Case 15-E-0302 - Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard.

Case 22-M-0149 - Proceeding on Motion of the Commission Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act.

Roger Caiazza Individual Filing

Caiazza Comments Submitted to the NYISO

Regarding the 2025-2044 System & Resource Outlook

May 18, 2026

On May 18, 2026, I submitted comments on the New York Independent System Operator update to the 2025-2044 System & Resource Outlook (Outlook). This filing puts those comments on the record of these cases because they illustrate an unacknowledged affordability challenge of the Climate Leadership and Community Protection Act (CLCPA).

I have extensive experience in two relevant areas: the Regional Greenhouse Gas Initiative (RGGI) and meteorological impacts on electric utility systems. The RGGI impact on the electric market should be addressed because of its impact on affordability. The direct cost of CO2 allowances is about $700 million but the total impact on the ratepayer is at least two to three times that figure based on how day-ahead auction pricing works. That difference includes windfall profits to generators without RGGI compliance obligations. The remaining points of emphasis in my submittal are also relevant to these proceedings because they illustrate impactful implementation issues. I have found that the current RGGI allowance cap trajectory likely means that RGGI could require generating unit shutdowns in 2032. I also explain why I believe that extreme winter weather event of January 23–February 9, 2026, should be incorporated into the Outlook.

The opinions expressed in this filing 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. The supporting evaluation spreadsheets are available upon request to NYpragmaticenvironmentalist@gmail.com.

Caiazza Comments on the 2025-2044 System & Resource Outlook

At the May 6, 2026, Transmission Planning Advisory Subcommittee meeting the NYISO presented an update to the 2025-2044 System & Resource Outlook (Outlook) that offered stakeholders the opportunity to provide feedback on the analyses planned. I am submitting these comments on the Outlook as a private citizen. The opinions expressed in this filing 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.

I have extensive experience in two relevant areas: the Regional Greenhouse Gas Initiative (RGGI) and meteorological impacts on electric utility systems. RGGI must be considered in the Outlook because I have found that the current allowance cap trajectory likely means that RGGI could require generating unit shutdowns in 2032. The RGGI impact on the electric market should be addressed. The direct cost of CO2 allowances is about $700 million but the total impact on the ratepayer is two to three times that figure based on how day-ahead auction pricing works. That difference includes windfall profits to generators without RGGI compliance obligations. I also explain why I believe that extreme winter weather event of January 23–February 9, 2026, should be incorporated into this Outlook.

These comments summarize findings in recent articles published at my Pragmatic Environmentalist of New York blog. The supporting evaluation spreadsheets are available upon request to NYpragmaticenvironmentalist@gmail.com.

RGGI Status

I recently published several articles describing RGGI issues that are relevant to the Outlook. I provided background information on the impact of the April 29, 2026 RGGI statement that Virginia was rejoining the program in the first article. In the days following, the futures market price of RGGI allowances nearly doubled, and the spot market cost also increased significantly. In response on May 8, the RGGI states issued a notice that they were monitoring the allowance market in response to a sharp increase in the secondary futures market price. This is relevant to the Outlook because it indicates that current and future allowance price, allowance availability, and general generation unit economics volatility is significantly greater than in the past.

