regulatory requirements, offering regulated parties more options to protect occupants and users of buildings while also addressing programmatic space needs in the most cost-effective manner.

Item #3 (Needs and Benefits General) above elaborates on the costs linked to the significant changes in the existing Uniform Code. For an overall summary of the potential costs related to New York's code updates, reference to two cost-impact studies conducted by the State of Florida and the National Association of Home Builders are discussed below.

The 2023 Florida Building Code is based on the 2021 I-Codes and utilized RS Means 2024 cost data specifically for the densely populated Orlando region. The 2020 New York Uniform Code is derived from the 2018 I-Codes. Therefore, it can generally be extrapolated to assume that New York's costs to go from a 2018 ICC based code to a 2024 ICC based could be roughly double the percentages identified in Florida's report, without accounting for compounding percentages. Based on available data, the cost impact of the 2024 ICC code changes is estimated to range from approximately 1.68% for a small hotel to about 0.20% for a one-story residential building. The average cost increase for commercial and institutional buildings may be around 0.90%, while residential buildings may experience an average cost increase of approximately 0.26%.

Item	Building Type	Estimated 2024 Cost under 2020 NYS Uniform Code[a]	Estimated 2024 Cost Under 2024 I-Codes	Anticipated Cost Change[b]
1	Small Office	$ 14,640,696	$ 14,754,893	0.78%
2	Retail Spaces	$ 28,543,941	$ 28,606,738	0.22%
3	Primary School	$ 13,406,124	$ 13,478,517	0.54%
4	Small Hotel	$ 11,627,667	$ 11,823,012	1.68%
5	Mid-Rise Apartment	$ 65,296,987	$ 66,119,729	1.26%
6	1-Story Residence	$ 435,506	$ 436,377	0.20%
7	2-story Residence	$ 639,780	$ 641,827	0.32%
		Average Net % Change in Cost Estimate (comm./inst. bldgs.):		**0.90%**
		Average Net % Change in Cost Estimate (residential):		**0.26%**

Footnotes:

a. Estimated costs from "Table 1. Summary I-Codes and NEC Chnages Cost Impact Comparison" in *Issa, R. R., Wenniger, K., & Chyz, J. (2024). Evaluation of the Cost Impact of 2024 ICC Prescriptive Code Changes. Center for Advanced Construction Information Modeling (CACIM) Rinker School of Construction Management. https://www.floridabuilding.org/fbc/commission/FBC_0624-B/Final_Report_Reduced.pdf*

b. Percentages based on data from "Table 1. Summary I-Codes and NEC Chnages Cost Impact Comparison" in *Issa, R. R., Wenniger, K., & Chyz, J. (2024). Evaluation of the Cost Impact of 2024 ICC Prescriptive Code Changes. Center for Advanced Construction Information Modeling (CACIM) Rinker School of Construction Management. https://www.floridabuilding.org/fbc/commission/FBC_0624-B/Final_Report_Reduced.pdf*

The National Association of Home Builders (NAHB) evaluated the changes in the 2024 IRC that impact construction costs for residential buildings. They quantified the additional costs associated with constructing a single-family, detached house that complies with the 2024 IRC, using the 2021 IRC as a baseline. The NAHB study estimated these costs for houses located in Climate Zones 1-8. Below are tables from that report, with New York's climate zones highlighted. The following tables are extracted for reference from the 2024 IRC Code Changes estimated costs report prepared for the National Association of Home Builders.[151]

[151] Home Innovation Research Labs. (2024). *Estimated Costs of the 2024 IRC Code Changes, prepared For National Association of Home Builders*. In 2024 I-Codes Adoption Kit (pp. 3–5). National Association of Home Builders. https://www.nahb.org/-/media/NAHB/advocacy/docs/top-priorities/codes/code-adoption/estimated-costs-of-2024-irc-changes.pdf?rev=ea36f1c3d5ab4c47b04f5c5b233738e1&hash=2117BED78F03126767B463A5399C0F56

Table 2. Estimated Incremental Cost of Selected 2024 IRC Changes attributed to the Reference Houses

		Selected Cities	Miami, Dallas		LA, Seattle, New York		Chicago, Helena		Duluth, Fairbanks	
		Climate Zone	1 & 2		3 & 4		5 & 6		7 & 8	
		Reference House	1 & 2		1, 2, 3, & 4		3 & 4		3 & 4	
					Cost Range					
Ref #	Description of Change	2024 IRC Section	High	Low	High	Low	High	Low	High	Low
R-10 (RB173)	Adds requirements for framing at an open floor edge to support a guard assembly & resist rotation.	R502.11	$459	$0	$459	$0	$156	$0	$156	$0
R-11 (RB175)	Allows a 6-mil polyethylene vapor retarder under a slab-on-ground floors instead of a 10-mil vapor retarder conforming to ASTM E1745 Class A reqs.	R506.3.3	($472)	($951)	($472)	($957)	($472)	($957)	($472)	($957)
R-20 (S241.2)	Modifies the water-resistive barrier requirements for stucco in dry climates	R703.7.3	$0	($1,203)	$0	($1,270)	$0	($1,270)	$0	($1,270)
Total			($13)	($2,154)	($13)	($2,227)	($316)	($2,227)	($316)	($2,227)

[152]

[152] Home Innovation Research Labs. (2024). *Estimated Costs of the 2024 IRC Code Changes, prepared For National Association of Home Builders*. In 2024 I-Codes Adoption Kit (pp. 3–5). National Association of Home Builders. https://www.nahb.org/-/media/NAHB/advocacy/docs/top-priorities/codes/code-adoption/estimated-costs-of-2024-irc-changes.pdf?rev=ea36f1c3d5ab4c47b04f5c5b233738e1&hash=2117BED78F03126767B463A5399C0F56

Table 3. Estimated Incremental Cost of Selected 2024 IRC Changes not attributed to the Reference Houses

		Selected Cities	Miami, Dallas		LA, Seattle, New York		Chicago, Helena		Duluth, Fairbanks	
		Climate Zone	1 & 2		3 & 4		5 & 6		7 & 8	
		Reference House	1 & 2		1, 2, 3, & 4		3 & 4		3 & 4	
					Cost Range					
Ref #	Description of Change	2024 IRC Section	High	Low	High	Low	High	Low	High	Low
R-1 (ADM 13.2)	Reorganizes and expands the duties and powers of the Building Official.	R104	$597	$74	$597	$74	$597	$74	$597	$74
R-2 (RB7)	Reorganizes and updates the appendix for existing buildings; a few items are substantive.	Appendix BO	$1,304	($1,332)	$1,304	($1,720)	$875	($1,720)	$875	($1,720)
R-3 (RB44)	Modifies the table for allowable deflection under live load to exclude guards & handrails.	Table R301.7	$0	($402)	$0	($402)	$0	($402)	$0	($402)
R-4 (RB45)	Requires splices in floor, ceiling, or roof framing members not occurring over a bearing point to be designed by a registered design professional.	R502.3, R802.4.1, R802.5	$804	$0	$891	$0	$891	$0	$891	$0

[153]

[153] Home Innovation Research Labs. (2024). *Estimated Costs of the 2024 IRC Code Changes, prepared For National Association of Home Builders*. In 2024 I-Codes Adoption Kit (pp. 3–5). National Association of Home Builders. https://www.nahb.org/-/media/NAHB/advocacy/docs/top-priorities/codes/code-adoption/estimated-costs-of-2024-irc-changes.pdf?rev=ea36f1c3d5ab4c47b04f5c5b233738e1&hash=2117BED78F03126767B463A5399C0F56

R-5 (RB108)	Provides an exception that exterior stairways to grade with three or fewer risers may have a 36" wide landing provided the stairway is not serving the required egress door.	R318.7.6	$0	($798)	$0	($798)	$0	($798)	$0	($798)
R-6 (RB149)	Requires markings where BIPV systems create hidden electrical hazards.	R329.6.4	$246	$190	$246	$190	$246	$190	$246	$190
R-9 (RB165)	Adds a new column with the USDA Textural Soil Classification and indicates which soil types are unsuitable for backfill.	R401.4.1	$0	($946)	$0	($946)	$0	($946)	$0	($946)
R-12 (RB190)	Adds prescriptive requirements for deck ledger flashing and requires the water-resistive barrier to run behind the ledger.	R507.2.4, R507.9, R703.2, R703.4	$36	$28	$36	$28	$36	$28	$36	$28
R-13 (RB226)	Provides an additional method to support masonry veneer at a roof-wall intersection.	R703.8.2.2	$0	($328)	$0	($328)	$0	$0	$0	$0
R-15 (RM13)	Adds a compliance option for location of exhaust openings above windows and doors.	M1504.3	$0	($262)	$0	($262)	$0	($262)	$0	($262)
R-16 (RM18)	Allows taking return air for HVAC systems from bathrooms	M1602.2	$435	$198	$435	$198	$435	$198	$435	$198
R-17 (RM19)	Allows taking return air for HVAC systems from closets	M1602.2	$1,843	$0	$1,843	$0	$1,843	$0	$1,843	$0
R-18 (RM20)	Allows taking return air for HVAC systems from mechanical rooms.	M1602.2	$0	$0	$244	$0	$244	$0	$244	$0
R-19 (S240.2)	Modifies the water-resistive barrier requirements for stucco to apply to all exterior sheathing.	R703.7.3	$684	$369	$750	$369	$750	$394	$750	$394

154

b. COST TO THE AGENCY, THE STATE, AND LOCAL GOVERNMENTS FOR THE IMPLEMENTATION OF, AND CONTINUED ADMINISTRATION OF THE RULE

154 Home Innovation Research Labs. (2024). *Estimated Costs of the 2024 IRC Code Changes, prepared For National Association of Home Builders*. In 2024 I-Codes Adoption Kit (pp. 3–5). National Association of Home Builders. https://www.nahb.org/-/media/NAHB/advocacy/docs/top-priorities/codes/code-adoption/estimated-costs-of-2024-irc-changes.pdf?rev=ea36f1c3d5ab4c47b04f5c5b233738e1&hash=2117BED78F03126767B463A5399C0F56

The Department of State's Division of Building Standards and Codes ("DBSC") will provide training on the new provisions of the Uniform Code for all local government code enforcement personnel, registered design professionals, and other interested parties. Offering such training is part of the DBSC's core mission, and the DOS anticipates that DBSC will be able to provide such training using its existing staff and facilities, at no significant additional cost to the agency. However, DOS, in consultation with NYSERDA, intends to retain a consultant to assist with the development of the advanced in-service training for this code update.

The Department of State, State agencies that administer and enforce the Uniform Code, State agencies that own or construct buildings, and local governments that administer and enforce the Uniform Code will be required to obtain copies of the new code books. It is anticipated that the set of code books will cost between $971 and $1,141.[155] However, the Department of State will provide either one (1) electronic copy of the set of code books or one (1) hard copy of the set of code books for each local government administering and enforcing the Uniform Code. Smaller agencies and local governments typically require only one set of code books. Larger local governments may require multiple sets. Approximately 4,000 code enforcement officials in approximately 1,600 municipalities will be affected by a new version of the Uniform Code.

Local governments, counties, and State agencies that construct commercial buildings and residential buildings for their own use will be required to comply with the Uniform Code, as amended by this proposed rule. When a local government, county, or State agency constructs a commercial building or a residential building for its own use, it will be a regulated party, and it will be subject to the same costs of implementation and continuing compliance as private parties, as discussed in Part 4(a) of this Regulatory Impact Statement.

[155] The cost is only for the code books and a range is provided depending upon whether electronic copies versus hard-copy prints are purchased. Note there would likely be additional costs for the reference standards that are cited within the code books.

Any additional costs borne by local government authorities having jurisdiction for increased plan review or inspections are generally passed on to the general public in the form of marginal increases in permitting and inspection fees.

Further information concerning costs and savings of the most significant of the new provisions of the Uniform Code are discussed within Item #3 (Needs and Benefits General) above.

5. LOCAL GOVERNMENT MANDATES

This rule making will impose some programs, services, duties, and responsibilities upon counties, cities, towns, villages, school districts, fire districts, and other special districts. When any of the aforementioned governmental entities undertake the construction of a building or structure, the construction process is subject to the provisions of the proposed rule to the same extent that the construction of a private building or structure would be regulated.

Pursuant to Executive Law §381, cities, towns, and villages are responsible for administering and enforcing the Uniform Code, except in limited specific circumstances. Consequently, local government personnel will require training in the details of this rule. However, the Department of State's Division of Building Standards and Codes has funding available to provide for training local government code enforcement officials. This training will provide knowledge to enable local government to enforce this regulation.

6. PAPERWORK

This rule will impose minimal additional reporting or record keeping requirements. The additional reporting or record keeping requirements include operating permits for inflatable amusement devices and lithium-ion battery storage; a fire safety plan and an evacuation plan for occupancies involving battery related activities and storage, handling, and use; and an emergency response plan for ESS installations. Local

governments should already have a system in place for administering and enforcing the use of operating permits in accordance with the local government's 19 NYCRR Part 1203-compliant code enforcement program. Additionally local government should also already have a system in place for maintaining property files including fire safety, evacuation, and emergency response plans.

7. DUPLICATION

The Uniform Code provides standards for the construction and maintenance of buildings and structures and for the protection of buildings and structures and their occupants from the hazards of fire. The federal government does not impose comprehensive requirements for these matters. The federal government has addressed the topic of accessible and usable facilities for persons with disabilities through adoption of the Americans with Disabilities Act (ADA) and the Fair Housing Act. Although the existence of federal and State standards may raise issues of overlap or conflict, no such overlap or conflict exists with this proposed rule.

Several State agencies have promulgated regulations which impose requirements upon buildings or structures that house activities licensed or regulated by the particular agency. Although such regulations may affect the construction and/or maintenance of particular buildings or structures, they are not a comprehensive building and fire prevention code like the Uniform Code. Such regulations may impose an additional layer of regulation upon the construction, maintenance, or use of certain categories of buildings. These other regulations, however, are focused upon activities or occupants regulated or protected by the particular State agency and have been promulgated pursuant to statutory authority other than Article 18 of the Executive Law. To the extent that any other State agency regulation conflicts with provisions of the Uniform Code, such other regulation is superseded by the code. *See* Executive Law §383(1).

The provisions set forth in 19 NYCRR Subpart 1229-2, as required by Executive Law §378(19), are included for consistency with the amendments to the Energy Code set forth in the proposed rule making to

amend 19 NYCRR Part 1240, as required by Energy Law §11-104(6)-(8). Please see the Regulatory Impact Statement for the Notice of Proposed Rule Making to amend 19 NYCRR Part 1240 for further detailed information.

8. ALTERNATIVES

It is the policy of the DOS to modernize and amend the Uniform Code, so as to maintain consistency with the national model codes, to keep building practices in New York State consistent with practice nationally, and to incorporate new technical developments in a timely manner. Consequently, the alternative of maintaining existing provisions of the Uniform Code was rejected.

Beginning in March 2022 and continuing through July 2024, the Code Council received summaries of the notable changes in the 2021 and 2024 ICC Model Codes. Staff indicated that a Notice of Rule in Development (NRD), which is the first step in the code adoption process, would summarize the code changes and highlight modifications, including changes from the ICC code development process, legislative directives, and solicit public comments. This was done to ensure that the new provisions of the Uniform Code would remain appropriate and applicable to continually developing design and construction issues and needs in New York State. Additionally, as required under Public Officers Law §103(c), the public was able to view and/or participate in these meetings.

Proposed New York State modifications were posted on the Department of State website for public inspection through a Notice of Rule in Development in July 2024. In addition, the Department of State maintains a list of over 10,000 interested parties that have signed up for e-bulletins regarding code issues, and the Notice of Rule in Development announcement was distributed via the *Building New York* e-bulletin in July 2024. The Department of State accepted comments on the Notice of Rule in Development through September 24, 2024.

Some other alternatives were considered but ultimately not included in this code update. Those alternatives include but are not limited to including mobile fueling and mobile marine craft fueling provisions and aligning definitions such as the definition of agricultural building in 19 NYCRR Subpart 1229-2 with the definition of agricultural building provided in the Uniform Code. Ultimately these provisions alternatives were not implemented due to life safety concerns for a widespread fueling of gasoline from non-fixed equipment, and a need for the definitions with the supporting regulations to have a separate and distinct meaning in order to align with the intent of the law. The Department also considered the alternative of not including code provisions that coordinate with various agency laws and regulations, such as the Public Health Law, Education Law, and Real Property Law for related construction, inspection, and emergency response planning; however, this was rejected because this would create conflicts with other applicable laws and lack of uniformity with enforcement. The Department received comments requesting zoning provisions, such as setback requirements and location restrictions, for Energy Storage Systems (ESS) be provided for in the Uniform Code. Such zoning provisions were not considered because they are outside the scope of the Uniform Code. The Department received comments requesting to expand the conditions of the open burning prohibition under Section 307.1.1 of the Fire Code to include when its smoke, odor, or emissions affect neighboring property. Such expansion of the open burning prohibition based on Section 19 of the New York State Constitution is outside the scope of the Uniform Code and would be covered by the air emissions and odor nuisance regulatory provisions of the DEC and local laws.

Public hearings will be held in accordance with the provisions of the State Administrative Procedure Act. A draft of the proposed code will also be available on the Department of State's website and an e-bulletin will be sent announcing that fact.

9. FEDERAL STANDARDS

The Uniform Code provides standards for the construction and maintenance of buildings and structures and for the protection of buildings and structures and their occupants from the hazards of fire. The federal government does not impose comprehensive requirements for these matters. The federal government has addressed the topic of accessible and usable facilities for persons with disabilities through adoption of the Americans with Disabilities Act (ADA) and the Fair Housing Act. Although the existence of federal and State standards may raise issues of overlap or conflict, no such overlap or conflict exists with this proposed rule.

With respect to the proposed provisions set forth in 19 NYCRR Subpart 1229-2 relating to the prohibition of fossil-fuel equipment and building systems in certain buildings, there is pending litigation where plaintiffs assert federal preemption relating to the use of energy, such as gas, by covered appliance and equipment under the Energy Policy and Conservation Act (EPCA, 42 U.S.C. §§6201-6422). However, the provisions set forth in 19 NYCRR Subpart 1229-2, as required by Executive Law §378(19), are included for consistency with the amendments to the Energy Code set forth in the proposed rule making to amend 19 NYCRR Part 1240, as required by Energy Law §11-104(6)-(8). Please see the Regulatory Impact Statement for the Notice of Proposed Rule Making to amend 19 NYCRR Part 1240 for further detailed information.

10. COMPLIANCE SCHEDULE

The target date for publishing a notice of adoption for this rule making is 2025, with an effective date no later than December 31, 2025. These amendments will take effect at least 90 days after the Notice of Adoption is published in the State Register.

