Buildings

I. Introduction

Commenters broadly support the CAC's recommendations to decarbonize the residential and commercial building sectors. We fully support the Housing and Efficiency Advisory Panel's recommendations and also urge the CAC to elaborate on certain aspects in the Final Scoping Plan ("FSP"). Increasing energy efficiency and electrification to fully transition off combustion for heating, cooling, and cooking will allow New York State to meet the CLCPA's 2030 and 2050 emission reduction mandates by eliminating greenhouse gas ("GHG") emissions from buildings. On-site fuel combustion in residential, commercial, and industrial buildings generates 32% of the State's total GHG emissions, and combined buildings emissions, including electricity generation used for buildings, constitute approximately 45% of the State's total GHG emissions.[1]

[1] NYSERDA, *New York State Greenhouse Gas Inventory: 1990-2016* S-4 fig. S-1 (2019), https://www.nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/Greenhouse-Gas-Inventory; NYSERDA, *New York State Greenhouse Gas Inventory Fact Sheet*, https://www.nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/Greenhouse-Gas-Inventory; N.Y. Climate Action Council, *Draft Scoping Plan* ("DSP"), 24 (2021), https://climate.ny.gov/-/media/Project/Climate/Files/Draft-Scoping-Plan.pdf.

The technology required to make this transition exists today, but the State must work to overcome awareness and financial barriers. Additionally, the State must avoid endorsement of false solutions: costly and environmentally damaging dead ends such as combusting hydrogen or biomethane (which the gas industry calls "renewable natural gas" or "RNG") for heating, domestic hot water, clothes drying, and cooking in buildings.

Ambitious energy efficiency improvements are also a critical part of the strategy to reduce building emissions and will benefit both communities and residents by reducing electricity bills and improving air quality. Additionally, building shell improvements will contribute to improving energy efficiency and lowering energy bills, while enhancing New Yorkers' health and comfort.

We commend the Council for championing a just transition from New York's reliance on gas and other fossil fuels to clean, renewable energy, which will make the building sector safe, healthy, affordable, efficient, and emissions-free. To fully decarbonize the building sector, the Council must (1) recommend that the State massively scale up financial support for energy efficiency and electrification upgrades, which includes the creation of an energy efficiency and electrification readiness fund to address pre-existing building conditions like roof repair/replacement, foundation repair, and abatement of legacy environmental toxins (e.g., lead, mold, and asbestos), (2) encourage the governor to direct the Public Service Commission to implement regulations that will phase out fossil fuel in an intentional and equitable way, (3) phase in new zero emission standards for existing and new buildings, (4) direct the PSC to develop and adopt a new rate design which incentivizes and is compatible with conservation, efficiency, and electrification, (5) prioritize accessible consumer finance and protection, (6) bolster local supply chains and create local jobs, and (7) ensure that building decarbonization solutions serve as a benefit to the grid.

Low-income households and disadvantaged communities have paid and continue to pay a greater price for the State's dependence on fossil fuels because they face disproportionate levels of air pollution and related illnesses. As we increase efficiency and electrification, we must make sure the investments and policies are intentionally designed from the outset to include disadvantaged communities. While we endorse the Council's recommendations, we are concerned by the lack of specificity regarding how the investments and policies will be targeted to reduce the burden and increase the benefits in disadvantaged communities. As a first step in implementing an equitable energy efficiency and building decarbonization strategy, we recommend that NYSERDA, DEC, PSC, HCR, and OGS work together, in consultation with the CJWG, and develop a tool to direct green investments and benefits to disadvantaged communities in line with the equitable investment mandate in the CLCPA. This tool should be executed quickly to ensure an equitable transition and incorporate the interim (and then final) criteria and maps for disadvantaged communities, identify which communities have been helped and by which program, and include annual goals. The tool should include specific benchmarks to ensure that investments are continually reaching DACs and LMI households at the pace needed to meet the Climate Act mandates. DACs and LMI households should be the vanguard of a just transition. Therefore, we recommend that investments are frontloaded and barriers to accessing energy efficiency and electrification programs and services are overcome in the early years of the transition. Early and targeted action will protect DACs and LMI households from being stranded

on a decommissioning, aging, and increasingly expensive to maintain fossil fuel energy system. In addition, it is imperative that an energy efficiency and electrification strategy does not drive increased housing costs for DACs and LMI households and must not result in gentrification and neighborhood displacement.

II. Regulations to Phase Out Fossil Fuels in Buildings

As the DSP recognizes, regulations must be put in place to phase out and retire fossil fuel use in buildings. New legislation is also needed to enact all of the policy changes required to achieve building electrification statewide. As discussed further in comments on the Gas Transition Chapter, electrification is essential to decarbonizing buildings.

A. Electrification is the only sensible approach to decarbonization of the building sector.

Commenters agree that widespread electrification of buildings is essential and urge the CAC to reject strategies built around combustion of alternative fuels such as RNG and hydrogen. Production and use of these fuels result in significant GHG emissions and other environmental impacts.[2] For example, hydrogen combustion creates significant emissions of nitrogen oxides (NOx), a precursor to both ground-level ozone and fine particulate matter.[3] These pollutants adversely impact local air quality and can cause serious health problems, and disproportionately affect communities of color.[4] In fact, combusting hydrogen may produce NO_x emissions at six

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[2] Sasan Saadat & Sara Gersen, Earthjustice, *Reclaiming Hydrogen for a Renewable Future: Distinguishing Oil & Gas Industry Spin from Zero-Emission Solutions* 10–11, 28 (Aug. 2021), https://earthjustice.org/sites/default/files/files/hydrogen_earthjustice.pdf.

