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Prioritizing Justice in New York's Cap-Trade-and-Invest: Obligating Electricity and Capping Generator Emissions

Issue Brief 24-04 by **Molly Robertson**, **Eunice Ko**, **Eddie Bautista**, **Alan Krupnick**, and **Wesley Look** — June 2024

1. Introduction

Disadvantaged communities (DACs) in New York State bear a disproportionate burden of pollution from fossil fuel power plants. Using SNL Energy data on generators, we estimate that 65 percent of emitting power generators in New York State are within one mile of a DAC. In New York City, nearly a million people live within one mile of the dirtiest peaker power plants, and the overwhelming majority are people of color. This issue brief presents modeling results for obligating the electricity sector and adding facility-specific caps to electric power generating facilities in the context of New York State's cap-trade-and-invest (CT&I) system. Our analysis, which builds on previous work, covers the statewide and regional effects of these policy decisions and examines the community-level impacts to assess the role of these policies in delivering benefits to DACs in New York.

The work featured in this issue brief builds on prior research, including a report coauthored by Resources for the Future and the New York City Environmental Justice Alliance that examined the impacts of environmental justice guardrails on emissions and costs in a cap-trade-and-invest program in New York State (Krupnick et al. 2024). That report provided evidence that facility- and sector-specific caps could be implemented to reduce emissions near DACs at little to no cost to households.

Shortly before we released that report, the state shared a CT&I pre-proposal outline and preliminary scenario analyses to evaluate the policy designs it is considering (NYSERDA & DEC 2023, 2024). In the pre-proposal outline, the state requested feedback from stakeholders on certain aspects of the program to inform the CT&I draft regulations that will be released at the end of 2024. This issue brief and Krupnick et al. (2024) directly respond to questions raised in the pre-proposal outline.

NYSERDA and DEC (2023) indicated that the state may not obligate (include) the New York power sector in the economy-wide CT&I system. In practice, this would mean that emissions from the electricity sector would contribute to New York's overall emissions targets, but generators would not be required to purchase allowances to cover their emissions in the CT&I auction. Power generators in New York would still be required to purchase allowances in the Regional Greenhouse Gas Initiative (RGGI) auction to cover their emissions.

The pre-proposal provided several reasons for this exclusion:

1. the power sector is already regulated by other policies, including RGGI, a clean energy standard, and clean generation mandates that will drive decarbonization in the sector;
2. electricity prices could rise if the power sector is included, which could discourage the electrification needed to drive decarbonization in a variety of sectors;
3. rising electricity prices for New York generators facing the carbon price could induce power plants in other states (which may be dirtier than those in New York State) to increase their generation and associated greenhouse gas (GHG) and copollutant emissions, a process called leakage, making the regional emissions problem worse; and
4. permitting and interconnection delays for clean generation may limit the sector's ability to decarbonize in the earliest years of the program, even with a carbon price in place.

The state's preliminary scenario analyses highlighted some of these concerns, mainly noting higher costs of delivering electricity and high GHG emissions leakage rates. The analyses did not investigate the impact of excluding the power sector on DACs.

The pre-proposal solicited further input on whether the electricity sector should be obligated—that is, included in the CT&I system. It also sought guidance on the impact and importance of facility-specific caps for stationary emitters like power sector facilities. Our research responds to this solicitation, further informing the development of the New York cap-trade-and-invest system.

In our previous report (Krupnick et al. 2024), we discussed the emissions and cost impacts of implementing facility-specific CO_2 emissions caps in the power sector under a New York State cap-trade-and-invest program. However, our analysis did not consider what the impact of these caps would be if the state chose not to obligate the power sector in the program. We saw significant GHG and copollutant emissions benefits in the power sector relative to a business-as-usual (BAU) case without cap-trade-and-invest, but that case did not consider the possible impact of increased demand for electricity from other sectors driving emissions even higher in the power sector. We address this gap in this issue brief.

For brevity, this issue brief focuses more on GHG and fine particulate matter ($PM_{2.5}$) emissions than on results for NO_x and SO_2 emissions because these three copollutants generally move together. However, some tables and text do consider SO_2 and NO_x emissions separately. The next report from our team will examine the implications for DACs and other New York communities of the transformation and dispersal of these copollutant emissions into fine particulate concentrations ($PM_{2.5}$ in ug/m^3).

