



July 1, 2011

New York Climate Action Council
New York State Department of Environmental Conservation
625 Broadway
Albany, New York
12233-001

Generate Capital, PBC - Feedback on New York Draft Scoping Plan

Dear Climate Action Council Members,

Generate Capital, PBC (Generate) submits the following comments in response to the New York Climate Action Council's (CAC or Council) Draft Scoping Plan (DSP).

We applaud the extensive work of the Council, the Advisory Panels, and the dedicated staff at New York's agencies tasked with drafting this historic plan to address climate change and the threats it poses to all New Yorkers. We acknowledge and thank the leadership of the New York Department of Environmental Protection (DEC), New York State Energy Research and Development Authority (NYSERDA), and the Public Service Commission (PSC) for their diligent efforts on behalf of NY's climate future.

Once complete, the Final Scoping Plan (the Plan) will be the state's most comprehensive document aimed at providing a pathway toward reducing greenhouse gas (GHG) emissions and achieving the broader social, economic, and environmental goals required by the letter and the spirit of the Climate Leadership and Community Protection Act (CLCPA).

In our comments below, we provide input across sectors and the climate solutions that we build, own and operate (e.g. renewable electricity and fuels, electrification of buildings and transportation, etc.) and we gave special attention to the waste sector which, with the 20-year global warming potential (GWP) used in NY as per the CLCPA requirements, is the third largest source of climate impact in the state. With the majority of the waste sector impact stemming from biogenic methane generated by the decomposition of organic waste, adding a comprehensive approach to transforming the organic waste sector to the Plan will be essential for NY to achieve the goals in the CLCPA.

We encourage the CAC, and NY's leadership more broadly, to focus effort on ways to incentivize the outcomes they want to see and that are required in the CLCPA. The goals of the CLCPA cannot be achieved through government action alone. This historic, economy-wide transformation will take leadership from NY's businesses, teachers, faith leaders, community leaders, farmers, scientists, activists, bankers, artists, and other citizens all across the state. This is why it is critical for the NYS Government and the Final Plan to focus on getting the



incentive structures right so that millions of New Yorkers can more readily contribute to the myriad innovations needed to help stave off the worst impacts of climate change.

Generate Capital looks forward to expanding our workforce and our investments in sustainable infrastructure in NY over the coming years and decades to help drive both rapid decarbonization of NY's economy as well as the transition to a social just, circular economy.

Sincerely,

A handwritten signature in black ink, appearing to read 'Suzanne Hunt'.

Suzanne Hunt
Director, Policy
Generate Capital, PBC

Introduction

We appreciate the enormous amount of time, effort and care that went into the creation of the Draft Scoping Plan (DSP) and we appreciate NY State's climate leadership. As the financial capital of the nation, the birthplace of the electrical grid, and an increasingly important food producing region (as climate change impacts worsen), it is imperative that NY State succeed in its efforts to tackle the intertwined challenges of climate change and social inequities.

Generate Capital, PBC (Generate) is a leading sustainable infrastructure company driving the infrastructure revolution. Generate builds, owns, operates and finances solutions for clean energy, water, waste and transportation. Founded in 2014, Generate partners with over 40 technology and project developers and owns and operates more than 2,000 assets globally. Generate is the one-stop shop offering pioneers of the infrastructure revolution tailored funding and support needed to get projects built. Our Infrastructure-as-a-Service model delivers affordable, reliable and sustainable resources to over 2,000 customers, companies, communities, school districts and universities. Generate is a Public Benefit Corporation, which means that we have a fiduciary responsibility to the public benefit as well as to our shareholders.

We own and operate many sustainable infrastructure projects and solutions in NY State and thousands across the country. They include renewable energy generation, energy storage, electric bus fleets, energy efficiency and electrification of buildings, hydrogen fuel cells, and organic waste composting, as well as anaerobic digestion (AD) facilities which produce renewable electricity, renewable natural gas (RNG), and fertilizer. Our experience financing, building and operating these assets, gives us valuable perspective on what will help accelerate/enable the transformation of NY's infrastructure to address the climate crisis.

All stakeholders who understand the seriousness of the threat of climate change wish we could move much more quickly to deploy the key clean technologies needed to reach carbon



neutrality. Generate's dedicated staff work constantly to try to accelerate capital deployment and speed up real world investment timelines for sustainable infrastructure.

We feel that this Scoping Plan, and future iterations, should find a way to highlight a role for the clean technology investor's voice, which has not received formal attention in this process to date. Firms such as Generate are actively trying to turn the vision of a decarbonized New York into reality, but there remain real world challenges, and missed opportunities, that deserve attention from the Climate Action Committee, and other senior New York leaders. We appreciate the opportunity to provide input on both what's working and what could be improved. Included herein are our suggestions to strengthen the DSP so that NY can lead the nation in not only the energy and climate transition, but also the transformation to a truly equitable, circular economy.

Overarching Issues

Private Sector Investment and Innovative Climate Finance Must Added to the Plan

To achieve the economy-wide transformation required by the Climate Leadership and Community Protection Act (CLCPA) – everything from materials flows, to energy production and use, to the ways in which land and water are managed, to the way people and goods are moved around – will require massive capital investments and unprecedented levels of coordination, collaboration and communication within and across sectors and stakeholder groups. Therefore, much more attention in the DSP and subsequent processes, programs, and initiatives must be focused on these critical elements.

Additionally, there is much discussion of costs in the DSP, but insufficient attention is paid to the types of costs, the types of capital needed, where it will come from, how capital will be deployed, and by whom. There is also little consideration of the potential cost savings and/or revenue streams stemming from climate solutions and how they impact our consideration of costs, benefits, and who should pay (and who should not). High capital costs for a given climate solution may be acceptable if they can be borne by businesses and investors who have a sufficient level of confidence in their ability to be paid back through revenue generation or cost savings, and future market growth potential for these (high upfront cost) climate solutions. High cost environmental solutions paid for entirely by the state government and borne by NY's citizens in the form of higher taxes will be a politically challenging solution to meeting the state's decarbonization goals. Therefore, innovations in how climate solutions are financed also deserves detailed consideration in the final Plan.

While the DSP contains many recommendations related to government funding for new infrastructure, it needs to better acknowledge the critical role of the private sector and other non-governmental actors in funding and delivering new infrastructure.

Importantly, much of the focus of the cost assessments is only on the up-front costs of purchasing new infrastructure and leaves out the ongoing and essential operating and

maintenance costs. Successfully deploying and operating new infrastructure requires sufficient sustained revenues to cover operating costs – including labor, maintenance, insurance, and many other cost considerations beyond just the upfront capital investment. The recommendations in the DPS must enable successful business models, or other operational plans, to ensure that once constructed, new infrastructure will be operated safely and successfully over the lifetime of the assets.

Transformation Requires Innovation and Well Designed Incentive Structures

“Innovation” in the context of the climate crisis is often assumed to be related to technology, but some of the most important innovations take place in business models. The transformation of an entire state economy will require far more than just technological innovation. The experience of the solar PV industry has demonstrated that equally, if not more important to success, were innovations in financing of solar (e.g. PPAs, solar leasing, etc.), innovations up and down the supply chain, and countless innovations developed throughout the deployment process. These included innovations in manufacturing, installation methods, maintenance methods (e.g. solar grazing), in a whole host of soft cost reductions, and so on.

In essence, the two major strategies NY can use are to incentivize outcomes and ban activities. If NYS is too stringent with the latter, it risks both:

- Locking in the status quo by making it too hard to do anything different/better for people and the climate, and/or
- Causing businesses to move out of NY to other states, resulting in job and tax revenue losses and no benefit to the climate system.

Three of the primary means of designing incentive are:

- To create a market to drive desired outcomes (e.g. Clean Heating Standard, Clean Fuel Standard, through government procurement, etc),
- By shifting tax policy to shift the economics, or
- By providing funding directly to priority solutions.

Great care must be given to properly design and implement incentive structures. Too little incentive and people don't change behavior. Too much, and you end up overpaying for outcomes - and potentially causing added cost burden to low-to-moderate income (LMI) New Yorkers - and flight of businesses to other states. And, some incentives can become hard to remove once they are implemented and can thus outlive their usefulness if not designed to phase out or end once the desired outcomes have been achieved.

Incentives can and should be designed to both maximize benefits to the climate and to communities, and should prioritize LMI communities. This is already done in some instances in NY. For example, the program in NY community solar that pays a premium in the form of a community adder for projects that subscribe LMI customers.

And, because we have no federal climate law in the US currently, the DSP needs to give careful consideration, when suggesting bans or incentives, to the very real concern about leakage to other states. For instance, a greenhouse gas intensive company operating in NY may choose to move its operations to a neighboring state rather than reduce their emissions to comply with the CLCPA and related regulations and laws - thus hurting the state economically while not achieving any climate benefit.

On the flip side, NY will attract innovative companies and investment to the state if it puts strong, predictable incentive structures in place that make NY a more attractive place to deploy their resources.

Interconnectivity and Efficiency Deserve More Attention

The way the chapters are divided in the DSP results in the interconnectivity among sectors and strategies not being fully appreciated/addressed. For example, a clean fuel standard (CFS) for transportation fuel will drive emissions reductions in the transportation sector but also in the waste and agricultural sectors and potentially others as well. The synergies that can be developed among a well designed menu of policies and programs should be more fully elaborated in the DSP.

Efficiency, and even radical efficiency as Amory Lovins calls it, is not given the focus and attention it deserves as a critical element of any climate plan. A full chapter should be dedicated to opportunities for enhanced efficiencies in the design, materials, systems, practices, technologies, etc that can drive significant GHG reductions. While NY cannot rely only on efficiency measures to achieve its climate goals, it should give this critical tool more attention in the plan.

