Caiazza Personal Comments on Section 2.1 Scientific Evidence of Our Changing Climate

Summary
At a recent Climate Action Council meeting one of the council members noted that very few comments were presented at the public hearings questioning the necessity of greenhouse gas emission reduction action inherent in the Climate Leadership and Community Protection Act (Climate Act). I believe that was primarily because presenters were only given two minutes so they had to pick their battles. These comments have been prepared for the record based on my long experience in air pollution meteorology, my education and direct experience with many aspects of New York climate. I believe that until specific climate catastrophes can be shown to be the result of anthropogenic greenhouse gas emissions using observational data, that there is no existential climate threat that can be alleviated by reducing New York emissions.

In these comments I refute many of the claims made in Section 2.1 of the Draft Scoping Plan. If documentation is not included that explicitly supports the claims made and contradicts in these comments and the attachment, then I think those claims should be removed from the final Draft Scoping Plan.

Introduction
The Draft Scoping Plan presents the scientific evidence for changing climate in simple unequivocal terms. The reality is different. Dr Judith Curry describes the complexity and uncertainty of climate change much differently. I present her short summary as the introduction to my comments on this section of the Draft Scoping Plan because I agree with everything she says.

> Let me start with a quick summary of what is referred to as the 'climate crisis:'
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> Its warming. The warming is caused by us. Warming is dangerous. We need to urgently transition to renewable energy to stop the warming. Once we do that, sea level rise will stop and the weather won't be so extreme.
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> So what's wrong with this narrative? In a nutshell, we've vastly oversimplified both the problem and its solutions. The complexity, uncertainty, and ambiguity of the existing knowledge about climate change is being kept away from the policy and public debate. The solutions that have been proposed are technologically and politically infeasible on a global scale.
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> Specifically with regards to climate science. The sensitivity of the climate to a doubling of carbon dioxide has a factor of three uncertainty. Climate model predictions of alarming impacts for the 21st century are driven by an emissions scenario, RCP8.5, that is highly implausible. Climate model predictions neglect scenarios of natural climate variability, which dominate regional climate variability on interannual to multidecadal time scales. And finally, emissions reductions will do little to improve the climate of the 21st century; if you believe the climate models, most of the impacts of emissions reductions will be felt in the 22nd century and beyond.
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> Whether or not warming is 'dangerous' it is an issue of values, about which science has nothing to say. According to the IPCC, there is not yet evidence of changes in the global frequency or intensity of hurricanes, droughts, floods or wildfires. In the U.S., the states with by far the largest population growth are Florida and Texas, which are warm, southern states. Property

along the coast is skyrocketing in value. Personal preference and market value do not yet regard global warming as 'dangerous.'

Climate change is a grand narrative in which manmade climate change has become the dominant cause of societal problems. Everything that goes wrong reinforces the conviction that that there is only one thing we can do prevent societal problems – stop burning fossil fuels. This grand narrative misleads us to think that if we solve the problem of manmade climate change, then these other problems would also be solved. This belief leads us away from a deeper investigation of the true causes of these problems. The end result is narrowing of the viewpoints and policy options that we are willing to consider in dealing with complex issues such as public health, water resources, weather disasters and national security.

Does all this mean we should do nothing about climate change? No. We should work to minimize our impact on the planet, which isn't simple for a planet with 7 billion inhabitants. We should work to minimize air and water pollution. From time immemorial, humans have adapted to climate change. Whether or not we manage to drastically curtail our carbon dioxide emissions in the coming decades, we need to reduce our vulnerability to extreme weather and climate events.

With regards to energy. All other things being equal, everyone would prefer clean over dirty energy. However, all other things are not equal. We need secure, reliable, and economic energy systems for all countries in the world. This includes Africa, which is currently lacking grid electricity in many countries. We need a 21st century infrastructure for our electricity and transportation systems, to support continued and growing prosperity. The urgency of rushing to implement 20th century renewable technologies risks wasting resources on an inadequate energy infrastructure and increasing our vulnerability to weather and climate extremes.

