Caiazza Testimony on New York RGGI Funding Status
Prepared for Assembly Committee on Energy Public Hearing
NYSERDA Spending and Program Review

Summary
My testimony documents New York State Energy Research & Development Authority (NYSERDA) revenues and expenditures associated with the Regional Greenhouse Gas Initiative (RGGI). The purpose is to give the Energy Committee a perspective on the effectiveness of NYSERDA's RGGI-related programs and its implications on the prospects for the New York Cap-and-Invest (NYCI) program component of the Climate Leadership & Community Protection Act (Climate Act).

I summarize electric sector emission reductions and reasons for the reductions and include an attachment that documents that analysis. I show that while emissions are down 49% since 2000 and 38% lower since the start of RGGI, reductions due to NYSERDA's RGGI proceed investments are only responsible for at most 4.2% of the observed reductions. Fuel switching from coal and oil to natural gas generation is the primary reason for the reductions. There are no more opportunities for fuel switching reductions. The primary way future emissions can be reduced is to displace their generation and associated emissions with zero-emission resources and load reduction programs. NYSERDA has not prioritized its program funding to ensure that natural gas generating unit operations will be reduced enough to achieve RGGI compliance obligations.

The cost effectiveness of NYSERDA RGGI auction proceeds is also a concern. The cumulative annual estimated total incentives and actual costs at the end of 2023 totaled $1,001 million and the annual emissions savings were 1,976,101 tons. The resulting cost per ton reduced for the RGGI program investments is $582 per ton. This cost effectiveness value exceeds the New York Value of Carbon and is so high that it may exceed what the market can bear to achieve Climate Act mandates.

This testimony explains my concern that NYSERDA's stakeholder process associated with the investments of auction proceeds is broken. NYSERDA treats the shareholder process as an obligation and not as an opportunity to improve program performance and program investment strategies. This is an example of the NYSERDA governance issues raised by John Howard at the Public Hearing.

Background

RGGI is a market-based program to reduce greenhouse gas emissions (GHG) (Factsheet). It has been a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to cap and reduce CO2 emissions from the power sector since 2008. New Jersey was in at the beginning, dropped out for years, and re-joined in 2020. Virginia joined in 2021 but has since withdrawn, and Pennsylvania has joined but is not actively participating in auctions due to on-going litigation. According to a RGGI website:

> The RGGI states issue CO2 allowances that are distributed almost entirely through regional auctions, resulting in proceeds for reinvestment in strategic energy and consumer programs.
>
> Proceeds were invested in programs including energy efficiency, clean and renewable energy, beneficial electrification, greenhouse gas abatement and climate change adaptation, and direct bill assistance. Energy efficiency continued to receive the largest share of investments.

NYSERDA is responsible for investing the proceeds from the RGGI auctions. The RGGI Operating Plan is designed to "strategically invest across disciplines, economy wide, in a way that supports comprehensive strategies that best advance the CO2 emission reductions goals of the State." The RGGI funding status reports document RGGI funding portfolio and cumulative program benefits.

Compliance Obligations

On a quarterly basis allowance or permits to emit a ton of CO2 are auctioned by RGGI. The electric generating units that have RGGI compliance options must surrender one allowance for each ton emitted to comply with the regulations. At its root RGGI is a CO2 emission reduction program for the utility industry funded by ratepayers who pay for the allowances. In theory, RGGI States invest the proceeds to reduce emissions indirectly through energy efficiency programs and directly through the deployment of renewable energy that displaces fossil fired generation and supporting carbon abatement technology. However, NYSERDA's latest proposed program allotments support more funding for other initiatives than those two objectives. In my opinion, the RGGI proceeds should prioritize funding programs that directly reduce emissions or indirectly reduce emissions by reducing load. However, NYSERDA investments disregard the compliance obligations to the extent that there are potential compliance issues as I will explain below. The attachment provides documentation for the numbers described.

Observed Trends

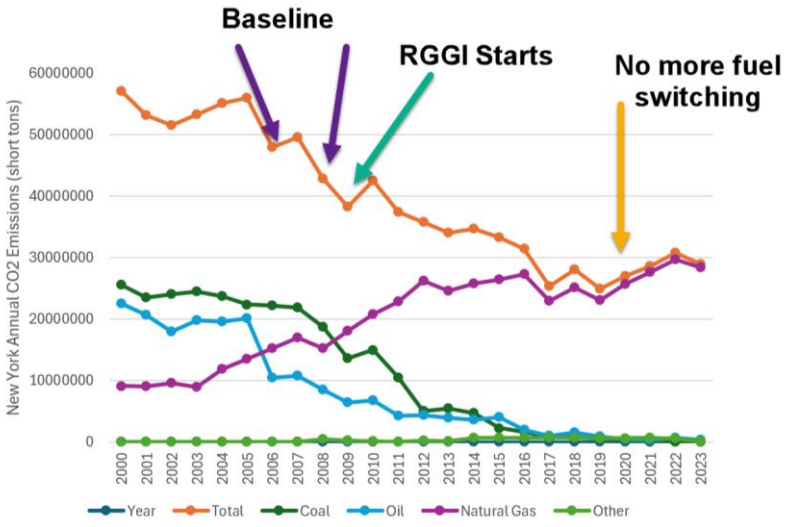
Whenever there is a public meeting about RGGI, the overview presenters state that there has been a large reduction in electric sector emissions. For example, at the NYSERDA RGGI Stakeholder meeting on 5 December 2024, Jon Binder from the New York Department of Environmental Conservation said:

> Together, we have cut New York's power sector emissions of carbon dioxide by more than 50 %. And we've done this by establishing regulations that set limits on pollution while also making investments through this operating plan process in parallel with so many other critical policies at the state level and commitments to implement the Climate Leadership and Community Protection Act.