Upon filing the Notice of Adoption for the rule making, a transition period will commence. During this period, regulated parties will have the option of submitting building permit applications in compliance with either current code provisions or the newly adopted provisions. Transition periods are authorized by Executive Law §378(20), which provides that "(a) . . . [N]o change to the building code shall become effective until at

least ninety days after the date on which notice of such change has been published in the state register. . . .” and Subdivision 20 further states that “(b) . . . [T]he council may provide that, in the period during which changes to the code have been adopted but are not yet effective . . . a person shall have the option of complying with either the provisions of the code as changed or with the code provisions as they were set forth immediately prior to the change.”

The magnitude of the proposal to adopt new provisions for the Uniform Code makes it necessary that the Code Council establish a plan for transition to the new provisions. This transition provides flexibility for large construction projects that are in the planning and development stages prior to adoption of the new code provisions. However, the option of compliance with either the “old” Uniform Code or the “new” Uniform Code would not allow persons to mix the application of current and proposed code provisions. The new code provisions will take effect fully at the end of the transition period. A delay of the effective date of the new Uniform Code provisions for a specified time after their adoption, and the option of compliance with either the existing or the proposed code during that period ensure that regulated parties will be able to achieve compliance with the rule on the date that it becomes effective.

REGULATORY IMPACT STATEMENT

(Energy Code)

1. STATUTORY AUTHORITY.

Under Energy Law §11-103(2)(a), the State Fire Prevention and Building Code Council ("Code Council") is authorized, from time to time as it deems appropriate and consistent with the purposes of Article 11 of the Energy Law, to review and amend the State Energy Conservation Construction Code ("Energy Code"), or adopt a new Energy Code, through rules and regulations provided that the Energy Code remains cost effective with respect to building construction in the State. Energy Law §11-103(2)(b) provides that when adopting the first amended version of the Energy Code following the effective date of Chapter 374 of the Laws of 2022, or July 5, 2022, and any subsequent codes, the Code Council shall use its best efforts to adopt provisions for residential buildings that achieve energy savings greater than energy savings achieved by the then most recently published International Energy Conservation Code ("IECC") and to adopt provisions for commercial buildings that achieve energy savings greater than energy savings achieved by the then most recently published ASHRAE 90.1, both at levels recommended by the New York State Energy Research and Development Authority ("NYSERDA"), provided that the Code Council determines that such advanced energy savings can be achieved while still meeting the cost effectiveness considerations contemplated by Energy Law §11-103(2).

Energy Law §11-104 provides that the Energy Code shall be designed to satisfy specific criteria, including the following:

(1) the Energy Code's standards and requirements, so far as may be practicable, shall be formulated in terms of performance objectives;

(2) to the fullest extent feasible, use of modern technical methods, devices and improvements which

tend to minimize consumption of energy and utilize to the greatest extent practical solar and other renewable sources of energy without affecting reasonable requirements for the health, safety and security of the occupants or users of buildings shall be permitted;

(3) as far as may be practicable, the improvement of energy conservation construction practices, methods, equipment, materials and techniques shall be encouraged;

(4) the Energy Code shall provide reasonable uniform standards and requirements for construction and construction materials for the improvement of energy conservation construction practices;

(5) The Code Council, in consultation with the Commissioner of the Department of Parks, Recreation and Historic Preservation, is authorized to adopt exemptions to such uniform standards and requirements for historic buildings as defined in Energy Law §11-102, to the extent that the uniform standards and requirements would threaten, degrade, or destroy the historic form, fabric, or function of such historic buildings;

(6) to the fullest extent feasible, the standards for construction of buildings in the Energy Code shall be designed to help achieve the State's clean energy and climate agenda, including but not limited to greenhouse gas (GHG) reduction, set forth within Chapter 106 of the Laws of 2019, also known as the New York State Climate Leadership and Community Protection Act (the "Climate Act"), and as further identified by the New York State Climate Action Council ("CAC") established pursuant to Environmental Conservation Law §75-0103; and

(7) to support the goal of zero on-site GHG emissions and help achieve the State's clean energy and climate agenda, including but not limited to GHG reduction requirements set forth within the Climate Act, the Energy Code shall prohibit the installation of fossil-fuel equipment and building systems, in any new building not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, on or after December 31, 2025, and the Energy Code

shall prohibit the installation of fossil-fuel equipment and building systems, in all new buildings after December 31, 2028, with certain exceptions.

This proposed rulemaking would repeal the current version of the Energy Code and adopt a new version of the Energy Code pursuant to Article 11 of the Energy Law. The current version of the Energy Code is set forth in 19 NYCRR Part 1240 which incorporates by reference the 2020 Energy Conservation Construction Code of New York State ("2020 ECCCNYS") and the 2016 edition of the *Energy Standard for Buildings Except Low Rise Residential Buildings* ("ASHRAE 90.1-2016"), as amended by Part 1240. This proposed rule would repeal the existing Energy Code and adopt new version of the Energy Code set forth in Part 1240 incorporating by reference the 2024 Energy Conservation Construction Code of New York State ("2024 ECCCNYS") and NYS ASHRAE 90.1 - 2024, *Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings* ("2024 NYS ASHRAE 90.1"), which is the New York State-specific version of the publication ASHRAE 90.1-2022. This proposed rule is authorized by Energy Law §11-103(2).

Please note that the Uniform Fire Prevention and Building Code ("Uniform Code") will be the subject of a separate rulemaking.

2. LEGISLATIVE OBJECTIVES.

Energy Law §3-101(2) states that it shall be the energy policy of the State "to encourage conservation of energy and to promote the clean energy and climate agenda, including but not limited to GHG reduction, set forth within [Chapter 106] of the laws of [2019], also known as the [Climate Act], in the construction and operation of new commercial, industrial, agricultural and residential buildings, and in the rehabilitation of existing structures, through heating, cooling, ventilation, lighting, insulation and design techniques and the use of energy audits and life-cycle costing analysis."

Energy Law §11-101 provides that in furtherance of the above-quoted energy policy, an Energy Code shall be adopted "to protect the health, safety and security of the people of the State and to assure a continuing supply of energy for future generations" and that the Energy Code shall "mandate that economically reasonable energy conservation techniques be used in the design and construction of all new public and private buildings in the state."

Energy Law §11-104, as amended by Part RR of Chapter 56 of the Laws of 2023, provides that the Energy Code shall be designed to help achieve the State's clean energy and climate agenda, including but not limited to GHG reduction, set forth within the Climate Act, and as further identified by the CAC, and that the Energy Code shall prohibit the installation of fossil-fuel equipment and building systems in any new building not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, on or after December 31, 2025, and prohibits the installation of fossil-fuel equipment and building systems, in all new buildings after December 31, 2028, with certain exceptions.

On July 5, 2022, Energy Law §11-103 was amended by changing what the Code Council must consider in determining whether the code remains cost effective. Prior to July 5, 2022, when determining whether the Energy Code remained cost effective, the Code Council had to consider "whether the cost of materials and their installation to meet its standards would be equal to or less than the present value of energy savings that could be expected over a ten-year period in the building in which such materials are installed." Energy Law §11-103(2), as amended by Chapter 374 of the Laws of 2022, now requires that the Code Council consider "(i) whether the life-cycle costs for a building will be recovered through savings in energy costs over the design life of the building under a life-cycle cost analysis performed under methodology as established by the New York State Energy Research and Development Authority in regulations which may be updated from time to time, and (ii) secondary or societal effects, such as

reductions in GHG emissions, as defined in regulations." On April 29, 2024, the NYSERDA Board approved a new Part 510 of Title 21 of the Official Compilations of Codes, Rules and Regulations of the State of New York ("21 NYCRR Part 510") that established NYSERDA's methodology for life-cycle cost analysis and defined secondary or societal effects. 21 NYCRR Part 510 became effective on June 18, 2024.

Energy Law §11-103(2) also provides that the Energy Code for commercial buildings must meet or exceed the most recently published "*Energy Standard for Buildings Except Low-Rise Residential Buildings*" (ASHRAE 90.1), or achieve equivalent or greater energy savings; and that the Energy Code for residential buildings must meet or exceed the then most recently published edition of the publication entitled "International Energy Conservation Code" (IECC), or achieve equivalent or greater energy savings.

The current version of the Energy Code for commercial buildings meets or exceeds ASHRAE 90.1-2016. The proposed rule will amend the Energy Code for commercial buildings to a code that meets or exceeds the 2022 edition of ASHRAE 90.1 ("ASHRAE 90.1-2022"). ASHRAE 90.1-2022 is the most recently published ASHRAE 90.1 and the 2024 NYS ASHRAE 90.1 is based on ASHRAE 90.1-2022, with modifications to achieve energy savings greater than ASHAE 90.1-2022, as recommended by NYSERDA. Therefore, the Energy Code, as proposed by this rule, will satisfy Energy Law §11- 103(2), which requires the Energy Code for commercial buildings to meet or exceed the then most recently published ASHRAE 90.1.

The current version of the Energy Code for residential buildings meets or exceeds the 2018 edition of the IECC ("2018 IECC"). The proposed rule will amend the Energy Code for residential buildings to a code that includes the "Residential Provisions" of the 2024 ECCCNYS based upon the most recent (2024) edition of the IECC ("2024 IECC"), with modifications to achieve energy savings greater than the 2024 IECC, as recommended by NYSERDA. Therefore, the Energy Code, as proposed by this rule, will satisfy that part of Energy Law §11-103(2) that requires the Energy Code for residential buildings to meet or exceed

the most recent edition of the IECC.

As more fully discussed below in Part 3 “General Needs, Benefits, and Costs” of this Regulatory Impact Statement, it is anticipated that (1) buildings that comply with the Energy Code, as proposed by this rule, will use less energy than buildings that comply with the current Energy Code; (2) on average, the Energy Code, as proposed by this rule, will be cost effective for commercial buildings and residential buildings; and (3) on average, the increase in the cost of constructing a commercial or residential building according to the requirements of the Energy Code as proposed by this rule over the cost of constructing a similar commercial or residential building according to the requirements of the current version of the Energy Code will be less than the present value of the savings in energy costs that could be expected over the life-cycle cost of the building. Based on the foregoing, the Department of State (DOS) and the Code Council believe that this proposed rule will encourage the conservation of energy in the construction and operation of new commercial, industrial, and residential buildings; protect the health, safety and security of the people of the State by helping to assure a continuing supply of energy for future generations; maximize the extent to which the use of modern technical methods, devices and improvements which tend to minimize consumption of energy will be permitted; encourage the improvement of energy conservation construction practices, methods, equipment, materials and techniques; mandate that economically reasonable energy conservation techniques be used; help achieve the State's clean energy and climate agenda to the fullest extent feasible; provide a cost-effective building energy code for commercial buildings and residential buildings; and otherwise help achieve the legislative objectives described above.

In addition, this proposed rule will ensure that the Energy Code complies with Title III of the Federal

Energy Conservation and Production Act ("ECPA") (42 U.S.C. 6831, et. seq.).[1]

3. NEEDS AND BENEFITS.

Necessity

This proposed rule is necessary to encourage conservation of energy and installation of clean energy features in the construction and operation of new buildings; to protect the health, safety and security of the people of the State by helping to assure a continuing supply of energy for future generations; to maximize the extent to which the use of modern technical methods, devices and improvements which tend to minimize consumption of energy are employed; to encourage the improvement of energy conservation construction practices, methods, equipment, materials and techniques; to mandate that economically reasonable energy conservation techniques be used; to provide a cost effective building energy code for residential and commercial buildings; and to otherwise help achieve the legislative objectives described above in Part 2 "Legislative Objectives" of this Regulatory Impact Statement, specifically Part RR of Chapter 56 of the Laws of 2023 (Prohibition on the installation of fossil-fuel equipment and building systems) and Chapter 374 of the Laws of 2022 (Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022), which both reference Chapter 106 of the Laws of 2019 (New York State Climate Leadership and Community Protection Act).

In addition, this proposed rule is necessary to ensure that the Energy Code will comply with Title III of the ECPA.

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[1] 42 U.S.C. § 6833(b) provides that when the U.S. Department of Energy ("DOE") determines that commercial buildings constructed to a revised edition of ASHRAE 90.1 would achieve greater energy efficiency than buildings constructed to the prior edition of ASHRAE 90.1, states are required to update their energy codes for commercial buildings to codes that meet or exceed the revised edition of ASHRAE 90.1. DOE issued a determination on March 6, 2024 regarding ASHRAE 90.1-2022 and State certifications for Standard 90.1-2022 must be submitted by March 6, 2026.

The more significant changes to the Energy Code to be implemented by this proposed rule, and the needs associated with each such change, are discussed in greater detail below.

Benefits.

The principal benefits to be derived from this proposed rule will be the reduction in the energy used by buildings that comply with the Energy Code as amended by this proposed rule and the savings in energy costs to be realized by owners of buildings that comply with the Energy Code as amended by this proposed rule. Buildings are responsible for one third of the energy consumed in the State; reduced energy consumption will contribute to the availability and reliability of the energy supply. The following paragraphs describe the principal benefits in more detail.

Cost Effective. The DOS anticipates that the Energy Code, as amended by this proposed rule, will be cost effective, and that, on average, building owners will receive a net economic benefit from this proposed rule. More specifically, the DOS and Code Council anticipate that, on average, when comparing a building constructed to the requirements of the Energy Code as amended by this proposed rule to a similar building constructed to the requirements of the current version of the Energy Code, the life-cycle costs for a building will be recovered through savings in energy costs over the design life of the building under a life-cycle cost analysis performed under methodology as established by NYSERDA, as set forth in 21 NYCRR Part 510, and secondary or societal effects, such as reductions in GHG emissions, as defined in 21 NYCRR Part 510.

Life-cycle cost. Based on the life-cycle cost analysis performed under the methodology established

by NYSERDA and secondary or societal effects, such as reductions in GHG emissions,[2] the DOS and Code Council anticipate that, on average, the increase in initial construction costs resulting from constructing a building to the requirements of the Energy Code as amended by this proposed rule, rather than the requirements of the current version of the Energy Code, will be recovered through savings in energy costs over the design life of the building.

Compliance with New York State Energy Law. This proposed rule will ensure that the provisions of the Energy Code applicable to commercial buildings will continue to meet or exceed the most recently published ASHRAE 90.1 and that the provisions of the Energy Code applicable to residential buildings will continue to meet or exceed the most recently published IECC, as required by Energy Law §11-103(2)(a). This proposed rule will also ensure that the provisions for commercial buildings will achieve energy savings greater than energy savings achieved by the most recently published ASHRAE 90.1 as recommended by NYSERDA and that the provisions for residential buildings will achieve energy savings greater than energy savings achieved by the most recently published IECC as recommended by NYSERDA, as required by Energy Law §11-103(2)(b).

Compliance with Federal Law. This proposed rule will ensure that the Energy Code complies with Title III of the ECPA.

Consistency with National Practices. This proposed rule will also ensure that energy conservation construction practices in New York State remain consistent with national practices. It is expected that many other states will update their building energy codes for commercial buildings to codes that meet or exceed ASHRAE 90.1-2022 and update their building energy codes for residential buildings to codes that meet or

[2] See 21 NYCRR Part 510.

exceed the "Residential Provisions" of the 2024 IECC. DOS and the Code Council believe that maintaining consistency with national practices will make it less complicated, more uniform, and less expensive for regulated parties to comply with the Energy Code.

Reduced Demand for Energy from Fossil-Fuel Sources. By reducing energy demands in a cost-effective manner, as required by Energy Law §11-103, this proposed rule will reduce demand for energy from fossil-fuel sources. As new buildings constructed in accordance with the amended Energy Code for commercial buildings replace obsolete, less energy-efficient buildings, energy use should be further reduced. NYS will benefit from Part RR of Chapter 56 of the Laws of 2023, which prohibits the installation of fossil-fuel equipment and building systems in new construction, along with Chapter 374 of the Laws of 2022, known as the Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022, and the consequent reduction of dependence on imported fossil-fuels and the reduction in associated emissions produced by their use to help achieve the State's clean energy and climate agenda, including but not limited to GHG reduction, set forth in the Climate Act, and as further identified by the CAC.

The more significant changes to the Energy Code to be implemented by this proposed rule and the benefits associated with each such change, are discussed in greater detail below.

Commercial Provisions of 2024 ECCCNYS

The studies, reports, and analyses which served as the basis for the part of this proposed rule that applies to commercial buildings include:

(1) Notice of Determination. Issued by the United States Department of Energy ("DOE") and

published in the Federal Register on March 6, 2024 in 89 Federal Register at 15983-01.[3] This Notice (hereafter referred to as the "DOE Commercial Notice of Determination") indicates that DOE has determined that buildings constructed to the requirements of ASHRAE 90.1-2022 would improve overall energy efficiency in buildings subject to the Energy Code compared to the requirements of ASHRAE 90.1-2019. See 89 Federal Register 15983-01 (March 6, 2024) at 15984.

(2) Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2022. Prepared by Pacific Northwest National Laboratory ("PNNL"), Richland, WA (D. Maddox, J. Zhang, M. Rosenberg, Y. Xie, M. Taylor, J. Lerond, M. Tillou, M. Myer, L. Troup, T. Pilet and H. Nagda publication date February 2024).[4] According to this most recent national analysis of ASHRAE 90.1-2022, new commercial buildings meeting the requirements of the updated standard will experience on average, an 8.9 percent energy costs savings over new commercial buildings designed to ASHRAE 90.1-2019.[5] The DOE concluded moving from ASHRAE 90.1-2016 to ASHRAE 90.1-2019 resulted in energy cost savings of 4.3 percent.[6] The cumulative energy savings from ASHRAE 90.1-2016 to ASHRAE 90.1-2022 is 14.5 percent. The prototypes selected for this analysis are those used by PNNL in previous New York State specific analyses to determine the cost effectiveness of ASHRAE 90.1 for its national and New York State specific analyses. Specifically, the PNNL "Energy Savings Analysis" considered sixteen commercial building prototypes (small office, medium office,

[3] https://www.federalregister.gov/documents/2024/03/06/2024-04717/determination-regarding-energy-efficiency-improvements-in-ansiashraeies-standard-901-2022

[4] ANSI/ASHRAE/IES Standard 90.1-2022 : Energy Savings Analysis, U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, February 2024 available at ANSI/ASHRAE/IES Standard 90.1-2022: Energy Savings Analysis (energycodes.gov)

[5] *ANSI/ASHRAE/IES Standard 90.1-2022 : Energy Savings Analysis*, U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, February 2024 available at ANSI/ASHRAE/IES Standard 90.1-2022: Energy Savings Analysis (energycodes.gov) at p. vii; See 89 Federal Register 15983-01 (March 6, 2024) at 15984.