How the climate of the 21st century will play out is a topic of deep uncertainty. Once natural climate variability is accounted for, it may turn out to be relatively benign. Or we may be faced with unanticipated surprises. We need to increase our resiliency to whatever the future climate presents us with. We are shooting ourselves in the foot if we sacrifice economic prosperity and overall societal resilience on the altar of urgently transitioning to 20th century renewable energy technologies.

We need to remind ourselves that addressing climate change isn't an end in itself, and that climate change is not the only problem that the world is facing. The objective should be to improve human well being in the 21st century, while protecting the environment as much as we can.

Scientific Evidence of Our Changing Climate

In general, the underlying premise in all the New York legislative and regulatory initiatives and the Draft Scoping Plan is that there is a climate crisis, that the effects of climate change are observable today, and that changes in greenhouse gas concentrations due to humans are responsible for the observed climate

changes. The politicians and regulators who prepare the rationales that climate change needs to be addressed frequently confuse weather and climate.

According to the National Oceanic and Atmospheric Administration's National Ocean Service "Weather reflects short-term conditions of the atmosphere while climate is the average daily weather for an extended period of time at a certain location." The referenced article goes on to explain "Climate is what you expect, weather is what you get." Also keep in mind that the standard climatological average is 30 years. In order to think about a change in today's climate averages you really should at least compare the current 30 years against the previous 30 years. In order to get a trend, you need to look at as much data as possible. On the face of it that might seem easy but the reality is that the conditions for a representative trend are difficult to achieve. Ideally you need to use the same instruments, the same methodology, and keep the conditions around the observing location the same. No recent New York legislative or regulatory description of climate change impacts has presented any claims that make the distinction between weather and climate so all their claims are suspect. The Draft Scoping Plan description of four recent hurricane events does not explain how these events are part of any climatological trends. The final Scoping Plan document must make that distinction in this paragraph.

However, this is not a simple analysis. Dr. William Briggs shows that attempts to blame extreme weather on human-caused global warming are "overconfident and probably wrong". He explains that the first problem is how to define natural because "some have the curious and false idea that earth's climate never changed before mankind began 'interfering' with it." Those people reason that the industrial revolution changed the environment due to man's interference starting on the order of a hundred years ago. Briggs argues:

> Now it is true that man, like every other creature, influences the climate and the environment to some extent. It is impossible for any creature, man included, not to have an effect. After all, every living thing is part of the environment. There is therefore no 'natural' state of the climate, defined as one operating without man's influence.

Briggs explains the problems trying to attribute human-caused effect to weather and climate. No matter how you estimate that potential effect it is impossible to independently check that estimate. The primary tool used today to estimate effects is a climate model. In order to trust those models Briggs points out that "they first have to demonstrate forecast skill" and "if they can't, or they are inaccurate, they can't be trusted". Finally, he explains that "we might pick a date and say all observations before it are 'natural' and all after are tainted by 'climate change'. But this is not proof man caused the differences. It is mere assumption." He concludes that "climate-change event attribution studies rely on all these kinds of guesses and claims. As such, they are either incorrect or are far too certain." How will the final Scoping Plan address these concerns?

The first paragraph of Section 2.1 in the Draft Scoping Plan suggests that because there have been some recent hurricane impacts that climate change consequences are occurring now:

