March 15, 2024

To: Department of Environmental Conservation and the New York State Energy Research and Development Authority

Re: New York Cap-and-Invest Program

The Institute for Policy Integrity at New York University School of Law (Policy Integrity) and the Guarini Center on Environmental, Energy and Land Use Law (Guarini Center) respectfully submit these comments in response to the requests by the Department of Environmental Conservation (DEC) and the New York State Energy Research and Development Authority (NYSERDA) for comment on various recent publications and presentations concerning the future New York Cap-and-Invest Program (NYCI).[1]

Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. The Guarini Center is a university-based research center housed at New York University School of Law that advances innovative energy and environmental policies for a sustainable and equitable economy. The Guarini Center and Policy Integrity collaborated on a study of whether, in the context of Local Law 97, it would be feasible to design a trading program for buildings' GHG emissions that would promote environmental justice.

These comments recommend as follows:

- Based on DEC and NYSERDA's modeling results, NYCI alone is unlikely to ensure the statewide GHG emissions limits are met.
- To enable stakeholders to contribute useful insight to the development of programs that ensure the statewide GHG emissions limits are met, DEC and NYSERDA (collectively, the Agencies) should provide more detailed information about their assumptions, modeling, and analysis.
- The Agencies should prepare and provide more granular analysis of building decarbonization dynamics both to appropriately target NYCI program investments and to identify complementary regulations needed for timely achievement of CLCPA GHG emissions limits.
- The Agencies should study NYCI's intersections with local building decarbonization policies and coordinate with local governments to support effective local and state policies.
- The Agencies' modeling and program proposals relating to LMI households' energy burdens should be adapted to better align with LMI households' energy spending experience.

[1] This document does not purport to represent the views, if any, of New York University School of Law.

- Given infrastructure and institutional barriers to reducing GHG emissions associated with natural gas, DEC and NYSERDA should give the Public Service Commission (PSC) clear direction on the magnitude of reductions needed in that sector.
- To protect disadvantaged communities (DACs) against disproportionate impacts, the Agencies should implement measures that target the harm caused by co-pollutants.

I. Based on the Agencies' Modeling Results, NYCI Alone Is Unlikely to Ensure the Statewide GHG Emissions Limits Are Met.

The Climate Leadership and Community Protection Act (CLCPA) amended the Environmental Conservation Law by adding a new Article 75, concerning climate change. Under Section 75-0109(1), by January 2024, DEC was to "promulgate rules and regulations to ensure compliance with the statewide emissions reduction limits,"[2] which include specific 2030 and 2050 limits.[3] Under Section 75-0107, DEC must set those limits based on percentage reductions compared to a 1990 baseline. Accordingly, DEC set the 2030 limit at 245.87 million metric tons (MMT) of carbon dioxide equivalent (CO_2e), and for 2050, 61.47 MMT CO_2e.[4]

During the initial stage of stakeholder engagement, in the spring and summer of 2023, state officials described NYCI as accomplishing what Section 75-0109(1) stipulates—namely, regulations to ensure compliance with the CLCPA's economy-wide emissions limits.[5] However, information disclosed during the current stage of stakeholder engagement includes modeling that suggests that NYCI, as currently envisioned by the Agencies, will *not* ensure compliance with the CLCPA's economy-wide emissions limits.[6] Price ceilings with unlimited reserve allowances (what the Agencies are proposing to call "Price Ceiling Units") could lead to uncapped emissions.[7] If demand for allowances is high enough, the resulting overage could be significant.

Indeed, at all the potential price ceiling levels for which modeling results have been provided, the overage is significant. According to the January 26 presentation, the Agencies have modeled three possible price ceilings for allowances, which they call "scenarios."[8] Notably, each possible maximum allowance price was well below the Social Cost of Carbon recognized by the DEC.[9] According to slide 24, none of the expected 2030 values for the sectors that the Agencies expect will be obligated to carry allowances (the obligated sectors) meets the presumed GHG budget for the obligated sectors for that year.[10] Even under the strictest of the three scenarios, 2030 emissions from obligated sectors are projected to be 15% above NYCI's intended 2030 GHG

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[2] CLCPA § 2; N.Y. Env't Conserv. Law § 75-0109(1).
[3] CLCPA § 2; N.Y. Env't Conserv. Law § 75-0107.
[4] 6 NYCRR § 496.
[5] *See* DEC & NYSERDA, Presentation on Pre-Proposal Stakeholder Outreach Overview of New York Cap-and-Invest, slides 8–10 (June 1, 2023), https://capandinvest.ny.gov/-/media/Project/CapInvest/Files/NYCI_Overview-Webinar.pdf.
[6] *See* DEC & NYSERDA, New York Cap-and-Invest Pre-Proposal Stakeholder Outreach: Preliminary Scenario Analyses, slides 15, 24 (Jan. 26, 2024), https://capandinvest.ny.gov/-/media/Project/CapInvest/Files/2024-01-26-NYCI-Preproposal-Analysis-Webinar.pdf [hereinafter January 26 Presentation].
[7] *See* DEC & NYSERDA, NEW YORK CAP-AND-INVEST PRE-PROPOSAL OUTLINE 22 (2023) [hereinafter PRE-PROPOSAL OUTLINE]; January 26 Presentation, *supra* note 6, at slides 14, 15, 24.
[8] *Id*. at slide 16.
[9] *See generally* DEC, ESTABLISHING A VALUE OF CARBON: GUIDELINES FOR USE BY STATE AGENCIES (revised Aug. 2023), https://extapps.dec.ny.gov/docs/administration_pdf/vocguide23final.pdf.
[10] January 26 Presentation, *supra* note 6, at slide 24.

emissions limit for the relevant sectors (194 MMT, vs. 169 MMT). The least strict of the scenarios would result in an even greater exceedance—a total of 197 MMT, 17% over the limit. The Agencies did not provide information about the estimated extent of exceedances compared to any 2050 benchmark.

Given that the January 26 presentation strongly suggests that the Agencies are preparing to promulgate NYCI rules and regulations that will not, on their own, ensure that the statewide emissions limits are met, DEC needs to proceed expeditiously to secure the establishment of *other* rules and regulations to ensure compliance with the statewide emissions reductions limits.

II. To Enable Stakeholders to Contribute Useful Insight to the Development of Programs that Ensure the Statewide GHG Emissions Limits Are Met, the Agencies Should Provide More Detailed Information About Their Assumptions, Modeling, and Analysis.

The various materials that the Agencies have made public have been limited. For example, the fact that price ceilings are binding in all scenarios modeled in the January 26 presentation (that is, in each scenario, the ultimate allowance price would in fact be the price ceiling) suggests that the Agencies may be grappling with a steep marginal abatement cost curve for obligated sectors.[11] It would be helpful if the Agencies published a set of modeling results that more fully illustrates the relationship between emissions reductions up to the level required by the statewide GHG emissions limit and the costs associated with achieving those reductions. Without such information, stakeholders can make only the most general recommendations concerning programmatic adjustments to NYCI itself, and/or complementary programs, that would ensure that the statewide GHG emissions limits are met. We note other important limitations in the information that has been made public as they arise in other sections of these comments.

To ensure that stakeholders can provide useful input at this juncture in order to get the State on course to ensure that the statewide GHG emissions limits are met, the Agencies should provide significantly more detailed information about the assumptions, modeling, and analysis, both overall and in specific sectors, that have informed their upcoming NYCI proposal.

III. The Agencies Should Prepare and Provide More Granular Analysis of Building Decarbonization Dynamics Both to Appropriately Target NYCI Program Investments and to Identify Complementary Regulations Needed for Timely Achievement of CLCPA GHG Emissions Limits.