GHG Reductions Sooner are More Valuable

Because we are in the critical decade as the Intergovernmental Panel on Climate Change (IPCC) has deemed it, there is greater value for reductions sooner rather than later, especially for reductions in short lived pollutants like methane.¹ Therefore, there is a compelling argument to be made around prioritizing program development and incentive structures around solutions that can be implemented quickly to drive reductions in the near and medium term while debate continues over which solutions will be viable for the hardest to decarbonize sectors.

Sustainable Biofuels Must be Properly Valued

The DSP also undercounts the potential benefits of sustainably produced biofuels, which is counter to the recommendations from the IPCC. In the most recent draft report on GHG mitigation, entitled *Climate Change 2022, Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, the IPCC states that:

¹ Climate Change 2021: The Physical Science Basis, Working Group I contribution to the Sixth Assessment Report, <https://www.ipcc.ch/report/ar6/wg1/> (see Chapter 6 for a discussion of methane's importance).

“Sustainable biofuels, low emissions hydrogen, and derivatives (including synthetic fuels) can support mitigation of CO2 emissions from shipping, aviation, and heavy-duty land transport but require production process improvements and cost reductions.”²

“Because some applications (e.g., aviation) are not currently amenable to electrification, it is anticipated that 100% renewable energy systems will need to include alternative fuels such as hydrogen or biofuels.”³

A key need that is evidenced by the DSP is that proper resourcing of the relevant NYS government agencies will be essential for them to take on all of this additional monitoring, analysis, research, program development and administration, reporting, etc. that will be needed in order for them to be able to implement the myriad recommendations in this plan. Also, because drafting the plan is only the first step, the NYS government should give thought to how to engage the expert advisory panels over time as NYS shifts from development to implementation of the plan.

New York Should Revisit Biogas’s Role in the Clean Energy Standard

We continue to be concerned that the CLCPA statutory definition of “Renewable Energy Systems” (and the associated Clean Energy Standard implementation by the PSC) ignores the potential of biogas as a form of dispatchable renewable electricity, when such electricity is generated using combustion technologies. It is also out of step with the IPCC, the IEA, the US DOE and a whole host of national and global authorities which define bioenergy as a renewable resource and put a critical focus on sustainable feedstocks. In its recent 2021 Key Findings summary, the IEA states that “waste- and residue-derived [bio]fuels deserve more policy attention.”⁴

Such resources can be low-carbon or even carbon-negative (see discussion of GHG accounting frameworks for biomass to energy below). For instance, **Generate owns and operates three food waste digesters in NYS which have a combined capacity to recycle over 155,000 tons per year of food waste, resulting in a 97,700 metric ton reduction in CO2E emissions versus landfilling, 25 Gigawatt hours of low carbon energy, and 36 million gallons of fertilizer.**

While we also own fuel cell assets and support the use of fuel cell generation units for their criteria air pollutant and other benefits, they remain expensive relative to combustion power generation equipment and do not always provide the same grid services as combustion units. We are open to alternative uses of methane captured from organic waste if viable bioproduct

² https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf See Page SPM-41

³ Id., Page TS-54.

⁴ IEA. BioEnergy. Key Findings. <https://www.iea.org/fuels-and-technologies/bioenergy>. Accessed June 15, 2022.

markets emerge. In the meantime, the current definition is resulting in unsustainable economics for electricity generation from biogas and will drive some of NY's existing ADs to shut down (some already have) and will drive others to invest in RNG upgrading and then sell the RNG outside of NY. Therefore, in the cases of the shutdowns, the methane is no longer being captured and destroyed, and in the case of the shift to RNG for export, the methane is being destroyed, but NY is not getting the added benefit of the RNG use in within the state to help it meet the goals of the CLCPA.

Greenhouse Gas Accounting for Biomass to Energy Deserves Additional Attention in the Final Plan (or In Specific Programs Designed to Incentivize Adoption)

There are two distinct greenhouse gas emission accounting approaches commonly used in regulatory programs for bioenergy today: the “point source biogenic CO₂ emissions are carbon neutral” approach and the “lifecycle approach”.⁵ It is important to understand that neither of the two common accounting approaches is necessarily correct or more accurate, only that it sets the responsible party for various emissions (as well as sinks and avoided emissions) at different places—often based on an expectation of analogous regulatory activity by all other jurisdictions in the “point source” case. That said, Generate strongly believes that, in the near term—while New York is a jurisdiction at the leading edge of climate action—programs built on lifecycle analysis are more likely to produce better incentives for biofuels and bioenergy more broadly.⁶

The analytical work underlying the DSP relies upon a unique⁷ third approach that is not required by statute, is unproven relative to the two approaches discussed above, and is unlikely to be helpful for creating the correct incentives for maximizing the greenhouse gas reductions associated with bioenergy. This third approach incorporates upstream emissions from fossil fuels, but not from biofuels, and essentially ignores the netting of biogenic emission sinks in an untransparent way. We explore the merits of the two existing GHG accounting approaches below for biofuels/bioenergy before explaining why the preliminary work on the third approach for New York's inventory would be unhelpful if applied in potential regulatory programs that are inclusive of biofuels/bioenergy.

⁵ For US EPA's description of these two well-accepted options see: <https://www.epa.gov/sites/default/files/2016-03/documents/life-cycle-ghg-accounting-versus-ghg-emission-inventories10-28-10.pdf>

⁶ International reporting under the IPCC framework uses point source accounting. In the long-run, we remain hopeful that harmonized global action on GHG reductions may one day reinvigorate the likelihood of successful coordinated implementation of a point-source approach.

⁷ Page 22 of the Draft Scoping Plan states that emission values provided in the Plan are not “comparable to those reported by other governments, nor are they comparable to values reported by New York State in the past”. We recommend that the Final Plan include a better discussion as to why developing a unique, NY-specific, accounting framework is viewed as helpful to solve a global problem. If such a discussion cannot be articulated we recommend building regulatory programs around proven accounting methods.

When using a point source approach,⁸ GHG emissions from bioenergy are assessed only at the point of combustion/use of the biofuel/bioenergy—such as in a home, business, vehicle, power plant or industrial facility. When determining these point-source GHG emissions, the biogenic carbon dioxide produced from the combustion of a biomass-derived input is often assumed to be counteracted by the carbon dioxide that was recently removed from the atmosphere when the biogenic material was grown and thus netted out of any final compliance obligation.⁹ The use of such a point-source framework is appropriate if it is expected that the upstream emissions and upstream GHG sinks/avoided emissions (with the exception of the biogenic sink) will be accounted for by other jurisdictions under analogous programs.

A lifecycle approach (LCA) accounts for GHG emissions generated from a fuel's production through its end-use—the full life of the fuel. The lifecycle approach for GHG emission accounting can also be referred to as a “well-to-wheels” or “full fuel cycle” approach.¹⁰ This approach accounts for all the GHG emissions produced or avoided from the production, collection and processing, transmission and delivery, and ultimate use of a fuel (including upstream sinks and the final point source emissions).¹¹

When determining the lifecycle GHG emissions factor, the GHG emissions are summed across each stage and the end user of the fuel is responsible for all of these emissions. A full lifecycle approach is appropriate if other jurisdictions do not have programs to account for these upstream sources and sinks, or simply if the jurisdiction's goal is to create the proper incentives to reduce global emissions across an entity's entire biofuel/bioenergy supply chain.

Fundamentally, it is appropriate to track biogenic carbon dioxide emissions from use of biomass and biofuels as a line item in any point source emission accounting, and/or to appropriately “net out” CO₂ biogenic emissions or sinks as a step in any accounting of such fuels. Conversely, it is not appropriate to treat biogenic CO₂ from the use of biomass and biofuels as identical to CO₂ from fossil fuels (thus ignoring the upstream atmospheric CO₂ sink as the biogenic material is grown). The analytics conducted for the Scoping Plan scenario analysis choose to do so and thus significantly understate the true GHG benefits of bioenergy across all scenarios.¹²

Further—and more importantly—if the accounting framework used in the Scoping Plan analytics was also used in future GHG reduction policies that are inclusive of biofuels/bioenergy as a

⁸ In voluntary corporate GHG accounting entities represent their “Scope 1” emissions using such a framework.

⁹ For example, in the Regional Greenhouse Gas Initiative, point source CO₂ emissions from eligible biomass reduce the total CO₂ allowance compliance obligation of the emitting unit. See: <https://www.rggi.org/allowance-tracking/emissions>

¹⁰ In voluntary corporate GHG accounting such lifecycle analysis can also be thought of as looking carefully at Scope 1, 2, and 3 emissions across a corporate actor's supply chain.

¹¹ Clean fuel programs across the world use lifecycle analysis to incent the proper types of biofuels. For example see the European Union's Renewable Energy Directive program, the California and British Columbia Low Carbon Fuel Standards, the Canadian, Oregon and Washington Clean Fuel Standards, etc.

¹² As explained on Section I - Page 83 of the integration analysis (page 760 of the Scoping Plan pdf).

compliance option, it will not create the correct incentives to use the least-emitting biofuels/biomass. For example, biofuels that have demonstrated dramatic upstream GHG impacts—such as deforestation due to expansion of palm oil plantations—would be treated identically to fuels derived from circular use of the waste streams produced by New York’s consumption of organic materials (e.g. used cooking oil to biodistillates, renewable gasses derived from wastewater treatment, etc.). If such an accounting framework were used in regulatory policies and New York still consumes a significant amount of biofuels, as predicted in all Scoping Plan scenarios, it will lead to a “race to the bottom” across biofuel feedstocks that is counter to the intent of the CLCPA’s authors who are skeptical about the GHG benefits of biofuels.

Transportation (Chapter 11)

Generate Invests in a Portfolio of Clean Fuels and Fueling Infrastructure

As a finance provider, owner and operator of a range of climate solutions in the transportation sector (including EVs, hydrogen fuels cells, and organic waste derived RNG), we support many of the recommendations in this chapter.

