

Initial Impression of New York Cap and Invest Auction

On January 10, 2023 New York Governor Kathy Hochul [delivered her 2022 State of the State Address](#), outlining her plans for the future. This post describes my initial impressions of the announced plan to use a market-based program to raise funds for the Climate Leadership & Community Protection Act (Climate Act) implementation. I believe that this will be a future textbook example of how perverting the concept of a market-based pollution control program to fit the ideological purposes of a political agenda inevitably leads to failure.

I submitted [comments](#) on the Climate Act implementation plan and have [written over 270 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 such that the net-zero transition will do more harm than good. I also follow and write about the [details of the Regional Greenhouse Gas Initiative \(RGGI\)](#) market-based CO2 pollution control program for electric generating units in the NE United States. I have extensive experience with air pollution control theory, implementation, and evaluation having worked on every cap-and-trade program affecting electric generating facilities in New York including the Acid Rain Program, RGGI, and several Nitrogen Oxide programs. The opinions expressed in this post do not reflect the position of any of my previous employers or any other company I have been associated with, these comments are mine alone.

Climate Act Background

The Climate Act established a "Net Zero" target (85% reduction and 15% offset of emissions) by 2050. The [Climate Action Council](#) is responsible for preparing the Scoping Plan that outlines how to "achieve the State's bold clean energy and climate agenda." In brief, that plan is to electrify everything possible and power the electric grid with zero-emissions generating resources by 2040. The [Integration Analysis](#) prepared by the New York State Energy Research and Development Authority (NYSERDA) and its consultants quantifies the impact of the electrification strategies. That material was used to write a [Draft Scoping Plan](#) that was released for public comment at the end of 2021 and approved on December 19, 2022.

The [Final Scoping Plan](#) noted:

The Climate Action Council (Council) has identified the need for a comprehensive policy that supports the achievement of the requirements and goals of the Climate Act, including ensuring that the Climate . A well-designed policy would support clean technology market development and send a consistent market signal across all economic sectors that yields the necessary emission reductions as individuals and businesses make decisions that reduce their emissions. It would provide an additional source of funding, alongside federal programs, and other funding sources, to implement policies identified in this Scoping Plan, particularly policies that require State investment or State funding of incentive programs, including investments to benefit Disadvantaged Communities. Equity should be integrated into the design of any economywide strategy, prioritizing air quality improvement in Disadvantaged Communities and accounting for costs realized by low- and moderate income (LMI) New Yorkers. Pursuant to the Climate Act, a policy would be designed to mitigate emissions leakage. Finally, an economywide

strategy would be implemented as a complement to, not as a replacement for, other strategies in the Scoping Plan. A well-designed economywide program will bring about change in the market and promote equity in a way that does not unduly burden New Yorkers or with the global economy.

It is no surprise that the Scoping Plan recommends a market-based program. New York was a primary driver for RGGI and has consistently touted its success. However, the reality is that RGGI is [not as successful as they claim](#). I will explain why the experiences of RGGI should be warning signs for this program. If you are interested in a good overview of Hochul's cap and invest program I recommend James Hanley's article: [Cap and Invest or Cap and Divest](#).

Comments on the Draft Scoping Plan Investment-Wide Strategy

I submitted [comments](#) on the Draft Scoping Plan chapter on a market-based approach to provide an additional source of funding provide an additional source of funding for policies that "require State investment or State funding of incentive programs, including investments to benefit Disadvantaged Communities". I will summarize some of my concerns in this section.

My comments described general issues for a carbon pricing market-based approach. One major difference between controlling CO2 and other pollutants is that there are no cost-effective control technologies that can be added to existing sources to reduce emissions. Combine that with the fact that CO2 emissions are directly related to energy production, the result is that the primary way to reduce emissions is to reduce operations. Consequently, CO2 emission reductions require replacement energy production that can displace existing production. This necessarily increases costs to consumers and is why I believe carbon pricing will always be a regressive tax.