[6] Preliminary Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2019 US. Department of Energy Office of Energy Efficiency & Renewable Energy, April 2021 available at Preliminary Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2019

large office, standalone retail, strip mall, primary school, secondary school, outpatient health car, hospital, small hotel, large hotel, non-refrigerated warehouse, quick service restaurant, full service restaurant, mid-rise apartment, and high-rise apartment) in sixteen climate zones, including two of the three climate zones found in New York State (4A and 5A).[7] Also noted, the cities selected for climate zones 4A and 5A were also the same cities previously used by PNNL in both the 2019 and 2016 reports; namely, New York City, and Buffalo, NY.[8]

Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2019 prepared by PNNL (J. Zhang, M. Rosenberg, J. Lerond, Y. Xie, C. Nambia, Y. Chen, R. Hart, M. Halverson, D. Maddox and S. Goel publication date July 2021). According to this national analysis of ASHRAE 90.1-2019, new commercial buildings meeting the requirements of the standard would experience on average 4.3% energy cost savings when compared to ASHRAE 90.1-2016.[9]

(3) NORESCO Report. Energy Savings and Cost-Effectiveness Analysis of the 2024 New York State Energy Conservation Construction Code Commercial Provisions. Prepared for NYSERDA by NORESCO (B. Edwards, J. Arent, F. Yousefi, and R. Athalye), dated November 2024. The NORESCO report utilized eight building prototypes that make up approximately 76 percent of the statewide enclosed built environment. These building prototypes included NYC high rise apartment (20-story), high-rise apartment (10-story), mid-rise apartment (4-story), large hotel, standalone retail, large office, secondary school, and warehouse.

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[7] *ANSI/ASHRAE/IES Standard 90.1-2022 : Energy Savings Analysis*, U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, February 2024 available at ANSI/ASHRAE/IES Standard 90.1-2022: Energy Savings Analysis (energycodes.gov) at p. 5-6

[8] *ANSI/ASHRAE/IES Standard 90.1-2022 : Energy Savings Analysis*, U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, February 2024 available at ANSI/ASHRAE/IES Standard 90.1-2022: Energy Savings Analysis (energycodes.gov) at p. 6.

[9] Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2019 (energycodes.gov)

Explanation of how studies were used – Commercial buildings.

DOS and the Code Council used the DOE Notice of Determination to determine that this proposed rule will reduce energy use by commercial buildings and that the Energy Code, as proposed by this rule, will satisfy that part of Energy Law § 11-103(2) that requires the Energy Code for commercial buildings to meet or exceed the most recently published ASHRAE 90.1, or achieve equivalent or greater energy savings.

DOS and the Code Council used the PNNL National Energy Savings Analysis Study and the NORESCO Report to determine (1) that this proposed rule will reduce energy use by commercial buildings; (2) that the Energy Code for commercial buildings, as proposed by this rule, will be cost effective; and (3) that the aggregate "first costs" associated with compliance with the Energy Code for commercial buildings, as proposed by this rule, will be recovered through savings in energy costs over the design life of the building under a life-cycle cost analysis performed under methodology as established by NYSERDA. The DOS and the Code Council also used the PNNL National Energy Savings Analysis Study and the NORESCO Report to determine the initial costs of compliance with this proposed rule and the ongoing costs of continuing to comply with this proposed rule.

The analyses assume that the proposed code will take effect in 2026. The studies also assume that Energy Law Section 11-104(6)(b), which prohibits installation of fossil fuel equipment in most new construction less than seven stories or 100,000 sf, will prohibit low-rise buildings from using fossil fuels starting December 31, 2025. This means, assuming a three-year code cycle, that all three years of construction for the Standalone Retail, Mid-rise Apartment, and Warehouse building types will be with electric end uses, in compliance with New York State Energy Law. New York City's Local Law 154 (NYC 2021) mandates electrification of all buildings for the final year of the 3-year code cycle modeled. This is incorporated into the study and the final weighting of results.

Energy Usage Savings – Commercial Buildings.

The DOE and PNNL anticipate that commercial buildings constructed to the requirements of ASHRAE 90.1-2022 rather than ASHRAE 90.1-2019 will improve overall energy efficiency in buildings subject to the code. See the DOE Commercial Notice of Determination 89 Federal Register 15983-01 (March 6, 2024) at 15984.[10]

Energy Cost Savings – Commercial Buildings.

PNNL anticipates that the energy costs for commercial buildings constructed to the requirements of ASHRAE 90.1-2022 will be approximately 8.9 percent lower than the energy costs for commercial buildings constructed to the requirements of ASHRAE 90.1-2019.[11] According to PNNL's Energy Savings Analysis of ANSI/ASHRAE/IES Standard 90.1-2019, new commercial buildings meeting the requirements of the standard would experience on average 4.3% energy cost savings when compared to ASHRAE 90.1-2016.[12]

The NORESCO Report anticipates overall, the proposed 2024 State Energy Code is expected to yield 19.5 percent site energy savings and provide a 30-year net present value savings of $10.72 per square foot compared to the current 2020 codes, across all new commercial construction in the State for this code cycle.

Table. Statewide Energy Cost Savings, Incremental Cost, and Lifecycle Cost Savings by Prototype for NORESCO Report

Building Type	First year energy cost savings ($/sf)	Incremental first cost ($/sf)	LCC savings ($/sf)	Societal effects ($/sf)	LCC Savings with societal effects ($/sf)
NYC High-rise Apartment	$0.43	($1.61)	$9.18	$0.60	$9.78

[10] https://www.federalregister.gov/documents/2024/03/06/2024-04717/determination-regarding-energy-efficiency-improvements-in-ansiashraeies-standard-901-2022

[11] *ANSI/ASHRAE/IES Standard 90.1-2022 : Energy Savings Analysis*, U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, February 2024 available at ANSI/ASHRAE/IES Standard 90.1-2022: Energy Savings Analysis (energycodes.gov) at p. vii;

[12] Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2019 (energycodes.gov)

Building Type	First year energy cost savings ($/sf)	Incremental first cost ($/sf)	LCC savings ($/sf)	Societal effects ($/sf)	LCC Savings with societal effects ($/sf)
High-rise Apartment	$0.60	($0.11)	$11.88	$0.84	$12.72
Mid-rise Apartment	$0.80	$1.46	$13.25	$0.69	$13.94
Large Hotel	$0.60	$3.40	$7.97	$1.25	$9.22
Standalone Retail	$1.05	$1.28	$18.23	$0.88	$19.10
Large Office	$0.45	($2.63)	$13.53	$0.29	$13.82
Secondary School	$0.22	$2.13	$2.26	$0.34	$2.60
Warehouse	$0.28	$3.14	$1.75	$0.33	$2.08
Weighted Average, NYS	$0.53	($0.01)	$10.06	$0.66	$10.72

Cost Effectiveness – Commercial Buildings.

The Energy Code for commercial buildings, as proposed by this rule, will be cost effective when comparing a building constructed to the requirements of 2024 ECCCNYS to a similar building constructed to the requirements of 2020 ECCCNYS. It is anticipated that, according to NORESCO's analyses, based on costs and assumptions, the commercial provisions of the proposed 2024 ECCCNYS are cost effective compared to the 2020 ECCCNYS. Commercial building prototypes studied in the NORESCO Report analyzed the present value of the energy cost savings over 30 years and determined it will exceed the sum of (1) the first costs (i.e., the increase or decrease in the initial costs of construction), (2) present value of the differences in replacement costs over 30 years, plus the present value of the differences in maintenance costs over 30 years.

Table. Cost effectiveness by building type NORESCO Report

Prototype	Construction weights by building type	First year energy cost savings ($/sf)	Incremental first cost ($/sf)	LCC savings ($/sf)
NYC High Rise Apartment	37.7%	$0.43	($1.61)	$9.18
High Rise Apartment	18.3%	$0.60	$0.11	$11.88
Midrise Apartment	8.1%	$0.80	$1.46	$13.25
Large Hotel	7.5%	$0.60	$3.40	$7.97
Standalone Retail	6.9%	$1.05	$1.28	$18.23
Large Office	9.5%	$0.45	($2.63)	$13.53
Secondary School	1.0%	$0.22	$2.13	$2.26
Warehouse	10.9%	$0.28	$3.14	$1.75
Statewide Weighted Average Results	100%	$0.53	($0.01)	$10.06

Life-cycle cost analysis – Commercial Buildings.

Pursuant to Energy Law §11-103(2), in determining that the Energy Code for commercial buildings, as proposed by this rule, will be cost effective (as indicated above), the DOS and the Code Council must consider (1) whether the life-cycle costs for a building will be recovered through savings in energy costs over the design life of the building under a life-cycle cost analysis performed under methodology as established by NYSERDA, and (2) secondary or societal effects, such as reductions in GHG emissions. NYSERDA's methodology considers energy prices, effective useful life, labor and material costs and property tax. For commercial buildings, the methodology considers ownership scenarios, maintenance costs, loan interest rate, income tax rate, and aggregating results. The methodology also considers the societal effects of the value of avoided GHG emissions resulting from changes in electricity and fuel consumption.

This consideration consisted of comparing the first costs (i.e., the increase or decrease in the cost of constructing a building to the requirements of 2024 ECCCNYS compared to the cost of constructing a building to the requirements of 2020 ECCCNYS) to savings in energy costs over the design life of the

building under the life-cycle cost analysis performed under methodology established by NYSERDA (21 NYCRR Part 510), including secondary or societal effects (New York State Department of Environmental Conservation's published guidance, [13]).

The NORESCO Report provides the following documentation as a part of their Rulemaking support:

1. An Equivalency Study to (a) provide a determination that the Commercial provisions of the Energy Code are at least as stringent as ASHRAE 90.1-2022 and (b) address the requirements of the Energy Law, Article 11. This study has determined that the Commercial provisions of the Energy Code are as stringent as ASHRAE 90.1-2022.
2. A Cost Effectiveness Study to satisfy (a) the economic impact analysis required by Energy Law §11-103(2), and (b) to determine the continued cost of compliance. This study has determined that 2024 ECCCNYS is cost effective per New York State's requirement for the life-cycle costs analysis.

As in PNNL's previous national analysis, PNNL shared with the national cost data related to the differences in first cost, maintenance cost, and replacement cost over 30 years between ASHRAE 90.1-2016 and ASHRAE 90.1-2022. Note that cost data was only available for two of New York's climate zones: 4A and 5A. Therefore, the cost-effectiveness analysis is limited to two cities: New York City (4A) and Buffalo (5A).[14]

The Cost Effectiveness Rule permits more granular fuel costs, where available. Electricity costs in each New York State climate zone were averaged for residential and commercial electricity prices for the utilities serving each county in the zone. Revenue and sales data were derived from Form EIA-861M's Sales

[13] NYSDEC Value of Carbon Guidance 2023 Update

[14] Energy Efficiency and Renewable Energy Office, *Determination Regarding Energy Efficiency Improvements in ASNI/ASHRAE/IES Standard 90.1 -2022*, March 2024.

and Revenue data for 2023 (EIA 2024) and then averaged for each zone, based on the utility territory, weighted by population served in each county. Natural gas costs were determined using the 2023-2024 winter small commercial gas tariffs from each utility listed by the New York State Department of Public Service using the same weighted average methodology for the regional costs as electric utilities (National Grid NYC 2023) (ConEd 2023) (Central Hudson 2023) (National Grid Long Island 2023) (NYSEG 2023) (NYSEG 2023) (National Grid Upstate 2023) (ORU 2023) (RG&E 2023) (RG&E 2023) (National Fuel 2024).

Table. Economic Parameters

Parameter	Value	Source
Analysis Period	30 years	NYSERDA Methodology (NYSERDA 2023)
Loan Term	30 years	Same as Analysis Period
Depreciation Term	39 years	IRS Publication 946 (IRS 2012)
Inflation Rate	2.63%	BLS Producer Price Index, new construction (BLS 2022)
Nominal Discount Rate	6.00%	NYSERDA Methodology
Real Discount Rate	3.29%	NYSERDA Methodology
Loan Interest Rate	6.00%	Online Source (RealtyRates 2022)
Overhead and Profit	28.8%	NYSERDA Methodology
Gas Price Escalation Rate	Varies annually	Supplement to NIST 135, Table Ca-1 (Kniefel 2023)
Electricity Price Escalation Rate	Varies annually	Supplement to NIST 135, Table Ca-1
Fuel Price	Table on page 18	EIA and NYS Utilities

Table. Fuel Prices

Fuel Cost	Commercial	Commercial	Residential	Residential
Region	Electricity ($/kWh)	Gas ($/Therm)	Electricity ($/kWh)	Gas ($/Them)
CZ4- NYC	$0.25	$1.31	$0.30	$2.17
CZ4 – Other	$0.20	$1.32	$0.23	$1.83

CZ5	$0.13	$0.81	$0.18	$1.05
CZ6	$0.13	$0.91	$0.17	$1.16

The following table summarizes the societal effects of each building prototype in the NORESCO Report. Avoided GHG emissions were calculated by multiplying the annual building electricity and gas savings by GHG emissions factors published by NYSERDA. The avoided GHG emissions were then converted to annual dollars by following guidance from DEC's *Establishing a Value of Carbon, Guidelines for Use by State Agencies*. A 2 percent discount rate was used and the value of avoided GHG emissions was added to the annual cash flow.

Prototype	LCC savings - no societal benefits ($/sf)	First year emissions savings (lbs CO2e/sf)	Net present value of societal benefits savings ($/sf)	Cost-Effectiveness ($/sf)
NYC High Rise Apartment	$9.18	1.21	$0.60	$9.78
High Rise Apartment	$11.88	1.71	$0.84	$12.72
Midrise Apartment	$13.25	2.42	$0.69	$13.94
Large Hotel	$7.97	2.50	$1.25	$9.22
Standalone Retail	$18.23	3.10	$0.88	$19.10
Large Office	$13.53	1.04	$0.29	$13.82
Secondary School	$2.26	0.99	$0.34	$2.60
Warehouse	$1.75	1.16	$0.33	$2.08
Statewide Weighted Average Results	$10.06	1.60	$0.66	$10.72

Cost Summary by Building Type

The following tables summarize the incremental cost of building components for each prototype impacted by measures in the proposed relative baseline based off the NORESCO Report. Where there were changes, they were costed on an incremental basis, *i.e.*, only those components of a system that provided the increase in performance were costed. The difference between the sum of these component costs is the total

incremental cost between baseline and proposed, weighted across climate zones where the prototypes are modeled.

NYC High-rise Apartment Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$215,384	$202,995
	Fenestration	$579,066	$449,382
	Thermal Bridging Mitigation	$36,700	$47,625
	Air Leakage reduction	$0	$19,465
HVAC	Central System	$1,201,528	$1,002,305
Water Heating	Central System	$101,627	$93,399
Lighting	Interior Lighting	$602,180	$434,419
Clean Energy	PV system	$17,381	$89,085

High-rise Apartment Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$127,581	$120,645
	Fenestration	$285,861	$223,292
	Thermal Bridging Mitigation	$18,210	$24,500
	Air Leakage reduction	$0	$10,531
HVAC	Central System	$762,589	$643,255
Water Heating	Central System	$54,953	$38,203
Lighting	Interior Lighting	$184,017	$168,679
Clean Energy	PV system	$16,755	$88,444

Mid-rise Apartment Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$70,850	$70,850
	Fenestration	$49,482	$50,027
	Thermal Bridging Mitigation	$6,907	$10,077
	Air Leakage reduction	$0	$4,365
HVAC	Central System	$201,989	$151,860
Water Heating	Central System	$20,204	$20,204
Lighting	Interior Lighting	$67,250	$45,300
Clean Energy	PV system	$0	$73,462

Large Hotel Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$579,598	$568,999
	Fenestration	$283,802	$230,370
	Thermal Bridging Mitigation	$17,992	$24,140
	Air Leakage reduction	$0	$13,749
HVAC	Central System	$1,046,650	$1,385,394
Water Heating	Central System	$339,314	$395,247
Lighting	Interior Lighting	$953,958	$771,646
Clean Energy	PV system	$11,995	$234,592

Standalone Retail Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$282,868	$278,085
	Fenestration	$15,131	$21,901
	Thermal Bridging Mitigation	$6,861	$9,113
	Air Leakage reduction	$0	$4,020

System	Component	Baseline	Proposed
HVAC	Central System	$146,479	$147,023
Water Heating	Central System	$8,695	$7,290
Lighting	Interior Lighting	$244,604	$186,863
Clean Energy	PV system	$8,337	$80,457

Large Office Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$1419,246	$1,381,780
	Fenestration	$1,268,693	$936,402
	Thermal Bridging Mitigation	$47,321	$60,908
	Air Leakage reduction	$0	$54,292
HVAC	Central System	$2,782,124	$3,120,728
Water Heating	Central System	$126,524	$32,325
Lighting	Interior Lighting	$7,656,156	$6,146,185
Clean Energy	PV system	$18,299	$406,499

Secondary School Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$601,194	$601,194
	Fenestration	$374,618	$377,813
	Thermal Bridging Mitigation	$21,707	$28,578
	Air Leakage reduction	$0	$19,716
HVAC	Central System	$3,159,363	$3,017,179
Water Heating	Central System	$48,648	$45,672
Lighting	Interior Lighting	$168,312	$121,380
Clean Energy	PV system	$0	$612,571

Warehouse Measure Costs

System	Component	Baseline	Proposed
Envelope	Opaque Assembly	$218,454	$218,454
	Fenestration	$53,608	$53,632
	Thermal Bridging Mitigation	$13,878	$18,792
	Air Leakage reduction	$0	$5,955
HVAC	Central System	$54,586	$67,912
Water Heating	Central System	$2,425	$2,357
Lighting	Interior Lighting	$238,727	$208,816
Clean Energy	PV system	$0	$151,228

Conclusion:

The NORESCO Report concluded the proposed commercial provisions of the proposed 2024 ECCCNYS are cost effective compared to the 2020 ECCCNYS with the 2020 NYC Energy Conservation Code. The costs savings for building owners arise from the reduction in energy consumption and the associated reduction in annual energy costs. Additional savings are derived from the social effects. The Energy Code commercial provisions as proposed by this rule were found to be cost effective under the life-cycle cost analysis performed under methodology as established by NYSERDA as set forth in 21 NYCRR Part 510.

2024 NYS ASHRAE 90.1 achieves energy savings greater than energy savings achieved by the most recently published ASHRAE 90.1 (ASHRAE 90.1 - 2022), in compliance with Energy Law §11-103(2)(b).

Residential Provisions of 2024 ECCCNYS

The studies, reports, and analyses which served as the basis for the part of this proposed rule that

applies to residential buildings include:

(1) Notice of Determination. Issued by the United States DOE and published in the Federal Register on July 28, 2021 in 86 Federal Register at 40529.[15] This Notice (hereafter referred to as the "DOE Residential Notice of Determination") indicates that DOE has determined that buildings constructed to the requirements of the 2021 International Energy Conservation Code (2021 IECC) would improve overall energy efficiency in buildings subject to the Energy Code compared to the requirements of the 2018 International Energy Conservation Construction Code (2018 IECC). See 86 Federal Register 40529 (July 28, 2021).

(2) Energy Savings Analysis. 2021 IECC for Residential Buildings. Prepared by PNNL, Richland, WA (V. Robert Salcido, Yan Chen, Yulong Xie, and Z. Todd Taylor, publication date July 2021). According to this most recent national analysis of the IECC, new residential buildings meeting the requirements of the updated code will experience on average, an 8.66 percent energy costs savings over new residential buildings designed to the 2021 IECC. The prototypes selected for this analysis are those used by PNNL in previous New York State specific analyses to determine the cost effectiveness of the IECC for its national and New York State specific analyses.