[3] *See, e.g.*, Jeffrey Goldmeer et al., Gen. Elec., *Hydrogen as a Fuel for Gas Turbines* 5 (2021), https://www.ge.com/content/dam/gepower-new/global/en_US/downloads/gas-new-site/future-of-energy/hydrogen-fuel-for-gas-turbines-gea34979.pdf (finding that a 50/50 mixture of hydrogen and fossil gas (by volume) could increase concentrations of NOx in gas exhaust by 35% using General Electric combustion turbines); Mirko Bothien et al., ETN Global, *Hydrogen Gas Turbines: The Path Towards a Zero-Carbon Gas Turbine* 9 (2020), https://etn.global/wp-content/uploads/2020/01/ETN-Hydrogen-Gas-Turbines-report.pdf (warning that higher flame temperatures for hydrogen-gas blends will produce more health-harming NOx emissions "if no additional measures are undertaken"); Mehmet Salih Cellek & Ali Pinarbasi, *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 1194, 1205 (2018), https://www.sciencedirect.com/science/article/abs/pii/S0360319917319791 (finding that hydrogen combustion can emit more than six times as much NOx as does methane combustion).

[4] NOx is a pollutant that damages heart and respiratory function, impairs lung growth in children, and leads to higher rates of emergency room visits and premature death. Further, the state's Department of Health has identified the reduction of air pollution, including ozone, as a key indicator to drive improvements in asthma rates and public health outcomes throughout the state. The New York State Prevention Agenda 2019-2024 notes the "extensive evidence" linking ozone with respiratory and cardiovascular illness and death and establishes a goal to "reduce exposure to outdoor air pollutants," with an emphasis on vulnerable groups. *See* N.Y. State Dep't of Health, *New York's State Health Improvement Plan: Prevention Agenda 2019-2024* 72–3 (updated Sept. 2, 2021), https://www.health.ny.gov/prevention/prevention_agenda/2019-2024/docs/ship/nys_pa.pdf; *see also Nitrogen Dioxide & Health*, California Air Resources Board, https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health (last visited May 31, 2022); *see also* Christopher W. Tessum et al., *PM2.5 Polluters Disproportionately and Systemically Affect People of Color in the United States*, 7 Sci. Advances eabf4491 (2021), https://www.science.org/doi/pdf/10.1126/sciadv.abf4491.

times the rate of combusting methane.[5] Additionally, a growing body of research indicates that blending hydrogen with natural gas for use in buildings is highly inefficient and does little to reduce GHG emissions.[6] Moreover, because of the difference in chemical properties between hydrogen and methane, it is not feasible to use the existing natural gas infrastructure to combust hydrogen in buildings.[7] Natural gas pipelines can only handle low hydrogen blends before creating safety risks.[8] Relying heavily on hydrogen to power appliances would therefore require utilities to retrofit or replace most pipelines, a huge capital investment, whereas electrification is significantly less disruptive because equipment and appliance replacements can occur incrementally using existing electrical infrastructure.[9]

Additionally, less than one percent of hydrogen is produced via electrolysis and only about 0.02 percent qualifies as green hydrogen (meaning that it is produced from electrolysis powered purely by renewable electricity).[10] Green hydrogen production is currently limited to demonstration projects, with projects "mostly in the single-digit MW scale."[11] Instead, nearly all hydrogen within the United States is gray hydrogen, produced via steam methane reformation ("SMR") of fossil gas, an energy-intensive process emitting both GHGs and harmful co-pollutants including NO_x, fine particulate matter, carbon monoxide, and volatile organic compounds.[12] And because electrolysis is so energy-intensive, hydrogen produced using grid-average electricity is even more carbon-intensive than hydrogen produced via SMR.[13] Producing hydrogen is also water-intensive, and at a large scale could lead to water stress.

Production and use of other non-fossil fuels such as RNG also results in harmful environmental impacts and can increase net GHGs.[14] Indeed, because RNG is chemically identical to fossil gas, its combustion emits the same level of GHGs.[15] Additionally, RNG cannot provide a meaningful source of energy: the supply of true, capturable waste methane (e.g., from

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[5] Lew Milford et al., Clean Energy Group, *Hydrogen Hype in the Air* (Dec. 14, 2020), https://www.cleanegroup.org/hydrogen-hype-in-the-air/. ("The bad news is that H2 combustion can produce dangerously high levels of nitrogen oxide (NOx). Two European studies have found that burning hydrogen-enriched natural gas in an industrial setting can lead to NOx emissions up to ***six times that of methane*** (the most common element in natural gas mixes). There are numerous other studies in the scientific literature about the difficulties of controlling NOx emissions from H2 combustion in various industrial applications" (emphasis in original).

[6] Sara Baldwin et al., Energy Innovation Policy & Tech., *Assessing the Viability of Hydrogen Proposals: Considerations for State Utility Regulators and Policymakers* 2 (2022), https://energyinnovation.org/wp-content/uploads/2022/04/Assessing-the-Viability-of-Hydrogen-Proposals.pdf.

[7] *Id*.

[8] *Id*. at 7

[9] *Id*. at 10.

[10] Saadat & Gersen, *supra* note 2, at 7; Emanuele Taibi et al., Int'l Renewable Energy Agency, *Green Hydrogen Cost Reduction: Scaling Up Electrolysers to Meet the 1.5°C Climate Goal* 18 (2020), https://irena.org/-/media/Files/IRENA/Agency/Publication/2020/Dec/IRENA_Green_hydrogen_cost_2020.pdf; *see also Decarbonising Industry with Green Hydrogen*, Int'l Energy Agency (Nov. 17, 2020), https://www.iea.org/articles/decarbonising-industry-with-green-hydrogen (defining "'green' hydrogen" as hydrogen produced "using electricity generated from renewable energy sources").

[11] Taibi et al., *supra* note 1010, at 18.

[12] Saadat & Gersen, *supra* note 2, at 10.

[13] *Id.* at 13.

