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GLEN OAKS VILLAGE OWNERS, INC., ROBERT FRIEDRICH, 9-11 MAIDEN, LLC, BAY TERRACE COOPERATIVE SECTION I, INC. and WARREN SCHRIEBER,

Plaintiffs-Respondents,

– against –

CITY OF NEW YORK, NEW YORK CITY DEPARTMENT OF BUILDINGS, and ERIC A. ULRICH, in his official capacity as Commissioner of the New York City Department of Buildings,

Defendants-Appellants.

BRIEF FOR *AMICI CURIAE* RICHARD ELLENBOGEN, NADIR MAOUI AND NEW YORKERS FOR AFFORDABLE RELIABLE ENERGY

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CORPORATE DISCLOSURE STATEMENT

Under the Rules of Practice of the New York Court of Appeals, 22 N.Y.C.R.R. § 500.1(f), New Yorkers for Affordable Reliable Energy states that is a not-for-profit 501(c)(4) corporation formed in 2024 that has no parent, subsidiary, or affiliate corporations.

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INTRODUCTION AND SUMMARY OF ARGUMENT

This brief presents information that is at the heart of the irreconcilability of the state's Climate Leadership and Community Protection Act (Climate Act) and New York City's Climate Mobilization Act (Local Law 97). The irreconcilability demonstrates that the state Climate Act preempts the field. But the issue is greatly underappreciated and barely touched upon in the parties' briefing.

The irreconcilability arises from simultaneous mandates in Local Law 97 and the Climate Act. First, Local Law 97 mandates that large residential buildings in New York City convert to electric heat by 2030. Meanwhile, the Climate Act requires 70 percent of the state's electricity come from "renewables," also by 2030.

The latter mandate requires replacing always-available fossil fuel electrical generation capacity with intermittent wind and solar electricity generation. Wind and solar cannot provide continuous electricity supply. Intermittency threatens buildings that have converted to electric heat with losing heat for extended periods in the dead of winter.

The Climate Act, and a "Scoping Plan" developed under it, contain no credible plan to provide the additional reliable electricity needed to heat all large New York City buildings, as Local Law 97 mandates.

AMICI CURIAE

Richard Ellenbogen is a Cornell-educated electrical engineer, the owner of a business in Westchester County, and the owner of a condominium apartment in Manhattan that is subject to the mandate of Local Law 97 to convert to electric heat by 2030. Mr. Ellenbogen is also co-author, along with Roger Caiazza and Francis Menton, of a "Don't Do It! Report,"[1] substantially relied on in this brief, that strongly advises Co-op and Condo Boards subject to the Local Law 97 mandate that they should nevertheless not convert to electric heat due to unacceptable and severe risk of danger to shareholders, particularly from lack of heat in the winter, due to

[1] Richard Ellenbogen, Roger Caiazza and Francis Menton, *Don't Do It! Report to New York Co-op and Condo Boards and Trade Associations On Local Law 97 Conversion To Electric Heat* (July 8, 2024), available at https://pragmaticenvironmentalistofnewyork.blog/wp-content/uploads/2024/07/report-to-trade-assocs-v8-070724.pdf (last accessed January 2, 2025).

irreconcilable conflict between Local Law 97 and the State's Climate Leadership and Community Protection Act (Climate Act).

Nadir Maoui is the Board President of a 150-unit co-op, Sunnyside Towers, located at 46-01 39th Avenue in Sunnyside, Queens. Mr. Maoui also owns a unit in that building. Sunnyside Towers is larger than 25,000 square feet, and therefore subject to the mandate of Local Law 97. It has been advised by consultants that the only feasible way to comply with that mandate is to convert to electric heat by 2030. However, as a Board President, Mr. Maoui has fiduciary duties to his shareholders, which would be violated if he subjects them to serious risk of freezing in the winter due to lack of heat.