This insinuates that the investments funded by RGGI auction proceeds contribute significantly to the observed reductions. My analysis of Environmental Protection Agency (EPA) emission data and NYSERDA documentation contradict this implication.

Historical emissions from the electric sector have gone down significantly. The Figure 1 graph lists annual electric sector emissions by fuel type. There are three key takeaways. Emissions have gone down. Secondly, the data show that most of the emission reductions since 2000 are due to fuel switching coal and oil emission reductions even though there is an increase in natural gas emissions to compensate for the displaced generation. This happened because the cost of natural gas dropped sufficiently below the cost of coal and oil so that fuel switching was a cost-effective option. In most instances, regulations that set limits on pollution were enacted after these conversions occurred.

Figure 1: New York State Electric Sector Emissions by Fuel Type



The other key point is that there are no appreciable potential reductions from future fuel switching from coal and oil to natural gas. Since 2019 total and natural gas emissions are nearly the same. There are no add-on control systems that can meet the Climate Act 2040 mandate for zero emissions. This means that the only future CO2 reduction strategy for the electric sector is to fund programs that displace the use of natural gas with zero-emission resources. NYSERDA has not acknowledged the implication of this finding that RGGI auction proceeds must fund projects that reduce emissions from electric generators because there are no otheroptions for further emission reductions.

NYSERDA Investment Performance

Given that most of the observed reductions are from fuel switching, the question how much is from NYSERDA investments is relevant. The estimated emission savings from NYSERDA investments are described in the Semi-Annual Status Report through December 2023. The description states that:

> This report is prepared pursuant to the State's RGGI Investment Plan (2022 Operating Plan) and provides an update on the progress of programs through the quarter ending December 31, 2023. It contains an accounting of program spending; an estimate of program benefits; and a summary description of program activities, implementation, and evaluation.

Table 1 compares the observed reductions and NYSERDA RGGI investment emission savings. I list the last five years of data starting in 2019 when the emissions went up because of the closure of Indian Point. Reductions from the 2006-2008 average baseline are listed. The emissions savings listed are cumulative annual emissions. Were it not for the RGGI investments, then the total emissions would be higher by the amount of the savings. The total cumulative annual emission savings through the end of 2023 are only 1,976,101 tons and that represents a reduction of 4.2% from the pre-RGGI baseline.

Table 1: NY Electric Emissions, GHG Emission Savings from RGGI, and Emissions by Fuel Type

		Cumulative RGGI Net		CO2 Emissions By Fuel Type			
	Total New York CO2 Emissions (tons)	Annual	Total Emissions Without RGGI	Coal	Oil	Natural Gas	Other
Baseline	46,777,377		46,777,377	20,915,932	9,911,913	15,801,374	148,157
2019	24,903,924	977,422	25,881,346	471,969	868,516	23,019,716	543,723
2020	26,920,636	1,246,651	28,167,287	174,360	476,741	25,675,000	594,535
2021	28,558,685	1,446,937	30,005,622	0	325,270	27,619,633	613,781
2022	30,818,867	1,731,823	32,550,690	0	604,475	29,707,409	506,983
2023	28,889,913	1,976,101	30,866,014	0	316,176	28,429,838	143,899
Delta	-17,887,464	1,976,101	-15,911,363	-20,915,932	-9,595,737	12,628,464	-4,259
% Reductions	-38.2%	-4.2%		-44.7%	-20.5%	27.0%	0.0%

New York RGGI Program Investment Reductions

RGGI is touted as a model emission reduction program for NYCI. This raises the question of the cost per ton reduced effectiveness of program investments. Table 2 lists data from Semi-Annual Status Report through December 2023's Table 2: Summary of Total Expected Cumulative Annual Program Benefits. It shows the cumulative annual costs of investment programs and annual tons of carbon dioxide equivalent (CO2e) saved by the investments. The report notes that: "NYSERDA begins tracking program benefits once project installation is complete and provides estimated benefits for projects under contract that are not yet operational (pipeline benefits). " The report presents "expected quantifiable benefits related to carbon dioxide equivalent (CO2e) reductions, energy savings, and participant energy bill savings with expended and encumbered funds" but I only consider the CO2e reductions. In the original table "lifetime" savings are included. I did not use "lifetime" savings data because I am trying to compare the RGGI program benefits emission savings reductions to the RGGI compliance metric of an annual emission cap. Lifetime reductions are clearly irrelevant. The observed cost per ton of emissions savings is $582.

Table 2: RGGI Funding Status Report Table 2: Summary of Total Expected Cumulative Annual Program Benefits

Through Date	Cumulative Costs ($ millions)			Savings (Cumulative Annual Tons CO2e)			Cost Benefit Ratio ($/Ton CO2e)
	Total Incentives	Associated Costs	Combined Costs	Installed Savings	Pipeline Savings	Total Savings	$ per ton CO2 savings
12/31/2023	$1,009.9	$139.5	$1,149.4	1,870,066	106,034	1,976,101	$582

Cost Effectiveness Implications

The New York State Value of Carbon guidance "establishes a value of carbon that can be used by State entities to aid decision-making and used as a tool for the State to demonstrate the global societal value of actions to reduce greenhouse gas emissions." The Social Cost of Carbon "is intended to provide a comprehensive measure of the net damages—that is, the monetized value of the net impacts—from global climate change that result from an additional ton of emissions." The choice of the value used is dependent upon the discount rate chosen and the guidance recommends that State entities present the damages-based value of carbon using estimates calculated at a range of discount rates from 1 to 3 percent, with a central value that is estimated at the 2 percent discount rate". In 2024 the social cost of carbon dioxide is $57.25 at 3% discount rate, $132.09 at the central value 2% discount rate, and $430.75 at 1% discount rate.

The observed $582 per ton cost effectiveness of the NYSERDA RGGI auction proceeds calculated in Table 2 is well above the social cost of carbon estimates. This means that the

monetized value of the net impacts of the emission reductions is less than the cost to make the reductions. This means that NYSERDA investments fail this cost effectiveness test.

