

Strategies for Massachusetts Municipalities to Implement Net Zero Building Mandates

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INTRODUCTION

This paper examines legal complexities that Massachusetts towns and cities must navigate when mandating reductions of greenhouse gas emissions from the building sector. Often framed as “net zero” initiatives, this issue is garnering increasing attention as municipal regulators and residents pursue more ambitious climate change mitigation goals. Successful mandatory approaches to net zero buildings must fit into the framework of federal and state laws so as to avoid being preempted and should weave together community-level rules and policies to support successful implementation with an eye to impacts and equity. This paper evaluates a range of municipal options, concludes that several are viable with existing authority, and then provides an annotated model ordinance for one. Although the focus is on mandatory actions, the paper also briefly outlines ideas for voluntary and incentive-based approaches to promoting net zero building (“NZB”) goals.

The analysis assumes that a municipal program will apply to both new and existing buildings. While new large-scale development can account for a disproportionate share of emissions from the building sector, and is often the focus of NZB initiatives, net zero goals at the community level cannot be achieved without addressing existing buildings. For example, in 2016, 23% of GHG emissions in Massachusetts were from the residential sector,¹ but approximately 90% of housing units at that point were already over 15 years old.² While addressing emissions from existing buildings will be important, there are policy and implementation concerns that may favor a phased roll-out of NZB requirements and the paper notes different potential pathways to full NZB mandates. Throughout, the paper also highlights decision points for regulators, regulated communities and advocates to consider in the design of NZB programs.

SUMMARY

Section I begins with an introduction to net zero buildings (“NZB”), a concept that generally looks to (i) increase energy efficiency in building design and construction as well as in operations, and (ii) incorporate greater use of renewable energy. Then this paper reviews factors that can shape the design of a NZB program, such as the scope of building operations covered and the scale of measurement, and addresses why municipalities are contemplating action in this arena.

Section II provides a brief overview of municipal authority to pursue NZB initiatives. Pursuant to the home rule authority granted by the Massachusetts Constitution, cities and towns can adopt new laws, even with respect to subject matters already regulated by the Commonwealth, unless doing so is either expressly prohibited or inconsistent with the Constitution, Massachusetts laws or a municipality’s charter. While the Massachusetts Building Code imposes some limits on municipal action, towns and cities have sufficient authority to pursue NZB mandates. Several strategies for expanding municipal authority relative to NZB initiatives are noted in Appendix 1.

¹Massachusetts Greenhouse Gas (GHG) Emission Trends, <https://www.mass.gov/service-details/ma-ghg-emission-trends>.

² U.S. Census Bureau, American Fact Finder, <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>.

Section III outlines five approaches that municipalities could take to mandate NZB measures. Some would entail stand-alone ordinances: for example, regulating greenhouse gas (“GHG”) emissions, clean energy use, or energy efficiency from or at buildings. Mandates such as these could apply to both new and existing buildings, regardless of size, as could a credit system ordinance. Other approaches, such as amendments to zoning ordinances, might be more limited in scope with less impact on existing buildings. All options face a range of common decision points, such as whether to include alternative compliance mechanisms. As discussed in subsequent sections, some of these tools to mandate NZB actions are a better fit with existing municipal authority than others.

Section IV reviews existing federal and Massachusetts laws that are relevant to NZB-related actions, including the federal and Massachusetts Clean Air Acts, federal energy efficiency standards for consumer and industrial products, and the Massachusetts Building Code. While existing laws regulate or affect some NZB-related actions at the building level, there is space for additional municipal regulation that would neither be duplicative nor preempted.

Section V considers the concept and contours of preemption; the principle that a higher law may, either explicitly or by implication, preclude additional or conflicting action by a lower authority. In particular, the preemptive nature of the National Appliance Energy Conservation Act and Massachusetts Building Code are considered. The former explicitly limits municipal action with limited exceptions, one of which is outlined in Appendix 4. While courts in Massachusetts are reluctant to find that local laws are preempted by acts of the General Legislature, they interpret the Building Code as precluding municipal action that would disrupt the Building Code’s uniform requirements. Whether a local regulation would be preempted by a state or federal law is based not only on what the regulation requires, but also on its outcome. For example, a municipal NZB ordinance cannot avoid preemption by framing its requirements as separate from the issues regulated by the Building Code if there is no compliance option other than taking action beyond that required by the Building Code; such a de facto mandate would be preempted. On the other hand, not all regulations that touch on or implicate an area governed exclusively by a state or federal law are preempted; the effect needs to be more than incidental. Including reasonable alternative compliance options in ordinances can help insulate them from preemption.

The paper concludes in Section VI with a preemption analysis of several of the tools to mandate NZB measures introduced in Section III. Regulations that either require clean energy use by buildings or limit greenhouse gas emissions from buildings should, if appropriately designed, withstand a preemption challenge. A municipal ordinance that regulates energy efficiency, either in the design and construction of buildings or from building operations, would be at greater risk of at least partial preemption. In any approach, important design measures include the availability of reasonable alternative compliance mechanisms.

This paper is not a comprehensive review of opportunities for municipal action regarding NZB initiatives. In addition to other forms of mandates, such as cap and trade programs and public-health based requirements, towns and cities could pursue voluntary measures, such as incentive programs via zoning or taxes. An example of such a program, a green building property tax rebate, is outlined in Appendix 5. Nor does this paper flesh out all policy and implementation

implications, such as equitable impacts, that should be accounted for in developing a NZB program. Such analyses should be informed both by municipal-specific considerations and lessons learned as communities in Massachusetts and elsewhere continue to evaluate and implement NZB initiatives.

Table of Contents

Introduction	1
Summary	1
Section I: Introduction to Net Zero Buildings	5
What Are Net Zero Buildings?	5
Why Is There an Interest in Net Zero Buildings?	6
Why Are Municipalities Taking Action?	7
Section II: Municipal Authority to Pursue Net Zero Building Initiatives	9
Section III: Potential Tools for Municipalities to Mandate Net Zero Building Measures	11
What Are Some Decision Points Common to Each Tool?	14
Section IV: Existing Federal & State Laws Relevant to Net Zero Building-Related Actions	16
Section V: Preemption – A Potential Limit on Municipal Action	18
What is Preemption?	18
How Does Preemption Affect Actions of Municipalities in Massachusetts?	19
Can a Local Law Be Preempted Because its Outcome, as Opposed to its Direct Requirement, is Precluded?	19
Does the Massachusetts Building Code Limit Local Action?	21
Does the National Appliance Energy Conservation Act Limit Local Action?	23
Does Preemption Differ Between Prescriptive and Performance-Based Standards?	23
Section VI: Preemption Analysis of Municipal Actions to Mandate Net Zero Building Actions	25
Greenhouse Gas Emissions Ordinance: Preemption Analysis	25
Clean Energy Use Ordinance: Preemption Analysis	27
Energy Efficiency Ordinance: Preemption Analysis	28
Appendix 1: Strategies to Expand Municipal Authority for Net Zero Building-Related Actions	30
Appendix 2: Voluntary Measures to Incentivize Net Zero Building-Related Actions	31
Appendix 3: Annotated Model Clean Energy Use Ordinance	32
Note 1: Massachusetts Anti-Aid Amendment	46
Note 2: Municipal Options to Support Compliance	47
Appendix 4: National Appliance Energy Conservation Act: Exceptions for Certain Building Code Requirements	48
Appendix 5: Model Green Building Property Tax Rebate Program	50

SECTION 1: INTRODUCTION TO NET ZERO BUILDINGS

What Are Net Zero Buildings?

There is no single definition of a “net zero” building, but the concept generally builds on three precepts:

1. Increasing energy efficiency in building design and construction;
2. Improving energy use in building operations; and
3. Developing on-site renewable energy.

Programs build off of these principles by integrating mechanisms such as off-site renewable energy and carbon offsets. Whether net zero is defined in reference to emissions, energy usage or energy cost, program design features may vary with respect to the following questions:

- What emissions or energy uses are covered?

Regulated emissions or energy use could include direct sources (*i.e.*, emissions or energy use from the operation of buildings and activities in the building), attributable sources (*i.e.*, emissions or energy use from the production of electricity and energy used by the building) and/or indirect sources (*i.e.*, emissions or energy use from activities such as office employees commuting to and from the building).

Calculating indirect emissions, often referred to as “Scope 3” emissions in GHG reporting protocols, is more complex than calculating direct and attributable emissions, and methodologies are still under development. Particularly to the extent that net zero programs will require self-reporting from building owners, including indirect emissions in early net zero programs may add administrative hurdles that would hinder introduction and feasibility of such initiatives.

- What is the scope of building operations included?

A net zero requirement could apply to emissions from a building's base operations, which would exclude emissions from the activities of tenants or occupants, or whole (*i.e.*, entire) building operations. For example, if a building owner supplies preset heat and cooling but electricity is separately metered and paid for by tenants, the electricity might not be included in the calculation of emissions from base operations.

Examples of Net Zero Definitions

Net-Zero Energy Building - “A building that is designed, constructed, or renovated and operated such that the actual annual source energy consumption is balanced by on-site renewable energy.”

~ E.O. 13693, Planning for Federal Sustainability in the Next Decade, 2015

Zero Energy Building – “An energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.”

~ Dept. of Energy, Sept. 2015

Net Zero New Construction – “Developments that achieve net zero emissions from their operations, through energy efficient design, onsite renewable energy, renewable energy infrastructure such as district energy, and, if appropriate, the limited purchase of RECs [Renewable Energy Credits] and GHG offsets.”

~ Net Zero Task Force, Cambridge, MA, April 2015

- What portion of a building's life span is covered?

Net zero programs could apply to emissions or energy usage from a building's construction phase, operations, and/or demolition. Even if a net zero program only applies to a building's operation, the development process and contractors will be implicated. For example, in some voluntary programs, buildings can be certified as net zero only after they have operated for a year, to ensure that building design features operate as projected. Given that building developers and eventual owners/occupants are often different parties, building contracts will need to address the risk of unmet net zero goals. These issues will also need to be addressed in leases where owners and tenants have different responsibilities under net zero programs but are still impacted by each other's actions. Such contractual issues may be beyond the ambit of municipal regulators, but could inform how enforcement or incentive programs are designed.

- What is the scale of measurement?

Some categories and locations of buildings will be better suited to net zero design and operation than others, and retrofits at existing buildings will face additional technological and financial challenges. Given these concerns, some programs, such as the Net Zero Task Force in Cambridge, Massachusetts, define net zero on an aggregate scale, *e.g.* community, neighborhood or campus, as well as at the building level. Relatedly, some argue that the funds and resources needed to achieve net zero at the building level may be more cost-effectively spent creating district energy and other systems that support net zero performance across a neighborhood.

Why is there an Interest in Net Zero Buildings?

Climate change is already occurring and is projected to produce increasingly serious consequences over the course of this century. The magnitude of these impacts will depend on the climate change mitigation measures adopted around the world. This includes reducing the energy use intensity of buildings and taking advantage of opportunities to harvest energy from renewable sources.

The building sector accounts for approximately 40% of greenhouse gas ("GHG") emissions in the United States, and this percentage can be significantly higher for some cities and towns. As more states and municipalities adopt GHG mitigation goals, such as pledging to meet the commitments of the Paris Climate Agreement, more attention will turn to reducing emissions from the building sector as a necessary step to meet commitments. On a global scale, roughly 60% of the total building stock in the world will be built and rebuilt in urban areas by 2030.³ Buildings have a lifespan of 50-100 years; design and energy integration decisions made today will influence GHG emissions and the resiliency of the built environment for years to come. As calculated by the U.S. Green Building Council (USGBC), if half of new commercial buildings were built to use 50% less energy, it would be equivalent to taking more than 1 million cars off the road every year.⁴

³ Architecture 2030, "Roadmap to Zero Emissions: Submission to the Ad Hoc Working Group on the Durban Platform for Enhanced Action," pg. 2 (June 2014).

⁴ U.S. Green Building Council, *Buildings and Climate Change*, <http://www.eesi.org/files/climate.pdf>.

Beyond their role as a tool for meeting climate change mitigation goals, the U.S. Department of Energy describes the long-term advantages of zero energy buildings as including “lower environmental impacts, lower operating and maintenance costs, better resiliency to power outages and natural disasters, and improved energy security.”⁵

Proponents of net zero buildings also point to the following benefits (often citing experiences with other green building programs for support):

- Lowering energy costs for building owners and occupants;
- Attracting tenants/buyers and increasing rents/sale prices;
- Advancing the development of renewable energy resources and energy storage technologies, including electric vehicle charging facilities;
- Creating local clean energy and construction jobs;
- Improving occupant health and productivity; and
- Promoting public relations and community benefits.

Advancing environmental goals in the building sector is not a new phenomenon. Many communities in Massachusetts already have building-related initiatives that encourage the use of sustainable buildings through both policies and regulations. For instance, many municipalities require new buildings and/or major modifications to existing buildings to comply with requirements for certification under the Leadership in Energy & Environmental Design (“LEED”) program.⁶ Approximately 76% of cities and towns have also adopted the Stretch Energy Code in the Massachusetts Building Code, which requires greater energy efficiency in buildings than the mandatory base Building Code.⁷

Why are Municipalities Taking Action?

City or town development of net zero building strategies may stem from their own initiative, as part of or separate from a GHG mitigation goal, or in response to citizen petitions. Municipal activity to-date reflects mandatory and voluntary measures and includes requirements that both achieve and prepare for incremental movement to net zero. For example, reflective of the phased planning seen elsewhere in the climate change context, some municipalities are requiring the

⁵ U.S. Dept. of Energy, Office of Energy Efficiency and Renewable Energy, “DOE Releases Common Definition for Zero Energy Buildings, Campuses, and Communities” (Sept. 16, 2015), <https://www.energy.gov/eere/buildings/articles/doe-releases-common-definition-zero-energy-buildings-and-campuses-and>

⁶ LEED is an internationally recognized green building certification system, developed by the U.S. Green Building Council, which provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

⁷ Mass. Dept. of Energy Resources, “Stretch Code Adoption, by Community” (May 2019), <https://www.mass.gov/files/documents/2019/05/29/stretch-code-towns-adoption-by-community-map-and-list.pdf>.

installation of solar energy systems on specified buildings while others are requiring “solar-ready” construction with a dedicated solar zone and an empty conduit from the building’s electrical panel to the roofline so that solar PV can be easily added at a later date.