There are other practical reasons that carbon pricing will not work as theorized. Leakage is an insurmountable problem. A fundamental problem with all carbon pricing schemes is that funds decrease over time as carbon emissions decrease unless the carbon price is adjusted significantly upwards over time. The Regulatory Analysis Project (RAP) recently completed a relevant study: [Economic Benefits and Energy Savings through Low-Cost Carbon Management](#) for Vermont that concludes "carbon pricing alone will be a weak tool to deal with the realities of consumer behavior, our historic buildings infrastructure, rural settlement patterns, and the many barriers that working families and businesses face in choosing to invest in energy efficiency or other low-carbon options". Based on investment results for RGGI proceeds, the programs funded are not cost-effectively reducing emissions. The Climate Act mandate for funding in Disadvantaged Communities will exacerbate that issue because cost-effectiveness will not be a primary consideration.

In addition to my practical concerns "[A Practical Guide to the Economics of Carbon Pricing](#) by Ross McKittrick defines how carbon pricing is supposed to work in theory. His guide is at odds with the Final Scoping Plan for every point. He explains that "First and foremost, carbon pricing only works in the absence of any other emission regulations", but the cap and invest program proposed by Hochul is in addition to the emission regulations of the Climate Act itself. The Guide goes to note "another

important rule for creating a proper carbon-pricing system is to be as careful as possible in estimating the social cost of carbon". He argues that "whatever the social cost of carbon is determined to be, the carbon price must be discounted below it by the marginal cost of public funds (MCPF) — that is, the economic cost of the government raising an additional dollar of tax, on top of what is already being raised". The Scoping Plan does not even recognize the importance of this aspect of carbon pricing. He concludes: "There may be many reasons to recommend carbon pricing as climate policy, but if it is implemented without diligently abiding by the principles that make it work, it will not work as planned, and the harm to the Canadian economy could well outweigh the benefits created by reducing our country's already negligible level of global CO2 emissions." Substitute New York for Canada and I believe this describes this policy option.

Results of the Existing Cap and Invest Program

I previously mentioned that I have evaluated the RGGI program. This section describes the results of that work especially as they relate to the proposed program.

Since 2009 when the RGGI program started, I [found](#) that the cost per ton removed of the investment proceeds from RGGI auctions is \$818 per ton for the entire RGGI region. According to the latest NYSERDA [RGGI funding status report](#) the costs of the current programs are \$776.1 million, the net greenhouse gas emission savings are 1,656,198 tons and [that works out](#) to emission cost per ton removed of \$469. If all the RGGI administrative and operating costs are included another \$113 million is added to the total and the emissions cost per ton removed is \$537 per ton. It is not clear to me how much of this funding meets the criteria for disadvantaged community investments.

I evaluated current emissions relative to the 2030 Climate Act target of a 40% reduction by 2030. The following table lists the trajectory of observed, projected, and interpolated emissions consistent with the 2030 requirements. New York State has released the official GHG emissions for New York State for 2018 and 2019 and they are highlighted in gold. I estimated emissions for 2020 and 2021 based on observed RGGI emission levels. Note that they increase due to the shutdown of the Indian Point nuclear generating facility. The 2030 levels are fixed and are highlighted in rose. There are four columns that list the emissions trajectory necessary to get from the observed emissions to the target. The annual reduction in the trajectory is the difference between the observed emissions and the 2030 target divided by the number of years. For example, the estimated GHG emissions in 2021 were 378.69 million metric tons. If the emissions are reduced by 14.76 million tons per year, then in 2030 the emissions will meet the target of 245.87 million metric tons.