Buildings are the single largest source-category of GHG emissions in New York State,[12] but if NYCI ultimately resembles the Agencies' stated leanings, few buildings will be subject to

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[11] Jan. 26 Presentation, slides 16, 23–25. A marginal abatement cost curve maps each ton of potential GHG reduction to the cost of achieving that reduction. *See*, e.g., *What You Need to Know About Abatement Costs and Decarbonization*, WORLD BANK (Apr. 20, 2023), https://www.worldbank.org/en/news/feature/2023/04/20/what-you-need-to-know-about-abatement-costs-and-decarbonisation. If a price ceiling is binding for a given amount of GHG reduction, it is likely because the cost of that amount of reduction is greater than the price ceiling.

[12] Statewide, emissions from buildings currently are the largest source of GHGs by economic sector, accounting for 31% of total emissions. DEC, 2023 STATEWIDE GHG EMISSIONS REPORT: SUMMARY REPORT, Tbl. ES.3, https://dec.ny.gov/sites/default/files/2023-12/summaryreportnysghgemissionsreport2023.pdf.

NYCI's cap-and-invest and auction rules directly.[13] Rather than having to buy NYCI allowances in their own right, most buildings will experience incentives to decarbonize and electrify through changes in the relative prices of electricity and fossil fuels, as well as through investments of NYCI proceeds. In addition to buildings' importance for GHG emissions reductions, the Agencies' modeling also suggests that buildings will play an important role in reductions in DACs' exposure to co-pollutants, which will result in health benefits for DAC residents.[14]

As the Agencies proceed with developing NYCI's implementing rules and investment strategies, the Agencies should provide a more transparent and granular analysis of how buildings will respond to NYCI's price signals—particularly concerning when, and where, different types of buildings can be expected to decarbonize. Analyzing differences in buildings' decarbonization trajectories is important for several reasons. First, a granular analysis of the effects of NYCI's cap-and-invest and auction rules on buildings would shed light on whether those effects, if not paired with investments or complementary policies, could create any risks for the state's overall progress towards the CLCPA GHG limits (for example, because there may be a sizeable tranche of difficult-to-decarbonize buildings). Additionally, it would help identify risks of co-pollutants differentially accruing in DACs, to the extent that difficult-to-decarbonize buildings may be overrepresented in or near DACs and emit co-pollutants. A granular analysis furthermore could help the state and stakeholders better discern how to target NYCI's investment allocations for buildings, so as to mitigate the foregoing risks.[15] Finally, a granular analysis could help the state and stakeholders better identify which complementary policies outlined in the Scoping Plan (such as, for example, zero-emission standards for space and water heating equipment)[16] should be deployed, and when those complementary policies should go into effect.

A. Variations in energy prices across regions of the state—among other drivers of building-related costs—may cause buildings to decarbonize at different rates depending on location.

Absent regulatory mandates, building owners' and operators' decisions to electrify their operations and implement energy efficiency measures are driven in large part by the costs of such projects and whether those investments will "pay off."[17] The relative cost to customers of

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[13] PRE-PROPOSAL OUTLINE, *supra* note 7, at 12–13.
[14] *See* January 26 Presentation, *supra* note 6, at slides 44, 48.
[15] The NYCI revenue allocation split modeled by the Agencies is merely illustrative, *see* January 26 Presentation, *supra* note 6, at slide 21, but even with that caveat it is unclear whether the Agencies' modeled scenario for investing NYCI's auction proceeds was at the "right" level to drive decarbonization gains above what the cap-and-invest rule and the auction rule alone could deliver under the model's conditions. On the one hand, the amount of investment modeled (roughly 40% of total NYCI proceeds) appears to be roughly commensurate with buildings' central place in the state's emissions profile, as well as their expected role in driving co-pollutant reductions in DACs. On the other hand, it is not clear from the Agencies' results whether spending a higher amount—or even spending the same amount but with different sub-allocations among building types—would produce more gains with respect to relevant metrics. The Agencies should have explained the rationale behind the modeled investment levels, and it is unclear to what extent the Agencies considered alternative investment specifications. It also is unclear from the results how, if at all, the complementary policies that appear to be needed to ensure the state's overall compliance with CLCPA limits would intersect or interact with NYCI-derived investments.
[16] CLIMATE ACTION COUNCIL, SCOPING PLAN: FULL REPORT 186–187 (2022).
[17] *See, e.g.*, Sara Savarani & Danielle Spiegel-Feld, *Equitable Electrification: Could City and State Policies Aggravate Energy Insecurity?*, 52 ENV'T L. REP. 10831, 10844–45 (2022).

electricity versus fossil fuels is an important driver of whether and when electrification may be financially justified, and NYCI will directly influence this factor.

At present, there are notable differences in the relative prices of electricity and fossil fuels among different regions of the state. For example, in 2021 a Con Edison residential electricity and gas customer in the Bronx would have paid approximately $80.10/MMBTU ($0.2733/kWh) for electricity and $20.16/MMBTU ($20.80/kCuf) for natural gas. By contrast, a Rochester Gas & Electric residential electric and gas customer in the city of Rochester would have paid approximately $39.68/MMBTU ($0.1354/kWh) for electricity and $9.17/MMBTU ($9.46/kCuf) for natural gas.[18] At those prices, the Rochester customer would pay an extra $30 to procure 1 MMBTU of energy using electricity rather than gas, whereas the Bronx customer would pay an extra $60 to make the same substitution. These regional differences in the relative retail prices of electricity and fossil fuels mean that, at the present time, the value proposition for building electrification is not uniform across the state. These baseline variations further suggest that to the extent that NYCI allowance prices affect building decarbonization, the strength and swiftness of those effects may vary by location.

Regional differences in building decarbonization may create risks that the state should bear in mind when developing NYCI rules and complementary regulations. In particular, it is unclear from the Agencies' modeling results whether regional differences in the effects of NYCI's cap-and-invest and auction rules on energy prices may produce distinct pockets of difficult-to-decarbonize buildings, nor is it clear where and how large those pockets may be. Looking ahead, the existence of these pockets, if sufficiently numerous or concentrated, could create risks for the state's overall progress towards the CLCPA GHG limits by creating backlogs of decarbonization projects. Furthermore, regional differences in building decarbonization progress may cause co-pollutant effects to accrue to DACs differentially, because DACs are not distributed evenly around the State. Specifically, there is a particular concentration of DACs in New York City.[19] Regional differences in building decarbonization progress could prevent New York City DACs from attaining expected co-pollutant benefits under the program, perpetuating environmental and public health inequities.[20]

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[18] *See* NYSERDA, PATTERNS AND TRENDS: NEW YORK STATE ENERGY PROFILES, 2007–2021 F-1, F-10 (2023), available at https://www.nyserda.ny.gov/About/Publications/Energy-Analysis-Reports-and-Studies/Patterns-and-Trends. NYSERDA's electricity price data reflects "[a]nnual average electricity prices . . . based on bundled electricity sales." *Id.* at F-1. This comment uses a conversion factor of 1.032 to convert kCuf to MMBTU based on the average heat content of natural gas in New York in 2021. *See Heat Content of Natural Gas Consumed*, ENERGY INFO. ADMIN., https://www.eia.gov/dnav/ng/ng_cons_heat_a_EPG0_VGTH_btucf_a.htm (last accessed Mar. 13, 2024).

[19] *See* DEC & NYSERDA, NEW YORK STATE'S DISADVANTAGED COMMUNITIES CRITERIA (Sept. 2023), available at https://climate.ny.gov/Resources/Disadvantaged-Communities-Criteria.