SECTION II: MUNICIPAL AUTHORITY TO PURSUE NET ZERO BUILDING INITIATIVES

Although there is no explicit authority for municipalities to regulate GHG emissions from, or energy use by, the building sector, there is strong support for municipal authority to introduce and implement net zero building initiatives based on both (a) the powers given to municipalities by the “home rule” provisions of the Massachusetts Constitution and laws, including broad “police powers” and (b) existing provisions in federal, state and municipal laws.

Home Rule Authority

Municipalities in Massachusetts have broad authority to take independent action to regulate activities within their communities. This authority, which is sometimes referred to as “general police powers,” derives from the “home rule” provisions in Article 89 of the Massachusetts Constitution. The stated intent of Article 89 is “to grant and confirm to the people of every city and town the right of self-government in local matters” (Section 2), including the adoption of local ordinances or bylaws to exercise any power or function that the Massachusetts Legislature has power to confer on municipalities. (Section 6). This home rule authority for municipalities is reiterated in M.G.L. ch. 43B. Courts have interpreted this express grant of power to municipal governments to include “all unexpressed, incidental powers necessary to carry it into effect.” *Fafard v. Conservation Comm. of Barnstable*, 432 Mass. 194, 206 (2000).

Pursuant to the home rule authority, any local ordinance or bylaw must be consistent with: (i) the Massachusetts Constitution, (ii) laws passed by the Massachusetts Legislature, and (iii) the city’s or town’s own charter. (Section 6). *See e.g., Board of Appeals of Hanover v. Housing Appeals Comm.*, 363 Mass. 339, 358 (Mass. 1973).⁸ In addition to these general limits of municipal authority, Article 89 also identifies specific issues for which authority is retained at the state level. For example, municipalities may not, without permission from the Massachusetts Legislature, levy taxes, regulate elections, or govern civil relationships. (Section 7).⁹

Thus, municipalities have the legal authority to adopt more stringent regulations than parallel state laws, including with respect to environmental, public health and land use issues – even in areas where the state is implementing a component of a federal law. But home rule authority does not give communities carte blanche powers. The General Legislature may choose to enact laws that either explicitly prevent further action by municipalities or that are interpreted by the

⁸ “Municipalities are now free to exercise any power or function, excepting those denied to them by their own charters or reserved to the State by § 7, which the Legislature has the power to confer on them, as long as the exercise of these powers is not inconsistent with the Constitution or laws enacted by the Legislature in accordance with § 8.”

⁹ Mass. Constitution, Art. 89, § 7 (“Nothing in this article shall be deemed to grant to any city or town the power to (1) regulate elections other than those prescribed by sections three and four; (2) to levy, assess and collect taxes; (3) to borrow money or pledge the credit of the city or town; (4) to dispose of park land; (5) to enact private or civil law governing civil relationships except as an incident to an exercise of an independent municipal power; or (6) to define and provide for the punishment of a felony or to impose imprisonment as a punishment for any violation of law”).

courts as prohibiting such action. As discussed further below, the Massachusetts Building Code is an example of such a law and will preempt certain municipal action.

City v. Town: This paper refers to towns and cities collectively as municipalities. Towns and cities have different forms of governance, but generally the distinction is not relevant for the analysis in this paper. One exception is that towns adopting or amending bylaws must have the proposal approved by the Massachusetts Attorney General's Office, while ordinances adopted by cities do not require such review or approval. (M.G.L. ch. 40, §32)

Other Sources of Authority

In some instances, specific laws, as opposed to general home rule/police powers, may provide authority for municipalities to take net zero building-related action. For example, the federal Clean Air Act ("CAA"), and its Massachusetts equivalent, are potential sources of authority for air emissions-based approaches to NZB initiatives. The CAA explicitly allows states and "political subdivisions thereof" to adopt or enforce more stringent standards or limitations respecting emissions of air pollutants, or any requirement respecting control or abatement of air pollution. 42 U.S.C. §7416. As discussed further in Section VI, there is a strong argument that this savings clause extends to actions by municipalities. While the Massachusetts Clean Air Act (M.G.L. ch. 111, §§ 142A-142J) does not include an explicit savings clause, it has no language preempting municipal authority to adopt additional measures

Depending on the structure of a municipality, and the language in its charter and existing laws, authority to oversee NZB-related programs could reside in or be divided between elected officials and multiple agencies or departments, including, but not necessarily limited to: community development or planning departments; public works departments; environmental agencies; and public health entities. In addition to looking at an agency's/department's authority to develop and implement a NZB program, municipalities may consider factors such as the agency's expertise, existing and historic portfolio of program and experiences, capacity and enforcement authority.

SECTION III: POTENTIAL TOOLS FOR MUNICIPALITIES TO MANDATE NZB MEASURES

Municipalities in Massachusetts can use their police powers and home rule authority to pass a number of local laws that would advance implementation and achievement of NZB measures. For example, a municipality could require building owners to meet an established target, such as a limit on greenhouse gas emissions or required use of non-GHG emitting energy. Municipal requirements could either (i) give building owners flexibility to choose the method(s) by which they meet the target (i.e., performance standards), or (ii) require owners to follow certain design and construction standards in order to meet the target (i.e., prescriptive standards). However, any such law must be consistent with federal and state law, including any express or implied limits on local action. Thus, municipalities should consider potential overlap and conflict with current laws, especially the Massachusetts Building Code.

The following table presents five approaches for ordinances that a community could utilize to forward the goals of net zero buildings: GHG emissions ordinance; clean energy use ordinance; energy efficiency ordinance; credit system ordinance; and zoning ordinance. The likelihood of such measures withstanding a preemption challenge under state or federal laws is analyzed in Section VI. As will be discussed, in some instances additional authority is required; strategies for seeking such authority are outlined in Appendix 1.

The approaches presented below, and discussed in this paper, focus on mandatory actions that municipalities could take; examples of additional opportunities for voluntary measures that incentivize NZB-related actions are addressed briefly in Appendix 2.

Table 1: Examples of Municipal Actions to Mandate NZB Activities

Examples of Municipal Actions to Mandate NZB Activities	
Action	Description
GHG Emissions Ordinance	<ul style="list-style-type: none"> • Prohibit buildings, new and/or existing, from emitting more than a given amount of CO_{2e} per year,¹⁰ measured as an absolute amount or percentage of an identified baseline or metric. • Requires an emissions-tracking tool at the building level¹¹ <ul style="list-style-type: none"> ○ Potential models: Cambridge’s Building Energy Use Disclosure Ordinance & Boston’s Building Energy Reporting and Disclosure Ordinance.

¹⁰ Net zero discussions generally focus on emissions of carbon dioxide (CO₂), but could be designed to account for other or all GHG emissions as well.

¹¹ One tool is EPA’s Energy Star program, which calculates emissions based on amount of energy purchased from the grid, carbon offsets purchased, and amount of clean energy based on site. A program such as this could be supplemented to account for factors such as energy purchased from competitive suppliers, energy purchased from Massachusetts regulated utilities whose emission profile is lower than that of the grid due to in-state Renewable Portfolio Standard requirements, and non-grid based heating fuel purchases.

	<ul style="list-style-type: none"> • Depending on program design, may require development of baseline emissions per building or category of building/use. • Would result in specified levels of emissions reductions. • Methods of compliance include, but are not limited to: <ul style="list-style-type: none"> ○ Increasing energy efficiency via building design, operation and/or appliance improvements; ○ Purchasing lower-emitting sources of energy; ○ Generating lower-emitting sources of energy on-site; and/or ○ Reducing emissions via activities such as electrification of heating systems (assuming the N.E. ISO Grid’s CO_{2e} profile is preferable than existing heating sources).
Clean Energy Use Ordinance	<ul style="list-style-type: none"> • Require buildings, new and/or existing, to use a certain amount of “clean” energy, <i>i.e.</i>, low- or non- CO_{2e} emitting energy, per year, measured as an absolute amount or a percentage of an identified baseline or metric, such as total annual energy use. <ul style="list-style-type: none"> ○ For the former measurement, the risk of counterproductively requiring additional energy use could be avoided by creating a cap on the use of traditional energy sources. ○ Capping the use of traditional energy, as opposed to requiring that a percentage of energy come from clean sources, would create a level of certainty regarding the total GHG emissions from regulated buildings. ○ An absolute cap, as opposed to a percentage of energy use requirement, limits flexibility for building owners to address events such as demand spikes and may increase the need for exceptions or variances from the ordinance. ○ A percentage-based requirement does not guarantee reduction in use of energy, particularly as clean energy sources become more cost-competitive, nor does it guarantee that building owners will replace most-polluting sources of energy first. • Requires a tool for tracking a building’s total energy use, sources of energy, and CO_{2e} profiles of such sources. • Methods of compliance include, but are not limited to: <ul style="list-style-type: none"> ○ Purchasing clean sources of energy; ○ Generating clean energy on-site; and/or ○ Increasing energy efficiency via building design, operation and/or appliance improvements. • A model for such an ordinance is included in Appendix 3.
Energy Efficiency Design Ordinance	<ul style="list-style-type: none"> • Require that new and/or existing buildings and new appliances meet specified energy-efficiency design, construction and/or performance standards. <ul style="list-style-type: none"> ○ To advance NZB goals beyond the status quo, would need to include standards more stringent than those already required by the Massachusetts Building Code. • Application to existing buildings could be triggered by significant renovations, as is currently reflected in certain Building Code provisions, or purchases of new appliances.

	<ul style="list-style-type: none"> ○ A broader application to existing buildings, triggered at time of transfer or within a set period of time, would have less precedent and could be resisted as an intrusion on private property rights. ● Compliance could require meeting prescriptive standards for energy efficiency. ● Alternatively, a performance standard-based approach would require that buildings be designed and constructed to consume no more than a specified amount of energy (defined by metrics such as sq. ft., use, etc.). <ul style="list-style-type: none"> ○ Added flexibility might support development of better energy-efficient designs ○ Methods of compliance include increasing energy efficiency via building design, operation and/or appliance improvements. ● Neither approach guarantees that operation of a building would meet anticipated or specific emission-reduction goals, unless paired with a requirement regarding a building’s actual energy usage.
<p>Credit Systems</p>	<ul style="list-style-type: none"> ● Require owners of buildings, new and/or existing, to take a specified number of approved NZB-related actions; “credits” would be awarded for each action. ● Methods of compliance would parallel the scope of actions awarded credits by the ordinance. These could include: <ul style="list-style-type: none"> ○ Implementing energy efficiency standards, either prescriptive or performance based (presumably more stringent than required by the MA Building Code to advance NZB-goals beyond the status quo); ○ Purchasing energy efficient appliances; ○ Purchasing lower-emitting sources of energy; and/or ○ Generating lower-emitting energy on-site. ● Credits could be extended to emission-reducing activities in other sectors, such as reduced vehicle trips by providing shuttles for a building’s employees. ● A broader range of credits would increase flexibility for building owners, and perhaps address additional restrictions on existing buildings. ● Would require a system for building owners to report compliance in a manner that can be verified by municipalities; given the range of possible credits, this could be a significant administrative burden. ● A model is the LEED certification system for green buildings.
<p>Integrating NZ Requirements into Zoning Ordinances</p>	<ul style="list-style-type: none"> ● Require buildings to meet specified NZB-related requirements; could identify specific requirements or a list of prescriptive options. <ul style="list-style-type: none"> ○ Selected compliance mechanisms would be integrated into building design plans and/or added as conditions to zoning relief. ● If implemented akin to existing zoning requirements, would apply primarily to large new construction and major modifications to existing buildings. ● Methods of compliance would parallel the scope of NZB-related actions required by the zoning ordinance. These could include: <ul style="list-style-type: none"> ○ Integrating on-site generation of lower-emitting energy (<i>e.g.</i>, solar or solar-ready requirements); and

	<ul style="list-style-type: none"> ○ Integrating infrastructure for electrification of heating energy supplies (assuming the N.E. ISO Grid’s CO_{2e} profile is preferable than existing heating sources). ● Models are the number of municipal zoning laws that already include “green building” related requirements (<i>see e.g.</i>, Article 22 of the Cambridge Zoning Ordinance and Article 37 of the Boston Zoning Code).
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What are Some Decision Points Common to Each Tool?

Whether to Include an Alternative Compliance Option

Any of the approaches discussed in Table 1 could be designed to include an alternative compliance mechanism. As discussed further below, the inclusion of alternative compliance mechanisms could help reduce risks of successful preemption claims. Alternative compliance mechanisms could include:

- Financial payments in lieu of performance (akin to the alternative compliance payments that regulated utilities can make rather than purchasing Renewable Energy Credits (RECs) as required by the Massachusetts Renewable Portfolio Standard);
- Purchasing RECs from off-site sources of renewable energy; or
- Purchasing carbon offsets, either from specific projects, sources or parties (including certifiers) pre-approved by the municipality.

Whether to Vary Requirements for New and Existing Buildings or Based on a Building’s Use

As reflected in laws such as the Building Code and zoning ordinances, there are often distinctions in regulatory approaches to new versus existing buildings. This is often because new buildings frequently have more flexibility to respond and adapt to requirements, making it more economical to change the design and construction of a new building than to retrofit an existing building.

Regulations may also differentiate between buildings based on their size or use (*e.g.*, single family homes, apartments, and commercial or industrial buildings). These distinctions may be based on factors such as economy of scale and assumed relative sophistication of building developers and owners. For example, if an alternative compliance mechanism to a NZB-related mandate is the purchase of RECs or carbon offsets, owners of large commercial or industrial buildings may be better positioned and able to evaluate purchase options or negotiate contracts with suppliers. Smaller building owners might need additional assistance in identifying opportunities to comply with NZB-requirements (*e.g.*, access to municipal aggregation programs or model contracts for purchasing RECs or carbon offsets). As another example, the owner of a commercial building may be better situated to absorb compliance costs than the owner of a single or two-family residence.