We invest in both low carbon biofuels and zero emission vehicle infrastructure and believe these technologies are complementary. The Final Plan should better emphasize that EVs and clean fuels are not in conflict and that regulatory tools in the DSP will push ZEVs as hard as possible. In fact the DSP states (on page 118) that, “Because this Plan expedites electrification as much as reasonably feasible, any GHG emission reductions from the use of renewable fuels are in addition to the emission reductions from accelerated electrification.”

The DSP states (in Section T12) that, “Although the CJWG is correct that renewable fuels still emit air pollutants, some renewable fuels have lower emissions of PM.” While this is true, it does not give the full picture. The use of some renewable fuels (e.g. renewable diesel and RNG) in conventional engines lowers emissions of PM as well as SOx and other criteria pollutants significantly when compared to conventional diesel fuel.^{13,14}

Tradable Performance Standards Can Do Most of the Heavy Lifting in the Transportation Sector

We are glad to see that both the huge investments needed, and the need for market-based policies, are acknowledged in the Transportation Chapter of the DSP. We agree that it is critical to unlock private financing to supplement state dollars. The transformation of our transportation

¹³ Review of the Scientific Literature on Greenhouse Gas and Co-pollutant Emissions from Waste- and Coproduct-derived Biomass-based Diesel and Renewable Natural Gas. HakSoo Ha, Ph.D., and Tristan R. Brown, J.D., Ph.D. Bioeconomy Development Institute. State University of New York College of Environmental Science and Forestry. January 2022.

¹⁴ Biofuels for Transport. Global Potential and Implications for Sustainable Energy and Agriculture. Worldwatch Institute. Published 2007.

infrastructure, and the infrastructure to power it, cannot be paid for by taxpayers alone. Therefore we support New York's use of existing vehicle-side tradable performance standards, such as the Advanced Clean Car and Advanced Clean Truck rules developed in partnership with California.

A significant new policy that New York should add is the Clean Fuel Standard (CFS). A key benefit of the CFS is that it forces polluters to pay for the cleaner fuels/infrastructure. Private capital motivated by such a policy can be an important supplement or replacement for state dollars to electric vehicle infrastructure as well as infrastructure for low carbon liquid and gaseous fuels to help decarbonize legacy fleets. The existing Low Carbon Fuel Standards (LCFSs) and Clean Fuel Standards that have been in place for over a decade already in California and British Columbia, and for over five years in Oregon, have demonstrated that this policy is effective in accelerating the deployment of EVs and charging infrastructure¹⁵ while also reducing both GHGs and other pollutants from the legacy ICE vehicles.^{16,17,18,19}

It also bears emphasis that a CFS would require full life cycle GHG accounting, and ties financial compensation to reductions in the carbon intensity score of a given transportation fuel pathway. In this way, the policy provides powerful incentives, and important revenues, to private and public sector fleet operators making it possible for them to afford to switch to e.g. EVs for new fleets and replace fossil fuels with renewable fuels in existing ICE vehicle fleets. (See the BioEnergy section above for additional details on lifecycle GHG accounting.) And it accomplishes these impacts at no cost to taxpayers other than some administrative expenses.

The LCFS in California, that the CFS is modeled after, has been critical to giving our investment committee at Generate the confidence to green light our investments in renewable transportation fuels/vehicles for the California market. These investments have given us valuable knowledge and experience that we can bring to NY.

Generate supports the feebates concept which is analogous to the Clean Fuel Standard in that higher emitters pay and lower emitters benefit. This concept has been studied extensively in

¹⁵ <https://ww2.arb.ca.gov/resources/documents/lcfs-zev-infrastructure-crediting>

¹⁶ Mazzone, Daniel, Julie Witcover, Colin Murphy (2021) *Multijurisdictional Status Review of Low Carbon Fuel Standards*, 2010–2020 Q2: California, Oregon, and British Columbia. Institute of Transportation Studies, University of California, Davis, Research Report UCD-ITS-RR-21-60 https://itspubs.ucdavis.edu/publication_detail.php?id=3461

¹⁷ Murphy, C., Kleeman, M. J, Wang, G., & Li, Y. (2022). *Modeling Expected Air Quality Impacts of Oregon's Proposed Expanded Clean Fuels Program*. UC Davis: Policy Institute for Energy, Environment, and the Economy. <https://escholarship.org/uc/item/6pz348mc>

¹⁸ Environmental Defense Fund, American Lung Association, TetraTech, Driving California Forward. (2014) *Driving California Forward: Public Health and Societal Economic Benefits of California's AB 32 Transportation Fuel Policies*. https://www.edf.org/sites/default/files/content/edf_driving_california_forward.pdf

¹⁹ Huseynov S, Palma MA (2018) *Does California's Low Carbon Fuel Standards reduce carbon dioxide emissions?* PLoS ONE 13(9): e0203167. <https://doi.org/10.1371/journal.pone.0203167>

California²⁰ and is again under debate as a possible addition to that state's regulatory portfolio to promote clean vehicles.

Existing Programs and Future Programs Both Need Clear Ex-Post Evaluation Metrics to Ensure Success

The DSP is unclear on what laws, programs, and subsidies would be needed to get to 98% of new sales being all electric vehicles by 2030 (from only a few percent of sales today) in the Accelerated Transition Away from Combustion scenario (Figure 8 on page 73). Clear signals from NYS, and the creation of a stable/supportive policy environment, will be critical to enable EV manufacturers, and other key participants in the EV value chain, to do the long-term planning, and to mobilize the significant resources, that will be necessary to help NYS achieve this massive scale up in EV sales between now and 2030. The DSP should also acknowledge and adjust for the current supply chain constraints that have slowed down the manufacturing of EVs and have subsequently contributed to the current limited availability of EVs in NYS.

We understand the reasoning behind consideration of early vehicle retirement strategies, but we urge NYS to assess the cost and viability of relying too heavily on early vehicle retirement. The DSP should provide better analysis to demonstrate the relative cost of this strategy vs others in achieving the GHG reduction goals for the sector. Past experiences with such efforts (e.g. 'cash for clunkers') programs have shown that they are hugely expensive per ton of GHG reduction for early retirement of ICE vehicles vs other strategies (such as performance based incentives programs). It is unclear in the DSP how aggressive early retirement would be promoted and how it would be paid for. While some early retirement of the most polluting vehicles may make sense, the most aggressive early retirement scenarios would likely require New Yorkers to retire well-functioning, relatively new vehicles, which will likely meet strong public resistance and thus undermine program effectiveness. Further, it is unclear how these costs are represented in the scenario analysis.

An additional critical issue that the DSP needs to address is operations and maintenance strategies for all the new infrastructure that will be needed. Charging stations, for example, don't do anyone any good if they don't work. Ensuring the proper functioning of EV charging stations via regular maintenance and monitoring has been a challenge in California (the state with the most EVs in the US). There has to be consideration for the business model around these assets and/or long-term funding for operations/maintenance from public funding sources.

In general, we'd like the Final Plan to focus more on ensuring there are ex-post metrics to assess the ongoing success of the eventual policies adopted. This should be possible to do now for existing strategies. In the Existing Sectoral Strategies section of the DSP, a number of initiatives are described but there is no description of the impacts they've had or even general level of success achieved. For instance, there is no indication of whether the EV charger efforts

²⁰ *California Feebate: Revenue Neutral Approach to Support Transition Towards More Energy Efficient Vehicles*. Jenn and Sperling, UC Davis Institute of Transportation Studies, June 2017. <https://escholarship.org/uc/item/7jj0x8dk>

have been successful. For the Final Plan we recommend that the description of these existing policies include:

- How many charging station installations have they facilitated?
- What are the utilization rates of the installed charging stations?
- Are they properly maintained?

There's no description of how much each of these existing strategies have accomplished, or how much each of them costs, or who pays for each of them. Some type of prioritization of lessons learned based on past performance (cost/benefit analysis) of the programs listed would be helpful to inform future strategy and programmatic development stemming from the Plan.

Gaseous and Liquid Renewable Fuels Will Be Needed

The DSP transportation chapter says that “Given the service life of current vehicles and equipment under the most aggressive scenarios identified for transitioning to zero-emission technologies, fossil fuels are expected to constitute most of the fuel mix until the mid- or late-2030s,” and yet there is hardly any discussion of the fuels and strategies to reduce the adverse climate and health impacts of the existing vehicles or displace significant portions of those fossil fuels with renewable fuels produced from organic waste streams. A number of liquid and gaseous fuels can be produced from NY’s organic waste streams and used to reduce the climate (and often health) impacts of NY’s existing vehicle fleet while the transition to electrification is underway.

RNG is never mentioned in the Transportation Chapter as a potential lower carbon vehicle fuel. There are fleets of CNG vehicles in NY and the Plan should support the use of low carbon, waste derived, RNG fuels to displace fossil gas currently being used to fuel those vehicles. RNG from organic wastes is the only carbon negative fuel (based on full lifecycle GHG accounting) commercially available currently and thus should be factored into every effort to reach net zero emissions; otherwise all of the other fuel sources must have zero emissions to meet the objectives of the CLCPA – which is unlikely in the near term.

The Key Stakeholders section should include new mobility innovators/product developers and finance providers/investors. The bulk of the money, by definition, for these investments must come from the private sector and the chapter lists “unlocking private financing” as a key strategy, and yet private sector financiers are completely left out of consideration. Even the key stakeholders list in the financing section doesn’t include private sector banks, investors, or other private sector finance providers.