[20] To the extent that slower-to-decarbonize buildings are located *in* DACs, DAC residents may face continued health risks arising not only from the presence of combustion co-pollutants in outdoor, ambient air, but also from fossil-fuel appliances' negative effects on indoor air quality. *See, e.g.,* LAURA FIGUEROA & JACK LIENKE, INST. FOR POL'Y INTEGRITY, THE EMISSIONS IN THE KITCHEN: HOW THE CONSUMER PRODUCT SAFETY COMMISSION CAN ADDRESS THE RISKS OF INDOOR AIR POLLUTION FROM GAS STOVES, 2–6 (2022) (summarizing research demonstrating that "cooking with a gas stove, especially without adequate ventilation, can lead to indoor air pollution levels that exceed relevant health guidelines and are far higher than those generated by electric stoves. These pollution levels pose significant health risks for stove users and their families—risks that are borne disproportionately by those with pre-existing respiratory conditions, children, people of color, and lower-income households."). Furthermore, to the extent that slower-to-decarbonize buildings cause natural gas supply infrastructure to remain in use, DACs may

As the Agencies develop NYCI's rules, they should study the effect of geographic heterogeneity on the likely pace of building decarbonization. Such analysis would be helpful for understanding whether the state will be on track for meeting the CLCPA's emissions limits, as well as fulfilling the CLCPA's commitments to DACs.[21] In addition, this analysis would better position the Agencies to identify regulations or investments needed to mitigate gaps that would be left by operation of the cap-and-invest and auction rules alone. For example, complementary DEC regulations such as zero-emission standards for space and water heating equipment might reduce the degree to which certain geographies lag overall, as well as the degree to which DAC-associated buildings lag in relation to their non-DAC-associated peers. Similarly, the Agencies could structure NYCI investments to accelerate the electrification of buildings where the value proposition for electrification is relatively less favorable.

B. Variations among buildings according to their type (among other characteristics) may cause them to decarbonize at different rates.

In addition to regional variations in energy prices, the Agencies should study, with greater granularity, variations in buildings' decarbonization trajectories based on buildings' types and other relevant characteristics, such as their age and ownership or management structures. Variations in use, age, ownership, operation, and other factors may make different buildings more or less responsive to NYCI's price signals.

The Agencies' most recent modeling already reflects certain variations in response to NYCI that appear correlated with variations in building types. The January 26 presentation shows that the number of incremental heat pumps installed in commercial buildings by 2035 is modest compared to the number of incremental heat pumps installed in residential buildings, even with NYCI-financed investments.[22] The Preliminary Analysis Data Annex further reflects significant differences in commercial buildings' behavior, as compared to residential buildings. Under the highest NYCI auction allowance ceiling price scenario, commercial buildings appear to substitute more heat pumps in place of electric resistance space heating systems than in place of either natural gas or oil space heating systems.[23] By contrast, residential buildings, as a group,

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continue to be exposed to the significant health and safety risks associated with that infrastructure. *See, e.g.*, Pipeline Safety: Gas Pipeline Leak Detection and Repair, 88 Fed. Reg. 31,890, 31,910–31,912 (May 18, 2023) (describing prevalence of leaks from natural gas infrastructure, distribution of leaks in environmental justice communities, and risks posed by leaks from natural gas infrastructure); Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 89 Fed. Reg. 16,820, 16,836, 16,841 (Mar. 8, 2024) (noting oil and natural gas infrastructure's significant emissions of, *inter alia*, volatile organic compounds, and summarizing research on volatile organic compounds' negative health impacts).

[21] *See* N.Y. Env't Conserv. Law § 75-0109(3)(c)–(d).

[22] Jan. 26 Presentation, slide 30 (1.803 million incremental residential heat pumps, versus 37,700 incremental commercial heat pumps).

[23] To be precise, the modeling reflects that in the baseline year of 2025, the respective shares of the state's commercial building stock that rely on electric resistance heating, heat pumps, natural gas, and oil for space heating are 12%, 1%, 76%, and 12%. Under the highest modeled auction allowance price ceiling scenario, by 2035 the share of the commercial building stock reliant on electric resistance heating declines to 7% of stock, the share reliant on heat pumps increases to 11% of stock, the share reliant on natural gas declines to 73% of stock, and the share reliant on oil declines to 9% of stock. The substitution of heat pump technology for electric resistance technology is even more stark in the water heating context: nearly all growth between 2025 and 2035 in heat pump water heater usage

show greater reductions in both natural gas and heating oil usage in favor of heat pumps, although natural gas use in 2035 remains significant.[24] These differences in how commercial and residential buildings adopt heat pumps appear to be related to different outcomes in GHG emissions reductions: The model shows that, by 2035, more total GHG emissions reductions are achieved from residential buildings than from commercial buildings.[25]

Because the Agencies' modeling results regarding buildings' heating technologies run only through 2035, and the Agencies have not released any analysis of why commercial buildings respond to NYCI as they do, it is difficult to determine what the above trends might portend for the state's achievement of the CLCPA's 2050 GHG emissions limit. In the meantime, however, it seems possible that the differences between commercial and residential buildings could be one component of the emissions exceedance these comments identify with respect to the 2030 GHG emissions budget for NYCI-obligated sectors.[26] Overall, the Agencies should explain more clearly why commercial buildings' behavior in the model represents the optimal pathway for that sub-sector. In addition, the Agencies should explain how, beyond 2035, the modeled approach to decarbonizing commercial buildings will ensure that DACs are not disproportionately burdened by the continued presence of on-site burning of fossil fuels within building systems.

While the Agencies have accounted, to a certain degree, for variations between commercial buildings and residential buildings, the Agencies' analysis of residential buildings thus far appears to elide important variations in that sub-sector—namely, differences between single-family and multifamily dwellings, owner-occupied and rental units, and buildings with market-rate units and rent-regulated units. Prior research suggests that, under NYCI, these variations could cause differences in the pace and distribution of residential building decarbonization. In particular:

- Research conducted for NYSERDA found that single-family homes generally were much more responsive to efficiency and electrification incentives than multifamily dwellings.[27] This finding is consistent with Guarini Center research finding that multifamily rental building owners in New York City were reluctant, as of 2022, to take steps to electrify their properties' heating systems, in part because of the significant capital costs of

in commercial buildings (from 0% to 23% of buildings) appears to come from buildings' substituting heat pump systems for electric resistance ones (which decline from 34% to 13% of buildings), while natural gas systems remain constant (63% of building stock). *See* NYSERDA & DEC, PRE-PROPOSAL ANALYSIS FOR NEW YORK CAP AND INVEST: DATA ANNEX, Tab 2A (Feb. 21, 2024, *updated* Mar. 5, 2024), available at https://capandinvest.ny.gov/Resources [hereinafter NYCI Data Annex].

[24] *See id.* (residential buildings reliant on heat pumps for space heating increase from 1% to 22% of buildings; residential buildings reliant on natural gas decline from 76% to 66% of buildings; residential buildings reliant on heating oil decline from 16% to 9% of buildings; residential buildings reliant on electric resistance heating decline from 8% to 4% of buildings). With respect to water heating sources, residential buildings in the model adopt heat pumps in place of electric resistance and oil heating units, but natural gas's share of the residential building stock remains constant (76% of buildings throughout the 2025–2035 period). *See id.*

[25] *See id.* (total commercial building emissions between 2025 and 2035 decline from 35 to 31 MMT of CO_2e, while residential building emissions decline from 58 to 43 MMT of CO_2e).

[26] *See supra*, at section I.

[27] NYSERDA, ASSESSMENT OF ENERGY EFFICIENCY AND ELECTRIFICATION POTENTIAL IN NEW YORK STATE RESIDENTIAL AND COMMERCIAL BUILDINGS 1-9–1-10, 9-66 (2023).

retrofits.[28] Taken together, these findings suggest that single-family dwellings may electrify more rapidly than multifamily buildings, where electricity costs are favorable.