Distinctions between building types may also vary based on expected patterns of energy usage and resulting GHG emissions. For instance, energy use patterns in residential buildings are generally more predictable than with respect to industrial or manufacturing facilities where energy use could vary based on business trends; this may support longer compliance periods for non-residential buildings to accommodate such fluctuations or averaging over shorter compliance periods. (Relatedly, regulators should consider how to phase in NZB requirements, particularly for existing buildings, as moving from the status quo to “zero” status in too short a time frame could entail higher costs than intended.) Depending on the type of NZB-action mandated, and anticipated impact and compliance cost, there may also be a basis for creating exceptions or variances for buildings hosting “critical” uses. Critical uses could be defined by a range of factors, such as services provided to the community (*e.g.*, hospitals), economic contributions (*e.g.*, large employers) or competitive risk (*e.g.*, business that have intense energy demands or emissions and face stiff out of state competition).

Whether to Create Prescriptive or Performance-Based Requirements

Laws can establish (i) prescriptive requirements, *e.g.*, requiring buildings to include specific energy efficiency features, such as types of insulation and windows, or (ii) performance-based requirements, *e.g.*, requiring buildings to meet a threshold of energy efficiency by whichever means chosen. For example, the International Energy Conservation Code, which is integrated into the Massachusetts Building Code, allows certain buildings to choose between complying with prescriptive or performance-based requirements (after complying with some minimum mandatory provisions).

From an implementation perspective, issues to consider when choosing between prescriptive and performance based standards include (i) ease of demonstrating compliance, *e.g.*, additional modeling or calculations may be required if performance based standards are used, and (ii) opportunities for innovation and cost savings. With respect to NZBs, compliance is often measured after a building has been in operation, rather than at the time of construction. Thus, another issue to consider is who is or should be responsible for long-term compliance with performance based goals, *e.g.*, the developer of the building or the occupant.

There may also be legal implications in the choice between prescriptive and performance-based requirements. As discussed in Section V, where prescriptive requirements already exist, and are intended to, or explicitly, fill an entire field or preempt other regulation, other requirements are precluded from taking effect due to the doctrine of preemption. However, there may be situations in which performance-based requirements are not preempted by prescriptive ones.

SECTION IV: EXISTING FEDERAL AND STATE LAWS RELEVANT TO NZB-RELATED ACTIONS

Significant components of NZBs include increased energy efficiency, both in building design, construction and operations, and increased use of renewable energy; with the goal of reducing GHG emissions. The following outlines some of the existing federal and Massachusetts laws that regulate or otherwise affect these activities at the building level, both to identify areas where municipal NZB mandates can avoid duplication and to assess preemption risks.¹²

- Federal Clean Air Act & Massachusetts Clean Air Act: The federal and Massachusetts Clean Air Acts regulate emissions of pollutants, including certain greenhouse gases, when such emissions are (i) above a defined threshold and/or (ii) from a regulated facility or category of sources. These regulations typically apply to manufacturing and industrial facilities, which are present in a small subset of buildings. For example, only approximately 125 facilities in Massachusetts are subject to the federal CAA's Title V Operating Permit requirements.¹³
- Federal Energy Efficiency Standards for Consumer and Industrial Products:¹⁴ In 1975, Congress gave the Department of Energy ("DOE") the authority to develop and implement energy efficiency standards that are mandatory at the national level. These requirements have since been amended pursuant to the National Appliance Energy Conservation Act of 1987 ("NAECA") and subsequent laws, including the Energy Policy Acts of 1992 and 2005 and the Energy Independence and Security Act of 2007. Today, federal regulations set energy efficiency standards for approximately sixty categories of consumer and industrial appliances and equipment, including: central air conditioners and heat pumps, direct heating equipment, furnaces, water heaters, faucets, showerheads, circulator pumps and refrigeration equipment. According to DOE, the covered products account for approximately 90% of energy use in homes, 60% in commercial buildings and 30% in industrial facilities.¹⁵
- Massachusetts Building Code: The Building Code in Massachusetts, which regulates the

¹² This list is not necessarily comprehensive.

¹³ MassDEP Operating Permit & Compliance Program, <https://www.mass.gov/guides/massdep-operating-permit-compliance-program> (July 2019).

¹⁴ Massachusetts has adopted appliance efficiency standards, pursuant to the Appliance Efficiency Standards Act (M.G.L. ch. 25B), but many of these standards have been preempted by federal standards. The Act does not include any explicit preemption provisions.

¹⁵ U.S. Dept. of Energy, "Saving Energy and Money with Appliance and Equipment Standards in the United States" (Jan. 2017), *available at* https://www.energy.gov/sites/prod/files/2017/01/f34/Appliance%20and%20Equipment%20Standards%20Fact%20Sheet-011917_0.pdf. For more information about federal appliance and product standards, see the Massachusetts 2015 Update of the Clean Energy and Climate Plan for 2020, *available at* <https://www.mass.gov/files/documents/2016/11/tq/appliance-and-product-standards.pdf>.

construction and design of buildings in the Commonwealth, has two base volumes: (i) the International Building Code 2015 (“IBC”), as amended by 780 CMR 1.00 *et seq.*; and (ii) the International Residential Code 2015 (“IRC”), as amended by 780 CMR 51.00, which applies to one- and two-family dwellings. For purposes of this paper, these are generally referred to collectively as the Building Code. The Building Code also incorporates the International Energy Conservation Code, which includes provisions relevant to energy efficiency, such as walls and insulation. As noted previously, approximately two-thirds of communities in Massachusetts have adopted the Stretch Energy Code. The Building Code is revised periodically by the Board of Building Regulations and Standards, which recently committed to develop a Net Zero stretch energy code.

- Municipal Zoning Requirements: Municipalities may promote environmentally sustainable and energy-efficient design and development practices through zoning incentives (*e.g.*, excluding green roofs and additional insulation from gross floor area and setback calculations) and requirements (*e.g.*, mandating eligibility with LEED criteria). Zoning-based measures generally apply only to new buildings or major modifications to existing buildings.
- Municipal Energy Use Disclosure Requirements: A few municipalities, such as Cambridge and Boston, require owners of larger buildings to report their energy use.

Other laws in Massachusetts regulate activities relevant to NZB activities, but not at the building level. For example:

- The Regional Greenhouse Gas Initiative regulates carbon dioxide emissions from electric generating facilities.
- The Global Warming Solutions Act (“GWSA”) requires reducing greenhouse gas emissions 25% compared to 1990 levels by 2020 and 80% by 2050. To-date, the GWSA-implementing regulations address GHG emissions from sources such as electric generating facilities, gas-insulated switchgear, and natural gas distribution mains and services.
- The Renewable Portfolio Standard (“RPS”) regulates fuel choice by requiring regulated electric distribution companies to purchase a specified percentage of the electricity they sell to consumers from defined renewable sources. While this affects the fuel mix available to individual purchasers of electricity, the RPS does not create any requirement that applies to individual consumers.
- The Massachusetts Renewable Energy Trust is funded, in part, by a surcharge per kilowatt-hour of electricity purchased by many electricity consumers in Massachusetts. This mandatory contribution generally does not apply to customers of municipal lighting plants and supports the development of renewable energy without imposing a requirement on particular buildings.

SECTION V: PREEMPTION – A POTENTIAL LIMIT ON MUNICIPAL ACTION

This section of the paper provides a brief introduction to the concept of preemption, the preemptive nature of NAECA and the Building Code, and some of the contours of preemption analyses. The next section considers the preemptive nature, if any, of the CAA, NAECA and Building Code relevant to municipal efforts to mandate NZB goals via (i) increased energy efficiency in building design and operation, (ii) reduced GHG emissions from building operations, and (iii) greater use of clean sources of emissions in building operations.

What is preemption?

Preemption refers to situations in which a law or regulation passed by a higher authority, such as the federal government or Massachusetts legislature, takes precedence over, *i.e.*, precludes the application of, laws passed by a lower authority. Thus, for instance, federal laws can preempt state and municipal laws, and state laws can preempt local laws. But preemption exists in only one direction; a local law cannot preempt a state or federal law.

Preemption can be either express or implied, the latter of which can take the form of either conflict or field preemption.

- Express preemption -- legislative intent to preclude further regulation on an issue by lower authorities is expressly stated in the law or regulation.
- Implied preemption -- express legislative intent is not required; rather a local law is preempted if it either:
 - Conflicts or interferes with a higher law, such that a regulated entity cannot comply with both laws at once; or
 - Regulates activities in a “field” that a federal or state law is interpreted as “occupying,” *i.e.*, not leaving room for further regulation.

Courts do not have to use these terms when analyzing whether a local law is preempted, but this framework is frequently applied.

Preemption can occur retroactively. For example, a local government’s regulation of an issue can be preempted by a subsequent state or federal law that explicitly, or by operation, preempts such local action.¹⁶

¹⁶ Examples of this phenomena have arisen with respect to fracking (*e.g.*, attempts by municipalities in Texas to ban or limit fracking were preempted by a subsequent state law expressly prohibiting local regulation of fracking) and plastic bag bans (*e.g.*, the Ohio legislature continues to consider bills that would prevent local plastic bag bans).

How does preemption affect actions of municipalities in Massachusetts?

Generally speaking, Massachusetts courts are reluctant to find that a State law preempts a municipal action unless (i) the State law includes an explicit preemption provision, or (ii) the municipal action somehow interferes with the purpose of the State law. As explained by the Massachusetts Supreme Judicial Court (“SJC”):

If the State legislative purpose can be achieved in the face of a local ordinance or by-law on the same subject, the local ordinance or by-law is not inconsistent with the State legislation, unless the Legislature has expressly forbidden the adoption of local ordinances and by-laws on that subject.

Bloom v. Worcester, 363 Mass. 136, 156 (1973). In that case, the SJC found that a city’s ordinance establishing a human rights commission was not preempted by the existence of Massachusetts anti-discrimination laws. The SJC more recently reiterated this principle in a 2018 decision in which the Court also found that, “in determining whether the Legislature intended to preempt local ordinances and bylaws, it is appropriate to consider whether the subject matter at issue has traditionally been a matter of local regulation.” *Roma, III, Ltd. v. Board of Appeals of Rockport*, 478 Mass. 580, 591 (2018).

A situation where the SJC did find that a local law interfered with a state law occurred in *Easthampton Sav. Bank v. Springfield*, 21 N.E.3d 922, (Mass. 2014). In that case, the court evaluated whether a City ordinance that required mediation for parties in foreclosure proceedings was preempted by the Massachusetts Foreclosure Statute. The SJC concluded that, despite a theoretic ability to comply with both laws, “the mediation ordinance alters what the Legislature determined, as a matter of policy, to be the just medium between the parties,” thus the ordinance “frustrated the purpose” of the state law and was preempted. *Id.* at 291. A more recent example is from a lower court in Massachusetts, which found that a local ordinance regulating the inspection, maintenance and repair of natural gas leaks was “inconsistent” with state law, and thus preempted, because it created obligations that were “different from, or beyond” what was mandated by the state law. *Boston Gas Co. v. City of Boston*, 35 Mass. L. Rep. 142 (2018). Interpreted broadly, cases like these could be applied to preclude any local law that mandates additional steps in a process that is already governed by a state law.

While these and other past cases provide valuable guidance, they are not always determinative as preemption analyses are typically fact-specific. Because local level green building regulations are relatively new, there are few examples of cases that directly analyze the issue. Thus, this paper also considers several cases relevant to NZB actions from outside Massachusetts, although it by no means discusses all potentially relevant cases. These cases may not be directly on point, or necessarily binding on Massachusetts’ courts, but provide useful guidance as to how a local NZB law might be analyzed.

Can a local law be preempted because its outcome, as opposed to its direct requirement, is precluded?

In brief, a local law may be preempted if it effectively creates an outcome at odds with a state or

federal scheme even if nothing about the local action explicitly required such an outcome. However, a local law is not preempted when it only indirectly regulates parties within a preempted field and presents regulated parties with viable, non-preempted options.

In conducting a preemption analysis, courts may choose to consider not only whether a local law is directly preempted by a state or federal law, but also whether a local action may cause a chain reaction that effectively disrupts a state or federal statutory scheme even if it does not actually mandate the disruptive result. An example of this comes from a federal court in New York when it reviewed a New York City program that offered incentives for taxicab owners to lease and buy hybrid vehicles. Opponents argued that the City's incentive program was preempted by a federal law that established fuel economy standards and explicitly prohibited state or local laws related to fuel economy standards for the vehicles covered by the federal law. *Metro. Taxicab Bd. of Trade v. City of New York*, 633 F. Supp. 2d 83 (S.D.N.Y. 2009), *aff'd*, 615 F.3d 152 (2d Cir. 2010).

Although the City argued that the incentives were voluntary, and therefore not subject to the express preemption clause in the federal law, the court held that the incentives could not be truly voluntary, because a cost-benefit analysis would always force fleet owners to choose hybrid vehicles. *Id.* at 99 (“The combined effect of the lease cap changes, and even the disincentive alone, constitutes an offer which cannot, in practical effect, be refused.”). The court thus found that the incentive was a “de facto” mandate that was preempted. On appeal, the Second Circuit Court of Appeals upheld the lower court's disposition of the case, but did not reach the de facto mandate argument, finding instead that the City's “incentives” were actually direct regulations on fuel economy, and were thus clearly prohibited by the express preemption of laws and regulations “related to” fuel economy. *Metro. Taxicab Bd. of Trade v. City of New York*, 615 F.3d at 157-58.