Investment Priorities

One of my primary concerns is that the investment priorities do not recognize compliance obligations. The Semi-Annual Status Report through December 2023 describes the funding priorities for the auction proceeds:

> The State invests RGGI proceeds to support comprehensive strategies that best achieve the RGGI CO2 emission reduction goals. These strategies aim to reduce global climate change and pollution through energy efficiency, renewable energy, and carbon abatement technology. Deploying commercially available renewable energy and energy efficiency technologies help to reduce greenhouse gas (GHG) emissions from both electricity and other energy sources in the short term. To move the State toward the goals enacted by the Climate Leadership and Community Protection Act (Climate Act) and a more sustainable future, RGGI funds are used to empower communities to make decisions that prompt the use of cleaner and more energy-efficient technologies that lead to both lower carbon emissions as well as economic and societal co-benefits. RGGI helps to build capacity for long-term carbon reduction by training workers and partnering with industry. Using innovative financing, RGGI supports the pursuit of cleaner, more efficient energy systems and encourages investment to stimulate entrepreneurial growth of clean energy companies. All these activities use funds in ways that accelerate the uptake of low- to zero-emitting technologies.

Savings in Table 2 are misleading in the context of RGGI compliance obligations because not all the savings will affect RGGI emission sources. There is a significant fraction of RGGI funds that goes to programs that increase rather than decrease electric generating unit emissions.

In Table 3, I categorized programs relative to RGGI compliance obligations based on the latest Status Report. The table breaks down the program allocations and expected annualized CO2 savings for three categories: direct reductions to RGGI sources, indirect reductions, and those programs that will increase electric generating emissions. An example of a program that increases emissions is Charge NY. It is NYSERDA's Clean Transportation Program that "has been pursuing five strategies to promote EV adoption by consumers and fleets across New York". The results in the Funding status reports show that since the start of the program NYSERDA has allocated $98.8 million to programs that directly reduce utility emissions achieving emission savings of 199,733 tons, $702.7 million for programs that indirectly reduce utility emissions savings by 1,205,780 tons, and $348.1 million for programs that will increase utility emissions by 678,804 tons. In the last category, the GHG emission savings listed are the benefits for programs that facilitate

switching from gasoline and diesel to electric vehicles. When the savings that do not affect RGGI source emissions are removed, total savings are reduced to 1,297,297 and the emissions from RGGI sources in New York would have been only 2.8% higher if the NYSERDA program investments did not occur.

Table 3: Summary of Expected Cumulative Annualized Program Benefits through 31 December 2023 for Programs that Directly, Indirectly, or Do Not Affect RGGI CO2 Emissions

	Programs that Directly Displace CO2 Emissions		Programs that Indirectly Displace CO2 Emissions		Programs that Do Not Directly Affect RGGI Emissions	
Program	Costs (millions of dollars) Total Costs	Net Greenhouse Gas Emission Savings (Annualized Tons CO2e) Total Committed Savings	Costs (millions of dollars)	Net Greenhouse Gas Emission Savings (Annualized Tons CO2e)	Costs (millions of dollars) Total Costs	Net Greenhouse Gas Emission Savings (Annualized Tons CO2e) Total Committed Savings
Renewable Energy						
NY-Sun Initiative Statewide Customer Incentives	$33.7	30,940				
NY-Sun Long Island Incentives	$5.5	3,602				
NY-Sun Long Island SEEF Incentives	$54.3	114,395				
Renewable Heat New York			$10.3	2,477		
NYSERDA Solar Electric	$5.3	50,796				
Energy Efficiency						
LIPA Energy Efficiency and Renewable Energy Initiative			$289.6	646,714		
EmPower Plus			$88.9	44,454		
Community Thermal Energy Networks			$10.5	0		
Multifamily Performance Program			$14.8	41,430		
Multifamily Carbon Emissions Reduction Program			$5.9	45,151		
Solar Hot Water (Thermal) Program			$4.2	959		
Green Residential Building Program			$2.8	2,798		
Innovative GHG Abatement Strategies						
Charge NY					$217.1	236,734
Community Clean Energy						
Regional Economic Development & GHG Reduction					$10.2	34,018
Clean Energy Communities					$3.8	176,215
Directed						
Clean Energy Fund					$117.0	231,837
Green Jobs - Green New Yor			$275.7	421,797		
Cross-Program Overlap						
TOTAL Annualized Cumulative	$98.8	199,733	$702.7	1,205,780	$348.1	678,804

RGGI Compliance and Draft Operating Plan Amendments

The RGGI Operating Plan is designed to "strategically invest across disciplines, economy wide, in a way that supports comprehensive strategies that best advance the CO2 emission reductions goals of the State." NYSERDA's five investment goals "support the pursuit of the State's greenhouse gas emissions reduction goals" but only one addresses emission reductions. The others are vague cover language to justify the use of RGGI auction proceeds to bury administrative expenses, force ratepayers to cover costs related to Climate Act implementation and provide funding for politically favored projects at the expense of programs that affect CO_2 emissions from RGGI affected sources. This section determines how much funding is allocated to reducing emissions in the 2025 Draft Amendment.

Table 4 is 2025 Draft RGGI Operating Plan Amendment Table1 and lists all the proposed programs. The original table highlights programs that "indicate newly funded programs or additional funding to existing programs". The notes to the table also explain that "Totals may not sum exactly due to rounding and that the fiscal years begin on April 1st and end on March

31st. The Draft Amendment document provides brief descriptions of the proposed programs in most instances, but not all the programs have descriptions.