- Under current law, as well as agency policies, heating electrification is less attractive for landlords of rent-regulated units to pursue: state law limits how these landlords can recoup the costs of their capital investments, and the state's Division of Housing and Community Renewal has a longstanding policy that prevents these landlords from shifting heating costs towards tenants when heat has been a service included in tenants' rents.[29] These policies have important tenant affordability justifications; however, assuming that these policies do not change, they may cause a divergence between market-rate and rent-regulated rental buildings in undertaking electrification projects in response to NYCI's price-signals.[30]

To gain a more complete picture of how residential buildings are likely to decarbonize—not only through 2035, but through 2050—the Agencies should study how the foregoing differences (among others) affect the pace and distribution of residential building decarbonization. Without more granular analysis, it is unclear whether these apparent differences between single-family and multifamily buildings, and differences *among* multifamily dwellings, might constitute obstacles to attainment of the statewide GHG emissions limits for 2030 and 2050. Furthermore, without more granular analysis it is not clear whether these differences could cause differential outcomes for DACs: for example, to the extent that rent-regulated buildings may be concentrated in or adjacent to DACs in New York City, and to the extent that they may be slower to decarbonize than other buildings, they may perpetuate inequitable distributions of co-pollutants.

A deeper understanding of how buildings' variations relate to decarbonization differences will help the Agencies better target investments funded by NYCI's auction proceeds and identify and implement appropriate complementary policies. For example, the Agencies may wish to consider concentrating investments in heat pump installation projects that reduce on-site fossil fuel usage, either for the purpose of achieving the CLCPA's emissions limits or for protecting DAC residents' health. Additionally, further analysis might reveal that unique barriers to electrification in rent-regulated residential buildings demand targeted investments in that sector, both to promote its decarbonization and to protect tenant affordability. With respect to complementary policies, the Agencies might consider implementing zero-emission standards for space and water heating to set a clearer trajectory for buildings to electrify their space and water heating equipment. Finally, the Agencies might consider coordinating with the Division of Housing and Community Renewal to address how best to create financial incentives for rent-regulated landlords to electrify their properties, while protecting tenant affordability.

IV. The Agencies Should Study NYCI's Intersections with Local Building Decarbonization Policies and Coordinate with Local Governments to Support Effective Local and State Policies.

While the state has been formulating its economy-wide response to GHG emissions, some of the state's local governments have pursued their own building decarbonization initiatives—notably,

[28] *See* Savarani & Spiegel-Feld, *supra* note 17, at 10844–45.
[29] *See id.* at 10833 n.18, 10842–43.
[30] *See id.* at 10845–46.

New York City, pursuant to Local Law 97, and the city of Ithaca, with its Green New Deal. The state's Scoping Plan calls partnership between the state and localities a "keystone" of the state's response to climate change.[31] In keeping with this vision of state and local partnership, DEC and NYSERDA should study and explain how NYCI's price signals interact with such local initiatives for electrifying buildings. The Agencies should then promulgate NYCI rules and complementary programs that support local government efforts to achieve effective and equitable building decarbonization.

With respect to Local Law 97, the Agencies have stated that their modeling's reference case incorporates Local Law 97 as one of its parameters.[32] However, the modeling results do not clearly illuminate how NYCI and Local Law 97 interact. In fact, the results do not distinguish between buildings with Local Law 97 compliance obligations, and those without. It is possible that the combination of NYCI's price signals with Local Law 97's penalties for non-compliance with emissions limits creates stronger financial incentives for buildings to decrease their on-site emissions. Yet, as noted above, the Agencies' modeling results suggest that NYCI would not cause significant shifts in commercial buildings' on-site fossil fuel use,[33] so it is unclear how NYCI's price signals could be additive to the effects of Local Law 97's emissions caps for covered commercial buildings. Moreover, since the state's modeling results do not distinguish between single-family and multifamily buildings,[34] there is no basis for evaluating NYCI's impact on Local Law 97-obligated residential buildings.

As the Agencies formulate the NYCI cap-and-invest rule and auction rule, and the NYCI investment programs, they should analyze the following specific questions: To what extent will NYCI's price signal and investments in buildings accelerate the decarbonization and electrification of buildings in New York City, specifically? How will commercial buildings with Local Law 97 obligations respond to NYCI's price signals and investments? How will residential buildings with Local Law 97 obligations respond? How will New York City buildings that are not subject to Local Law 97 emissions caps respond, compared to those buildings that are subject to the caps?

In developing answers to these questions, and in designing NYCI program parameters and complementary programs, the Agencies should consult directly with New York City to ensure that NYCI and complementary state programs align with the City's own decarbonization efforts. The Agencies should also work with New York City to offer clear guidance about how their programs can work together to lower costs and promote building decarbonization at speed and scale across the City. While much of this coordination undoubtedly will concern the intersection of NYCI with Local Law 97, the Agencies also should seek to understand and implement measures that can support decarbonization in buildings—like housing developments operated by the New York City Housing Authority—that are not subject to GHG caps or prescriptive requirements under Local Law 97.

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[31] CLIMATE ACTION COUNCIL, SCOPING PLAN, at 396.
[32] *See* January 26 Presentation, *supra* note 6, at slide 19.
[33] *See supra*, at III.B.
[34] *See supra*, at III.B.

V. The Agencies' Modeling and Program Proposals Relating to LMI Households' Energy Burdens Should be Adapted to Better Align with LMI Households' Energy Spending Experience.

Housing and energy affordability are important concerns in the state's decarbonization transition. But while gross impacts for low- and middle-income (LMI) residents could reach several hundred dollars per year by 2035, the Agencies' modeling predicts that net impacts will be much less, once benefits paid from the state's newly-created Consumer Climate Action Account (CCAA) are taken into account. Some residents, indeed, are predicted to see "surplus" benefits (*i.e.*, CCAA payments in excess of NYCI-related cost increases) as energy efficiency and decarbonization measures are implemented.[35]

However, there may be important obstacles to achieving the Agencies' intended affordability outcomes for LMI households in New York City—and, potentially, other regions of the state. In their modeling, the Agencies appear to have assumed that LMI households could (and would) adopt a mix of building energy efficiency and decarbonization measures by 2030 that would produce surplus CCAA benefits for them.[36] However, 83% of New York City households earning $35,000 (or less) are renters, as are 73% of New York City households earning between $50,000 and $75,000.[37] Generally speaking, tenant households do not control either the uptake of energy efficiency measures by their buildings or whether their units switch from fossil fuels to heat pumps for heating. In addition, as discussed earlier in these comments,[38] the Agencies have not disclosed modeling results addressing how multifamily housing—either in general, or in New York City specifically—may differ from single-family housing in responding to NYCI (nor, indeed, how different types of rental housing may respond, as compared to one another or owner-occupied housing). Given tenants' lack of control, on the one hand, and the unclear nature of multifamily housing's response to NYCI, on the other, it is unclear whether the CCAA benefits surplus modeled by the Agencies represents a realistic outcome for many New York City LMI households.

The Agencies should refine their affordability analysis in light of the foregoing issues. Among other questions, the Agencies should analyze who may be affected by NYCI-related cost increases (landlords? market-rate tenants? rent-regulated tenants?), and how those cost increases will be experienced (utility bill increases? rent increases?). In developing a more nuanced analysis of affordability, the Agencies may be able to identify approaches that help unlock the desired benefits surplus for LMI households. For example, the Agencies might find that investments drawn from NYCI's general investment fund and specifically targeted at inducing multifamily housing landlords to undertake energy efficiency and/or decarbonization projects in their buildings may be needed for LMI households to enjoy optimal energy affordability benefits from the CCAA.

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[35] January 26 Presentation, *supra* note 6, at slides 33–34.

[36] *See id.* at slides 34–35; NYCI Data Annex, *supra* note 23, at Tabs 3A–3C.

[37] *See* Steven Ruggles et al., IPUMS USA: VERSION 15.0 (2024), https://doi.org/10.18128/D010.V15.0 (2022 1-year ACS data). The income brackets noted here overlap with the Agencies' definitions of "low-income" and "middle-income" households in modeling NYCI affordability impacts. *See* January 26 Presentation, *supra* note 6, at slide 32.

[38] *See supra*, at section III.B.