> The consequences of a changing climate are not just a future concern, they are here. New Yorkers have felt the devastation from several extreme weather events in recent years:
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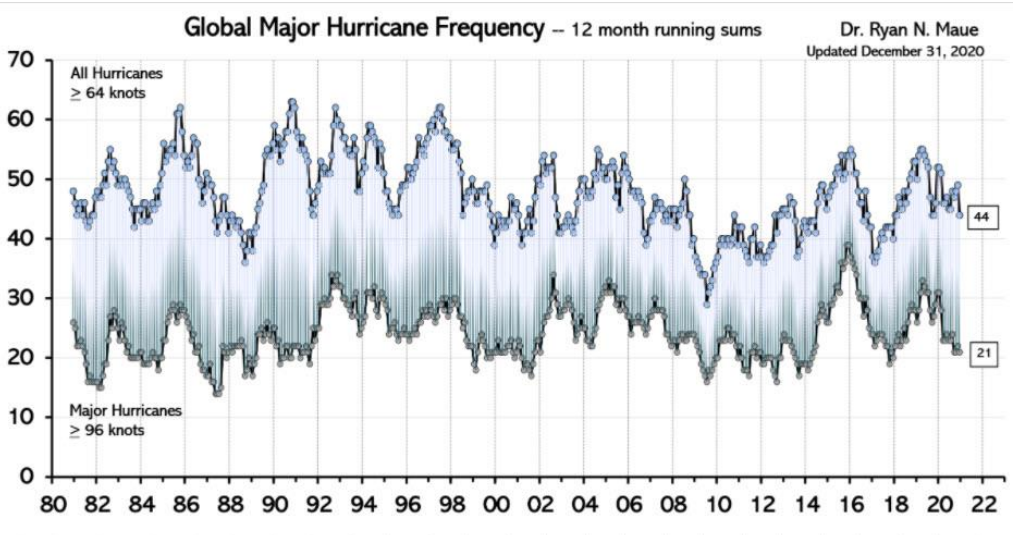
> - Historic flooding from Hurricane Ida in 2021 not only left lasting damage to the Gulf Coast but also devastated the Northeast. The National Weather Service issued its first flash flood

emergency warning for parts of northeastern New Jersey and its second ever flash flood emergency for New York City.

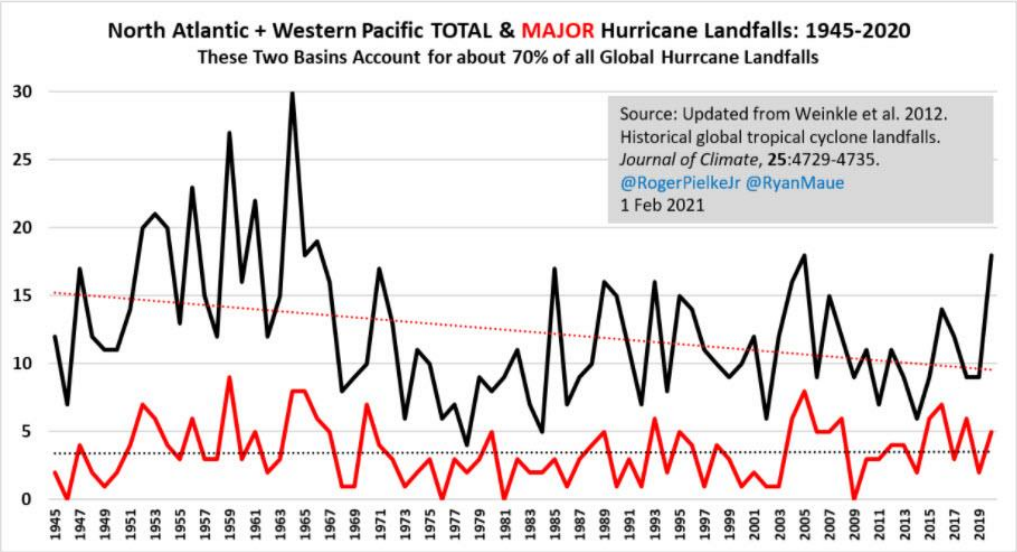
- Tropical Storm Isaias left over 800,000 New Yorkers without power in 2020, with high winds causing damage to critical infrastructure.
- In 2012, Superstorm Sandy killed dozens and left hundreds of thousands of New Yorkers without power. It brought storm surges over 13 feet high and devastated many parts of New York City. The Federal Emergency Management Agency spent over $25 billion on recovery efforts in New York and New Jersey in the five years after Sandy.
- In 2011, Tropical Storm Irene caused damage across many regions of the State, flooding main streets, washing out roads, overwhelming wastewater treatment plants, and leaving hundreds of thousands without power. Not two weeks later, Tropical Storm Lee came through New York and overwhelmed communities still dealing with the aftermath of Irene.

