Caiazza Personal Comments on Benefits of Climate Action

Summary
The Draft Scoping Plan asserts that there will be benefits from the implementation of the Climate Act but provides no documentation to support that claim. These comments highlight the claims that must either be substantiated by analysis and documentation or removed from the final Scoping Plan.

These comments include my personal analyses of the potential effect of the Climate Act on global warming and global emissions both as an example of the analysis necessary to make claims and as a cautionary tale. The fact is that any expectation that the Climate Act will have any detectable effect on the severity of current or future climate change is mis-placed because the expected impact on global warming is an immeasurable 0.01°C by the year 2100. If you cannot measure the change in temperature there is no way you can detect a change in the purported effects of that temperature change.

In addition, when New York's emissions are considered in the context of global emissions it is unreasonable to expect that other jurisdictions will be encouraged to implement similar restrictions. In the first place, New York's emissions are less than one half of one percent of global emissions. At the same time, New York's 2020 Gross State Product (GSP) ranks ninth if compared to the Gross Domestic Product (GDP) of countries in the world. That ranking was achieved in no small part because New York has had access to abundant, reliable, and affordable energy for many years. Expecting that countries without our wealth will be encouraged to develop costly zero-emissions energy resources is naïve and immoral.

Chapter 2 Benefits of Climate Action
On page 7 the introductory paragraph claiming that there are benefits of Climate Act action states:

> Climate change is adversely affecting economic well-being, public health, natural resources, and the environment of New York. The severity of current climate change and the threat of additional and more severe change will be affected by the actions undertaken in New York and other jurisdictions to reduce GHG emissions: such actions will have an impact on global GHG emissions and will encourage other jurisdictions to implement complementary GHG reduction strategies by providing an example of how such strategies can be implemented. Climate change especially heightens the vulnerability of Disadvantaged Communities, which often bear disproportionately greater environmental and socioeconomic burdens as well as legacies of racial and ethnic discrimination. Although substantial GHG emissions reductions are necessary to avoid the most severe impacts of climate change, complementary adaptation measures will also be needed to address those risks that cannot be avoided.

There are two unsubstantiated assertions in this paragraph. The first is "the severity of current climate change and the threat of additional and more severe change will be affected by the actions undertaken in New York" and the second is "such actions will have an impact on global GHG emissions and will encourage other jurisdictions to implement complementary GHG reduction strategies by providing an example of how such strategies can be implemented". Both statements must either be backed up with analysis and documentation in the final Scoping Plan or removed from the text.

Potential Climate Act Effects on Global Warming
New York State has never estimated the effect on global warming for any greenhouse gas emission reduction program or in any decision on fossil fuel infrastructure permits. In order to claim that there

are any benefits for Climate Act action the final Scoping Plan must include an analysis showing the potential effects of New York GHG emission reductions on global warming.

These comments explain how I evaluated the effect on global warming. I show that when the Climate Act eliminates New York's greenhouse gas emissions the effect on global warming will not be measurable. The expected impact on global warming is only 0.01°C by the year 2100. More importantly, New York's emissions will be subsumed in a matter of months by countries in the developing world building their energy systems with reliable and affordable fossil fuels. To deny those countries the benefits of plentiful electricity is immoral. The final Scoping Plan must provide its own analysis and demonstrate that New York's actions will have any effect.

Analysis Approach

For this analysis I simply adapted the calculations in Analysis of US and State-By-State Carbon Dioxide Emissions and Potential "Savings" In Future Global Temperature and Global Sea Level Rise to estimate the potential effect. This analysis of U.S. and state by state carbon dioxide 2010 emissions relative to global emissions quantifies the relative numbers and the potential "savings" in future global temperature and global sea level rise. These estimates are based on MAGICC: Model for the Assessment of Greenhouse-gas Induced Climate Change so they represent projected changes based on the Intergovernmental Panel on Climate Change estimates. All I did in my calculation was to pro-rate the United States impacts by the ratio of different New York inventory emissions divided by United States emissions to determine the effects of a complete cessation of all New York's emissions.

Global Warming Savings

The following table shows that for the Climate Act Part 496 inventories there would be a reduction, or a "savings," of between approximately 0.0097°C and 0.0081°C by the year 2100. To give you an idea of how small these temperature changes are consider changes with elevation and latitude. Generally, temperature decreases three (3) degrees Fahrenheit for every 1,000-foot increase in elevation above sea level. The projected temperature difference for all the greenhouse gases is the same as a 39-inch change. The general rule is that temperature changes three (3) degrees Fahrenheit for every 300-mile change in latitude at an elevation of sea level. The projected temperature change is the same as a change in latitude of less than a mile.