In addition, the Agencies should not readily assume that the Climate Affordability Study's preferred method of distributing CCAA funds—that is, as a refundable tax credit—is the optimal one.[39] While it may be possible that, on an annual basis, the CCAA could reduce energy-related cost burdens as described by the Agencies, it appears that on smaller timescales a gap could emerge: namely, while LMI households' increased energy costs would accrue at least monthly, the refundable tax credit only would arrive yearly. Thus, if the refundable tax credit model were employed, there could be a significant mismatch between residents' experience of energy-related cost burdens, and their receipt of NYCI-funded burden relief. The Agencies should consider the feasibility of alternative aid-delivery mechanisms that would produce more timely energy-related cost burden relief for LMI households.

VI. Given Infrastructure and Institutional Barriers to Reducing GHG Emissions Associated With Natural Gas, DEC and NYSERDA Should Give the PSC Clear Direction on the Magnitude of Reductions Needed in that Sector.

NYCI will establish a price signal on certain fuels whose use results in GHG emissions. But in practice, fuel users' ability to change their fuel usage based on the price of the fuel can be constrained by existing infrastructure (including buildings, facilities, and energy-related infrastructure) and institutional arrangements. Programs that directly address these constraints may enhance the effectiveness of the NYCI allowance price signal.

Infrastructure and institutional constraints hamper electrification in particular. Existing infrastructure for gasoline, propane, and natural gas are widespread and deeply embedded both in physical structures and in business practices such as rent. By contrast, vehicle charging infrastructure and electric heat pumps will likely require significant private investment. Furthermore, building electrification has significant ramifications for (*and* is significantly influenced *by*) the natural gas system and natural gas utility business practices. Yet the Agencies' modeling and analysis appear to ignore the existence of natural gas as a sector in its own right, with its own distinct barriers to decarbonization.

Natural gas alone accounted for more than 72 MMT CO2e in New York in 2021[40]—almost half of all fuel-related emissions in that year (an amount that by itself would be about a third of the 2030 statewide emissions limit, and well in excess of the 2050 statewide emissions limit).[41] While a large share of these emissions arise from end use of natural gas, the natural gas system itself is also a source of GHG emissions. A distinct set of natural gas-related infrastructure and institutional constraints affect the achievability of emissions reductions available from the natural gas sector. While the PSC understands these constraints,[42] these comments summarize

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[39] *See* NYSERDA & DEC, NEW YORK STATE CLIMATE AFFORDABILITY STUDY 6–7 (2023).
[40] DEC, NYS GREENHOUSE GAS EMISSIONS REPORT: SECTORAL REPORT #1 5 (2023), https://dec.ny.gov/sites/default/files/2023-12/sr1energynysghgemissionsreport2023.pdf.
[41] 6 NYCRR § 496.4.
[42] The PSC observed in its Order on Implementation of the Climate Leadership and Community Protection Act that "[t]he transition away from natural gas will impact existing gas utility regulatory processes related to planning, cost recovery and future business models." N.Y. Pub. Serv. Comm'n Case 22-M-0149, *In the Matter of Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act*, Order on Implementation of the Climate Leadership and Community Protection Act (May 12, 2022) at 25.

them to inform DEC's and NYSERDA's strategies for meeting the statewide GHG emissions limits. For example:

- Gas utilities, like other regulated utility companies, earn returns primarily on investments in capital infrastructure, but do not earn returns on operating costs,[43] which can give rise to a bias in favor of building and retaining capital infrastructure.
- Natural gas infrastructure can last half a century or longer.[44] Gas companies recover their investment costs, plus returns, over many decades and even generations.[45] The longer the amortization, the lower the cost of existing delivery infrastructure that utilities seek to recover from current customer bills.
- Cost of capital, which includes interest payments to lenders as well as return on shareholder equity, plus operating expenses in any given year comprise a utility's "revenue requirement."[46] Thus, utility companies design their rates to recover their infrastructure costs and earn their allowed returns by spreading a given revenue requirement across all their expected sales. Dramatically lower sales would imply dramatically higher rates to meet the same revenue requirement.
- The New York Public Service Law currently considers continuity of gas service to residential customers to be in the public interest,[47] and requires gas utilities to provide line extensions free of charge to prospective new customers[48] (that is, delivery rates to all customers include the cost of these as-of-right extensions to new customers).
- Gas utilities' customers include residential, commercial, and industrial end users, as well as electric generators. Gas utilities cannot predict, using conventional demand forecasting methods, precisely which customers may decarbonize by abandoning natural gas.

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[43] *See* SCOTT HEMPLING, REGULATING PUBLIC UTILITY PERFORMANCE: THE LAW OF MARKET STRUCTURE, PRICING AND JURISDICTION 217 (2013); *see also* Justin Gundlach & Elizabeth B. Stein, *Harmonizing States' Energy Utility Regulation Frameworks and Climate Laws: A Case Study of New York*, 42 ENERGY L. J. 211, 216 (2020).

[44] *See* Heather Payne, *The Natural Gas Paradox: Shutting Down a System Designed to Run Forever*, 80 MD. L. REV. 693, 705 (2021).

[45] Scott Hempling notes in a footnote that "an explanation of depreciation and its role in the revenue requirement appears in Louisiana Public Service Commission v. FCC, 476 U.S. 355, 364-65 (1986):

> Depreciation is defined as the loss in service value of a capital asset over time. In the context of public utility accounting and regulation, it is a process of charging the cost of depreciable property, adjusted for net salvage, to operating expense accounts over the useful life of the asset… [A] regulated carrier is entitled to recover its reasonable expenses and a fair rate of return on its investment through the rates it charges its customers, and… depreciation practices contribute importantly to the calculation of both the carrier's investment and its expenses. [citations omitted]
>
> The total amount that a carrier is entitled to charge for services, its 'revenue requirement,' is the sum of its current operating expenses, including taxes and depreciation expenses, and a return on its investment 'rate base.' The original cost of a given item of equipment enters the rate base when that item enters service. As it depreciates overtime–as a function As it depreciates overtime—as a function of wear and tear or technological obsolescence—the rate base is reduced according to a depreciation schedule that is based on an estimate of the item's expected useful life. Each year the amount that is removed from the rate base is included as an operating expense.

SCOTT HEMPLING, REGULATING PUBLIC UTILITY PERFORMANCE: THE LAW OF MARKET STRUCTURE, PRICING AND JURISDICTION 217–18 n.3 (2013).

[46] *See* SCOTT HEMPLING, REGULATING PUBLIC UTILITY PERFORMANCE: THE LAW OF MARKET STRUCTURE, PRICING AND JURISDICTION 217 (2013).

[47] N.Y. Public Service Law Section 30.

[48] N.Y. Public Service Law Section 31(4).

- In New York, gas utilities build, operate, and maintain gas delivery infrastructure, but they are not themselves suppliers. They are responsible for procuring adequate supply to meet their customers' needs, but they do not earn a rate of return on the supply; they pass the cost through to their customers when it is incurred.[49]
- For the most part, natural gas utilities have franchises that allow and obligate them to engage in one type of business: delivering natural gas to customers in a defined geographic area.[50] To the extent market or regulatory changes make delivering natural gas a less attractive business to be in, gas utilities cannot necessarily develop a new line of business.

In summary, gas utilities' profit opportunities and obligations are largely unrelated to the price of natural gas. They deliver natural gas for use in appliances that only run on natural gas, and do not directly compete against other natural gas companies. They have an obligation to deliver natural gas, and are permitted to do little else.[51] Standalone gas utilities generally have little opportunity to gain from electrification, and have much to lose.[52] To the extent decarbonization requires reductions in their natural gas sales, it would be unreasonable, absent clear direction from regulators, to expect them to vigorously pursue such reductions. They also have no innate incentive to be inclined to help target electrification so that portions of the gas system can be decommissioned, which could in some circumstances prove more efficient than allowing electrification to occur essentially at random while continuing to operate the entire current system despite dramatically reduced load.