With respect to just Hurricane Ida the text needs to be revised to reflect the following information. I followed the forecasts of the remnants of Ida as it slogged north and the east out to sea. Every forecaster was warning that heavy rains were likely in the New York City area and coupled with already saturated grounds that flooding was likely. Cliff Mass described the weather as it hit the area and noting that New York's Central Park had a record of 3.15 inches in an hour. He explains that hurricane remnants, known as extratropical cyclones, combine strong upward motions with large amounts of tropical moisture. This combination causes heavy rains and flooding. His article also makes that point that many of the problems in New York City could have been prevented with better communication. The fact that this was the first flash flood emergency warning was primarily due to the fact that is new forecasting product not that the this was an unprecedented event. In fact an evaluation of past precipitation data shows that the storm isn't an example of climate change, Finally, Joe Bastardi explains that there have been many instances of worse hurricane impacts in the Northeast. In my work every extreme weather event I have evaluated that was claimed as anecdotal proof of climate change has not been supported by close examination of climate records. The final Scoping Plan needs to provide better documentation to make the claims in this section.

New York was impacted by several hurricanes in recent years and that fact is used as "proof" that the climate is changing. However actually reviewing the data shows otherwise. Dr. Ryan Maue compiles data on the frequency of hurricanes across the globe and has found no trend.



Roger Pielke summarized hurricane landfalls and found a trend of decreasing landfalls since the early 1960's.



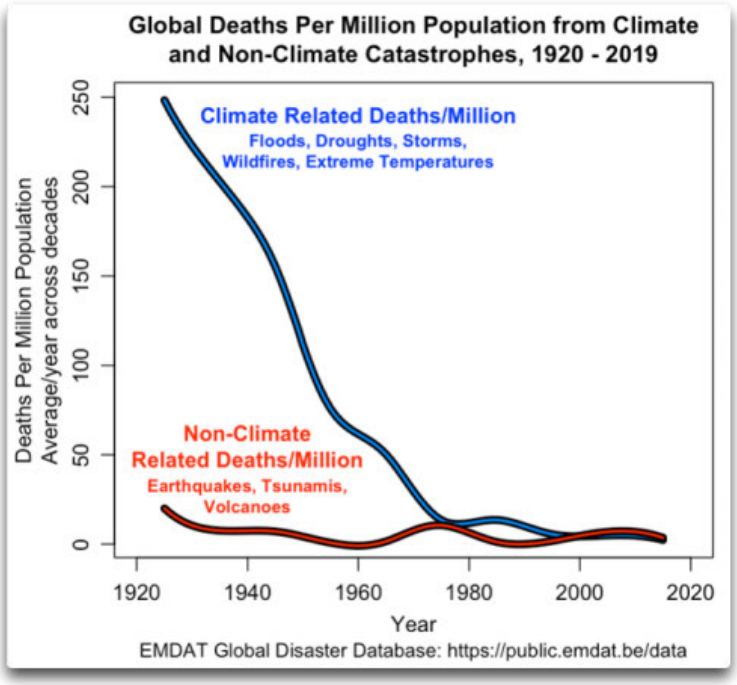
There ae no trends in hurricane activity. NOAA's Geophysical Fluid Dynamics Laboratory in Princeton NJ has concluded:

> "In summary, it is premature to conclude with high confidence that increasing atmospheric greenhouse gas concentrations from human activities have had a detectable impact on Atlantic basin hurricane activity, although increasing greenhouse gases are strongly linked to global warming…Human activities may have already caused other changes in tropical cyclone activity that are not yet detectable due to the small magnitude of these changes compared to estimated natural variability, or due to observational limitations".

The next paragraph in Section 2.1 in the Draft Scoping Plan claims large global impacts:

> The World Meteorological Organization found that in the 50-year period from 1970 to 2019, the number of disasters worldwide increased by a factor of five, and economic losses due to weather, climate, and water extremes have increased sevenfold. Scientific consensus is represented by the works of notable international, national, and local scientific institutions. Through their assessments, they determine the current state of knowledge on climate change, identify consensus, and outline knowledge gaps where further research is necessary to understand the full ramifications of impacts.

