



**Testimony of Urban Green Council before  
New York City Council Committee on Environmental Protection  
Re: Int. No. 2317**

November 17, 2021

Dear Chair Gennaro and Committee members:

My name is Chris Halfnight and I am Director of Policy at Urban Green Council, an environmental nonprofit working to reduce the carbon footprint of New York City buildings.

Urban Green supports an ambitious, equitable and affordable transition for New York City buildings from fossil fuels to clean electricity. Our perspective is informed by four key facts from our data-based research:

1. Boilers, furnaces and hot water heaters emit more carbon in New York City than all uses of electricity, accounting for 40 percent of citywide emissions. Electrifying these systems is NYC's primary climate challenge.
2. Heat pumps are so efficient that they save carbon today, even with New York City's dirty electricity grid. There is no carbon-based reason to wait.
3. Building electrification primarily adds winter electricity demand. The grid is built to serve a summer peak that is 40 percent higher than winter, which means the grid is ready for building electrification to start now and we have a long planning horizon for future load growth.
4. The additional upfront cost to build all-electric in New York City is small, with the latest data for multifamily buildings showing about 2 percent higher cost after incentives and credits.

At the same time, we recognize that electrification of existing buildings is far more challenging than new construction, that operational costs must be addressed, and that New York City industry has limited experience designing and building all-electric multifamily buildings. To succeed, an electrification mandate must navigate these challenges and drive not just all-

electric construction but efficient, all-electric construction to make buildings more comfortable, healthier and affordable, particularly for low-income New Yorkers.

With these points in mind, Urban Green supports Int. No. 2317 and recommends several important changes:

***I. Phase in requirements by building height to allow more time for taller buildings and market ramp-up.***

We recommend applying requirements in two phases: first, any building with seven or fewer stories permitted two years from the law's effective date; second, any building with eight or more stories permitted five years from the law's effective date.

This phased approach recognizes that all-electric new construction in lower-rise buildings is easier and can happen sooner, with design and technology ready for this transition. But it also allows more time for designers, builders and trades professionals to adapt to the greater technical challenges in taller buildings and for manufacturers to bring more products to market.

Above seven stories, system design becomes more complex in part because of limitations in refrigerant line length and less roof and basement space compared to the size of the building. Domestic hot water systems present the biggest challenge, with limited equipment options on the market today and minimal industry experience designing and installing efficient, all-electric hot water systems that meet health and comfort needs in NYC's large residential buildings. In the multifamily sector, this is new territory and an ambitious but reasonable phase-in will yield a better result.

Urban Green and others have used seven stories as a building typology division to assess statewide building electrification pathways. It's also a division used for both commercial and residential buildings in the [One City Built to Last Technical Working Group Report](#). And the NYC Department of Housing and Preservation uses the same seven story division in its [electrification retrofit program](#) in collaboration with NYSERDA. While a three-story height division that aligns with the energy code is also a viable possibility, that division would delay all-electric construction for a substantial number of buildings and 20 percent or more of annual new building area that could feasibly be built all-electric in the near term.

Lastly, this phased approach allows time for planned updates to the energy code, which will help ensure new, all-electric construction is highly efficient and has lower utility costs that benefit the residents and businesses that will eventually occupy all-electric buildings.

Based on historical data, the first phase of this approach affecting buildings up to seven stories would cover over 90 percent of new buildings and over 40 percent of new floor area.

## **II. Clearly define a high threshold for major renovations to be covered.**

Electrification is much more challenging for existing buildings. If included, we recommend only covering very major renovations that present electrification opportunities similar to new construction, such as by reference to a clearly defined and high threshold like the Building Code defined term “Substantial Improvement.”<sup>1</sup> Additional triggers may be appropriate and permitted work should be aggregated over a time period (e.g. 12 months) to avoid the possibility of projects being subdivided to circumvent a cost threshold. We also recommend addressing any significant hardships unique to renovations, such as the inability to increase capacity for incoming electrical service, through exceptions or waivers.