[14] *See generally id.*

[15] *Alternative Fuels Data Center*, U.S. Dep't of Energy, https://afdc.energy.gov/fuels/natural_gas_basics.html#:~:text=RNG%20qualifies%20as%20an%20advanced,liquefied%20for%20use%20in%20vehicles (last visited May 31, 2022).

uncontrolled landfills and wastewater treatment plants) amounts to less than 1% of current gas demand.[16]

Moreover, any strategy built around continued reliance on the gas pipeline system necessitates massive investments in replacement of leak-prone pipes. Utilities are collectively planning to invest billions of dollars in LPP replacement over the next several decades. These costs are grossly disproportionate to their climate benefits and most of these costs could be avoided through a more surgical, safety-based approach to focusing instead on the most hazardous and environmentally significant leaks. For these reasons, building decarbonization must be pursued through electrification, and reliance on alternative fuels must be rejected.

B. The State should adopt standards for zero-emissions and electric appliances.

Commenters agree that the State should adopt standards for zero-emission equipment (B2). Additionally, to promote the transition to zero-emission equipment and appliances, the State should eliminate incentives for energy efficient gas appliances: such incentives would only prolong reliance on gas.

Transitioning from fossil fuel to electric appliances will achieve efficiency gains in addition to climate and public health benefits. For example, NYSERDA estimates that a geothermal heat pump is up to three times more efficient than an oil-fueled system, and that an air source heat pump is up to 50% more efficient than an oil-fueled system.[17] Additionally, the CAC should reject false claims that heat pumps provide insufficient heat in cold climates. Geothermal heat pumps can operate in any climate, and modern cold-climate heat pumps can sufficiently heat homes in cold climates when the right technology is paired with the right improvements to building envelope. Field tests of some cold-climate air source heat pumps in Minnesota found that these systems maintain effectiveness up to negative thirteen degrees Fahrenheit.[18]

However, the onus should not be on customers to determine whether they are being sold a heat pump that is adequate for their building. Standards must be set and enforced for the sale and marketing of cold-climate heat pumps in New York so that only the most efficient cold-climate air source heat pumps are sold to customers in New York and that no customer is sold a heat pump for a building that does not have the adequate insulation to support that appliance. Heat pumps that are not designed for or that do not adequately provide heat in cold New York's cold climate should not be sold to customers.

New and modified buildings present an enormous opportunity to advance electrification and efficiency and achieve progress towards the State's 2050 mandates. Commenters agree with the DSP's recommendation to adopt, on an accelerated timeframe informed by the integration

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[16] Sasan Saadat et al., Earthjustice & Sierra Club, *Rhetoric v Reality: The Myth of "Renewable Natural Gas" for Building Decarbonization* 9 (July 2020), https://earthjustice.org/sites/default/files/feature/2020/report-decarb/Report_Building-Decarbonization-2020.pdf.

[17] NYSERDA, NYS Clean Heat, *Keep Your Home Comfortable All Year Long* 3, https://cleanheat.ny.gov/assets/pdf/CHC-SFR-HP-buyingguide-br-1-v3_acc.pdf.

[18] Minn. Com. Dep't Energy Res., *Cold Climate Air Source Heat Pump* 19 (2017), https://www.mncee.org/sites/default/files/report-files/86417-Cold-Climate-Air-Source-Heat-Pump-%28CARD-Final-Report-2018%29.pdf.

analysis, State building codes that will require new construction to be highly efficient and all-electric by a specified date and require grid-interactive electrical appliances as feasible (B1). Additionally, Commenters support the recommendation that DOS, NYSERDA, and the Code Council advance all-electric code provisions that prohibit fossil fuel equipment for space conditioning, hot water, cooking, and other appliances. It is critical that the State align regulatory incentives so that new, decarbonized, all-electric buildings cost less to build to code than those requiring additional gas infrastructure.

While commenters are disappointed that the All-Electric Building Act and the Advanced Building, Appliance, and Equipment Standards Act were not included in the 2022 State budget, the CAC should call on the State Legislature to pass both bills. Moreover, as the DSP recognizes, additional funding for local code enforcement, including training and a credentialing program for Energy Code inspectors, is critical to ensure that revised codes are implemented.

C. Public service law must align with Climate Act.

The FSP should recommend that PSC and DPS bring their policies in line with the Climate Act's mandates. Safe and reliable service cannot supplant the Climate Act. Reliability and climate justice are not incompatible, and the State must resolve any perceived tension between the two. Commenters support the elimination of subsidies for fossil fuels and subsidies for gas connections; the 100-foot rule; and the utility obligation to serve. The CAC should accordingly urge the Legislature to pass the Gas Transition and Affordable Energy Act, a necessary step for ending the expansion of gas infrastructure. Additionally, as the State develops a robust non-pipeline alternative framework, non-pipeline alternatives should be treated as the default, with gas investments made only as a last resort. To that end, Commenters support the proposal to develop a comprehensive plan to end investments in new gas infrastructure in coordination with municipalities.

III. Support Massive Investments to Scale Up Financial Support for EE Building Envelope Upgrades and Electric Heat Pump Systems

The CAC is aware that New York State has not yet allocated the necessary resources to decarbonize the existing building sector and explains that both public resources and private capital will be needed to pay for the required building upgrades. In the DSP, the CAC explains that to "meet New York's GHG emission reduction requirements, more than 250,000 housing units each year will need to adopt electric heat pumps and energy efficiency measures from around 2030 onward."[19] Moreover, this year, Governor Hochul announced a plan to achieve two million electrification-ready homes by 2030, including by electrifying 200,000 homes per year by the end of the decade.[20] The DSP identifies some dedicated financial support programs that enable households to benefit from energy upgrades, but overall, the Council fails to identify which existing programs will contribute to fund efficiency upgrades and electrification installations and also neglects to provide policymakers with a financial roadmap to fund the

[19] DSP at 131.