(3) Resource Refocus Report. Energy Savings and Cost-Effectiveness Analysis of the 2024 New York State Energy Conservation Construction Code, Residential Provisions. Prepared for NYSERDA by Resource Refocus LLC (R. David, N. Heckman, N. Low, S. Naby, and A. LaRue), dated November 2024. The Resource Refocus report includes all combinations of models by building type (single family and low-rise multifamily), electric heating type (electric resistance and heat pump), foundation types (crawlspaces, heated

[15] https://www.federalregister.gov/documents/2021/07/28/2021-15969/analysis-regarding-energy-efficiency-improvements-in-the-2021-international-energy-conservation-code

basements, unheated basements, and slab foundations) and New York State Climate Zones (4A, 5A, and 6A).

Notice of Analysis. Energy Savings and Cost-Effectiveness Analysis of the 2024 New York State Energy Conservation Construction Code, Residential Provisions. Prepared for NYSERDA by Resource Refocus (R. Davis, N. Heckham, N. Low, S. Naby and A. LaRue).

The 2024 edition of the ECCCNYS was developed as an overlay of the 2024 IECC with additional measures from the 2020 New York State Stretch Energy Code.

The Resource Refocus analyses concluded the updated model code will increase energy efficiency in residential buildings and residential buildings meeting the 2024 ECCCNYS (compared to the previous 2020 ECCCNYS) are expected to incur the following: (1) 43 percent site energy savings, (2) 6 percent increase in energy costs, (3) an $18,921 increase in lifecycle cost per dwelling unit, which results in a 30-year lifecycle savings of $13 per dwelling unit when including the societal benefits of avoided GHG, and (4) GHG reduction of 82 percent.

The Resource Refocus Report included a qualitative assessment of the prescriptive and mandatory residential provisions of the current Energy Code, which is the 2020 ECCCNYS, based on the 2018 IECC residential provisions as modified by New York State, and the proposed residential provisions of the 2024 ECCCNYS. The qualitative assessment includes an evaluation of the expected energy impact of each code change and whether the change will be captured through energy modeling during the *quantitative* analysis. In summary, the code change prohibiting installation of fossil fuel equipment and building systems in low rise residential new construction, taking effect on December 31, 2025, has the largest energy impacts and can be captured using energy modeling in the quantitative analysis.

Secondly, the report produced an overall *quantitative* analysis to assess the stringency and cost-effectiveness of the residential provisions of the proposed 2024 ECCCNYS. The *quantitative* analysis contains:

- A stringency comparison of the residential provisions of the current Energy Code versus the proposed residential provisions of the 2024 ECCCNYS as it applies to the three climate design zones in New York State (4A, 5A, and 6A).
- An assessment of energy cost savings from the proposed residential provisions of the 2024 ECCCNYS over the residential provisions of the current Energy Code calculated in the energy analysis into energy cost savings using average fuel prices for New York State.
- Calculation of the associated incremental construction costs for the requirements of the residential provisions of the proposed 2024 ECCCNYS over the provisions of the current Energy Code.
- Calculating a simple payback 30-year Lifecycle Cost (LCC) savings analysis from the perspective of the homeowner.

Resource Refocus used PNNL draft prototype models to match the specific requirements for the current and proposed residential provisions of the 2024 ECCCNYS in climate design zones 4A, 5A, and 6A. The study utilizes the mandatory and prescriptive provisions of the code in its analyses.

The Resource Refocus Report included residential prototypes modified to match the code requirements and credits of the proposed and baseline codes, including all combinations of models by building type (single family and low-rise multifamily), heating fuel (gas, oil, electric resistance heat, and heat pump) and foundation types (crawlspaces, heated basements, unheated basements, and slab foundations).

The analyses include a qualitative assessment to evaluate anticipated energy impact of code changes proposed by the 2024 ECCCNYS, including a determination of which impacts could be quantified through an energy analysis. The energy savings from the energy analysis were then combined with the incremental construction costs associated with the changes to determine the simple payback, the 30-year life cycle cost (LCC) savings.

Explanation of How Studies Were Used – Residential Buildings. DOS used the Resource Refocus

analyses to determine that the proposed rule will (1) reduce energy use in residential buildings, and (2) assure that the provisions of the Energy Code applicable to residential buildings comply with Title III of the ECPA.

Energy Usage Savings – Residential Buildings. Based on the Resource Refocus analyses, it is anticipated that residential buildings constructed to the requirements of the 2024 ECCCNYS rather than the 2020 ECCCNYS will use approximately 43 percent less energy, on a statewide basis.

Energy Cost – Residential Buildings. Based on the Resource Refocus analyses it is anticipated that the energy costs for residential buildings constructed to the requirements of the 2024 ECCCNYS will be approximately 6 percent higher on a statewide basis than the energy costs for residential buildings constructed to the requirements of the 2020 ECCCNYS.

Cost Effectiveness – Residential Buildings. Based on the Resource Refocus analyses it is anticipated that the Energy Code for residential buildings, as amended by this proposed rule, will be cost effective when considering a 30-year life cycle savings based on societal benefits of avoided GHG. Resource Refocus analyses identified key changes which result in the bulk of the energy savings associated with the updated code:

- Improved efficiency for opaque building thermal envelope assemblies (more stringent specific insulation requirements for ceilings/roof, walls, and floors).
- Improved U-factors and solar heat gain coefficient (SHGC) for fenestration.
- Modified air leakage rate provisions with tighter rates in climate zone 6 and specific requirements for multi-unit testing and small buildings.
- Duct systems required to be installed in conditioned space.
- Heat recovery or energy recovery ventilation system in Climate Zone 6 for dwelling units.

- Separate metering requirement for multi-family dwellings 3-stories or less consistent with the parallel existing requirements for multi-family dwellings 4-stories of more.
- Additional efficiency credit requirements of a minimum of 10 credits earned from a list of options that include more efficient building thermal envelope, HVAC systems, water heating, and lighting, as well as energy efficient appliances, renewable energy, demand response, or renewable energy.
- Limit historic buildings exception to character-defining features of the historic form, fabric, or function of such historic building or historic district.
    - These changes are expected to have a significant and measurable impact on energy efficiency in residential buildings, increase energy savings, and can be reasonably quantified through the established methodology.

Fuel Prices - To estimate electricity costs in each Climate Zone of New York State, average residential electricity prices for all utilities serving each county are pulled from Form EIA-861M's Sales and Revenue data for 2023 and then averaged for each Climate Zone based on the utility territory weighted by population served in each county. Natural gas costs are determined using the 2023-2024 winter residential gas tariffs from each utility listed by the New York State Department of Public Service using the same weighted average methodology for the regional costs as electric utilities. Fuel oil costs are determined using the most recent 2023-2024 heating season weekly prices by region from NYSERDA.

The Tables below shows the fuel prices used for the analyses.

Table. Average New York State Fuel Prices

Climate Zone	Electricity ($/kWh)	Gas ($/therm)	Oil ($/therm)
4A	$0.279	$2.064	$3.269
5A	$0.177	$1.049	$3.261
6A	$0.166	$1.163	$3.186

Table. Average New York State Electricity Prices

Climate Zone	Electricity ($/kWh)
NYC	$0.302
4A	$0.227
5A	$0.177
6A	$0.166

Energy Usage Stringency – Based on the Resource Refocus Report, it is anticipated that residential buildings constructed to the requirements of the 2024 ECCCNYS rather than the 2020 ECCCNYS will use approximately 43 percent less energy, on a state-wide basis.

Energy Cost– Based on the Resource Refocus Report, it is anticipated that the energy costs for residential buildings constructed to the requirements of the 2024 ECCCNYS will be approximately 6 percent higher than the energy costs for residential buildings constructed to the requirements of the 2020 ECCCNYS.

Cost Effectiveness Simple payback – Based on the Resource Refocus Report it is anticipated that the Energy Code for residential buildings, as amended by this proposed rule, will be cost effective.

Net Present Value and Lifecycle Cost savings – The 30-year Lifecycle Cost (LCC) savings analysis found by the report is positive in terms of savings for the homeowner. The 2024 ECCCNYS does not have positive 30-year LLC savings based on the standard calculation, but it does have an LLC when including societal effects from avoided GHG emissions.

Societal Effects: Greenhouse Gas Emissions Savings

The statewide total first-year energy and GHG savings by fuel type are calculated by multiplying annual energy and GHG savings per dwelling unit by the estimated number of annual construction starts by building type and Climate Zone in New York State. The 30-year cumulative energy and GHG savings are calculated by summing the total annual energy and emissions savings over the next 30 years, given the same

number of construction starts for each of the three years of the code cycle.

The Resource Refocus Report concludes the GHG savings of the 2024 NYSECCC and Zero Emission New Construction ("ZENC") represent an 82% reduction from the 2020 ECCCNYS and current fuel mix in new construction.

Table. Resource Refocus Report - Annual Average Greenhouse Gas Emissions Savings, 2026-2055

(pounds CO_2e/dwelling unit-year)[a]	Electricity	Fossil Fuels	Total
Single-family	-784	12,103	11,318
Multifamily	-220	4,628	4,409
Total (weighted)	-627	10,020	9,392
(pounds CO_2e/ft^2-year)[a]	Electricity	Fossil Fuels	Total
Single-family	-0.29	4.50	4.21
Multifamily	-0.17	3.55	3.38
Total (weighted)	-0.27	4.35	4.08

Energy Usage Stringency - The results of the energy savings analysis of the proposed residential provisions of the 2024 ECCCNYS over the current Energy Code by end-use at the climate zone and State level are included. These results have been aggregated over the entire set of building types, foundation types, and heating systems using the construction weights matrix. The results show 43 percent site energy savings at the State level as set forth in the following tables.

Table: Site Energy Savings for the Prescriptive and Mandatory Provisions 2024 NYSECCC and ZENC for Single-family Buildings

(kBtu/dwelling unit)	Heating	Cooling	Lighting	Interior Equipment	Fan	DHW	Total Energy
2020 ECCCNYS	51,521	5,639	4,930	37,059	3,660	14,781	117,591
2024 NYSECCC/ZENC	20,127	4,396	4,635	29,279	5,834	2,287	66,557
($kBtu/ft^2$)	Heating	Cooling	Lighting	Interior Equipment	Fan	DHW	Total Energy
2020 ECCCNYS	19.2	2.1	1.8	13.8	1.4	5.5	43.7
2024 NYSECCC/ZENC	7.5	1.6	1.7	10.9	2.2	0.9	24.8
Savings (%)	61%	22%	6%	21%	-59%	85%	43%

Table: Site Energy Savings for the Prescriptive and Mandatory Provisions of 2024 NYSECCC and ZENC for Multifamily Buildings

(kBtu/dwelling unit)	Heating	Cooling	Lighting	Interior Equipment	Fan	DHW	Total Energy
2020 ECCCNYS	13,677	3,166	3,709	22,953	1,558	11,094	56,155
2024 NYSECCC/ZENC	7,186	2,284	3,062	17,562	2,761	1,611	34,466
(kBtu/ft^2)	Heating	Cooling	Lighting	Interior Equipment	Fan	DHW	Total Energy
2020 ECCCNYS	10.5	2.4	2.8	17.6	1.2	8.5	43.0
2024 NYSECCC/ZENC	5.5	1.8	2.3	13.5	2.1	1.2	26.4
Savings (%)	47%	28%	17%	23%	-77%	85%	39%

Table: Weighted Average Site Energy Savings for the Prescriptive and Mandatory Provisions of 2024 NYSECCC and ZENC

(kBtu/dwelling unit)	Heating	Cooling	Lighting	Interior Equipment	Fan	DHW	Total Energy
2020 ECCCNYS	40,973	4,950	4,590	33,127	3,074	13,754	100,468
2024 NYSECCC/ZENC	16,520	3,807	4,196	26,013	4,977	2,099	57,613
(kBtu/ft^2)	Heating	Cooling	Lighting	Interior Equipment	Fan	DHW	Total Energy
2020 ECCCNYS	17.8	2.1	2.0	14.4	1.3	6.0	43.6
2024 NYSECCC/ZENC	7.2	1.7	1.8	11.3	2.2	0.9	25.0
Savings (%)	60%	23%	9%	21%	-62%	85%	43%

Energy Cost Savings. The energy cost savings from the proposed residential provisions of the 2024 ECCCNYS over the current Energy Code by fuel type at the climate zone and State level are included below. These results have been aggregated over the entire set of building types, foundation types, and heating systems using the construction weights matrix.

In summary, the Resource Refocus Report shows a 6 percent energy cost increase at the State level as set forth in the Tables below:

Table: Annual Energy Cost Savings of the Prescriptive and Mandatory Provisions of 2024 NYSECCC and ZENC for Single-family Buildings

($/dwelling unit-year)	Electricity Cost	Natural Gas Cost	Fuel Oil Cost	Total Cost
2020 ECCCNYS	$2,467	$896	$0	$3,362

2024 NYSECCC	$3,624	—	—	$3,624
($/ft^2-year)	Electricity Cost	Natural Gas Cost	Fuel Oil Cost	Total Cost
2020 ECCCNYS	$0.92	$0.33	$0.00	$1.25
2024 NYSECCC	$1.35	—	—	$1.35
Savings (%)[a]	-47%	100%	N/A	-8%

Table: Annual Energy Cost Savings of the Prescriptive and Mandatory Provisions of 2024 NYSECCC for Multifamily Buildings

($/dwelling unit-year)	Electricity Cost	Natural Gas Cost	Fuel Oil Cost	Total Cost
2020 ECCCNYS	$1,729	$374	$2	$2,105
2024 NYSECCC	$2,093	—	—	$2,093
($/ft^2-year)	Electricity Cost	Natural Gas Cost	Fuel Oil Cost	Total Cost
2020 ECCCNYS	$1.32	$0.29	$0.00	$1.61
2024 NYSECCC	$1.60	—	—	$1.60
Savings (%)[a]	-21%	100%	100%	1%

Table: Weighted Average Annual Energy Cost Savings of the Prescriptive and Mandatory Provisions of 2024 NYSECCC

($/dwelling unit-year)	Electricity Cost	Natural Gas Cost	Fuel Oil Cost	Total Cost
2020 ECCCNYS	$2,261	$750	$0	$3,012
2024 NYSECCC	$3,197	—	—	$3,197
($/ft^2-year)	Electricity Cost	Natural Gas Cost	Fuel Oil Cost	Total Cost
2020 ECCCNYS	$0.98	$0.33	$0.00	$1.31
2024 NYSECCC	$1.39	—	—	$1.39
Savings (%)[a]	-41%	100%	100%	-6%

Simple Payback. The following Tables show the weighted average annual energy cost savings, the associated total incremental costs, and the resulting simple payback from the Resource Refocus Report.

Table. Simple Payback and Net Present Value

Building Type	Total Cost Savings ($/year)[a]	Incremental Cost ($)	Simple Payback (years)	10-Year NPV ($)	10-Year NPV minus Incremental Cost ($)[a]
Single-family	-$262	$6,008	N/A	$2,872	-$3,136
Multifamily	$12	$2,156	181.4	$1,199	-$957
All	-$186	$4,934	N/A	$2,405	-$2,529

30-year Life Cycle Cost (LCC) Savings. The table below summarizes the Lifecycle Cost (LCC) savings of the proposed residential provisions of the 2024 ECCCNYS over the current Energy Code at the climate zone and State level. The results have been aggregated over the entire set of building types, foundation types, and heating systems using the construction weights matrix. The residential provisions of the proposed 2024 ECCCNYS are found to be cost-effective for the homeowner and yield positive savings over the life of the dwelling.

Table. Summarized Average 30-Year Cost Effectiveness

Building Type	LCC savings ($/ft^2)[a]	Societal effects ($/ft^2)[b]	LCC savings with societal effects ($/ft^2)[a]	LCC savings ($/dwelling unit)[a]	Societal effects ($/ft^2)[b]	LCC savings with societal effects ($/dwelling unit)[a]
Single-family	-$8.51	$8.48	-$0.03	-$22,881	$22,807	-$74
Multifamily	-$6.64	$6.82	$0.18	-$8,670	$8,908	$238
All	-$8.22	$8.22	$0.01	-$18,920	$18,933	$13

Conclusion:

The prescriptive and mandatory elements of the residential provisions of the 2024 ECCCNYS combined with the impact of ZENC are expected to yield positive energy savings over the baseline 2020 ECCCNYS and current distributions of fuel types used in new construction. Statewide, the weighted average savings (based on an assumed package of credit measures) results in a 43% reduction in annual site energy and 82% reduction in lifetime GHG emissions but a 6% increase in annual energy cost compared to the baseline code and fuel mix. The 2024 ECCCNYS and ZENC result in a statewide 30-year life cycle cost of $18,920 per dwelling unit. However, the 2024 ECCCNYS and ZENC result in a statewide 30-year life cycle savings of $13 per dwelling unit when including the societal benefits of avoided GHG in the analysis.

NORESCO/Resource Refocus Analysis Summary

Model #1**:** This Model compares 2024 ECCCNYS to 2020 ECCCNYS plus the 2020 NYC Energy Conservation Code and local laws as the baseline in New York City.

Moving to the proposed 2024 ECCCNYS is cost-effective for both residential and commercial buildings in New York State and will provide statewide energy savings of 18.6% compared to the current 2020 ECCCNYS. The 2024 ECCCNYS will provide statewide site energy savings of 19.5% for commercial buildings and 17.0% for residential buildings compared to the current Energy Code. Where decarbonization is mandated outside of the Energy Code, both the baseline and proposed conditions are modified. The 2020 New York City Energy Conservation Code and local laws are the baseline in New York City. The average household will save $594 on annual utility bills. Similarly, commercial buildings will save an average of $69,371 in annual utility bills. Assuming a three-year code cycle, the 2024 ECCCNYS will reduce statewide CO_2e emissions over 30 years by 604,657 metric tons and will save $308,000 statewide at Year-1 in societal effects from the emissions reduction. Adopting the 2024 ECCCNYS in New York State is expected to result in buildings that are energy efficient, more affordable to own and operate, and based on current industry standards for health, comfort, and resilience.

The expected statewide energy impact of updating to the 2024 ECCCNYS is shown in the table below and is based on metrics established by the New York State Energy Law and 21 NYCRR Part 510, consistent with the U.S. DOE methodology for evaluation of changes to the Energy Code.