If major renovations are not included, we urge consideration of how City government can lead by example with an electrification requirement for major renovations of City-owned property. This approach would strengthen the existing green building laws for City capital projects and help shed light on options and costs for design, equipment and labor for heat pump retrofits.

## **III. Lower the permitted CO<sub>2</sub> emissions limit.**

The proposed CO<sub>2</sub> emissions limit is only marginally lower than emissions from natural gas combustion, which means a small amount of lower-CO<sub>2</sub> fuel, such as hydrogen, blended with natural gas could enable installation of new or replacement fossil fuel equipment in buildings.

We recommend lowering the limit to a significantly lower threshold, such as 25 kg CO<sub>2</sub> per MMBtu, to ensure fuel blending does not enable new or replacement fossil fuel equipment.

## **IV. Add “electrification-ready” requirements for all new construction and major renovations in the interim.**

Every new building with fossil fuel equipment is adding to the future retrofit challenge, as these buildings will be harder and more costly to retrofit to all-electric down the line.

We recommend requiring modest “electrification-ready” measures for all new construction and major renovations until these emissions limits kick in, so that future retrofits are less costly and easier. Potential measures include electrical distribution sizing, space for future electrical service upgrades, access requirements for mechanical spaces, roof layouts to consolidate equipment and structural support for future equipment.

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<sup>1</sup>*Substantial Improvement means: “Any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started.” (§ 28-7 G201.2)*

**V. Add detail to keep exceptions limited and justified.**

Exceptions to the emissions limits may be necessary for certain building types, space uses or circumstances, but the current phrasing is overbroad and risks exempting too many buildings.

We recommend requiring Department of Buildings rulemaking to:

- Define a waiver process for circumstances where sufficient utility electricity service is not possible within a reasonable timeframe because of utility infrastructure limitations.
- Define “undue hardship” with clear criteria so it is available only when truly necessary.
- Provide criteria for when and to what degree combustion is deemed “required” for emergency standby power, for manufacturing, or for the operation of a laboratory, laundromat, hospital or commercial kitchen.
- Define “intermittent basis” or provide additional detail on what uses are permissible, specifically clarifying that fuel oil boilers are not included.

With these changes, we believe Int. No. 2317 will drive efficient, all-electric new construction, while allowing sufficient time to address the technological, design, workforce and affordability considerations of this major transition.

Thank you for the opportunity to comment today. I am available to answer any questions.

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**Appendix**  
**Summary Table of Issues and Recommendations**

	<b>Issue</b>	<b>Recommendation</b>
1.	<p>NYC industry has limited experience designing and building all-electric buildings, in particular taller multifamily buildings. The <a href="#">most recent data</a> show costs are coming down, equipment availability is improving and leading designers are adapting, with an average cost premium of about 2 percent for all-electric multifamily buildings after incentives and credits. But additional time is necessary to ensure a feasible transition for larger, more-complex projects and for the market to adapt with increased heat pump equipment availability and industry training.</p>	<p><b>Phase in requirements by building height to allow more time for taller buildings and market ramp-up.</b></p> <p>Phase in requirements based on building height and aligned with construction code permitting, so that the emissions limits affect:</p> <ol style="list-style-type: none"> <li>a) low- and mid-rise buildings with seven or fewer stories permitted two years from effective date, and</li> <li>b) buildings with eight or more stories permitted five years from effective date.</li> </ol> <p>This phased approach will:</p> <ul style="list-style-type: none"> <li>• Recognize that all-electric construction in lower-rise buildings is easier and can happen sooner;</li> <li>• Allow more time for designers, builders and trades professionals to adapt to technical challenges in buildings over seven stories. Above seven stories, system design becomes more complex in part because of limitations in refrigerant line length and less roof and basement space compared to the size of the building. Domestic hot water systems present the biggest challenge, with limited equipment options on the market today and minimal industry experience designing and installing efficient, all-electric hot water systems that meet health and comfort needs in NYC’s large residential buildings;</li> <li>• Align with a seven-story building typology division used in statewide building electrification assessment, in the <a href="#">One City Built to Last Technical Working Group Report</a>, and the NYC Department of Housing and Preservation’s <a href="#">electrification retrofit program</a> in collaboration with NYSERDA;<sup>2</sup></li> <li>• Allow time for manufacturers to bring more products to market; and</li> <li>• Allow time for planned updates to the energy code, which will help ensure new, all-electric construction is highly efficient.</li> </ul> <p>Based on historical data, the first phase of this approach affecting buildings up to seven stories would cover over 90 percent of new buildings and over 40 percent of new floor area.</p>
2.	<p>The bill is intended to affect new construction and major renovations, but that intent is not explicit in the legislation. The standard for a “major renovation” is neither defined nor clearly structured as a threshold criterion for emissions limits to apply. Electrifying the heating systems of most</p>	<p><b>Clearly define a high threshold for major renovations to be covered.</b></p> <p>If existing buildings are included, we recommend only covering very major renovations that present electrification opportunities similar to new construction, such as by reference to a clearly defined and high threshold like the Building Code defined term “Substantial</p>