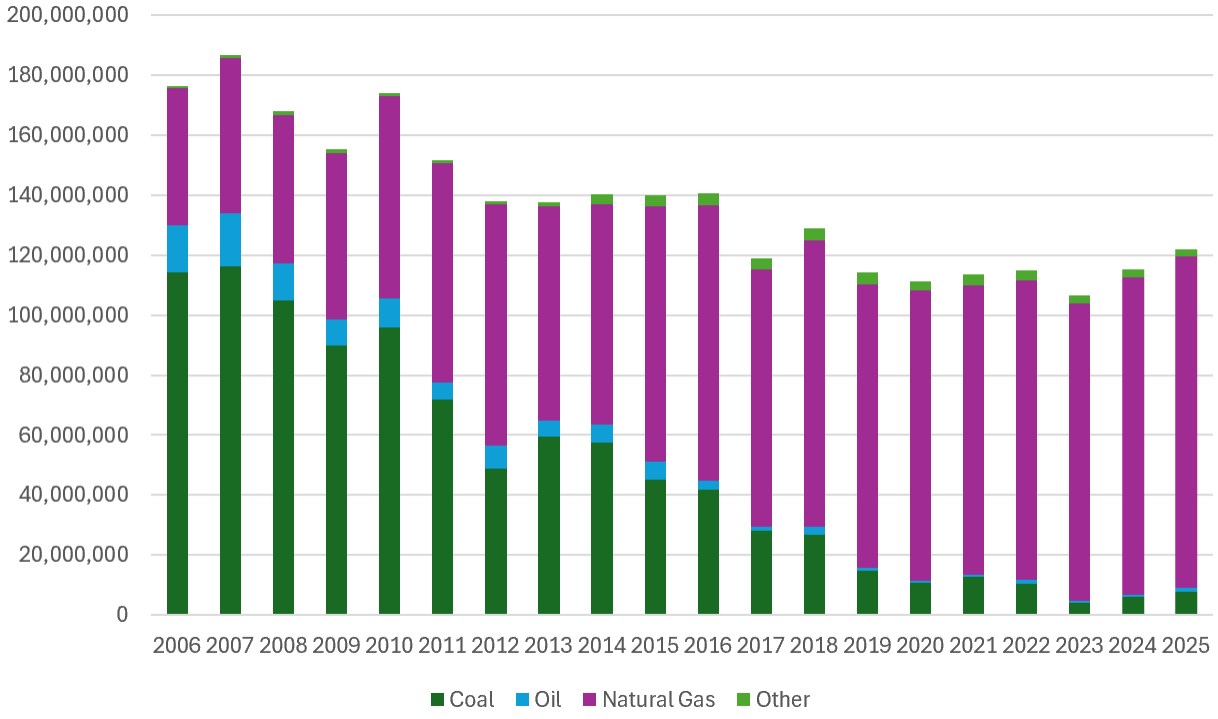
RGGI Future Allowance Availability

My second article compared historical emissions to the current RGGI allowance cap trajectory.

Figure 1 plots CO_2 emissions by fuel type across all current eleven RGGI states from 2006 to 2025. What you see is fuel switching was the primary cause for the observed reductions and that there are only minor opportunities for future fuel switching. When I analyzed the 2023 RGGI investment proceeds report, I estimated that only about 7.6% of observed emission reductions could be attributed to RGGI-funded projects. It is also notable that emissions have leveled off since 2019 despite RGGI auction proceeds of over $7 billion since 2021. Changes to Federal policy, supply chain issues, retirement of key nuclear assets, rejection of new permits to build new natural gas combined cycle units, and inflation coupled with load growth all indicate that significant near-term reductions in RGGI emissions are

unlikely. Therefore, for this analysis I assume that future emissions in RGGI will remain constant for the foreseeable future.

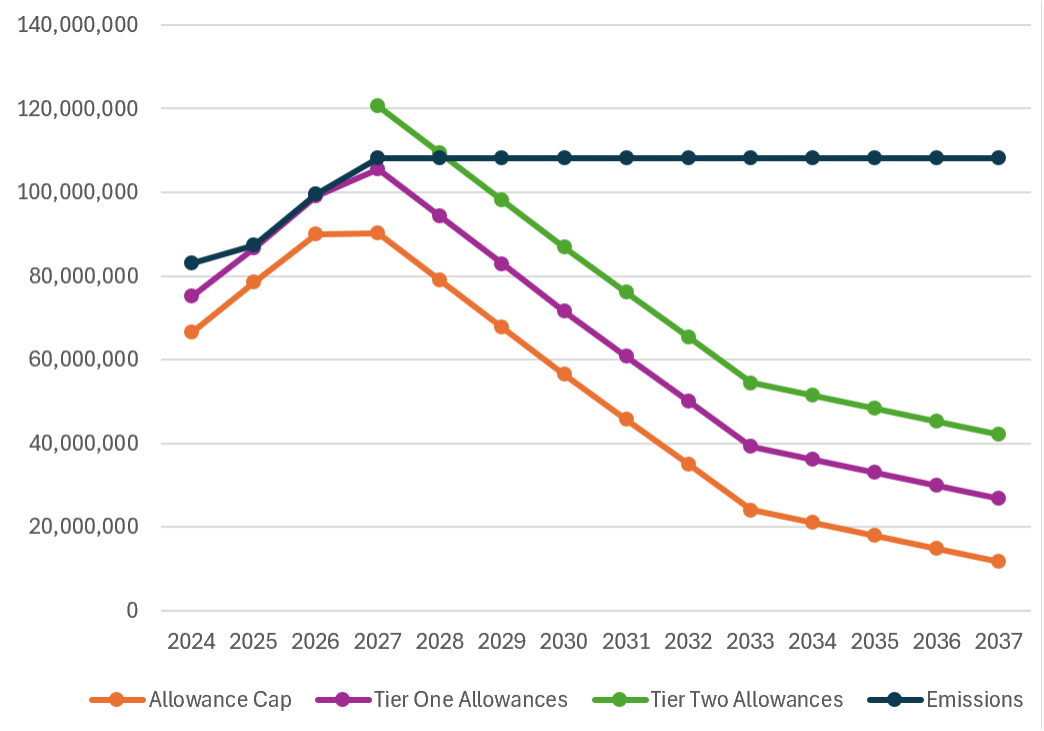
Figure 1: Eleven State RGGI CO_2 Emissions (short tons) for all Programs 2006–2025