New Yorkers for Affordable Reliable Energy (New Yorkers ARE) is a not-for-profit 501(c)(4) corporation formed in 2024 in response to the irreconcilable conflict between the State's Climate Act and the City's Local Law 97. New Yorkers ARE's mission is to educate New York co-op and condo owners and board members as to the danger posed by the inconsistency between the two statutes,

particularly the danger of converting buildings to electric heat (as required under Local Law 97) before there is sufficient reliable electricity available to the grid (under the Climate Act) to support the additional electrical load. The Board members of New Yorkers ARE are current or former unit owners, Board members, and/or Board officers of co-ops in Queens more than 25,000 square feet, and thus subject to the mandate of Local Law 97.

Understanding the interplay of the Climate Act and Local Law 97 calls for a degree of technical savvy that Mr. Ellenbogen (a co-author of the Don't Do It! Report and a party to this amici brief) brings — an engineering perspective that is critical to understanding why the Climate Act preempts Local Law 97.

BACKGROUND

On May 19, 2019, New York City enacted Local Law 97. Among other things, Local Law 97 amended Article 28 of the Administrative Code of New York City to set limits on "greenhouse gas" (GHG) emissions from residential buildings of 25,000 square feet or greater.

> Building emissions limits for calendar years 2030 through 2034. For calendar years 2030 through 2034 the annual building emissions limits for covered buildings shall be calculated pursuant to items 1 through 10 of this section. . . .
>
> * * *
>
> For spaces classified as occupancy groups R-2: multiply the building emissions intensity limit of 0.00407 tCO2e/sf by the corresponding gross floor area (sf).

Administrative Code of City of NY § 280-320.3.2(9). "Occupancy groups R-2" refers to multi-unit residential buildings. The unit designation of "tCO2e/sf" means tons of carbon dioxide equivalent per square foot.

This provision's draconian significance is not immediately apparent to most readers. But since Local Law 97 was passed co-op and condo boards and residents have learned from their managing agents and consultants as follows: there is no possible fossil fuel-based heat system for their buildings that can comply with the 2030 emissions limit.

No modification, upgrade, or even full replacement of current systems with even the very most modern and efficient fuel oil or natural gas-based system will get buildings under the limit.

Converting to electric heat is the only option for compliance. Heat from electricity counts as "zero emissions" and complies — even though about half the electricity supplied currently to New York City comes from burning fossil fuels.

Just two months after New York City enacted Local Law 97 the Legislature enacted the Climate Act. The Climate Act brought forth a comprehensive scheme to transform the State's entire energy system to "net zero" carbon emissions by 2050. To move toward the 2050 goal, the Climate Act sets interim mandates for transforming the state's electricity generation system.

Most relevant here is a provision of the Climate Act that added § 66-p(2) to the Public Service Law:

> [T]he [Public Service C]ommission shall establish a program to require that: (a) a minimum of seventy percent of the state wide electric generation secured by jurisdictional load serving entities to meet the electrical energy requirements of all end-use customers in New York state in two thousand thirty shall be generated by renewable energy systems. . . .

Public Service Law § 66-p(2).

This provision is known as the "70 by 30" or "70x30" mandate. PSL § 66-p(2) also contains a further mandate that the state's entire electricity generation system be "zero emissions" by 2040 (known as the 100x40 mandate). However, this brief focuses on the more immediate 2030 mandate.

The federal Energy Information Administration (EIA) issues an annual energy Profile Analysis for each state. The most recent such profile analysis for New York provides full-year data for calendar year 2022.[2] According to the EIA, the state's 2022 electricity generation broke down as follows (rounded): 47 percent from natural gas; 21 percent from hydropower (mostly from Niagara Falls); 21 percent from nuclear; 4 percent from solar; 4 percent from wind; 1 percent from oil; and 2 percent from biomass and other. That breakdown has barely moved since.

Of the listed sources, natural gas, nuclear and oil, adding up to 69 percent of the current total, do not count as "renewable."

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[2]U.S. Energy Information Administration, *New York State Profile and Energy Estimates* (December 31, 2023), available at https://www.eia.gov/state/analysis.php?sid=NY (last accessed January 2, 2025).

