



American Council of Engineering Companies of New York

Comments on Draft Intro. 1253-A Submitted March 29, 2019

The American Council of Engineering Companies of New York (ACEC New York) appreciates the opportunity to provide the following comments regarding the recently circulated amended draft bill.

As you know, we strongly support Intro 1253-A's goal. We want the bill to accomplish its purpose of reducing greenhouse gas emissions from buildings 40% by 2030. We previously submitted comments outlining concerns we had about the original bill version as it is critical that this important and sweeping legislation be effective, practical and clear.

However, we continue to believe that even in its revised form, the bill framework does not meet that standard, notwithstanding the good faith efforts of the sponsors and Council staff to address the complex technical challenges the bill requires.

The optimal bill approach is to balance maximizing greenhouse gas reductions, maximizing building retrofits and minimizing setting the bar so high as to make implementation unrealistic, or incorporating methodologies that are counterproductive to our shared goals. We submit the recommendations below which, if incorporated, will result in a bill that will achieve the emissions reduction goal in the most technically sound and cost effective way possible and in principle, have our support.

The first two recommendations below regarding the creation of a "Reference Standard" and "Building Occupancy Groups" are ones we submitted in our testimony to the Committee on Environmental Protection on December 4, 2018, a copy of which is attached, and which we have subsequently discussed with the Mayor's Office of Sustainability and Council staff. The third recommendation regarding the "Caps versus Percentage Reduction Targets" approach to regulating emissions is a concept we first endorsed in August 2018 as signers to the 80x50 Partnership's *Blueprint for Efficiency*. The fourth recommendation addresses the need for an Advisory Board that is robust and has technical expertise. We urge you to make these changes to the bill.

1) Reference Standard

Issue: Building energy performance [and therefore emissions] is a function of the building's design, construction *and* operation. Each of these factors contributes to the building's performance and each of these factors is under the control of a different participant in the process (i.e. building engineer/architect, contractor, owner and operator). For this reason, a building may be designed to comply with the prescribed emissions target but could nevertheless fail to comply if the building is constructed other than as contemplated in the design plans and/or occupied differently than anticipated at the time of design.

A Reference Standard would require that the design professional be provided with sufficient information to be able to calculate more accurately what measures should be taken. This is critically important because of the innovative approach of penalizing property owners whose properties fail to meet the limits, as it will help avoid unnecessary finger pointing or unnecessarily conservative and costly design adjustments.

Examples of factors that have an impact on a building's performance and that are out of the engineer's control include substitution of materials by contractors; the type and energy usage of building occupant-

installed equipment; occupant-determined energy use patterns; and owner-determined building operations and maintenance procedures.

Recommendation: *Require the Advisory Board to create a Reference Standard.* The Reference Standard will essentially outline “who is responsible for what.” The Reference Standard must delineate the responsibilities of the building designer, versus owner, versus operator in ensuring compliance with the building’s prescribed emissions target and at a minimum, prescribe the information the owners must provide to the design professionals and advance notice of materials adjustments so the emissions consequences can be evaluated. An example of possible Reference Standard contents is attached as Appendix A. It will provide guidance and a generally accepted methodology that should be followed when designing building retrofits to comply with the statutory emissions limits, ensuring informed, technically appropriate choices are made.

2) Building Occupancy Groups (“buckets”)

Issue: The building occupancy groups used in the bill are not appropriate for regulating greenhouse gas emissions. We acknowledge that the amended bill does break down buildings into more “buckets” than the original version did, but this does not fully address our concerns. As written, buildings with widely varying typical energy intensity are still subject to the same performance requirement. The groups proposed in the bill classify buildings by *life safety characteristics* from the Building Code (ICC Occupancy Group), rather than by *energy use pattern*.

Furthermore, the main reason why the groups currently in the bill were used appears to be because they are familiar to the involved City agencies. This is not a sufficient reason to use a system that is out of sync with national standards and widely used methodologies for classifying buildings. The bill’s approach in this respect is akin to the Building Code integrating use of the Metric System (grams and meters) when the Imperial System (pounds and feet) is more universally familiar in the United States. This approach will be a burden to design professionals and other stakeholders who are familiar with these national conventions and who must now utilize a New York City-specific system.

