Comments re NYSERDA Draft NY Nuclear Blueprint – no to nuclear – yes to proven renewables.
by Valdi Weiderpass, [redacted] 11/8/2024

These comments are my submission in response to NYSERDA's 'Draft Blueprint for Consideration of Advanced Nuclear Technologies', that was focus of afternoon session of 'Future Energy Economy Summit' of 9/5/2024. I am a retired engineer with a B.S. in Chemical Engineering, and A.A.S. in Industrial technology with Electrical Emphasis. I am firmly opposed to New York State pursuing nuclear power as a solution to meeting the mandated targets of the Climate Leadership and Community Protection Act (CLCPA). New York needs to focus on proven renewable energy technology that works now, and should not waste resources, time, and money chasing solutions which will not be ready in the timeframe of the Climate Leadership and Community Protection Act (CLCPA). Nuclear power has long been proven to be too toxic, too dangerous, too expensive, and too slow to build to be a climate solution. I was raised on a farm and was taught to appreciate nature by my parents, who took me on many nature walks, as well as to state and national parks. As I became an adult, I grew to understand how important a thriving natural environment is to humanity's survival and in recent decades have come to realize how crucial and urgent it is to save a habitable climate. As a result, I have dedicated much of my volunteer time in retirement to strive to help save a habitable climate. For that reason, I voluntarily spent many hours of time to take a fresh look at nuclear power and reviewed articles, technical papers, books, and data on the history of nuclear power and new technologies including Small Modular Reactors. My reasoned, thoughtful conclusion is that nuclear power should NOT be pursued as a climate solution, based on ample evidence, science and consideration of risks and uncertainties. This technical comment paper is my explanation of why I still oppose nuclear power, and instead advocate for accelerating efforts to deploy proven renewable energy solutions, backed up by energy storage and efficiency measures, in order to meet necessary climate targets and reduce greenhouse gas emissions quickly enough to save a habitable climate. The outlined summary of major reasons for my opposition is listed below.

1) **<u>Nuclear is High Cost</u>**

The levelized (project lifetime) cost of energy generated by various sources has been calculated and tabulated in a June 2024 Lazard report, published at this link:
https://www.lazard.com/media/xemfey0k/lazards-lcoeplus-june-2024-_vf.pdf
The report reveals that Onshore Wind, with Energy Storage, is least expensive per unit of energy measured in dollars per megawatt hour ($/MWh), with a range of 45 to 133 $/MWh. Utility scale solar, backed up by Energy Storage is next in cost with a range of 60 to 210 $/MWh.
Conventional Nuclear energy is most expensive, ranging from 142 to 222 $/MWh. The latest nuclear project, Vogtle in Georgia, costs 190 $/MWh. The Vogtle nuclear expansion project has two reactors of 1.1 GW each and started delivering electricity to the grid in March 2024, 7 years behind schedule. The project took 15 years and cost $34 Billion, more than double the initial $14 Billion estimate.
Small Modular Reactor (SMR) designs are high cost with high uncertainty in cost!
The best cost estimate we have for **unsubsidized** electricity cost to be produced by Small Modular Reactors is from the cancelled NuScale project at $119/MWh in 2022 dollars, based on the article linked below from IEEFA dated Jan 11, 2023.
Eye-popping new cost estimates released for NuScale small modular reactor
This is likely to go up, especially if you factor in potential cost increases as it is still unproven technology and the costs of handling and safely storing nuclear waste for hundreds of thousands of years! Also, the estimated construction cost for the six reactor "Carbon Free Power Project"

that NuScale was trying to design and get approval to break ground for ballooned from $5.3 billion to $9.3 billion before the project was cancelled. I don't advocate gas-fired power plants, but for comparison purposes, one of the newest, modern combined-cycle gas-fired power plants, the Valley Energy Center plant built by CPV in Wawayanda in Orange County, NY is estimated to have a total construction cost of $900 million and is rated at a 680MW power output. The NuScale project was only going to produce 462 MW of total power, and was estimated to cost more than $9 Billion (if you believe the latest estimate), so it would produce just 2/3 of the power while costing 10 times as much to build! ' According to the National Renewable Energy Laboratory (NREL), solar farms cost $1.06 per watt, whereas residential solar systems cost $3.16 per watt. In other words, a 1 megawatt (MW) solar farm can cost upwards of $1 million.'
https://www.marketwatch.com/guides/solar/solar-farm-cost/
Based on $1.06/watt for a fixed-tilt utility scale solar farm, a 462 MW solar farm would cost $490 million. For utility scale solar in NY State, there is a 17% capacity factor from Lawrence Berkely Lab data for NYISO region, page 26 of file at following link, therefore, on average a utility scale solar farm would produce 17% of the rated full power nameplate capacity of the solar farm.
https://emp.lbl.gov/sites/default/files/utility_scale_solar_2023_edition_slides.pdf
Adjusting for needing to build more solar to get full capacity factor output on average:
462MW/0.17 = 2718MW would be the roughly estimated needed solar farm nameplate capacity.
Cost of this is $1.06/W x 2718MW = $2881 million, which is $2.9 billion. This is about 1/3 of cost to build the NuScale project, if you believe the $9 billion latest cost estimate for NuScale's SMR 462MW plant!