Although the district court found that New York City's program was preempted, it made clear that not all local actions that affect a federal law with a preemption scheme are prohibited. As examples, the court pointed to two Supreme Court cases that found “remoteness” between the objectives of state and federal laws meant that state laws did not create a de facto mandate even if they impacted an area regulated by a federal law with broad preemption language. Both of the cases described below considered whether state laws were preempted by provisions of the Employee Retirement Income Act (“ERISA”).

- The first case involved a California state law that permitted lower wages to participants in state-approved apprenticeship programs. In that case, the Supreme Court examined whether California's law was preempted by Section 514(a) of ERISA, which preempts state laws that relate to employee benefit plans. In particular, the court considered whether the state law “related” to an ERISA-covered employee benefit plan either by having a “connection” to an ERISA-covered plan or “referring” to such a plan. Here, the court found that the goal of the California law was “quite remote from the areas with which ERISA is expressly concerned”. As such, because the California law did not bind ERISA plans, either legally or as a practical matter, the Court concluded that it created a permissible economic incentive program to use

apprenticeship programs. *California Division of Labor Standards Enforcement v. Dillingham Construction*, 519 U.S. 316 (1997).

- In the second case, the Supreme Court reviewed a New York law that required hospitals to create surcharges for certain health maintenance organizations (“HMOs”) and private insurance companies, but not for Blue Cross/Blue Shield policy holders. The purpose of the law was to help defray the costs that Blue Cross/Blue Shield incurred by providing coverage to individuals otherwise ineligible for health insurance. While the New York law did not mention ERISA, which ensures minimum standards for most private health and pension plans, it did have the effect of creating higher costs for certain ERISA plans and therefore had an indirect economic impact on them. However, the Court found that the goal of the state law, which was to ensure coverage for individuals that might otherwise be rejected by insurance companies, was far afield from ERISA’s objective to provide uniformity in employee benefit regulations. Thus, the indirect connection between the laws meant that the New York law was not preempted. *New York State Conference of Blue Cross & Blue Shield Plans v. Travelers Insurance Co.*, 514 U.S. 645, 659 (1995) (“An indirect economic influence, however, does not bind plan administrators to any particular choice and thus function as a regulation of an ERISA plan itself”).

As described by the court in *Metro Taxicab*, the rule derived from this Supreme Court precedent is that “a local law is not preempted when it only indirectly regulates parties within a preempted field and presents regulated parties with viable, non-preempted options.” 633 F. Supp. 2d at 95-96.

More recent decisions by the Supreme Court have reiterated the principle that, even when a federal law preempts a field, state programs with only “incidental” effects on that field are allowed. In the context of looking at the scope of the Federal Energy Regulatory Commission’s (“FERC”) authority to set wholesale electricity rates, the Supreme Court noted that “[s]tates, of course, may regulate within the domain Congress assigned to them even when their laws incidentally affect areas within FERC’s domain.” *Hughes v. Talen Energy Mktg., LLC*, 136 S. Ct. 1288, 1298 (2016). In making this statement, the Supreme Court pointed to its prior decision in *Oneok, Inc. v. Learjet*, in which it determined that whether the Natural Gas Act preempted a state law turned on “the target at which the state law aims”. 135 S. Ct. 1591, 1600 & 1605 (2015) (distinguishing between “measures aimed directly at interstate purchasers and wholesalers for resale, and those aimed at subjects left to the States to regulate”) (internal citations omitted).

Does the Massachusetts Building Code Limit Local Action?

The Massachusetts law that created the Building Code provided that:

- i. The Building Code “shall be binding and have the full force and effect of law [] in all cities and towns notwithstanding any special or general law to the contrary;” and
- ii. “All by-laws and ordinances of cities and towns in conflict with the state building code [at the date of its adoption] shall cease to be effective.”

1972 Mass. Acts ch. 802, §§ 72 and 75. On its face, this language explicitly preempted already-existing local laws that would “conflict” with the Building Code. With respect to local laws passed after the adoption of the Building Code, Massachusetts courts have consistently found that the Massachusetts law intended for the Building Code to supersede any *future* local laws that would conflict with the explicit legislative intent for the Building Code to create “[u]niform standards and requirements for construction and construction materials, compatible with accepted standards of engineering and fire prevention practices, energy conservation and public safety.” M.G.L. ch. 143, § 95(a).

Thus, regardless of whether a local law would be more or less stringent than the Building Code, it is generally deemed preempted if within the field regulated by the Building Code.

One of the most referenced cases in this arena is the SJC’s decision in *St. George Greek Orthodox Cathedral of Western Massachusetts, Inc. v. Fire Dep’t of Springfield*. 462 Mass. 120, 125–27 (2012). In that case, the City of Springfield passed a law requiring developers to use one of the four fire control methods allowed by the Building Code. Arguably, building owners could have complied with both the state and local laws at once by using the fire control method required by the city. However, the SJC concluded that the Springfield law was precluded by the Building Code; narrowing the options provided by the Building Code, without requiring anything more stringent, was not permitted. The SJC considered several factors in reaching its decision, finding that:

- The legislature had stated an express intention that the Building Code create uniform standards for construction, including by being binding on all municipalities and superseding conflicting local laws; and
- The existence of a statutory mechanism by which municipalities could seek variances from the Building Code was further grounds for holding local actions preempted.¹⁷ The court found that the variance provisions in the statute “would serve no purpose had the Legislature not intended the code to preempt local building regulations. Any other view . . . would impermissibly render it superfluous.” *Id.* at 127.

Earlier cases also found that the municipalities do not have authority to grant variances or changes from the Building Code. For example, in *Shriners’ Hosp. for Crippled Children v. Boston Redevelopment Authority*, the Massachusetts Appellate Court found there was a clear legislative intent to “create uniform standards throughout the Commonwealth for the construction of buildings and materials used therein,” thus Boston’s ability to grant deviations from the Building Code was preempted. 4 Mass. App. Ct. 551, 560–61 (1976).

¹⁷ The statute establishing the Building Code provides for a process by which municipalities can apply to the Board of Building Regulations and Standards (“BBRS”), which administers the Building Code, for variances from the Building Code. M.G. L. ch. 143, § 98.

Does the National Appliance Energy Conservation Act Limit Local Action?

The National Appliance Energy Conservation Act (“NAECA”) has explicit preemption provisions that limit states and their political subdivisions, including municipalities, from creating more stringent energy conservation standards and testing and labeling requirements for appliances and equipment subject to the federal efficiency standards. (42 U.S.C. §§ 6297 & 6316). For example, with respect to energy conservation standards for consumer products (other than automobiles), states may not regulate the energy efficiency, energy use, or water use of covered products unless an exception exists either (i) for a specified product, (ii) for new construction, or (iii) via a waiver from the Department of Energy. 42 U.S.C. Section 6297(c) (general rule of preemption for energy conservation standards when Federal standard becomes effective for product). The factors applicable to exceptions for new construction are listed in Section 6297(f) and in Appendix 4 of this paper.

Different exceptions may be available for various subcategories of appliances. For instance, in the case of specified air cooling and heating equipment, for which the federal energy efficiency requirements “supersede any State or local regulation concerning the energy efficiency or energy use of a product for which a standard is prescribed or established,”¹⁸ exceptions may be available for state or local standards that neither require more energy efficiency than, nor take effect before, the minimum requirement in amended ASHRAE/IES Standard 90.1. 42 U.S.C. § 6316(b)(2)(B). The nuances may vary between appliances, but the general takeaway is that a local building code or other law cannot require the installation of covered products with efficiencies exceeding an applicable federal standard (or state standard that has been approved by the Department of Energy) without a specific statutory exception or waiver from DOE.

Does Preemption Differ Between Prescriptive and Performance-Based Standards?

In 2010, a federal district court in New Mexico examined whether the National Appliance Energy Conservation Act (“NAECA”) preempted energy efficiency codes adopted by the City of Albuquerque that included both prescriptive and performance-based compliance options. The prescriptive options included compliance with standards more stringent than those required by NAECA, while the performance-based options included compliance with LEED-type standards or exceeding minimum energy efficiency standards (*e.g.*, ASHRAE Standard 90.1-1999) by a specified percentage. The City argued that its codes were not preempted by NAECA because the provision of alternative mechanisms of compliance meant no particular action was mandated. The court concluded that:

- The prescriptive options constituted preempted regulations, despite the existence of alternatives, which thwarted Congress’ intent to set uniform appliance efficiency standards; and
- The performance-based options that were tied to existing efficiency standards for products covered by NAECA were also preempted, rejecting the City’s argument that the reference to the standard merely created an energy efficiency baseline that did not

¹⁸ 42 U.S.C. § 6316(b)(2)(A).

require regulated parties to comply with any product standard used to calculate the baseline.

Air Conditioning, Heating & Refrigeration Ins. v. City of Albuquerque, 835 F. Supp. 2d 1133 (D.N.M. 2010). The court did not reach the question as to whether the performance-based standards linked to programs such as LEED were preempted, noting it was possible that such standards fell outside the preemptive scope of NAECA because they did not deal with covered products.

A Ninth Circuit case also looked at the relationship between state-level energy efficiency performance standards and the NAECA preemption provisions. In that case, the court found that performance-based standards in Washington's Building Code did not expressly or effectively require appliance efficiency levels beyond the federal minimum standards because the code did not create a legal compulsion to use higher efficiency products as one could theoretically satisfy the state standard without any appliances exceeding federal requirements (nor did the code impose a penalty for not using higher efficiency products). Nor was an economic incentive to buy more efficient products sufficient to prove a coercive effect. *Bldg. Indus. Ass'n of Washington v. Washington State Bldg. Code Council*, 683 F.3d 1144, 1150-53 (9th Cir. 2012)

One take-away from these cases is that, while utilizing performance-based requirements, as opposed to prescriptive requirements, may not by itself insulate a local law from preemption if it regulates in a field in which local action is precluded by a state or federal law, performance based-standards *may* not always be precluded by prescriptive standards.

SECTION VI: PREEMPTION ANALYSIS OF MUNICIPAL ACTIONS TO MANDATE NZB ACTIVITIES

A preemption analysis for a municipal law begins by asking what, if any, “higher” laws (*i.e.*, federal or state) regulate or otherwise govern the issue in question, either directly or by implication. If any such laws are identified, the second step in the preemption analysis is to examine whether such “higher” laws either (i) explicitly preclude additional action by municipalities, (ii) fill the field such that there is no room for additional municipal action, or (iii) conflict with additional municipal requirements such that a regulated entity could not comply with both. Finally, where any type of preemption is found to exist, either explicit or implied, a preemption analysis must consider the scope of municipal actions that are precluded, *i.e.*, what are the boundaries of the preempted action, and is there room left for additional municipal action.

This section of the paper considers the preemptive effect, if any, of three laws (the Clean Air Act, federal energy conservation standards for appliances, and the Massachusetts Building Code) on several municipal options for mandating NZB-related actions. The analysis focuses on three of the municipal approaches outlined in Table 1: a greenhouse gas emissions ordinance, a clean energy use ordinance, and an energy efficiency ordinance. The option of integrating NZB requirements into zoning ordinances is not examined in detail here given its limited application to existing buildings. The credit system approach to a NZB ordinance is also not addressed here, but many of its components are examined in the discussion of the greenhouse emissions ordinance, clean energy use ordinance, and energy efficiency ordinance.

Table 2 below summarizes the relationship between the laws and municipal approaches considered herein; any preemptive nature of these relationships is discussed in greater detail in the following text. In brief, there are strong arguments that appropriately designed municipal GHG emissions ordinances or clean energy use ordinances would not be preempted by the laws analyzed in this section. A municipal energy efficiency ordinance for buildings, however, would likely be preempted, at least in part, by the preemptive provisions and/or nature of NAECA and the Building Code.

Table 2: Relation of NZB Ordinances to Subject Areas Regulated by Select Other Laws

	GHG Emissions Ordinance		Clean Energy Use Ordinance		Energy Efficiency Ordinance	
	Direct Application	Potential Implication	Direct Application	Potential Implication	Direct Application	Potential Implication
CAA	✓					
NAECA		✓		✓	✓	
Bld. Code		✓		✓	✓	

Greenhouse Gas Emissions Ordinance: Preemption Analysis

Applicability – Clean Air Act: In some instances, the operations in buildings are subject to GHG emission limits under the federal and/or state Clean Air Act. As noted above, this is relevant to a relatively small number of facilities in Massachusetts.

Preemption – Clean Air Act: Neither the federal nor state Clean Air Act expressly preempt

additional emissions regulations by “lower” government entities. To the contrary, as discussed above, the federal Clean Air Act includes a “savings” clause that explicitly reserves authority for states and “political subdivisions thereof” to adopt or enforce more stringent standards or limitations respecting emissions of air pollutants, or any requirement respecting control or abatement of air pollution. 42 U.S.C. §7416. While the CAA does not define “political subdivisions,” and therefore does not explicitly grant municipalities authority to adopt or enforce legislation that involves air pollution, it can be argued that the CAA’s permission extends to municipalities.¹⁹ While the “CAA certainly envisions a joint approach to air pollution abatement between federal, state, and local governments,” at least one federal Circuit court has noted that the federal law does not “affirmatively grant local governments the independent power to regulate air pollution” such that a local ordinance could bypass “an express limitation placed on a local government by a state.” *Southeastern Oakland County Resource Recovery Auth. v. City of Madison Heights*, 5 F.3d 166, *8-9 (6th Cir. 1993).

The Massachusetts Clean Air Act does not include any express limitation on local municipal action. While the Massachusetts law does not directly authorize additional local action, given the Commonwealth’s status as a “home rule” state, it is reasonable to argue that, when the state law is silent about municipal authority, it should be interpreted that municipalities have local control.²⁰

Applicability - Federal Appliances Standards & Massachusetts Building Code: Neither of these programs directly regulate GHG emissions from buildings, but it could be argued that a municipal regulation that does so would implicate areas regulated by the federal appliances standards or Massachusetts Building Code. A building owner’s or occupant’s strategy for reducing GHG emissions from a building’s operations could include increasing the energy efficiency of the building and its appliances. Arguably, the higher the emissions reduction target, the more likely that building owners would have to pursue some level of energy efficiency beyond that required by federal appliance standards or the Building Code.