Recommendation: *Use Energy Star to group buildings by energy efficiency into high, medium and low efficiency.* This system is used nationally, including for the energy benchmarking law adopted by the Council (Local Law 84). The relevant section of the City’s benchmarking law is attached as Appendix B.

Energy Star’s classifications are more appropriate for characterizing building energy use. The Energy Star system is not perfect but is far superior to the classification system currently in Intro 1253-A. The Advisory Board established by the bill can further refine this classification system as needed.

We note that as design professionals it will be our responsibility to classify the occupancies in the buildings we are certifying. We also note that Intro 1253-A is cutting edge policy. Jurisdictions around the country will replicate this policy. The City should be mindful that the bill will serve as a national model and should not use a fundamentally inappropriate classification system designed for an entirely different purpose, when the goal is to maximize the environmental benefit of the law.

3) Caps versus Percentage Reduction Targets

Issue: The bill proposes carbon intensity caps. While we first acknowledged this as an issue last year as signers of the *Blueprint for Efficiency*, since that time further analysis has been performed and we have concluded that this regulatory approach is disadvantageous to actually accomplishing the bill’s goals.

Under the cap approach, some buildings will never be able to comply with the prescribed emissions cap no matter what efforts they undertake. These buildings will therefore be subject to significant penalties.

Over time, this penalty will accumulate and reduce funds that could otherwise be better spent actually reducing emissions to the extent feasible. Technical problems with this cap approach include that it does not account for factors impacting building performance such as hours of operation, use, number of workers; occupant density. It does not distinguish efficient energy use and wasteful energy use; and it does not consider a building's "starting point".

Recommendation: *Group buildings by energy efficiency into high, medium and low efficiency and prescribe required percentage reductions to each of these groups.* This inherently adjusts for the density (number of people living or working in the building), type of space use, operation and other factors described above. If calibrated appropriately, this percentage reduction approach will result in the same emissions reduction as the cap approach, or 40% reduction by 2030 while minimizing building penalties, achieving the bill's goal in a technically sound and cost-effective manner. Note that under either approach, using the appropriate building classification system and having an appropriate Reference Standard remains critical.

4) Size and Technical Expertise of the Advisory Board

Issue: The amended bill halves the size of the Advisory Board and removes technical support available to it.

Recommendation: Increase the board's size, technical expertise and perspective to include (representing the relevant associations):

- licensed professional consulting engineers;
- construction managers with specific multifamily and commercial retrofit experience;
- carbon emissions trading experts; and
- building energy statisticians.

We urge you to further develop the bill to address our concerns.

ACEC New York is committed to providing what we believe is the best professional judgment of the licensed professionals who volunteer their time to thoroughly analyze proposals affecting their work, such as this. We continue to offer to make these professionals available to you as you work through these important issues. If you have questions or would like to discuss these comments with representatives of our Energy Code Committee, please let us know.

Attachments: Appendix A – Example of Reference Standard Contents
 Appendix B – Local Law 84
 December 2018 Testimony

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Appendix A

Example of Reference Standard contents

Design Team Responsibilities:

- All space occupancy schedules and operational schedules of all systems must be defined for every hour of the year.
- Assumptions for unit power densities for all internal energy consumption loads (e.g. Plug and Lighting) must be defined for every hour of the year.
- All space temperature and humidity set points must be defined for every hour of the year.
- The model weather year for purposed of hourly energy simulation must be explicitly defined in the standard for each location.
- System Types for all building functions and spaces must be defined.
- Assumptions for energy consumption parameters of non-regulated loads must be defined.
- Elevator energy consumption parameters must be defined (e.g. per American Society of Heating and Air-Conditioning Engineers (ASHRAE) User Manuals)
- Assumptions about Domestic Hot Water consumption must be defined.
- Assumptions about any energy consuming misc. equipment must be defined.
- An overall energy modeling safety factor must be defined.
- Energy modeling software must be compliant and certified against applicable ASHRAE Standards.
- Energy modeling personnel must have appropriate professional certifications: Building Energy Modelling Professional (BEMP, by ASHRAE) or other certification or credentials
- A Quality Assurance process must be implemented by the energy modeler which includes identifying and publishing: Preparer of Models, Reviewer of Models, and Approver of Models.
- If required, customized control and equipment performance curves may be required to accommodate specific systems configurations and control sequences. This may require post processing or other analytical tools not available in “off the shelf” software packages.
- Address fact that owner does not have knowledge about some assumptions: guideline could include a number of defined prototypes of buildings that could be chosen from.
- Require peer review for projects above a certain size threshold.

