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VIA ELECTRONIC MAIL

Climate Action Council
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RE: Comments of the Sierra Club Regarding Climate Action Council Draft Scoping Plan

Dear Members of the Climate Action Council:

The Sierra Club appreciates the opportunity to submit these comments regarding the Climate Action Council's (Council's) Draft Scoping Plan. Founded in 1892, the Sierra Club is the nation's oldest and largest grassroots environmental organization with approximately 800,000 members nationwide including 50,000 members in New York State. Consistent with its mission to explore, enjoy and protect the plant, to practice and promote the responsible use of earth's ecosystems and resources, and to educate and enlist humanity to protect and restore the quality of the natural and human environment, the Sierra Club has been working for years to mitigate the climate crisis and address its inequitable effects. Climate change—with its myriad environmental, public health, societal, and geopolitical impacts—is the defining issue of our time. We applaud New York's forward thinking in crafting the Climate Leadership and Community Protection Act (CLCPA) and empowering the Climate Action Council to make recommendations regarding the steps the State must take in order to achieve the CLCPA's ambitious climate and clean energy mandates. Ambitious action by states to address climate change is particularly important in light of the new constraints on federal regulation that the Supreme Court imposed in its recent decision in *West Virginia v. EPA*.[1]

The Sierra Club broadly supports the recommendations in the Draft Scoping Plan. We appreciate the enormous amount of work that went into developing the draft. Beginning with the efforts of the sector-specific panels, the draft Scoping Plan reflects the input and expertise of a large number of stakeholders and experts. Significantly, the draft scoping plan confronts many of the most contentious issues head on and comes to the practical, and in many cases the only viable result. In particular, the Draft Scoping Plan appropriately cabins the role for new gas in the electric sector to use as a last resort in situations of absolute need. If the iterative reliability assessment and fossil fuel plant replacement process is effectively implemented, these situations of need should be scarce or nonexistent. The building sector recommendations also appropriately

[1] *West Virginia v. EPA*, Case No. 20-1530, slip op. (June 30, 2022).

focus primarily on electrification, which is the lone truly workable pathway to deep decarbonization of the sector.

As discussed below, we are disheartened but unsurprised that interests, largely within or funded by the fossil fuel industry, have been spreading concern and misinformation about the implications of the Draft Scoping Plan. Not only is it critical that the Climate Action Council not capitulate to this fossil fuel industry pressure—which is based in fear and not fact—but also that the State focus resources on educating the public about the need for the emission limits in the Climate Act, the actual recommendations of the Council, and the fact that the Just Transition Working Group found that implementing the recommendations in the Draft Scoping Plan will be a major catalyst of job *growth* in New York State.

The Sierra Club is separately submitting detailed sector-specific comments on the Draft Scoping Plan in conjunction with a broad and diverse coalition of other organizations. These comments focus narrowly on a subset of issues in order to highlight the following points:

- There is no tension between protecting the climate and promoting jobs and a vibrant economy in New York. Complying with the climate mandates of the CLCPA will increase employment substantially, including growing the number of family-sustaining jobs. Failure to take strong action on climate will have devastating impacts on jobs in New York State.
- The Draft Scoping Plan outlines a prudent path for transitioning away from the present dependence on fossil fuels in the electric sector by narrowly cabining the potential for new fossil fuel generation and establishing a process for phasing down emissions from and reliability retiring existing fossil fuel plants.
- The Council must not yield to fossil fuel interest pressure to weaken of the meaning of "zero emissions" as it applies to the electric sector; achieving a truly zero emitting electric sector by 2040 is critical to the decarbonization of multiple other sectors of the economy including transportation and buildings.
- The Final Scoping Plan must restrict use of "low carbon fuels" to the discrete applications for which they are specially suitable and must broadly reject the use of hydrogen and "renewable natural gas" in buildings and for power generation. Availability, cost, and emissions considerations render these fuels unsuitable for those applications.
- The Council should reaffirm its recommendation—already codified by New York City—that all new construction be fully electric and set an aggressive timeline for this requirement commensurate with the need to rapidly decrease building sector emissions.
- The Council should repurpose the tens of billions of dollars it would cost to systematically replace all leak-prone (bare steel and cast iron) pipes in the State to instead support equitable electrification of buildings, prioritizing gas customers with the highest energy burdens.
- As automakers increasingly move toward a direct sales model, particularly for electric vehicles, it is imperative that the Final Scoping Plan recommend elimination of all constraints on direct vehicle sales in New York and enable the State to achieve its zero emission vehicle and climate goals for the transportation sector.

- Safeguards are needed in the Final Scoping Plan to ensure not only that the transition away from fossil fuels actually occurs but that overburdened communities receive the full benefits of that transition. Safeguards are also needed to ensure that the transition is affordable, that lower-income households are able to electrify their homes and their transportation options without exacerbating already-challenging energy burdens, and that the new jobs created are high quality and located in New York.

A. New York Need Not Choose Between Jobs and the Environment

Detractors of the CLCPA and the Draft Scoping Plan have created a false narrative around compliance with the CLCPA, claiming it will sacrifice New York jobs. In reality, the opposite is true, and the clean energy economy is already catalyzing significant job growth in New York.

As an initial matter, it is critical to recognize that climate change will affect employment in New York whether or not the State takes steps to address its causes. Simply allowing climate change to unfold unmitigated will eliminate thousands of jobs in the state. Starting broadly, a report by the International Labour Organization found that 34 percent of jobs in G20 countries rely directly on ecosystem services and, therefore, on mitigating the effects of climate change.[2] According to the United Nations, heat stress from rising temperatures is projected to lead to the loss of 80 million full-time equivalent jobs globally by 2030.[3]

Zooming in on New York state, the same vulnerabilities are present. Agricultural jobs will be impacted by accelerating climate change. For example, dairy products are the top agricultural commodity in New York.[4] Yet, "[a]s average temperatures increase, milk output is likely to decrease, in particular among high-producing herds . . . with substantially greater sensitivity to heat stress."[5]

Indeed, some sectors of jobs in New York could disappear completely. For example, New York currently ranks third in the nation in skier visits behind only Colorado and California.[6] The ski industry in New York and supporting hospitality services represent 14,000 jobs in the state.[7] Yet, absent aggressive climate mitigation, the ski industry is likely to be a major casualty of climate change.[8]

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[2] Int'l Labour Org., The Employment Impact of Climate Change Adaptation (Aug. 2018), at 13, available at https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_645572.pdf.
[3] Lin Taylor, 80M jobs could be lost by 2030 due to climate change: UN, Global News (July 1, 2019), https://globalnews.ca/news/5449602/climate-change-un-jobs-heat/.
[4] NYSERDA, Responding to Climate Change in New York State (ClimAID), Chapter 3, at 74, available at https://www.nyserda.ny.gov/About/Publications/Research-and-Development-Technical-Reports/Environmental-Research-and-Development-Technical-Reports/Response-to-Climate-Change-in-New-York.
[5] *Id.*
[6] SKI/NY Announces, 'Banner Year' Ski Industry Numbers Ahead of 2021/2022 Ski Season (Nov. 30, 2021), https://www.iskiny.com/news/skiny-announces-banner-year-ski-industry-numbers-ahead-202122-ski-season-looking-maintain.
[7] *Id.*
[8] Diana Olick, Climate change is taking a toll on the $20 billion winter sports industry – and swank ski homes could lose value, CNBC (Mar. 21, 2019), https://www.cnbc.com/2019/03/20/climate-change-is-taking-a-toll-on-the-20-billion-ski-industry.html.

At the same time, analysis has found that achieving New York's CLCPA mandates will be a significant engine of job *growth* in the state. The Just Transition Working Group's 2021 Jobs Study found that under both of the CLCPA compliance pathways it studied, the new jobs added through 2030 would exceed jobs displaced by a factor of more than ten.[9] The Jobs Study identified job growth in all regions of the State, the bulk of which was in the family-sustaining middle wage tier ($28-37/hour in 2019$).[10]

This is not to say that meeting New York's climate goals will not entail change or that change will be easy. The Jobs Study acknowledges that, without adaptation, jobs associated with conventional fueling stations in particular will decline.[11] But even there, the Jobs Study finds that this loss can be substantially mitigated if fueling stations install electric vehicle charging.[12] Ultimately, vocal opposition from one sector of workers should not overshadow the adverse impacts to other workers if we fail to act aggressively to mitigate New York's climate impacts.