[20] NYSERDA, *Governor Hochul Announces Plan to Achieve 2 Million Climate-Friendly Homes by 2030* (Jan. 5, 2022), https://www.nyserda.ny.gov/About/Newsroom/2022-Announcements/2022-01-05-Governor-Hochul-Announces-Plan-to-Achieve-2-Million-Climate-Friendly-Homes-By-2030.

Council's one hundred billion dollar estimate.[21] Based on the current incentives, rebates, and tax credits available to tenants and property owners, there is a clear risk that current programs have insufficient funds to support the transition off fossil fuels.[22] Additionally, the FSP should include an accurate accounting of how many homes currently have heat pumps—without knowing where we start, the State cannot know how much financing is needed to achieve the 250,000 target.

In addition to developing a financial plan, the CAC must identify and direct policymakers to remove roadblocks to efficiency upgrades and electrification by improving affordability with incentives, rate reform, and financing with a primary focus on making it work for disadvantaged communities. A policy designed to work for the most vulnerable is more likely to work for everyone. The CAC must aim to be comprehensive and holistic. Combining energy efficiency and electrification programs with public health programs and initiatives could have both climate and health benefits. For example, braiding efficiency, weatherization, and building shell improvements into lead and mold remediation would address environmental and health concerns and enable New Yorkers to reside in healthier environments. Finally, the FSP must include benchmarks and incentives for end users, contractors, manufacturers and distributers, and policymakers in order to implement the Council's massive decarbonization plan.

A. Equity must be centered when decarbonizing the building sector.

As New York State begins to accelerate its progress towards efficiency upgrades and electrification, the CAC must ensure that policies and investments focus on equity. The CLCPA requires "disadvantaged communities to receive forty percent of overall benefits of spending on clean energy and energy efficiency programs, projects or investments in the areas of housing workforce development, pollution reduction, low-income energy assistance, energy, transportation and economic development …[and] no less than thirty-five percent of the overall benefits of spending."[23] We commend the CAC for committing to meet or exceed the benefits required by the Climate Act. However, the programs that could be leveraged to achieve this goal are not sufficiently funded, scalable, or accessible to customers, and are hamstrung by supply constraints and the ability of industry and contractors to dramatically increase project volume while centering their business models around equity, community benefits, and high road labor standards. The CAC must create a plan for how the State will meet its statutory requirements. The Draft Scoping Document identifies several programs which will benefit LMI customers and disadvantaged communities, but many include limitations or continue to install fossil fuel boilers and appliances. Below are examples of existing programs:

- **EmPower** is a NYSERDA-administered weatherization and energy conservation program funded by utility ratepayers. Empower will spend up to around $10,000 per household on free energy assessments, insulation, efficient lighting, and energy star refrigerators/appliances for families below a statewide income level. Homeowners and renters are both eligible. In cases where renters are income eligible, Empower will provide services at no cost with consent of the landlord. Empower, however, is not explicitly targeted to efficiency through electrification

[21] DSP at 130.
[22] *See id*. at 131, 134–136.
[23] ECL § 75-0117.

and may install new boilers and appliances that rely on natural gas, thus locking in the household for more years of gas usage in contravention of the State's goals to decarbonize and promote public health. Additionally, Empower provides no enforceable protection for tenants and there is a risk of rent increase or displacement once upgrades have been made.

- **The New York Federal Weatherization Assistance Program (WAP)** has $65 million in funding and is administered by local non-profits throughout the State. The non-profits provide assistance with primarily insulation-related repairs as well as providing efficient appliances and lighting. Eligibility is for households below 60% of the State median income. Like Empower, WAP is not explicitly targeted to efficiency through electrification, and may install new boilers and appliances that rely on natural gas, thus also locking in the household for more years of gas usage.
- **NY-Sun Solar Equity Framework:** Is expected to disperse $1.6 billion in loans for solar projects across the State. Most of the allotted funds are directed to commercial and industrial projects. However, only $200 million are directed to increase access to solar energy for LMI households, affordable housing, and environmental justice communities.[24]
- **NY Clean Heat**: is the State's building electrification program, which is jointly administered by the investor-owned utilities and NYSERDA. NYS Clean Heat is planning to invest nearly $700 million to develop the market and drive customer adoption of efficient building electrification solutions and train the workforce required for this transformation.

Many of the existing State programs provide some financial assistance to lower the up-front cost of efficiency and electrification upgrades, by offering rebates for appliances. Customers are encouraged to weatherize and insulate their homes, and utilities are rolling out make-ready programs to update electric panels to accommodate electric appliances. However, while these programs are helpful, they are inadequate to meet financing needs at the scale required by the CAC Draft Scoping Plan. The CAC must urge policymakers to significantly increase the amount of funding to be used for programs in order to reduce GHG emissions.

As the Climate Action Council has recognized, the transition off fossil fuels in homes and buildings must be done in a manner that does not harm or burden lower-income households and disadvantaged communities. This includes phasing out incentives for non-electric appliances, which contribute to health harms and will become obsolete as the State advances building electrification. Instead, programs should focus on the specific steps needed to electrify homes. Additionally, while efficiency upgrades and electrification will provide individual households, communities, and the State enormous benefits, there are also some risks that must be managed. As such, efficiency upgrades and electrification must be implemented equitably and with due consideration. Ignoring the risks instead of addressing them could exacerbate the burdens on an already under-resourced group of people.

[24] NYSERDA, *NY-Sun's Commercial & Industrial Program: Making Solar Energy More Accessible to Homes, Businesses, and Communities* 5 (2021) https://www.cenhud.com/globalassets/pdf/my-energy/solar-summit/2021/solar-summit-2021---ny-sun-program-updates.pdf.