Table. Summary of 2024 ECCCNYS Impact Compared to 2020 ECCCNYS

2024 NYS ECCC Impact	**Commercial**	**Residential***	**Total**
First Year Statewide Energy			
Electric Savings, MWh	50,190	36,536	86,726
Fossil Fuel Savings, MMBTU	63,421	0	63,421
CO_2e Emission Savings, Metric Tons	18,150	12,075	30,225
30-Year Cumulative Statewide Energy			
Electric Savings, MWh	4,366,528	3,178,605	7,545,134
Fossil Fuel Savings, MMBTU	5,517,597	0	5,517,597

CO_2e Emission Savings, Metric Tons	382,868	221,790	604,657
Life-Cycle Benefits			
Incremental Construction Cost, $/sf	$(0.01)	$2.33	$0.86
Annual Energy Cost Savings, $/sf	$0.53	$0.26	$0.43
Savings, No Societal Cost $/sf	$10.06	$2.05	$7.10
Societal Cost Savings $/sf	$0.66	$0.45	$0.58
Life-Cycle Energy and Societal Cost Savings, $/sf	$10.72	$2.50	$7.68

*Three stories or less, as defined in the ECCCNYS

Model #2: This Model compares the 2024 ECCCNYS to 2020 ECCCNYS

Moving to the proposed 2024 ECCCNYS is cost-effective for both residential and commercial buildings in New York State and will provide statewide energy savings of 21% compared to the current 2020 ECCCNYS. The 2024 ECCCNYS will provide statewide energy savings of 24.2% for commercial buildings and 16.3% for residential buildings compared to the current Energy Code. Where decarbonization is mandated outside of the Energy Code, both the baseline and proposed conditions are modified. The average household will save $605 on annual utility bills. Similarly, commercial buildings will save an average of $79,974 in annual utility bills. Assuming a three-year code cycle the 2024 ECCCNYS will reduce statewide CO_2e emissions over 30 years by 1.3 million metric tons and will save $435 hundred thousand statewide in societal effects from the emissions reduction. Adopting the 2024 ECCCNYS in New York State is expected to result in buildings that are energy efficient, more affordable to own and operate, and based on current industry standards for health, comfort, and resilience.

The expected statewide energy impact of updating to the 2024 ECCCNYS is shown in the table below and is based on metrics established by the New York State Energy Law and 21 NYCRR Part 510, consistent with the U.S. DOE methodology for evaluation of changes to the Energy Code.

Table. Summary of 2024 ECCCNYS Impact Compared to 2020 ECCCNYS

2024 NYS ECCC Impact	**Commercial**	**Residential***	**Total**
First Year Statewide Energy			

Electric Savings, MWh	49,371	36,911	86,282
Fossil Fuel Savings, MMBTU	148,384	0	148,384
CO_2e Emission Savings, Metric Tons	24,316	12,218	36,535
30-Year Cumulative Statewide Energy			
Electric Savings, MWh	4,295,271	3,211,299	7,506,570
Fossil Fuel Savings, MMBTU	12,909,434	0	12,909,434
CO_2e Emission Savings, Metric Tons	1,166,221	224,153	1,390,374
Life-Cycle Benefits			
Incremental Construction Cost, $/sf	$(0.17)	$1.99	$0.63
Annual Energy Cost Savings, $/sf	$0.58	$0.26	$0.46
Savings, No Societal Cost $/sf	$10.42	$2.61	$7.53
Societal Cost Savings $/sf	$1.10	$0.40	$0.84
Life-Cycle Energy and Societal Cost Savings, $/sf	$11.52	$3.01	$8.37

*Three stories or less, as defined in the ECCCNYS

SIGNIFICANT CHANGES

Some of the more significant changes to the Energy Code to be implemented by this proposed rule, and the needs and benefits, costs, and alternatives associated with these changes, are as follows:

SIGNIFICANT CHANGES TO COMMERCIAL AND RESIDENTIAL BUILDINGS

1. Fossil-fuel equipment and building systems prohibition in new buildings.[16]

19 NYCRR Section 1240.6

Origin: Energy Law §11-104(6), (7)

Description of Change

This code amendment prohibits the installation of fossil-fuel equipment and building systems, with some exceptions, in new buildings: (a) not more than seven stories above grade plane height, except for a new commercial or industrial building greater than one hundred thousand square feet in conditioned floor area, for which a substantially complete building permit application for the initial construction of such building is submitted on or after December 31, 2025: or (b) for which a substantially complete building permit application for the initial construction of such building is submitted after December 31, 2028 (Energy Law §11-104(6)(b), (7)). Such prohibition shall not apply to buildings existing prior to the effective date of the applicable prohibition, including to: (1) the repair, alteration, addition, relocation, or change of occupancy or use of such buildings; and (2) the installation or continued use and maintenance of fossil-fuel equipment and building systems, including as related to cooking equipment, in any such buildings [Energy Law §11-104(7)(a)].

Needs and Benefits

The prohibition on fossil-fuel equipment and building systems shifts energy use from fossil fuel end

[16] Corresponding provisions are proposed to be added to the Uniform Code by a separate Notice of Proposed Rule Making.

uses such as gas furnaces and gas water heaters to heat pump heating and cooling. This fuel shift provides energy savings, as heat pumps are often at least three times more energy efficient than their gas counterparts, but not necessarily energy cost savings, as the cost per unit energy for electricity is four to five times higher than the cost per unit energy for natural gas in New York State, depending on the region. Upfront costs of equipment for a heat pump are higher than a fossil-fuel powered furnace or boiler. Installation costs are approximately $200-$500 more than an equivalently sized air conditioner and cost effectiveness depends on the efficiency of the equipment installed as well as the efficiency of the building thermal envelope.[17] Whether installing a heat pump instead of a fossil-fuel fired appliance will benefit consumers economically in the long term depends on several factors, including regional climate variations and building type. Other economic factors include whether space cooling is being installed simultaneously, the installed cost of the electric appliances themselves, and the relative costs of electricity compared with fossil fuel options.[18] The ideal opportunity for the installation of heat pumps is in new buildings where other energy-efficiency measures, such as more efficient building thermal envelopes, can be leveraged.[19] Nevertheless, nationwide peer-reviewed research has documented that the replacement of fossil-fuel heating equipment in existing buildings with a cold climate heat pump could save households $1,500 annually on average, with savings being highest for homes currently using heating oil, propane, or older electric equipment.[20]

A 2024 nationwide study found that when health costs associated with burning fossil fuels and social cost of GHG emissions are included, electrifying space heating yields over $20,000 to $25,000 in benefits per

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[17]Heat pumps for all? Distributions of the costs and benefits of residential air-source heat pumps in the United States. Wilson, E. Munankarmi, P., Less, B., Reyna, J., Rothgeb, S. 50 Joule. Volume 8, Issue 4

[18] *Beneficial Electrification of Space Heating.* Shipley J., Lazar J., Fansworth D., and Kadoch C.. (The Regulatory Assistance Project). November 2018.

[19] *Beneficial Electrification of Space Heating.* Shipley J., Lazar J., Fansworth D., and Kadoch C.. (The Regulatory Assistance Project). November 2018.

[20]Results in Michigan with similar climate zones as NYS. *For Most Americans, A Heat Pump Can Lower Bills Right Now.* DOE Office of Policy. February 2024. https://www.energy.gov/policy/articles/most-americans-heat-pump-can-lower-bills-right-now

household, while benefits increase about $9,000 to $10,000 for electrifying water heating.[21] Some of the benefits, about $500 for water heating and few $1,000 for space heating, are due to the reduced health costs of lower air pollution but most of the benefits come from avoided costs of climate change.[22] Full electrification is the most beneficial option, reducing costs by about $10,000 relative to electrifying space heating alone.[23]

Electrification of buildings is critical to meet the State's GHG emissions limits under the Climate Act. Electrification is the primary proven strategy to decarbonize space heating, water heating and several other common home energy needs.[24] Electrification of space and water heating with high-efficiency heat pumps is a viable approach to decarbonizing operations for nearly all types of buildings in New York.[25] Modern heat pumps that work in very cold weather are commercially available and able to keep homes and businesses safe and comfortable year-round, as long as they are properly chosen, sized, installed by appropriately trained workers, and paired with an energy-efficient building envelope and HVAC system design.[26]

Critics of the prohibition on fossil-fuel equipment and building systems in new buildings claim the prohibition is premature and the electrical grid does not have the capacity to handle the increase in demand that will come from new buildings installing heat pumps instead of furnaces and boilers. The New York State Independent System Operator (NYISO) projects an increase in electric energy consumption of roughly 50 to 90% over the next 20 years.[27] This increase is largely driven by the electrification of essential energy-consuming

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[21] *The Value of Prioritizing Equitable, Efficient Building Electrification*, American Council for Energy-Efficient Economy (ACEEE) (May 2024) p. 15.

[22] *The Value of Prioritizing Equitable, Efficient Building Electrification*, American Council for Energy-Efficient Economy (ACEEE) (May 2024) p. 15.

[23] *The Value of Prioritizing Equitable, Efficient Building Electrification*, American Council for Energy-Efficient Economy (ACEEE) (May 2024) p. v.

[24] *The Value of Prioritizing Equitable, Efficient Building Electrification*, American Council for Energy-Efficient Economy (ACEEE) (May 2024) p. 1.

[25] *Scoping Plan Full Report*, Climate Action Council (December 2022) p. 176.

[26] *Scoping Plan Full Report*, Climate Action Council (December 2022) p. 176.

[27] *2023-2042 System and Resource Outlook*, New York Independent System Operator (July 23, 2024) p. 5

systems, primarily building heating and electric vehicle charging. [28] The increase in demand is anticipated to be alleviated by additional clean energy electricity capacity coming onto the grid in the coming years, from projects such as the Champlain Hudson Power Express, and large offshore wind projects.

Critics of the prohibition also claim the upfront cost of heat pumps and geothermal systems are higher than those of traditional fossil-fuel equipment and building systems such as furnaces and boilers. For the most part this is true, however, in 2022, New York enacted a State Geothermal Income Tax Credit equal to 25% of geothermal system expenditures up to $5,000 for owner-occupied homes.[29]

Cost

The estimated costs of this proposal for single and low rise residential is between $4,500 and $30,000 and for commercial the estimated costs are between $20,000 and $200,000. The average cost of a residential propane boiler is between $3,300 and $9,800, the average cost of a residential oil boiler is between $4,400 and $9,000 and the average cost of a residential natural gas boiler is between $3,900 and $11,000.[30] The range in costs are due to differences in building type, building size, and building location.

According to the CAC Final Scoping Plan, air source and ground source heat pumps are generally more expensive than fossil fuel boilers and furnaces, and the Scoping Plan provides:

> "For example, for an older single-family home that is otherwise in good condition, the average installed cost for a heat pump for whole-home space heating and cooling paired with an air sealing and insulation upgrade is estimated to be about $21,000 for a cold climate air source heat pump (ASHP) and $40,000 for a ground source heat pump (GSHP) system (before available rebates

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[28] *2023-2042 System and Resource Outlook*, New York Independent System Operator (July 23, 2024) p. 5

[29] Geothermal Energy System Credit (ny.gov)

[30] Bartolone, Ginny. *How Much Does Boiler Installation and Replacement Cost in 2024?* Forbes, How Much Is A New Boiler In 2024? – Forbes Home

and tax credits), as compared with roughly $10,000 or less to replace a fossil fuel boiler/furnace and air conditioner (with no envelope work)."[31]

For new construction, the February 2021 report *Home Innovation Research Labs Cost and Other Implications of Electrification Policies on Residential Construction* prepared for the National Association of Home Builders provides:

"The upfront additional cost of an electric house with a high efficiency inverter heat pump and 80-gallon heat pump water heater (3.75 UEF) compared to a baseline gas house (minimum efficiency natural gas equipment) for a cold climate, the additional cost ranges from $10,524 (19 SEER/10 HSPF inverter heat pump system rated down to -13 degrees F) to $11,803 (20 SEER/13 HSPF inverter heat pump system)."[32]

Accordingly, the estimated additional cost for the installation of heat pumps is between $10,524 (lower efficiency heat pump) and $11,803 (higher efficiency heat pump), for an average estimate of $11,164.

Alternative

An alternative is to not adopt any provisions addressing the fossil-fuel equipment and building systems prohibition in new buildings. This alternative does not comply with Energy Law §11-104, as amended by Part RR of Chapter 56 of the Laws of 2023, which requires the Energy Code to prohibit the installation of fossil-fuel equipment and building systems in any new building not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, on or after December 31, 2025, and prohibits the installation of fossil-fuel equipment and building systems, in all new

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[31] https://climate.ny.gov/Resources/-/media/project/climate/files/Chapter12Buildings.pdf, p. 193 of Chapter 12.

[32] https://www.nahb.org/-/media/NAHB/nahb-community/docs/committees/construction-codes-and-standards-committee/home-innovation-electrification-report-2021.pdf; *see* p. iii of the Executive Summary.

buildings after December 31, 2028, with certain exceptions.

Another alternative is to delay the implementation of the prohibition until later dates. This alternative also does not comply with Energy Law §11-104, as amended by Part RR of Chapter 56 of the Laws of 2023, which contains specific prohibition dates of December 31, 2025 for any new building not more than seven stories in height, except for a new commercial or industrial building greater than 100,000 square feet in conditioned floor area, and December 31, 2028 for all new buildings, with certain exceptions. Absent a statutory amendment, DOS and the Code Council are not authorized to delay the prohibition dates set forth in the Energy Law.

2. More restrictive building thermal envelope requirements.

ECCCNYS Sections C402, R402

Origin: 2024 IECC and NYStretch

Description of Change

The proposed code amendment increases energy efficiency for assembly U-Factors, R-Values, and Fenestration efficiency. It also imposes new mandatory air leakage testing requirements for certain commercial buildings that is consistent with the provisions applicable to residential buildings.

Needs and Benefits

The building thermal envelope includes basement walls, exterior walls, floors, roofs, and any other building element that separates conditioned space from unconditioned space.[33] Increasing the efficiency of the building thermal envelope is an important part of the purpose of every code update, not only at the State level but also at the model code level. The increased efficiency levels in the proposed code are largely consistent with

[33] See *ECCCNYS.*

the efficiency improvements of the model codes, with additional efficiency increases based on NYStretch 2020 to the requirements for roof, wall, and heated slab insulation values, consistent with the requirements of Energy Law §11-103(2)(b). The building thermal envelope is the most critical aspect of the energy efficiency of the building with the longest useful life and the most challenging to retrofit in the future. Additionally, failure to meet the requirements of the energy code can lead to ice damming (in colder climates), mold and moisture problems, and indoor air quality issues. Meeting the requirements of the code can increase durability of the building envelope components, increase indoor air quality, and assist the builder in complying with health/life safety codes.[34] Increased energy efficiency leads to lower operating costs for buildings.

Cost

For the commercial provisions, the opaque envelope insulation requirements in the national model code did not change. The cost for opaque assembly requirements is in the following table:

Prototype	Walls	Roofs
NYC High-rise Apartment	$164,328	$38,667
High-rise Apartment	$82,256	$38,389
Mid-rise Apartment	$38,964	$31,886
Large Hotel	$464,499	$92,117
Standalone Retail	$174,404	$103,681
Large Office	$1,190,911	$176,419
Secondary School	$122,070	$479,123
Warehouse	$109,749	$108,705

The fenestration performance has been improved in the proposed code. Due to typical cost sources, such as RSMeans, providing insufficient detail for the fenestration performances in this analysis, current fenestration cost survey data from the Façade Tectonics Institute (FTI) were used.[35] The costs for the insulated glazing unit

[34] *Building Energy Codes: Creating Safe, Resilient, and Energy-Efficient Homes*. Institute for Market Transformation, July 2013. pg.3

[35] Component costs were analyzed using an adaptation of the National Fenestration Rating Council (NFRC 2024) Component Modeling Approach, where performance – and, here, cost – for selected technologies was built up, piecewise. See summary (Benney n.d.) for application in codes and standards. Overhead and profit was applied globally. Cost updates were from the FTI's cost data shared during the 2024 IECC development cycle.

technologies are applicable to all fenestration, though the survey was limited to metal-framed commercial applications (curtainwall, window-wall).

Without multipliers to lower the frame costs to represent smaller and non-metal windows, it should be noted that fenestration incremental costs could be elevated relative to installed costs. However, that additional cost is in both baseline and proposed cases, so it cancels in the incremental analysis. Both baseline and proposed vertical fenestration is built up from a double-pane clear reference. Performance and costs associated with necessary additional technologies are incremental, but the reference window cost cancels in the analysis. Because the changes to fenestration performance are not extreme, technology needed to meet the prescriptive minimum does not necessarily differ between cases. That is, the lowest cost window might be common to multiple minimum performances.

For proposed vertical fenestration and skylights, the frame is assumed to be thermally broken metal. Vertical fenestration was priced with the necessary selection of technologies to achieve a given prescriptive performance: low-e coatings, improved spacers, and argon fills.

Prototype	Baseline	Proposed
NYC High-rise Apartment	$579,066	$449,382
High-rise Apartment	$285,861	$223,292
Mid-rise Apartment	$49,482	$50,027
Large Hotel	$283,802	$230,370
Standalone Retail	$15,131	$21,901
Large Office	$1,268,693	$936,402
Secondary School	$374,618	$377,813
Warehouse	$53,608	$53,632

The baseline has air leakage control requirements based on the 90.1-2016 with New York State amendments, but testing is not mandatory. The total building leakage rate dropped from 0.4 cubic feet *per* minute *per* square foot at a pressure difference of 75 Pascals in the baseline to 0.35 cfm/sf in the proposed case, with leakage testing. Leakage in the baseline is assumed to use the deemed to comply materials and assemblies

lists in 90.1. Primarily, the air leakage reduction is a result of attention to detail in current designs and installation of materials.

Air leakage testing is less expensive for a lower leakage threshold because less fan power is required to achieve the pressure differential, which means smaller equipment and lower costs to transport the equipment. The real-world cost of this measure depends on the testing approach and schedule. Large buildings can be tested as whole buildings or in sections. Multiple mobilizations of testing contractors are more expensive but often better align with phased completion of the rest of the build out.

Cost estimates are based on PNNL 's Envelope Air Tightness for Commercial Buildings (Hart, Nambiar, et al. 2018) research, ongoing research at the ASHRAE 90.1 Envelope Subcommittee Air Leakage Working Group, and the professional experience of the consultants who provided the reports.

Cost estimates for the air leakage measure are in the table below:

Table. Air Leakage Reduction Costs

Prototype	Baseline	Proposed
NYC High-rise Apartment	$0	$19,465
High-rise Apartment	$0	$10,531
Mid-rise Apartment	$0	$4,365
Large Hotel	$0	$13,749
Standalone Retail	$0	$4,020
Large Office	$0	$54,292
Secondary School	$0	$19,716
Warehouse	$0	$5,955

Alternative

An alternative is to retain without increasing the building thermal envelope efficiency values of the current code. This alternative was rejected because without improved efficiency, the burden to the State to update the Energy Code and the burden to regulated parties to adapt to the new code is unmitigated and would

not comply with Energy Law §11-103(2)(a).

Another alternative is to increase minimum stringency required. This alternative was rejected because it would impose unreasonable requirements on regulated parties and was not proven to be cost-effective as required pursuant to Energy Law §11-103(2).

A third alternative is to decrease minimum stringency required. This alternative was rejected, not only for the reasons stated in the first alternative but also, because it would be a less restrictive requirement than the model codes, placing the State at a competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the U.S. DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

The last alternative considered was to include different thermal envelope requirement based upon building use classification. This alternative was rejected because it deviates fundamentally from how both model codes (IECC and ASHRAE 90.1) develop and establish these requirements. These requirements are based on recorded weather data, material properties and their tested efficiencies, and other data. There currently is not well established and reliable data to suggest that the material properties and associated efficiencies of building materials will yield different energy efficiencies in different occupancies or use classifications.