Our main findings are as follows:

- All CT&I designs increase the demand for electricity in New York. Without obligating the electricity sector under CT&I, this rise in demand leads to an increase in GHG and $PM_{2.5}$ emissions in the New York power sector.
- Statewide GHG emissions and average $PM_{2.5}$ emissions at power sector facilities are lowest when the power sector is obligated and power generators face facility-specific caps. Statewide GHG emissions are highest when the power sector is not obligated and there are no facility-specific caps.
- Facility-specific CO_2 emissions caps on power generators deliver copollutant emissions benefits to DACs whether the electricity sector is obligated under CT&I or not, by forcing emissions reductions at those facilities that are least responsive to CO_2 emissions pricing through cap-trade-and-invest.
- About 43 percent of emissions reductions achieved by obligating the electricity sector are offset by out-of-state increases in power sector emissions.
- Obligating the electricity sector in CT&I or including facility-specific caps has almost no impact on electricity prices in our modeling.

Overall, we find that obligating the electricity sector under New York's CT&I program while also capping CO_2 emissions at each facility offers the greatest power sector GHG and copollutant emissions improvements statewide and for areas surrounding DACs, compared with a BAU scenario.[1] If the state ultimately decides not to obligate the electricity sector, facility-specific caps are even more important for delivering $PM_{2.5}$ (and other copollutant) emissions reductions. Obligating the electricity sector under CT&I leads to some emissions leakage but still has a net negative impact on regional power sector emissions. Neither of the policy options we explored has a significant impact on retail electricity prices in our model.

1 The state is also considering extending caps to copollutants. Our electricity generator modeling assumes a fixed relationship between generation levels, GHG emissions, and copollutant emissions for each individual generator. Because our facility-specific caps are a percentage reduction requirement on historic emissions, the caps would have the same result if they were extended to copollutants (in our modeling, a 20 percent reduction in generation output is equivalent to a 20 percent reduction in GHGs and copollutants alike). There are no investment or operational decisions for existing generators in our model that reduce GHG or copollutant emissions without reducing generation.

2. Scenarios Modeled

In this analysis, we compare five different future scenarios: a business-as-usual (BAU) case and four different cap-trade-and-invest (CT&I) design cases:

1. A business-as-usual (BAU) case
2. An electricity obligated CT&I case with no facility-specific caps
3. An electricity obligated CT&I case with facility-specific caps
4. An electricity not obligated CT&I case with no facility-specific caps
5. An electricity not obligated CT&I case with facility-specific caps

Table 1 provides details on what is included in each case.

These scenarios allow us to investigate the impact of obligating the power sector under CT&I compared with pricing CO_2 emissions only through RGGI, as well as the impact of adding facility-specific CO_2 emissions caps on generators under each obligation-related policy. Forecasts for allowance prices in the RGGI market indicate those prices will be significantly lower than those the power sector in New York State would face if it was obligated. New York generators could be obligated under both programs, with generators receiving credit in the CT&I program for payments they make on RGGI allowances. This is the assumed design in the electricity-obligated scenarios.

3. Results

In this section, we offer supporting evidence and relevant caveats for each of our key findings.

The CT&I program increases electricity demand in New York. Without obligating the electricity sector under CT&I, this increase in demand leads to increased GHG emissions in the power sector.

Krupnick et al. (2024) used transportation and residential sector models to estimate future electrification rates driven by existing regulations, incentives, and the CT&I program. Isolating the potential electrification impact of CT&I, we estimated a 6 percent higher electricity demand relative to the business-as-usual case without CT&I. The higher electricity demand is driven by a slight increase in EV adoption on top of the ZEV mandate included in the BAU scenario, and a large increase in heat pump adoption.

