**Testimony by Mark Schaeffer on Chapter 13 of Draft Scoping Plan - Electricity**

**To New York State Climate Action Council July 1 2022**

I am a member of the core group of People of Albany United for Safe Energy (PAUSE), the affiliate in the Capital Region of the international movement 350.org1. I am testifying as an individual.  I am also a member of the Citizen Action of New York State Board, the Policy Development Committee of the New York Renews coailition, and Sheridan Avenue Alliance for Renewable Energy, and support the testimony of those organizations. I studied energy and environmental policy in graduate school in the 1970s, worked for the Missouri Coalition for the Environment in St. Louis and the Environmental Action Foundation in Washington DC in the 1980s, and moved to Albany in December 1985 to work for the state (now retired). I stayed here past the first winter only because I already knew then that the climate was warming.

**The climate crisis is now an emergency**1 -- we are decades late in taking serious action. The COVID tragedy -- hundreds of thousands of preventable deaths in the US alone, millions worldwide -- is a stark warning of the consequences of inadequate public action in a global emergency.

The scientific community through the Intergovernmental Panel on Climate Change (IPCC )2 has warned that to avoid a global catastrophe it is necessary to cut global Greenhouse Gas **(**GHG) emissions about in half by 2030, reach net zero GHG emissions by 2050 and then further draw down2,6 GHGs in the atmosphere to net negative emissions. The US, a rich country responsible for the most cumulative GHG emissions, is morally obligated to meet IPCC targets faster than the low income majority of the world's people, who have done the least to overheat the atmosphere, but suffer the worst effects of climate disruption.  New York as a progressive state should continue to lead the US.

The fastest feasible state-led transition from a fossil to a sustainable economy **would create an economic bonanza** for New Yorkers - large numbers of good new jobs, more than paid for over time by avoiding the costs of buying fossil energy from out of state (some $39 Billion/year according to the federal EIA)10 and avoiding the much greater foreseeable costs of accelerating climate disasters if prevention is inadequate, for example crop failures in many parts of the world, and multiple Sandy-level superstorms in the NYC area by midcentury11.

In view of both the urgent need to act economy-wide ASAP2, and the real chance that substantial funds for a clean energy transition may become available on the state level (CCIA) and/or federal level (Build Back Better) within the next few years, CAC should make detailed contingency plans for a faster transition for the electric power sector than required by CLCPA. **The timeline set by the CLCPA should be a floor, not a ceiling**.4

**I urge that NY set the goal of zero greenhouse emissions from the power sector by 2030.** That would entail not only replacing all electric generation from fossil combustion, but expanding generation to power the electrification of transportation and other sectors. But it may not necessarily require a net increase in total electric generation if serious efficiency improvements are made simultaneously. At least, CAC should develop detailed plans and scenarios4 to achieve 80% and 100% reductions in total GHG emissions from the power sector by 2030 as well as the more modest goal required by CLCPA. Those scenarios should be compared on the basis of total costs and benefits, including the danger of triggering irreversible runaway accelerating feedbacks3, leading to a global catastrophe the could destroy civilization as we know it.

Because so much methane, a very powerful greenhouse gas, is released by the natural gas fuel cycle9 (especially fracking), **natural gas use should be phased out ASAP,** and no new NG infrastructure or other fossil infrastructure should be approved. Existing fossil fueled power plants should be retired on a strict timetable, as fast as the power they supply can be replaced by a combination of renewably generated power, efficiency improvements and storage, prioritizing for shutdown plants powered by fracked gas and/or polluting vulnerable local communities.

**Nuclear power should not be considered**4 an option to replace fossil fuels: it is too expensive compared to renewable sources such as solar and wind, especially when those are combined with investments in energy efficiency and storage. New nuclear plants also take too long to deploy, because of the complex technology needed to prevent the enormous quantities of dangerous radioactivity they contain from ever escaping to the environment. Shareholders, not ratepayers, should pay for nuclear cost overruns. The $7.6 Billion imposed by PSC on ratepayers to bail out shareholders should be redirected to speed deployment of distributed renewable generation, efficiency and storage. Similarly, New York should not import more hydropower from Quebec megadams. Hydro-Quebec has a record of environmental destruction and disrespect for indigenous Cree and Inuit people.

**Utilities under the present system make money by selling as much electricity as they can, a perverse incentive** to maximize their rate base, although it is well known that the cleanest and least expensive way to meet energy needs is by end use efficiency aka demand side management, which would reduce emissions and costs to consumers, but also utility profits. **Public ownership of electric utilities** would eliminate those perverse incentives.

Households (apartments and private homes) as well as business customers would save both money and the biosphere **by integrated state-of-the-art improvements in efficiency**5 - not only insulation, lighting and appliances but HVAC.  But front-end costs and lack of know-how have effectively prevented most people from making those changes, even with current incentives. State policy must change utility business models to sell “negawatts” - energy efficiency services, by financing efficiency investments and enabling customers to pay as they save on utility bills.