Hydropower at 21 percent does count as "renewable," but the state does not have another Niagara Falls, so hydropower cannot grow meaningfully. The other renewables – solar, wind, and biomass –, stand currently at only about 10 percent of generation after three decades of promotion and subsidization.

Generation from renewable sources must grow to almost 50 percent within the next five years to meet the 70x30 mandate. Meanwhile, nobody, in this state or anywhere else, has come up with any solution for prolonged wind and sun "droughts" that make wind and sun impracticable as the main sources of electricity to a grid.

By 2030 a large portion of the state's reliable natural gas generation must be shut down and replaced under the Climate Act. Intermittent wind and solar are the only renewable generation sources available currently to replace that generation. But 2030 is also when thousands of large New York City buildings will be relying on their electric heat under Local Law 97. Local Law 97 thus

requires adding massive new loads to a grid the Climate Act's mandates are driving toward collapse.

The Climate Act does not solve the problem of wind and solar generation being intermittent. When the wind is calm and the sun dark, no electricity gets generated. A grid that relies on the wind and sun for 50 percent of its electricity would be forced to shut down on a calm night.

New Yorkers will be threatened with regular and lengthy blackouts if the Climate Act is implemented as designed and as scheduled. Today, blackouts may mean no light, no refrigeration, no air conditioning, no computers, no internet, or no elevators. None of those are as life-threatening as having no heat in electrified buildings in the dead of winter.

ARGUMENT

The Climate Act's mandate to transform the state's electricity generation and Local Law 97's effective mandate for electric heat for all large New York City residential buildings cannot be reconciled. Local Law 97 will increase New York City's electricity

demand, particularly in the coldest and darkest times of the year. Meanwhile, the Climate Act will require many natural gas generators that supply electricity to end users in New York City to go offline by 2030.

The state's electricity grid must be radically transformed in the next five years. The changes to the state's electricity supply system mandated by the Climate Act's mandates show that the Legislature intended to preempt this field. *Consol. Edison Co. v Town of Red Hook*, 60 NY2d 99, 105 (1983)("A desire to pre-empt may be implied . . . from the fact that the Legislature has enacted a comprehensive and detailed regulatory scheme in a particular area.").

The Legislature stated in the Climate Act its intent to build upon "past [statewide and regional] developments by creating a comprehensive regulatory program to reduce greenhouse gas emissions." L. 2019, ch. 106, § 1. The Legislature's renewables mandate tasks the Public Service Commission with ensuring end-use customers statewide are supplied with electricity from renewable generation sources. L. 2019, ch. 106, § 4.

Thus, the state, through its comprehensive regulatory scheme must be able to coordinate and design plans for electricity supply and demand to be balanced. Local Law 97 interferes with such planning by increasing future electricity demand in New York City without a plan for supplying that electricity from renewable sources.

POINT 1. Local Law 97 and the Climate Act are inconsistent and irreconcilable and show the Climate Act preempts.

The Climate Act mandates that 70 percent of New York's electricity must come from renewables by 2030. But the Climate Act does not provide any mechanism by which the electricity generated by renewables can be provided on a dispatchable or continuous basis. Nor does it solve the intermittency of wind and solar generation.

An electrical grid must have electricity supply and demand be balanced moment-to-moment to function continuously without blackouts. The current grid has dispatchable generating plants, powered by fossil fuels and hydro power, that can be ramped up

and down to meet demand. Wind and solar generators, on their own, are not dispatchable.

Closing the natural gas plants, while replacing their generation with wind and solar facilities, therefore leaves a "gap" in needed generation when wind and solar production is low, such as on a calm night.

The Climate Act created a body called the Climate Action Council (Climate Council) and charged it with developing a Scoping Plan to specify how the state can meet the Climate Act's goals and mandates, including the 70x30 mandate. The Climate Council issued the final Scoping Plan in December 2022.[3] Despite its length — some 300 pages long plus another 400 pages of appendices — the Scoping Plan does not solve the problem of intermittency or the "gap."