Analysis of Carbon Dioxide Emissions and Potential "Savings" in Future Global Temperature and Global Sea Level Rise from Complete Cessation of New York State GHG Emissions

			US Observed 2010 GHG GWP-100	Part 496 1990 GHG GWP-100
CO2	Emissions Million Metric Tons		5631.3	317.92
	Percentage of Global Total		17.88%	1.0094%
Time (Days) Until Total Emissions Subsumed	Completed in 2019 & Under Construction		11,946	674
	Under Construction		20,252	1,143
	Completed in 2019		29,126	1,644
Temperature "Savings"	Deg C	2050	0.0830	0.00469
		2100	0.1720	0.00971
Sea-Level "Savings"	(cm)	2050	0.6000	0.03387
		2100	1.8000	0.10162
Relative impacts	Elevation (inches)		688.00	38.84
	Distance (feet)		90,816	5,127
	Distance (miles)		15.60	0.88

Sea-level rise is often considered an inevitable consequence of global warming. Similar to the temperature change the effect on sea level is so small (0.1 cm in 2100) that it is imperceptible.

Developing World Emissions

The Climate Act should also be considered relative to the rest of the world. According to the China Electricity Council, about 29.9 gigawatts of new coal power capacity was added in 2019 and a further 46 GW of coal-fired power plants are under construction. If you assume that the new coal plants are super-critical units with an efficiency of 44% and have a capacity factor of 80%, the reductions provided by the CLCPA greenhouse gas inventory will be replaced by the added 2019 Chinese capacity in less than two years or four and a half years if the 2019 capacity and the units under construction are combined.

New York Emissions in Context

Ultimately the expectation that New York's actions could have any effect on global warming fails simply because our emissions are so small relative to global emissions. Climate Act advocates frequently argue that New York needs to take action because our economy is large. I analyzed that claim recently and summarized the data here. The 2020 Gross State Product (GSP) ranks ninth if compared to the Gross Domestic Product (GDP) of countries in the world. However, when New York's GHG 2016 emissions are compared to emissions from other countries, New York ranks 35th. More importantly, a country's emissions divided by its GDP is a measure of GHG emission efficiency. New York ranks third in this category trailing only Switzerland and Sweden.

There is no question that New York is rich but is not a major player in global GHG emissions. In fact, New York's share of global GHG emissions is 0.45% in 2016, the last year when state-wide emissions consistent with the methodology used elsewhere are available. In 1990 New York's share of global GHG emissions was 0.77% so the state's programs to reduce emissions have been working.

In order to include the claims found in the Draft Scoping Plan that New York's actions will influence global emissions the final version has to provide documentation Based on my evaluation of CO2 and GHG emissions data for the world's countries (consolidated data here) I do not agree that New York's "leadership" will convince anyone to follow us down a road of energy unaffordability and unreliability. The trend results indicate that the year-to-year trend in GHG emissions was positive 21 of 26 years and for CO2 emissions was positive 24 of 30 years. The five-year average of the GHG year-to-year trends was positive every year between 1995 and 2016, the last year GHG emissions were available. The five-year average of the CO2 year-to-year trends was positive every year between 1995 and 2020 except for the 2020 COVID year. In addition, excluding COVID year 2020, the smallest five-year average annual global GHG or CO2 emissions increase was 0.5%. New York's share of global GHG emissions is 0.45% in 2016 so this means that global annual increases in GHG emissions have always been greater than New York's total contribution to global emissions.

Conclusion

These comments show that any expectation that the Climate Act will have any detectable effect on the severity of current or future climate change is mis-placed because the expected impact on global warming is an immeasurable 0.01°C by the year 2100. If you cannot measure the change in temperature, then there is no way you can expect to detect a change in the purported effects of that temperature change. What evidence does the Climate Action Council have that runs contrary to this assessment?

In addition, when New York's emissions are considered in the context of global emissions it is unreasonable to expect that other jurisdictions will be encouraged to implement similar restrictions. In the first place, New York's emissions are less than one half of one percent of global emissions. At the same time, New York's 2020 Gross State Product (GSP) ranks ninth if compared to the Gross Domestic Product (GDP) of countries in the world. That ranking was achieved in no small part because New York has had access to abundant, reliable, and affordable energy for many years. Expecting that countries without our wealth will be encouraged to develop costly zero-emissions energy resources is naïve and immoral.

I prepared this comment because I believe that the data shows that the assertions that New York's Climate Act will have any meaningful effect on global warming or global GHG emissions is wrong. I am a retired meteorologist who started working for Niagara Mohawk in 1981 and have continued to work in the New York electric generating industry continuously since then. I have written extensively on implementation of the Climate Act because I believe the ambitions for a zero-emissions economy outstrip available renewable technology such that it will adversely affect reliability and affordability, risk safety, affect lifestyles, and will have worse impacts on the environment than the purported effects of climate change in New York. The opinions expressed in this comment 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.

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