If the power sector is not obligated to purchase allowances under CT&I, the increased demand for electricity could lead to increased GHG and copollutant emissions from power generators. Table 2 shows the estimated electricity demand for each policy case, the share of renewable generation, and the total CO_2e emissions for the New York power sector. Power sector CO_2e emissions (including imports) are 48 percent lower than BAU when the electricity sector is obligated but 15 percent higher than BAU without electricity obligation. The share of renewables is also lower without obligation. Renewable generation continues to grow, but the

Table 1. Modeled Policy Case Details

	No CT&I	CT&I cases			
	BAU	**Electricity obligated**	**Electricity obligated with caps**	**Electricity not obligated**	**Electricity not obligated with caps**
CT&I obligation in the power sector?	No	Yes	Yes	No	No
CT&I obligation in other sectors?	No	Yes	Yes	Yes	Yes
Facility-specific caps in the power sector?	No	No	Yes	No	Yes
Existing state and federal policies (incl. RGGI)?	Yes	Yes	Yes	Yes	Yes

Table 2. 2030 Electricity Demand and Emissions, by Policy Case

	BAU	Electricity obligated	Electricity obligated with caps	Electricity not obligated	Electricity not obligated with caps
Electricity demand (TWh)	179	188	188	188	188
Percentage renewable generation	80%	88%	88%	80%	81%
GHG emissions (MMT CO_2e)	12.17	6.27	6.23	14.00	13.01

percentage of demand covered by renewable generation is consistent with the share in the BAU scenario. In contrast, when electricity is obligated, the share of electricity demand met with renewable generation is higher by 8 percentage points.

In Figure 1, panels A (electricity obligated) and B (electricity not obligated) show $PM_{2.5}$ emissions differences at power generation facilities relative to BAU. Green dots indicate facilities that have lower $PM_{2.5}$ emissions than BAU and red dots indicate facilities that have higher $PM_{2.5}$ emissions than BAU. In panel A, when the electricity sector is obligated, $PM_{2.5}$ emissions are decreasing at most facilities across the state. In panel B, several facilities have higher $PM_{2.5}$ emissions than BAU, likely to meet the increased demand associated with electrification. Red dots outside of New York State show evidence of increased out-of-state emissions because of New York State policy. These increases are present even when the power sector is not obligated (Figure 1, panel B) because of the increased demand for electricity driven by electrification in New York State.

Statewide GHG and copollutant emissions are lowest when the power sector is obligated under New York's cap-trade-and-invest *and* power generators face facility-specific caps.

Figure 1. Facility-Level Impacts of Obligating the Electricity Sector under CT&I, Direct $PM_{2.5}$ emissions (lbs)