Owner Responsibilities:

- Owner will provide appropriate sub metering and trend logging of energy consuming systems (A portion of these sub meters may be required by Code) and have this data analyzed in order to proactively identify any potential energy performance shortcomings (prior to any regulatory milestones of measured energy performance).
- Owner will perform Commissioning of all energy consuming systems in the project, commensurate with industry best practices.
- Owner will include adequate time in project design schedule to complete energy modeling of the project for all major milestones.
- Milestones for Full Energy Modeling shall include: Schematic Design (SD) Phase, Design Development (DD) phase, Final Design Model at end of CD's. Also, an update of model based on substitutions during bid/award phase and an as-built model at end of Construction Administration (CA).
- Owner will require installing contractors to submit all final sequences of operation for review by design team, upon completion of construction.
- All design information and energy modeling assumptions shall be documented and formally approved by the Owner.
- All energy modeling inputs and assumptions shall be reviewed by the entire design team for review.
- Owner will commission a peer reviews of all energy models, at a minimum at the Development Design (DD) milestone.
- Owner to conduct post occupancy evaluation with participation of design team.

Appendix B

LOCAL LAWS OF THE CITY OF NEW YORK FOR THE YEAR 2009

No. 84

Introduced by Council Members Mark-Viverito, the Speaker (Council Member Quinn), Recchia Jr., Avella, Brewer, Fidler, Gentile, James, Liu, Nelson, Seabrook, Weprin, White Jr., Garodnick, Lappin, Yassky, Sears, Mendez, de Blasio, Katz, Mitchell, Vann, Gioia, Vacca, Vallone Jr., Jackson, Ferreras, Koppell, Comrie, Barron, Arroyo, Crowley, Gennaro, Mealy and Reyna.

A LOCAL LAW To amend the administrative code of the city of New York, in relation to benchmarking the energy and water efficiency of buildings.

Be it enacted by the Council as follows:

Section 1. Chapter 3 of title 28 of the administrative code of the city of New York is amended by adding a new article 309 to read as follows:

ARTICLE 309 BENCHMARKING ENERGY AND WATER USE

§ 28-309.1 General. The energy and water use of city buildings and covered buildings shall be benchmarked in accordance with this article.

§ 28-309.2 Definitions. As used in this article, the following terms shall have the following meanings:

BENCHMARK. To input and submit to the benchmarking tool the total use of energy and water for a building for the previous calendar year and other descriptive information for such building as required by the benchmarking tool.

BENCHMARKING TOOL. The internet-based database system developed by the United States environmental protection agency, and any complementary interface designated by the office of long-term planning and sustainability, to track and assess the energy and water use of certain buildings relative to similar buildings.

§ 28-309.4 Benchmarking required for covered buildings.

The owner of a covered building shall annually benchmark such covered building no later than May 1, 2011, and no later than every May first thereafter. Benchmarking of water use shall not be required unless the building was equipped with automatic meter reading equipment by the department of environmental protection for the entirety of the previous calendar year. The owner or the owner's representative performing the benchmarking shall consult with the operating staff of the building, as appropriate.