The RGGI webpage describes the current allowance cap trajectory. The RGGI states developed the allowance cap trajectory so it would be consistent with state laws that require emissions to go to zero. The result is that allowance allotted the program decline by **approximately 10.5%** of the 2025 budget per year from 2027 through 2033.

Plotting the allowance cap trajectory and future emissions is instructive. To determine when the allowances will run out it is necessary to consider emissions and the allowance trajectory. For this analysis I assume that future emissions equal the average of the last three years. In Figure 2, I plotted the updated cap trajectory (orange), total updated regional cap if all allowances are released from Cost Containment Reserve (CCR) Tier 1 (purple), CCR Tier 2 (green) and emissions i(grey) for the RGGI states including Virginia. I assume that allowance prices will exceed the trigger for the CCR allowance release every year so that the CCR will be sold off in the first quarter in each year. Note that the addition of Viriginia makes no significant difference in the results. In 2028 the emissions become greater than the allowances added to the RGGI market, but the allowance bank must be considered to determine when there will be insufficient allowances.

Figure 2: RGGI Emissions and Cap Trajectories for RGGI States With Virginia



Allowance Availability

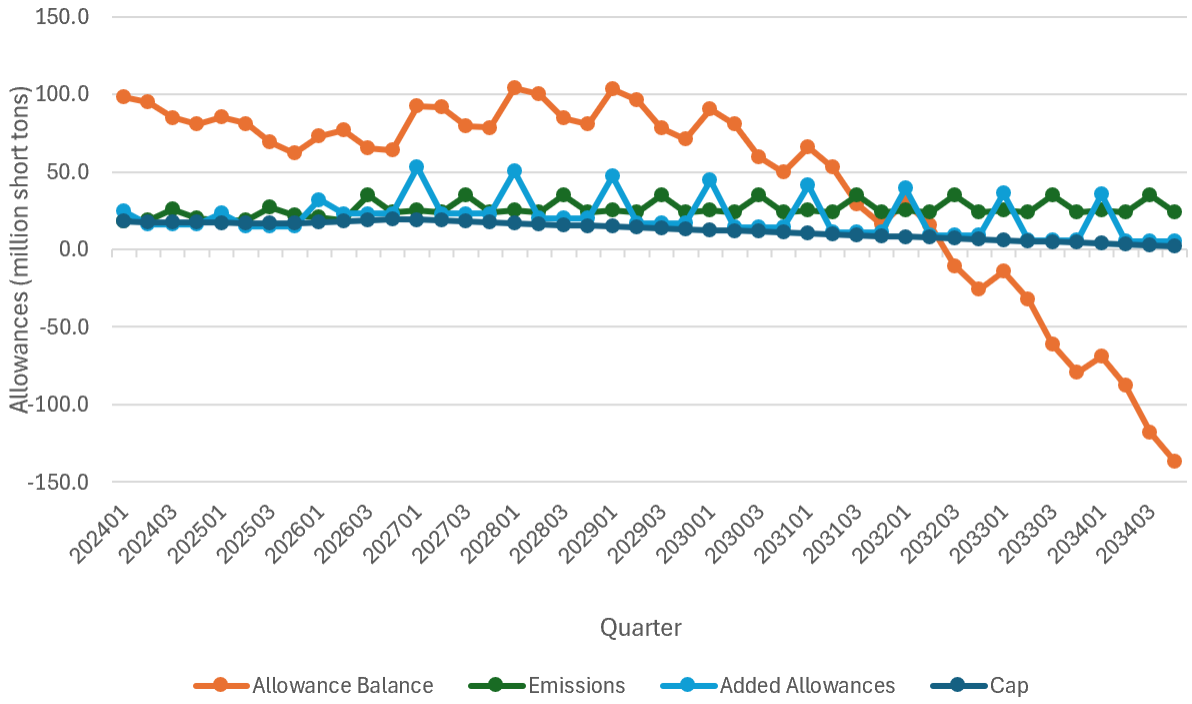
To determine when the allowances will run out it is necessary to consider emissions, banked allowances and when allowances are added to the market. RGGI does not provide a report that describes the status of the allowance bank, so I had to develop my own estimate. Potomac Economics provides independent market monitoring analysis of RGGI that provide the information needed to estimate the bank. The Quarterly Reports on the Secondary Market are released several weeks after the end of a quarter. The Quarter 4 2025 report includes a description of CO2 allowance holdings:

> *CO2 Allowance Holdings* – At the end of the fourth quarter of 2025:
>
> - There were 175 million CO2 allowances in circulation.
> - Compliance-oriented entities held approximately 125 million of the allowances in circulation (71 percent).
> - Approximately 142 million of the allowances in circulation (81 percent) are believed to be held for compliance purposes.

The allowance bank is simply the difference between allowances being added and emissions that subtract allowances. Allowance transactions occur on a quarterly basis, and I subtracted the emissions on a quarterly basis. Figure 3 plots the quarterly emissions (green), allowance cap (dark blue), added allowances (light blue) and allowance balance (orange). This analysis assumes that emissions remain constant and shows that as the allowance cap is reduced the bank of allowances eventually is exhausted. When the allowance balance is less than zero there are no longer sufficient permits to emit CO2 and affected units must shut down or end up out of compliance. This analysis shows that during

the third quarter of 2032 there are insufficient allowances for expected emissions. If there are no changes to RGGI, the Outlook must account for the potential that generating units will have to shut down to comply with the RGGI regulations.

Figure 3: Quarterly RGGI Allowance Balance, Emissions and Allowance Cap



RGGI Market Cost Adder

I was encouraged by electric system experts to write a post about the two effects of RGGI allowance prices on customer supply costs: the direct cost of the allowances themselves needed for each generating unit and the impact of the cost adder used by generating units in their bid prices. My third recent RGGI article estimated the impact of the cost adder relative to recent RGGI allowance price volatility.

I do not have access to data with short term resolution. Instead, I used annual values to estimate impacts. In 2025, EPA Clean Air Markets Program Division data indicated that statewide gross energy from New York RGGI units totaled 67,094.6 GWh, those units emitted 32,037,339 tons of CO2. The RGGI market monitor average quarterly RGGI auction price was $22.09 per ton and NYISO Gold Book Table III-2a reports total net New York energy of 132,182 GWh.

I understand that the RGGI cost adder is only included in market prices when the marginal unit emits CO2. Table 1 provides bounding estimates for costs to consumers. The first section, "Cost of Allowances for Annual Emissions," shows the direct cost of allowances to the affected units which equals annual emissions multiplied by the average auction price: 32,037,339 tons times $22.09 per ton, or about $708 million The effect of the NYISO market clearing-price adder that is passed through to ratepayers is

estimated in scenarios that represent system averages and specific equipment types. In each scenario I used observed heat rates and observed CO2 emission rates derived from EPA data to estimate an allowance-cost adder in dollars per MWh, which is then multiplied by total NYISO energy to estimate the statewide annual cost impact.