A. Electricity obligated, compared with BAU

B. Electricity not obligated, compared with BAU

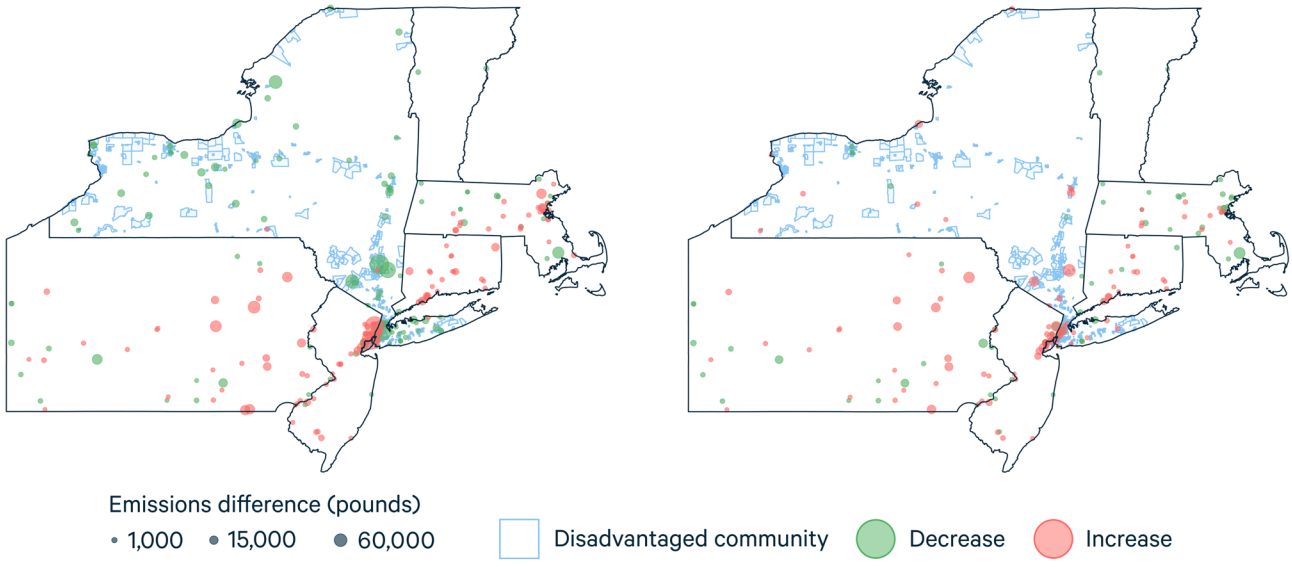


Table 3. GHG and Copollutant Power Sector Emissions, by Policy Case

	BAU	Electricity obligated	Electricity obligated with caps	Electricity not obligated	Electricity not obligated with caps
GHG emissions (MMT CO_2e)	12.17	6.27	6.23	14.00	13.01
NY $PM_{2.5}$ emissions (MT)	648.12	263.66	232.15	715.64	588.53
NY SO_2 emissions (MT)	781.52	199.20	172.41	772.13	542.97
NY NO_x emissions (MT)	4,880.67	1,448.77	1,271.20	5,031.73	3,705.78

Table 3 shows the GHG and copollutant emissions levels in each of the policy cases. Emissions (except SO_2) are highest in the power sector when electricity is not obligated and there are no facility-specific caps. As discussed in Section 2, this scenario has increased electricity demand because of CT&I obligation in other sectors and no restrictions on the power sector beyond those included in the BAU scenario (i.e., clean energy standards, RGGI, and Climate Leadership and Community Protection Act technology mandates). Without the additional decarbonization incentive in the power sector from CT&I, it is possible for emissions to grow in the power sector.

GHG and copollutant emissions from the power sector are lowest in the cap-trade-and-invest scenario with electricity obligation and facility-specific caps added. The differences are particularly pronounced for SO_2 and NO_x emissions, which are 75 and 78 percent lower, respectively, than the emissions levels in the electricity-not-obligated scenario without facility-specific caps.

Facility-specific CO_2 emissions caps on power generators deliver emissions benefits to DACs whether the electricity sector is obligated under CT&I or not.

In our analysis, we investigate the impact of facility-specific caps in two settings: (1) when the power sector is obligated under CT&I and (2) when it is only covered under RGGI. We find that facility-specific caps can deliver additional emissions reductions in either scenario. However, facility-specific caps on power generators reduce total $PM_{2.5}$ emissions reductions by 50 percent more when the electricity sector is not obligated under CT&I. This is largely due to the higher power sector emissions in the electricity-not-obligated scenario.

In Figures 2, panels A (electricity obligated) and B (electricity not obligated) show $PM_{2.5}$ emissions differences at power generation facilities when facility-specific caps are added. Green dots indicate facilities that have lower $PM_{2.5}$ emissions because of facility-specific caps, and red dots indicate facilities that have higher $PM_{2.5}$ emissions because of facility-specific caps. In panel A, when the electricity sector is obligated, $PM_{2.5}$ emissions are already fairly low at most facilities across the state, which means there are fewer facilities in breach of the standard set by facility-specific caps. As a result, the changes due to facility-specific caps are relatively small. In contrast, panel B illustrates the impact of facility-specific caps when the electricity sector is not obligated under CT&I. Without obligation, the power sector would emit more if not for the facility-specific caps, making the caps more important for emissions reductions in this case. Additionally, as CO_2 and $PM_{2.5}$ emissions move together, facility-specific caps have a larger impact on reducing $PM_{2.5}$ emissions in the electricity-not-obligated scenario than in the obligated scenario.