Buildings (Chapter 12)

Tradable Performance Standards and Other Market-based Policies Can Help in the Buildings Sector

Market-driven proposals would also help accelerate progress in the building sector. One example is to provide opportunities for buildings to generate revenues by responding to Demand Response signals. If buildings are able to ramp up and down their energy need (for example being able to shift demand to times when the grid is more decarbonized by utilizing building energy management systems (BEMS) or batteries), and were rewarded financially for that, it would incentivize building owners to adopt solutions, in new buildings and through retrofits, that allow them to tap into new revenue streams, or reduce their operating costs. This could be implemented through a utility demand response program (California pioneered the Demand Response Auction Mechanism (DRAM) as a possible template and source of lessons learned). This may be incorporated into the state's ISO and utility response to FERC Order 2222, requiring ISOs to provide routes to wholesale markets for distributed resources.

We also support the feebates and cap-and-invest or carbon pricing approaches covering energy use in buildings. Feebates for appliances would work similar to the concept described above for vehicles—increasing the costs of high emitting appliances and lowering the cost of low GHG appliances.

Where the economics don't pencil for the preferred solution, and market-based solutions to motivate competition are deemed infeasible, the DSP could recommend the identification of grants and tax credits that move the needle on production. For example, if a hypothetical inefficient air conditioning unit costs \$75 but a super efficient heat pump costs \$100, then a \$30 grant for heat pumps or a 30% tax credit would lower the cost to customers of the heat pump and incentivize buyers to choose the cheaper option. As deployment rises, the incentive can step down, which also creates a sense of urgency among buyers to make a decision sooner. NYSERDA has used similar structures successfully in the past to incentivize solar and storage deployment through its MW Block program. Economy wide carbon pricing or a cap-and-invest program could raise significant revenue that could help fund appliance rebate programs.

Changing building and appliance codes and standards is also a key tool to motivate GHG reductions in buildings. However, changes to code must be done very thoughtfully in order to address social justice concerns. Past experiences have demonstrated that increasing the stringency of codes typically makes new housing more expensive and contributes to housing affordability challenges.

Renewable Gas Policy Deserve Additional Attention in the Final Plan

We support both widespread electrification of buildings and targeted use of renewable gasses for building loads in the near term, or for loads that prove difficult to electrify in the long term. Adopting either a Clean Heating Standard²¹ or a Renewable Gas Standard²² should be

²¹ Clean Heat Standards are being pioneered in Colorado, Minnesota, and are under debate in Vermont. For a general summary of how such policies can be designed, see: <https://www.eanvt.org/chs-whitepaper/>

²² Renewable Gas Standards are in place in California, Oregon, British Columbia, Quebec. For a general summary of how such policies can be designed, see: <https://www.icf.com/insights/energy/design-principles-for-renewable-gas>

included in the Final Plan. Generally, a Renewable Gas Standard is a policy that requires, or allows, utilities to procure a certain quantity of renewable gasses (e.g., biomethane/RNG or green hydrogen) by certain milestone years.²³ A Clean Heat Standard would allow utilities (or other entities that currently supply energy services such as home heating through natural gas delivery) to use a variety of low carbon technologies to displace the use of fossil gas.

Adopting an RNG procurement policy for gas utilities, such as a Renewable Gas Standard or Clean Heating Standard, is currently being pioneered to promote low carbon fuel use in other states, and should be adopted in New York.²⁴ This should allow hydrogen and other renewable gasses such as RNG to participate from in-state and out of state resources and CI should be factored into the value of the gas to incentivize the lowest carbon fuel pathways and thus more rapidly meet the DSP objectives.

Renewable natural gas (RNG), derived from organic waste, is an effective complement to other strategies to reduce emissions from thermal demands—such as energy efficiency and electrification—especially in the near-term. RNG does not, in any way, diminish the potential to use these other strategies, some of which will be serviced by electricity in the long term and deserves additional attention in the Final Plan. The implementation of a renewable gas standard would provide the strongest incentive for RNG growth across all applications which are served by New York’s current gas network. It would also meaningfully reduce methane emissions in the state and would enhance resilience.

Combining Technologies May be Helpful in District Thermal Systems

We would like to see a better discussion of which fuels/industries/technologies will drive district thermal heating and an exploration of the overlap between building district heating and the distributed resources in the power sector (mentioned on page 160 of the DSP). A key question is what mix of primary sources of energy can best be combined to contribute to the district heating system. Renewable gasses could have a role in district heating to take advantage of heat input from cogeneration facilities that burn gaseous fuels. Gaseous fuel is capable of providing energy inputs to efficient combined heat and power units, fuel cells, absorption heat pumps and similar technologies whose low temperature heat could be tapped as one input to distributed heat grids (and potentially combined with geothermal heat²⁵ and other sources).

Building Material Purchase Programs Guided by Lifecycle Analysis Could be Helpful

In line with our support for the use of LCA in analysis of biofuels, we also support programs based around analyses of embodied carbon in building materials using lifecycle analysis

²³ In many ways this concept is very similar in concept to Renewable Portfolio or Clean Energy Standards in the electricity generation space.

²⁴ The CLCPA’s Renewable Energy Program provisions defines “Renewable Energy Systems” as “Systems that generate electricity or thermal energy through use of the following technologies: solar thermal, photovoltaics, on land and offshore wind, hydroelectric, geothermal electric, geothermal ground source heat, tidal energy, wave energy, ocean thermal, and fuel cells which do not utilize a fossil fuel resource in the process of generating electricity.”

²⁵ <http://geodh.eu/about-geothermal-district-heating/>

(overlap with industry that produce these materials, page 187). Such programs can be effective even if neighboring jurisdictions don't have similarly bold climate policies yet.

Continue Research into All Low Carbon Technologies

New York should continue to support research and development (R&D) across the full portfolio of low carbon technologies and strategies, including for the integration and optimization of low carbon technologies, as well as for low carbon fuel use in buildings as discussed on page 145 of the DSP. The building sector remains a very complex decarbonization challenge and there is no one technology today that is likely to address all situations. Funding for continued R&D is critical to promote breakthroughs that will lead to cost declines, enhanced resilience, and additional abatement options in this sector.

Electricity (Chapter 13)

New York is making good progress on increasing the proportion of zero carbon electricity on the grid — 56% renewables and nuclear, and 43% fossil fuel (of which 0% coal) in 2020 is commendable. The trajectory of renewable energy deployment continues its rapid increase. The pipeline of renewable energy projects in development, that will accelerate NY's efforts towards meeting its 100% renewable electricity goal, remains strong.

Generate would support continued tightening of the targets under the Regional Greenhouse Gas Initiative (RGGI). The December 2020 adjustment to reduce the program's cap by 30% through 2030 was helpful, but we would support additional increases in stringency through the regional program review process scheduled to begin toward the end of this year as mentioned on page 152 of the DSP. This would help move the RGGI price closer to the social cost of carbon, and thus improve the overarching incentive for electric-sector greenhouse gas abatement.²⁶

Generate welcomes the approach that is inclusive of a wide range of renewable generation strategies and scales, including facilitating DG/DER projects (E2), and feels that the discussion reflects the key considerations of industry participants. The key challenge will be to implement the market structures that incentivize the desired outcomes. A few recommendations to address this challenge include the following:

- Recognize the incremental value of siting generation close to load in this process. Benefits that are incidental to the revenue case should be recognized and compensated appropriately, including the offset need for additional transmission infrastructure, improved resilience of the electricity grid, and reduced carbon and co-pollutant emissions in Disadvantaged Communities. These additional revenues would help a long tail of marginal projects pencil for developers, communities, and investors.

²⁶ For more description of how low prices in carbon pricing programs, see our comments below on Chapter 17.

- Pay particular attention to the details of how NYS quantifies and communicates about these benefits. The devil is in the details here. It has proven to be hard to quantify these benefits, as they are often based on a counterfactual, i.e. what would have happened if we have gone with the alternative?, and circumstantial, i.e. resilience is more highly valued during a grid outage or major weather event.

E2. Generate would support continued tightening of the Clean Energy Standard (CES) as described on page 158 of the Draft Plan. The Climate Act requires the PSC to undertake a biennial review of the CES Program, so that the PSC can adjust program requirements as necessary (to meet both the 2030 and 2040 directives required in the CLCPA). Generate will participate in such reviews to ensure the proper incentive structure remains for distributed renewable electricity generation. As described in more detail in our comments on Chapter 17 below, we recommend that New York build on concepts that have worked well in tradable performance standards, such as the CES, and apply these lessons to motivate reductions in other sectors. Generate would support aligning incentives in the CES with other components of a Clean Energy Supply Standard, should such an economy-wide policy be developed.

E3. Generate is very supportive of greater staffing at utilities (p. 161). While we have been fortunate to not have a project fail as a result of interconnection issues yet, we have had many problems interacting with NY state utilities that have delayed projects and put their viability at risk.

E4. Permitting new projects is becoming harder. Fierce opposition to renewable energy projects raises costs and extends timelines. Increasingly we are seeing towns passing outright moratoriums on new solar projects. Therefore, Strategy E4 is welcome. Like with E2, the recommendations are directionally beneficial, however all of the challenges are not properly addressed. Roadblocks need to be removed and permitting processes streamlined, including escalation to the state for unnecessarily obstructionist local politics. Meanwhile, certain communities with less local organizing power (e.g. Historically Disadvantaged Communities) may need to be protected at the state level. Therefore, Generate would suggest:

- The creation of a framework for considering in what communities and typologies (e.g. rooftop solar) permitting can be considered 'by-right' vs. requiring extensive critical path community engagement that create red flag risks to viability; and
- New York should also consider whether there are incentive structures that would encourage communities to cooperate with project developers, e.g. grant funding for projects that require community participation in project JVs.

Similar challenges exist related to organic waste processing facilities (some of which produce electricity from e.g. biogas) as it relates to concern about odors, traffic and noise. These facilities typically need to be built in heavy industrial zoned lands except when located on farms or at wastewater treatment plants.

E5. We support the recommendations related to community choice aggregation.