NYS GHG Emissions, Projections and 2030 Target (MMT CO₂e AR5 20 yr)

Observed values are highlighted (2020 and 2021 Estimated)

2030 Values are the Part 245 Limit for a 40% reduction

Intermediate values represent a linear reduction from Observed values to meet the 2030 mandated targets

Year				
2018	379.43			
2019	368.30	376.23		
2020	357.17	364.38	377.48	
2021	346.04	352.53	364.32	378.69
2022	334.91	340.68	351.16	363.93
2023	323.78	328.83	338.00	349.17
2024	312.65	316.98	324.84	334.42
2025	301.52	305.12	311.68	319.66
2026	290.39	293.27	298.51	304.90
2027	279.26	281.42	285.35	290.14
2028	268.13	269.57	272.19	275.39
2029	257.00	257.72	259.03	260.63
2030	245.87	245.87	245.87	245.87

The emissions reduction trajectory of 14.76 million tons per year is going to be a challenge. The following table lists the New York State GHG emissions (MMT CO₂e AR5 20 yr) by sector from the DEC emissions inventory. There have been years when the annual reductions have exceeded that trajectory but there have also been years when it went up by that much. RGGI has a three-year compliance period intended to smooth out the inter-annual variation. Whether the compliance period for the Climate Act program will do something similar is one of those details that remains to be worked out.

I think the fundamental issue that New York energy users and suppliers will have to deal with this year regarding this cap-and-invest program is the disconnect between the theory of cap and trade with what is proposed, the practical considerations necessary to make it work, and the preconceived notions of the environmental community.

The first concern is the schedule. The theory of market incentives is that raising the cost of carbon will let the market innovate to produce the least cost approach to provide carbon reductions. That makes the schedule problematic. It may not be possible for the innovation necessary to replace a system that took decades to build to coincide with the 27-year arbitrary schedule of the Climate Act net-zero by 2050 target. The other fundamental theoretical issue looms huge. The state is going to “invest” the proceeds. Government investments pick winners and losers and governments don’t have a good record in that regard.

New York State Greenhouse Gas emissions (MMT CO₂e AR5 20 yr) and Annual Change by Sector in the DEC Emissions Inventory