These claims have to be considered in the context of global death rates from climate catastrophes that show a different picture of the climate impacts. There is an attachment to these comments by Willis Eschenbach that has a series of similar graphs that all show a contrary opinion to what is expressed here. The final Scoping Plan should be revised to show that there are many indications that climate impacts on society are not universally negative



The next paragraph in Section 2.1 in the Draft Scoping Plan describes some of the projected impacts:

> New York's geographic and socioeconomic diversity will lead to a wide range of experienced climate driven impacts. Warming trends and incidences of intense heat waves will contribute to greater localized heat stresses; heavy rainfall events that exacerbate localized flooding will continue to impact food production, natural ecosystems, and water resources; and sea-level rise threatens sensitive coastal communities and ecosystems. Climate-driven impacts are magnified when accounting for New York's most vulnerable populations, who are often disproportionately affected and on the front lines of climate change. Women, femmes, youth, and children in poverty commonly face higher risks and greater burdens from the impacts of climate change.

This paragraph is a good example of the Draft Scoping Plan's tendency to make unsubstantiated claims. Here are some responses to those claims from a series of fact checks by Joseph S. D'Aleo. sHeat Waves – have been decreasing since the 1930s in the U.S. and globally. Droughts and Floods – there has no statistically significant trends. Sea level – the rate of global sea level rise on average has fallen by 40% the last century. Where today, it is increasing – local factors such as land subsidence are to blame. See how sea level trends are being adjusted here. The final Scoping Plan either has to document the source of its claims or remove them from the document.

The next paragraph in Section 2.1 in the Draft Scoping Plan describes the international effort to evaluate climate change impacts.

> New York is feeling the impacts of a global issue. The Intergovernmental Panel on Climate Change (IPCC) is a body established by the World Meteorological Organization and the United Nations to assess scientific, technical, and socioeconomic information relevant for understanding climate change, its potential impacts, and options for adaptation and mitigation. The IPCC is undergoing its

> Sixth Assessment cycle, with the recent release of the Working Group 1 report Climate Change 2021: The Physical Science Basis. The entirety of the Sixth Assessment Report (AR6) will be released in 2022. Since the IPCC's Fifth Assessment Report (AR5), released in 2014, the scientific community has made significant strides in simulation modeling, analyses, and understanding.

There is some missing context in this paragraph. The AR6 report mentioned in this paragraph is an overview summary of material. It was not written by the relevant technical experts. Consequently, the conclusions may not necessarily supported by the AR6 report due out later this year. Dr. Steven Koonin's "Unsettled: What Climate Science Tells Us, What It Doesn't, and Why It Matters" translates the IPCC scientific reports into plain English and explains why a more reasoned approach to climate change is more appropriate. I described a presentation on his work late last year. Koonin's concludes that "precipitous climate action can be much more dangerous than any climate change you can imagine. The mis-representation of the actual contents of the IPCC work in this paragraph should be revised in the final Scoping Plan.

There also is a United States parallel effort as described here:

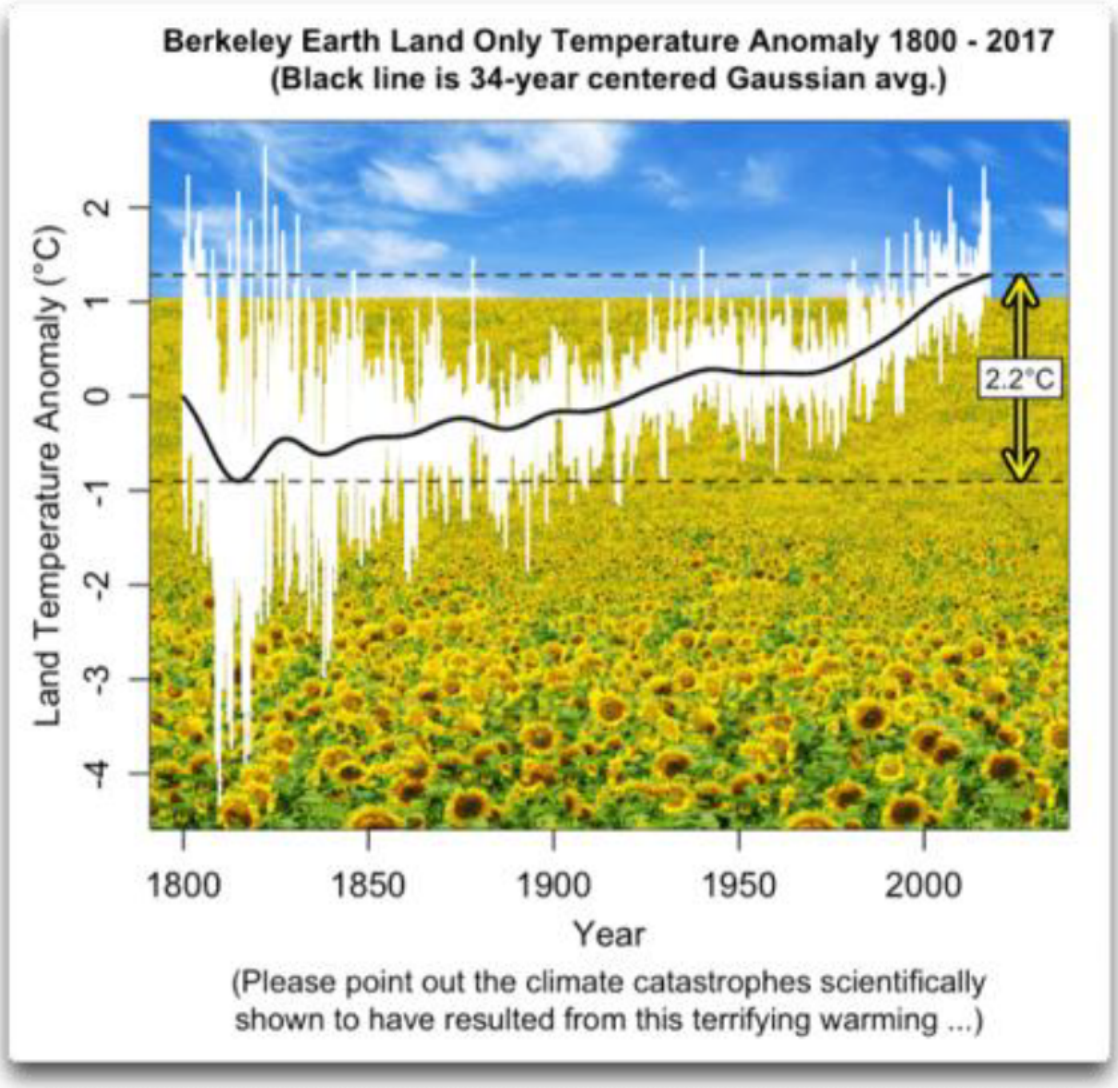
> The U.S. Global Change Research Program is currently developing its fifth National Climate Assessment, with an anticipated delivery in 2023. The fourth assessment, released in 2017, states, "thousands of studies conducted by researchers around the world have documented changes in surface, atmospheric, and oceanic temperatures; melting glaciers; diminishing snow cover; shrinking sea ice; rising sea levels; ocean acidification; and increasing atmospheric water vapor."

Scientific validity is not determined by votes. All those changes may be occurring but the relevant question in the context of the Draft Scoping Plan is why. If those changes are due to natural variability then this entire effort is a waste of time.

The final paragraph in Section 2.1 in the Draft Scoping Plan claims that reductions are necessary:

> According to both the U.S. Global Change Research Program and the IPCC, substantial reductions in greenhouse gas (GHG) emissions will be required by mid-century in order to limit the global average increase in temperature to no more than 2°C (and ideally 1.5°C), thus minimizing the risk of severe impacts from climate change.

The attachment includes the following graph that shows that temperatures according to this data base have already exceeded the dreaded 2°C. The other information in the attachment shows that there have been no cataclysmic consequences.



I am a retired air pollution meteorologist with over 45 years experience. Ultimately greenhouse gas emissions and their effect on climate is an air pollution problem so I felt it was necessary to submit these comments on the fundamental rationale of the Climate Act that we have to act because there is a climate emergency. The opinions expressed in this document 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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