Preemption - Federal Appliances Standards & Massachusetts Building Code: As discussed in Section V, the NAECA explicitly preempts more stringent energy conservation requirements for regulated appliances unless an exception or exemption applies or is granted, and the Building Code is interpreted by courts as limiting more stringent municipal building construction requirements absent a variance. A municipal GHG emissions ordinance for buildings would not *require* a building owner to do more than either of these laws require with respect to energy efficiency. At a certain point, however, building owners might not be able to comply with an

¹⁹ According to the legislative history of Section 7416 of the Clean Air Act, the current language was inserted in 1970, replacing a provision that referenced activities by “any State, political subdivision, or inter-municipal or interstate agency [entity].” The reference to inter-municipal entities could be interpreted to mean that political subdivisions included municipalities, otherwise municipalities would need to be separately listed. Even if the change in 1970 from “State, political subdivision” to “State or political subdivision thereof” meant that Congress intended the latter to include only a state’s political subdivisions, in Massachusetts, municipalities are deemed political subdivisions of the state.

²⁰ Jeremy M. Vaida, *The New York City Carbon Charge (“NY3C”): Unlocking Localities’ Power to Fight Climate Change*, 27 Fordam Env’tl Law Rev. 277

emissions reduction requirement (*e.g.*, a requirement to reduce GHG emissions 90%) without implementing efficiency measures beyond those already required. An opponent to the ordinance might argue that any such overlap is not incidental or remote given the ties between energy efficiency and reduced GHG emissions. Moreover, the emissions ordinance could be seen as a *de facto* mandate for buildings to integrate energy efficiency measures beyond those required by the federal or state law.

But there are strong arguments against such a characterization and ways of designing an ordinance to preclude impermissible *de facto* mandates. For example, energy efficiency is only one tool for reducing GHG emissions; building owners and occupants could also comply by switching their sources of energy to non-GHG emitting fuels, such as solar, geothermal and wind, and pursuing behavioral changes. Voluntary decisions to implement additional energy efficiency measures do not impede the Building Code's creation of uniform standards nor make redundant the Building Code's variance process. Moreover, if the ordinance includes an alternative compliance mechanism, such as purchase of RECs to offset GHG emissions, it would further support the argument that the municipal law only indirectly affects parties within a regulated field and presents viable, non-preempted options for compliance.

Clean Energy Use Ordinance: Preemption Analysis

Applicability - Clean Air Act, Federal Appliances Standards & Building Code: None of the laws considered here regulate energy fuel sources at the individual building level, nor has this paper identified any other federal or Massachusetts law that does so. However, building owners and occupants could choose to pursue energy efficiency measures as a method of compliance if, for example, "clean" energy sources were more expensive or difficult to access than traditional GHG-emitting fuel sources. Another compliance option, development of on-site renewable energy, is addressed by the Building Code but in a limited manner. For example, energy efficiency package options for certain commercial buildings include the on-site supply of renewable energy in accordance with specified minimum ratings. However, the Building Code does not mandate the use of or include prescriptive standards for on-site renewable energy generation. The performance criteria for on-site renewable generation are relevant only to the extent a building seeks to meet energy efficiency requirements via the use of such facilities.

Preemption - Clean Air Act, Federal Appliances Standards & Building Code: The preemption analysis for a clean energy use ordinance is similar to that for the GHG emissions ordinance. However, there may be an argument, or at least visceral perception, that a clean energy use ordinance is more remote from the federal and state laws considered herein. Although the ultimate goal of both emission and energy use ordinances, at least in the context of NZB initiatives, is to reduce GHG emissions, an energy use ordinance does not as directly implicate energy efficiency measures. Particularly with the availability of alternative compliance mechanisms, meeting the requirements of a clean energy use ordinance could, in theory, be achieved without any change in the amount of energy used. (This is technically true for an emission ordinance as well although may not be thought of as frequently in those terms.) The risk of a clean energy use ordinance being interpreted as a *de facto* mandate to take energy efficiency measures beyond those required by the Building Code or appliance standards will continue to decrease as non-emitting energy sources become more cost-competitive and readily

available.

Energy Efficiency Ordinance: Preemption Analysis

Applicability - Clean Air Act: A municipal energy efficiency ordinance would not directly concern or implicate activities regulated by the federal or Massachusetts Clean Air Act.

Applicability – Building Code & Federal Appliance Standards: The Massachusetts Building Code, which incorporates the 2015 International Energy Conservation Code, contains both prescriptive and performance-based options for energy efficiency in new construction and covered renovations.²¹ A municipal ordinance that requires building design and construction to integrate energy efficiency measures would directly regulate in an area addressed by the Building Code. Similarly, a municipal ordinance that requires the use of certain energy efficient appliances would directly address an area governed by the NAECA. A municipal ordinance that requires building operations to meet energy efficiency standards would implicate activities regulated by the Building Code and NAECA.

Preemption – Building Code & Federal Appliances Standards: Cases such as *Shriners Hospital* and *St. George* indicate that municipal ordinances requiring building construction to contain energy efficiency features, such as levels of insulation, beyond those required by the Building Code (including the Stretch Energy Code) would be preempted. Similarly, the explicit preemption provisions in the NAECA mean that, without an exemption or variance, a municipality could not require building developers or owners to install regulated appliances with a higher energy efficiency level than that established by the federal regulations.

Preemption is also a risk for municipal laws that impose prescriptive energy efficiency requirements for building aspects that are not covered by the Building Code. As the SJC has stated, the legislature intended the Building Code “to occupy a field by promulgating comprehensive legislations.” *St. George*, 462 Mass. at 128. While the Building Code does not regulate every possible aspect of energy efficiency in a building’s design and construction, the comprehensive nature of its scheme could be argued to mean that energy efficiency measures not included were *deliberately* excluded, such that municipal action regarding the issue would require a variance. But such preemption would not be limitless; particularly as new technologies advance, failure to address an issue cannot always be interpreted as a definitive decision on the issue.

Rather than formulating an energy efficiency ordinance that requires specific building design features, a municipal ordinance could seek to require buildings to improve their energy use, *e.g.*, reducing energy use by a specified percentage each year. However, reducing energy use to comply with such a performance standard could likely only be met by increasing energy

²¹ See 780 CMR 13.00 (regarding base code energy efficiency provisions), 780 CMR 51.00 Ch. 11 (regarding residential energy efficiency provisions), and 780 CMR Appendix AA (regarding the stretch energy code).

efficiency through technological, design and/or behavioral actions.²² Thus, the municipal ordinance could be argued to create a de facto mandate for buildings to incorporate efficiency measures beyond those required in the Building Code (assuming the municipal ordinance requires a performance level beyond that which buildings may elect to pursue to comply with the Building Code).²³ The inclusion of an alternative compliance option could help protect the ordinance from preemption, although attention would need to be paid to the cost of the alternative compliance. Too high a cost could remove any logical economical choice between the alternative compliance and pursuing energy efficiency measures beyond those required by the Building Code, thus pushing the ordinance back into the realm of a potential de facto requirement.

* * *

Municipalities in Massachusetts have authority to create mandatory NZB-related ordinances and bylaws. Such laws must be crafted to avoid regulating or unduly interfering in an arena where local action, particularly action more stringent than existing state and federal laws, is precluded by the preemptive nature of the Massachusetts Building Code and federal energy conservation standards for appliances. Regulating either the type of energy used in buildings or greenhouse gas emissions from buildings are both viable strategies for municipalities, particularly if such ordinances incorporate reasonable alternative compliance mechanisms. While ordinances such as these present opportunities to regulate both new and existing buildings, more incremental methods, such as revisions to zoning ordinances, can also advance NZB goals. This paper is not a comprehensive review of all strategies for municipal NZB mandates. For instance, while cap and trade programs are rare at the municipal level, the feasibility of such an approach could increase as more communities pursue NZB-related measures. While municipalities have the authority to act now, they can also push for additional authority to pursue a greater range of NZB-related measures.

²² Other types of NZB-related actions, such as switching to cleaner energy sources, would not help meet a requirement that equates to using less energy.

²³ One might argue that, where the Building Code does not include performance-based alternatives for energy efficiency (such as with respect to additions to existing buildings), a municipal ordinance could create such a performance-based requirement so long as a building could meet it without violating, and thus being in conflict with, the prescriptive standards in the Building Code. However, such an approach would likely be preempted, particularly if the end result was a higher level of energy efficiency than that achieved by the Building Code's combined prescriptive measures.

APPENDIX 1

STRATEGIES TO EXPAND MUNICIPAL AUTHORITY FOR NZB-RELATED ACTIONS

Examples of Strategies to Expand Municipal Authority for Mandatory NZB Actions	
Action	Discussion
Municipal-specific variance from Building Code	<ul style="list-style-type: none"> • Process: application to the BBRS • Requires demonstrating circumstances “unique” to the applicant municipality; hard to demonstrate for climate change impacts <ul style="list-style-type: none"> ○ Large cities may be able to argue unique circumstances due to urban heat island effect, but likely only viable for one city • Not widely sought or granted
Municipal-specific permission to require NZB-related construction requirements beyond the Building Code	<ul style="list-style-type: none"> • Process: <ol style="list-style-type: none"> 1. Home Rule petition to the Massachusetts Legislature. 2. Petition to the BBRS to revise the Building Code • Substance could range from: (i) waiver from existing energy efficiency requirements, <i>i.e.</i> permission to require more, to (ii) permission to add specific net-zero construction requirements.
Permission for any municipality to require NZB-related construction requirements beyond the Building Code	<ul style="list-style-type: none"> • Process: <ol style="list-style-type: none"> 1. Legislation from the Massachusetts Legislature, ranging from granting municipalities general authority to adopting a specific NZB-related code to directing the BBRS to revise the Building Code. 2. Petition to the BBRS to revise the Building Code • Could model process after the adoption of the Stretch Energy Code.

APPENDIX 2

VOLUNTARY MEASURES TO INCENTIVIZE NZB-RELATED ACTIONS

Examples of Voluntary Municipal NZB Actions	
Action	Discussion
Zoning Incentives (<i>e.g.</i> , relief on floor area ratio, height and open space requirements)	<ul style="list-style-type: none"> • These types of incentives are already used in some communities for other environmental goals • Extensive use may face community pushback if there is concern about new large development • Often more relevant for new large projects or major modifications to large projects; less effective for smaller new development and much existing building stock
LEED Incentives (relevant for communities that require LEED compliance/eligibility)	<ul style="list-style-type: none"> • Preference existing LEED criteria that advance NZB-goals. This could produce limited advancement of NZB goals given existing scope of LEED criteria. Could increase impact by substituting municipal-specific criteria for a certain number of LEED points • Often more relevant for new large projects or major modifications to large projects; less effective for smaller new development and much existing building stock
Tax Incentive via lower tax rate for NZBs	<ul style="list-style-type: none"> • Requires authority from the Massachusetts Legislature to create a new property tax category (or subset within existing brackets) (Mass. Constitution, Art. 89, § 7)
Tax Incentive via property tax rebate for NZBs	<ul style="list-style-type: none"> • A model of such a program is included in Appendix 5 of this paper • Within authority of municipalities (would require a local vote) • Requires additional municipal administrative capacity • Could look to water and sewer abatements as a model

APPENDIX 3

ANNOTATED MODEL CLEAN ENERGY USE ORDINANCE

The following model ordinance (starting on the next page) promotes net zero building objectives by requiring buildings to use clean, *i.e.*, non-GHG emitting, sources of energy.²⁴ Much of this model could also serve as a template for designing a GHG emissions ordinance for buildings. The ordinance outlined here is ambitious in nature: it encompasses all properties and energy use in a community. However, municipalities could stagger reporting and/or compliance requirements, both to address concerns about administrative capacity and impacts on residents. Issues such as these are addressed in the annotations to the model ordinance along with other legal and policy considerations relevant to design and implementation.

²⁴ The model ordinance incorporates provisions from the Boston Building Energy Reporting & Disclosure Ordinance (“BERDO”) and the Cambridge Building Energy Use & Disclosure Ordinance (“BEUDO”).

ANNOTATED MODEL CLEAN ENERGY USE ORDINANCE

Whereas, the use of Energy accounts for a significant percentage of greenhouse gas emissions in the Municipality and the Commonwealth;

Whereas, the use of Energy from non-greenhouse gas emitting sources may reduce air pollution and contribute to the Commonwealth's goal of reducing greenhouse gas emissions to 80% below 1990 levels by 2050;

Whereas, the use of non-greenhouse gas emitting sources of Energy, particularly from sources that generate Energy on Property, may increase building resiliency during power outages and increase energy security by reducing reliance on imported sources of energy;

Whereas, investment in clean energy may contribute to economic growth, create local jobs, improve public health, and protect future generations;

Whereas, the availability of energy from non-greenhouse gas emitting sources is growing and expected to continue to grow; and

Whereas, the Municipality aspires to promote the use of non-greenhouse gas emitting sources of energy and to secure the associated benefits.

Section 1. Short Title:

This Ordinance may be cited as the "Clean Energy Usage Ordinance" of the Municipality.

Section 2. Purpose:

To promote the use of Clean Energy, this Ordinance requires Property Owners to (1) measure and disclose total Energy and Clean Energy use annually, and (2) comply with minimum Clean Energy Use Requirements in defined compliance periods.

Section 3. Definitions:

As used in this Ordinance, the following words shall have the following meanings:

These introductory terms are a placeholder that can be updated to reflect a community's own climate change goals and relationship to other municipal programs, whether or not related to climate change.

In the substance of the ordinance, references to the "Municipality" could be replaced by references to the department, commission, etc. implementing the ordinance.