Thus, the state has no plan for how electricity will be supplied to New Yorkers in 2030 and beyond without lengthy blackouts.

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[3] New York State Climate Act, *New York's Scoping Plan* (December 2022), available at https://climate.ny.gov/resources/scoping-plan/ (last accessed January 2, 2025).

Meanwhile, Local Law 97 mandates that owners of buildings over 25,000 square feet must give up their heat from natural gas or oil — which can work during blackouts — and convert to electric heating.

The Legislature preempted the field with a flawed plan that places New Yorkers on course for regular blackouts by 2030. Local Law 97 compounds the problem by placing New York City on course for higher electricity demand that adds risk for the grid. The Climate Act by its nature requires that any program that increases future electricity be controlled by the same regulators responsible for ensuring 70 percent of the supply in 2030 comes from renewables.

A. The state agencies themselves recognize a "gap" and the need for "dispatchable emissions-free resources" or "DEFR," to make the grid function reliably under the Climate Act mandates.

Intermittent renewable wind and solar generation requires backup resources that can be ramped up and down quickly to keep the grid running continuously. The mandate in the Climate Act to eliminate emissions from fossil fuels means that the missing

backup source must have zero emissions. This hypothetical resource is known as a "Dispatchable Emissions-Free Resource" or "DEFR." Regulators also use the term "zero-carbon firm resource."

No workable DEFR currently exists or has been deployed at scale. There is little to no likelihood of a sufficient DEFR coming into existence at the necessary scale, or anything close to it, by 2030. However, responsible New York state parties involved in transforming the grid recognize need for the DEFR to make electricity supply reliable post-2030.

1. The Scoping Plan itself shows the need for DEFR.

Given the significant need for DEFR for the Climate Act's mandates to work, a plan for DEFR should be a principal issue in the Scoping Plan. It is not. Instead, deeply, deeply buried in the appendices, the Climate Council recognizes the issue:

> *During a week with persistently low solar and wind generation*, additional firm zero-carbon resources, beyond the contributions of existing nuclear, imports, and hydro, are needed to avoid a significant shortfall; Figure 34 demonstrates the system needs during this type of week. During the first day of this week, most of the short-duration battery storage is quickly depleted, and

> *there are still several days in which wind and solar are not sufficient to meet demand. A zero-carbon firm resource becomes essential to maintaining system reliability during such instances.*[4]

In that Appendix, only one week of "persistently low solar and wind generation" is modeled. It is entirely possible for such conditions to persist for a month or more, or to recur several times over the course of a few months.

2. The New York Independent System Operator (NYISO) has recognized and provided substantial detail as to the need for and characteristics of DEFR.

In May 2023, the Public Service Commission initiated a process to "identify technologies that can close the anticipated gap between the capabilities of existing renewable energy technologies and future system reliability needs."[5] This resulted in the PSC holding a technical conference on December 11 and 12, 2023. The

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[4] New York State Climate Act, *Appendix G: Integration Analysis Technical Supplement New York State Climate Action Climate Council Scoping Plan* at 49 (December 2022), available at https://climate.ny.gov/resources/scoping-plan/-/media/project/climate/files/Appendix-G.pdf (last accessed January 2, 2025).

[5] New York State Public Service Commission, *PSC Announces Initiative to Leverage New Clean Energy Technologies for a Zero-Emissions Electric Grid* (May 18, 2023), available at https://dps.ny.gov/system/files/documents/2023/05/pr23052.pdf (last accessed January 2, 2025).

technical conference included a session titled "Gap Characterization."[6]

At the Gap Characterization panel, Zachary Smith, VP System Resource Planning for NYISO, gave an overview presentation of the characteristics of DEFR needed to maintain system reliability in a future grid with fewer or no fossil fuel power plants. [7] In his presentation Mr. Smith acknowledged that the hypothetical DEFR must be able to "to follow instructions to increase or decrease output on a minute-to-minute basis." There must be "flexibility to be dispatched through a wide operating range with a low minimum output." And the hypothetical DEFR must be "fast ramping to inject or reduce the energy based on changes to net load which may be driven by changes to load or intermittent generation output."[8]