The CLCPA says nothing specific about the future of natural gas. Not only does it not require any particular reductions in natural gas use, it does not even specify a level of GHG emissions reductions required from natural gas. The silence about natural gas is particularly notable in contrast to electricity, with respect to which the CLCPA both requires GHG emissions reductions (zero emissions electrical demand system by 2040) and anticipates *increases* in use.[53] The PSC opened a process to meet 2030 electric sector requirements shortly after the CLCPA became

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[49] *See, e.g.*, *Con Edison Offers Consumer Friendly Programs to Help Customers Save on Winter Bills; Company Urges Customers to Conserve Energy*, CON EDISON (Oct. 13, 2023), https://www.coned.com/en/about-us/media-center/news/2023/10-13/consumer-friendly-programs-help-customers-save-on-winter-bills.

[50] The New York Legislature recently expanded gas utilities' options by passing the Utility Thermal Energy Network and Jobs Act, which modified the definition of a "gas corporation" under the Public Service Law to include a company "owning, operating or managing any gas plant <u>or thermal energy network</u>." Utility Thermal Energy Network and Jobs Act, Section 4, amending Public Service Law Section 2(11).

[51] Some gas utilities in New York are housed within "combination utilities," which include gas companies and electric companies (and, in the case of Con Edison, steam). Even in the case of combination utilities, each of these businesses operates as a distinct business unit, with its own unique franchise (that is, the geographic contours of the gas and utility businesses within the same company may be different), and has its own separate capital invested, revenue requirements, and rate of return.

[52] Combination utilities may see some upside opportunity from electrification, but that only directly offsets the loss of natural gas sales where their electric and gas service territories overlap, and the downside risks associated with reduced use of existing natural gas infrastructure apply equally to combination utilities.

[53] *See* Public Service Law Section 66-p.

law,[54] and began a process to meet 2040 electric sector requirements in 2023;[55] although the exact pathway to zero emissions in 2040 remains unknown, and the precise implications for each electric utility remain unknown, the need to achieve a zero emissions electrical demand system by 2040 constitutes a reasonably clear benchmark for decarbonization of the electric sector as a whole. The PSC can, at least to some extent, evaluate near-term and medium-term changes to New York's electric sector based on whether they will conflict or interfere with achieving that benchmark. No equivalent benchmark exists for natural gas.

Clear expectations are essential to identifying when a program is off-course. This very proceeding provides a useful illustration. Without a benchmark, the NYCI modeling that the Agencies have presented might appear to describe a reasonably effective program. But the 2030 statewide GHG emissions limits set by the CLCPA make it possible to discern that a NYCI designed in accordance with the Agencies' modeling would be unlikely to put New York on course to reduce GHG emissions as quickly as the law requires, making complementary policies and programs essential to meeting statewide GHG emissions limits.

The PSC has informed gas utilities that they will need to contribute to meeting statewide GHG emissions reductions.[56] However, absent any clear sense of the future of the natural gas system, the PSC's ability to provide *clear* direction to the gas utilities as to their role in decarbonizing, and evaluate gas utilities' success at meeting their obligations in that area, is limited. The PSC's Gas Planning Order recognizes the lack of specificity in its directive, noting that "[w]hile the CLCPA does not impose specific requirements on the State's gas distribution system, rationally, meeting the CLCPA's emissions reductions targets for the entire economy will require emissions reductions from the gas distribution system."[57]

In the absence of a gas-specific benchmark, a recent PSC decision approached the question of whether GHG reductions anticipated in a gas utility's long-term plan were consistent with the CLCPA by generally balancing the expectation of *some* GHG emissions reductions against the need for ratepayers to receive safe and reliable service.[58] More recently, a different gas utility has asserted that its long-term plan satisfies the PSC's "standards of being consistent with the CLCPA" because it provides for "significant GHG emissions reductions and makes meaningful contributions to the GHG emissions reduction goals of the CLCPA."[59]

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[54] See generally N.Y. Pub. Serv. Comm'n Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Adoption Modifications to the Clean Energy Standard (Oct 15, 2020).
[55] *See generally* N.Y. Pub. Serv. Comm'n Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Initiating Process Regarding Zero Emissions Target (May 18, 2023).
[56] *See* N.Y. Pub. Serv. Comm'n Case 12-G-0297, *Proceeding on Motion of the Commission To Examine Policies Regarding the Expansion of Natural Gas Service* and Case 20-G-0131, *Proceeding on Motion of the Commission in Regard to Gas Planning Procedures*, Order Adopting Gas System Planning Process (May 12, 2022) at 4–5.
[57] *Id*. at 4.
[58] N.Y. Pub. Serv. Comm'n Case 22-G-0610, *In the Matter of a Review of the Long-Term Gas System Plan of National Fuel Gas Distribution Corporation*, Order Implementing Long-Term Natural Gas Plan with Modifications (Dec. 14, 2023) at 59.
[59] N.Y. Pub. Serv. Comm'n Case 23-G-0437, *In the Matter of a Review of the Long-Term Gas System Plan of New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation*, Reply Comments of New York State Gas & Electric Corporation and Rochester Gas and Electric Corporation (Jan. 19, 2024) at 6.

In reality, as with statewide GHG emissions and electric sector GHG emissions, success will demand a particular trajectory of natural gas-related emissions reductions—but neither the CLCPA nor the DEC has given the gas utilities or their regulator a clear signal of what that trajectory is. The DEC should work closely with the PSC to establish a clear understanding of the magnitude of the natural gas sector changes natural gas utilities are required to support—whether those take the form of overall GHG emissions reductions, reductions in customer reliance on natural gas, or otherwise. Such a benchmark could help the PSC set clear expectations for the natural gas utilities it regulates.

VII. To Protect DACs Against Disproportionate Impacts, the Agencies Should Implement Measures that Target the Harm Caused by Co-pollutants.

The CLCPA directs the DEC to "[e]nsure that activities undertaken to comply with the regulations [to be adopted under Section 75-0109] do not result in a net increase in co-pollutant emissions or otherwise disproportionately burden disadvantaged communities….,"[60] and calls for DEC to "[p]rioritize measures to maximize net reductions of greenhouse gas emissions and co-pollutants in disadvantaged communities."[61] The Pre-Proposal Outline acknowledges that "these communities have long suffered from disproportionate impacts and environmental injustice,"[62] and, to that end, proposes three potential regulatory mechanisms[63] "to ensure NYCI does not result in disproportionate impacts within or near DACs."[64]

Co-pollutants drive a number of life-threatening health risks like asthma and other respiratory diseases, and further contribute to health complications like pulmonary heart disease and diabetes.[65] They also cause economic burdens including high hospitalization rates and loss of pay due to lost work days.[66] These impacts are disproportionately high in DACs relative to non-DACs. For example, according to a study on the impacts of air pollutants like particulate matter and NO_2 on health in New York City, asthma rates, emergency room visits, and mortality rates linked to $PM_{2.5}$ were particularly high in communities with high poverty rates and communities of color.[67]

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[60] CLCPA § 75-0109(3)(c).
[61] N.Y. Env't Conserv. Law § 75-0109(3)(d).
[62] PRE-PROPOSAL OUTLINE, *supra* note 7, at 24.
[63] *Id*. at 22–24.
[64] *Id*. at 22.
[65] *See generally,* Denise L. Mauzerall et al., *NO_x Emissions from Large Point Sources: Variability in Ozone Production, Resulting Health Damages and Economic Costs*, 39 ATMOSPHERIC ENV'T 2851 (2005); *Sulfur Dioxide Basics*, EPA, https://www.epa.gov/so2-pollution/sulfur-dioxide-basics (last visited Jan. 22, 2024); C. Arden Pope III, David V. Bates, & Mark E. Raizenne, *Health Effects of Particulate Air Pollution: Time for Reassessment?*, 103 ENV'T HEALTH PERSP. 472 (1995).
[66] *See generally,* Denise L. Mauzerall et al., *NO_x Emissions from Large Point Sources: Variability in Ozone Production, Resulting Health Damages and Economic Costs*, 39 Atmospheric Env't 2851 (2005); *Sulfur Dioxide Basics*, EPA, https://www.epa.gov/so2-pollution/sulfur-dioxide-basics (last visited Jan. 22, 2024); C. Arden Pope III, David V. Bates, Mark E. Raizenne, *Health Effects of Particulate Air Pollution: Time for Reassessment?,* 103 ENV'T HEALTH PERSP. 472 (1995).
[67] *See* Eugene S. Mananga et al., *The Impact of the Air Pollution on Health in New York City*, J. OF PUB. HEALTH (Oct. 2023), at 8–9, 11; *See also* Iyad Kheirbek et al., *Air Pollution and the Health of New Yorkers: The Impact of Fine Particles and Ozone*, NYC HEALTH DEP'T (2010), https://www.nyc.gov/assets/doh/downloads/pdf/eode/eode-air-quality-impact.pdf.