- (a) “Alternative Compliance Mechanism” shall mean Alternative Compliance Payments and Carbon Offset Allowances.
- (b) “Alternative Compliance Payments” shall mean a payment to the Municipality in an amount of dollars per megawatt hour (MWh), or per other unit of energy, established by the Municipality, provided that the amount shall not be less than the lowest cost Alternative Compliance Payment set for the Massachusetts Renewable Portfolio Standard (RPS).
- (c) “Average Clean Energy Use” shall mean consumption of Clean Energy generated off a Property, plus consumption of Clean Energy generated on a Property, plus an Owner’s Alternative Compliance Mechanisms, all divided by the Property’s total Energy use.
- (d) “Clean Energy Use Requirement” shall mean the Average Clean Energy Use that a Property must achieve within each compliance period.
- (e) “Carbon Offset Allowance” shall mean a credit that represents real, verifiable, enforceable, and permanent reduction or avoided emission of carbon dioxide (CO₂) or CO₂ Equivalent.
- (f) “Carbon Offset Projects” shall mean projects that result in real, verifiable, enforceable, and permanent reduction or avoided emissions of CO₂ or CO₂ Equivalent emissions.

Alternative Compliance Payment: Tying the Alternative Compliance Payment to the RPS program reflects the cost of regulatory renewable energy credits (RECs). RECs in the voluntary market are often less expensive; tying the Alternative Compliance Payment to voluntary market prices could lower compliance costs.

Average Clean Energy Use: The Ordinance does not incentivize parties to change their dirtiest Energy use habits first. Rather, it incentivizes them to make the least-costly changes first.

Carbon Offset Allowance: Differs from Regional Greenhouse Gas Initiative (310 CMR 7.70) by including projects that avoid emissions & excluding the additionality criteria due to accounting and administrative difficulties. E.g., McFarland, “Carbon Reduction Projects and the Concept of Additionality,” 11 Sust. Dev. L. & Pol’y 15 (2011) (“The challenge with additionality . . . is that one must prove a counterfactual argument (i.e., what would have otherwise happened in the absence of a project) to ensure the project provides carbon reductions that would not have otherwise occurred.”)

- (g) “Clean Energy” shall mean Energy from any of the following sources: (1) solar photovoltaic or solar thermal electric; (2) wind; (3) ocean thermal, wave or tidal; (4) fuel cells utilizing renewable fuels; (5) landfill gas; (6) waste-to-energy which is a component of conventional municipal solid waste plant technology in commercial use; (7) naturally flowing water and hydroelectric; (8) low emission advanced biomass power conversion technologies using fuels such as wood, by-products or waste from agricultural crops, food or animals, energy crops, biogas, liquid biofuel including but not limited to biodiesel, organic refuse-derived fuel, or algae; or (9) geothermal. The Municipality may designate additional sources or uses of those sources as “Clean Energy.”
- (h) “CO₂ Equivalent” shall mean the quantity of a greenhouse gas multiplied by its global warming potential (GWP), based on the Intergovernmental Panel on Climate Change’s findings.
- (i) “[Commission/Department]” shall mean the [municipal entity responsible for implementing the Ordinance].
- (j) “Energy” shall mean electricity, natural gas, steam, hot or chilled water, heating oil, or other product for use on a Property, or renewable on-Property Energy generation, for purposes of providing heating, cooling, lighting, water heating, or for powering or fueling other end-uses on a Property. The Municipality may designate additional sources or uses of those sources as “Energy.”
- (k) “Energy Monitoring Tool” shall mean a system created by the Municipality for Owners to report and track: Energy use; Clean Energy use; Energy generated by on-Property Energy facilities; Carbon Offset Allowances; Alternative Compliance Payments; and such other information necessary for implementation of this Ordinance. The system may incorporate some or all features of the federal Environmental Protection Agency’s Energy Star Portfolio.
- (l) “Owner(s)” shall mean:
 - a. An individual or entity, including a municipality or municipal entity, having title to a Property;

Clean Energy: This definition can track what constitutes “renewable energy” for the MA RPS or can be expanded to include additional sources such as nuclear, geothermal, unlimited hydropower, and energy from waste-to-energy facilities.

CO₂ Equivalent: The Global Warming Solutions Act defines CO₂ Equivalent with respect to global warming impact based on “best available science,” including from the IPCC. If the state uses non-IPCC data, that could be referenced here.

Energy: The ability to expand the definition creates flexibility to address additional energy uses or demands. For example, carving out electricity for electric vehicles could avoid inadvertently disincentivizing adoption of such vehicles.

Owner: Applicability to state- or federally-owned Property is not addressed in this model Ordinance. Condominium boards of directors are not

- b. An agent authorized to act on behalf of an Owner;
 - c. The net lessee in the case of a Property subject to a net lease with a term of at least four years, inclusive of all renewal options; or
 - d. The board of directors in the case of a cooperative apartment corporation.
- (m) “Property” shall mean a parcel, as described in public records or as determined by the Municipality, irrespective of whether or not it contains a building.
- (n) “Tenant” shall mean a person or entity other than an Owner leasing, occupying or holding possession of a Property or a condominium unit owner.
- (o) “Utility” shall mean an entity that distributes and/or sells Energy to a Property.

[Optional Additional Definitions]

- ❖ “Dwelling Unit” shall mean [insert definition from municipal zoning ordinance].
- ❖ “Municipal Property” shall mean a property that is owned by the Municipality or any subdivision thereof.
- ❖ “Non-Residential Building” shall mean one or more non-residential buildings in the same ownership where such building(s) singly or together contain more than [XX] square feet.
- ❖ “Residential Building” shall mean one or more residential building(s) in the same ownership where such building(s) either (i) singly or together contain more than [YY] square feet, or (ii) contain more than [Z] Dwelling Units, whether such Dwelling Units are rented or owned.

Section 4. Applicability:

This Ordinance is applicable to all Properties in Municipality.

treated as owners in all regulatory programs, but for purposes of this Ordinance, such boards as Owners reflects that they may be better positioned than unit owners to change heating and cooling systems or make decisions about on-site renewable energy systems. Boards treated as owners will have to decide how to (i) collect Energy use data from all unit owners and (ii) distribute compliance costs.

Optional Additional Definitions: *These are examples of definitions that could be used to create different requirements (temporally or substantively) for different types of buildings.*

Non-Residential Buildings & Residential Buildings: *The square footage thresholds can address a municipality’s goal regarding number and/or type(s) of buildings covered by the ordinance. There can be further distinction between small and large buildings in each category. As a reference, Cambridge’s BEUDO and Boston’s BERDO set the dwelling unit threshold for covered residential buildings at 50 and 35 respectively.*

Applicability: *This can be altered by amending the definition of Property, including by integrating some or all of the optional additional definitions.*

Section 5. Clean Energy Use Requirement:

(a) Clean Energy Use Requirement Schedule

- a. Within each compliance period, a Property’s Average Clean Energy Use must meet or exceed the percentage of Clean Energy specified below.

Compliance Period	Average Clean Energy Use
<i>These compliance periods & clean use requirements are examples. An ordinance could include an initial reporting period to develop baseline data before a Clean Energy Use requirements applies. Length of compliance periods may reflect private and public costs of collecting and analyzing data and enforcing the ordinance.</i>	
Jan. 1, 2020 – Dec. 31, 2022	20%
Jan. 1, 2023 – Dec. 31, 2025	30%
Jan. 1, 2026 – Dec. 31, 2028	38%
Jan. 1, 2029 – Dec. 31, 2031	44%
Jan. 1, 2032 – Dec. 31, 2034	50%
Jan. 1, 2035 – Dec. 31, 2037	56%
Jan. 1, 2038 – Dec. 31, 2040	62%
Jan. 1, 2041 – Dec. 31, 2043	68%
Jan. 1, 2044 – Dec. 31, 2046	74%
Jan. 1, 2047 – Dec. 31, 2049	80%
Jan. 1, 2050 – Dec. 31, 2052	86%
Jan. 1, 2053 – Dec. 31, 2055	92%
Jan. 1, 2056 – Dec. 31, 2058	98%
Jan. 1, 2059 – Dec. 31, 2061	100%

- b. Beginning on January 1, 2059, a Property’s Average Clean Energy Use must be 100% during every subsequent three-year compliance period.

(b) Average Clean Energy Use

- a. A Property’s Average Clean Energy Use shall be calculated as follows:
 - i. Divide the sum of the following during a compliance period:
 1. Clean Energy Use, which shall include use of Clean Energy generated off- or on- a Property; and
 2. Alternative Compliance Mechanisms, which shall include Carbon Offsets Allowances credited to a Property and Alternative Compliance Payments credited to a Property

Schedule of Clean Energy Use Requirement: Factors to consider in setting:

- (i) Percent of average building Energy use from electricity. In municipalities served by electric distribution companies subject to RPS renewable and alternative energy requirements, the first compliance amount should be high enough so that compliance requires action beyond the status quo of buying electricity from RPS-regulated suppliers. (Similar analysis for municipal light providers).
- (ii) Costs of each marginal increase in Clean Energy Use, including extent to which heating and cooling are electrified. As the grid is “greened,” access to clean electricity may require less capital investment or large expenses by Property Owners as compared to other forms of energy. This may support more moderate increases in Clean Energy Use requirements after reaching the threshold of average electricity use.
- (iii) Compliance schedules and requirements may differ by building type, e.g., buildings with higher electricity use, older heating systems, or low-income residents.
- (iv) Final requirement could be less than 100% and/or measured at a scale other than an individual Property.

- ii. By the Property's total Energy use during a compliance period.

Simplified Formula: Average Clean Energy Use =

$$\frac{\text{Clean Energy Use} + \text{Alternative Compliance Mechanisms}}{\text{Total Energy Used}}$$

Expanded Formula: Average Clean Energy Use =

$$\frac{\text{(Use of Clean Energy Generated Off a Property} + \text{Use of Clean Energy Generated On a Property} + \text{Carbon Offset Allowances} + \text{Alternative Compliance Payments)}}{\text{Total Energy Used}}$$

Section 6. Clean Energy Use Components:

(a) Clean Energy Generated Off-Property

- a. Clean Energy Use may include a Property's use of Clean Energy generated off-Property. Clean Energy generated off Property may include the percentage of Clean Energy in the portfolio of any third-party supplier of Energy to the Property. Examples include, but are not limited to:
 - i. For utilities subject to the RPS, the percentage of Clean Energy required by the RPS program;
 - ii. For competitive suppliers, the percentage of Clean Energy that such suppliers report in their portfolios; and
 - iii. For municipal light companies or municipal aggregators, the percentage of Clean Energy that such municipalities report in their portfolios.

(b) Clean Energy Generated On-Property

- a. Clean Energy Use may include a Property's use of Clean Energy generated on the Property.
 - i. Clean Energy generated on the Property may include, but is not limited to, Energy for which the associated Renewable Energy Credits (RECs) are sold or transferred to a party or entity other than the Property Owner.
 - ii. If an on Property source of Clean Energy is not metered, Owners shall calculate and report Clean Energy use from such sources based on a formula provided by the Municipality.

Clean Energy Use Requirement: The Ordinance should specify whether Owners that own multiple Properties must calculate compliance at each Property or whether they may calculate compliance on a portfolio basis.

Clean Energy Generation On-Property: Property Owners counting on-site Clean Energy generation towards compliance while selling RECs (vs. retiring) could result in double counting but avoid disrupting existing, and potentially future, financing mechanisms for renewable energy systems such as rooftop solar panels.

(c) Banking

- a. If Owners exceed the Clean Energy Use Requirement in any compliance period, they may bank any excess Clean Energy for use in the next compliance period.
- i. Carbon Offset Allowances may be banked, provided, however, that banked Carbon Offset Allowances may constitute no more than ten percent (10%) of an Owner's Average Clean Energy Use in the compliance period.

Banking: Ex: A compliance period has a 30% Clean Energy Use Requirement and the Owner uses 10 MWh of Energy - 5 MWhs from Clean Energy. The Owner banks 2 MWhs that can be used in the next compliance period.

Allowing additional use of banked Carbon Offset Allowances might encourage greater investment in offset projects (and reductions in GHG emissions) in early phases of an ordinance if there is concern that prices will rise over time.

Section 7. Alternative Compliance Mechanisms:

(a) Carbon Offset Allowances

- a. The Municipality shall provide a formula or other information regarding the process for converting Carbon Offset Allowances to megawatt hours or another unit of Clean Energy.
- b. The Municipality shall develop, publish and maintain a list of pre-approved Carbon Offset Projects and categories of Carbon Offset Projects.²⁵ The Municipality may designate some Carbon Offset Projects as eligible for use by subsets of Owners, such as Owners of small residential properties. The list of approved Carbon Offset Projects shall:
 - i. Include Renewable Energy Credits that qualify for use in the Massachusetts Renewable Portfolio System (RPS);

Alternative Compliance Mechanisms: Reasonable alternative compliance mechanisms may help counter any claim that the ordinance is preempted. Municipalities can reduce compliance costs and transactional burdens for Owners by supporting a market for Carbon Offset Allowances. This and other opportunities to support compliance are discussed in Note 1 below.

RECs: Options for Carbon Offset Allowances include: (1) RPS Alternative Energy Certificates (in the short- to medium-term); (2) RECs

²⁵ The Regional Greenhouse Gas Initiative (RGGI) includes, or has included, standards for several categories of offset projects: landfill methane capture and destruction, sulfur hexafluoride emission reduction, forestry and afforestation, end-use efficiency projects, and agricultural methane projects.

- ii. With the exception of Renewable Energy Credits authorized by Section 7(a)(b)(i), require that Carbon Offset Projects are or be located in Massachusetts; and
 - iii. Outline any criteria or performance standards that Carbon Offset Projects must satisfy to generate Carbon Offset Allowances.
- c. The Municipality may, at its discretion, solicit or accept proposals for additional individual Carbon Offset Projects or categories of Carbon Offset Projects. Approval of such additional Carbon Projects shall be at the Municipality's discretion and may consider factors such as the availability and cost of Clean Energy and Carbon Offset Allowances.
- d. The Municipality shall develop guidance regarding the routine auditing of pre-approved Carbon Offset Projects and other Carbon Offset Projects. The audit requirements for pre-approved Carbon Offset Projects may be distinct from the audit requirements for other Carbon Offset Projects. Based on the outcome of audits, the Municipality may revoke some or all Carbon Offset Allowances awarded to a Carbon Offset Project's Carbon Offset Allowances.
- (b) **Alternative Compliance Payments**
- a. The Municipality shall review the Alternative Compliance Payment at least once every three years and may adjust the price as it deems necessary. If the Alternative Compliance Payment is increased, notice of such increase must be provided to the public one (1) year before it takes effect.
 - b. The Municipality shall utilize or allocate Alternative Compliance Payments for projects that will produce a public benefit and result in real, verifiable, enforceable, and permanent reductions or avoided emissions of CO₂ or CO₂ Equivalent emissions.