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[6] New York State Department of Public Service, *Zero by 2040 Technical Conference Day 1, Part 1* (December 11, 2023), available at https://youtu.be/H8cDf0bRetQ?t=1152 (last accessed January 2, 2025).
[7] Zach Smith, New York State Department of Public Service: Zero by 2040 Technical Conference, *Dispatchable Emission-Free Resources (DEFRs)* at 5 (December 11, 2023), available at https://dps.ny.gov/system/files/documents/2023/12/zero-by-2040-tech-conference-presentations-day-1.pdf#page=5 (last accessed January 2, 2025).
[8] *Id*. at 9, available at https://dps.ny.gov/system/files/documents/2023/12/zero-by-2040-tech-conference-presentations-day-1.pdf#page=9 (last accessed January 2, 2025).

3. Professor Lindsay Anderson of Cornell University reached similar conclusions at the PSC-sponsored conference.

At the Gap Characterization session, Prof. C. Lindsay Anderson, Chair of Department of Biological and Environmental Engineering at Cornell University, described an analysis[9] by her group that projected expected loads and generation from wind, solar, and energy storage resources using 22 years of hourly historical data to model the New York grid.

Professor Anderson's group assessed system vulnerabilities to evaluate periods where there would be insufficient generation to meet projected loads. That assessment found that as dispatchable fossil fuel generation is replaced with intermittent wind and solar, there will be regular times, particularly during the coldest and hottest periods, when generation from wind, solar, and energy storage resources will be insufficient.

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[9] New York State Department of Public Service, *Zero by 2040 Technical Conference Day 1, Part 1: Gap Characterization* (December 11, 2023), available at https://youtu.be/H8cDf0bRetQ?t=1653 (last accessed January 2, 2025).

B. No sufficient DEFR exists or can be deployed at scale in time to meet the simultaneous 2030 mandates of the Climate Act and Local Law 97.

Only a handful of ideas exist for a potential DEFR that can be deployed in sufficient quantities by 2030 to enable compliance with both the Climate Act and Local Law 97. The three leading candidates for the DEFR — and worth even discussing — are nuclear, green hydrogen, and batteries. But none of those comes close to being a realistic possibility for making sufficient electricity under a Climate Act-compliant grid to support the higher demands caused by Local Law 97.

1. Nuclear generation cannot be deployed in the relevant time frame and is also blocked by New York's regulatory environment.

Nuclear is the only proven zero-emissions technology that can be expanded sufficiently to fulfill the energy requirements of the Climate Act mandates. However, in New York nuclear energy for decades has been completely stifled by regulatory obstacles and by resistance from the public.

Rather than expanding nuclear after 2019 to comply with the Climate Act, in 2020 and 2021 New York closed two large nuclear facilities at Indian Point, about 40 miles north of New York City. Indian Point had long-standing opposition by residents who did not like having nuclear reactors near their homes.

A nuclear facility on Long Island (Shoreham) was completed in the 1980s, but never operated commercially. It has since had its reactor dismantled. The plant was blocked from operating for decades based on the difficulties of emergency evacuations. Against the history of popular and regulatory opposition, it is highly unlikely that developing new nuclear resources is a viable option for meeting New York City's electricity demands.

Moreover, building new nuclear facilities takes far too long to meet the 2030 deadlines of the Climate Act and Local Law 97. No nuclear plants are under construction in New York, nor are any in a financing or permitting or siting stage, nor are any even in the planning stage.

The only nuclear power plants to enter service in recent years in the U.S. — two new units at the Vogtle plant in Georgia — took 17 years from regulatory approval of plans in 2006 to commercial operation in 2023. Even if a crash program started today, nuclear energy cannot feasibly make any significant contribution to a New York low-emissions grid before 2040, let alone 2030. Further, the DEFR capacity required under the Climate Act is equivalent to at least ten new nuclear-powered generators.