3. Eight counties that were previously in Climate Zone 6 are now in Climate Zone 5.

ECCCNYS Sections C301.1 and R301.1

Origin: 2024 IECC

Description of Change

This proposed code amendment makes changes to the Climate Zone designations in Tables C301.1 and R301.1. The weather data recording the number of heating degree days in each county across the nation is maintained by ANSI/ASHRAE Standard 169, *Climatic Data for Building Design Standards.* That number of

degree days is matched to Tables C303.1(1) and R301.1(1) of the IECC to determine the appropriate Climate Zone. The data trends for recent years show that consistently higher temperatures have resulted in fewer heating degree days in these counties as documented in the 2021 version of ANSI/ASHRAE Standard 169. The impacted counties were previously in Climate Zone 6 and are now in Climate Zone 5; they are as follows: Allegany, Broome, Cattaraugus, Schoharie, Schuyler, Steuben, Tompkins, and Wyoming.[36] The main direct impact of this change is more lenient minimum building thermal envelope requirements in these counties than historically required.

Needs and Benefits

ANSI/ASHRAE Standard 169, *Climatic Data for Building Design Standards,* serves as a comprehensive source of climate data for those involved in building design and provides a variety of climatic information for designing, planning, and sizing building energy systems and equipment.[37] The standard provides dry-bulb, dew point, and wet-bulb temperature; enthalpy; humidity ration; wind conditions; solar irradiation; latitude; longitude; and elevation for locations worldwide. Standard 169 also includes statistical data, such as mean temperatures; daily ranges; degree hours; and seasonal percentages within ranges of temperatures.[38] The different requirements applicable to different Climate Zones are based on this data and aim to result in cost-effective energy efficiency.

Cost

There will be a range of costs associated with the varying code requirements associated with Climate Zone 5 instead of Climate Zone 6. Accordingly, new buildings within the eight counties identified above would

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[36] *ANSI/ASHRAE Addendum a to ANSI/ASHRAE Standard 169-2020 – Climatic Data for Building Design Standards* (October 29, 2021) p. 92-95.

[37] ASHRAE Weather Data Center. https://www.ashrae.org/technical-resources/bookstore/weather-data-center (Last viewed Sept 30, 2024)

[38] ASHRAE Weather Data Center. https://www.ashrae.org/technical-resources/bookstore/weather-data-center (Last viewed Sept 30, 2024)

see a decrease in the cost of construction based on the new designation; however, that decrease is offset by the increased requirements in the code update.

Alternative

An alternative is to retain the current climate zone designations, leaving Allegany, Broome, Cattaraugus, Schoharie, Schuyler, Steuben, Tompkins, and Wyoming counties in Climate Zone 6. This alternative was rejected because it would result in the climate zone designations being out of alignment with recent climate data and imposing stricter requirements in those counties that are not supported by current data.

4. Additional efficiency credits for new buildings and existing buildings following the prescriptive compliance path.
ECCCNYS Sections C406 and R408

Origin: 2024 IECC

Description of Change

Additional efficiency credits for new buildings and existing buildings chosen from a list of options. New commercial buildings and alterations that are substantial improvements must earn a minimum number of credits, based on climate zone, occupancy, and size, with 50% of the required credits applying to additions. New residential buildings must earn a minimum of 10 or 15 credits, depending on size, additions must earn a minimum of 5 credits, and alterations that are substantial improvements (e.g. 50 percent of market value) must earn 3 credits.

Needs and Benefits

Compliance with the proposed code requires projects to achieve credits based on additional energy efficiency measures. Required energy credit totals and the number of credits earned for a specific measure vary by building occupancy to reflect the energy savings achieved for a given measure. For example, residential

occupancies earn more credits than an office occupancy for efficient water heating, storage, and distribution, because they use more hot water.

It is not feasible to model every combination of credits that could be used to meet the requirements. A package of credit measures was created to achieve the points total for each prototype (based on the prototype occupancy). Credit selection was informed by the number of available credit points and likelihood of the measure being used in an actual building of the given type. A typical and financially reasonable package of credits was chosen for each building and climate. The energy credits included in the cost analysis briefly are described below. Additional detail has been provided in subsequent sections.

Table. Energy Credits Modeled for Each Prototype

Efficiency Credits	Energy Credits Modeled							
Applicable measures for modeled building types.	NYC High-rise Apartment	High-rise Apartment	Mid-rise Apartment	Large Hotel	Standalone Retail	Large Office	Secondary School	Warehouse
E01 Envelope performance				X				
W08 SHW distribution sizing	X	X	X					
H02 Heating efficiency	X	X	X	X	X	X	X	X
H03 Cooling efficiency	X	X	X	X	X	X	X	X
L02 Lighting dimming and tuning				X	X	X	X	
L03 Increase occupancy sensor				X	X	X	X	X
L05 Residential lighting control	X	X	X					
L06 Lighting power reduction	X	X	X	X	X	X	X	X
R01 Renewable energy	X	X	X	X	X	X	X	

- Envelope Performance – Decreases overall envelope load to be satisfied by space conditioning equipment through lower thermal transmission across a selection of assemblies.
- Efficient space heating and cooling equipment adds a 10 percent efficiency improvement.
- Residential Lighting Control – In the apartment prototypes this is an additional master switch in an existing gang for each dwelling unit.

- Lighting Dimming and Tuning, and Power Reduction – This measure contributes to lower lighting energy use. Cost development discussed in a dedicated section below.

Cost

As previously noted, there will be a range of costs depending on the options selected to meet the efficiency credit requirements. Cost estimates for the options selected for this analysis are in the table below and were developed using RS Means, market research, the methodology used in the NORESCO report, and professional field experience.

Table. Energy Credit Costs

CZ	Prototype	$/sf *	$/sf **	Total $/sf	Weight
4A	NYC high-rise apt	$0.91	$0.96	$1.87	37.70%
4A	Highrise apt	$1.03	$0.96	$1.99	17.40%
4A	Midrise apt	$1.15	$0.96	$2.12	0
4A	Large Hotel	-$1.13	$1.67	$0.54	5.10%
4A	Standalone Retail	-$1.44	$1.15	-$0.30	4.40%
4A	Large Office	-$2.03	$1.06	-$0.98	9.50%
4A	Secondary School	-$0.06	$1.20	$1.14	0
4A	Warehouse	-$0.79	$0.71	-$0.08	0
5A	NYC high-rise apt	N/A	N/A	N/A	N/A
5A	Highrise apt	$1.03	$0.92	$1.95	0.80%
5A	Midrise apt	$1.15	$0.92	$2.07	7.00%
5A	Large Hotel	-$1.13	$1.34	$0.21	1.80%
5A	Standalone Retail	-$1.44	$1.15	-$0.29	2.10%
5A	Large Office	-$1.67	$1.09	-$0.57	0.00%
5A	Secondary School	-$0.06	$1.17	$1.11	0.90%
5A	Warehouse	-$0.79	$0.69	-$0.10	9.80%
6A	NYC high-rise apt	N/A	N/A	N/A	N/A
6A	Highrise apt	$1.03	$0.83	$1.86	0
6A	Midrise apt	$1.15	$0.83	$1.99	1.10%
6A	Large Hotel	-$1.13	$1.01	-$0.13	0.70%
6A	Standalone Retail	-$1.44	$1.40	-$0.04	0.40%
6A	Large Office	-$1.19	$0.82	-$0.37	0

6A	Secondary School	-$0.06	$1.09	$1.03	0.10%
6A	Warehouse	-$0.79	$0.99	$0.20	1.20%
	Weighted Average	$0.16	$1.00	$1.16	100.00%

* Based on efficiency credits.
** Based on renewable credits.

Alternative

Three alternatives considered were (1) to not require additional efficiency credits, (2) to reduce the number of credits required, or (3) to require credits only for new buildings and not for substantial alterations to existing buildings. These alternatives were rejected because they would be less restrictive requirements than the model codes, placing the State at a competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the US DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

Another alternative is to require credits only for commercial buildings or only for residential buildings. This alternative was rejected for the same reasons noted above.

The last alternative is to increase the number of credits required. This alternative was rejected because an incremental approach for this new requirement would impose a lower burden on regulated parties that allows for market adjustment before more stringent requirements are imposed.

5. Limits on the use of electric resistance space heating.

ECCCNYS Sections C403.1.3 and R403.7.1

Origin: 2024 IECC

Description of Change

The proposed amendment includes limits on the use of electric resistance space heating for commercial buildings based on their size and occupancy. The proposed amendment also includes limits on the use of electric

resistance space heating to 2.0 kW for detached one-and two-family dwellings and townhouses three stories or less in height.

Needs and Benefits

Electric resistance heat systems, such as electric furnaces and baseboard electric heaters, are inexpensive to install but expensive to run.[39] Electric furnaces include a blower to move conditioned air through ducts and electric resistance coils to provide heat.[40] Electric furnaces are even more expensive to operate than other electric resistance systems because of their duct losses and the extra energy required to distribute the heated air throughout the building.[41]

Baseboard electric heaters are zonal heaters controlled by thermostats located within each room.[42] They contain electric heating elements encased in metal pipes and are located at the bottom of outside walls to supply heat at the building's perimeter where the greatest heat loss occurs.[43] The quality of baseboard electric heaters varies considerably, and cheaper models provide poor temperature control.[44]

Alternatives to electric resistance heat regardless of whether fossil-fuel based, or heat pumps can cut electricity usage for home heating by little more than a half on average.[45]

Heat pumps are much more energy efficient than electric resistance heat.[46] Heat pumps extract heat from

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[39] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p. iii.

[40] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p. 1; *Electric Resistance Heating*, Department of Energy, https://www.energy.gov/energysaver/electric-resistance-heating

[41] *Electric Resistance Heating*, Department of Energy, https://www.energy.gov/energysaver/electric-resistance-heating

[42] *Electric Resistance Heating*, Department of Energy, https://www.energy.gov/energysaver/electric-resistance-heating

[43] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p. 2; *Electric Resistance Heating*, Department of Energy, https://www.energy.gov/energysaver/electric-resistance-heating.

[44] Electric Resistance Heating, Department of Energy, https://www.energy.gov/energysaver/electric-resistance-heating

[45] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p. iii.

[46] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p.1.

cold air to produce warm air and exhaust air that is even colder than what is outdoors.[47] Heat pumps are considered two-way air conditioners.[48]

Cost

The cost to install an electric resistance heating system in both new Residential and Commercial buildings is substantially less when compared to fossil fuel and heat pump systems. The installation of such systems, at large, is cost prohibitive when considering the operating cost. Most new buildings do not rely fully on electric resistance heat due to the high cost to operate them. When considering even a simple payback method, it is a matter of a few years to recover the extra cost to install a fossil fuel or heat pump system. Allowing the limited use of electric resistance heat in certain applications provides regulated parties flexibility to install them where the heating needs are low and the cost to install other type of systems too high. This would reduce costs to regulated parties in those situations.

The cost of installation of an electric resistance heating system will vary widely depending on building size, type, design choices and other variables. In general, the initial cost can be assumed to be approximately 60% of the cost to install a heat pump. However, an electric resistance heating system will consume twice the amount of electricity used by a heat pump,[49] with a heat pump having the additional benefit of providing air conditioning.

Alternative

An alternative is to not limit the use of electric resistance space heating. This alternative was rejected because while electric resistance heat carries the lowest cost for initial installation, it results in the greatest

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[47] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p. 1.

[48] *Opportunities for Energy and Economic Savings by Replacing Electric Resistance Heat with Higher-Efficiency Heat Pumps*, American Council for an Energy-Efficient Economy (May 2016) p. 3.

[49] Electric Resistance Heating | Department of Energy. https://www.energy.gov/energysaver/electric-resistance-heating

energy consumption for the life of the equipment. This imposes unreasonable burdens, not only on the ratepayers, but also on the supply of electricity, straining the utility companies' ability to provide the electricity required to implement the regulation prohibiting the use of fossil-fuel equipment and building systems. Prioritizing initial costs over long-term costs to this extreme degree creates a split incentive between building owners or developers and tenants, where the long-term cost is simply passed on to parties that have no input on the design process or the ability to implement efficiency retrofits later on. This split incentive is most burdensome for tenants of affordable housing and disadvantaged communities.

Another alternative is to increase the limit on the use of electric resistance space heating. This alternative was rejected for the same reasons noted above.

The last alternative is to decrease the limit on the use of electric resistance space heating. This alternative was rejected because a lower threshold would impose an undue burden for buildings with areas that are difficult to condition by other means. A lower threshold would make the installation of heat pumps and heat pump water heaters infeasible in some areas and climate zones.

6. Increased minimum efficiency requirements for gas-fired water heaters, hot-water boilers, air conditioning, and refrigeration equipment as mandated by federal standards.
ECCCNYS Section C403.3.2

Origin: U.S. DOE

Description of Change

This proposed amendment increases minimum efficiency for federally preempted equipment under the Energy Policy and Conservation Act (EPCA). The proposed amendment adds minimum thermal efficiencies and maximum water return temperature for gas hot-water boilers with a system input capacity between 1 and 10 million Btu/h, with exceptions. It also includes new efficiency requirements for gas-fired water heaters that have an input capacity over 1,000,000 Btu/hr and new minimum standards for combustion air positive shut-off,

fan motor, and oxygen concentration control for some boiler systems based on input capacity and nameplate rating.

Needs and Benefits

Increasing the minimum efficiency of the HVAC, refrigeration and water heating equipment is an important part of the purpose of every code update, not only at the State level but also at the model code level. The increased efficiency levels in the proposed code are consistent with the efficiency improvements of the model codes with editorial corrections of inconsistencies between the two. Some of the equipment efficiency improvements are also requirements of the U.S. DOE's *Energy Conservation Program for Consumer Products,* 10 CFR 430 and 431. The federal requirements apply to new equipment installed in existing buildings, as well as new buildings.

Cost

DOS does not anticipate a significant cost impact. Most commercially available equipment already conforms to the most recent minimum federal equipment efficiency standards, which will be included in the energy code update. The cost of equipment in compliance with federal minimum efficiency updates has historically been on par with inflation.

Alternative

An alternative is to not increase the minimum efficiency requirements for gas-fired water heaters, hot-water boilers, air conditioning, and refrigeration equipment as mandated by federal standards. This alternative was rejected because such increased efficiency might bring the code update out of compliance with the cost effectiveness criteria of the Energy Law. Additionally, as it applies to federally regulated equipment, the State would need to secure approval from DOE that, even if granted, would delay the implementation of this rule.

Another alternative is to impose stricter efficiency requirements. This alternative was rejected because it would be inconsistent with the model code updates.

SIGNIFICANT CHANGES TO COMMERCIAL BUILDINGS

1. **Renewable energy (solar) for commercial buildings.**

ECCCNYS Section C202, C405.15

ASHRAE 90.1 Section 10.5.1

Origin: 2024 IECC and ASHRAE 90.1

Description of Change

This proposed amendment adds a new minimum prescriptive requirement for on-site renewable electricity generation systems with a power rating of not less than 0.75 watts per square foot in all new commercial buildings, or additions thereto. There is an exception for applicants following the ASHRAE optional compliance path for buildings where installation of a solar photovoltaic system is impractical, such as those with limited roof space, obstructions, and for those with a gross conditioned floor area less than 5,000 square feet. For applicants following the ECCCNYS optional compliance path, instead of a blanket exception, a power purchase agreement is required where the installation of a solar PV system would be impractical. This proposed amendment also includes definitions for financial renewable power purchase agreement and physical renewable energy power purchase agreement which closely align with language in ASHRAE Standard 228P, The Standard Method of Evaluating Zero Energy Building Performance, and in ASHRAE Standard 189.1

Needs and Benefits

This proposed amendment has the potential of saving a significant amount on building energy costs because buildings will be generating their own energy through on-site renewable electricity generation systems.[50] The code change will also allow building owners to hedge against financial risks associated with the

[50] *On-Site Renewable Energy Generation*, Environmental Protection Agency (2014) p. 2.

price volatility of fossil-fuel energy sources.[51] The code change will improve supply reliability of electricity by providing commercial buildings with another source of electrical power.[52] On-site renewable energy generation systems have fewer interconnections (e.g., transmission substations), electricity from these sources is likely to have higher power quality than electricity delivered through the grid from fossil-fuel sources.[53] An additional benefit of photovoltaics systems that harness energy through sunlight, is that the sun is an infinite source of energy, unlike fossil-fuel sources, such as oil and natural gas.

About 20% of buildings with onsite renewable energy systems use the energy generated to meet more than half of their total electricity consumption.[54]

While the requirement is for the building to have on-site renewable energy and could be met through technologies such as ground source geothermal systems, the exceptions are afforded to all buildings where a solar PV system is infeasible.

Cost

The least cost method for meeting the proposal requirements is the installation of a solar PV system.

Material costs were estimated at $1.22/W and labor costs at $1.46/W, based on NREL national average cost (NREL 2023), cost-adjusted and weighted by climate zone. Due to an economy of scale, the cost per square foot will be higher for smaller buildings. An annual maintenance cost of $11/kW was assumed, derived from NREL's 2020 Annual Technology Baseline (NREL 2020).

Table. PV Systems Costs.

Prototype	Baseline	Proposed
NYC High-rise Apartment	$17,381	$89,085

[51] *On-Site Renewable Energy Generation*, Environmental Protection Agency (2014) p. 1.

[52] *On-Site Renewable Energy Generation*, Environmental Protection Agency (2014) p. 3.

[53] *On-Site Renewable Energy Generation,* Environmental Protection Agency (2014) p. 3

[54] *Commercial Buildings and Onsite Renewable Energy*, Energy Star, Environmental Protection Agency (Sept. 2020) p. 8.

Prototype	Baseline	Proposed
High-rise Apartment	$16,755	$88,444
Mid-rise Apartment	$0	$73,462
Large Hotel	$11,995	$234,592
Standalone Retail	$8,337	$80,457
Large Office	$18,299	$406,449
Secondary School	$0	$612,571
Warehouse	$0	$151,228

Another potential cost for some buildings could be unintended impacts from rooftop solar installations such as premature failure and replacement of rooftop membrane systems. Rooftop solar panels make it more difficult to inspect and perform regular maintenance of the roofing system. This can lead to an increase in maintenance and replacement costs.

Alternative

An alternative is to not require renewable energy for commercial buildings. This alternative was rejected because it would be a less restrictive requirement than the model codes, placing the State at competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the US DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

Another alternative is to increase the minimum requirement above 0.75 watts per square foot. While this alternative would provide the benefit of an economy of scale, this alternative was rejected because an incremental approach for this new requirement would impose a lower burden on regulated parties that allows for market adjustment before more stringent requirements are imposed.

A third alternative is to reduce the minimum requirement below 0.75 watts per square foot. This alternative was rejected because without an economy of scale, the provision would not be cost effective.