Section 8. Reporting Obligations:

- (a) The Municipality shall establish reporting schedules that require Owners to provide periodic updates about their Energy and Clean Energy Use. Prior to the first reporting period, the Municipality shall develop an Energy Monitoring Tool and provide guidance material for using the Energy Monitoring Tool.

from other mandatory or voluntary markets, non-RPS sources of energy, or expanded geographic areas; and (3) Offset Projects located outside MA. Localized projects could provide extra co-benefits to municipalities. Offset Allowances from more distant projects could receive reduced credits.

If the amount of an Alternative Compliance Payment is tied to the RPS, RECs would typically be less expensive, making Carbon Offset Allowances less expensive than Alternative Compliance Payments. Owners might still use the latter if there are transactional costs associated with Carbon Offset Allowances.

Alternative Compliance Payments: Municipal use of Alternative Compliance Payments must comply with the Massachusetts Constitution's Anti-Aid Amendment (discussed in Note 2 below).

Reporting Schedule: Annual reporting would support an Owner's ability to evaluate and adjust behavior prior to compliance deadlines.

- a. The Municipality may develop guidance regarding extenuating circumstances that would support an Owner's request for an alternative reporting deadline. The Municipality shall have discretion whether to establish or grant an alternative reporting deadline.
- (b) Owners shall report the following information: total Energy used during the reporting period; total Clean Energy used during the reporting period; any Carbon Offsets Purchased during the reporting period; and any Alternative Compliance Payments made during the reporting period. Owners of multiple Properties may elect to either (i) report required information for each Property, or (ii) cumulatively report information for all owned Properties. Such information shall be submitted via the Energy Monitoring Tool.
 - a. Owners may authorize a Utility or other third party to input data on their behalf, provided, however, that such authorization shall not transfer or otherwise alleviate an Owner's obligation to comply with reporting requirements or any Clean Energy Use Requirement.
 - b. For Properties occupied by a single tenant, Owners may, with the consent of the tenant, authorize the tenant to input data on their behalf, provided, however, that such authorization shall not transfer or otherwise alleviate an Owner's obligation to comply with reporting requirements or any Clean Energy Use Requirement.
 - c. For Properties occupied by a single tenant or by multiple tenants, in the event that Owners are unable to obtain complete Energy use data from the tenant(s), Owners shall report Energy use based on formulas or values established by the Municipality. The Municipality shall update such formulas or values within twelve (12) months of the end of each compliance period.

Extended Reporting Deadlines: Extenuating circumstances might include changes in ownership.

Reporting Across Portfolios: Allowing Owners of multiple Properties to report and measure compliance across a portfolio of Properties may result in portfolio-wide compliance but not building-specific compliance. A portfolio-based approach may be more cost-effective for some Owners.

Data in Lieu of Tenant Energy Use Information: Average Energy use per type of Property could be established based on existing data, both local and federal, and updated periodically with data collected pursuant to the Ordinance.

- (c) Based on information from the Energy Monitoring Tool, the Municipality will inform Owners within ninety (90) days of the end of a reporting period of: (1) their Average Clean Energy Use up to that point in the compliance period, and (2) the amount of Clean Energy they will have to use in the remaining years of the compliance period in order to meet the compliance period's Clean Energy Use Requirement, assuming their total Energy Use remains consistent.
- (d) Owners that fail to comply with interim reporting deadlines shall be issued a written notice of such failure within sixty (60) days of the missed deadline.
- (e) Owners that fail to report some or all information needed to determine compliance with an Average Clean Energy Use requirement by the end of a compliance period shall be issued a written notice of violation within sixty (60) days of the missed deadline and provided a thirty (30) day period to submit the missing information. At the Municipality's discretion, an Owner may be granted an additional thirty (30) days to submit the missing information, provided that the Owner has responded to the initial notice of violation and shown good cause for the additional time.
 - a. For Owners that do not correct a reporting violation, it shall be assumed that, for the portion of the compliance period for which data was not provided, the Property(ies):
 - i. Used Energy based on the formulas or values established by the Municipality pursuant to Section 8(b)(c) of this Ordinance. Alternatively, if an Owner previously reported Energy use for a Property, the highest Energy use reported in the prior five (5) years will be assumed for any period in which data is missing;
 - ii. Used zero (0) Clean Energy; and
 - iii. Did not receive credit for any Carbon Offset Allowance or Alternative Compliance Payment.

Section 9. Failure to Comply with Clean Energy Use Requirement:

- (a) At the end of each compliance period, the Municipality shall evaluate a Property's compliance with the Average Clean Energy Use requirement based on information in the Energy Monitoring Tool.

Informing Owners of Interim Compliance Status: With multiyear compliance periods, Owners that do not meet the Clean Energy Use Requirement in a single year can still bring Properties into compliance by the end of a compliance period. Annual "progress reports" may be most valuable (i) in early phases of the ordinance, and/or (ii) for less sophisticated Owners, such as residential and small building owners.

Penalty for Not Reporting: Because reporting is a pre-requisite to demonstrating compliance with the Ordinance's Clean Energy use requirements, the consequence of not reporting should be significant enough to deter non-reporting. For example, electricity used by many Properties will have more than 0% Clean Energy (e.g., energy bought from a municipal aggregator or utility subject to RPS requirements), so assuming 0% Clean Energy creates a penalty for not reporting data.

- a. If the Energy Monitoring Tool is missing information for a Property, the Municipality shall follow the procedure outlined in Section 8(e) of this Ordinance.
- (b) If a Property, or portfolio of Properties, does not satisfy the applicable Average Clean Energy Use requirement, the Municipality shall issue a written notice of violation to the Owner(s). Such notice shall identify the amount of additional Clean Energy required for compliance with the Average Clean Energy Use requirement. In the event that information in the Energy Monitoring Tool is not complete, the Municipality shall calculate the amount of additional Clean Energy required based on the provisions in Section 8(e) of this Ordinance.
- (c) Owners shall have thirty (30) days to either (i) correct the violation, by complying with the Average Clean Energy Use requirement, or (ii) submit a written appeal to the Municipality. The Municipality may, at its discretion, conduct a hearing for an appeal if requested by an Owner; any such hearing shall be conducted in accordance with M.G.L. ch. 30A and its implementing regulations. The Municipality shall make a decision regarding an appeal within sixty (60) days of receipt, provided, however, that the response time may be extended by an additional thirty (30) days if a public hearing is held. If the Municipality denies an appeal, an Owner shall have thirty (30) days from the date of the decision to correct the violation.
- a. If an Owner demonstrates in an appeal that a violation of an Average Clean Energy Use requirement occurred solely because a third party provider of Energy, Clean Energy or Carbon Offset Allowances violated a contractual obligation with the Owner to provide a specific type of Energy or specific amount of Clean Energy or Carbon Offset Allowances, then the Owner's compliance shall be calculated as if the contractual obligations were satisfied, provided that the Owner met all of its obligations under the contract. The burden of proving such contractual violation is on the Owner. An Owner may use this defense to a violation of an Average Clean Energy Use requirement in only one compliance period.

*Notice of Violation:
Compliance shall be measured on an absolute basis. E.g., in a period with a 30% Clean Energy Use requirement, a Property with (i) Total Energy Used of 3 MW, 4MW and 3 MW in years 1, 2 and 3 respectively, and (ii) Clean Energy Use & Alternative Compliance Mechanisms of 1 MW, 0.5 MW and 1 MW in years 1, 2 and 3 respectively, would be 0.5 MW "out of compliance." As written, this provision assumes that Owners can demonstrate compliance across a portfolio of Properties. Notices should be sent by a mechanism that tracks the date of receipt.*

*Violations due to Contractual Violations:
This one-time defense could help protect less sophisticated Property Owners that have less experience with contracts for products like Clean Energy and Carbon Offset Allowances.*

- (d) Owners that fail to correct a violation shall be subject to fines of up to \$300 per violation; each day of noncompliance shall count as a separate violation.
- a. The Municipality may also, to the extent permitted by law, (i) seek an injunction from a court of competent jurisdiction instructing a Property Owner who has failed to comply with a notice of violation to comply with this Ordinance, and (ii) direct agencies and other subdivisions within the Municipality not to issue any permits or other approvals for the Property until the Owner has come into compliance with this Ordinance.

Section 10. Maintenance of Records:

- (a) Owners shall maintain records demonstrating their Energy use and compliance with the Ordinance for at least two (2) years after the end of each compliance period, provided, however, that records regarding verification or audits of Carbon Offset Projects must be retained for the life of such project. At the request of the Municipality, such records shall be made available for inspection and audit by the Municipality.

Section 11. Alternative Clean Energy Use Requirements and Schedules:

- (a) The Municipality may, at its discretion, create exceptions to Average Clean Energy Use Requirements and compliance schedules; such exceptions shall be available to Owners that demonstrate, via completing an application, eligibility for the exception.
- (b) The Municipality may, at its discretion, create a process for Owners to apply for a variance from Average Clean Energy Use Requirements and compliance schedules. Such variances may be granted if the Municipality determines that there is an “undue hardship” unique to a particular Property. Relief granted by a variance may include any or all of the following:

Penalties: Because compliance is measured as an Average Clean Energy Use over a three-year period, a failure to meet the average would constitute 1,096 days of noncompliance, with a maximum fine of \$328,800. Municipalities may wish to earmark fees or other funds collected.

Sharing Information at Property Transfers: This Ordinance does not address whether a Municipality can, or should, require transfer of such records between private parties when ownership of a Property changes.

Exceptions: Energy uses that might be exempted include (i) an electric vehicle or charging facility, (ii) public safety, e.g., lighting in parking lots, or (iii) critical services, e.g., backup generators at hospitals. A Municipality could calculate average Energy use by such activities and create a standard exception that Owners deduct from a Property’s total Energy use.

Variances: Limiting eligibility for variances to specific categories of Properties, or providing detailed criteria for undue hardship, could help conserve municipal resources needed to review variance requests.

- a. Exemption of specified Energy uses from compliance with the Average Clean Energy Use requirement;
- b. An Average Clean Energy Use requirement specific for the Property;
- c. A cap on Clean Energy use required, with such cap defined as an absolute amount, with respect to cost, or as a percentage of past Clean Energy use; or
- d. Extension of a compliance period.

Section 12. Severability:

The provisions of this Ordinance are severable. If any section, provision or portion of this Ordinance is determined to be invalid by a court of competent jurisdiction, the remaining provisions of this Ordinance shall continue to be valid.

Section 13. Effective Date:

The provisions of this Ordinance shall be effective immediately upon passage.

Effective Date: The effective date should ensure sufficient time for development of an Energy Monitoring tool before the first reporting deadline.

NOTE 1
MASSACHUSETTS ANTI-AID AMENDMENT

This issue will be addressed in a separate paper.

NOTE 2 MUNICIPAL OPPORTUNITIES TO SUPPORT COMPLIANCE

A municipality's costs of implementing a Clean Energy Use Ordinance would include: educating property owners about the ordinance; developing systems to collect required information; and processing the data provided by property owners. Municipalities should also consider investing in measures that could help reduce Property Owners' costs and compliance burdens. This is particularly important if a Clean Energy Use Ordinance applies to small properties whose owners may be less sophisticated or familiar with evaluating the "cleanness" of energy sources, purchasing RECs, or evaluating and entering into contracts for Carbon Offset Allowances. Examples of measures that municipalities could pursue include the following:

- Offering municipal aggregation services that provide residents an opportunity to buy electricity with a "clean" quotient (*i.e.*, percentage of non-GHG emitting sources) that exceeds that available from private utilities. The "clean" quotient could be set so that compliance with the ordinance, at least in the early phases, could be achieved by purchasing electricity offered by a municipal aggregation program. Such a program could reduce transaction costs for regulated property owners and limit risks from dealing with third parties. (Communities with municipal light companies could provide a similar service via the portfolio of electricity provided to residents.)
- Providing pre-negotiated contracts, sample contracts, or guidance for the purchase of clean energy or carbon offset allowances, including Renewable Energy Credits ("RECs"). This would go beyond creating a list of approved carbon offset projects (*e.g.*, conversion of heating systems at public schools or at designated low-income properties) or standards for categories of carbon offset projects. In some instances, a municipality could choose to act as the developer for a carbon offset project, or purchase allowances directly from a project developer, and then create a market of allowances for sale to property owners. Any such program would need to comply with applicable state and federal laws, such as procurement requirements (M.G.L. ch. 30B).

A model for the use of pre-negotiated contracts is the Massachusetts Brownfields Redevelopment Access to Capital Program, which requires that state-subsidized environmental insurance policies include a standard state-specific endorsement. Akin to the procurement of offshore wind, a municipality could issue a request for proposals for a clean energy or a carbon offset project and negotiate contract terms but, rather than procure the energy or offsets itself, approve the contract for regulated property owners to use towards compliance with the ordinance.

- Funding energy efficiency and clean energy projects, such as district or thermal energy systems or community solar, that could be used by multiple property owners to advance compliance with the ordinance's requirements. Such projects could be funded by general municipal funds as well as any alternative compliance payments or penalties collected under the ordinance.

APPENDIX 4

NATIONAL APPLIANCE ENERGY CONSERVATION ACT EXCEPTIONS FOR CERTAIN BUILDING CODE REQUIREMENTS

Excerpt from the National Appliance Energy Conservation Act regarding exceptions from preemption for certain state energy standards for consumer products other than automobiles.