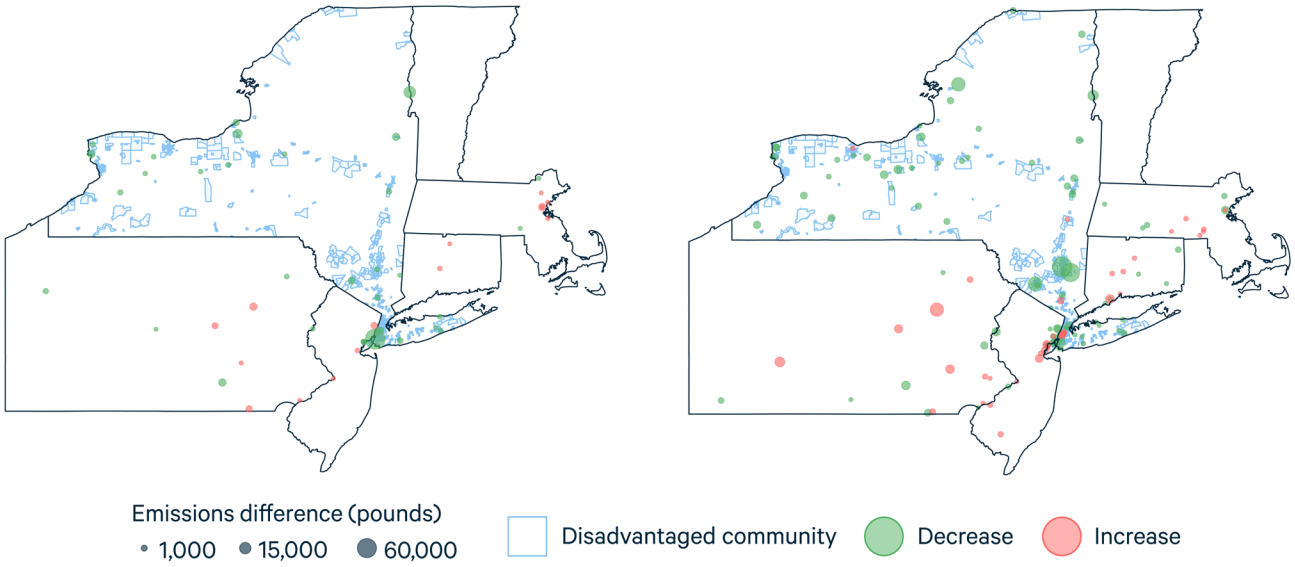
Importantly, the facility-specific caps in the electricity-not-obligated scenario do not make up for the higher GHG emissions relative to BAU. In other words, GHG emissions are lower in the BAU scenario than in the electricity-not-obligated scenario, even with facility-specific caps. On the other hand, $PM_{2.5}$ emissions are lower than BAU with facility-specific caps in place in the electricity-not-obligated scenario. The scenarios where the power sector is obligated under CT&I still have by far the lowest GHG and copollutant emissions.

Facility-specific CO_2 emissions caps reduce copollutant emissions at the facilities that are least responsive to CO_2 pricing through cap-trade-and-invest.

Figure 2. Facility-Level Impacts of Obligating the Electricity Sector under CT&I, Direct $PM_{2.5}$ emissions (lbs)

A. Electricity obligated, $PM_{2.5}$ emissions impact of facility-specific caps

B. Electricity not obligated, $PM_{2.5}$ emissions impact of Facility-specific-caps



The facility-specific caps we model require each facility to reduce its emissions from historic levels at a rate comparable to the economy-wide emissions reduction trajectory (40 percent reduction from 1990 levels by 2030). By design, facility-specific caps improve emissions outcomes at those plants that would have failed to keep pace with that trajectory in the absence of guardrails. Krupnick et al. (2024) found that even with a CT&I policy in place, some power plants do not decrease emissions at the economy-wide rate, and some even increase emissions relative to their historic baseline. With CT&I in place and the electricity sector obligated, 11 facilities still do not reduce emissions commensurate with the statewide cap. When CT&I is in place but the electricity sector is not obligated, that number increases to 54 facilities. Community advocates have expressed concern that these facilities are disproportionately harming DACs that have been historically overburdened by pollution. Indeed 7 out of the 11 facilities that do not reduce emissions commensurate with the statewide cap are within one mile of a DAC in the electricity-obligated scenario. In the electricity-not-obligated scenario, 32 out of the 54 facilities that do not reduce emissions commensurate with the statewide cap are within one mile of a DAC.