The fourth alternative is to provide a blanket exception for some buildings instead of the optional compliance path through power purchase agreements. This alternative was rejected because the blanket

exception is available for those pursuing the optional ASHRAE compliance path.

The fifth alternative was to limit the 0.75 W/SF requirement (or PPA alternative) to structures with flat membrane roofs or sloped standing seam roofs over 5,000 SF. This alternative was rejected because the provisions allow for flexibility in terms of the type of renewable energy provided and exceptions for buildings where rooftop solar installations are infeasible.

The last alternative was to credit the addition or allocation of renewable energy (solar) assets that are part of a district system which serves the subject building in lieu of rooftop solar. This alternative was rejected because, firstly and as mentioned above, the ASHRAE compliance path provides a blanket exception where a PV solar system is infeasible. Secondly, for those pursuing the ECCCNYS compliance path, without a separate power purchase agreement for each building, there is no practical mechanism to tie the assets to the specific building.

2. Thermal bridge mitigation and documentation of energy loss associated with thermal bridges in commercial buildings.

ECCCNYS Section C402.7

Origin: 2024 IECC

Description of Change

This proposed amendment requires documentation and mitigation of energy losses associated with structural and physical interruptions in the building thermal envelope of commercial buildings. The proposed amendment includes the reduction of heat transfer through building elements by utilization of materials and methods which reduce thermal conductivity. The proposed amendment also includes prescriptive provisions for mitigating thermal bridge losses in above-grade walls, balconies, floor decks, parapets, structural members penetrating thermal envelope, and for vertical fenestration.

The proposed amendment adds a requirement to note thermal bridges on the construction documents

and includes a definition of thermal bridges. Currently, thermal bridges that occur at intersection of assemblies and components are not accounted for or clearly addressed in the 2020 ECCCNYS which therefore assumes no thermal performance degradation at assembly interfaces and penetrations of the building thermal envelope. Ignoring thermal bridges at interfaces makes it seem like building thermal envelopes are performing much better than they do. The proposed amendment includes new provisions to account for thermal bridges at assembly and component intersections. The proposed amendment also includes prescriptive minimum requirements for insulation and structure details.

Needs and Benefits

Thermal bridging has generally been unregulated, except as they occur due to framing members within assemblies. Thermal bridging occurs when a relatively small area of a wall, floor or roof loses much more heat than the surrounding area.[55] Thermal bridging can occur in any type of building construction.[56] A thermal bridge allows heat to "short circuit" insulation.[57] Typically, this occurs when thermal conductive materials, such as steel framing or concrete, penetrates or interrupts a layer of low thermal conductivity material, such as insulation, creating areas of significantly reduced resistance to heat transfer.[58] Thermal bridges can also occur where building elements are joined, such as exposed concrete floor slabs and beams that abut or penetrate the exterior walls of a building.[59] The effects of thermal bridging may include increased heat loss, occupant discomfort, unanticipated expansion or contraction, condensation, freeze-thaw damage, and related moisture and/or mold problems for materials susceptible to moisture.[60] Thermal bridges, and the subsequent damage,

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[55] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1.

[56] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1.

[57] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1.

[58] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1; Love, Andrea and Charles Klee, Thermal Bridging: Observed Impacts and Proposed Improvement for Common Conditions p. 2

[59] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1.

[60] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1.

can be avoided by several strategies which are best implemented during the design stage, when changes can be easily incorporated.[61] After construction, repairing thermal bridges can be both costly and difficult.[62]

Thermal bridging can reduce the thermal performance of the opaque building envelope by between 20 to 70 percent.[63] Non-thermally broken cladding attachments can degrade the thermal performance of opaque panel assemblies by 50 percent.[64] Thirteen percent of the heat loss through a typical steel stud wall with punched opening windows is due to the window to wall transition and heat loss is even higher with poorer edge details.[65] This is a huge degradation in performance that the Energy Code is currently ignoring and must be addressed to improve the energy performance of as-built structures. To achieve net-zero performance the State needs to address these significant energy losses through thermal bridges at the building thermal envelope. This proposed amendment seeks to take a small step towards recognizing and accounting for thermal bridges that are typically present in conventional construction. It seeks to recognize and account for current design and construction practices, not to drive a large change in construction practices. This is a good first step to move building thermal envelope performance and to get the design and construction industry thinking about thermal bridges in the design process.

The inclusion of thermal bridge details on construction documents will encourage design teams to identify and address thermal bridging. The requirements for what thermal bridges to identify on the construction documents is referenced to section C402.6 where the types of thermal bridges are identified. This will ensure that only the main thermal bridges need be shown.

The prescriptive provisions of the proposed amendment create a simple yet flexible approach, focusing

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[61] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1.

[62] *Thermal Bridges in Wall Construction*, Concrete Masonry and Hardscape Association (CMHA) p. 1.

[63] *Thermal Bridging Guide Version 1.5*, BC Housing (2020).

[64] *Thermal Bridging Guide Version 1.5*, BC Housing (2020).

[65] *Thermal Bridging Guide Version 1.5*, BC Housing (2020).

on a few thermal bridge conditions that have the most impact, and which have practical and available means to effectively manage the bridging. In every case, alternative means and methods are permitted with an approved design to avoid any unnecessary restriction or inflexibility.

Mitigation of energy loss associated with structural and physical interruptions in the building thermal envelope will result in a decrease in heat loss through the wall, leading to lower operating costs, decrease in cold or hot spots on the interior and exterior at the thermal bridge locations, leading to more comfort for the building's occupants and less freeze-damage to the exterior of the building.[66] The continuity of a thermal barrier across the entire building envelope is fundamental to good thermal performance, reducing energy consumption, increasing thermal comfort and helping to prevent condensation.[67]

Cost

This code change proposal will result in an increase in the cost of construction. Perfect mitigation or no thermal bridging at interfaces is implied by code, however, current practice is to ignore them or provide no or little mitigation. Any proposal to reduce thermal bridging will increase the cost of construction relative to current practices. This proposal provides a way of practical mitigation which does not require significant changes to current practices, setting a relatively low performance bar.

Table. Thermal Bridging Mitigation Costs

Prototype	Baseline	Proposed
NYC High-rise Apartment	$36,700	$47,625
High-rise Apartment	$18,210	$24,500
Mid-rise Apartment	$6,907	$10,077
Large Hotel	$17,992	$24,140
Standalone Retail	$6,861	$9,113
Large Office	$47,321	$60,908
Secondary School	$21,707	$28,578

[66] *Thermal Bridges in Wall Construction*, Concrete Masonry & Hardscapes Association p. 1.

[67] Love, Andrea and Charles Klee, *Thermal Bridging: Observed Impacts and Proposed Improvement for Common Conditions* p. 11.

Prototype	Baseline	Proposed
Warehouse	$13,878	$18,792

Alternative

An alternative is to not require thermal bridge mitigation and documentation of energy loss associated with thermal bridges in commercial buildings. This alternative was rejected because it would be a less restrictive requirement than the model codes, placing the State at competitive disadvantage for federal code adoption and implementation grants. It would also hinder the State from fulfilling its obligation to certify to the US DOE that it has adopted an Energy Code that is at least as stringent as the national model codes.

Another alternative is to require documentation only, as an interim measure to provide for market adjustment, without an energy efficiency advantage. This alternative was rejected for the same reasons as the first alternative.

3. Increased equipment efficiency for elevators and escalators.

ECCCNYS C405.8.1.1

Origin: NYStretch

Description of Change

This proposed amendment includes increased equipment efficiency for elevators and conveying systems in commercial buildings. The proposed amendment adds requirement for power conversion system on new elevators with a rise of 75 feet or more, efficiency requirements for elevator motors and transmissions; and requirements for capture and reuse of energy released by elevators during motion.

Needs and Benefits

The increased energy efficiency improvement is essential as it reduces the elevator's overall power consumption, making it a more sustainable and cost-effective option. The proposal also incorporates regenerative drives, which produce energy when the elevators are being lowered, particularly when they have

a heavy load. That electricity is returned to a building's power grid and can then be used to power other parts of the property. Regenerative drives also save energy by decreasing the elevator machine room's cooling requirements by as much as 50 percent. There is a range of options in regenerative drives, which can recover up to 30 percent of an elevator's total energy consumption. In terms of extra benefits, a regenerative drive can also allow an older elevator or escalator to provide passengers with smoother, more comfortable travels up and down.

Cost

This code change proposal will result in an increase in the cost of construction when elevators or escalators are installed in a building. Depending on the height of the building the cost of a typical elevator motor can range from $10,000 to $14,000 on average. Depending on the height and use of the elevator the initial cost could be recovered over a short period of time, due to power regeneration, decrease in machine room cooling, and recovery of the elevator's energy consumption.

Alternative

An alternative is to not require an increase in efficiency for elevators and escalators. This alternative was rejected because this is an additional efficiency measure proposed by NYSERDA in accordance with Energy Law §11-103(2)(b).

SIGNIFICANT CHANGES TO RESIDENTIAL BUILDINGS

1. Separate electric metering for low-rise multi-family buildings

ECCCNYS Section R404.7

Origin: Department of State, Division of Building Standards and Codes, Energy Code Services Unit

Description of Change

This proposed amendment is to require separate electric metering for all dwelling units in multi-family

buildings three stories or less, consistent with existing requirements for multi-family buildings four stories or more.

Needs and Benefits

There are only two different methods by which multifamily buildings are metered for electricity: direct metering and master-metering.[68] In a direct-metered building (also known as individually metered), the utility owns the meter and supplies electricity to each apartment.[69] Residents pay for the electricity they consume, receiving an electric bill from the utility at the residential retail rate.[70] The building receives an electric bill for electricity usage in the common areas, typically at a commercial retail rate.[71] Direct metering encourages individual conservation through consumer informed decisions but it does not yield bulk rate discounts.[72] In a master-metered building, the utility supplies electricity to the entire building.[73] One utility-owned meter serves the building.[74] The building receives one electric bill from the utility, often at a rate that results in a bill significantly lower than the retail residential rate.[75] Individual apartments are not metered, and actual apartment consumption cannot be determined or used as the basis for billing electric charges.[76] Nor is it possible to ensure that all tenants are contributing proportionately to their consumption. With a master-metered building, energy costs can be factored into tenants' leases or the owner charges each tenant for a percentage of the building's

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[68] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[69] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[70] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1; Thurgood, Allen and Lewis M. Kwit, *The Fairness Doctrine for Electric Submetering*, Cooperative Housing Bulletin (December 1996) p.2.
[71] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[72] Thurgood, Allen and Lewis M. Kwit, *The Fairness Doctrine for Electric Submetering*, Cooperative Housing Bulletin (December 1996) p.2.
[73] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[74] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1; Thurgood, Allen and Lewis M. Kwit, *The Fairness Doctrine for Electric Submetering*, Cooperative Housing Bulletin (December 1996) p.1.
[75] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[76] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.

total monthly electric bill based upon the percentage of the building the tenant occupies.[77] Master-metering is inherently unfair and encourages excessive consumption.[78] Submetering combines the best of both the direct metering and master-metering systems.[79] It offers the opportunity for discounts while encouraging conservation.[80] Submetering is the measurement and billing of electric use in individual apartment units in a master-metered multi-family building.[81] Submetering permits the measurement of electricity use in individual apartments via a building-owned meter that is installed for each apartment[82] The building continues to purchase its electricity at a less expensive commercial or bulk residential rate, but now the owner is able to allocate the electric costs to individual apartments on an actual consumption basis.[83] The owner continues to be responsible for the remaining portion of the utility bill that covers the building's common areas.[84]

Submetering allocates the building's total apartment sector electric charges to the individual apartments in direct proportion to their individual usage.[85] It provides a mechanism and incentive for individual residents to monitor and reduce their own monthly electric expense by practicing conservation.[86] Additionally, once the issue of fairness has been addressed, apartment residents are less inclined to scrutinize each other's lifestyle as far as electric usage is concerned.[87] Finally, in those buildings where monthly charges are assessed for appliances such as air conditioners, dishwashers, freezers, washing machines, and dryers, submetering

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[77] *Benefits of Electrical Submetering*, National Electrical Manufacturers Association p. 12, 16.
[78] Thurgood, Allen and Lewis M. Kwit, *The Fairness Doctrine for Electric Submetering*, Cooperative Housing Bulletin (December 1996) p.1-2, 5.
[79] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[80] Thurgood, Allen and Lewis M. Kwit, *The Fairness Doctrine for Electric Submetering*, Cooperative Housing Bulletin (December 1996) p.1.
[81] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[82] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1
[83] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[84] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[85] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p.6.
[86] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 2, 5, 6; *see also Case Study -Park City Estates, Queens Submetering for Multifamily Building*, New York State Energy Research and Development Authority (noting that residents changed their behavior and found ways to reduce their bills after the co-op in Queens, New York, switched from master-metering to sub-metering).
[87] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p.6.

eliminates the building management task of estimating and billing residents for the additional electric consumption associated with these appliances.[88] It eliminates the need for annual apartment inspections to count appliances, many of which are hidden by the residents to avoid the extra charge.[89] Elimination of this task tends to diminish the adversarial relationship between the owner and the residents.[90]

Submetering largely eliminates a volatile, variable and difficult-to-control factor from a building's operating budget- apartment electric usage costs.[91] Owners can better predict costs when the only electric usage to be considered is for common areas under management control.[92] Buildings that use submeters show 15 to 25 percent savings in energy use verses master metering building of like construction.[93] Studies have shown that providing a bill to end users through submetering reduces overall consumption. [94]

Cost

The cost of a smart meter is estimated in the range of $550 to $680 per meter, plus an approximate $35 monthly charge for meter reading, billing, and collection. The $35 monthly charge for meter reading will be included in the utility bill and it is anticipated energy savings will offset some of that cost. Low-income households will be most affected by the split incentive.

Alternative

One alternative is to not require separate electric metering for low-rise multi-family buildings. This alternative was rejected because the benefits far outweigh the costs and provide a means to pursue, to the fullest extent feasible, the use of modern technical methods, devices and improvements which tend to minimize

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[88] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 6; Thurgood, Allen and Lewis M. Kwit, *The Fairness Doctrine for Electric Submetering*, Cooperative Housing Bulletin (December 1996) p.5-6.
[89] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 6.
[90] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 6.
[91] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 6.
[92] *Residential Electric Submetering Manual*, New York State Energy Research and Development Authority (October 2001) p. 1.
[93] *Benefits of Electrical Submetering*, National Electrical Manufacturers Association p. 3
[94] *Benefits of Electrical Submetering*, National Electrical Manufacturers Association p. 13

consumption of energy in accordance with Energy Law §11-104(2) and (4).

Another alternative is to require individual tenant monitoring only without separate billing at less than half the cost for the initial installation and no monthly fees. This alternative was rejected because it only provides the potential benefit of informed consumer energy use behavior without any direct financial benefit attached to those behavior modifications. Further, monitoring could be perceived as a tool to justify rent increases and foster distrust between tenants and building owners.

2. Energy recovery ventilation (ERV) required for residential buildings in Climate Zone 6.

ECCCNYS Section R403.6.1

Origin: 2024 IECC

Description of Change

This proposed amendment requires an energy recovery ventilation or heat recovery system (ERV or HRV) for residential buildings in Climate Zone 6. Previously, an HRV or ERV was only required in Climate Zones 7 and 8, but this provision was modified in the 2024 IECC.

Needs and Benefits

An ERV is a type of heat exchanger that either pre-heats or pre-cools incoming outdoor air, significantly reducing the demand on heating and cooling equipment.[95] ERVs work by exchanging heat and moisture between two airstreams: one contained in exhausted, indoor air exiting the building and one incoming outdoor, supply air that is entering the building.[96] During colder weather, the ERV exhaust air warms and moistens the

[95] Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV) Building Energy Exchange (June 2021) p. 2.

[96] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 2; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced*

supply air from outdoors.[97] During warmer weather, the ERV exhaust air cools and dries the supply air from outdoors.[98] The two air streams do not mix, keeping odor, smoke and pollutants in exhausted air separate from fresh supply air.[99] This technique, called preconditioning, conserves a significant amount of energy that would otherwise be lost with traditional ventilation methods.[100]

Air conditioning and ventilation systems are among the main sources of high indoor levels of air pollutants.[101] Conventional Heating, Ventilation and Air- Conditioning (HVAC) systems must fully temper fresh air before distributing it throughout the building.[102] Tempering fresh air can be an energy demanding process.[103]

An ERV provides controlled and conditioned ventilation that improves indoor air quality and occupant

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Comfort and Savings, Building Energy Exchange (June 2021) p. 2.*Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 1. D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3714.

[97] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 1; D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3714.

[98] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 1; D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3714.

[99] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 2; Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings, Building Energy Exchange (June 2021) p. 2; D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3714.

[100] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 2; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 2.; D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3715.

[101] D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3713.

[102] *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 2.

[103] *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 2.

health and comfort while reducing GHG emissions and saving energy.[104] Buildings that adopt an ERV are less likely to experience persistent odors, mold, dampness, and other issues that trigger complaints and increase health risks.[105] The continuous clean fresh filtered air supply from an ERV can eliminate irritants, allergens and air pollutants.[106]

A home can have several appliances exhausting simultaneously including bath exhaust fans, kitchen hoods and clothes dryers.[107] When exhaust-only appliances operate and a home becomes depressurized, water vapor intrusion from outdoors in more humid climates could generate the additional issue of mold in the building envelope.[108] The operation of all these exhaust-only appliances in conjunction with the mechanical ventilation system raise significant issues related to (1) occupant comfort, health and safety and (2) building and equipment durability and reliability.[109] An ERV can provide a means to deliver make-up air and reduce the level of home pressurization to mitigate these issues.[110] An ERV requires a low level of maintenance[111] An ERV should

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[104] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 2; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 2.

[105] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 2; D. Ben Guida, *Heat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3715.

[106] D. Ben Guida, H*eat Recovery Ventilation for Energy-Efficient Buildings: Design, Operating and Maintenance*, International Journal of Innovative Technology and Exploring Engineering (2019) p. 3715.

[107] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.

[108] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.

[109] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.

[110] *Laboratory Evaluation of Energy Recovery Ventilators*, U.S. Department of Energy, Energy Efficiency and Renewable Energy (November 2016) p. 6.

[111] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 4; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 4.

typically be inspected every three months and fully cleaned every six months.[112] The air filters within an ERV require regular cleaning.[113]

Cost

Considering that a balanced ventilation system is required by the Uniform Code, the incremental cost of an HRV or ERV ranges from $1,000 to $1,500 depending on the size of the house or dwelling unit.

This provision only applies in Climate Zone 6, which consists of the counties of Chenango, Clinton, Delaware, Essex, Franklyn, Fulton, Hamilton, Herkimer, Jefferson, Lewis, Madison, Montgomery, Oneida, St. Lawrence, Sullivan, Ulster, Warren.

Alternative

An alternative is to not require an HRV or ERV in residential buildings in Climate Zone 6. This alternative is rejected because the cost of installing an HRV and ERV will be recovered through energy savings.