LMI and DAC customers and tenants already face significant obstacles to paying their utility bills and enjoying the benefits of building electrification. We applaud the Council for accounting for New York's existing Energy Affordability Policy, which seeks to limit energy costs for low-income households to no more than 6% of their income. However, we urge the Council to direct the PSC and the legislature to develop a much more robust and workable electricity affordability policy in New York so that efficiency upgrades and electrification are made truly affordable for LMI customers as well as DACs, and that the electricity needed to operate electric equipment is affordable. Additionally, electrification and weatherization programs should be coordinated with other affordable housing programs to streamline the upgrade process for consumers. LMI and DAC customers requiring pre-weatherization and pre-electrification work, such as mold, lead, or asbestos remediation, should be able to access a single program that helps them navigate the entire process. In addition, as mentioned above, this customer base also needs protections to ensure that landlords who receive incentives and financial support to electrify do not indiscriminately and unjustly increase rents. We have concerns that as landlords and property owners move towards efficiency upgrades and electrification, tenants will face rent increases, displacement, and even eviction. The answer to this concern is not to avoid the upgrades—the housing stock in New York must be improved in order to protect the occupants from the climate and health impacts of burning fossil fuels—but the CAC should work with the housing advocates and environmental justice communities to develop the right local protections for tenants.

In order to prioritize energy affordability, the CAC must urge policymakers to integrate programs and require public assistance and benefits programs to communicate with each other. The public assistance and administering agencies include, but are not limited to: Temporary Assistance, HEAP, Weatherization Assistance Program, WIC, SNAP, Section 8 Vouchers, and NYCHA. Through increased integration and communication among programs, education, outreach, and bundling of benefits will increase which will help households and all New Yorkers to decrease their energy consumption. In partnership with community-based organizations, energy democracy advocates, and environmental justice communities, NYSERDA will soon launch a statewide Regional Clean Energy Hubs initiative that will lay a critical foundation for increasing access to energy efficiency and electrification upgrades for DACs and LMI households. However, funding levels for this new initiative are not adequate to fully engage these communities across a spectrum of interconnected needs from housing and neighborhood stabilization to workforce development to MWBE participation and capacity building.

B. The State must identify barriers, benchmarks and incentives for customers, contractors, manufacturers, and policymakers.

To adopt electric heat pumps and energy efficiency measures for more than 250,000 housing units each year,[25] New York State needs to address the fact that most people have still never heard of a heat pump and most people do not know about State and utility efficiency programs. The Council needs to direct the DEC, PSC, HCR, and NYSERDA to develop a major communications campaign to inform the public and conduct deep outreach to consumers and the workforce in order to inform them about the health, economic, and safety benefits of efficiency and electrification. To ensure compliance with the Climate Law mandates, the CAC must also

[25] DSP at 131.

establish benchmarks and incentives for (1) updating both single family and multi-family household for electrification, (2) purchasing household electric appliances, (3) installing the household electric appliances, and (4) efficiency upgrades (such as weatherization to improve building envelopes). The CAC should consider the following:

- Committing to all-electric public buildings—including public housing—is an important way to demonstrate and publicize the benefits of electrification while also reducing emissions;
- The house-by-house approach to weatherization and electrification will not get us to scale at the pace necessary and will be inequitable. Utilities and their workforces must be engaged and required to help plan and scale the investments and conversions necessary to meet the efficiency and electrification goals;
- Policymakers should invest in electrification and weatherization training programs as well as apprenticeship programs which will create long-term middle-class careers with livable wages for people facing barriers to competitive employment opportunities;
- Prevailing wages and project labor agreements should be incorporated into State and utility investments in efficiency and electrification programs;
- Creating a split incentive target program for landlords and tenants. Often times, renters and LMI customers face significant obstacles to enjoying the benefits of building electrification when the landlord is responsible for decisions about appliance replacements and the tenant is responsible for paying the energy bills. Funding must be provided to tackle this split incentive problem and identify the affected households and educate both tenant and landlord about available programs for purchase incentives and ratepayer protection;
- Building owners and tenants need to be educated, and myths surrounding increased costs and electrification must be dispelled; and
- Educate suppliers, contractors, HVAC professionals, electricians, and/or plumbers and provide them with incentives to sell, install and service advanced electric appliances. Capacity building and financial support to contractors should prioritize MWBEs and worker-owned cooperative businesses.
- Some incentives and rebates will be addressed and expanded in investor-owned utility rate cases. Typically, utility-run electrification programs in New York involve technology-based rebates to residential customers.[26] To expand on utility-run electrification programs, the PSC should authorize utilities to provide access to financing for home energy upgrades and require utilities to partner with community-led Regional Clean Energy Hubs in creating customer education plans and prioritizing financial assistance and education to residents in disadvantaged communities. Non-utility program administrators are more likely offer more

[26] Utilities offer a program called Heating Electrification Make-Ready, which involves making significant upgrades to electrical boxes, breaker boxes, and fuse boxes to accommodate electric appliances and climate-forward technologies. *See, e.g.*, ConEd Customer Energy Solutions Panel Testimony at 29, 22-E-0064 (Item No. 3) & 22-G-0065 (Item No. 2) (Jan 28, 2022). Switching appliances to run on electricity instead of fossil fuels increases the amount of power flowing through a home's breaker box, which is why upgrades are necessary. As many as 70% of breaker boxes in the U.S. homes will need to be upgraded to handle the increased load of electric heating and vehicle charging. *See Residential Energy Consumption Survey (RECS)*, U.S. Energy Information Administration, https://www.eia.gov/consumption/residential/ (last visited May 31, 2022).

comprehensive program models, including whole-home retrofit programs, financing for upgrades, workforce training programs, low- and moderate-income programs, market development, and other strategies. Program administrators should offer point of sale incentives to contractors and homeowners in order to resolve any cost differential.