Table 4: Draft RGGI Operating Plan Amendment Table 1: Funding Allocations with Totals for this Planning Period

Table 1: Funding Allocations with Totals for this Planning Period

Category	Program	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total (This Planning Period)
Renewable Energy	NY-Sun Statewide Customer Incentives	20,000,000	-	9,000,000	-	29,000,000
	NY-Sun Long Island SEEF Incentives	1,000,000	4,000,000	5,000,000	5,000,000	15,000,000
	Residential PV Plus Storage	3,000,000	-	-	-	3,000,000
	Agrivoltaics	5,000,000	7,000,000	10,000,000	-	22,000,000
	Circular Economy Renewable Energy Feasibility Study	1,000,000	-	-		1,000,000
Energy Efficiency / Building Electrification	LIPA Efficiency and RE	20,000,000	20,000,000	20,000,000	20,000,000	80,000,000
	EmPower+	30,000,000	46,250,000	30,250,000	45,250,000	151,750,000
	Comfort Home	6,500,000	-	-	-	6,500,000
	Pilot Projects with Municipal Utilities	-	1,000,000	1,000,000	-	2,000,000
	Disadvantaged Communities Schools/Buildings	42,500,000	40,000,000	30,000,000	-	112,500,000
	Multifamily Low Carbon Capital Planning / Pathway Projects	3,000,000	12,000,000	10,000,000	5,000,000	30,000,000
	Community Thermal Energy Networks	3,000,000	4,000,000	2,000,000	-	9,000,000
	Building Retrofit and New Construction Challenges	42,500,000	42,500,000	43,000,000	15,000,000	143,000,000
	Climate Resiliency Implementation Planning	5,000,000	5,000,000	5,000,000	10,000,000	25,000,000
	Support for 2 Million Homes Goal	-	15,000,000	10,000,000	-	25,000,000
	Technical Services	5,000,000	10,000,000	10,000,000	15,000,000	40,000,000
	LMI Efficient Appliances Program	-	10,000,000	-	-	10,000,000
	Innovative Finance & Risk Management	-	3,000,000	3,000,000	-	6,000,000
Innovative GHG Abatement Strategies	Electric Vehicle/Charge NY	89,900,000	74,000,000	57,000,000	57,000,000	277,900,000
	Clean Energy Business Development	5,400,000	4,100,000	6,000,000	-	15,500,000
	Natural Carbon Solutions	2,000,000	2,000,000	3,000,000	-	7,000,000
	Equity and Climate Transformation Research	900,000	1,000,000	1,000,000	-	2,900,000
	Scoping Plan Implementation Research	7,200,000	9,500,000	6,000,000	6,000,000	28,700,000
	Advanced Fuels	-	8,250,000	8,250,000	8,000,000	24,500,000
Community Clean Energy	Cleaner Greener Communities	(1,058,912)	-	-		(1,058,912)
	Clean Energy Communities	3,000,000	2,000,000	13,000,000	10,000,000	28,000,000
	Healthy New Home Design & Construction Challenge	3,000,000	3,000,000	3,000,000	-	9,000,000
	Clean Energy Workforce Development	9,000,000	25,000,000	30,000,000	11,000,000	75,000,000
	Clean Energy Hubs	3,000,000	6,500,000	6,500,000	6,500,000	22,500,000
	Community-Based DAC Engagement	-	-	3,500,000	1,500,000	5,000,000
	Clean Energy Siting and Soft Cost Reduction	-	-	2,000,000	2,000,000	4,000,000
	Climate Action Consumer Awareness & Education	5,000,000	4,500,000	4,500,000	4,500,000	18,500,000
Directed	NYS Environmental Protection Fund	5,000,000	5,000,000	5,000,000	5,000,000	20,000,000
	Electric Generation Facility Cessation Mitigation	1,000,000	8,000,000	14,158,000		23,158,000
	Green Jobs-Green NY- Additional Funding	32,211,693	49,500,000	54,500,000	14,764,433	150,976,126
	Grant Program Match Opportunities	29,000,000	30,000,000	21,664,544	15,000,000	95,664,544
	Transfer to(from) Clean Energy Fund	22,000,000	19,773,196	-		41,773,196
Administration and Other Non-Program Costs	Program Administration	25,606,370	30,445,000	30,445,000	30,445,000	116,941,370
	Program Evaluation	2,000,000	2,000,000	3,000,000	3,000,000	10,000,000
	RGGI Inc pro-rata costs	825,000	825,000	825,000	825,000	3,300,000
	State Cost Recovery	4,060,319	3,353,901	3,744,402	3,595,586	14,754,208
	Total Funding Allocations	436,544,470	508,497,097	465,336,946	294,380,019	1,704,758,532

I evaluated programs in the Operating Amendment relative to their value for future EGU emission reductions. I reviewed each proposed program and classified each program relative to six categories of potential RGGI source emission reductions. The first three categories covered programs that directly, indirectly or could potentially decrease RGGI-affected source emissions. I also included a category for programs that will add load that could potentially increase RGGI source emissions such as programs to incentivize electrification. Another category considered programs that do not affect emissions such as feasibility studies. Finally administrative costs are categorized.

Table 5 presents the results for the programs in the proposed amendment in the 2025 Draft Amendment. Five programs without documentation are highlighted in yellow. The orange highlighted programs will be discussed later. The first three categories cover programs that directly, indirectly, or could potentially decrease RGGI-affected source emissions which only account for 22% of the investments. Programs that will add load that could potentially increase RGGI source emissions and whose emissions savings are unrelated to the electric sector total 37% of the investments. Programs that do not affect emissions are funded with 29% of the proceeds and administrative costs total another 8%. Clearly there is no preference for reducing emissions.