Table 1: 2025 New York State RGGI Unit Operating Characteristics Emissions, and RGGI Allowance Costs

Projection	Parameter	Value
Direct Cost of Allowances for Annual Emissions	Total RGGI Unit Gross Load (GWh)	67,095
	NYS RGGI Unit CO2 Emissions (tons)	32,037,339
	Average Quarterly RGGI Auction Price	$22.09
	Total Durect NYS RGGI Allowance Costs	$707,704,828
Annual Total	Gold Book Table III-2a Energy (GWh)	132,182
RGGI Heat Input Weighted Average Cost Added	NYS RGGI Unit Weighted Average Heat Rate (mmBtu/MWI	11.71
	NYS RGGI Unit Weighted Average CO2 Rate (tons/MWh)	0.77
	Average RGGI Allowance Price (¢/kWh)	$0.17
	RGGI cost impact for New York	$2,260,768,234
Modern CCGT Annual Cost of Allowances	Modern CCGT Heat Rate (mmBtu/MWh)	6.78
	Modern CCGT CO2 Rate (tons/MWh)	0.40
	Efficient RGGI Allowance Price(¢/kWh)	$0.09
	Efficient RGGI cost impact for New York	$1,163,586,274
Steam Boiler Annual Cost of Allowances	Steam Boiler Heat Rate (mmBtu/MWh)	10.00
	Steam Boiler CO2 Rate (tons/MWh)	0.59
	Steam Boiler RGGI Allowance Price(¢/kWh)	$0.13
	Steam Boiler RGGI cost impact for New York	$1,735,313,058
Old Combustion Turbine Annual Cost of Allowances	Old Combustion Turbine Heat Rate (mmBtu/MWh)	17.52
	Old Combustion Turbine CO2 Rate (tons/MWh)	1.04
	Old Combustion TurbineRGGI Allowance Price(¢/kWh)	$0.15
	Old Combustion Turbine RGGI cost impact for New York	$2,009,500,572

Using average 2025 heat input weighted input data for New York RGGI units, the " RGGI Heat Input Weighted Average Cost Added " scenario yields an estimated statewide cost impact of $2.26 billion, nearly three times the direct cost of purchasing allowances alone. If every fossil unit in New York were a modern state-of-the-art combined-cycle unit, represented here by the average of the Cricket Valley and Valley Energy Center units, the "Modern CCGT" scenario estimates costs would be $1.16 billion. A representative steam-boiler scenario yields about $1.74 billion. The worst-case "Old Combustion Turbine" scenario yields about $2.01 billion. The intent of the RGGI cost adder is to reflect the compliance cost but the difference includes windfall profits to generators without RGGI compliance obligations.

There are other windfall profits. All imports from RGGI units have embedded RGGI costs paid in the exporting state but also are paid the market price by New Yorker consumers. Imports from non-RGGI

units are free riders and gain the full market clearing price without any RGGI costs. So, all imported MWHs delivered to the grid are affected by RGGI costs. My analysis does not include these costs so I am underestimating the impact of the RGGI costs.

When the RGGI announcement that Virginia was going to rejoin the program was made, there was a price spike that approximately doubled the cost of RGGI futures. If futures prices are a good indicator of future allowance prices and that projection is realized, then all these cost estimates would roughly double.

There is another impact. The allowances proceeds available for investments are much less than the cost to consumers due to the electric market impact. In 2025 there were 20,902,887 New York adjusted allowances available and at an average cost of $22.09 that means that $461,797,031 was raised that can be invested for RGGI program objectives. These results show the RGGI revenue collections that can be used to reduce emissions and mitigate cost impacts are much less than what ratepayers are paying for the RGGI program. For all the talk of mitigating impacts to low- and middle-income consumers with RGGI proceeds these results show that regressive RGGI electric market prices likely exceed the benefits of those investments.

There is an affordability crisis in New York. As of December 2024, over 1.3 million New York households were behind on their energy bills by sixty days or more, collectively owing more than $1.8 billion. In response to the New York State Public Service Commission notice soliciting comments regarding a petition for a hearing to suspend or temporarily modify the Renewable Energy Program I demonstrated that the increase in the number of accounts in arrears from 2019 before enactment of the CLCPA and 2025 are statistically significant for statewide totals and four of ten utilities. I believe this is relevant to the NYISO and Outlook analyses because affordability must be a consideration.

I recommend that NYISO develop refined estimates of the electric market impacts to ratepayers caused by RGGI allowance prices, especially the potential for much higher prices due to market scarcity as the existing allowance bank declines. I suspect that the models the NYISO use could track all the market costs. Given the impact of these effects on consumer costs I request that NYISO report on the annual and peak market clearing price impacts of RGGI. On a related note, the models should also be able to track and report the subsidies for each generator. It would be useful to know the total cost of subsidies buried in market prices when market clearing prices are negative, but many facilities are collecting production-based subsidies.