American Council of Engineering Companies of New York

Testimony on Intro. 1253
Submitted to the City Council Committee on Environmental Protection
December 4, 2018

Good morning Chair Constantinides and Committee members. My name is Josephine Zurica, PE, LEED AP. I am Principal at Dagher Engineering and Vice Chair of the American Council of Engineering Companies of New York's (ACEC New York) Energy Codes Committee on whose behalf I am appearing today. Thank you for this opportunity to testify.

ACEC New York represents close to 300 consulting engineering and affiliate firms throughout New York State, with a concentrated presence in New York City. Our members plan and design the structural, mechanical, electrical, plumbing, civil, environmental, fire protection and technology systems for the City's buildings and infrastructure.

This year, our Association adopted "Principles for Reviewing New York City energy legislation." These Principles state; *"New York City should strive to be a leader in sustainability, green building, energy efficiency and carbon emissions reduction. In doing so, the City must take into account scientific principles, operational uncertainties within buildings, and must have reasonable expectations regarding future advances in technology."*

Bearing this in mind, ACEC New York supports the goal of Intro. 1253 but opposes the bill in its current form. We have identified the following issues with the bill as drafted and offer the recommendations below:

Timing: The 2022 and 2023 enforcement periods are too soon. The engineering community in New York will be adversely impacted as there will not be time to organize, develop methodologies and best practices, address insurability issues as well as design, construct and commission what in many cases will be major alterations to buildings needed to achieve success for our clients in satisfying these carbon reductions requirements. **Recommendation 1:** Enforcement should begin in 2024, allowing enough time to prepare. **Recommendation 2:** Require the Working Group, as established in the bill, to publish a Reference Standard for building designers to:

- Make the stakeholders' responsibilities clear.
- Establish an accepted standard of care for building design.
- Maintain insurability.
- Avoid lawsuits between stakeholders.

Structure of Carbon Reduction Regulations: The building classification system as currently proposed in the bill (pages 8 and 9) is completely inappropriate for regulating carbon emissions. A hospital has no relationship to a big box retail store when it comes to energy use, any more than a 24 hour financial trading operation has in relation to the millions of square feet of general office tenants in our Class B buildings, yet the bill, as currently written would treat all these building occupancies according to the same limits. With this system, some owners will never be able to meet the requirements no matter what efforts they undertake, and some will do so without even trying. As a result, there will be little

incentive to attempt to reduce carbon emissions and we will not make progress toward our shared goal. Furthermore, the fact that no benchmarking data yet exists for buildings between 25,000 and 50,000 square feet is problematic. In many cases these buildings may bear little similarities to their larger neighbors for which there is collected data. As a consequence, the initial building emissions intensity limits established for buildings 25,000 to 50,000 square feet will be entirely conjectural.

Recommendation 1: Intro 1253 should instead use the building classification system that is already in place (for several years now) for energy benchmarking (Local Law 84). The proposed building emissions intensity limits in the bill can easily be adapted to this system. In addition, the initial carbon dioxide equivalent metrics should be identified in Intro 1253 for the 2022 and 2023 compliance years and should be specific to New York City. **Recommendation 2:** In the initial enforcement period, 2022-2023, the city should issue notices of either compliance or non-compliance to building owners, stating what the penalty will be for non-compliance in the future (i.e., not collecting penalties in this initial period). It is important to appreciate for every dollar an owner spends on a penalty that is one less dollar they have to spend on carbon reduction. This period will enable the city to determine whether the initial building emissions limits are reasonable for building types that have been benchmarked, and to obtain data for buildings for which there is no benchmarking data. This information can be used by the Working Group to revise building emissions limits that will achieve the greatest reduction overall for the entire city building stock, while insuring that limits are equitably levied across each segment of the building stock.

Affordable Housing Exclusion: While we fully support the need to maintain affordable housing for New Yorkers, the blanket exclusion of ALL affordable housing, which we understand would include entire buildings where only a portion of the units are affordable, takes too much of New York's carbon emissions off the table. **Recommendation:** In order to reach 80x50, revisit removing such a large percentage of the building stock in this effort.

Thank you for this opportunity to provide testimony. If you have questions or would like to meet to discuss these comments with representatives of our Energy Codes Committee, please let us know.