B. The Draft Scoping Plan Charts the Appropriate Path Forward in the Electric Sector

The Sierra Club would like to express its appreciation for the thoughtful recommendations in the draft Scoping Plan for the electric sector. The draft Scoping Plan not only offers recommendations for accelerating deployment of renewable energy, but also recognizes the need to effectively cease building new fossil fuel power plants and systematically wean New York's grid off its reliance on the fleet of existing fossil fuel-fired facilities. Maintaining these latter recommendations is crucial in the final Scoping Plan.

The Council must not weaken the scoping plan based on lobbying from fossil fuel interests. The fossil fuel industry, and front groups like New Yorkers for Affordable Energy, are trading on fear about whether a grid that is not built around fossil fuel generators would be reliable. It can be. The Council must not take the bait, and must retain its critically important recommendations for the electric sector.

1. The Draft Scoping Plan outlines a prudent path for transitioning away from the present dependence on fossil fuels in the electric sector

New York will not be able to achieve a zero emissions electric system by 2040, or achieve the deep emission reductions in other sectors through electrification, if it continues to support a grid that is built around fossil fuel facilities. According to the recently released GHG emissions inventory for New York, based on the most currently available (2019) data, GHG emissions in New York have declined only 6 percent from 1990 levels.[13] Yet the CLCPA mandates that in less than 10 years, the State must achieve emission reductions that are 40 percent below 1990 levels. E.C.L. § 75-0107(1)(a). Further, in less than 30 years, statewide GHG

[9] Just Transition Working Group, 2021 Jobs Study (Dec. 2021), at 6, available at https://climate.ny.gov/-/media/Project/Climate/Files/JTWG-Jobs-Report.ashx.
[10] *Id.* at 7-8.
[11] *Id.* at 97-99.
[12] *Id.* at 117-20.
[13] Summary Report 2021 NYS Statewide GHG Emissions Report at 8.

emissions must be at least 85 percent below 1990 levels. E.C.L. § 75-0107(1)(b). Plainly, the emissions trajectory set forth in the CLCPA requires a significant and sustained decrease in emissions commencing immediately. Achieving emission reductions of the magnitude required by the Act and on the Act's time scale necessitates that New York eliminate rather than add new sources of GHG emissions.[14]

The incompatibility of new major pollution sources with the CLCPA is particularly clear in the power sector. The CLCPA mandates that, by 2040, "the statewide electrical demand system will be zero emissions." P.S.L. § 66-p(2). This requires emission reductions from the electric sector even steeper than those required for the State as a whole. The CLCPA also makes clear that offsetting of emissions to achieve CLCPA climate mandates is not permitted in the electric sector, expressly proscribing sources in the electric generation sector from participation in any alternative compliance mechanism developed by DEC. E.C.L. § 75-0109(4)(f). Thus, in less than 20 years—well within the economic lifespan of any new power plant—all power generation in New York State must be zero emissions. New fossil fuel electric generation, which produces huge quantities of GHG emissions, is inconsistent with the electric sector mandates of the CLCPA.

Ensuring reliable compliance with the CLCPA's zero emissions electricity by 2040 mandate requires proactive planning to phase down reliance on existing fossil generation. New York State presently relies heavily on fossil-fueled power plants for both energy and electric capacity. This reliance percentage is greater in the New York City area. In 2020, a mere 27.4 percent of statewide electric generation came from renewables, while 43.4 percent of generation came from fossil plants.[15] On a capacity basis, the situation is even worse, with the State relying on gas plants for more than half its electric capacity.[16] The State therefore must substantially decrease—not increase—reliance on fossil fuels in order to decrease greenhouse gas emissions and achieve 70 percent renewable generation by 2030 and zero emissions electricity by 2040.

To operate a zero emissions grid in 2040, as mandated by the CLCPA, New York must not only increase zero emission generation to meet projected demand, but must also ensure that the reliable functioning of the power grid does not depend on the continued operation of GHG-emitting fossil fuel-fired facilities. Consistent with Governor Hochul's recognition of the need for a blueprint to wean the State off of its reliance on the dirtiest peaker plants even sooner than 2040 (by 2030),[17] there is a need for a plan to wean New York off its reliance on the rest of the fossil fuel power fleet in the decade that follows.

The addition of new fossil fuel generation interferes with compliance with the CLCPA's mandates. As DEC has observed: "To achieve the State's climate change and clean energy

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[14] *See, e.g.*, Astoria Denial at 11.

[15] See New York Independent System Operator ("NYISO"), Gold Book: 2021 Load & Capacity Data Report 73 (2021), https://www.nyiso.com/documents/20142/2226333/2021-Gold-Book-Final-Public.pdf/b08606d7-db88-c04b-b260-ab35c300ed64.

[16] See New York State Profile and Energy Estimates, U.S. Energy Info. Admin., https://www.eia.gov/state/analysis.php?sid=NY#20 (last updated Sept. 17, 2020).

[17] Earlier this year, Governor Hochul announced that she will direct NYSERDA, DPS, and DEC "to develop a blueprint to guide the retirement and redevelopment of New York's oldest and most-polluting fossil fuel facilities and their sites by 2030." 2022 State of the State Book at 150.

policies as outlined in the CLCPA, the State needs to continue to accelerate its ongoing transition away from natural gas and other fossil fuels. Constructing and operating a new fossil fuel-fired power plant accomplishes the exact opposite and perpetuates a reliance on fossil fuels."[18]

Because maintenance of a reliable electric grid requires robust planning, commitments to eliminate emission sources in 2040 are insufficient to demonstrate CLCPA consistency. Building a new fossil fuel-fired plant that must retire just as the State's zero emissions energy needs become most acute would neither ensure reliability nor facilitate renewable integration. Adding such a plant would make it more—not less—difficult to achieve the 2040 zero emissions electricity mandate. New fossil fuel generation is particularly problematic because it perpetuates an electric grid where local reliability is dependent on fossil fuel capacity resources and jeopardizes the economics of zero emissions alternatives. Building a fossil fuel peaker entrenches the grid's local reliance on that resource and dampens market signals for storage or other non-emitting capacity resources to site in that load pocket. Thus, adding new gas resources will make it even more challenging for New York to extricate itself from its present over-reliance on fossil fuel generation.

The Council laudably perceived this in its Draft Scoping Plan, narrowly limiting the context in which new fossil fuel generation could ever be considered:

> If a reliability need or risk is identified, emissions-free solutions should be fully explored, such as storage, transmission upgrades or construction, energy efficiency, demand response, or another zero-emissions resource. Only after these alternatives are fully analyzed and determined to not be able to reasonably solve the identified grid reliability need shall new or repowered fossil fuel-fired generation facilities be considered. These should only be considered if the NYISO and local transmission operators confirm that the fossil fuel fired facility is required to maintain system reliability and that need cannot reasonably be met with the alternatives listed above.[19]

This gas-exclusively-as-a-last-resort approach is absolutely essential and must be maintained in the final Scoping Plan.

2. The Climate Action Council must not recommend any weakening of the meaning of "zero emissions" as used in the CLCPA

Efforts have been made by fossil fuel interests in both the legislature and at the PSC[20] to water down the meaning of "zero emissions" in the CLCPA. The CLCPA's mandate that the electric sector be 100 percent zero emissions by 2040 is a linchpin of the entire statute. Because electrification is by far the most feasible and cost-effective strategy for decarbonizing major sectors of the economy including buildings and transportation, ensuring that all electricity is truly

[18] Astoria Denial at 11.
[19] Draft Scoping Plan (Dec. 30, 2021), at 155.
[20] *E.g.*, S.6497-A; Petition of Independent Power Producers of New York, Inc., New York State Building and Construction Trades council and New York State AFL-CIO for the Establishment of a Zero Emissions Energy Systems Program under the Clean Energy Standard at 2, 9, Case No. 15-E-0302, Docket No. 878, (NYPSC Aug. 18, 2021).

non-emitting is critical to maximizing the emissions benefits of widespread electrification and achievement of the CLCPA's climate mandates.

The Council should regard with great skepticism proposals to modify the definition of "zero emissions" such as IPPNY's recent proposal to have it refer to "systems, other than renewable energy systems, that generate electricity or thermal energy through the use of technologies that do not lead to a net increase in greenhouse gas emissions into the atmosphere at any time in the process of generating electricity."[21] This type of definition has two fatal flaws.