Table 4 shows the direct $PM_{2.5}$ reductions from 2016 to 2030 for facilities near DACs and for all other facilities. The community-level data reflects the state-wide trends: for both DACs and non-DACs, emissions reductions are greatest when the power sector is obligated under CT&I and there are facility-specific caps. The facility-level data also reveals the role of facility-specific caps. Because facility-specific caps affect those facilities that are least responsive to carbon pricing, we look directly at emissions impacts at facilities with the least emissions reductions from their historic baseline (those at or below the 25th percentile of the $PM_{2.5}$ emissions reduction distribution) in each policy case.

Facility-specific caps significantly reduce emissions for facilities at or below the 25th percentile in either obligation scenario. As mentioned above, the deepest overall reductions for DAC-adjacent facilities occur when the electricity sector is obligated and facility-specific caps are included. However, facility-specific caps have the greatest impact when electricity is not obligated. Facility-specific caps increase the 25th percentile emissions reduction at DAC-adjacent facilities by 58 percent when the electricity sector is obligated, and by 350 percent when the electricity sector is not obligated.

Table 4. Direct $PM_{2.5}$ Emissions (lbs) Reductions between 2016 and 2030, by Policy Case

	BAU	Electricity obligated	Electricity obligated with caps	Electricity not obligated	Electricity not obligated with caps
DAC-adjacent facilities					
Total $PM_{2.5}$ reduction	2,701,495	3,208,826	3,261,072	2,655,874	2,776,215
Average $PM_{2.5}$ reduction	24,338	28,908	29,379	23,927	25,011
25th percentile $PM_{2.5}$ improvement	92	296	468	92	414
All other facilities					
Total $PM_{2.5}$ reduction	931,386	1,089,500	1,101,948	926,051	986,375
Average $PM_{2.5}$ reduction	16,058	18,784	18,999	15,966	17,006
25th percentile $PM_{2.5}$ improvement	39	706	724	39	714

Obligating the power sector under the CT&I program prompts greater investment in New York solar and wind capacity than in the not-obligated scenario. Obstacles to building new generation could impact GHG and copollutant emissions outcomes.

Capacity additions in the model are driven by increased demand and by profit opportunities for different generator technologies like wind and solar. Significant capacity additions from BAU are estimated because of increased demand for electricity under the cap-trade-and-invest program. Without facility-specific caps, this leads to increases in wind, solar, and natural gas capacity. With facility-specific caps, no new natural gas plants are built, and new solar capacity is slightly higher.

Table 5. MW New Capacity Estimated by 2030, by Policy Case

	BAU	Electricity obligated	Electricity obligated with caps	Electricity not obligated	Electricity not obligated with caps
New solar (utility scale and distributed)	45,618	56,041	56,099	47,089	47,354
New offshore wind	4,500	4,500	4,500	4,500	4,500
New onshore wind	3,487	4,622	4,634	3,864	3,809
New hydro	2	2	2	2	2
New natural gas	1,881	1,932	1,881	2,086	1,881

Note: Capacity additions from BAU include some capacity built between the data year (2016) and the current year (2024). The 2016 data include all existing and planned builds (some out to 2024) but not every generator built during that period. Some capacity captured in the BAU column represents existing capacity as of 2024. Higher capacity in the policy cases than in the BAU scenario can be interpreted as entirely new capacity.

Table 6. 2030 Electricity Prices and In-State Load, by Policy Case

	BAU	Electricity obligated	Electricity obligated with caps	Electricity not obligated	Electricity not obligated with caps
NY annual average LMP[a] ($/MWh)	26.52	26.36	26.33	26.12	26.24
NY residential retail electricity price ($/kWh)	0.191	0.193	0.193	0.191	0.191

[a] LMP = locational marginal pricing

The largest capacity addition differences are a result of obligating the electricity sector, which prompts 9 GW in new solar capacity and 0.76 GW in new onshore wind capacity in New York, relative to the not-obligated scenario. No changes in New York hydro or geothermal capacity are prompted by the electricity obligation under CT&I. Less than 2 MW of hydropower capacity is added out of state when the electricity sector is obligated. In the state's preliminary scenario analyses presentation, NYSERDA staff discussed potential delays in deploying new generation as a key consideration in determining the costs of obligating the electricity sector. Policymakers should consider whether capacity additions like those estimated in our analysis (see Table 5) are achievable before 2030.