**Energy storage is essential as we transition from fossil to renewable power** on both the system and household level, as well as grid modernization, to compensate for intermittency and peak loads. The energy services model should include not only financing of household efficiency improvements, energy storage systems, and solar cells and heat pumps, but also audits, installation, maintenance, training and technical support, and strong economic incentives for households to participate.

Similarly, because **refrigerant fluids such as HFCs** used in appliances have an equivalent greenhouse impact thousands of times that of CO2, utiliites whose customer base includes most households and businesses are well positioned to manage a program of retrieving and safely disposing of refrigerators, air conditioners, and other equipment using HFCs or other extreme greenouse gases as working fluids. Such a program must have sufficient financial incentives and publicity to guarantee participation.

**Public ownership of the electric grid, a textbook natural monopoly** (as well as central electric generation), is much more consistent with the energy services model than is regulated private ownership, which is vulnerable to "regulatory capture" because of the perverse incentives noted above. Community scale electric generation and microgrids likewise should be community owned, but subject to public standards for renewable generation, environmental impact, efficiency, reliability and equity. But public ownership must include effective democratic control by all stakeholders - workers, communites, customers, and everyone downstream. New York has a grim history of "public" authorities under the dictatorial control of the late Robert Moses trampling the public interest.

I concur with the recommendations of the Sheridan Hollow Alliance for Renewable Energy (SHARE), -- I am an active member -- that the **state government complex in downtown Albany be repowered with 100% renewable energy**, including renewably generated electricity, heatng and cooling, as a **top priority and model for the rest of the state and nation**. Optimizing energy use and reducing waste by the most advanced integrated efficiency improvements will minimize costs and emissions.

Sheridan Hollow, an Environmental Justice community, suffers extensive health problems due to pollution from the former ANSWERS incinerator and the old fossil-fueled steam plant still in use. EJ communities, largely of color -- underpaid, overpolluted, and disrespected -- generally experience the greatest impacts of pollution and climate disruption although they are least responsible for emissions. EJ and frontline communities, including also deindustrialized, polluted and abandoned majority-white working class communities, should be at the front of the line for clean energy deployment and good jobs.

Likewise as a member of the New York Renews coalition, I agree with NYR's recommendations to ensure justice for communities and a just transition for workers displaced from fossil dependent jobs, and high labor standards for jobs created or subsidized by NY State during the transition, including prevailing wages and non-interference by management with unionization. Justice for communities must include rapid replacement of facilities polluting the air by fossil combustion. Recent studies have found that air pollution is responsible for millions of premature deaths annually worldwide, and many thousands in the US.

A plan for the electricity sector should include siting sufficient electric vehicle charging stations to prevent range anxiety. But state or preferably national standards are needed to standardize connections between vehicles and chargers. As motor vehicles are electrified, their batteries can also serve as buffers to help balance electric loads as supply and demand fluctuate predictably and randomly, especially in conjunction with smart grids.

Governor Cuomo announced a plan to make major investments in offshore wind7, which was recommended in an 2013 analysis by Jacobson, Howarth et al8 as a potential major contributor toward meeting all of NY's energy needs from renewable sources by 2030. I support expansion of offshore wind - the huge environmental benefit of mimizing global overheating utterly dwarfs any aesthetic concerns of opponents of necessary progress.

Most of the technology to replace fossil fuels with sustainable technology already exists and is cost effective on a life cycle basis especially when all-too-real "external" social and environmental costs and benefits are counted. When JFK announced the Apollo program to put an American on the Moon in 10 years, we didn't fully know how to get there. But it was a major national priority, so we invented the means. ***This is a mission to planet Earth, a rescue mission***. As they say at NASA, **Failure is not an option.**

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1) According to Dr.James Hansen, NASA's top climate scientist for many years, 350 ppm is the maximim CO2 concentration compatible with a stable climate. It was just reported that CO2 is now 420ppm, 50% above rhe pre-industrial level. See attachment.

2) Highlights of Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5ºC https://www.ipcc.ch/sr15/

3) "Hothouse Earth" study **Trajectories of the Earth System in the Anthropocene** [https://www.pnas.org/content/115/33/8252](https://www.pnas.org/content/115/33/8252%22%20%5Ct%20%22_blank)

4) Testimony to this panel by Mark Dunlea of Green Education and Legal Fund, February 12, 2021

5) Amory Lovins, Rocky Mountain Institute Solutions Journal, Spring 2019
https://medium.com/solutions-journal-spring-2019/the-invisible-energy-bonanza-1e06301c83a5

6) Project Drawdown www.drawdown.org

7) www.NYSERDA.ny.gov/All Programs/Programs/Offshore Wind

8) https://web.stanford.edu/group/efmh/jacobson/Articles/I/NewYorkWWSEnPolicy.pdf

9) Robert Howarth, "Is shale gas a major driver..." Biogeosciences, 16, 3033–3046, 2019

10) https://www.eia.gov/state/seds/seds-data-complete.php?sid=US#StatisticsIndicators

11) https://www.researchgate.net/publication/262186934\_Hurricane\_Sandy\_Innundation\_Probabilities\_Today\_and\_Tomorrow