42 U.S.C. § 6297(f): Exceptions for Certain Building Code Requirements

(1) A regulation or other requirement enacted or prescribed before January 8, 1987, that is contained in a State or local building code for new construction concerning the energy efficiency or energy use of a covered product is not superseded by this part until the effective date of the energy conservation standard established in or prescribed under section 6295 of this title for such covered product.

(2) A regulation or other requirement, or revision thereof, enacted or prescribed on or after January 8, 1987, that is contained in a State or local building code for new construction concerning the energy efficiency or energy use of a covered product is not superseded by this part until the effective date of the energy conservation standard established in or prescribed under section 6295 of this title for such covered product if the code does not require that the energy efficiency of such covered product exceed—

(A) the applicable minimum efficiency requirement in a national voluntary consensus standard; or

(B) the minimum energy efficiency level in a regulation or other requirement of the State meeting the requirements of subsection (b)(1) or (b)(5), whichever is higher.

(3) Effective on the effective date of an energy conservation standard for a covered product established in or prescribed under section 6295 of this title, a regulation or other requirement contained in a State or local building code for new construction concerning the energy efficiency or energy use of such covered product is not superseded by this part if the code complies with all of the following requirements:

(A) The code permits a builder to meet an energy consumption or conservation objective for a building by selecting items whose combined energy efficiencies meet the objective.

(B) The code does not require that the covered product have an energy efficiency exceeding the applicable energy conservation standard established in or prescribed under section 6295 of this title, except that the required efficiency may exceed such standard up to the level required by a regulation of that State for which the Secretary has issued a rule granting a waiver under subsection (d).

(C) The credit to the energy consumption or conservation objective allowed by the code for installing covered products having energy efficiencies exceeding such energy

conservation standard established in or prescribed under section 6295 of this title or the efficiency level required in a State regulation referred to in subparagraph (B) is on a one-for-one equivalent energy use or equivalent cost basis.

(D) If the code uses one or more baseline building designs against which all submitted building designs are to be evaluated and such baseline building designs contain a covered product subject to an energy conservation standard established in or prescribed under section 6295 of this title, the baseline building designs are based on the efficiency level for such covered product which meets but does not exceed such standard or the efficiency level required by a regulation of that State for which the Secretary has issued a rule granting a waiver under subsection (d).

(E) If the code sets forth one or more optional combinations of items which meet the energy consumption or conservation objective, for every combination which includes a covered product the efficiency of which exceeds either standard or level referred to in subparagraph (D), there also shall be at least one combination which includes such covered product the efficiency of which does not exceed such standard or level by more than 5 percent, except that at least one combination shall include such covered product the efficiency of which meets but does not exceed such standard.

(F) The energy consumption or conservation objective is specified in terms of an estimated total consumption of energy (which may be calculated from energy loss- or gain-based codes) utilizing an equivalent amount of energy (which may be specified in units of energy or its equivalent cost).

(G) The estimated energy use of any covered product permitted or required in the code, or used in calculating the objective, is determined using the applicable test procedures prescribed under section 6293 of this title, except that the State may permit the estimated energy use calculation to be adjusted to reflect the conditions of the areas where the code is being applied if such adjustment is based on the use of the applicable test procedures prescribed under section 6293 of this title or other technically accurate documented procedure.

APPENDIX 5

MODEL GREEN BUILDING PROPERTY TAX REBATE PROGRAM

This appendix outlines a model property tax rebate program to incentivize progress towards net zero building (NZB) goals. In brief, this revenue neutral approach would assess and collect property taxes pursuant to existing municipal authority and then return rebates from the collected taxes to top-performing properties, with performance measured by progress towards NZB goals. The extent to which a tax rebate would be effective in changing behavior would depend, in part, on the amount of money returned and whether building owners derive reputational or other qualitative value from qualifying for the rebate.

Background

Municipalities in Massachusetts are authorized to assess and collect property taxes, but have limited ability to revise existing categories of property taxes and tax rates, both in general and within categories.

In the home rule provision of the Massachusetts Constitution, one of the authorities reserved to the Commonwealth is the assessment and collection of taxes.²⁶ However, the General Legislature retains the right to grant taxing authority to municipalities and has done so with respect to the assessment and collection of taxes on personal and real property situated within their boundaries.²⁷ A municipality's authority regarding property taxes is subject to several limitations:

- Properties must be classified according to one of four categories: residential, open-space, commercial or industrial. (M.G.L. ch. 59, §2A). Nowhere in the General Laws are municipalities given the authority to create additional categories. Given the starting point that cities and towns have no authority over taxation unless provided by the General Legislature, this silence can be interpreted to mean that municipalities do not have the authority to create additional categories for property tax purposes.
- While municipalities may determine the tax rate applied to each category of property, they may not have more than one tax rate *within* a single category.²⁸ (The tax rate is applied to the assessed value of each property. Pursuant to state law, certain solar and wind energy systems are exempt from local property tax for twenty years if used as a

²⁶ Mass. Constitution, Article 89, § 7.

²⁷ M.G.L. ch. 59, § 2A.

²⁸ Mass. Constitution, Article 112 (“[T]he general court may classify real property according to its use in no more than four classes and to assess, rate and tax such property differently in the classes so established, but proportionately in the same class, and except that reasonable exemptions may be granted.”)

primary or auxiliary power system for providing energy, including heat, to a taxable property. The exemption applies to the value added to a property by the solar or wind energy system. M.G.L. ch. 59, §5(45)).

Thus, municipalities cannot create a new property tax rate for NZBs without additional authority from the General Legislature. Compare this to Virginia, where state legislation allows municipalities to tax energy efficient buildings differently.²⁹

Although Massachusetts municipalities cannot create a new category of properties for tax purposes, they can decide how to use the property taxes they collect. Using tax abatements or rebates to incentivize or reward desired behavior is not a new concept. For instance, some communities abate property taxes for owner-occupied residences. While any tax rebate must be balanced against impacts on revenue, such decisions are within a municipality's existing authority.

Proposal

In brief, the property tax rebate program outlined herein would consist of two steps:

1. Increase the property tax rates (or increase the rates for certain existing categories of properties, such as industrial and commercial properties); and
2. Allocate revenue raised from the tax increase to buildings that have met a specified NZB-related goal, such as reducing greenhouse gas (GHG) emissions. In such a system, municipalities would set a GHG emissions target by property type, *e.g.*, emissions per square foot of residential property. Any property with emissions that are a specified amount below the target would qualify for a tax rebate, and rebates could be tiered so that "best performers" receive a higher rebate. The target could become more stringent over time to encourage increased emission reductions.

The approach outlined herein is revenue-neutral and could be tailored to apply only to certain categories of property.

Step 1: Increasing Property Tax Rates

The total property taxes assessed in any town or city cannot exceed 2.5% of the assessed real estate and personal property in that community in any given fiscal year.³⁰ Subject to that cap,

²⁹ Virginia Code, § 58.1-3221.2 ("Energy-efficient buildings, not including the real estate or land on which they are located, are hereby declared to be a separate class of property and shall constitute a classification for local taxation separate from other classifications of real property. The governing body of any county, city, or town may, by ordinance, levy a tax on the value of such buildings at a different rate from that of tax levied on other real property.")

³⁰ M.G.L. ch. 50, § 21C(b).

municipalities may increase the maximum revenue raised through property taxes each year by 2.5%.³¹ Communities have several mechanisms for increasing taxes beyond the 2.5% annual limit. One that might be relevant to a NZB tax rebate program is the override process. Residents of a city or town can approve an override that allows additional collection of taxes for a specified municipal expenditure, *e.g.*, building a new school.³² Additional research would be needed to evaluate whether such an override could be used to fund a tax rebate program that rewards NZB actions by private property owners, as opposed to a municipality directly funding NZB-related actions (such as changing the heating system in a public building).

Step2: Providing Rebates to Properties that Meet or Exceed NZB Goals

The laws that constrain municipal authority to levy taxes do not limit how cities and towns can use the funds collected. Rather, a municipality may “appropriate money for the exercises of any of its corporate powers.”³³ However, the use of tax revenues would be subject to any general principle, such as the anti-aid amendment in the Massachusetts constitution, regarding municipal use of public funds. (For a discussion of the anti-aid amendment, see the notes in Appendix 3.) Outlined below are two common decision points for designing a rebate system: (i) setting a NZB performance standard; and (ii) creating a rebate distribution formula.

Setting a NZB Performance Standard

The model discussed herein assumes that the unit of measurement for a NZB performance standard would be GHG emissions from operations at a property, including emissions from the use of energy generated off-site. Performance thresholds could then be set in several ways, including the following:

- Require buildings to reduce their GHG emissions by a specified percentage each year to qualify for the property tax rebate. The required percentage could vary by property type (*e.g.*, residential versus commercial). This approach would require development of baseline emissions data; a system for doing so could be modeled on the emissions reporting systems for larger buildings used in Cambridge and Boston. Development of baseline data could delay implementation of the rebate system and add an administrative burden.
- Require buildings to meet a GHG emissions limit, measured per square foot of a property (*i.e.*, X GHG emissions for square foot of commercial property). While property owners would still need to calculate and report their GHG emissions, baseline data would not be required. Instead, a municipality would need to establish emission targets for buildings;

³¹ *Id.* at 21(C)(f).

³² *Id.* at 21(C)(g). Overrides require majority votes from local governments and electorates. *See* DLS, Division of Local Services, “A Guide to Financial Management by Town Officials” <http://www.mass.gov/dor/docs/dls/publ/misc/town.pdf>

³³ M.G.L. ch. 40, § 5 (applicable to cities via M.G.L. ch. 40, § 1).

as data is collected over time, these targets could be tailored to reflect average emissions by building type in a particular community, rather than using state or federal data. This system could be tailored to create different emission standards for different types of buildings or uses. For example, a different performance standard might apply to senior housing than other forms of residences to reflect potential differences in hours of high occupancy and use of air conditioning and medical equipment.

In either approach, the target required to qualify for a rebate would need to be updated regularly, *i.e.*, tightened, to ensure that building owners continue to have an incentive to decrease their emissions.

Distributing Rebates

In a revenue neutral program, all funds from the tax increase would be returned to qualified property owners via rebates (with a possible exception for the program's administrative costs). The model described herein suggests a two-step process:

1. Any property that meets the NZB performance standard would be rebated the increase in property tax that it paid; and
2. Any property that exceeds the NZB performance standard would be rebated (i) the increase in property tax that it paid; and (ii) an additional sum from the increased tax revenue collected from non-compliant buildings.

Such an approach would reward early actors, and thus potentially motivate additional GHG emissions reductions, by giving larger rebates to property owners that exceed minimum NZB performance standards. The second round of rebates could be tiered so that properties with the greatest emission reductions above the threshold receive the highest rebate. As more buildings come into compliance with the NZB performance standard, individual tiered rebates would decrease.

Example

This example assumes that a municipality sets a NZB performance threshold of 10 pounds (lbs.) of GHG emissions per square foot, so that any property with GHG emissions of 10 or fewer pounds per square foot would qualify for the rebate. For purposes of this example, we assume that there are 5 properties in the municipality, and each property pays an additional \$20 in property taxes due to the program.

Revenue raised out of the increase in property tax \$100

Calculation of rebate step 1: Each property that met the NZB performance threshold during the prior tax year would receive back the additional \$20 paid in property tax.

- Property 1 -- 2 lbs. GHG emissions/square foot
- Property 2 -- 6 lbs. GHG emissions/square foot

Property 3 -- 6 lbs. GHG emissions/square foot
Property 4 -- 11 lbs. GHG emissions/square foot
Property 5 -- 15 lbs. GHG emissions/square foot

Properties 1, 2 and 3 had emissions under the performance threshold so they each receive a rebate of \$20, for a total of \$60.

Calculation of rebate step 2: After the first step rebate to properties that met the NZB performance standard, an additional \$40 of new revenue from the increased property tax remains. One option for distributing this additional money to the properties that exceeded the NZB performance standard would be to do so in proportion to their additional emission reductions (other formulas would be possible as well). Thus:

Property 1 had 2 lbs. GHG emissions/square foot (sq. ft.)
Compliance is 8 lbs./sq. ft. above required level
Property 2 had 6 lbs. GHG emissions/square foot
Compliance is 4 lbs./sq. ft. above required level
Property 3 had 6 lbs. GHG emissions/square foot
Compliance is 4 lbs./sq. ft. above required level

Total additional compliance is 16 lbs.

Property 1:
8 lbs. of additional compliance = 50% of total additional compliance
50% of \$40 (second pool of money for rebates) = \$20
Total rebate for Property 1 is \$20 + \$20 = \$40

Property 2
4 lbs. of additional compliance = 25% of total additional compliance
25% of \$40 (second pool of money for rebates) = \$10
Total rebate for Property 2 is \$20 + \$10 = \$30

Property 3
4 lbs. of additional compliance = 25% of total additional compliance
25% of \$40 (second pool of money for rebates) = \$10
Total rebate for Property 3 is \$20 + \$10 = \$30

A more sophisticated model could control for factors such as square footage of each property.

Conclusion

The tax rebate model described herein could incentivize property owners to reduce GHG emissions from their buildings by both penalizing buildings emitting over a threshold (through an increase in taxation) and rewarding particularly good behavior (through rebates for properties exceeding the performance standard threshold). The design of this model, however, was driven

in part by the limited authority municipalities have regarding property taxes.³⁴ Removing such limitations could allow for creation of a less complex tax-based incentive program for net zero buildings.

³⁴ Another market-based incentive that would be feasible based on a municipality's current legal authority would be to adjust property valuations in a manner that incentivizes net zero building (NZB) goals. However, such an action might be counterintuitive. The fair cash valuation of a property is supposed to reflect the price that a willing buyer would pay to a willing seller for that property. M.G.L. ch. 58, §38. To incentivize NZB actions, a municipality would need to lower the valuation of properties that do more to reduce their GHG emissions so that a property owner's taxes would decrease.