First, it presumes the only emissions of relevance under the CLCPA are greenhouse gas emissions. An IPPNY-type definition would ignore non-climate conventional and hazardous air pollutant emissions despite their serious adverse human health and environmental impacts. Nothing in P.S.L. § 66-p indicates that "emissions" was intended to refer only to GHG emissions. Indeed, the statute provides a definition for "greenhouse gas," E.C.L. § 75-0101(7) that the drafters declined to cross-reference in P.S.L. § 66-p(2). Moreover, in a precursor to the CLCPA legislation, the 2040 electric system target was to supply 100 percent of New York's electricity from "clean energy resources,"[22] which were defined to include "electric generation that releases zero or de minimis net greenhouse gas emissions to the atmosphere as a byproduct of generating electricity."[23] The CLCPA drafters' election to abandon the pure climate focus of "clean energy resources" and instead adopt a "zero emissions" requirement suggests a broader focus on pollution.

In addition, the CLCPA contains numerous provisions designed to address equity and ensure benefits to disadvantaged communities. These communities are adversely impacted by both climate *and* conventional air pollution making a broad definition of "emissions" most consistent with the salutary goals of the statute. When passing the statute, the legislature mandated that "[a]ctions undertaken by New York state to mitigate greenhouse gas emissions should prioritize the safety and health of disadvantaged communities" and explicitly identified the "exacerbation of air pollution" associated with climate change as one of its concerns. CLCPA § 1. The law requires both the scoping plan developed by the Climate Action Council and regulations developed to implement the scoping plan's recommendation to "maximize . . . reductions of . . . greenhouse gas emissions and co-pollutants in disadvantaged communities." E.C.L. § 75-0103(14)(d); § 75-0109(3)(d). These broader legislative goals related to health and safety are enshrined in P.S.L. § 66-p(2), which states that the zero emissions program should be formulated with an eye towards "safe… electric service." Thus, by looking "to the provisions of the whole law, and to its object and policy," it is clear that the legislature intended to adopt a definition of "zero emissions," that encompassed emissions impacting the health and safety of New Yorkers in general, and disadvantaged communities in particular. *Czyzewski v. Jevic Holding Corp*., 137 S. Ct. 973, 985 (2017) (quoting *Kelly v. Robinson*, 479 U.S. 36, 43 (1986)).

Second, a definition like IPPNY's would effectively transmute the words "zero emissions" into "not more greenhouse gas emitting than existing resources." Given New York's

[21] IPPNY Pet'n at 2.

[22] 2019 Budget Bill, S.1508/A.2008 (Jan. 18, 2019), Part X, § 5, available at https://legislation.nysenate.gov/pdf/bills/2019/s1508.

[23] *Id*. § 6.

current fossil fuel-dominated grid, adopting such a definition would potentially authorize a host of fossil fuel-fired or other carbon- or methane-emitting resources to qualify, particularly in the near term while the grid remains heavily reliant on fossil fuel generation. Such a result is plainly in conflict with the intent of the Legislature, which in passing the CLCPA, hoped to expedite New York State's complete decarbonization. To that end, the legislature instructed administrators to play a leadership role in the effort "to reduce greenhouse gas emissions from all anthropogenic sources *100% over 1990 levels*" and to take aggressive interim steps over the next two decades to do so. CLCPA § 1 (emphasis added). In contravention of the legislature's mandate, an IPPNY-type definition would allow a new efficient gas-fired combined-cycle or peaking unit to be deemed a "zero emissions energy system" because, based on NYISO's least cost approach to dispatch, the unit would only be called upon to generate electricity at times when its marginal cost (generally a proxy for its efficiency and emission rate) was at or below that of other units. Indeed, to the extent that unit efficiency correlates with marginal cost and emission rate for fossil fuel generating units, almost any unit could be considered a "zero emissions energy system" under the Petition's framework. The only way a unit could fail to qualify as "zero emissions" under IPPNY's definition would be if it displaced cleaner, more efficient units when it ran. But this is not typically how the grid operates and certainly not what the CLCPA envisioned. Consequently, an IPPNY-type re-definition of "zero emissions" to simply mean "not emissions-increasing" is irreconcilable with the plain meaning of "zero emissions."

Consideration of displaced emissions as a basis for establishing CLCPA consistency is also directly contravened by the DEC decisions denying Title V air permits to the Astoria and Danskammer proposed gas plants. In those decisions, DEC addressed arguments by both project developers that the projects furthered the emissions goals of the CLCPA by displacing more emissions-intensive generation when they operated.[24] DEC expressly rejected those arguments, finding that the "projected displacement of other GHG emission sources across the State is not itself sufficient for the Department to determine consistency with the Statewide GHG emission limits established" by the CLCPA.[25] Rather, DEC looked to the fact that each "[p]roject itself would result in substantial direct and upstream GHG emissions due to the production, transmission, and combustion of fossil fuels," and declined to "specifically take into account actions that may or may not occur at other GHG emission sources."[26] The same considerations apply in evaluating IPPNY's proposed definition. Like the developers of Astoria and Danskammer, IPPNY proposes to look beyond the direct (and upstream) impacts of a technology to consider whether it will "lead to a net increase in greenhouse gas emissions into the atmosphere at any time in the process of generating electricity."[27] But this netting of a generator's emissions against hypothetical emission reductions from other sources is precisely what DEC rejected in denying the air permit applications for Astoria and Danskammer.

Moreover, it is clear from the CLCPA's broader context that the "zero emissions" definition for the electric sector was intended to be stricter than IPPNY contends. For example, while the CLCPA authorizes DEC to create an emissions-offset program as part of an alternative

[24] *See* Astoria Denial Ltr. at 13–14; Danskammer Denial Ltr. at 11–12.

[25] Astoria Denial Ltr. at 14.

[26] *Id*. at 14.

[27] IPPNY Pet'n at 2.

compliance mechanism for up to 15 percent of statewide GHG emissions, E.C.L. § 75-0109(4), the Act expressly precludes the use of offsets for sources in the electric sector. *Id.* § 75-0109(4)(f) ("Sources in the electric generation sector shall not be eligible to participate in such mechanism."). The CLCPA also explicitly bars the use of biofuels, like RNG produced from agricultural feedstocks, in this alternative compliance mechanism. *Id.* § 75-0109(4)(g) ("The following types of projects shall be prohibited: … ii. biofuels used for energy or transportation purposes."). The CLCPA intended for "zero" to mean zero as applied to emissions from the electric sector. The Council should not endorse a definition of the term that undermines the legislature's manifest intent.

C. The Final Scoping Plan Must Cabin the Use of So-Called "Low Carbon Fuels" to the Limited Applications for Which They Are Specially Well Suited

Given the hype around green hydrogen and so-called "renewable" natural gas, it is essential that the Council critically examine the facts underlying the rhetoric. The State builds its decarbonization strategy around both of these resources at great peril.

A clear-eyed assessment of hydrogen's potential reveals: (1) that replacing fossil gas in the power sector and buildings with green hydrogen would require unattainable levels of renewable energy development in New York; (2) that relying on blue (or gray) hydrogen rather than green hydrogen would eviscerate the intended climate benefits (increasing rather than decreasing total greenhouse gas emissions); and (3) that numerous other technical and practical barriers impede the safe and cost-effective deployment of hydrogen at scale. At the same time, the potential for RNG—and particularly for climate beneficial RNG—is extremely limited and RNG will necessarily play a limited role, helping to decarbonize discrete applications.

1. Green hydrogen cannot be supplied in sufficient quantities to replace fossil gas in the buildings or power sector

New York is already struggling to develop renewable energy resources at a pace sufficient to achieve the mandates of the CLCPA. Developing the incremental renewable generation that would be required to also convert New York's fossil gas power plants and a significant fraction of New York's residential and commercial gas combustion in buildings to green hydrogen is not realistic. Under the CLCPA, New York must procure at least 70 percent of its electricity from renewable energy systems by 2030.[28] The Public Service Commission (PSC) in its 2020 Clean Energy Standard order estimated that achieving the 70 percent by 2030 renewable requirement will require over 106.2 TWh of renewable energy generation and an incremental 42.8 TWh beyond the 63.3 TWh already in operation, under contract, or separately required by statute.[29] DPS and NYSERDA calculated that to achieve this level of incremental renewable development, the State would need to procure nearly 4,500 GWh annually between 2021 and 2026, representing a 40 percent increase over recent procurement levels.[30]

[28] P.S.L. § 66-p(2).
[29] Order Adopting Modifications to the Clean Energy Standard, Case 15-E-0302 (Oct. 15, 2020), at 22.
[30] DPS & NYSERDA, White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act, Case 15-E-0302 (June 18, 2020), at 26.