It is critical that electric appliances—heat pumps and induction cooktops—are consistently the least expensive option for consumers, not only in terms of the expected total lifetime cost to own but also in terms of upfront costs. However, upstream incentives for heat pump manufacturers are currently not widely funded. Expanding and funding upstream incentives for heat pump manufacturers would be the most cost-effective energy savings and GHG reductions because they are scalable and savings can be passed on to end-use customers. Such incentives are not currently widely funded, presenting an opportunity for the State to leverage public investments to expand access to heat pumps.

The presence of well-known and available rebates will also help time-crunched consumers avoid making a rushed decision to install a fossil fuel appliance. Contractors and dealers should be knowledgeable of the financial incentives and rebates and should also encourage replacement of fossil equipment that is nearing the end of its useful life and likely to fail. The FSP should propose a plan similar to "cash for clunkers," which would encourage retirement of fossil fuel appliances in exchange for a new electric one. Lastly, when offering financial incentives, it is important to not limit a program to tax credits for electrification because this would exclude customers who lack the tax equity to access these incentives.

Because contractors play a key role in building electrification, the CAC should consider establishing certification pathways to create standardized knowledge and skills for heat pumps and other electrification technology installation and maintenance. Expanding the workforce and educating and motivating contractors to install and service heat pumps is a critical strategy for scaling up capacity for electrification in buildings. Utilities can also consider offering partnerships with contractors to encourage heat pump sales and deployment. Most replacement purchases of furnaces, water heaters, and air conditioners happen when the current appliance stops working. Because this leaves little time for research, the recommendation of the general contractor, HVAC professional, electrician, or plumber who will do the installation has an outsized impact. That makes it essential both to motivate professionals to recommend this equipment and to have distributors stock heat pumps to prevent delay. Providing targeted upstream and midstream incentives to distributors, contractors, and qualified professionals will both increase sales of advanced electric appliances and move New York faster toward a mature heat pump market.

C. The State must adopt measures to protect consumers during the transition to electrification.

The FSP should incorporate the CJWG's recommendations that are designed to protect consumers, and in particular, low-income ratepayers.

The Buildings Chapter of the DSP acknowledges concerns raised by the CJWG regarding the need to frontload investments, technical assistance, and other resources in DACs to ensure

those communities are not left stranded in an aging and expensive fossil fuel-based energy system. However, the DSP fails to align strategies that prioritize investments in DACs with the proposed timelines for the adoption of new codes and standards. These strategies must move in lockstep to create the conditions for a just transition. The Buildings Chapter calls for the creation of a new Retrofit and Electrification Readiness Fund. This fund should be created as soon as possible and capitalized at a minimum of $1 billion per year, pursuant to the recommendations of the Energy Efficiency and Housing Advisory Panel. The fund should provide targeted direct investments to DACs and the affordable housing sector. Capitalizing the fund robustly and expeditiously will ensure that early investments in DACs and LMI households are done with proven technology, and therefore, that those investments will truly serve previously underserved populations. Additionally, the FSP should explicitly recognize and seek to achieve the State's goal that low-income families spend no more than 6% of their income on energy bills.[27]

The DSP fails to advance recommendations from the CJWG regarding consumer and community protections that would guard against energy rate increases, predatory business practices, mistreatment by landlords, and gentrification and neighborhood displacement. The following recommendations should be included in the final Scoping Plan:

- Utility customer bill of rights;
- Safety net guarantee of affordable renewable energy to every household;
- Public education to combat the power of the investor-owned utilities and the opaqueness of the energy system; and
- Clawback provisions regarding public subsidies to private landlords as an anti-displacement strategy to mitigate rent increases and evictions.

Additionally, the CAC should consider recommending that intervenor funding be made available for rate cases, as in Article 10 cases. Rate cases are highly technical, and meaningful participation requires staff time, legal counsel, and expert witnesses. The costs of these services present high barriers to participation, creating an access to justice problem. Providing intervenor funding would allow more stakeholders to participate in this critical process.

Finally, the State should endeavor to increase and improve access to financing for energy efficiency and electric equipment. As discussed, only $200 million of NY-Sun's financing is directed to increase access to solar energy for LMI households, affordable housing, and environmental justice communities.[28]

The State can increase financing in the communities that need it most by expanding zero- or low-interest loans such as NYSERDA's Smart Energy and on-bill recovery loan programs. The FSP should also recommend reforming NYSERDA's underwriting requirements for on-bill recovery loans by eliminating credit score and debt-to-income requirements on projects that are budget neutral or cashflow positive, meaning projected energy savings are equal to or greater than project costs. Carefully designed tariff-based on-bill financing programs administered by utilities that include robust consumer protections are another viable option for scaling investments in energy efficiency and electrification. Additionally, the FSP should recommend

[27] Commenters note that as heating, cooking, and transportation electrify, this figure might require adjustment.
[28] NYSERDA, *supra* note 24, at 5.

watchdog measures to ensure that consumers are protected against predatory lending when borrowing money for capital improvements.

IV. New Standards for Existing Buildings

New York State must also tackle emissions from existing buildings through standards that incentivize electrification and energy efficiency measures.

A. Energy performance and zero-emissions standards are needed.

Commenters agree that energy efficiency performance standards are needed for large existing buildings (B2). The standards should include penalties for noncompliance, which can finance resources and staff for monitoring and enforcement.

Commenters support the DSP's recommendation to issue zero-emissions standards to phase out fossil fuel combustion equipment. Specifically, Commenters endorse the requirement of zero-emission equipment and appliances at the time of replacement and agree that regulations to end on-site GHG emissions must be added to the State Energy Code.

Commenters further support the proposal for a feebate, but, consistent with the CJWG's recommendations, urge the CAC to further flesh out and explain how the feebate would work in practice. Additionally, it is critical that new zero-emission standards send clear market signals to industry stakeholders, including manufacturers, architects, real estate agents, builders, and contractors. Commenters are also concerned about a lack of benchmarks and enforcement mechanisms. Establishing a 2030 target for building emissions is a good first step that provides an interim objective ahead of the 2050 mandate. However, the FSP should include concrete benchmarks and enforcement mechanisms to keep the State on track and guarantee that the Climate Law mandates are fulfilled.