Year	Agriculture			Buildings			Electricity			Industry			Transportation			Waste			Total		
	Total	Delta	%	Total	Delta	%	Total	Delta	%	Total	Delta	%	Total	Delta	%	Total	Delta	%	Total	Delta	%
1997	15.22	0.21	1.4%	127.05	6.76	5.6%	91.15	7.41	8.8%	60.51	-1.36	-2.2%	102.17	1.23	1.2%	47.40	0.07	0.1%	443.50	14.32	3.3%
1998	15.78	0.56	3.6%	118.64	-8.41	-6.6%	94.60	3.45	3.8%	57.46	-3.05	-5.0%	104.32	2.15	2.1%	46.98	-0.42	-0.9%	437.78	-5.72	-1.3%
1999	16.15	0.38	2.4%	128.55	9.91	8.4%	102.31	7.71	8.1%	50.07	-7.39	-12.9%	105.38	1.06	1.0%	46.97	0.00	0.0%	449.44	11.66	2.7%
2000	15.92	-0.23	-1.4%	141.08	12.53	9.7%	101.88	-0.43	-0.4%	48.77	-1.30	-2.6%	108.11	2.73	2.6%	47.66	0.69	1.5%	463.42	13.99	3.1%
2001	15.82	-0.11	-0.7%	132.55	-8.53	-6.0%	94.75	-7.13	-7.0%	46.49	-2.28	-4.7%	109.92	1.81	1.7%	48.68	1.02	2.1%	448.21	-15.21	-3.3%
2002	16.34	0.53	3.3%	130.94	-1.60	-1.2%	93.50	-1.26	-1.3%	45.37	-1.11	-2.4%	111.05	1.13	1.0%	49.22	0.53	1.1%	446.42	-1.79	-0.4%
2003	16.72	0.37	2.3%	139.61	8.67	6.6%	92.48	-1.02	-1.1%	44.22	-1.15	-2.5%	113.34	2.29	2.1%	47.84	-1.38	-2.8%	454.20	7.78	1.7%
2004	16.67	-0.05	-0.3%	141.49	1.88	1.3%	92.94	0.47	0.5%	45.76	1.54	3.5%	114.59	1.25	1.1%	48.22	0.38	0.8%	459.67	5.46	1.2%
2005	16.78	0.11	0.7%	130.78	-10.71	-7.6%	97.86	4.91	5.3%	48.16	2.41	5.3%	116.72	2.13	1.9%	48.25	0.03	0.1%	458.55	-1.12	-0.2%
2006	16.83	0.05	0.3%	114.56	-16.22	-12.4%	89.75	-8.10	-8.3%	47.42	-0.74	-1.5%	117.89	1.16	1.0%	48.54	0.30	0.6%	435.00	-23.55	-5.1%
2007	17.00	0.17	1.0%	125.65	11.10	9.7%	95.71	5.96	6.6%	46.56	-0.86	-1.8%	114.24	-3.65	-3.1%	47.16	-1.38	-2.8%	446.34	11.34	2.6%
2008	17.32	0.31	1.9%	124.49	-1.17	-0.9%	89.30	-6.41	-6.7%	45.25	-1.31	-2.8%	110.30	-3.93	-3.4%	46.92	-0.25	-0.5%	433.58	-12.75	-2.9%
2009	16.92	-0.40	-2.3%	116.02	-8.47	-6.8%	76.19	-13.11	-14.7%	41.33	-3.92	-8.7%	108.31	-2.00	-1.8%	41.94	-4.97	-10.6%	400.70	-32.88	-7.6%
2010	17.86	0.94	5.6%	114.56	-1.46	-1.3%	85.62	9.44	12.4%	40.68	-0.65	-1.6%	108.01	-0.30	-0.3%	41.25	-0.69	-1.6%	407.99	7.29	1.8%
2011	18.15	0.29	1.6%	115.92	1.36	1.2%	78.16	-7.46	-8.7%	42.11	1.43	3.5%	117.93	9.92	9.2%	42.29	1.04	2.5%	414.56	6.57	1.6%
2012	18.46	0.31	1.7%	109.38	-6.54	-5.6%	76.62	-1.54	-2.0%	41.06	-1.05	-2.5%	117.27	-0.66	-0.6%	42.65	0.36	0.8%	405.43	-9.13	-2.2%
2013	18.33	-0.14	-0.7%	120.13	10.75	9.8%	72.39	-4.23	-5.5%	40.17	-0.89	-2.2%	117.16	-0.10	-0.1%	43.23	0.59	1.4%	411.41	5.97	1.5%
2014	18.91	0.58	3.2%	122.73	2.60	2.2%	70.21	-2.17	-3.0%	40.02	-0.15	-0.4%	116.70	-0.46	-0.4%	44.55	1.32	3.0%	413.13	1.72	0.4%
2015	20.49	1.58	8.3%	122.34	-0.38	-0.3%	65.80	-4.42	-6.3%	39.37	-0.65	-1.6%	114.34	-2.37	-2.0%	44.82	0.27	0.6%	407.16	-5.97	-1.4%
2016	21.20	0.71	3.5%	112.58	-9.76	-8.0%	64.73	-1.07	-1.6%	36.31	-3.06	-7.8%	111.03	-3.31	-2.9%	45.09	0.27	0.6%	390.94	-16.21	-4.0%
2017	21.19	-0.02	-0.1%	112.14	-0.44	-0.4%	51.50	-13.23	-20.4%	35.16	-1.15	-3.2%	107.25	-3.78	-3.4%	46.01	0.92	2.0%	373.25	-17.69	-4.5%
2018	21.72	0.54	2.5%	122.17	10.04	8.9%	56.87	5.37	10.4%	35.40	0.24	0.7%	106.18	-1.08	-1.0%	45.33	-0.68	-1.5%	387.68	14.43	3.9%
2019	21.21	-0.52	-2.4%	120.25	-1.93	-1.6%	50.85	-6.02	-10.6%	34.67	-0.74	-2.1%	106.92	0.75	0.7%	45.54	0.21	0.5%	379.43	-8.24	-2.1%