2. Green hydrogen is technically and economically infeasible as the DEFR and cannot possibly be built at scale in any relevant time frame.

A second possible technology that has been suggested for the DEFR is so-called "green" hydrogen. "Green" hydrogen in climate parlance is hydrogen that has been produced by electrolysis of water using electricity generated by emissions-free resources.

Among those who have suggested green hydrogen as the potential DEFR are the Climate Council itself. "Hydrogen effectively provides a form of storage to the system on the order of hundreds of hours. Large quantities of fuel can be produced during the

spring and summer and then utilized over the course of the winter provided that there is sufficient fuel storage."[10]

The Climate Council hypothesizes that green hydrogen could potentially work as the DEFR. Yet it fails to mention any of the issues that make that impractical to impossible. Today, the amount of hydrogen produced in the entire world by electrolysis using electricity from wind and solar generators is negligible. For hydrogen to function as New York's DEFR, there would need to be billions of cubic feet produced every day. Today, New York has no facilities that produce "green" hydrogen.

There are endless reasons why this "green" hydrogen cannot be the DEFR, at least not at scale in any relevant time frame. For starters, it is wildly too expensive to produce. Recent price information shows that the price of "green" hydrogen is in the range of 12 to 32 times more expensive than the price of natural gas for the same energy content. The current price of natural gas — the fuel most used in New York's dispatchable power plants and for

[10] Scoping Plan, Appendix G at 49.

residential heating — is approximately $3 per MMBTU (the units in which natural gas prices are customarily quoted).

According to information from the EIA, the price of natural gas has never been above $10/MMBTU since 2009, and never above $13/MMBTU going all the way back to 1998. For most of that period, the price of natural gas has been well below $5/MMBTU.[11] By contrast, the recent price of "green" hydrogen, according to BloombergNEF, is $4.50 – 12 per kilogram, which translates to $36-96/MMBTU.[12] That range is approximately 12 to 32 times the current price of natural gas.

There is no realistic prospect of large reductions in the price of green hydrogen. Its cost is driven by the cost of the electricity to run the electrolysis process, and by the efficiency of the electrolysis process itself.

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[11] U.S. Energy Information Administration, *Natural Gas: Data: Henry Hub Natural Gas Spot Price* (December 2024), available at https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm (last accessed January 2, 2025).

[12] Kamala Schelling, BloombergNEF, *Green Hydrogen to Undercut Gray Sibling by End of Decade* (August 9, 2023), available at https://about.bnef.com/blog/green-hydrogen-to-undercut-gray-sibling-by-end-of-decade/ (last accessed January 2, 2025).

Because of the enormous difference between the cost of natural gas and the cost of "green" hydrogen, no one will produce or buy large amounts of green hydrogen without receiving massive government subsidies.

Even with the hundreds of billions of dollars of subsidies for renewable energy that our federal government and other governments have offered up, the green hydrogen project cannot get off the ground. The second half of 2024 has seen the postponement or cancellation of one after another major international green hydrogen project, due to the completely unworkable economics.

In July, Australian mining and energy giant Fortescue announced that it was "scaling back" its green hydrogen plans, and laying off 700 employees, blaming "high energy prices."[13] On October 3, another Australian energy giant, Origin, pulled out of plans

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[13] David Carroll, pv magazine Australia, *PM Says Clean Energy Ambitions On Track Despite Fortescue Green Hydrogen Pivot* (July 19, 2024), available at https://www.pv-magazine-australia.com/2024/07/19/pm-says-clean-energy-ambitions-on-track-despite-fortescue-green-hydrogen-pivot/ (last accessed January 2, 2025).

to build the country's biggest green hydrogen plant in New South Wales.[14]

On October 24, Fortescue announced that it had withdrawn a proposal for a major green hydrogen facility in British Columbia, Canada.[15] On November 18, Fortescue further announced that it was pulling out of a major green hydrogen project at Gibson Island, Queensland, Australia.[16]

Here at home, Air Products has announced plans for a small green hydrogen project near Massena.[17] But Plug Power's construction of a green hydrogen production facility in Western New

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[14] Daniel Mercer, ABC News, *Hopes for Green Hydrogen Fading as Energy Giant Origin Walks Away from Flagship Project* (October 3, 2024), available at https://www.abc.net.au/news/2024-10-03/energy-giant-origin-walks-away-from-green-hydrogen/104429206 (last accessed January 2, 2025).