E6. Generate supports the development of a well designed and thoughtfully implemented “clean dispatch credit” system to help mobilize resources for the build out of energy storage and grid balancing capabilities.

E7. Transmission and storage of electricity are key. ISO prices show how hard it is for upstate solar to benefit from downstate pricing challenges. Pricing new transmission is insufficient - more needs to be done at the macro level, especially around permitting and utility engagement. One approach would be to create a permitting carveout for strategically significant infrastructure. All projects could be reviewed by a state entity.

E8. We recommend a more complex treatment of the environmental attributes of biomass/biogas in all such programs, both to better recognize the lifecycle GHG benefits of carbon negative or very low carbon biogas (in line with the GHG accounting issues discussed previously) and to ensure recognition of the potential for biogas/RNG to be a source of storable and dispatchable renewable energy. We recommend ensuring value is associated with these characteristics in energy, capacity, and GHG policy markets (see page 171).

E10. Generate agrees that studying all technologies is important to solve the problem of intermittency. We support looking at long-duration storage, RNG, green hydrogen, etc. (page 176). We would also suggest that the use of carbon dioxide capture and utilization from biogenic sources be explored to facilitate the use of renewable hydrogen, where appropriate.

As a final note, NYS needs to continue providing clear signals to the private sector to continue to invest for the long-term both financially, and in building enduring relationships in the communities we serve with our projects. In order to facilitate this long term investing, more detail around the market mechanisms and regulations, including the magnitude of the financial incentives, that will lead to preferred outcomes is required. The program delivery needs to be clarified here.

Industry (Chapter 14)

The discussion of industrial decarbonization in the draft plan includes an important concept of Emissions Intensive and Trade Exposed (EITE) industries that deserves more analysis in the Final Plan. Shifting industrial activity from New York to other jurisdictions with no net change (or perhaps even an increase) in global GHGs is an outcome that must be avoided.

Unfortunately, decarbonizing EITE activities has proven to be challenging in other jurisdictions thus far. These sectors are often highly energy price sensitive, exposed to competition from jurisdictions that do not have serious climate policy, and reluctant to shift established methods of doing business. Therefore, the DSP is correct to emphasize approaches that are less likely to result in emissions and economic leakage.

We support the four pillars outlined in the Plan for industry: energy efficiency, switching to low-carbon fuels (including renewable electricity), decarbonizing the electricity supply, and negative

emissions. In locations where electrification of industrial activities is too costly, or not technically feasible, renewable gasses are likely to play a crucial role. Generate currently sells RNG from some of its food waste recycling facilities to various utilities as well as industrial/commercial customers such as Modern Niagara to help with their decarbonization efforts.²⁷ Modern Niagara is a building services contractor that works with clients that have set net zero targets throughout North America.

To the extent that New York decision makers believe that the long-run best use of renewable gasses is in industrial applications, they should begin to explore methods of encouraging RNG projects to co-locate near industrial gas loads. The broad strategy of Financial and Technical assistance for industrial decarbonization (discussed on page 184) of the DSP should be sharpened in the Final Plan toward an explicit program to develop the fuel sources of the future for the industrial activities that are expected to remain relevant in New York in 2050.

Aligned with our comments on the buildings sector above, we would also support low-carbon procurement policies based on LCA of key materials. Increasing both the production of, and demand for, low-carbon materials (including steel, cement, aluminum, etc.) is a key cross-sectoral challenge that New York has the opportunity to pioneer new policies to address. We recommend New York regulators coordinate with other jurisdictions on such concepts. For example, the European Union continues to develop a Carbon Border Adjustment Mechanism for key carbon intensive goods.²⁸ If New York industry wants to align with such emerging concepts they should consider what a similar system could look like at the state level, including relying on consumption-focused policies that use lifecycle analysis. As one possible point of comparison, California plans to establish a Clean Cement Standard that will focus on cement producers.²⁹

Agriculture and Forestry (Chapter 15)

Generate appreciates the DSP's emphasis on the "elevated importance in the need for food security" due to COVID-19 and the intensifying impacts of climate change on farming. We support a number of the recommendations in the Agriculture and Forestry Chapter intended to help ensure the security of New York's farmers and food supply as the impacts of climate change intensify. These include but are not limited to:

- Developing a well-designed Payment for Ecosystem Services Program,
- Expanding procurement programs for NYS products (with the requirement that they meet climate smart/low carbon criteria),
- Supporting Carbon Farm Planning,

²⁷ StormFisher and Modern Niagara partner to deliver renewable natural gas to Canada's building infrastructure. PR Newswire. May 9, 2022. <https://www.prnewswire.com/news-releases/stormfisher-and-modern-niagara-partner-to-deliver-renewable-natural-gas-to-canadas-building-infrastructure-301542010.html>

²⁸ [Council agrees on the Carbon Border Adjustment Mechanism \(CBAM\) - Consilium](#)). European Council. March 15, 2022.

²⁹ <https://www.nrdc.org/experts/alex-jackson/california-enacts-legislation-slash-cement-emissions>

- Building a sustainable, Climate-Focused Bioeconomy in NYS,
- Adopting Soil Health Practice Systems including phasing out climate damaging fertilizers and scaling up the use of recaptured nutrients (through organic waste recycling), cover cropping, and other soil health practices.
- Increasing market access for New York low-carbon products, and
- Accelerating carbon removal via natural climate solutions (e.g. via increasing the adoption of agroforestry, afforestation, regenerative farming practices, etc.).

Regarding anaerobic digestion, please see our extensive comments in the waste section below. We would stress the importance of organic waste recycling (both composting and anaerobic digestion in re-capturing valuable nutrients that are often far better for soil health than synthetic fertilizers and with the War in Ukraine, increasingly cost effective.

We support the benchmarking of dairy emissions performance (page 221) and the co-processing of other local organic wastes with manure. We would urge the Final Plan to highlight that the upstream impacts of conventional fertilizers are not counted with the current methodology thus undervaluing the climate benefits of using natural fertilizers, compost and other recycled nutrients.

Advance Precision Feed, Forage, and Herd Management (AF10)

Regarding the component of the strategy regarding establishing co-product markets which states that “DEC should explore establishment of a co-product market for food “wastes” supplied from food processors, retailers, or institutions for best uses, including as livestock feed.” NYSDEC currently allows unprocessed (raw/unstabilized) food waste to be directly land applied on farms fields and/or dumped into manure lagoons. When managed this way, unstabilized food waste generates methane emissions. In order to reduce this methane generation and release to the atmosphere, DEC should consider a requirement that any food waste (that cannot be eaten by farm animals) be stabilized through anaerobic digestion or composting prior to shipping to farm fields or lagoons.

Advance Agricultural Nutrient Management (AF 11)

Generate supports the suggestion to impose a fee on GHG-intensive nitrogen fertilizers in order to reduce NOx emissions upon application as well as the upstream climate impacts of production (from natural gas), but would stress that the recommendation needs to be clarified to be a fee on synthetic nitrogen fertilizers in order to have the desired outcome of reducing importation of GHG intensive fertilizers, and encouraging climate friendly nutrient retention and creation strategies (such as leguminous cover crops) and recycling/recapturing of nutrients within NYS via organic waste recycling (i.e. via composting and anaerobic digestion).

Waste (Chapter 16)

There are a number of important recommendations in this chapter that Generate fully endorses. Overall the balance of the chapter content should be adjusted to reflect the relative importance

of the various waste types. Organic waste is highlighted as the source of the large majority of the climate impact from the sector and yet a comprehensive strategy is not laid out in order to address it. In addition, not only is addressing organic waste management critical for the near term, but also for decades to come. The DSP points out that when organic waste is trucked to landfills it will continue to generate/leak methane (a very powerful GHG) into the atmosphere for another 30 years!

A significant emphasis should be placed on the reduction of food waste overall, as well as on implementing policies that drive change at the residential level (since there will always be inedible food scraps - peels, pits, husks, stems, etc. that need to be recycled). It would be helpful to explain the mechanics of organic waste recycling in the DSP. Composting and anaerobic digestion are mentioned but not fully explained. We recommend adding the following information:

- The types of organic wastes that can and cannot be handled by these organic waste recycling methods,
- The various outputs generated by the different organic waste recycling methods,
- The various uses of these outputs (e.g. fertilizer, heat, power, RNG, transportation fuels),
- And the benefits and limitations of each method (e.g. space required, time required, etc.).

A shared understanding of these considerations will help inform and improve decision making and program development in the future.

Regarding the concern that methane can leak from anaerobic digesters, we agree that monitoring methane leakage is important. Properly valuing the methane generated by organic waste and the environmental/climate benefits of capturing and destroying this powerful GHG will be critical in helping to ensure that organic waste recyclers are able to invest in best practices in maintenance/operations and in the highest quality monitoring technologies.

And while the DSP mentions that methane can leak from digesters, it does not explain that organic waste digesters take the organic waste (that the DSP currently points out must be diverted away from landfills) and eliminates the methane that would have leaked out of a landfill (for decades to come). The DSP points out that even at landfills where methane capture systems are installed, methane will be emitted directly into the atmosphere for all of the years while waste is being added to the landfill before it is capped. The Final Plan should clarify for the average reader that methane leakage rates when a given amount of waste is sent to landfill will be much higher than when the same waste is sent to an anaerobic digester. Without a sense of the magnitude of this difference some environmental stakeholders do not properly distinguish between these two options and thus undervalue the benefits of anaerobic digesters.

In addition, the chapter also doesn't acknowledge that when this biogenic methane is captured by ADs, it can then be used to produce renewable electricity and heat, or upgraded to RNG

which can be used as a transportation fuel or to decarbonize the gas system for high temp applications and other hard to electrify applications/sectors.