We observe minimal impacts on electricity prices because of electricity obligation under CT&I and negligible price impacts associated with adding facility-specific caps in either obligation case.

In Table 6, we summarize the estimated New York State average locational marginal electricity prices, residential retail electricity prices, and percentage of New York demand met with in-state generation. We find minimal impact on electricity prices with the increased electricity demand associated with CT&I obligation and even smaller impacts associated with facility-specific caps.

An important limitation to consider regarding these results is that our electricity sector model does not include a capacity market or ancillary service products. Increasing capacity costs could contribute to higher prices in any policy case but may especially have an impact in cases with higher renewables penetration (Goggin 2020).

Moderate GHG emissions leakage does occur when obligating the electricity sector or adding facility-specific caps, but both designs still have an overall negative impact on regional power sector GHG emissions when New York reductions are considered.

We find evidence of GHG emissions leakage to other states in all policy cases. Without electricity sector obligation under CT&I, GHG emissions out of state still increase as a result of the higher electricity demand from electrification in New York. Increases in out-of-state emissions offset 43 percent of the in-state GHG emissions reductions achieved by obligating the electricity sector and between 42 and 49 percent of those achieved by adding facility-specific caps. These leakage ranges are lower than those estimated in the NYSERDA and DEC's preliminary scenario analyses, which estimated leakage of around 82 percent between 2025 and 2035, likely reflecting the different assumptions on capacity additions and load growth (see the list of assumptions in Section 5). Even with leakage considered, obligating the electricity sector under CT&I and applying facility-specific caps each produce net reductions in power sector GHG emissions.

4. Conclusions

The decision to obligate or not obligate the electricity sector under New York's cap-trade-and-invest system could have significant impacts on GHG and copollutant emissions in that sector, particularly for DACs. Without obligation, a rise in electrification in the broader New York economy could lead to higher GHG and copollutant emissions in the power sector relative to a business-as-usual case. Even as wind, solar, and storage resources

expand in the state, the greater electricity demand also increases the use of fossil fuel generators without additional GHG emissions pricing in place.

Of the modeled cases, the electricity-obligated scenario with facility-specific caps delivers the greatest GHG and copollutant emissions reductions throughout the state, particularly near DACs. Obligating the electricity sector delivers much of the emissions reduction benefits, but facility-specific caps more directly target those facilities whose GHG emissions levels are less responsive to carbon pricing.

If the state decides to not obligate the electricity sector, the facility-specific caps could play a larger role in delivering benefits to DACs. When the electricity sector is not obligated, facility-specific caps increase the 25th percentile facility-level $PM_{2.5}$ emissions reduction (from 2016) by 350 percent, compared with 58 percent when the electricity sector is obligated under CT&I.

The GHG and copollutant emissions benefits delivered by obligating the electricity sector and adding facility-specific caps are not associated with meaningful cost differences in wholesale and retail electricity prices. In some cases, the increase in renewable generation can lower average wholesale prices in the state. These cost findings assume the state can build new renewable generation as electricity demand increases. Our modeling assumes around 10 GW in additional (above 2030 BAU) wind and solar capacity associated with obligating the electricity sector, and about 300 MW in additional such capacity needed to meet demand with facility-specific caps in either obligation scenario.

Overall, the greatest emissions benefits in our analysis were observed in the case where the electricity sector was obligated, and facility specific caps were placed on power generators. We find that without electricity sector obligation, facility-specific caps are even more important for delivering $PM_{2.5}$ emissions reductions.

5. Assumptions and Limitations

The following are important assumptions that may affect the interpretation of our results or comparisons with other analyses, including the state's preliminary scenario analyses (NYSERDA & DEC 2024).