[15] Sergio Matalucci, pv magazine Australia, *Fortescue Canada Puts H2 Project on Hold* (October 24, 2024), available at https://www.pv-magazine-australia.com/2024/10/24/fortescue-canada-puts-h2-project-on-hold/ (last accessed January 2, 2025).

[16] David Carroll, pv magazine Australia, *Sale Plans Put End to Fortescue Green Hydrogen Project* (November 18, 2024), available at https://www.pv-magazine-australia.com/2024/11/18/sale-plans-put-end-to-fortescue-green-hydrogen-project/ (last accessed January 2, 2025).

[17] Air Products, *New York Green Hydrogen Facility*, available at https://www.airproducts.com/energy-transition/new-york-green-hydrogen-facility (last accessed January 2, 2025).

York appears to be on hold and faced opposition from environmental justice advocates opposing the project.[18]

And the cost of producing green hydrogen is only the beginning of the costs and technological difficulties of using this fuel. It's not just that green hydrogen is 12 to 30 or more times more expensive than natural gas to produce; it is also inferior to natural gas in every way as a fuel, and far more costly and dangerous to use.

There are extensive infrastructure challenges. A new fleet of power plants to burn the hydrogen or fuel cells with capacity as large or larger than our current fleet of natural gas plants is needed. There would also be a need for vast caverns to store the hydrogen or tank farm storage using a process that consumes energy coupled with a whole new system of pipelines to transport the hydrogen from where it is produced to where it is used.

Many technical issues would need to be solved to distribute the hydrogen because it is expensive to compress, and even more

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[18] Howard Owens, The Batavian, *News Surfaces that Suggests Plug Power Pulling Out of WNY STAMP* (October 18, 2024), available at https://www.the-batavian.com/howard-owens/news-surfaces-that-suggests-plug-power-pulling-out-of-wny-stamp/641208 (last accessed January 2, 2025).

expensive to liquefy. It is highly explosive (much more so than natural gas) And it is very difficult to contain without leaks.

If hydrogen is the DEFR, generation will be needed in specific locations within New York City and considerations of danger and explosiveness affect its viability there. These issues, among others, all explain why no one has yet built any utility-scale hydrogen facilities.

3. Batteries are totally infeasible as the DEFR due to high cost and insufficient storage capability.

The last remaining idea for a potential DEFR is grid-scale batteries. As with green hydrogen, the Scoping Plan makes passing reference to batteries as a part of an energy storage system that might hypothetically be used to transform wind and solar generation into a functioning electrical grid without fossil fuels.

"In addition to hydrogen-based resources, the analysis also examined the potential to meet reliability needs with a long-duration battery storage solution."[19] However, the Scoping Plan does

[19] Scoping Plan, Appendix G at 49.

not do the hard work of quantifying the amounts and technical capabilities of battery storage needed to make a fossil fuel-free, predominantly wind and solar grid work consistently.

Competent calculations of the amount of energy storage needed to provide full and reliable back up to intermittent generation for worst case wind and sun droughts run in the range of 500 to 1000 hours of average usage. NYSERDA itself recently projected that New York would need at least 1000 hours of energy storage to support the system, which is fully consistent with these other calculations.

This means that in the real world, for batteries to function as the DEFR, New York would need not the 24 GWh of battery storage that Governor Hochul is proposing, but rather at least between 9000 and 18,000 GWh of battery storage as DEFR. If statewide electricity usage were to double in response to electrification mandates, those figures would also need to be doubled, to 18,000 to 36,000 GWh of storage.