Using green hydrogen to replace natural gas in the electric sector would require a massive and unrealistic additional buildout of renewable energy resources. Repowering even a single gas peaker plant with green hydrogen would require thousands of megawatts of new renewable generation. According to gas turbine manufacturer GE, which has created a calculator to estimate renewable capacity required to power its turbines with "green" hydrogen, using today's technology it would take over 1,800 MW of renewables operating at a 100 percent capacity factor to generate the "green" hydrogen necessary to power a single 437 MW GE H-Class 7HA.03 turbine operating at a 30 percent capacity factor, as has been proposed by NRG to build in Astoria, Queens.[31] Because renewable generation resources typically operate at a lower capacity factor, even greater renewable capacity would be required to fully power such a facility with green hydrogen. For a 437 MW peaking turbine, GE's calculator discloses that "[y]ou will need the equivalent of 2408—1.5 MW wind turbines to create the required energy for your hydrogen infrastructure."[32] *In other words, it would require more than 8 times the capacity of wind generation to produce the green hydrogen required to power a turbine operating only at a 30 percent capacity factor!*

Looking out to 2040, Brattle identifies New York's grid requiring approximately 35 GW of gas operating at a 7 percent capacity factor—i.e., more than 20 TWh of dispatchable zero emission generation—to meet New York's CLCPA mandates.[33] Since Astoria operating at a 30 percent capacity factor would produce 1.15 TWh of electricity per year, which is approximately 1/18th of what would be needed in 2040, *New York would need an additional 65 GW of 50 percent capacity factor renewables to provide the green hydrogen to support 20 TWh of dispatchable hydrogen generation*. Using green hydrogen to supply New York's dispatchable zero emissions generation would therefore require a near *doubling* of the already very large amount of wind and solar that Brattle projects will be required in New York in 2040.[34]

Attempting to also replace a meaningful fraction of gas combusted in buildings with green hydrogen would strain these renewable energy demands even further. According to the Energy Information Administration, in 2021, New York's consumption of gas in residential and commercial buildings far outstripped gas use for electric power. Residential and commercial buildings consumed 426.8 Bcf and 291.4 Bcf respectively (718.2 Bcf in total), while gas-fired power plants consumed 448.5 Bcf.[35]

Rocky Mountain Institute recently published a policy brief that analyzed the renewable energy needed to replace natural gas with green hydrogen in New York's residential and

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[31] *Hydrogen Fueled Gas Turbines*, General Electric, https://www.ge.com/power/gas/fuel-capability/hydrogen-fueled-gas-turbines. These figures were derived from use of the cited calculator and based on NRG's proposed GE H-Class 7HA.03 turbine and NRG's permitted 30 percent capacity factor. *See* Draft Supplemental Environmental Impact Statement at 3-14.

[32] *Id*. (follow "Try our hydrogen calculator" hyperlink; choose "7HA.03" from question 1 dropdown; choose "simple" from question 2 dropdown; drag to "peaker" on question 3 bar; drag to "100%" on question 4 bar; choose "US New York(RGGI)" from question 5 dropdown; then follow the "See Your Hydrogen Potential" hyperlink; under results, find the "Electricity Required" section.)

[33] Brattle Grid Evolution Study at Slide 32.

[34] *Id*. In its central case, Brattle projects "minimal curtailments" of wind and solar in 2040, predominantly during the spring season due to short- and long-term balancing. *Id.* at Slide 23. These curtailments are on the order of 10 TWh or less. *Id.*

[35] EIA, https://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_SNY_a.htm.

commercial buildings.[36] These buildings on average between 2017 and 2021 consumed 828 TBtu of gas.[37] RMI calculates that the electricity needed to for green hydrogen to supply the same residential and commercial heating needs would be 308 TWh! RMI notes that the Integration Analysis projects New York's total electricity generation for all sectors in 2050 to be 320 TWh. Reliance on green hydrogen in the building sector would effectively double New York's renewable energy needs. At the same time, RMI calculates that electrifying current heating demand with heat pumps would require only 69 TWh—78 percent less electricity.

2. Alternatives to green hydrogen, including blue hydrogen, do not produce the requisite greenhouse gas emission reductions to support New York's ambitious climate commitments

Achieving New York's climate goals using green hydrogen requires an unrealistic buildout of new renewable energy resources. However, blue hydrogen—i.e., hydrogen produced from fossil fuels with carbon capture—or gray hydrogen—i.e., hydrogen produced using steam reformation of methane—are not alternative climate solutions.

Professors Bob Howarth and Mark Jacobson recently studied the emissions implications of these alternative hydrogen production methods.[38] The authors found that the greenhouse gas footprint of blue hydrogen is 20 percent *greater* than burning natural gas or coal for heat and 60 percent *greater* than burning diesel oil for heat.[39] This because, while blue hydrogen reduces direct carbon dioxide emissions (albeit incompletely), it increases fugitive emissions of methane, a far more potent greenhouse gas. In fact, due to this methane leakage, total carbon dioxide equivalent emissions from blue hydrogen were only 9-12 percent lower than gray hydrogen.[40] The authors further tested the robustness of their conclusions against different assumed leakage rates and found that the conclusion held even assuming a low methane leakage rate of 1.54 percent.[41] The authors also tested the robustness of their conclusions assuming blue hydrogen is produced with 100 percent zero emissions renewable energy—while retaining assumptions that hydrogen can be stored indefinitely without leakage—and found that total greenhouse gas emissions were still nearly half those from combusting natural gas as a fuel.[42] The emissions limitations of blue hydrogen are in addition to other challenges, including achieving high rates of carbon capture in practice[43] and the cost per ton of capturing the carbon.[44]

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[36] Olivia Prieto & Mike Henchen, RMI, Low-Carbon Fuels Have a Limited Role to Play in New York's Buildings (May 25, 2022), https://rmi.org/low-carbon-fuels-have-a-limited-role-to-play-in-new-yorks-buildings/.
[37] RMI Policy Brief.
[38] Howarth & Jacobson, How green is blue hydrogen? *Energy Sci. & Eng'r* (July 2021).
[39] *Id.*
[40] *Id.*
[41] *Id.*
[42] *Id.*
[43] Carbon capture projects associated with hydrogen production to date have achieved onsite carbon dioxide capture rates below 70 percent, far below the blue hydrogen industry goal of 95 percent. David Schlissel et al. Blue Hydrogen: Technology Challenges, Weak Commercial Prospects, and Not Green, IEEFA (Feb. 2022), at Slides 18-20, available at Blue-Hydrogen-Presentation_February-2022.pdf (ieefa.org).
[44] These costs have been in excess of $63/ton for capture rates below 85 percent, and substantially higher for higher capture efficiency. *Id.* at Slide 26. These are more than double the costs that would be required to make carbon capture financially viable. *Id.*

3. Hydrogen has a number of other significant limitations and drawbacks

Even if it were possible to supply sufficient renewable energy to produce relevant quantities of hydrogen, there are numerous logistical challenges that affect the cost, feasibility, and prudence of building a climate compliance strategy around hydrogen. These challenges are well-documented,[45] but several are briefly described here.

- **Hydrogen production via electrolysis is inefficient and expensive**: Due to the inefficiency of using green hydrogen to replace electricity, cost is likely to continue to be a barrier. The use of electricity to power electrolysis results in substantial energy losses—on the order of 20 to 40 percent according to GE,[46] and even higher according to BNEF founder Michael Liebreich.[47] Indeed, Agora explained that "the production of hydrogen is associated with high conversion losses" and noted that an electric heat pump is 6 to 12 times more efficient than a hydrogen fuel cell, with hydrogen combustion applications being more inefficient still.[48] According to analysis from 2021, even a carbon price of $237/metric tonne—four times higher than the current price in Europe—would not make green hydrogen cost-competitive with other forms of hydrogen production this decade.[49]

- **Hydrogen is leakable and is an indirect greenhouse gas**: Due to its small molecular size, hydrogen his highly leakable. Leakage rates for hydrogen are expected to be 1.3-2.8 times greater than those for methane.[50]At the same time, hydrogen is an indirect greenhouse gas with a 100-year global warming potential 5.8 times greater than carbon dioxide.[51] Recent research suggests that on shorter (and more relevant) time scales, the global warming potential for hydrogen is far higher: 19 to 38 for 20-year global warming

[45] E.g., Sasan Saadat & Sara Gersen, Reclaiming Hydrogen for a Renewable Future: Distinguishing Oil & Gas Industry Spin from Zero-Emission Solutions, Earthjustice (Aug. 2021), available at https://earthjustice.org/features/green-hydrogen-renewable-zero-emission (hereinafter "Reclaiming Hydrogen"); Sierra Club, Hydrogen: Future of Clean Energy or a False Solution? (Jan. 2022), https://www.sierraclub.org/articles/2022/01/hydrogen-future-clean-energy-or-false-solution; Energy Innovation, Assessing the Viability of Hydrogen Proposals (Mar. 2022), available at https://energyinnovation.org/wp-content/uploads/2022/03/Assessing-the-Viability-of-Hydrogen-Proposals.pdf (hereinafter "Energy Innovation"); Leigh Collins, Liebreich: 'Oil sector is lobbying for inefficient hydrogen cars because it wants to delay electrification,' Recharge (June 30, 2021), https://www.rechargenews.com/energy-transition/liebreich-oil-sector-is-lobbying-for-inefficient-hydrogen-cars-because-it-wants-to-delay-electrification-/2-1-1033226 (hereinafter "Liebreich"); David Schlissel et al. Blue Hydrogen: Technology Challenges, Weak Commercial Prospects, and Not Green, IEEFA (Feb. 2022), at Slides 18-20, available at Blue-Hydrogen-Presentation_February-2022.pdf (ieefa.org).