<sup>2</sup> A three-story height division that aligns with the energy code is also a viable possibility, but that would delay all-electric construction for many buildings and 20 percent or more of annual new building area.

	<p>existing buildings is far more challenging than in new construction or gut renovations.</p>	<p>Improvement.”<sup>3</sup> Additional triggers may be appropriate and permitted work should be aggregated over a time period (e.g. 12 months) to avoid the possibility of projects being subdivided to circumvent a cost threshold. We also recommend addressing any significant hardships unique to renovations, such as the inability to increase capacity for incoming electrical service, through exceptions or waivers.</p> <p>If major renovations are not included, we urge consideration of how the city can lead by example with an electrification requirement for major renovations of City-owned property. This approach would strengthen the existing green building laws for City capital projects and help shed light on options and costs for design, equipment and labor for heat pump retrofits.</p>
3.	<p>The proposed CO<sub>2</sub> emissions limit is only marginally lower than emissions from natural gas combustion, which means a small amount of lower-CO<sub>2</sub> fuel (e.g. hydrogen) blended with natural gas could enable installation of new or replacement fossil fuel equipment in buildings.</p>	<p><b>Lower the permitted CO<sub>2</sub> emissions limit.</b></p> <p>Lower the limit to a significantly lower threshold, such as 25 kg CO<sub>2</sub> per MMBtu, to ensure fuel blending does not enable new or replacement fossil fuel equipment.</p>
4.	<p>Buildings built or significantly renovated before emissions limits take effect will be harder and more costly to retrofit to all-electric down the line.</p>	<p><b>Add “electrification-ready” requirements for all new construction and major renovations in the near term.</b></p> <p>Require modest “electrification-ready” measures for all new construction and major renovations until emissions limits kick in to make future retrofits cheaper and easier. Potential measures include electrical distribution sizing, space for future electrical service upgrades, access requirements for mechanical spaces, roof layouts to consolidate equipment and structural support for future equipment.</p>
5.	<p>Exceptions to the emissions limits are necessary for certain building types, space uses or circumstances, but the current phrasing is overbroad and risks exempting too many buildings.</p>	<p><b>Add detail to keep exceptions limited and justified.</b></p> <ol style="list-style-type: none"> <li>a) Include a waiver process for circumstances where sufficient utility electricity service is not possible within a reasonable timeframe because of utility infrastructure limitations.</li> <li>b) Define “undue hardship” to ensure it has clear criteria and is available only when truly necessary.</li> <li>c) Provide criteria for when and to what degree combustion is deemed “required” for emergency standby power, for manufacturing, or for the operation of a laboratory, laundromat, hospital or commercial kitchen.</li> <li>d) Define “intermittent basis” or provide additional detail on what uses are permissible (note, for example, that the current phrasing could be read to exempt oil boilers).</li> </ol>

<sup>3</sup>*Substantial Improvement means: “Any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started.” (§ 28-7 G201.2)*