2026 Extreme Winter Weather

The Winter 2025-2026 Cold Weather Operations presentation by the NYISO is an excellent summary of the conditions observed. I have been a utility meteorologist in New York since 1981 and am a member of the New York State Reliability Council's Extreme Weather Working Group (EWWG). I have closely followed the challenges associated with providing reliable electricity in a system that heavily relies on wind and solar resources during extended snowy, dark doldrums.

In March 2023, Judith Curry and I prepared a white paper titled "Historical Weather and Climate Extremes for New York" for the EWWG. We noted that there is substantial variability in seasonal temperatures and occurrence of temperature extremes on interannual, decadal, and multidecadal time scales. We also pointed out that the most recent 5-year period does not capture the most extreme temperature events that have been observed in the historical records. The report also included an appendix describing a possible worst-case scenario that identified a 15-day period from January 20 until February 3, 1961, that could turn out to be the worst-case cold wave.

I recommend that this winter's January 23–February 9, 2026, weather observations be included in Outlook analyses because the upper air pattern was similar for the 1961 event and this winter's event. Integrating the recent data will capture an extreme temperature event needed to address weather impacts on electric resource planning.

My primary concern is reliability planning related to weather-dependent generating resources. After retirement I started the Pragmatic Environmentalist of New York blog. I recently published a blog post that showed that this event proved that dispatchable emissions-free resources (DEFR) are necessary to achieve net-zero in New York. I relied on data from the NYISO presentation and New York fuel-mix load data from the NYISO Real-Time Dashboard and the January and February Operations Performance Metrics Monthly Reports. Using these data, I was able to estimate daily FTM solar, BTM solar, and wind energy production and capacity factors. I found that the snowstorm starting on January 23, followed by below-freezing temperatures, buried the BTM solar panels through February 4 that reduced solar output to negligible levels.

The results are relevant for the Outlook. I showed that proposals to replace peaking units with renewables and storage are impractical until DEFR is available. Using the liquid-fuel generation during the event as a proxy for peaking units, I showed that oil-fired units supplied roughly 2 million MWh over this period, while total renewable energy production was only 469,308 MWh. This illustrates the scale of firm backup currently needed and that oil-fired peaking units cannot be retired until firm, dispatchable backup is available.

The Outlook should address timing for DEFR support. Given that we do not yet know what DEFR resources will be commercially available before 2044, I believe that the Outlook should emphasize the importance of DEFR to the Climate Leadership and Community Protection Act (CLCPA) Public Service Law 66-P Renewable Energy Program. That program mandates renewable resources which, in my view, cannot fully achieve their reliability objectives unless DEFR resources are available before 2044.

Conclusion

I recommend the Outlook analyses address the issues I raised. Without changes to RGGI, there will be insufficient allowances to cover emissions well before 2044 because the RGGI allowance cap trajectory includes a 10.5% annual cap reduction while historical CO_2 emissions since 2019 have been essentially unchanged. Under current conditions, there is no realistic prospect that emissions can be reduced at the pace implied by the cap trajectory. The regulations must change, or the Outlook must explicitly address the implications of generating units shutting down to maintain compliance.

The 2026 extreme winter weather event represents conditions that must be addressed given the CLCPA mandates for renewable energy. I believe that the episode conclusively proves that DEFR technology is needed and could represent the bounding limit of how much is needed.

Finally, I understand that the implications of the RGGI cost adder have been discussed by NYISO stakeholders in the past. Given the affordability crisis, I believe that it is unacceptable to pay electric generators the cost of compliance for RGGI when they have no compliance obligations. At a minimum, NYISO should provide their best estimate of ratepayer impacts using their proprietary and fine resolution data.

Caiazza Background

I have been a practicing meteorologist for 50 years, was a Certified Consulting Meteorologist, and have B.S. and M.S. degrees in meteorology. My particular expertise is air pollution meteorology in the electric utility sector with a focus on meteorological and pollution measurements. However, when I joined Niagara Mohawk Power Corporation in 1981, I was the only meteorologist on staff. Until deregulation when I left the company I served as an in-house consultant for any meteorological issues including electric resource planning.

I also have a unique background with market-based emission reduction programs. 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 over the last 30 years including the Acid Rain Program, Regional Greenhouse Gas Initiative (RGGI) and several Nitrogen Oxide programs. The details of the RGGI program have been a focus on my blog since the I started it in 2017.