We agree with the DSP that local in-state facilities are better and that local solid waste management plans should emphasize food scrap recovery and NY infrastructure for food scrap recycling. However, cross-state waste flows (page 234) are the current reality. We recommend allowing the procurement of food waste and RNG from outside of the state where logistics and efficiencies make sense. For example, a food waste recycling facility in the southern tier may be able to procure food waste from a location just over the border in Pennsylvania that is far closer than locations in northeastern NY.

In order to help achieve the goal of carbon neutrality in NY, the DSP should put a strong focus on residential waste diversion, including with the Municipal Waste Reduction and Recycling grants (page 238). We would support using some of the levies on garbage proposed in the DSP to fund this grant program. NY should work toward the implementation of successful residential organics collection programs in all of the cities above a certain size - perhaps starting with communities that have a population greater than 50,000 people (that also meet a certain population density threshold). We recommend weekly residential collection of organic waste and recyclables and bi-weekly collection of other wastes to force organic waste diversion away from landfills/incineration. In Ontario, Canada they have successfully implemented a similar program that has fostered the build out of a robust organic waste processing industry.

The DSP correctly points out that in order for NYS to meet its climate obligations, “dramatic changes to materials management systems” will be needed. However, the role of waste recyclers is hardly acknowledged. Organic waste collectors, haulers, and recyclers should be added to the list of key stakeholders. Additionally, the plan should suggest the creation of an Organic Waste Task Force, or similar forum to engage some of the people who will build, own, operate, and finance the organic waste and wastewater recycling facilities that will be needed in order to “dramatically change” how these materials are handled (and therefore dramatically improve the resulting climate impacts).

We agree with the DSP that new infrastructure is costly (page 241). The massive investments that will be required to build out all of this new organic waste handling and recycling infrastructure will only be possible if:

- The logistical systems are in place to manage large volumes of organic waste;
- Markets exist for the compost, fertilizer, energy and other outputs;
- Properly zoned lands are provided within key communities to allow for the infrastructure to be developed;
- The necessary permits can be obtained, and in a reasonable time frame; and
- The revenues generated by some combination of the sales of products and energy, tipping fees, clean fuel credits, sale of RNG into a renewable heating or other standard, and/or RINs can sustain the costs of building, maintaining, and operating these facilities.

The “circular economy” concept is only mentioned twice in the entire DSP (both in the waste chapter) and is not explained. The plan should explain the concept of the circular economy and the need to shift away from the largely linear model of resource extraction, use and waste that is dominant now, to one that designs materials production, use, reuse, and/or upcycling in ways that will actually enable the “dramatic changes to materials management systems” that the DSP calls for. In addition to the climate, health, and other environmental benefits of truly circular economy solutions, the potential for significant economic benefits that will result from transitioning to a more circular economy in NYS should be explained, including:

- Job growth,
- Tax base expansion, and
- Economic security.

Developing a more circular economy in NYS, wherein inputs are grown/made in NY, high value products are made from these inputs in NY, and these climate friendly products are used and reused or upcycled within NY, will result in multiplier effects both for the economy and the climate. These dynamics and benefits should be highlighted in the plan.

The GreenNY initiative is mentioned regarding state procurement specifications, but there is no mention of whether this program has been effective in driving results, or how it could be improved/expanded to help drive the shift to a circular economy in NY. Discussion of these questions would be helpful additions to the final Plan.

The Food Donation and Food Scraps Recycling Law is also mentioned. The plan should recommend that the 25-mile limitation in the law be modified to better facilitate the build out of food scrap recycling infrastructure. The mileage limitation should be either greatly increased or removed, recognizing that a provision already exists that allows food waste generators to obtain waivers if the food waste diversion requirements cause them economic hardship. The current mileage-based limitation severely curbs the ability of organic waste recyclers to obtain food waste and thus curbs their ability to create or expand operations in NY. As stated by EarthJustice in their comments on the DSP, “This unreasonably low distance limit significantly undermines the effectiveness of the law since, given the dearth of organics recycling facilities [currently], this leaves most food scrap generators uncovered. This distance limit is unnecessary and unreasonable - for example, garbage is often trucked far farther than 25 miles to landfills - and the final scoping plan must urge the legislature to revisit and revise this limit. This short distance also creates very small catchment areas for potential new recycling facilities, thus squelching any possible incentives for new composting or recycling facilities. The law also exempts several large food waste generators and does not apply to New York City...”

In addition, and critically important, is *enforcement* of The Food Donation and Food Scraps Recycling Law. The loopholes in the bill and the lack of enforcement have resulted in this law having no noticeable beneficial impact on food waste diversion in NY since it went into effect in January. The view from our food waste recycling facilities operators in NY in their words is: “Thus far we have seen very little impact from this law. The law doesn't have enough teeth. Waste generators are exempt if more than 25 miles from a composter or anaerobic digester. In

addition, if the total cost of solid waste management including organics recycling is at least 10 percent greater than the total cost of disposal without organics recycling, waste generators can get a waiver and continue landfilling their waste.”

W1. Organic Waste Reduction and Recycling.

Food scraps from residential and commercial enterprises are not the same as overproduced food, or near expiration packaged foods, nor are they akin to the bi-products of industrial food production (which make-up the bulk of organic waste heading to landfills!). Therefore, it is important that in the final Plan a clear distinction be made between still-edible excess food, that would become waste if not diverted to a beneficial use, and inedible food scraps whose beneficial reuse/recycling does not include human consumption. And, with this important distinction added, inedible food scraps should not be described in the final Plan as “wholesome” as they are in the DSP.

Regarding a ban on landfilling and combustion of organics, we fully support the vision of a future where no organics are sent to landfills or incinerators (we’re in the business of keeping organics out of landfills!). In practice, this vision will require significant investments in pre-processing capacity (e.g. de-packaging equipment for tainted or expired packaged foods like expired yogurt, soda, beer, etc.), anaerobic digestion facilities for food production bi-products (e.g. cheese whey), etc. The ban would have to have the potential for exceptions based on extreme circumstances (e.g. Superstorm Sandy produced massive, unanticipated quantities of wastes, including organics). All organic waste cannot be recycled using the same methods. For example, all organic wastes are not appropriate for composting and some contain dangerous contaminants (e.g. PFAS, heavy metals). Therefore, in order to recycle all of NY’s organic waste streams safely, additional recycling methods, such as anaerobic digesters and some novel technologies, will be required to handle some of the human, animal and other organic waste streams.

Based on our experience to date, the build out of pre-processing, composting and anaerobic digestion facilities will likely require:

- An increase in tip fees,
- Long-dated contracts, and/or
- Other means of reducing risk and ensuring viable revenue streams in order for the labor and capital intensive projects to be economically viable (such as a Renewable Heat Standard).

Moreover, the waste collection companies will have to support the implementation of either additional routes to pick-up source separated organics (SSO) (like they do in Toronto for example) or more robust pre-processing strategies to sort organics out of MSW (like they do in California). The experience in California thus far has demonstrated that these projects and systems can be developed quickly when there is a willingness to pay for them. The timeline for development of the infrastructure needed to enable an organics landfill ban in NY will depend

upon the implementation of revenue enhancement strategies, long term contracts, etc. to enable the build out of the needed organic waste recycling infrastructure.

Regarding the Financial Assistance component of the strategy focused on funding organics recycling infrastructure, Generate recommends considering providing funding specifically for inorganic/contamination removal from post consumer organic waste.

Revenue streams created by the sale of energy (either power or RNG) from anaerobic digestion facilities can be a critical method to ensure projects are economically viable. Support for utility procurement of RNG, through a Renewable Gas or Clean Heat Standard, should be thought of as a key intersectoral strategy to ensure waste sector emission reductions from diverted organics occur.

Generate supports the Simplify Regulations component of the strategy. This will be very important to the expansion of organic waste recycling infrastructure. DEC should also consider simplifying regulations around the land application and storage of digestate from digesters, recognizing the value of digestate as a fertilizer/soil amendment, that is inherently different and more benign, than unprocessed food waste or manure.

Generate also supports the: “facilitate research and development of recycling markets for organics/soil amendment products and end uses,” component of the strategy. One important example of where R&D could help accelerate the scaleup of organics recycling would be developing better ways of managing digestate. Digestate contains valuable nutrients (made far more valuable by the war in Ukraine) but is composed primarily of water (which is expensive and energy intensive to transport/spread on fields). Reducing the cost of converting digestate into concentrated fertilizer could help drive down the cost of organics recycling.

W2. Waste Reduction, Reuse and Recycling

Generate supports the recommendation to put a fee per ton on waste as well as the recommendation to provide financial support for reduction, reuse, and recycling. We would urge NYS to ensure that these funds are earmarked for waste reduction program development and execution, and not diverted to other purposes. One important use for these funds would be to support residential green bin collection programs (as described above). We recommend specifying in the Final Plan that the fees should apply only to waste going to landfills/incinerators and not to waste that is separated and sent to composting, anaerobic digesters, glass, metal, paper, or other recycling facilities. In addition, the point where the fee is charged is critical to ensuring that waste haulers don't start trucking garbage to other states to avoid paying the fee. The fee would have the intended impact if applied at the transfer station level. At that point any recyclables that are in the waste stream could be separated out and not charged the fee. Separating out recyclables is typically more expensive than sending mixed waste streams to landfill, so this would help reorient financial incentives towards recycling and away from landfilling.



Generate also supports the DSP's recommendation for state support of workforce development related to recycling and innovative materials use. Finding trained, experienced organic waste recycling professionals has been a major challenge for us.

The DSP should acknowledge that municipalities can only move so quickly, and should therefore place more emphasis on private project development and public-private partnerships.