[46] Energy Transitions Commission, Making the Hydrogen Economy Possible: Accelerating Clean Hydrogen in an Electrified Economy, at 22 (Apr. 2021), https://energy-transitions.org/wpcontent/uploads/2021/04/ETC-Global-Hydrogen-Report.pdf.

[47] Liebreich (identifying efficiency losses of at least 50 percent).

[48] Agora, The Future Cost of Electricity-Based Synthetic Fuels (Sept. 19, 2018), at 11, The Future Cost of Electricity-Based Synthetic Fuels (agora-energiewende.de).

[49] Leigh Collins, 'Not even a carbon price of €200 would make green hydrogen cost-competitive this decade,' Recharge (July 8, 2021), https://www.rechargenews.com/energy-transition/not-even-a-carbon-price-of-200-would-make-green-hydrogen-cost-competitive-this-decade/2-1-1037262.

[50] Fotis Rigas & Paul Amyotte, Myths and Facts about Hydrogen Hazards, 31 Chem. Eng'r Transactions 913, 914 (2013), available at https://www.aidic.it/cet/13/31/153.pdf.

[51] Derwent, R., Simmonds, P., O'Doherty, S., Manning, A., Collins, W. and Stevenson, D. 2006. "Global Environmental Impacts of the Hydrogen Economy." Int. J. of Nuclear Hydrogen Production and Applications. 1(1): 57-67. Available at: http://agage.mit.edu/publications/global-environmental-impacts-hydrogen-economy.

potential and 34 to 66 for 10-year global warming potential.[52] Any strategy built around hydrogen would need to consider and quantify the potential for adverse climate impacts due to hydrogen leakage during production, transport and use.

- **Hydrogen embrittles steel and cast iron pipelines, necessitating a costly replacement of existing pipeline infrastructure to accommodate hydrogen**: The small molecular size of hydrogen also enhances its diffusion through the lattice structure of pipeline materials and causes embrittlement.[53] Researchers studying the potential for leakage and embrittlement of hydrogen in steel pipes found that the "numerical obtained results have shown that using pipelines designed for natural gas conduction to transport hydrogen is a risky choice" and recommended that the "replacement of the transported gas [with hydrogen] has to be preceded by feasibility studies taking in account both aspect of fatigue of material and pipeline failure due to overpressure and also due to hydrogen embrittlement."[54]

- **Any importation of hydrogen would create CLCPA compliance problems**: If New York were to rely on hydrogen produced out of state to supply its needs, it would need to contend with both logistical challenges as well as CLCPA compliance issues. As an initial matter, the 300,000 mile[55] interstate gas pipeline system is not well suited for transmitting hydrogen, as its composition as of 2005 was 98 percent steel pipes[56] incapable of transporting more than a low blend of hydrogen. But if New York is importing and combusting hydrogen blended with gas, it cannot possibly count or treat this as zero emissions for purposes of CLCPA compliance.

- **End-use appliances are not made to combust hydrogen and costly appliance replacement would be required to accommodate substantial hydrogen blends**: Our current end use appliances, including gas space and water heaters, gas stoves, and gas dryers were not designed to combust hydrogen. Indeed, hydrogen cannot be readily substituted for methane for use in heating or consumer appliances above a 5 to 20 percent blend without enormous costs and disruption, while low blends achieve very few greenhouse gas emission reductions and increase emissions of nitrogen oxides.[57]

- **Hydrogen has a substantially lower energy density than methane, which means that far greater quantities must be combusted to generate the same energy or heat**:

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[52] Ilissa B. Ocko & Steven P. Hamburg, Climate consequences of hydrogen leakage, Atmospheric Chemistry & Physics (preprint, discussion started Feb. 18, 2022), available at https://acp.copernicus.org/preprints/acp-2022-91/acp-2022-91.pdf.

[53] Zahreddine Hafsi et al., Hydrogen embrittlement of steel pipelines during transients, Procedia Structural Integrity 13 (2018), 210-217, available at https://www.sciencedirect.com/science/article/pii/S2452321618302683#:~:text=The%20transient%20regime%20is%20created,diffusion%20through%20the%20pipeline%20wall.

[54] *Id.*

[55] *See* PHMSA, https://portal.phmsa.dot.gov/analytics/saw.dll?Portalpages&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F_portal%2FPublic%20Reports&Page=Infrastructure.

[56] DOE Hydrogen Program, FY2005 Progress Report, https://www.hydrogen.energy.gov/pdfs/progress05/v_g_1_schmura.pdf.

[57] Energy Innovation at 3.

Hydrogen has a far lower heat content than methane gas: only approximately 30 percent.[58] Consequently, despite the expense and complexity, blending hydrogen into methane gas streams at low concentrations does very little to improve total greenhouse gas emissions.

- **Hydrogen is explosive and storage issues must be resolved**: Hydrogen is highly combustible, even in low concentrations, raising concerns about the safety of its increased use in homes. A study by the UK government estimated that explosions in homes would increase more than fourfold if hydrogen were to replace gas in homes.[59]

- **Hydrogen combustion results in significant air pollution**: While reaction of hydrogen in a fuel cell produces only water, combustion of hydrogen results in significant formation of harmful nitrogen oxides. Nitrogen oxides are a pollutant in their own right, and also the primary contributor to ground level ozone (smog) and a precursor of dangerous fine particulate matter. Indeed, combustion of pure hydrogen may result in far greater emissions of nitrogen oxides than burning methane.[60] Indeed, Physicians for Social Responsibility recently published a report cautioning against burning hydrogen in buildings based on adverse health and climate impacts.[61] As the report succinctly states, "Hydrogen perpetuates the air pollution-related health inequities driven by burning fossil fuels in buildings and should be avoided."[62]

4. RNG cannot decarbonize buildings or electricity production in any significant way and it should be limited to the use cases where electrification is not an available alternative

Blending hydrogen with RNG does not render it a viable climate solution. Most fundamentally, there is simply not a large quantity of RNG available in New York, and the limited amounts that will be available have higher and better uses than replacing fracked gas in buildings and power plants.

NYSERDA recently commissioned ICF to conduct a study of RNG potential in New York by 2040. The study confirmed that achievable levels of RNG, "optimistic" levels of RNG,

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[58] Ulf Bossel & Baldur Eliasson, Energy and the Hydrogen Econony, at 5, https://afdc.energy.gov/files/pdfs/hyd_economy_bossel_eliasson.pdf ("at any pressure, the volumetric energy density of methane gas exceeds that of hydrogen gas by a factor of 3.2 (neglecting non-ideal gas effects)").
[59] Collins, Leigh, 'Hydrogen in the home would be four times more dangerous than natural gas': government report, (RechargeNews.com, last updated August 2, 2021), available at https://www.rechargenews.com/energy-transition/hydrogen-in-the-home-would-be-four-times-more-dangerous-than-natural-gas-government-report/2-1-1047218.
[60] Reclaiming Hydrogen at 18 (citing Cellek Mehmet Salih & Ali Pınarbaşı, Investigations on Performance and Emission Characteristics of an Industrial Low Swirl Burner While Burning Natural Gas, Methane, Hydrogen-Enriched Natural Gas and Hydrogen as Fuels, 43 Int'l J. of Hydrogen Energy 1994, 1205 (Jan. 11, 2018), https://www.sciencedirect.com/science/article/abs/pii/S0360319917319791) (finding that burning pure hydrogen would emit more than six times more nitrogen oxides than burning methane).
[61] Physicians for Social Responsibility, Hydrogen Pipe Dreams: Why Burning Hydrogen in Buildings Is Bad for Climate and Health (June 2022), available at https://www.psr.org/wp-content/uploads/2022/06/hydrogen-pipe-dreams.pdf.
[62] *Id*. at 16.

and even "maximum potential" levels of RNG are all a small fraction of the State's current gas consumption. Even in using New York's maximum potential (i.e., 100 percent of all possible RNG feedstocks – a scenario that would never occur in the real world) would only replace 21 percent of New York's recent gas consumption.[63] Using more realistic scenarios—e.g., ICF's "achievable deployment"—would only replace 7 percent of New York gas consumption. Importantly, ICF's estimate includes RNG produced from numerous feedstocks that are likely to actually *increase* greenhouse gas emissions or otherwise cause significant environmental damage. NRDC strongly cautions against using RNG from forestry and forest product residue, energy crops, and animal manure.[64] If one removes these three categories of feedstocks, the maximum potential for RNG in New York is cut by nearly 50 percent,[65] down to less than 4 percent of current gas consumption. RNG cannot anchor a decarbonization strategy in New York and must instead be reserved for specific niche uses where it is uniquely valuable.