Emissions trading has the potential to exacerbate these dangerous health risks and economic burdens in concentrated areas of pollution in DACs known as hotspots.[68] Specifically, an emissions trading program that solely focuses on GHG emissions does not automatically protect DACs from high co-pollutant emissions. For example, hotspots could be worsened if GHG abatement costs are higher for facilities affecting DACs relative to those outside of DACs. In these circumstances, facilities affecting pollution levels in DACs might purchase allowances from distant facilities rather than adopt mitigation measures, causing mitigation of harmful co-pollutants to occur disproportionately outside of DACs while effecting less mitigation of these co-pollutants within the DACs.[69] Thus an emissions-trading program that does not consider DAC-specific issues could perversely cause or exacerbate poor air quality conditions in existing hotspots.

While NYCI cannot singlehandedly redress the historic, multigenerational harms the energy system has caused in DACs, the Agencies can still design a GHG mitigation mechanism that does not exacerbate disproportionate pollution in DACs and works alongside complementary programs aimed at reducing pollution in DACs.

In this section, we provide recommendations on how the Agencies can facilitate New York's access to least-cost GHG abatement opportunities while avoiding disproportionate burdens on DACs. In Section VII.A we explain the importance of mapping co-pollutant emissions from source to community and assessing the health and economic impacts that these emissions cause. In Section VII.B we offer global recommendations for a balanced policy design, and discuss particular design considerations associated with each of the three mechanisms that the Agencies offer in the Pre-Proposal Outline.

A. An effective solution requires careful assessment of the differential harms co-pollutant emissions cause to communities.

Attempting to address local pollution disparities through any CO_2 emissions mitigation program would have an uncertain effect on resulting levels of relevant co-pollutants. Co-pollutant emissions vary in their proportion to GHG emissions depending on the emitting source. For example, two facilities emitting the same amount of CO_2 in a year may emit significantly different amounts of nitrogen oxides or particulate matter.[70] This variation in co-pollutant ratios arises from the different technological and fuel attributes of the facilities.[71] Not only can the ratio of CO_2 to any given co-pollutant vary by facility, but the *rate of reduction* of each co-pollutant that may occur when CO_2 emissions are reduced is also highly variable.[72]

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[68] *Environmental Justice Issues in California's Cap and Trade System*, CAL. ENV'T JUST. ALL., https://caleja.org/wp-content/uploads/2017/04/EJissuesinCAcapandtrade.pdf (last visited Feb. 14, 2024); Jeff Todd, *Climate Cap and Trade and Pollution Hot Spots: An Economics Perspective*, 39 GA. STATE UNIV. L. REV. 1003, 1015 (2023).
[69] *See, e.g.*, Jeff Todd, *Climate Cap and Trade and Pollution Hot Spots: An Economics Perspective*, 39 GA. STATE UNIV. L. REV. 1003, 1015 (2023).
[70] Christa M. Anderson et al., *Climate Change Mitigation, Air Pollution, and Environmental Justice in California*, 52 ENV'T SCI. & TECH. 10829, 10829–38 (2018).
[71] *Id.* at 10831.
[72] *Id.* at 10834.

Attempting to address local pollution in DACs by addressing sources located in or near DACs would also have somewhat uncertain results. There is significant variation and uncertainty in how co-pollutant emissions travel from sources and result in local harms. Economic analyses of the disparate impacts of pollution emphasize the importance of air dispersion patterns specific to the geographic regions being studied.[73] New York has distinct meteorological patterns that, combined with the geographic location of stationary and mobile pollution sources, determine how much pollution is carried from sources to communities.[74] Pollution concentrations in DACs may originate from sources that are located both within the DAC and outside (upwind) of the DAC. As one study points out, "explicit modeling of pollution dispersal is critical" for understanding the impact of an emissions trading program.[75]

The Agencies have begun modeling efforts to assess health effects to DAC and non-DAC communities associated with NYCI.[76] This modeling involves spatially granular integrated modeling of co-pollutant emissions levels, how they travel from their sources to communities, and how the resulting exposure harms those communities. These integrated modeling tools can establish a link between pollution sources and DACs. Agencies should use the tools at their disposal to conduct a thorough analysis to determine which polluting sources are associated with which DACs as well as the extent of harmful pollution exposure they are causing, and use this analysis to inform policy design.

B. Policy design can preserve economic benefits of GHG allowance trading while addressing pollution disparities.

It is important that the Agencies not regard a GHG emissions trading program as a policy that will work in place of other efforts to directly address the disproportionate harms caused by local pollutants that persist in disadvantaged communities. Rather, the Agencies can implement NYCI in a way that accords with the CLCPA mandate to "[p]rioritize measures to maximize net reductions of greenhouse gas emissions and co-pollutants in disadvantaged communities."[77]

A growing body of economic research shows that emissions-trading programs can work to mitigate pollution disparities in DACs if regulators make careful design choices. For example, a study of California's cap-and-trade program finds that it has resulted in lower emissions of both GHG and local pollutants among covered facilities, and, using air dispersion modeling, shows

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[73] Danae Hernandez-Cortes & Kyle C. Meng, *Do Environmental Markets Cause Environmental Injustice? Evidence from California's Carbon Market*, 217 J. OF PUB. ECON. 1, 2 (2023) [hereinafter Hernandez-Cortes & Meng (2023)] ("We demonstrate the importance of modeling pollution dispersal for our results."); Glen Sheriff, *California's GHG Cap-and-Trade Program and the Equity of Air Toxic Releases*, 11 J. OF THE ASS'N OF ENV'T AND RES. ECONOMISTS, 137, 139 (2024) [hereinafter Sheriff (2024)] ("Moving from a theoretical acknowledgment of the possibility that a GHG cap-and trade program could adversely impact pollution exposure for people of color to an empirical assessment faces a number of challenges, including identifying pollutants of concern, determining where they go, and determining where they would have gone in a counterfactual world without the program.").
[74] *See, e.g.,* Rong Lu & Richard P. Turco, *Air Pollutant Transport in a Coastal Environment-II. Three-Dimensional Simulations Over Los Angeles Basin*, 29 ATMOSPHERIC ENV'T 1499, 1499−1518 (1995).
[75] Hernandez-Cortes & Meng (2023), *supra* note 73, at 1.
[76] January 26 Presentation, *supra* note 6, at slides 44–48.
[77] CLCPA § 75-0109(3)(d).

that the program narrowed the pollution disparity between DACs and non-DACs.[78] Similarly, another study examines the effects of California's cap-and-trade program on air toxics pollution disparities in DACs, and finds that disparities in air toxics exposures narrowed as a result of the program.[79] Closer to home, the Guarini Center and Policy Integrity examined emissions trading in New York City's buildings sector as a means for complying with Local Law 97 (which limits GHG emissions from large buildings), and concluded that "a carefully designed trading program could further the City's diverse goals," including environmental justice goals.[80]

In the Pre-Proposal Outline, the Agencies mention three possible mechanisms for safeguarding against disproportionate impacts to DACs that might result from the trading of GHG emissions allowances under NYCI.[81] Each of these mechanisms could be a reasonable tool for addressing disproportionate impacts, and each could be calibrated to reflect the differential harm caused to DACs by pollution-emitting sources. We make the following recommendations to Agencies regarding these mechanisms:

- The Agencies should implement the mechanism selected in a manner that facilitates the realization of low-cost GHG abatement opportunities while addressing the differential harms caused by co-pollutants;
- The Agencies should conduct thorough analysis to determine how much harm obligated entities cause to individual DACs (see Section VII.A). This information should inform the specific design features of the chosen mechanism; and
- The Agencies should ensure that co-pollutant emissions, and their attendant harm, are monitored and verified on a regular basis by a party external to the polluting entities, and that policy parameters (such as ratios or source-specific caps) are updated accordingly.