W4. Water Resource Recovery Facility Conversion

New wastewater treatment technologies/systems don't seem to have been contemplated in the writing of the DSP so we would like to highlight one such opportunity. Generate Capital has partnered with Sedron Technologies, LLC to deploy a new technology, called a Varcor™ system (thus far in the midwest and western US), that has the capability to convert Class B biosolids produced by wastewater treatment plants to a Class A dry fertilizer product and a nitrogen-based liquid fertilizer product that can be sold commercially. The sale of these products can provide much of the funding necessary to deploy a Varcor™ system. When combined with the cost savings from no longer disposing of Class B biosolids via traditional means such as landfill disposal, alternative daily cover at landfills or direct land application on farmland, the project becomes essentially self-funding and produces a commercial return, eliminating the need for public funding and freeing up municipal resources.

There are also significant environmental and GHG-reduction benefits that result from the deployment of a Varcor™ system. Producing fertilizer products from biosolids displaces fertilizer produced through traditional methods such as the Haber-Bosch method, which requires significant amounts of petrochemical input and produces high levels of GHGs. The Varcor™ system also has the ability to separate and sequester PFAS ("forever chemicals") from wastewater. PFAS have recently garnered increased concern due to potential health impacts and increased regulatory action nationally. Therefore, we recommend that NYS dedicate funding to testing and R&D related to PFAS detection in organic waste, as well as funding for demonstration projects for technologies such as the Varcor™ system that can isolate and sequester PFAS for subsequent destruction through a high-temperature thermal process.

In this section of the DSP it states that "The CJWG favors on-site use of biogas captured from waste management and that no significant new transmission infrastructure should be allowed to support additional biogas." The omission of bioenergy (which includes biogas captured from wastewater treatment facilities) from the definition of renewable energy systems in the 70% renewable electricity by 2030 target in the CLCPA creates a powerful disincentive to use biogas onsite. Because of this omission, onsite power generation from waste derived biogas cannot receive the value of E in the value stack and therefore transportation and voluntary carbon markets are far more valuable uses of that biogas than on-site power and heat generation. If the CJWG wants to see the use of this biogas onsite increase, that omission needs to be fixed.

Generate supports the recommendation to Implement Co-Digestion at wastewater treatment facilities and to "...support increased pre-processing and de-packaging capacity throughout the State...". We agree that co-processing will be key to implementing more organic waste

recycling. As food waste recycling expands from low hanging fruit (meaning clean food waste streams, often bi-products of food production) to post consumer organics, it will require far more pre-processing (i.e. depackaging, or removal of plastics, metals and glass from the organic wastes streams) in order to be able to be processed in digesters.

Generate's Upcycle division operates one of the largest depackaging facilities in North America in the Finger Lakes Region of NY. Regarding the Optimize Co-Digestion component of the strategy, Generate would recommend a focus on public private partnerships vs municipalities going it alone. This would have the benefit of leveraging the experience of private sector firms like ours with deep expertise in managing co-digestion, and would help facilitate private sector investment versus competing with or discouraging it. Our team has the expertise, financing, and technology required to facilitate de-packaging, co-digestion, contaminant sequestration (when needed), nutrient recapture, and energy production. We are already in talks with several NY municipalities about financing and operating co-digestion facilities to support their wastewater treatment and organic waste recycling needs and to address budget and staffing constraints.

Related to the Co-pollutant Research recommendation that, "The State should evaluate the extent and impact of co-pollutants such as emerging contaminants", we suggest that PFAS (or forever chemicals) be highlighted in the Final Plan. PFAS are garnering increased concern due to potential health impacts and increased regulatory action nationally. Therefore, we recommend that NYS dedicate funding to testing and R&D related to PFAS detection in organic waste, as well as funding for demonstration projects for technologies that can isolate, sequester, and destroy PFAS.

W5. Reduce Fugitive Emissions from Solid Waste Management Facilities

The DSP says that "The CJWG strongly supports controlling fugitive emissions from landfills, sewage plants and other methane sources as a critical step in reducing emissions from the waste sector." As stated previously, the best way to achieve this goal is to properly value waste derived methane such that there are financial incentives to enable the needed investments to prevent the release of this methane into the atmosphere.

W6. Reduce Fugitive Emissions from Solid Waste Management Facilities

The CJWG in the DSP suggests that "DEC should improve maintenance on methane collection systems at anaerobic digesters." DEC doesn't run digesters so it is not clear how this recommendation would be implemented. Generate would, again, recommend ensuring that biogenic methane be properly valued so that anaerobic digester operators have the funds needed to implement best practices for maintenance of anaerobic digester facilities which prevent leakage as well as the inherent financial incentive to avoid any loss of methane.

W7. Reduce Fugitive Emissions from Water Resource Recovery Facilities

Generate appreciates, and would like to underscore, the acknowledgement in the DSP that some organic wastes are unavoidable and "Capturing these unavoidable gasses for strategic

and local use while the State transitions to electrification will help meet the goals of the Climate Act while avoiding future reliance on fossil fuels.”

W8. Recycling Markets

Generate supports the Production Tax Credit for recycling products recommendation in the DSP and we suggest applying it to digestate and biogas derived from organic waste.

We agree that the creation of and periodic updating of an Organics Roadmap would be valuable. Having a detailed understanding of NY organic waste characteristics, volumes, and geographic and seasonal distributions will help us build out organic waste recycling/upcycling solutions.

W9. Biogas Use

Generate would like to endorse the statement in the plan that, “Alternative revenues at organics recycling facilities, such as biogas revenue, will allow lower tip fees to attract organics at competitive levels. Stable, enhanced energy revenue will attract investment to aggressively manage methane in existing disposal facilities and existing and new organics recycling facilities.” As investors/operators in this space, we can attest to the accuracy of this statement.

Economy-Wide Strategies (Chapter 17)

Generate Supports the Use of Economy-Wide Policies

Generate supports the use of one (or a hybrid of more than one) of the broad economy-wide climate policies discussed in Chapter 17 of the draft plan. Carbon Pricing, Cap-and-Invest, or Clean Energy Supply Standards can all create the correct signals to drive significant investment by the clean tech community, if they are well designed.

In our experience such programs are most valuable when they are:

- **Visible:** The programmatic design of large economy-wide policies is usually highly visible and such programs may, at times, be thought of as the primary policy in use in a jurisdiction even when they are not, in fact, the sole driver of GHG abatement. As a result, economy-wide policy design receives significant press attention, requires expressions of support from elected officials (sometimes even to the point of creating political controversy), involves significant stakeholder input, and usually extensive implementation effort and resource allocation from agency staff. Such visible processes are generally easier for the clean investment community to follow, provide input into, and have confidence in, when compared to the alternative of many smaller balkanized programs.
- **Durable:** Such broad programs, once established, tend to continue and can be improved over time to maximize the correct investment incentives. This durability

generally offers a more stable investment framework than smaller sector-specific policies (e.g., grants or targeted regulations that are difficult to track and may be more easily discontinued).

- **Economically Efficient:** If New York designs the program such that the marginal cost of abatement (MAC) incentivized in the program matches the social cost of carbon, the program is likely to be economically efficient.
- **High Value:** Because New York has already assessed the social cost of carbon at a relatively high value compared to prior estimates, any such policy that provides an incentive to abate up to this level will, by definition, be high value. As described below, historically carbon pricing systems for GHGs in the US have failed to meet this criteria.

A Clean Energy Supply Standard Would Build Off a Long History of Successful Tradable Performance Standards

Generate strongly supports the concept of Tradable Performance Standards (TPS), including the proven models of:

- Clean Energy Standard/Renewable Portfolio Standards in the power sector,
- Clean Vehicle and Fuel Standards for the transportation sector, and
- The emerging Renewable Gas/Clean Heat Standards to promote fuel switching in stationary applications.

An economy-wide TPS that combines one or more of these concepts would likely be highly effective in motivating private capital to invest in clean technologies across the economy.

In general, TPSs set a standard of technology performance but leave technology choice to the program participants (e.g., clean technology companies and compliance entities). They increase the relative costs of technologies with undesirable GHG performance characteristics and lower the costs of technologies with desirable GHG characteristics. However, unlike the other two economy-wide policies considered in Chapter 17, an economy-wide TPS would not fully “price carbon”.

A Clean Energy Supply Standard (or a Set of Sector-Specific Tradable Performance Standards) Would be Complementary to Modest Carbon Pricing

In an excellent review of TPS programs in comparison to comparison to Cap-and-Invest/Carbon Tax Programs (collectively Carbon Pricing in their parlance), researchers at Resources for the Future found that:

“Whereas carbon pricing creates incentives for both output reduction and technology change, TPS programs do not fully internalize the costs of emissions, resulting in lower price effects on products and raising the total cost of emissions reductions compared with carbon pricing. However, a TPS provides stronger incentives for upstream innovation and technology transformation...TPS programs are generally additive to the effects of carbon pricing, so the policies can be combined without sacrificing the efficiency properties achieved by pricing. Given that the expected carbon price may be too low to substantially

affect transportation demand or technology change, combining TPS with a carbon price may be necessary to drive innovation and achieve a sustained low-carbon transformation in the sector.”³⁰

Carbon Pricing and Cap and Invest Have More Similarities than Differences

We conceptually support both economy-wide Carbon Pricing (using the DSP’s terminology) and Cap-and-Invest policies and believe that, in practice, these two policies can be very similar, especially when a Cap and Invest includes a price floor and ceiling, and limited use of offset credits from outside of the covered sources,³¹ as is often the case in modern GHG programs.

We have a mild preference for Cap and Invest because, as the DSP points out,³² emissions certainty is a nice feature to build around. Generate believes that achievement of strong long-run GHG abatement goals, in line with the best science, must be prioritized. However, when prices in Cap and Invest are range-bound with appropriate floors and ceilings,³³ there is a slight trade off: emissions certainty is reduced slightly in order to offer a range of price certainty.