5. The Council should dismiss irresponsible disinformation and fear-mongering by fossil fuel interests opposing electrification

The Sierra Club is profoundly concerned about the disinformation campaigns that fossil-allied interests are promoting in New York to undermine the efforts of the Council. The Intergovernmental Panel on Climate Change has confirmed that "[s]ocietal choices and actions implemented in the next decade" will shape our ability for climate resilient development, and "climate resilient development prospects are increasingly limited if current greenhouse gas emissions do not rapidly decline."[66] Misinforming New Yorkers about the impacts of the Climate Action Plan is dangerous and irresponsible.

By way of illustration, the New York Propane Gas Association's Marketer Toolkit is currently providing bill inserts, flyers, and postcards seeking to frighten customers about impacts of the Scoping Plan.[67] The bill insert, nominally from "SmarterNYEnergy.org," inaccurately claims that "New York State's proposed climate action plans would force you to switch to electric cars, heaters, and stoves, no matter how much they cost, how poorly they perform, or how unreliable our electric grid becomes in the process."[68] It goes on to state that "[p]ropane gas helps New York realistically achieve cleaner energy . . . ."[69] Similarly, New Yorkers for Affordable Energy, a predominantly fossil fuel-funded front group, states that "[e]xpanded

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[63] ICF projects a maximum potential of 272.3 tBtu/year of RNG while noting that 2017 gas consumption in New York was 1,280 tBtu. ICF/NYSERDA, Potential of Renewable Natural Gas in New York State, Final Report, Rpt. No. 21-34 (Apr. 2022), at ES-1 – ES-2, available at https://www.nyserda.ny.gov/-/media/Files/EDPPP/Energy-Prices/Energy-Statistics/RNGPotentialStudyforCAC10421.pdf.

[64] NRDC, Issue Brief: A Pipe Dream or Climate Solution? The Opportunities and Limits of Biogas and Synthetic Gas to Replace Fossil Gas (June 2020), available at https://www.nrdc.org/sites/default/files/pipe-dream-climate-solution-bio-synthetic-gas-ib.pdf.

[65] Animal manure (20.2 tBtu/year max potential) + Energy crops (69.1 tBtu/year max potential) + Forestry and Forest Product Residue (42.2 tBtu/year max potential) = 131.5 tBtu/year. This represents 48.3% of New Yorks 272.3 tBtu/year maximum potential.

[66] IPCC, Climate Change 2022: Impacts, Adaptation, and Vulnerability: Summary for Policymakers at 35 (May 2022), https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf.

[67] https://www.nypropane.com/toolkit/.

[68] https://www.nypropane.com/wp-content/uploads/2022/02/NYPGA-Anti-Electric-Bill-Insert-17088A.pdf.

[69] *Id.*

access to natural gas will help keep energy prices low by increasing supply to meet growing demand."[70]

In reality, even assuming that there was a future path to CLCPA compliance based around fossil gases (which there is not), that future will not be cheap as the above messaging tries to suggest. Fossil gas prices have more than quadrupled in the past two years, increasing from $1.60 per thousand cubic feet on June 26, 2020 to $8.32 on May 4, 2022.[71] As RMI building experts note, "[e]ven before recent gas price spikes, heating with efficient cold-climate heat pumps was comparable in terms of energy costs to heating with fossil gas in New York, and gas price volatility has only made electrification more economically attractive."[72] So-called low carbon alternatives like green hydrogen are even more expensive. While the May 2022 natural gas spot price was decade-high $8.14/MMBtu, RMI notes that green hydrogen costs around *$37/MMBtu*—more than four times higher—and, according to the Council, will remain above $20/MMBtu through 2030 and still cost $13.70/MMBtu in 2050.[73] The propane industry's claim that electrification will result in "huge increases in cost"[74] is particularly brazen given that the American Council for an Energy Efficient Economy even as early as 2018 (*before* recent gas price increases) found that high-efficiency electric heat pumps have lifecycle costs thousands of dollars less than propane furnaces and boilers in New York[75] and the payback period for switching from a propane to high-efficiency heat pumps in New York is only 1 to 3 years.[76]

6. Hydrogen could potentially play a supportive role in long-duration storage, but other resources may be able to provide the same grid services

If hydrogen is produced via electrolysis using renewable energy, leakage is controlled, and the hydrogen is reacted in a fuel cell rather than burned, hydrogen could play a climate-supportive role as long-duration storage resource. However, hydrogen's ability to serve as a long-duration storage medium is not unique. As Synapse explains:

> Compressed air storage and novel long-duration batteries are competing technologies to deliver the same service for the electric sector . . . . If these long-duration storage technologies have higher round-trip efficiency than 34 percent estimated for the hydrogen-based approach, they could reduce the need to build wind and solar generation.

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[70] New Yorkers for Affordable Energy, Issues, https://www.ny4affordableenergy.com/issues/.
[71] Irina Ivanova, Natural gas prices have soared to a 14-year high. Here's why, CBS News (May 5, 2022), https://www.cbsnews.com/news/natural-gas-price-14-year-high/.
[72] Olivia Prieto & Mike Henchen, Low-Carbon Fuels Have a Limited Role to Play in New York's Buildings (May 25, 2022), https://rmi.org/low-carbon-fuels-have-a-limited-role-to-play-in-new-yorks-buildings/.
[73] *Id.*
[74] https://www.nypropane.com/wp-content/uploads/2022/02/NYPGA-Anti-Electric-Bill-Insert-17088A.pdf.
[75] Steven Nadel, ACEEE, Energy Savings, Consumer Economics, and Greenhouse Gas Emissions Reductions from Replacing Oil and Propane Furnaces, Boilers, and Water Heaters with Air-Source Heat Pumps, Report A1803 (July 2018), at 18, Fig. 7 (furnaces) and 20, Fig. 8 (boilers), available at https://www.aceee.org/sites/default/files/publications/researchreports/a1803.pdf.
[76] *Id.* at 25, Fig. 16.

> All long-duration energy storage approaches, including hydrogen, require additional technology development before they are commercially available and ready to meet New York's needs after 2040. Continued research, development, and demonstration projects will be required to determine the most cost-effective portfolio.[77]

Hydrogen may have a role to play in long-duration storage subject to the safeguards identified above, but the magnitude of that role remains to be determined. Not only will it be necessary to see how other competing technologies develop and at what cost, but it is also important to bear in mind that increasing the interconnectivity of the electric grid over larger distances can also mitigate the need for storage resources in a high variable-renewable future[78] and reduce the magnitude of the energy gap that storage must fill.

D. New York Must Adopt All-Electric New Construction Requirements

Buildings are currently the largest source of greenhouse gas emissions in New York, accounting for nearly 1/3rd of the State's total emissions.[79] Finding workable pathways to decarbonize buildings is therefore essential to achievement of the CLCPA's climate mandates. As the Integration Analysis recognizes, widespread electrification of buildings is needed under all compliance scenarios.[80] The Draft Scoping plan calls for electrification of 1-2 million homes by 2030, and electrification of 250,000 homes and thousands of commercial buildings per year in the following years.[81]

Given the need to broadly electrify buildings, an essential first step is to halt the expansion of the existing gas distribution system. In 2021, New York City passed legislation phasing out gas in new construction over the next five years. A similar phase out is urgently needed in the remainder of the state.