The second overall concern is the practical considerations necessary to make any market-based program work. At the top of that list, and again not our problem, is emissions monitoring. In the RGGI cap-and-invest program there were minor implementation issues because all the affected sources were already providing the data necessary to run the program. This cap-and-auction program includes distributors of heating and transportation fuels and large-scale emitters of greenhouse gasses outside the electric utility industry that are not in similar programs so they have to create a new reporting system. Every sector has the issue of weather-related variations so the three-year compliance period should be considered.

The biggest practical concern is the expected revenue target. The New York State value of carbon guidance cost ranges between \$121 per ton in 2020 and \$137 per ton in 2030. That could be used as the auction price target. Presumably the auction will use the same features as in RGGI to control the price.

The potential revenues using the emissions trajectory and the New York value of carbon yields a little over \$40 billion in 2024 and \$34 billion in 2030. According to the [Citizen's Budget Commission](#) New York State's personal income tax revenues were \$47.1 billion in state fiscal year 2015-2016. I cannot imagine that the DEC and NYSERDA will propose a cap-and-invest revenue scheme that is on the order of the leading source of tax revenue. So what is the alternative value and how will it be justified.

One possibility is to calculate the money needed to get the 14.76 million tons per year by multiplying that by the observed \$537 per ton reduction cost from RGGI investments. That total of \$7.9 billion divided by the 2025 emissions, 320 million tons, yields a target allowance cost of \$24.76. That is a more reasonable value that may enable the Hochul Administration to avoid legislation for the program.

The final concern is the response of the environmental community to market-based programs. As far as I can see they oppose these programs because evil industry is not punished enough. In order to push their notion that zero-risk pollution control approaches are the only consideration and there are no tradeoffs, they have a list of talking points. Emission trading programs create hot spots because some locations don't decrease their emissions as much as others. There is a persistent suspicion that somehow industry cheats on the emissions monitoring. Finally, they think that industry is getting windfall profits from these programs. As a result, more and more limitations are added to the program making it less and less efficient as a cost-effective control alternative. Hot spots, industry cheats they make money

There is an impression that because money is involved really does not understand the theory of

Investing in Disadvantaged Communities: Cap-and-invest will prioritize the disadvantaged frontline communities across New York State that have suffered from pollution and environmental injustice for far too long. The program will not allow high-emitting sources to utilize offsets that would allow them to further pollute and expand, but will instead be designed to ensure pollution burdens are reduced. Under Governor Hochul's leadership, at least 35 percent — and with a goal of 40 percent — of investments will directly benefit disadvantaged communities. These investments will fund crucial programs to improve air quality, reduce reliance on polluting power plants, retrofit green schools, and clean up our public transportation systems, among other vital efforts.

Many carbon trading programs allow the use of offsets or emission reductions in other sectors to enable compliance and that has been a target for exclusion. However, adding allowances to the system will undoubtedly be opposed by the professional environmental organizations.

I am not sure that eliminating offsets will have much of an effect on future compliance. On the other hand, the "vital" efforts that receive funding are going to be chosen on the basis of appearance and not cost-

effectiveness. There are 15 programs listed in the latest NYSERDA RGGI funding status report that have cost and GHG emission savings estimates. As noted above, the sum of the costs divided by the tons reduced is \$537 per ton, but the cost per ton reduced ranges from \$61 to 2,515 with a standard deviation of \$681. If programs are chosen in the upper end of the costs per ton reduced to favor politically connected constituencies then it will be more difficult to meet the aggressive schedule and ambitious annual reduction targets of the 40% reduction in GHG emissions by 2030 mandate.