Table 5: Potential for RGGI Reductions for Funding Allocations for 2025 Operating Plan Amendments

	Total for Amendment					
	Direct RGGI Reductions	Indirect RGGI Reductions	Potential RGGI Reductions	Increase Generation	No Emission Reductions	Administration Costs
NYSun Statewide Customer Incentives	29,000,000					
NYSun Long Island SEEF Incentives	15,000,000					
Residential PV Plus Storage	3,000,000					
Agrivoltaics					22,000,000	
Circular Economy Renewable Energy Feasibility Study					1,000,000	
LIPA Efficiency and RE		80,000,000				
EmPower+		75,875,000		75,875,000		
Comfort Home		3,250,000		3,250,000		
Pilot Projects with Municipal Utilities		1,000,000		1,000,000		
Disadvantaged Communities Schools/Buildings		56,250,000		56,250,000		
Multifamily Low Carbon Capital Planning/ Pathway Projects				30,000,000		
Community Thermal Energy Networks				9,000,000		
Building Retrofit and New Construction Challenges				143,000,000		
Climate Resiliency Implementation Planning					25,000,000	
Support for 2 Million Homes Goal				25,000,000		
Technical Services					40,000,000	
LMI Efficient Appliances Program		10,000,000				
Innovative Finance & Risk Management					6,000,000	
Electric Vehicle/Charge NY				277,900,000		
Clean Energy Business Development					15,500,000	
Natural Carbon Solutions					7,000,000	
Equity and Climate Transformation Research					2,900,000	
Scoping Plan Implementation Research					28,700,000	
Advanced Fuels					24,500,000	
Cleaner Greener Communities					1,058,912	
Clean Energy Communities		14,000,000		14,000,000		
Healthy New Home Design & Construction Challenge					9,000,000	
Clean Energy Workforce Development					75,000,000	
Clean Energy Hubs					22,500,000	
CommunityBased DAC Engagement					5,000,000	
Clean Energy Siting and Soft Cost Reduction					4,000,000	
Climate Action Consumer Awareness & Education					18,500,000	
NYS Environmental Protection Fund					20,000,000	
Electric Generation Facility Cessation Mitigation					23,158,000	
Green JobsGreen NYAdditional Funding					150,976,126	
Grant Program Match Opportunities			95,664,544			
Transfer to(f rom) Clean Energy Fund						
Program Administration						116,941,370
Program Evaluation						10,000,000
RGGI Inc prorata costs						3,300,000
State Cost Recovery						14,754,208
Totals	47,000,000	240,375,000	95,664,544	635,275,000	501,793,038	144,995,578
	3%	14%	6%	37%	29%	8%

RGGI Compliance Summary

Given my decades-long background in the electric sector, it is not surprising that I have compliance concerns. NYSERDA, in general, and the 2025 Draft Amendment funding priorities do not recognize the implications of the observed emission trends. Figure 1 shows that no further fuel switching emission reductions are available. Affected sources have no remaining options to comply with RGGI mandates other than limiting operations. Future emission reductions are only possible if zero-emission resources displace the generation of RGGI-affected sources.

In all my comments to NYSERDA on their operating plan amendments I have argued that funding priorities over emphasize Climate Leadership and Community Protection Act (Climate Act) initiatives at the expense of the electric generating unit RGGI emission goals. I take the simple position that RGGI was promulgated as an emission reduction program for the electric generating sector. Advocates for market-based carbon dioxide trading programs overlook the ramifications of the limited compliance options for affected sources. New York sources can only limit operations to reduce emissions at this time. If NYSERDA does not fund programs that provide sufficient displacement of natural gas units then at some point, the RGGI allowances offered at auction will be less than those needed by New York sources to operate. An artificial energy shortage is not good energy policy.

I believe the Energy Committee should be aware that these issues have been repeatedly raised to NYSERDA and always ignored. These are governance issues that corroborate the issues raised by the John Howard testimony. In the following sections, I elaborate on the NYSERDA stakeholder process and offer recommendations for addressing the problems.

Revenue Allocation Tradeoffs

Danny Cullenward and David Victor's book Making Climate Policy Work describe one aspect of this problem that has not been acknowledged by NYSERDA. The authors note that the level of expenditures needed to implement the net-zero transition vastly exceeds the "funds that can be readily appropriated from market mechanisms". That observation and the conclusion that New York is going to have to fund alternative technologies means that electric system emission reduction investments should be a priority for RGGI revenues.

I have submitted five sets of comments on the annual operating plan amendment. Previously I was able to say that there has been a comfortable margin between emissions and allowance allocations such that costs have stayed below the RGGI Cost Containment Reserve (CCR) targets. That changed in 2024. In the last auction in 2023 the allowance clearing price was

$14.88. In the March 2024 auction the price went up to $16.00, triggering the release of the CCR allowances. The June auction clearing price jumped to $21.03 and went up to $25.75 in the September auction before falling to $20.05 in December. That is still well above the 2025 CCR price trigger of $17.03 so I expect that CCR allowances will be released next March. Clearly the margin between available allowances and emissions is getting smaller. This increases the importance of adequately funding programs that reduce emissions and the need to prioritize those programs that have been proven most effective.

In that context, it is particularly troubling that there is no feasibility analysis available. The sources that are responsible for compliance with RGGI have no remaining options for on-site control so must rely on others to make the investments for zero-carbon emitting resources to displace their operations to achieve emission reductions. If we do not know how the electric sector is expected to achieve zero emissions by 2040 then we do not know how much money is needed and what programs are needed to make the electric sector reductions necessary to meet that goal. The Energy Committee should require a feasibility analysis would to provide that information.

Program Priorities

In addition, it is clear that new technology is needed to achieve the goals so it is unclear whether the sector can reach zero emissions reliably and affordably. As part of the proceeding to implement a large-scale renewable program and the Clean Energy Standard (Proceeding 15-E-0302), the Public Service Commission held a technical conference on December 11 and 12, 2023 entitled "Zero Emissions by 2040" that included a session titled "Gap Characterization." The Gap Characterization session described the gap between the capabilities of existing renewable energy technologies and future system reliability needs. Speakers acknowledged that generation from wind and solar alone could not fill the gap and recognized the need for some new resource to be developed to provide electricity to meet demand when wind and solar production are low. They referred to this new, not-yet-existing, hypothetical technology as the Dispatchable Emissions-Free Resource, or "DEFR." NYSERDA has not acknowledged that DEFR may be required sooner to facilitate RGGI compliance requirements.