From an economic perspective, a gas phase out make sense. It currently costs less to construct a new home with efficient electric heat pumps than to construct a new home that heats with gas. According to a recent study by the National Building Initiative and NRDC, it costs $7,500-8,200 less to build an all-electric single family home in New York than the baseline code home, while a mixed-fuel single family home costs $900-1,600 more than the baseline code.[82]

From a climate perspective, limiting increased reliance on gas is essential. Sierra Club strongly supports the Draft Scoping Plan's recommendation that "State codes should require new

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[77] Synapse Energy Economics, Fact Sheet on Hydrogen & Low-Carbon Gases in New York's Electricity (June 2022), available at https://www.synapse-energy.com/sites/default/files/NY-Hydrogen-Factsheet-22-061.pdf.
[78] *Id*. (noting that interconnection over larger geographic areas reduces the likelihood that all areas will simultaneously experience low renewable output).
[79] Draft Scoping Plan at 24, Fig. 2.
[80] *See* Draft Scoping Plan at 120.
[81] *Id*. at 121.
[82] NBI & NRDC, Cost Study of the Building Decarbonization Code: An analysis of the incremental first cost and life cycle cost of two common building types (Apr. 2022), at 6, Fig. 1, available at https://newbuildings.org/wp-content/uploads/2022/04/BuildingDecarbCostStudy.pdf.

construction to be highly efficient, all-electric, and resilient to the effects of climate change."[83] There is also an education component to accelerating efficient electric heat pump deployment in both new and existing buildings. Developers and contractors need to be aware of the current abilities of heat pumps—which are increasingly capable of providing reliable heating on the coldest days New York experiences—as well as their ability to provide low cost heating and cooling without the price volatility of fossil fuel heating alternatives.

E. The Council Should Clarify that Systematic "Leak-Prone" Pipe Replacement is Not an Effective Climate Strategy

In recent years, New York's utilities have been systematically investing in replacing their thousands of miles of older steel and cast iron pipes. This "leak-prone" pipe replacement strategy was initially justified as a safety measure, but is increasingly being rebranded as a climate solution. While methane leaking from the gas distribution system is a climate problem, given our current ability to detect and prioritize for repair the more substantial leaks in the system in a targeted manner, the practice of engaging in wholesale pipe replacement should be critically reviewed to determine whether it is an appropriate use of limited gas customer dollars.

New York utilities in their recent rate cases have estimated the cost of replacing leak-prone pipe at $250-$1,650 per foot or $1.3-$8.7 million per mile.[84] According to the Pipeline and Hazardous Materials Safety Administration, there are nearly 22,300 miles of steel and cast iron pipe in New York State.[85] Replacing just the uncoated steel and cast iron pipes—the categories typically deemed "leak prone"—owned by the National Grid gas utilities (KEDNY, KEDLI, and Niagara Mohawk) and Consolidated Edison alone would cost $26 billion. In addition, these companies have thousands of bare steel and cast iron services that would also need to be replaced at enormous cost.

If climate is the driver, these tens of billions could be far better spent. Comparing Niagara Mohawk's recently approved leak-prone pipe expenditures with its gas efficiency investments reveals a stark disparity. Niagara Mohawk plans to spend $268 million on replacing leak-prone gas mains through FY25,[86] while reducing CO2 equivalent emissions by 53,600 tons,[87] a cost per ton of $5,000. By contrast, the Company projects spending approximately $56 million on gas

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[83] Draft Scoping Plan at 121.

[84] National Grid, Annual Leak Prone Pipe (LPP) Prioritization, Type 3 Leak, and Capital Report, Case 19-G-0310 (Mar. 30, 2022), available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BEB6B4FE5-DADB-44B4-A485-A669E0D97CBF%7D (based on 2023 LPP replacement length and cost estimates, KEDNY's average LPP cost was $8.72 million/mile (14.7 miles for $128.2 million); KEDLI's was $2.19 million/mile (106.3 miles for $233.2 million); National Grid, Annual LPP Prioritization, Type 3 Leak, and Capital Plan Report, Case 20-G-0381 (Mar. 30, 2022), available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BF43738D9-77F7-4E71-8223-71BB53C6A575%7D; Con Edison, Response to DPS Interrogatories – Set DPS-10, Question No. 366(2), Cases 22-E-0064 & 22-G-0065 (Mar. 9, 2022) (impact of gas revenue requirement associated with replacement of one mile of LPP is $5.3 million).

[85] PHMSA, Gas Distribution Annual Data for 2021, available at https://www.phmsa.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids.

[86] Joint Proposal Appendix 1, Schedule 5, at 2 of 18

[87] NiMo Initial Statement at 130.

efficiency programs during the three rate years of the case under the Joint Proposal[88] and achieving 234,260 tons of CO2e reductions,[89] a cost per ton of $240—approximately 1/20th the cost per ton of the leak-prone pipe replacements.

Putting the tens of billions of dollars in avoided pipe replacement costs into supporting electrification and efficiency measures, particularly for lower-income households, could go a great distance toward decarbonizing New York's building stock.

F. The Final Scoping Plan Should Recommend That New York Authorize Direct Sales of Electric Vehicles

Despite its Zero Emission Vehicle Memorandum of Understanding commitment to 800,000 zero emission vehicles by 2025 and its ambitious climate commitments, New York lags remarkably far behind other states in sales of electric vehicles (EVs). According to data from the National Renewable Energy Laboratory, through the end of 2020, New York had only 32,590 EV registrations, trailing not only California (by a factor of 13), but also Texas, Florida, and Washington (by nearly a factor of two), and barely surpassing New Jersey despite having more than double the population.[90] This is despite New York offering a "Drive Clean" rebate of up to $2,000/vehicle for EV purchases.[91]

While there are multiple barriers that need to be addressed, one with a particularly straight-forward solution is allowing direct sales of EVs to customers. Prior to 2014, direct sales of vehicles to customers were lawful in New York. In 2014, legislation was passed to limit Tesla's expansion in the state beyond its five existing locations.[92] While slowing Tesla's growth in the state may have yielded near-term benefits for incumbent auto dealers, it is crippling New York's ability to achieve needed emission reductions in the transportation sector.

The dealership model for automobile sales is growing increasingly obsolete and is becoming a major barrier to achieving the rapid electrification of passenger vehicles called for in the Draft Scoping Plan. In 2019, Sierra Club released Rev Up Electric Vehicles: A Nationwide Study of the Electric Vehicle Shopping Experience.[93] The Rev Up EVs study involved 579 volunteers visiting more than 900 car dealerships across the country seeking to purchase EVs. The study found that nearly ¾ of dealerships were not selling any EVs, almost half of those that did had no more than two EVs on the lot, that even these EVs were not prominently displayed,

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[88] *See* Joint Proposal Appendix 1, Schedule 2, at 2, 17, 29 (identifying gas efficiency spending as $16.616 million in RY1, $18.631 million in RY2, and $21.266 million in RY3).
[89] NiMo Initial Statement at 127.
[90] U.S. Dept. of Energy, Alternative Fuels Data Center, Electric Vehicle Registrations by State, https://afdc.energy.gov/data/10962.
[91] NYSERDA Drive Clean Rebate for Plug-In Electric Cars, https://www.nyserda.ny.gov/drive-clean-rebate.
[92] Julie Tighe, Electric vehicle direct sales must expand in New York (Feb. 14, 2022), https://www.nysenate.gov/newsroom/in-the-news/todd-kaminsky/electric-vehicle-direct-sales-must-expand-new-york.
[93] Sierra Club, Rev Up Electric Vehicles: A Nationwide Study of the Electric Vehicle Shopping Experience (Nov. 2019), available at https://contentdev.sierraclub.org/sites/www.sierraclub.org/files/program/documents/2153%20Rev%20Up%20Report%202019_3_web.pdf.

and that salespeople were frequently uninformed about EV technology and available state and federal purchase incentives.

As major automakers begin to ramp up production of EVs and put money behind advertising these vehicles, dealerships continue to act as an obstacle to EV sales. Despite automaker efforts to keep Manufacturer Suggested Retail Prices (MSRPs) affordable for their newly released EV models, dealers are exploiting the current scarcity of vehicles to increase prices substantially. The most egregious example occurred several weeks ago where a Ford dealer in Fort Walton Beach, Florida, attempted to sell a Ford F-150 Lightning with an MSRP of $71,049 for $140,600—including a "Market Adjustment" of $69,554.[94] While the $69,554 "Market Adjustment" is obviously an aberration, larger dealer mark-ups on EVs than internal combustion engine (ICE) vehicles are not. Bloomberg recently reported that the average dealer mark-up on battery-only EVs was 2.6%, as compared to 1.6% for ICE vehicles.[95] Indeed, Ford's CEO recently stated that he wants Ford EVs to be sold only online, with no dealer markups.[96]

If automakers move away from the increasingly obsolete dealership model and toward direct sales, New York's current direct sales limitations will continue to thwart its EV ambitions. The Council should recommend elimination of New York's limits on direct sales of vehicles.