The Governor's 24 GWh procurement represents a small fraction of one percent of the amount of storage that would be necessary for batteries to function as the DEFR. At $200/kWh of storage capacity (optimistic), 9000 GWh of storage would cost $1.8 trillion; 18,000 GWh of storage would cost $3.6 trillion; and 36,000 GWh of storage would cost $7.2 trillion. The $1.8 trillion figure is approximately equivalent to the state's entire annual GDP. The other figures are a multiple of the State's annual GDP. This is so extremely unaffordable that it cannot possibly be seriously considered as an option.

And even if it could be possible to buy all these batteries, their technology is not at all up to the job of functioning as the DEFR. Most notably, the generation of electricity by wind and sun is seasonal, with far more sun in the summer than winter, and more wind in the spring and fall.

In a wind and solar system backed up by energy storage, the storage needs to hold the energy for months on end, often six months or even a year, before called upon to discharge. Lithium-

ion batteries are not capable of this task, since charge stored in such a battery will slowly dissipate over the course of weeks and months. The same is true for every other known type of battery storage.

Again, as with nuclear and green hydrogen, there is no possibility of batteries of any sort functioning as the DEFR in time for New York's mandated conversion to electric heat in 2030.

C. Local Law97 places the City on track to increase its greenhouse gas emissions.

The numbers underpinning Local Law 97 underestimate electric grid emissions by between 39 percent and 47 percent. Local Law 97 uses incorrect emissions numbers to calculate penalties on buildings and as a basis for electric grid efficiency.

Under Local Law 97, "[u]tility electricity consumed on the premises of a covered building that is delivered to the building via the electric grid shall be calculated as generating 0.000288962 tCO2e per kilowatt hour . . ." Administrative Code of City of NY § 280-320.3.1.1(1). That number equates to 636.5 pounds per megawatt hour (MWh). However, the federal Environmental Protection

Agency data show the actual utility system emissions are between 886.6 pounds per MWH and 973 pounds per MWh in New York City and Westchester.[20]

The actual utility emissions are between 39% and 47% higher than what the city is using to calculate Local Law 97's policy values and the associated penalties. Thus, every electric heating unit installed in the City will have 39% to 47% higher holistic carbon emissions than what is calculated in Local Law 97, which means more polluting than existing heating systems.

The 636.5 pounds per MWh used in Local Law 97 for utility generation drops to 319 pounds/MWh in 2030 – 2034. 1 RCNY § 103-14(d)(3)(ii). The City does not explain how it expects to achieve the lower number because it cannot.

Generation resources in the New York and Westchester subregion were 96.9 percent natural gas in 2022.[21] And in November the project sponsor canceled the Clean Path NY power transmission

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[20] Environmental Protection Agency, *eGRID Summary Tables 2022* (January 30, 2024), available at egrid2022_summary_tables.pdf (epa.gov) (last accessed January 2, 2025).
[21] *Id*.

line that was supposed to bring electricity generated by renewables from upstate.[22] Thus, Local Law 97 puts the City on a path to higher greenhouse gas emissions by 2030 despite the mandates in the Climate Act.

CONCLUSION

The Climate Act mandates that New York transform its electricity-generation system, most immediately to 70 percent generation from renewables by 2030. There is no physically possible way that New York City can convert all its large buildings to electric heat consistent with this Climate Act mandate. The Climate Act and Local Law 97 are thus fundamentally irreconcilable. Because

[22] Peter Costello, *Letter to Michelle Phillips, Secretary to the New York State Public Service Commission* (November 27, 2024), available at https://www.cleanpathny.com/sites/g/files/ujywhv376/files/2024-11/NYSERDA%20Notice%20of%20CPNY%20Mutual%20Termination.pdf (last accessed January 2, 2025).

the Climate Act is the state statute, and because it comprehensively regulates this field, Local Law 97 is therefore preempted.

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CERTIFICATE OF COMPLIANCE

I hereby certify under 22 NYCRR PART 500.1(j) that the foregoing brief was prepared on a computer using Microsoft Word.

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