Although it is somewhat simpler for the clean tech investor when the regulator sets a fixed and stable carbon price, retaining some flexibility for GHG prices to fluctuate as other commodity prices also move can increase consumer acceptance. For example, if macro drivers (such as the recent war in Ukraine) create dramatic impacts on conventional oil and gas prices, a Cap and Invest system naturally responds with lower GHG prices, all else equal, which can have net benefits for energy consumers. A Carbon Pricing system would remain fixed, potentially leading to unacceptably high consumer energy prices.

Efficient Carbon Pricing (or Cap and Invest) Will Have a Bigger Immediate Impact on Consumer Energy Prices than Would a Clean Energy Supply Standard

As described by the RFF article cited above, carbon pricing (inclusive of Cap and Invest) is designed to create noticeable consumer price impacts to change energy consumption and consumer behavior. The conceptual argument is that “pricing the bad” (e.g., GHG emissions) motivates people to stop consuming the fuels and products that produce the bad. In concept, every GHG emission in such systems is priced at the MAC, which should theoretically align with the Social Cost of Carbon (SCC) to drive the socially optimal outcome. New York has assessed the 2020 central value of the social cost of carbon dioxide to be \$125 per ton.³⁴

³⁰ *Tradable Performance Standards in the Transportation Sector*, Resources for the Future, Sonia Yeh, Dallas Burtraw, Thomas Sterner, and David Greene. Working Paper 20-18 October 2020.

https://media.rff.org/documents/Tradable_Performance_Standards_in_the_Transportation_Sector_v3.pdf

³¹ As required by the CLCPA.

³² Draft Plan, Page 225.

³³ New York has been involved in the Transportation and Climate Initiative (TCI), the recent regional effort to set up a modestly-priced transportation-sector Cap-and-Invest system. The TCI Model Rule included price floors and ceilings (allowance price containment reserves).

<https://www.transportationandclimate.org/sites/default/files/TCI-P-Model-Rule.pdf>

³⁴ <https://www.dec.ny.gov/regulations/56552.html>

In practice, the MAC in many existing GHG carbon pricing systems has remained well below New York's Estimate of the SCC due to political constraints on setting carbon prices at the socially optimal level. For example, the RGGI price at the June 1, 2022 auction was \$13.90 per (short) ton,³⁵ and the California/Quebec Cap-and-Trade May 2022 auction price was \$30.85 per (metric) ton.³⁶ The TCI CO₂ CCR Trigger Price would have started at only \$12 per ton.³⁷ This issue is not unique to cap-and-invest programs, the BC carbon tax is currently \$CAN 50 per metric ton.³⁸ We believe that the lack of carbon pricing programs with MAC at social optimal levels is due to concerns about negative reaction to changes in consumer prices for conventional energy.³⁹

In contrast, in Tradable Performance Standards each emission reduction is priced at the MAC, thus TPS have less impact on energy prices and can still justify investments in technologies with higher MACs. At the outset of such programs, when the amount of emissions reductions called for is modest relative to remaining emissions, these programs have pricing impacts that are essentially undetectable to the average consumer (and even to sophisticated regression analysis) even at high MACs.⁴⁰

Thus, in practice regulators have found that it is expedient to motivate the more expensive forms of GHG abatement (up to the socially-efficient MAC), with TPS programs. Investors, such as Generate, also prefer TPS programs relative to low-priced carbon pricing systems because they can provide the needed value to allow investment in renewable power, fuels, and vehicles to be viable.

In order to leverage the strengths of both strategies, the Final Plan should recommend the implementation of TPSs in conjunction with modest economy-wide carbon pricing. We believe this will have the greatest impact on the deployment of climate solutions in New York with the least cost burden on New Yorker's citizens. It will also have the added benefit of helping to motivate other actors regionally to follow, which is an appropriate goal, as discussed on page 262 of the DSP. There is no point in leading if no one follows and socially optimal carbon pricing in New York alone will not solve the climate crisis.

TPS, Cap and Invest and Carbon Pricing Programs Can All Be Designed to Improve Equity and Ensure Progressive Outcomes

Because Carbon Pricing (inclusive of Cap-and-Invest policies) is designed to raise prices of high-carbon energy and goods, opponents often attack the policies by saying they are

³⁵ <https://www.rggi.org/auctions/auction-results/prices-volumes>

³⁶ https://ww2.arb.ca.gov/sites/default/files/2022-05/nc-may_2022_summary_results_report.pdf

³⁷ <https://www.transportationandclimate.org/sites/default/files/TCI-P-Model-Rule.pdf>

³⁸ <https://www2.gov.bc.ca/gov/content/environment/climate-change/clean-economy/carbon-tax#:~:text=On%20April%201%2C%202022%2C%20B.C.,%2450%20per%20tCO2e.&text=To%20align%20with%20the%20change,child%20effective%20July%201%2C%202022>.

³⁹ For one unfortunate example of this logic see: https://www.wsj.com/articles/the-northeast-climate-pact-implodes-connecticut-governor-ned-lamont-fuel-prices-11637351182?mod=trending_now_video_5

⁴⁰ https://www.bateswhite.com/media/publication/226_BW%20LCF%20Report%20-%20April%202022.pdf

automatically regressive or that they inherently increase burdens on low income/disadvantaged communities. In practice, such programs can be designed to be progressive,⁴¹ increase equity, and reduce emissions in historically disadvantaged communities.⁴² Generate supports such outcomes and recommends that these issues be a core focus of any program design for any economy-wide policy.

The simplest way to ensure equity improvement in a Carbon Pricing system is through progressive return of proceeds raised from carbon pricing and cap and invest auctions, either through direct progressive rebates of value above and beyond the cost of abatement,⁴³ or through targeted investment in GHG abatement in disadvantaged communities, as is required by CLCPA.⁴⁴

TPS systems that improve transportation emissions—such as clean vehicle and fuel programs—often inherently increase equity, because recipients of air quality benefits are more likely to be located in disadvantaged communities that currently suffer from a pollution burden created by transportation emissions.⁴⁵ TPS systems that impact electricity and gas costs can also ensure progressive outcomes through smart rate design, including through low income rate assistance programs and/or inclusion of extra recognition for low-income energy efficiency or electrification activities.

Gas System Transition (Chapter 18)

⁴¹ For an example of how the incidence of the BC Carbon Tax has been evaluated see: Murray and Rivers, *British Columbia's Revenue-Neutral Carbon Tax: A Review of the Latest "Grand Experiment" in Environmental Policy*, Energy Policy, November 2015, 86:674-683.

<https://www.sciencedirect.com/science/article/abs/pii/S0301421515300550?via%3Dihub>

⁴² The greatest beneficiaries of reduced emissions from both HDVs and facilities subject to the California Cap-and-Trade Program have been in communities of color and in disadvantaged communities in California. See: *Impacts of Greenhouse Gas Emissions Limits Within Disadvantaged Communities: Progress Toward Reducing Inequities*, California Office of Environmental Health Hazard Assessment, February 2022. https://oehha.ca.gov/media/downloads/environmental-justice/impacts_of_ghg_policies_report_020322.pdf

⁴³ *Impacts of a carbon tax across US household income groups: What are the equity-efficiency trade-offs?* Goulder et al, Journal of Public Economics 175 (2019) 44-64
<https://web.stanford.edu/~goulder/Papers/Published%20Papers/Goulder-Hafstead-Kim-Long%20-%20Carbon%20Tax%20Household%20Distributional%20Impacts%20-%20J%20Public%20Econ,%20April%202019.pdf>

⁴⁴ The Climate Act requires that, to the extent practicable, programs must “invest or direct available and relevant programmatic resources in a manner designed to achieve a goal for disadvantaged communities to receive forty percent of overall benefits of spending on clean energy and energy efficiency programs”.

⁴⁵ Disadvantaged communities are more likely to be exposed to harmful emissions from transportation, and so emission reductions from cleaner fuels and vehicles would be expected to reduce this disparity. However, researchers are often reluctant to presume this outcome at the beginning of such programs due to lack of spatial resolution in forward-looking air quality modeling tools. For a recent example of such analysis see: *Modeling Expected Air Quality Impacts of Oregon's Proposed Expanded Clean Fuels Program*, 2022 Murphy et al., <https://escholarship.org/uc/item/6pz348mc>

We agree that we need to rapidly scale back fossil gas use and maintain a focus on disadvantaged communities. NY can benefit from the lessons learned in cities like Zurich Switzerland, that have already begun shifting whole sections of the city off of gas.⁴⁶

We agree that better planning is needed to ensure a safe and smooth transition (i.e. to prevent price spikes for low and moderate income communities, to prevent gas shortages for hospitals and other critical services, etc). This is especially important with respect to integration with long-term electric system planning. We support DPS as the lead agency in a long-run integrated planning process. We support both cutting demand for gas as rapidly as possible and increasing supply of low carbon alternatives, including renewable gasses derived from organic waste. Researchers at Columbia University found that:

“...retrofitting and otherwise improving the existing pipeline system are not a choice between natural gas and electrification or between fossil fuels and zero-carbon fuels. Rather, these investments in existing infrastructure can support a pathway toward wider storage and delivery of cleaner and increasingly low-carbon gasses while lowering the overall cost of the transition and ensuring reliability across the energy system. In the same way that the electric grid allows for increasingly low-carbon electrons to be transported, the natural gas grid should be viewed as a way to enable increasingly low-carbon molecules to be transported.”⁴⁷

⁴⁶ To fight climate change, and now Russia, too, Zurich turns off natural gas. NPR. April 20, 2022. <https://www.npr.org/2022/04/20/1092429073/to-fight-climate-change-and-now-russia-too-zurich-turns-off-natural-gas>

⁴⁷ Investing in the US Natural Gas Pipeline System to Support Net-Zero Targets, Blanton et al., Columbia SIPA Center on Global Energy Policy, April 2021. <https://www.energypolicy.columbia.edu/research/report/investing-us-natural-gas-pipeline-system-support-net-zero-targets>