G. Equity and Just Transition

The current fossil fuel economy has resulted in certain communities—particularly communities of color—bearing an outsized share of the pollution burden for many decades. The strategies in the Draft Scoping Plan have the potential to dramatically reduce New York's reliance on fossil fuels in all sectors of the economy and greatly improve the quality of the environment for historically overburdened communities. At the same time, as discussed above, transitioning to a green economy can catalyze substantial job growth throughout the State. However, safeguards are needed in the Final Scoping Plan to ensure not only that the transition away from fossil fuels actually occurs but that overburdened communities receive the full benefits of that transition. Safeguards are also needed to ensure that the transition is affordable, that lower-income households are able to electrify their homes and their transportation options without exacerbating already-challenging energy burdens, and that the new jobs created are high quality and located in New York.

With regard to ensuring that the fossil fuel transition actually occurs, it is critical that communities are not railroaded into accepting newer fossil fuel-based facilities on the pretext that they will reduce local pollution levels. Too often, both the State and fossil fuel developers present new development to a host community as a choice between continuation of an existing highly polluting fossil fuel facility or a state-of-the-art somewhat-less-polluting fossil fuel

[94] Jo Borras, Gary Smith Ford and the $140,600 F-150 Lightning, Clean Technica (June 13, 2022), https://cleantechnica.com/2022/06/13/gary-smith-ford-and-the-140600-f-150-lightning/.
[95] Ira Boudway, Dealers Are Marking-Up EVs, Too, Bloomberg (Mar. 5, 2022), at https://www.bloomberg.com/news/articles/2022-03-05/hyundai-kia-price-mark-ups-test-consumers-purchasing-impulses.
[96] Jonathan M. Gitlin, No more dealer markups: Ford wants to move to online-only sales for EVs, Ars Technica (June 2, 2022), at https://arstechnica.com/cars/2022/06/ford-wants-to-sell-evs-online-only-with-no-dealer-markups-says-ceo-farley/.

facility. This choice is frequently a false one. For example, the developer of a proposed set of floating gas turbines in the Gowanus Canal in Brooklyn attempted to tether the development of the new turbines to the retirement of the existing turbines at the site and at the nearby Gowanus Narrows site.[97] Nevertheless, on December 15, 2021, the developer discontinued its pursuit of the new gas turbine project[98] and the following day filed a notice with the Public Service Commission announcing the deactivation of half of the existing generation at the project site,[99] demonstrating the retirement of the existing facility was not actually contingent on development of the new one. The developer of the Astoria gas peaking plant presented the local community with the same false choice. There again, despite having its air permit denied by DEC and being unable to move forward with the new plant, the plant owner nevertheless moved forward with retiring the antiquated units at the existing facility.[100]

Implementing the fossil fuel plant transition process recommended in the Draft Scoping Plan and, in the near term, the Governor's Blueprint to replace the State's dirtiest fossil fuel plants by 2030,[101] will allow communities hosting these polluting power plants to leapfrog gas and move directly to clean energy solutions. The Final Scoping Plan should ensure that workforce assessment planning is integrated into the planning processes for retiring fossil fuel-fired facilities.

It is also critical that the Final Scoping Plan support worker protections. As discussed above, the Just Transition Working Group promisingly found that the greatest job growth would be in the family sustaining wage range of $28-37 (2019$).[102] The Just Transition Principles within the Draft Scoping Plan create a strong framework for providing accessible, equitable, high-quality jobs across the new green economy. Additional safeguards in the Final Scoping Plan can help ensure the quality of newly created jobs by requiring strong labor standards on state-funded or state-sited projects including prevailing wage requirements, project labor agreements and labor peace agreements, local hire agreements, community benefits agreements, and lowering the threshold for these prevailing wage and labor peace agreements from the current 5 MW threshold for renewable projects that is codified in the New York Labor Law (§ 224-A(4)(g)).

The Draft Scoping Plan recognizes the importance of incentivizing supply chain development within New York State. In the Final Scoping Plan, this should be expanded to include maximizing the potential for state funds to incentivize job creation and prioritize good, high-road employers, such as Buy American provisions and best-value procurement, as well as

[97] *See, e.g.*, Gowanus Generating Station Gowanus Repowering Project: Public Involvement Program Plan (Revised), Case 18-F-0758 (Feb. 12, 2019), at 1-2.
[98] Discontinuance of Article 10 Proceeding, Case 18-F-0758 (Dec. 15, 2021).
[99] Notice of Intent to Retire Generating Facility Gowanus Barges 1 and 4, Case 05-E-0889 (Dec. 16, 2021).
[100] *See* Notice of Intent to Retire Astoria Gas Turbine Power LLC Turbine Units, Case 05-E-0889 (Feb. 22, 2022) (announcing intent to retire all 12 twin-pack simple cycle combustion turbines at the site despite the proposed new gas turbine being denied by DEC in October 2021).
[101] 2022 State of the State Book at 150 (identifying plan to direct NYSERDA, DPS and DEC to develop a blueprint to guide the retirement and redevelopment of New York's oldest and most-polluting fossil fuel facilities and their sites by 2030).
[102] Just Transition Working Group, Jobs Study at 127.

identifying opportunities for competitive solicitations for bulk purchasing or centralized procurement contracts for clean energy and clean transportation projects.[103]

The significant projected job growth necessitates investing in workforce development, including funding and facilitating attendance in apprenticeship programs and training courses and directing coordination between State and municipal programs that support workforce development to ensure training is supported and attended. Additionally, workforce development can be responsibly managed and aligned with New York State clean energy goals through the use of employment plans mapping expected job creation and job displacement, skill gaps, and projected workforce needs and opportunities.

The Final Scoping Plan should also include recommendations to ensure that job growth creates long-term career opportunities for women, Blacks, Indigenous people, and people of color, justice-impacted individuals, and members of disadvantaged communities, as well as job opportunities that are accessible at different educational levels.

Importantly, engagement with Indigenous Nations must respect their tribal sovereignty. The State and the Climate Action Council should use appropriate State-to-Nation channels of communication and should acknowledge both the direct impacts that climate change is having on Indigenous communities as well as their unique historical relationship to the land and long tenure of stewardship. To help minimize and mitigate conflict regarding the siting of renewable energy projects, the Council should recommend that the Office of Renewable Energy Siting hire an Indigenous Nations liaison to facilitate consultation, provide a single point of contact for Nations, developers, regulators, and others, and help guide conversation or mediate should applications or permitting plans become controversial, and advance protections to end the desecration of Indigenous ceremonial sites in New York.

Finally, it will be critical that the Final Scoping Plan address the need to ensure adequate funding so that lower-income New Yorkers are able to make the transition to electrification. While electrification of both transportation and home heating/cooling offers competitive fueling costs (in some cases substantially lower than fossil fuel alternatives), there are significant up-front cost challenges to purchasing electric vehicles or installing air-source heat pumps. For example, even with existing incentives, many lower income customers will not be able to afford the capital investments necessary to transition their residence to highly efficient air-source heat pumps. Yet, if low-income gas customers are not on the front end of the heat pump transition, they could end up assuming an increasingly large share of the (massive) fixed costs of maintaining the gas distribution system. While, as discussed above, repurposing the tens of billions of dollars that gas utilities may ask their customers to spend on leak-prone pipe replacement could go a long way toward alleviating the cost of electrifying low-income gas customers, additional sources of funding will be needed as well.

H. Conclusion

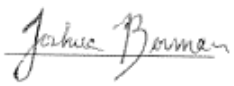
The Sierra Club appreciates the Climate Action Council's efforts to develop a just, equitable, and workable path toward achievement of New York's climate goals. Between the

[103] *See* Just Transition comments of Earthjustice et al. (filed with the Climate Action Council on June 30, 2022).

devastating droughts and wildfires ravaging huge portions of the Western United States, the more frequent and increasingly intense climate-fueled storms in the East and South, and our shores being battered by rising sea level, climate action has never been more urgent or more timely. Not long ago, these terrifying impacts might have seemed like a reality for future generations to face. Now they are already confronting us and are only going to intensify without a rapid and sustained effort to limit climate-destabilizing emissions. We urge the Council to consider the recommendations above and the more detailed recommendations in the joint comments submitted by Sierra Club and dozens of other organizations on June 30.

Thank you for your consideration.

Respectfully submitted,



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