1. **RGGI.** New York is assumed to be in RGGI in all cases. In the electricity-obligated scenarios, generators are credited for the RGGI price. RGGI is modeled as a price rather than a cap because we assume that RGGI prices will be at emissions containment reserve levels (the price floor).
2. **New generation builds.** The state preliminary scenario analyses assumed constraints on new generation to reflect interconnection queues and permitting delays. They lifted these constraints in 2031. This assumption allowed them to observe differences between economic responses in the early and later years of the program. We model only one year, 2030, and do so without these constraints. This reflects an assumption that the state could realize a large expansion of renewables in the next six years (see Table 5). This result brings down costs and reduces leakage compared with the state's 2030 results.
3. **Transmission growth.** Existing and planned transmission capacity is included in our analysis. There is no endogenous transmission expansion in our modeling, and transmission capacity does not vary among cases.
4. **Carbon border adjustment.** A carbon border adjustment is implemented as an in-state generation requirement that is equivalent to a uniform price on NYS imports equal to the CT&I allowance price.
5. **Other electricity market products.** Our electricity sector model does not include a capacity market or ancillary service market. These markets pay generators for services other than directly delivering energy to meet demand and contribute to retail electricity prices. Increasing capacity costs or ancillary service costs could contribute to higher retail electricity prices in any policy case.

6. **Facility-specific caps in the industrial sector.** The industrial sector is a contributor to stationary emissions and pollution (contributing to around 9 percent of New York GHG emissions in 2019). The stakeholders consulted in this process expressed interest in expanding the facility-specific caps to cover industrial emitters, but we lack the modeling capabilities to analyze this policy. Burtraw and Roy (2023) offer some analysis on the impact of facility-specific caps on power sector and industrial sector facilities in California.
7. **Emissions changes in other sectors.** In an economy-wide CT&I program with unrestricted trading, emissions increases in one sector typically lead to emissions reductions in another. The exclusion of the electricity sector and removal of those emissions from the allowance budget could lead to increased allowance prices and emissions decreases in other sectors. We do not have a general equilibrium model and do not observe or quantify this effect. Our analysis aligns with an assumed price ceiling at our modeled carbon price, which most closely aligns with the price ceiling in Scenario C in the New York State preliminary scenario analyses.

References

Burtraw, Dallas, and Nicholas Roy. 2023. *How Would Facility-Specific Emissions Caps Affect the California Carbon Market?* Report 23-09. Washington, DC: Resources for the Future. **https://www.rff.org/publications/reports/how-would-facility-specific-emissions-caps-affect-the-california-carbon-market/**.

Goggin, Michael. 2020. "Capacity Markets: The Way of the Future or the Way of the Past?" ESIG. **https://www.esig.energy/capacity-markets-the-way-of-the-future-or-the-way-of-the-past/**.

Krupnick, Alan, Molly Robertson, Wesley Look, Eddie Bautista, and Eunice Ko. 2024. *Prioritizing Justice in New York State Cap-Trade-and-Invest*. Report 24-05. Washington, DC: Resources for the Future. **https://www.rff.org/publications/reports/prioritizing-justice-in-new-york-state-cap-trade-and-invest/**.

NYSERDA & DEC (New York State Energy Research and Development Authority and New York State Department of Environmental Conservation). 2023. *New York Cap-and-Invest Pre-Proposal Outline*. **https://capandinvest.ny.gov/-/media/Project/CapInvest/Files/Second-Stage-of-Pre-Proposal-Outreach.pdf**.

———. 2024. New York Cap-and-Invest (NYCI) Pre-Proposal Stakeholder Outreach Preliminary Scenario Analyses. **https://capandinvest.ny.gov/-/media/Project/CapInvest/Files/NYCI-Preliminary-Analysis-Data-Annex.xlsx**

The New York City Environmental Justice Alliance (NYC-EJA) is a non-profit, 501(c)3 citywide membership network linking grassroots organizations from low-income neighborhoods and communities of color in their struggle for environmental justice. NYC-EJA empowers its member organizations to advocate for improved environmental conditions and against inequitable environmental burdens by the coordination of campaigns designed to inform City and State policies.

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