Another alternative is to expand the HRV or ERV requirement to residential buildings in all Climate Zones within New York State. This alternative is rejected because the provision is likely not cost-effective in Climate Zone 4 and the cost-effectiveness analysis for Climate Zone 5 was challenged by developers during the development of the 2024 IECC.

4. COSTS

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[112] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 4; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 4.

[113] *Tech Primer: Enhanced Ventilation with Energy Recovery Ventilators (ERV)* Building Energy Exchange (June 2021) p. 4; *Tech Primer Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Ventilators (ERV): Controlled Ventilation for Enhanced Comfort and Savings*, Building Energy Exchange (June 2021) p. 4.

(a) Costs to Regulated Parties.

Implementation Costs. "First Costs." In general, the costs to regulated parties for implementing this rule will include the "first costs," i.e. the increase (or decrease) in the costs of constructing a building to the requirements of the proposed Energy Code rather than the requirements of the current Energy Code. For example, under the current Energy Code, fossil-fuel equipment and building systems are permitted, while under the proposed Energy Code fossil-fuel equipment and building systems will be prohibited in new buildings, with exceptions.

For the nine commercial building prototypes studied in Climate Zones 4A, 5A and 6A for the NORESCO Report, the "first costs" range from a decrease of $1,311,156 for a Large Office to an increase of $450,260 for a Secondary School.

Table. Incremental Cost Change for NORESCO Report

Prototype	Incremental construction cost	
	Total $	$/sf
NYC High Rise Apartment	(271,642)	($1.61)
High Rise Apartment	9,419	$0.11
Midrise Apartment	49,267	$1.46
Large Hotel	415,427	$3.40
Standalone Retail	31,521	$1.28
Large Office	(1,311,156)[114]	($2.63)
Secondary School	450,260	$2.13
Warehouse	163,234	$3.14

[114] Savings due to a decrease in lighting power density that results in a reduction in the number of lighting fixtures required in the building. Recent technological advances enable the use of lighting fixtures with a longer useful life and a lower maintenance cost.

Statewide (weighted)	(163,037)[115]	($0.01)

For the residential building prototypes studied in the Resource Refocus Report, the "first costs" average ranges from an increase of $2,156 for a multifamily residence to an increase of $6,008 for a single-family residence. The first costs of the 2024 NYSECCC are primarily driven by the increase in building thermal envelope stringency and the presence of HRV/ERV in Climate Zones 5 and 6 (whether driven by energy credit options or required by prescriptive language). These envelope improvements also have the benefit of enabling the installation of smaller HVAC equipment with a lower price point.

This first cost does not include the incremental cost of a heat pump, as opposed to a traditional heating system, which is anticipated to be installed in most new residential buildings due to the prohibition against fossil-fuel equipment and building systems in residential buildings seven stories or less in height beginning on December 31, 2025 and for residential buildings above seven stories in height beginning on January 1, 2029. The cost of heat pumps is offset, in part, through the avoided cost of fossil-fuel infrastructure installation. The avoided cost is greater in urban and suburban areas where natural gas infrastructure is available. In other areas, where the fossil-fuel alternatives are either propane or fuel oil, either the developer or the buyer will also benefit from the avoided cost of installation and maintenance of tanks and fuel lines.

Other Implementation Costs. A copy of the 2024 ECCCNYS costs approximately $60 to $71 and a copy of 2024 NYS ASHRAE 90.1 costs $198.

Continuing Compliance Costs. In general, the on-going costs of continuing to comply with this rule will consist of the change (increase or decrease) in (1) the cost of maintaining energy-related systems and equipment, (2) the increased or decreased cost of periodic replacement of energy-related systems and

[115] Same as footnote 110.

equipment, and (3) an increase of 19.5 percent in site energy savings for commercial buildings and an increase of 6 percent in energy costs for residential buildings.

(b) Costs to the Department of State, the State, and Local Governments.

Costs to the DOS. The DOS's Division of Building Standards and Codes ("DBSC") will offer training on the Energy Code, as revised by this proposed rule, to code enforcement personnel, registered design professionals, and other interested parties. Offering such training is part of the DBSC's core mission, and the DOS anticipates that DBSC will be able to provide such training using its existing staff and facilities, at no significant additional cost to the agency.

Costs to Local Governments – Enforcement. Pursuant to Executive Law §381, local governments (cities, towns, and villages) are charged with administration and enforcement of the Energy Code, and some counties administer and enforce the Energy Code within their boundaries. Most counties and certain State agencies are required by existing law to administer and enforce the Energy Code with respect to buildings in their custody and control. These existing administration and enforcement obligations will continue with respect to the Energy Code as amended by this proposed rule. It is not anticipated that this proposed rule will have any significant impact on the existing code administration and enforcement obligations of local governments, counties, and State agencies.

Local governments, counties, and State agencies that currently administer and enforce the Energy Code will be required to ensure that their code enforcement personnel receive training on the new Energy Code for commercial buildings and residential buildings. However, code enforcement personnel are already required by regulation to receive annual "in-service" code training, and the DOS and the Code Council anticipate that code enforcement personnel will be able to receive training on the new Energy Code for commercial buildings and residential buildings as part of the already required in-service training. Furthermore, the DBSC has a program in place for training local government code enforcement officials. The staff of the DBSC will provide

complimentary training to assist local governments in understanding the requirements of the new Energy Code for commercial and residential buildings.

Local governments, counties, and State agencies that currently administer and enforce the Energy Code will be required to purchase one or more copies of the 2024 ECCCNYS (about $60 to $71) and one or more copies of 2024 NYS ASHRAE 90.1 ($198). However, DOS and NYSERDA will provide a free copy of the set of code books, either one (1) electronic copy or one (1) hard copy, to each local government administering and enforcing the Energy Code.

Costs to Local Governments – Compliance. Local governments, counties, and State agencies that construct commercial buildings and residential buildings for their own use will be required to comply with the Energy Code for commercial buildings and residential buildings, as amended by this proposed rule. When a local government, county, or State agency constructs a commercial building or a residential building for its own use, it will be a regulated party, and it will be subject to the same costs of implementation and continuing compliance as private parties, as discussed in Part 4(a) ("Costs to Regulated Parties") of this Regulatory Impact Statement.

5. LOCAL GOVERNMENT MANDATES

Enforcement Mandate. As discussed in Part 4(b) "Costs to the DOS, the State, and local governments" of this Regulatory Impact Statement, existing law charges local governments (cities, towns, and villages) with administration and enforcement of the Energy Code, and counties may be responsible for enforcing the Energy Code under certain circumstances. This proposed rule will not change the existing code enforcement responsibilities of any local government or county.

As discussed in Part 4(b) of this Regulatory Impact Statement, local governments and counties that currently administer and enforce the Energy Code will be required to ensure that their code enforcement

personnel receive training on the new Energy Code for commercial buildings and residential buildings. However, code enforcement personnel are already required by regulation to receive annual "in-service" code training, and the DOS and the Code Council anticipate that code enforcement personnel will be able to receive training on the new Energy Code for commercial buildings and residential buildings as part of the already required in-service training. Furthermore, the DBSC has a program in place for training local government code enforcement officials. The staff of the DBSC will provide training to assist local governments in an understanding of the requirements of the new Energy Code for commercial buildings and residential buildings.

Compliance Mandate. Local governments and counties that construct buildings for their own use are required to comply with the current Energy Code and will be required to comply with the Energy Code as amended by this proposed rule. The requirement that local governments and counties comply with the current Energy Code, and with the Energy Code as amended by this proposed rule, is imposed by existing provisions of the Energy Law, and will not be a new requirement imposed by this proposed rule. Local governments and counties that construct buildings for their own use are regulated parties, and as such can expect to see the same benefits described in Part 2 ("Needs and Benefits") of this Regulatory Impact Statement and to incur the costs described in Part 5(a) ("Costs to Regulated Parties") of this Regulatory Impact Statement.

6. PAPERWORK

Regulated parties are required by other, existing law to prepare plans and specifications documenting compliance with the current version of the Energy Code and to submit such plans and specifications to the governmental unit or agency responsible for enforcing the Energy Code with the application for a building permit. Governmental units or agencies that enforce the Energy Code are required by other, existing law to review such plans and specifications, to determine compliance with the current version of the Energy Code, to issue permits, to conduct and document construction inspections, and to issue certificates of occupancy. These

obligations will continue with respect to the Energy Code as amended by this proposed rule. This proposed rule will not add any new or additional reporting or paperwork requirements.

7. DUPLICATION / RELEVANT RULES AND LEGAL REQUIREMENTS

Rules and other legal requirements of the New York State and Federal governments that are relevant to this proposed rule include the following:

New York State Energy Law §11-103(2) provides that the provisions of the Energy Code applicable to residential buildings must meet or exceed the most recent edition of the IECC. Adoption of this proposed rule will assure that the provisions of the Energy Code applicable to residential buildings meet or exceed the 2024 edition of the IECC.

New York State Energy Law §11-103(2) provides that the provisions of the Energy Code applicable to commercial buildings must meet or exceed the most recently published ASHRAE 90.1. The Energy Code for commercial buildings as amended by this proposed rule will meet or exceed ASHRAE 90.1-2022.

Title III of the ECPA provides that when DOE determines that buildings constructed to a revised edition of the ASHRAE 90.1 Standard would achieve greater energy efficiency than buildings constructed to the prior edition of ASHRAE 90.1, states are required to update their energy codes for commercial buildings to codes that meet or exceed the revised edition of ASHRAE 90.1. On March 6, 2024, the DOE published the DOE Notice of Determination in the Federal Register, indicating that DOE has determined that buildings constructed to the requirements of ASHRAE 90.1-2022 would achieve greater energy efficiency than buildings constructed to the requirements of ASHRAE 90.1-2019. See 89 Federal Register 15983-01 (March 6, 2024) at 15984.[116]

[116] https://www.federalregister.gov/documents/2024/03/06/2024-04717/determination-regarding-energy-efficiency-improvements-in-ansiashraeies-standard-901-2022

This proposed rule would amend the Energy Code for commercial buildings from one that meets or exceeds ASHRAE 90.1-2016 to one than meets or exceeds ASHRAE 90.1-2022.

Title III of the ECPA, in 42 U.S.C. 6833(a), provides that when the DOE determines that buildings constructed to a revised edition of the 1992 Model Energy Code (MEC) or any successor to that code (i.e. the IECC), would achieve greater energy efficiency than buildings constructed to the prior edition of the MEC or any successor to that code, states are required to review their energy codes for residential buildings and make a determination as to whether it is appropriate to revise such codes to one that meets or exceeds the revised edition of the IECC. States may revise their residential building energy codes such that they meet or exceed the revised edition of the IECC or determine that it is not appropriate for the state to revise its residential building energy code.

Article 11 of the New York State Energy Law requires the adoption of the Energy Code and contemplates that the Energy Code be amended from time to time to achieve the objectives described in Part 2 ("Legislative Objectives") of this Regulatory Impact Statement.

Energy Law §11-103(3) provides that any regulation of any other State agency pertaining to energy conservation is superseded by the Energy Code and will be superseded by the Energy Code as amended by this proposed rule.

There is pending litigation regarding whether the prohibition on fossil-fuel equipment and building systems in new buildings discussed above in Section 3 (fossil-fuel prohibition) is preempted by the federal EPCA, 42 U.S.C. §§6201-6422. As of this date, there has been no court decision binding upon New York indicating that the fossil-fuel prohibition is subject to express preemption under federal law. Additionally, New York has not applied for a waiver from the Secretary of Energy pursuant to EPCA, 42 U.S.C. §6297(d).

Based on the foregoing, the DOS believes that this proposed rule does not duplicate or conflict with any rule or other legal requirement of the State or the Federal government.

8. ALTERNATIVES

The following is a significant alternative to the portion of this proposed rule that applies to commercial buildings that was considered by the DOS and the Code Council:

ALTERNATIVE: ADOPTION OF ASHRAE 90.1-2022 ONLY

In essence, this proposed rule will adopt the "Commercial Provisions" of the 2024 ECCCNYS (primarily based on the 2024 IECC Commercial Provisions) and an amended version of the standard ASHRAE 90.1, as an alternative compliance path, as the new Energy Code for commercial buildings ("2024 ECCCNYS Commercial Provisions"). Simply adopting an amended version of ASHRAE 90.1-2022 as the new Energy Code for commercial buildings was considered as an alternative. However, this alternative was not incorporated into this proposed rule for the following reasons:

1. The 2024 ECCCNYS Commercial Provisions allow a building owner and design professional to choose between complying with (1) ASHRAE 90.1-2022 or (2) one of two alternative compliance paths set forth in the 2024 ECCCNYS Commercial Provisions.

2. The building owners and design professionals typically find that the alternative compliance paths set forth in the 2024 ECCCNYS Commercial Provisions are easier to understand and to apply to smaller, less complex commercial buildings. The application of ASHRAE 90.1 as a compliance path is generally best utilized by design professionals, in more complex building design, high rise buildings, or highly glazed buildings, and is more applicable and compatible with sustainable building design. ASHRAE 90.1-2022 contains an alternative compliance path (Normative Appendix G) identified as a LEED compliance

methodology.[117]

3. The DOS and the Code Council believe that each of the two alternative compliance paths set forth in the 2024 ECCCNYS Commercial Provisions meets or exceeds ASHRAE 90.1-2022, or results is equal or greater energy savings.

Based on the foregoing, the DOS and the Code Council determined that adopting the 2024 ECCCNYS Commercial Provisions provides greater flexibility to building owners and design professionals, while still assuring that the Energy Code for commercial buildings meets or exceeds ASHRAE 90.1-2022 or results in equal or greater energy savings.

9. FEDERAL STANDARDS

As discussed above in Part 7 "Duplication / Relevant Rules and Legal Requirements" of this Regulatory Impact Statement, Title III of the ECPA provides that states' building energy codes for commercial buildings be updated to meet or exceed updated versions of ASHRAE 90.1 when the DOE determines that the updated version of ASHRAE 90.1 will improve energy efficiency in commercial buildings. Furthermore, Title III of the ECPA provides that when the DOE determines that the updated version of the 1992 Model Energy Code (MEC) or its successor code (i.e. the IECC) will improve energy efficiency in residential buildings, states are required to review their energy codes for residential buildings and make a determination as to whether it is appropriate to revise such codes to one that meets or exceeds the revised edition of the IECC. States may revise their residential building energy codes such that they meet or exceed the revised edition of the IECC or determine that it is not appropriate for the state to revise its residential building energy code. Where the state decides to

[117] https://www.usgbc.org/articles/new-guidance-leed-projects-subject-alternative-energy-codes

not revise said code, it shall submit to the Secretary of Energy, in writing, the reasons for such determination, and such statement shall be made available to the public.

This proposed rule will cause the Energy Code for commercial buildings to meet or exceed ASHRAE 90.1-2022, consistent with Federal standards as established by the EPCA and by the determination regarding ASHRAE 90.1-2022 published by DOE in the Federal Register on March 6, 2024.

This proposed rule will cause the Energy Code for residential buildings to meet or exceed the 2021 IECC residential provisions, consistent with the federal standards as established by the EPCA and by the determination regarding the 2021 IECC published by DOE in the Federal Register on July 28, 2021.

As discussed above in Part 7 "Duplication / Relevant Rules and Legal Requirements" of this Regulatory Impact Statement, there is pending litigation regarding whether the fossil-fuel equipment and building systems prohibition in new buildings discussed above in Section 3 (fossil fuel prohibition) is preempted by Energy Policy and Conservation Act (EPCA), 42 U.S.C. §6297(c). As of this date, there has been no court decision binding upon New York indicating that the fossil fuel prohibition is subject to express preemption under federal law. Additionally, New York has not applied for a waiver from the Secretary of Energy pursuant to EPCA, 42 U.S.C. §6297(d).

10. COMPLIANCE SCHEDULE

This proposed rule and the amendment of the Energy Code to be implemented by this proposed rule will become effective 90 days after the date of publication of the Notice of Adoption in the State Register. The DOS and the Code Council anticipate that regulated parties will be able to comply with the amended provisions of the Energy Code immediately upon this proposed rule becoming effective.

This appendix presents the written and verbal comments on the Draft GEIS, received by the Department during the public comment period from March 19, 2025, through May 27, 2025. The Notice of Acceptance of Draft GEIS and Public Hearing was published in the Environmental Notice Bulletin and State Register on March 19, 2025. A SEQR public hearing was held both in person and virtually on May 16, 2025. The Department did not receive any oral comments. Public comments on the Draft GEIS were accepted through May 27, 2025. The Department received two (2) written comments. The following is a summary of comments and responses to those comments.

Commenter Summary

1. **Jordan Garfinkle, Bloom Energy Corporation**
2. **Cameron Brooks, Think Microgrid**

Comment 1 (Commenter 1 and 2)

That the proposed definition of "fuel cell system" in *9 NYCRR §§ 1229-2.3(a)(8) and 1240.6(c)(1)(ix)* is not consistent with State and Federal Law and needs to be rewritten to remove the phrase "with no carbon byproducts" because it excludes certain fuel cell systems.

Response 1: Although there are no changes necessary to the GEIS in response to this comment, we agree that the definition should be clarified so as not to inadvertently exclude certain fuel cell systems. The following change to the definition of "fuel cell systems" is recommended: (Modified text in strikethrough)

> *Fuel cell system*. A device or system that uses the chemical energy of a fuel, such as hydrogen, to produce electricity ~~with no carbon byproducts~~.

Comment 2 (Commenter 1)

That the proposed definition of "fuel cell system" in *9 NYCRR §§ 1229-2.3(a)(8) and 1240.6(c)(1)(ix)* needs to be rewritten to remove the phrase "with no carbon byproducts" because it excludes certain fuel cell systems and in so doing does not minimize environmental harm.

Response 2: The Department has considered the definitional change raised by the Commenter and has determined that the definition should be clarified with the intent of minimizing environmental harm and so as not to inadvertently exclude certain fuel cell systems. Therefore, the following change to the definition of "fuel cell systems" is recommended: (Modified text in strikethrough)

> *Fuel cell system*. A device or system that uses the chemical energy of a fuel, such as hydrogen, to produce electricity ~~with no carbon byproducts~~.

Additionally, at a generic, non-site-specific level, this GEIS identifies the broad potential impacts that could be caused by the proposed adoption of the new Uniform Code and Energy Code. Considering the requirements of 6 NYCRR § 617.10 for generic environmental impact statements, the Code Council and the Department find that no changes to the GEIS are necessary in response to this comment.

Comment 3 (Commenter 2)

That the draft GEIS, as written, and how "fuel cell systems" are currently defined in the proposed Energy Code, will disadvantage smaller, cleaner, and more reliable microgrids in favor of increased operation of larger, dirtier, and less reliable central station power plants.

Response 3: The GEIS is used during the rulemaking process to serve as an environmental assessment to avoid or minimize environmental harm. The GEIS evaluates the impacts of emissions from fossil-fuel equipment and building systems in buildings, which are not defined to include microgrids. Thus, this GEIS did not contain an evaluation of microgrids. However, the requested definitional change for "fuel cell systems" will be considered as set forth in the Response to Comment 1 above.