In addition to establishing zero-emission standards, the State should establish and enforce energy efficiency standards for any appliances that are sold, leased, or installed in New York State where not preempted by federal law. As the DSP recognizes, electrification and efficiency are two sides of the same coin. However, we urge the CAC to accelerate its proposed timelines in the FSP. There is no reason to delay until 2030 the adoption of an energy efficiency performance standard for existing commercial and multifamily properties larger than 25,000 feet, and indeed, doing so would harm low-income households living in multifamily properties who will continue to endure the energy burden created by inefficient housing.

B. Benefits must target DACs and LMI households.

Additionally, Commenters support the CJWG's recommendation for regulatory sunset dates for combustion equipment in buildings coupled with public investments to benefit DACs and minimize the risk of negative impacts on lower-income and vulnerable households. While DACs should be targeted for the early benefits of retrofits, low-income housing should not be used as a test case for unproven technology. Additionally, while energy affordability is a challenge for many LMI households, and therefore, energy disclosure provides important

information to prospective renters and buyers, disinvestment could occur if disclosure of energy performance makes properties less attractive. Therefore, investment should be frontloaded to ensure that DACs truly reap the benefits of electrification as quickly as possible. Adequate technical and financial assistance will be critical to DACs.

V. New and Creative Rates to Accommodate Electric End Uses

While we commend the Council for identifying eleven key strategies that will allow New York to meet the climate mandates, developing a new and equitable rate design and structure that will accommodate electric end uses must also be included as a key strategy. To ensure affordability, the Council must recommend that the PSC evaluate and develop a variety of new rate structures, including but not limited to: an electrification rate, a low-to-moderate income rate class, voluntary time of use rates, voluntary demand rates, electric vehicle charging rates, renewable distributed generation rates, as well as bill assistance measures for LMI customers. In addition to developing new rate structures, the Council should urge the PSC to set a goal of ensuring that residential customers pay no more than six percent of their income for electricity.

Electrification should reduce costs, enhance grid flexibility, and reduce greenhouse gas emissions. Unlike traditional electricity load, much of the new electrification load from water and space heating and electric vehicles is flexible in when it draws energy from the grid. When connected with smart meters and thermostats, heat pumps can provide load-shifting capacity and electric vehicles can be programmed to charge in the middle of the night. Heat pumps run for longer at lower outputs than gas boilers and furnaces and with demand management, a customer can shift times of heating and cooling away from electricity network peaks. Thus, electric appliances not only benefit customers but also utilities who are concerned about peak loads with constrained networks. Because peak energy costs more than base load, utilizing load shifting with heat pumps allows customers to reduce their costs while also putting less strain on the electric grid.

Because electric appliances and electric vehicles are more efficient and flexible, it is imperative that policymakers understand customer needs and ensure customer involvement.

VI. Bolstering Local Supply Chains and Creating Local Jobs

The State should ensure that the transition to an electric building stock promotes workforce development and supports local supply chains. The FSP should recognize the important role that labor groups and community-based organizations can play in workplace development. Simply creating jobs is not sufficient: the State should endeavor to usher in a transition that creates good, well-paying jobs that are available in DACs and other underserved communities. Equitable job training programs should be launched in DACs so that people doing energy efficiency improvements and retrofits in DACs are residents of those communities. In sum, building electrification should aim to create communities-to-career pathways so that job creation has sustained and meaningful impacts on communities. In order to reach equitable employment outcomes, the CAC should direct NYSERDA, the PSC, DOL, and HCR to each leverage its authority around licensing, permitting, procurement, and program participation to transform the composition and diversity of the clean energy workforce in the State. Effective

policies and tools to accomplish this begin with high road labor standards and extend to Project Labor Agreements, community workforce agreements, and first source hiring.

Additionally, the final Scoping Plan should incorporate the CJWG's proposal that Minority- and Women-owned businesses be prioritized in contracting for building upgrades.

VII. Beneficial Electrification

Building decarbonization should achieve benefits to the electric grid and to public health, in addition to reducing greenhouse gases. Widespread building electrification will dramatically increase demand for electricity if the State does not properly manage the process by instating demand response, energy efficiency, and other load reduction measures discussed above. Additionally, the State must be able to reliably integrate renewable energy into the power supply at the lowest possible cost. The State should accordingly work to make sure that supply chains and delivery agents are able to meet rising demand for zero-emission buildings technologies.

A. The Final Scoping Plan should ensure that building decarbonization solutions benefit to the grid.

DPS, NYSERDA, and the PSC should offer a statewide electric panel upgrade program to promote beneficial electrification. Beneficial electrification refers to replacing fossil fuel equipment with electric alternatives in ways that deliver specific benefits, including lower costs to utility customers and better management of the electric grid.[29] Beneficial electrification of housing entails a combination of installing highly efficient electric equipment and appliances, reducing energy load by improving building envelopes, and using demand controls to manage the amount and timing of energy consumption.[30] Done properly, beneficial electrification of housing should lower housing cost burdens and improve housing quality to create a safe and healthy indoor environment, while improving how buildings interact with the electric grid. Housing cost burdens are lowered when inefficient gas appliances are replaced with more-efficient electric appliances such as heat pumps.

Moreover, when paired with demand controls and well-insulated building envelopes—and onsite renewable energy and/or battery storage—building electrification can be leveraged to reduce and manage the timing of electric energy consumption, decreasing overall strain on the grid.[31] As the DSP recognizes, flexible demand technologies like smart water heaters and smart thermostats can achieve further load reductions and benefits to the grid.[32] To begin the data collection and energy management required to utilize these technologies, the State should launch a panel upgrade system that is strategically focused to provide the greatest grid and ratepayer benefit.