The need for emission reductions, energy savings, and need for new technology should set the priorities for the NYSERDA RGGI Operating Plan. Adequate funding for zero-emission electric generation is a prerequisite for a successful transition. The transition cannot occur unless new technology necessary for the zero-emissions electric grid is developed. A feasibility analysis is needed as soon as possible to determine how much money will be needed for emission reductions consistent with the goals and to determine what is needed for new technology development and deployment. Such an analysis would also determine a realistic schedule.

In the meantime, the experience gained with past investments should be considered when allocating revenues. The observed emission reduction effectiveness for existing programs should be used to prioritize electric sector programs. These concerns have not been addressed in NYSERDA's stakeholder process and they should be.

Proposed Program Funding

In my previous comments on Operating Plan amendments, I addressed each of the proposed funding allocations. Given the broken stakeholder process I did not waste my time for a similar effort in this year's comments. To give readers an idea of the programs included, consider the two programs highlighted in orange in Table 8: Climate Action Consumer Awareness & Education and Clean Energy Siting and Soft Cost Reduction.

The Climate Action Consumer Awareness & Education program description states:

> The proposed funds aim to increase awareness and understanding of the critical need for and benefits of climate action in New York State. This investment will include targeted marketing to impact the purchase decisions and actions that are needed to support the State's climate goals. The targeted marketing will address specific barriers across critical sectors and encourage adoption of new technologies that will improve quality of life and help decarbonize our buildings and economy.

In my opinion, this is simply propaganda. NYSERDA is trying to guild the pig and con consumers into improving "quality of life". If their alternatives are so wonderful, then why the need to spend $18.5 million on convincing New Yorkers that the alternatives really aren't less convenient, resilient, and safe while costing more. I think investing in programs that reduce low- and middle-income consumer costs is a better investment. The Clean Energy Siting and Soft Cost Reduction program is no better.

Commented [RC1]: Typo in original This is million not billion

> This initiative will provide technical support to local governments and communities in New York with the education and resources they need to support local clean energy development, including solar, wind, energy storage, and other emerging technologies. As local governments are the permitting authority for most clean energy projects, it is essential that they have the tools they need to support the goals of the Climate Act. This initiative will expand the technical support network for communities by funding locally-based support networks, including forums as required in the SITED act, for community members and other stakeholders to learn and exchange information about clean energy. It will also provide funding for technical support contractors with subject-matter expertise to assist NYSERDA staff in developing new tools, resources, and training.

> Finally, this funding will allow the team to develop new resources for emerging technologies, with specific focus on dispatchable emissions free resources.

One could say that providing $4 million to local governments for "the tools they need to support the goals of the Climate Act" is a laudable investment but others could say it represents payola to further erode local rights.

I do want to make another plea for a stakeholder response to comments document. Although I am concerned about allocating any resources to programs that do not reduce emissions, I have previously argued on the need for one program. I offer my comments on that program below. If there was a response to comments document, then I would know if anybody has heard my arguments and rejected them or if something is in the works.

DEFR Gap Feasibility Study

During the December 5, 2024 NYSERDA RGGI Stakeholder meeting I asked if RGGI proceeds would be used to fund Dispatchable Emissions-Free Resource (DEFR) technical studies. The answer was probably but I do not know if my DEFR recommendation is under consideration.

I believe that the RGGI Operating Plan should confront the biggest Climate Act problem – feasibility. At this time, the State has not presented any clear plan demonstrating that in the early to mid-2030s there will be sufficient reliable electricity generation to meet the demands anticipated from both current uses, from the expected addition of new large sources of load like chip fabrication plants and data centers, and from the load added as part of electrification decarbonization strategies. Indeed, the State has admitted that, in lieu of a definitive plan, it relies instead on a speculative hope for new technologies not yet invented or deployed at scale to bridge the large difference in electricity supply that will inevitably arise from the conflicting mandates.

The biggest feasibility challenge is the identified "gap" when wind and solar resources are low for long periods. The existence of this "gap," and the need to fill it to maintain a reliable electrical grid, was acknowledged in the Climate Action Council's Scoping Plan of December 2022 and has also been recognized by the responsible New York regulators, particularly the Public Service Commission and the New York Independent System Operator. However, no one in the New York State government to date has specified how the gap will be filled by the mid-2030s.

As one example of appropriate feasibility funding, I recommend analyzing the variability in low wind and solar resource availability. New DEFR technology is needed for these periods. The

characteristics of the resource gaps must be quantified not only for New York but also for adjoining regional systems presuming that they also transition to an electric system with a similar reliance on wind and solar.

The Independent System Operator of New England (ISO-NE) Operational Impact of Extreme Weather Events completed an analysis that addresses this need for New England. The study evaluated 1-, 5-, and 21-day extreme cold and hot events using a database covering 1950 to 2021. The results illustrate why this information is necessary. Not surprisingly the system risk or "the aggregated unavailable supply plus the exceptional demand" during an event increased as the lookback period increased. If the resource adequacy planning for New England only looked at the last ten years, then the system risk would be 8,714 MW, but over the whole period of record, the worst system risk was 9,160 MW which represents a resource increase of 5.1%.

As part of the recently completed NYISO 2023-2042 System & Resource Outlook, DNV modeled "long-term hourly simulated weather and generation profiles for representative offshore wind (OSW), land-based wind (LBW), and utility- scale solar (UPV) generators". The analysis covered the period 2000 to 2021 and was limited to the New York Control Area. At the September 27, 2024 New York State Reliability Council (NYSRC) Extreme Weather Working Group (EWWG) meeting, Thomas Primrose from PSEG Long Island presented his analysis of data from the DNV work. Among other things, his evaluation found that all New York solar, onshore wind, and offshore wind capacity averaged less than 10% for 73 hours starting November 23, 2016 at 1600. I found that if the renewable resources projected in the Integration Analysis, without any fossil-fired resources, were operating at that time that there would have been a cumulative generation deficit of up to 103,465 MWh within the lull. Note that the lull deficiency projection length is dependent upon the location of the solar and wind facilities, so this is an approximation.