The first of the three possible mechanisms the Pre-Proposal Outline mentions is differential trading ratios. Economic research identifies allowance trading ratios as a means for addressing

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[78] Hernandez-Cortes & Meng (2023), *supra* note 73, at 2 ("Between 2012-2017, the program reduced California's EJ gap by 7%, 6%, and 10% annually for PM2.5, PM10, and NOx, respectively.").

[79] Sheriff (2024), *supra* note 73, at 164. The analysis first examines whether air toxic releases from facilities covered by the program and upwind of communities of color disproportionately increase relative to other comparable facilities as a result of the cap and trade program. This exercise results in no statistically significant evidence of such effects. Second, the study examines whether communities of color experience a disproportionate increase in exposure to air toxics from covered facilities relative to other sources as a result of the program. This exercise also resulted in no statistically significant evidence of such an effect, and found evidence that the cap-and-trade program reduced exposure to air toxics from GHG-covered facilities in communities of color. Third, the study examines whether the cap-and-trade program worsened the distribution of exposure to air toxics for communities of color. While noting the significant disparity between the distribution of air toxics for communities of color versus that of the white demographic group in all scenarios, the study concludes that the distribution of exposure improves for communities of color under the cap and trade program.

[80] Danielle Spiegel-Feld et al., *Carbon Trading for New York City's Building Sector: Report of the Local Law 97 Carbon Trading Study Group to the New York City Mayor's Office of Climate & Sustainability*, 8, 82–85, 94–101 (Nov. 2021), https://policyintegrity.org/files/publications/2021-11-15_Guarini_-_Carbon_Trading_For_New_York_Citys_Building_Sector.pdf. Appendix A to this report contains a literature review of the economics literature on the environmental justice implications of emissions trading, concluding that "[m]ost studies that have examined the distributional impacts of prior cap-and-trade programs fail to find that such programs have increased the relative pollution burden in disadvantaged communities." *Id.* at 113.

[81] *See* PRE-PROPOSAL OUTLINE, *supra* note 7, at 24–25.

differential harm caused by co-pollutants under an emissions trading program.[82] The Agencies' consideration of "[r]equiring Obligated Entities located in or near DACs to surrender Allowances at some multiple…greater than the typical one Allowance to one ton of CO2e general requirement"[83] is therefore grounded in economic theory, and similar mechanisms have been applied in practice.[84] The intuition behind this approach is that the entities causing the greatest harm to communities should face the steepest incentives for reducing their pollution.[85] The mechanism therefore has the potential to address harmful pollution sources in a highly targeted manner.

However, making this particular mechanism effective requires significant reduction in uncertainties associated with the harm that polluting sources cause to communities, as well as an understanding of the costs of available abatement options.[86] If the Agencies move forward with an allowance-trading-ratio-based mechanism, we recommend that they undertake careful analysis, as described in Section VII.A above, to resolve these uncertainties such that the mechanism's effectiveness will not be compromised.

Another mechanism the Agencies are considering is "[p]rohibiting Obligated Entities located in or near DACs from purchasing or trading Allowances from outside of DACs."[87] This approach, if not carefully tailored, may risk exacerbating pollution hotspots within DACs or groups of DACs. For example, consider a scenario in which, within a DAC, Firm A and Firm B have similar GHG emissions, but Firm A emits more co-pollutants than Firm B. (Also suppose that air transport modeling has shown that these emissions result in harm to the DAC.) Allowing Firm B to sell allowances to Firm A could increase co-pollutant levels within the DAC. The analogous issue arises if the firms are associated with different DACs; sales of allowances from Firm B to Firm A could result in greater co-pollutant levels in the DAC associated with Firm A. We recommend that, if the Agencies choose directional trade restrictions as their preferred mechanism, they implement tailored restrictions on trading that ensure that hotspots within or across DACs are not exacerbated.

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[82] *See* R. Scott Farrow et al., *Pollution Trading in Water Quality Limited Areas: Use of Benefits Assessment and Cost-Effective Trading Ratios*, 81 LAND ECON. 191 (2005); Nicholas Z. Muller & Robert Mendelsohn, *Efficient Pollution Regulation: Getting the Prices Right*, 99 AM. ECON. REV. 1714 (2009); Nicholas Z. Muller, *The Design of Optimal Climate Policy with Air Pollution Co-Benefits*, 34 RES. & ENERGY ECON. 696 (2012); Werner Antweiler, *Emission Trading for Air Pollution Hot Spots: Getting the Permit Market Right*, 19 ENV'T ECON. & POLICY STUDIES 35 (2017); Meredith Fowlie & Nicholas Muller, *Market-Based Emissions Regulation When Damages Vary Across Sources: What Are the Gains from Differentiation?*, 6 J. OF THE ASS'N OF ENV'T AND RES. ECONOMISTS 593 (2019) [hereinafter Fowlie & Muller (2019)].

[83] *See* PRE-PROPOSAL OUTLINE, *supra* note 7, at 24–25.

[84] The EPA's Clean Air Interstate Rule and Cross-State Air Pollution Rule are two examples. *See* Fowlie & Muller (2019), *supra* note 82, at n. 9; David A. Weisbach, *Regulatory Trading*, 90 UNIV. OF CHICAGO L. REV. 1095, 1128 (2023).

[85] One particular implementation of the allowance trading ratio approach is to assign a trading factor to each obligated entity, set according to the amount of harm its emissions cause. Werner Antweiler, Emission Trading for Air Pollution Hot Spots: Getting the Permit Market Right, ENV'T ECON. & POLICY STUDIES 19, 35–58 (2017).

[86] Fowlie & Muller (2019), *supra* note 82, at 607, 609. The strictness of the overall cap on GHG emissions may also play a role in determining the effectiveness of an allowance ratio based trading mechanism. *See* Nicholas Z. Muller, *The Design of Optimal Climate Policy with Air Pollution Co-Benefits*, 34 RES. & ENERGY ECON. 696, 698, 703 (2012).

[87] *See* PRE-PROPOSAL OUTLINE, *supra* note 7, at 24–25.

A third mechanism the Agencies are considering is "[s]etting facility-specific emissions caps for Obligated Entities located in or near DACs."[88] We recommend that, if the Agencies move forward with this mechanism, they design caps in a targeted manner that seeks to preserve the benefits of emissions trading for GHG mitigation while addressing the root issue of harm caused by co-pollutants. Because co-pollutants can be both emitted and reduced in varying proportions to GHGs, the Agencies should set caps that limit the level of co-pollutant emissions that cause harm to associated DACs. Such a mechanism should work in parallel with—and not in place of—other regulations that directly mitigate harm from co-pollutant emissions. The Agencies should use integrated modeling, as discussed in Section VII.A, to determine how much harm co-pollutant emissions are causing and to which communities. This analysis should form the basis of facility- or source-specific caps.

Sincerely,

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[88] *Id*. at 24–25.