Securing these benefits is critical to the just transition that the State seeks. In addition to upgrading panels to ensure these outcomes, the State should also empower and fund community-

[29] Yu Ann Tan et al., Rocky Mountain Inst., *Decarbonizing Homes* 9 (2021).
[30] *Id*. at 10.
[31] *Id*.
[32] *Id*. at 24.

based organizations to shape beneficial electrification policies, which will further socialize beneficial electrification at the community level.

B. Building electrification should achieve public health benefits.

Building electrification generates immediate public health benefits in addition to contributing to greenhouse gas reductions. In developing policies to electrify buildings, the State should consider health impacts associated with poor indoor air quality and insufficient thermal comfort. Additionally, DEC should take a more active role in monitoring indoor air quality, which will allow the State to target beneficial electrification efforts where they are most needed.

Burning fossil fuels in buildings contributes to dangerous air pollution including nitrogen oxides, carbon monoxide, fine particulate matter, ultrafine particles, and formaldehyde.[33] Cooking with gas, for example, can create spikes in nitrogen dioxide and carbon monoxide to levels that would violate pollution standards if they occurred outdoors.[34] Nitrogen dioxide poses threats to respiratory health; short-term exposure can aggravate respiratory disease, and long-term exposure can *cause* respiratory disease.[35] A study by the Rocky Mountain Institute found that children living in homes with a gas stove are 42% more likely to experience asthma symptoms and 24% more likely to be diagnosed with asthma by a doctor.[36] Additionally, when space and water heating appliances such as furnaces and boilers burn gas or oil to produce heat they also emit pollutants that can cause asthma attacks, hospitalizations, and even premature death.[37] A study released last year found that in 2017, fossil fuel combustion in residential and commercial buildings in New York lead to an estimated 1,940 premature deaths and totaled $21.7 billion in health harms—more than in any other state in the country.[38] Burning fossil fuels within buildings is also a significant source of *outdoor* air pollution, including particulate matter and ozone.[39]

Moreover, communities of color are disproportionately harmed by the indoor and outdoor air pollution emitted by gas-fired appliances, and the cumulative impacts of this pollution paired with other exposures produces poor health outcomes.[40]

Insufficient heating and cooling contribute to these health harms. Heat is the deadliest form of extreme weather and can also cause or contribute to non-fatal health impacts ranging from headaches to heart attacks.[41] In New York City, every year, on average 10 people die from heat stress, 100 die of chronic conditions exacerbated by extreme heat, and 350 die of natural causes exacerbated by heat.[42] Cooling technology such as air conditioning provides critical

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[33] *Id*. at 16.
[34] *Id*. at 17.
[35] *Id*. at 16.
[36] *Id*. at 17.
[37] *Id*. at 16.
[38] *What is the Health Impact of Buildings in Your State?*, Rocky Mountain Institute, https://rmi.org/health-air-quality-impacts-of-buildings-emissions#NY (last visited May 31, 2022).
[39] Tan et al., *supra* note 29 at 22.
[40] *Id*. at 10.
[41] *Weather Related Fatality and Injury Statistics*, National Weather Service, https://www.weather.gov/hazstat/ (last visited May 31, 2022); Tan et al., *supra* note 29 at 19.
[42] Tan et al., *supra* note 29 at 19.

protection from the risks of extreme heat. Maintaining safe temperatures during cold weather is equally important. However, many families must choose between heating and eating when energy costs are unaffordable. Beneficial electrification that combines improved buildings envelopes, greater grid reliability, and lower household energy burdens will reduce the risk that New Yorkers will be without sufficient heating or cooling.

In sum, building tight, well-ventilated buildings with all-electric appliances and equipment will directly improve resident health by reducing indoor allergens and pollutants, including those emitted by combusting fossil fuels, and reduce outdoor combustion pollutants. Additionally, these benefits should be targeted at DACs and LMI households, which are disproportionately burdened by air pollution, lack of sufficient heating and cooling, and household energy costs.

VIII. Conclusion

In summary, the FSP should:

- Clarify that electrification is the only sensible path to building decarbonization and reject combustion of alternative fuels including hydrogen and RNG.
- Recommend that the State adopt standards for zero-emissions and electric appliances.
- Recommend that the State amend the Public Service Law to be in line with the Climate Law mandates.
- Recommend that electrification and energy efficiency investments should be front-loaded in LMI households and DACs.
- Recommend that the State establish energy performance and zero-emissions standards for existing buildings.
- Recognize that electrification should benefit public health and the grid.

Respectfully submitted,

Acadia Center
All Our Energy
Alliance for a Green Economy
Brookhaven Landfill Action and Remediation Group
Clean Air Coalition of WNY
Climate Reality Project, Capital Region NY Chapter
Climate Reality Project, Finger Lakes Greater Region NY Chapter
Climate Reality Project, Hudson Valley and Catskills Chapter
Climate Reality Project, Long Island Chapter
Climate Reality Project, NYC
Climate Reality Project, Westchester NY Chapter
Climate Reality Project, Western New York Chapter
Climate Solutions Accelerator of the Genesee-Finger Lakes Region
Committee to Preserve the Finger Lakes
Community Food Advocates
CUNY Urban Food Policy Institute
Earthjustice
Environmental Advocates NY
Fossil Free Tompkins
Gas Free Seneca
Green Education and Legal Fund
HabitatMap

Hotshot Hotwires
Long Island Progressive Coalition
Nassau Hiking & Outdoor Club
Network for a Sustainable Tomorrow
New Clinicians for Climate Action
North Brooklyn Neighbors
NY Renews
People of Albany United for Safe Energy
PUSH Buffalo
Rewiring America
Roctricity
Sane Energy Project
Seneca Lake Guardian
Sierra Club
South Shore Audubon Society
Sustainable Finger Lakes
University Network for Human Rights
UPROSE
WE ACT for Environmental Justice
350NYC