It is imperative that the Climate Act transition plan address the characteristics of these gaps for New York planning. The frequency, duration, and intensity of wind and solar availability gaps must be known to properly plan to provide the generation, storage, and DEFR resources necessary to maintain reliable service using weather-dependent intermittent resources. The RGGI Operating Plan Amendments should extend the NYISO analysis to adjoining control areas and over a longer analysis period. Note that at the aforementioned EWWG meeting a draft comment for the NYSRC Executive Committee recommending this expanded analysis was discussed. At the last Executive Committee meeting the recommendation was discussed and is under active consideration.

Implications for the New York Cap-and-Invest Program

Advocates frequently refer to RGGI as the successful model for NYCI citing observed emission reductions and the quantity of funds raised. The prevailing perception of NYCI is exemplified by Colin Kinniburgh's description in his recent article in New York Focus. He describes the theory of a cap-and-invest program as a program that will kill two birds with one stone. "It simultaneously puts a limit on the tons of pollution companies can emit — 'cap' — while making them pay for each ton, funding projects to help move the state away from polluting energy sources — 'invest.'"

The missing piece for Kinniburgh and NYSERDA is that setting a cap on carbon emissions is all well and good in theory, but facts get in the way. The reality is that reducing carbon emissions is hard because there are no add-on control systems for CO2. The primary decarbonization strategy is to replace fossil fuels with zero emissions resources. In the electric sector, the owners of the generating units are not building zero-emission replacements. NYSERDA must motivate somebody else to do it. Danny Cullenward and David Victor's book Making Climate Policy Work describe another related aspect of these programs that has not been acknowledged by NYSERDA or NYCI proponents. The authors note that the level of expenditures needed to implement the net-zero transition vastly exceeds the "funds that can be readily appropriated from market mechanisms". The RGGI experience corroborates these findings and should be considered by the Energy Committee. It is also concerning that NYSERDA has never addressed my repeated comments describing these issues and the implications on their funding priorities.

John Howard Testimony

At the Assembly Committee on Energy on December 18, 2024, John Howard voiced his concerns about NYSERDA governance that I think are related to my concerns. Howard opened his remarks noting that "the subject of today's hearing is the fiscal and operational oversight of NYSERDA". He described how the Authority has evolved over time to "provide a little better understanding of this unique and powerful government entity".

His main concern is that NYSERDA is now exclusively responsible for procuring vast amounts of renewable energy consistent with the Climate Act mandates but there is no oversight of the contracts. The PSC, Comptroller Office, and the Legislature have no oversight checks and balances for grid contracts that he estimates will be "well in excess of $100 billion" that need to be let in the next 15 years and will commit consumers to 25 years of payments.

Howard made a recommendation relevant to my testimony. He believes that improvements are needed for the governance of NYSERDA contracting. "There is too much commitment of

the government directed spending without proper review". He suggested that both the State Comptroller and the Public Service Commission should have "the authority to approve large contracts with direct cost to consumers".

NYSERDA Operating Plan Amendment Stakeholder Process

In other testimony given at the December 18 hearing John Williams, Executive Vice President, Policy and Regulatory Affairs, NYSERDA emphasized the point that their RGGI program is informed by stakeholder input. On an annual basis, the Authority "engages stakeholders representing the environmental community, the electric generation community, consumer benefit organizations and interested members of the general public to assist with the development of an annual amendment to the Operating Plan." In my personal experience, however, this engagement is in name only. NYSERDA's treatment of the stakeholder requirement is that it is simply an obligation and not an opportunity. In my opinion a stakeholder process should be an opportunity for agencies to improve their proposals. NYSERDA treats the process as an obligation.

NYSERDA emphasizes its use of stakeholder engagement when publicly discussing their work. John Williams, referred to stakeholder input a couple of times in his testimony. He said: "Our work is informed by stakeholder engagement and market research." When describing the disposition of $191 million budget item for RGGI allowance sales, he said: "The investments for those funds are informed by a stakeholder process."

I have participated in this process submitting comments on the Operating Plan since the 2001 plan. The reality is that NYSERDA goes through the motions of a stakeholder process. The NYSERDA Board only hears what the staff wants them to hear before they rubber stamp the approval of the Operating Plan. In February 2023 I documented the approval process which exemplifies the process for every year that I have commented.

In that analysis I noted that the NYSERDA Use of Auction Proceeds website describes the operating plan and provides links to the operating plan, the meeting materials for the Stakeholder meeting, and the Comments on the Operating Plan Amendments. The transcript for the Board meeting where the 2023 Amendment was approved is available. I extracted the discussion for the operating plan approval but never found the memo referred to in the presentation.

At that the Board meeting agenda item for RGGI Operator Plan approval John Williams said:

> We'll move this one along pretty quickly. We're here with our annual routine RGGI approval process. The Members have received both the three year plan that we're proposing as well as a memo of summarizing all that. Just some high points here for

> awareness. You know, we did engage our annual process to come up with our proposal and present that to stakeholders. And on December 12th we held a webinar for receipt of stakeholder input on that. So some participation there and some exchange of thoughts happening at that December 12th webinar. The proposal was also open for written public comments through January 6th, and we did receive a couple of comments there. The proposal you have was you know, does take those public feedback into account.

It is obvious that NYSERDA was going through the motions of the stakeholder process. They had a meeting for stakeholder input, check. They had a public comment period, check. They posted both comments received, check. John Williams told the Board that public feedback was considered, check. They had a discussion of the Operating Plan Amendment at the Board meeting, check. John Williams responded to questions that came up during the discussion, check. The Board voted to approve the Amendment, check. Mission accomplished.

The only indication that someone read my comments is that I pointed out a typographical error that was corrected. There is no evidence supporting the John Williams claim to the Board that "The proposal you have was you know, does take those public feedback into account". The fact is that the recommendations of the two written comments were ignored. Howard pointed out that NYSERDA has no accountability. When there is no accountability then it is easy to ignore inconvenient stakeholder input. Moreover, the Board consists of political appointees who have no reason to speak up and ask questions

Nothing changed this year. I participated in the Advisory Stakeholder meeting held on December 5, 2024. The meeting exemplified the obligatory approach because when NYSERDA staff responded to questions there was no suggestion of any interest in the reason for the question.

I asked one relevant question: How will NYSERDA address the need to make the necessary reductions to meet RGGI goals relative to the proposed investments recommended in the draft plan? NYSERDA staff responded:

> I'm happy to take this one and provide the best answer as I can. RGGI itself is the cap-and-invest program for the power sector. Proceeds generated from that program are then invested across multiple sectors by NYSERDA in order to help us achieve our market transformation that we're really trying to get to align with the goals of the Climate Act. We certainly not only seek to invest in programs that are providing those really low cost carbon reductions but also pursue the full complement of carbon reduction strategies across multiple sectors. We're trying to use these funds not only through direct investments but also to complement other funding sources that

> NYSERDA has access to and to really just leverage as much as we can to have the biggest impact. We are looking to drive some of those costs down. NYSERDA does regularly post RGGI status reports that offer more information about the carbon benefits associated with each of these programs and the budgets associated with each. I point anyone who's interested to learn more about those impacts to NYSERDA website and the details posted there.

The entire response talks about how RGGI proceeds are invested. There is no acknowledgement that RGGI also includes compliance obligations. In the comments I submitted on 12/23 and all my earlier comments, I argued that NYSERDA Operating Plan funding priorities over emphasize Climate Leadership and Community Protection Act (Climate Act) initiatives at the expense of the electric generating unit RGGI emission compliance requirements based on the evaluation described above.

I asked the question because of my concern about compliance obligations. This response does not acknowledge that there are any RGGI program considerations other than generating money and investing it wisely.

I have some recommendations for the NYSERDA stakeholder process that I suggest the Energy Committee consider. I believe there are two missing pieces in the NYSERDA public stakeholder process. A published response to comments document like the Department of Environmental Conservation regulatory mandate is the first thing needed to instill confidence in the stakeholder process. The second piece is NYSERRDA needs to take the stakeholder engagement response to comments seriously.

I recently found an example of how a stakeholder process should work. The Santa Clara County Rapid Transit Development Project includes a master plan for transportation for Silicon Valley. An interview with the founding manager notes: "Part of the plan is a four-year public stakeholder review process. In the reviews, if the public came up with good ideas, the ideas went into the plan. If an idea wasn't good, we had the responsibility of explaining why."[1]

I believe the explanation responsibility would significantly improve NYSERDA public engagement. I would add one other thing. There might be issues that need to be resolved by further interaction so there should be a process for continued dialogue between NYSERDA and stakeholders. It may be that no resolution is possible for a particular issue. In that case, the

[1] "California's High-Speed Rail Visionary" Bill Buchanan, *Trains,* Volume 85, No. 1, January 2025, pages 30-37.

documentation provided to the Board should note that the issue was not resolved and explain why. The Board of Directors needs to know if there are any issues of this type to make informed decisions.

My final Energy Committee recommendation is to consider following future NYSERDA RGGI Operating Plan amendments because of the unacknowledged ramifications on the electric system.

Conclusion

In all my comments to NYSERDA on their operating plan amendments I have argued that funding priorities over emphasize Climate Act initiatives at the expense of the electric generating unit RGGI emission goals. I take the simple position that RGGI was promulgated as an emission reduction program for the electric generating sector. The failure of affected sources to comply with the RGGI compliance requirements has ramifications. NYSERDA does not acknowledge that because fuel switching opportunities are no longer available that affected sources can only comply by reducing or stopping operations. To prevent that from occurring, NYSERDA investments must displace the generation needed from RGGI-affected sources because that is the only compliance option left with no reliability implications.

In my opinion, the failure of NYSERDA to acknowledge my concerns is indicative of a larger problem. John Williams puts great stock in their stakeholder process, but the reality is that Staff consider it an obligation and not an opportunity to improve the program. Frankly there is an attitude that they know everything and don't need to listen to anyone. Consequently, the stakeholder process does not eliminate the need for governance oversight by the Comptroller Office, DPS, and the Legislature. I included suggestions to improve the stakeholder process as part of that oversight.

If NYSERDA provided a comprehensive explanation of all the emission reduction strategies in the Scoping Plan along with the expected emission reductions, anticipated costs, and potential sources of funding for their strategies then it would be possible to check that NYSERDA has addressed my compliance concerns via other programs. If NYSERDA published documentation of their response to submitted comments on their Operating Plan amendments, they could have explained their strategy for RGGI compliance. The lack of NYSERDA transparency precludes that reassurance.

I am uniquely qualified to comment on issues related to RGGI because I have been involved in the RGGI Program since it was first proposed, write about the details of the RGGI program, and continue to review and comment in stakeholder processes including the NYSERDA RGGI

Operating Plan stakeholder processes to this day. I also submitted comments on the Climate Act implementation plan and have written over 480 articles about New York's net-zero transition because I believe the ambitions for a zero-emissions economy embodied in the Climate Act outstrip available renewable technology so the net-zero transition will do more harm than good because of impacts on reliability, affordability, and environmental impacts.

The opinions expressed in this document do not reflect the position of any of my previous employers or any other organization I have been associated with, these comments are mine alone.

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