2) **Nuclear is Too Slow**

Conventional large nuclear could easily take 15 years from proposal to delivering power! The latest US nuclear project is the Vogtle nuclear expansion project in Georgia, which has two reactors of 1.1 GW each and started delivering electricity to the grid in March 2024, 7 years behind schedule. The project took 15 years and cost $34 Billion, more than double the initial $14 Billion estimate. https://www.eenews.net/articles/after-vogtle-whats-next-for-nuclear/
Small Modular Reactors may take a decade or more from proposal to completion of construction. New design Small Modular Reactors (SMR) are being proposed, but there is no commercial scale working project yet so this is unproven technology. The experience of the first attempt to build a nuclear power plant with Small Modular Reactors in USA, failed after 9 years of effort and over $1 billion in subsidies. The project was cancelled before a reactor building even started being built! https://www.reuters.com/business/energy/nuscale-power-uamps-agree-terminate-nuclear-project-2023-11-08/?fbclid=IwY2xjawFMLjRleHRuA2FlbQIxMAABHfNGGVvEPHbzV4UjuCNBcI3yvcz9YYSlsdPS5wumytHVMiHyhqFqr87Nug_aem_SZrRlFMRXyk6STQQED23MQ
With timelines of a decade to one and a half decades, or longer, nuclear would probably not help NY meet its 2030 goals for reduction of Greenhouse Gas (GHG) emissions, which are mandated to be reduced by 40% from 1990 levels for NY State per the Climate Leadership and Community Protection Act (CLCPA).

3) **Nuclear adds many risks:** **safety, health, environmental, security (terrorism)**
Uncontrolled releases and/or intentional releases from nuclear power plants due to problems could result in contamination of air, ground, and water near a nuclear power plant over a wide area. Airborne releases could be blown by wind over long distances and contaminate a large area downwind. This may require evacuation of the area and could render water source unusable. The following excerpt is from US Energy Information Administration (EIA): ' An uncontrolled nuclear reaction in a nuclear reactor could result in widespread contamination of air and water. The risk of this happening at nuclear power plants in the United States is small because of the diverse and redundant barriers and safety systems in place at nuclear power plants, the training and skills of the reactor operators, testing and maintenance activities, and the regulatory requirements and oversight of the U.S. Nuclear Regulatory Commission. A large area surrounding a nuclear power plant is restricted and guarded by armed security teams. U.S. reactors also have containment vessels that are designed to withstand extreme weather events and earthquakes.'
https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php

The safety concerns expressed by knowledgeable critics of the nuclear power industry are actually much worse than what is revealed in the relatively dry language of the excerpt above, from the US EIA.
Here are excerpts from The New Yorker article by Daniel Ford, titled "How Safe Are Nuclear Power Plants?", published 8/13/2022. Daniel Ford was Executive Director of the Union of Concerned Scientists from 1972 to 1979.
Excerpts: ' "Safe Enough? A History of Nuclear Power and Accident Risk" [book by Thomas Wellock] is a refreshingly candid account of how the government, from the nineteen-forties onward, approached the bottom-line question posed in the book's title. Technically astute insiders at the A.E.C. took it for granted that "catastrophic accidents" were possible; the key question was: What were the chances? The long and the short of it, Wellock's book suggests, is that, while many officials believed the chances were very low, nobody really knew for sure how low they were or could prove it scientifically. Even as plants were being built, the numbers used by officials to describe the likelihood of an accident were based on "expert guesswork or calculations that often produced absurd results," he writes. The "guesswork" nature of such analysis was never candidly acknowledged to either the public or the agency's licensing boards, …' … 'Around the world, more than four hundred reactors are in operation, most of them using U.S. designs, or similar ones, from the sixties and seventies, which have documented flaws that are not easily correctable. The nuclear reactors at Fukushima Daiichi, Japan, for example, where meltdowns occurred in 2011, were designed by General Electric; there are thirty-one plants of the same basic G.E. vintage currently operating in the U.S. Wellock discloses internal records describing specific and potentially urgent safety issues, still unresolved, that pertain directly to many of the nuclear plants operating downwind of major population centers.'… 'In recent years, as mitigating climate change has become a high priority, some energy-policy experts have argued that we should return to building nuclear plants, or at least have the federal government sponsor research on new types of reactors with better safety and performance features. In principle, nuclear energy remains an appealing technology, assuming that the problem of long-term radioactive-waste disposal can be solved. And yet my own studies on reactor safety—which

include papers co-authored with the late M.I.T. physicist and Nobel laureate Henry Kendall, and several books based on extensive reporting for this magazine—have concluded that nuclear power's potential contribution to clean energy has been compromised by safety shortcuts taken by the industry, and by lax government regulation of day-to-day safety practices at the plants.'

My commentary: Worse yet, similar to the fossil fuel industry, the cost of risks and harms is largely externalized from the nuclear power industry, and is left mainly to be paid for by government, and therefore, the taxpayers!

Returning to The New Yorker article excerpts: 'Shrewdly, the industry sought to protect itself from the risks it might be imposing on others: it refused to consider building large numbers of plants until 1957, when Congress passed the Price-Anderson Act, which effectively granted it blanket protection from paying the full cost of potential liabilities should accidents occur.' … 'Although government experts couldn't nail down the probability of an accident, they could use straightforward arithmetic to predict the damage that might result. The results were presented in a 1957 study by the A.E.C.'s Brookhaven National Laboratory. The study, which drew on research on the impact of ionizing radiation, conducted after the bombings of Hiroshima and Nagasaki, indicated that a worst-case scenario for a major accident at what was then considered a large nuclear plant could cause thirty-four hundred deaths and seven billion dollars in property damage—about seventy-four billion dollars in today's money. Eight years later, in 1965, Brookhaven updated its analysis of a worst-case scenario. Nuclear plants had grown in scale, and the implications were devastating: a meltdown could cause forty-five thousand deaths, with radioactive contamination creating a potential "area of disaster the size of the State of Pennsylvania." '
Source of above excerpts: https://www.newyorker.com/science/elements/how-safe-are-nuclear-power-plants

Small Modular Reactors may not be as safe as claimed!
Here is very worrisome information from Environmental Working Group's (EWG) July 2023 article about the risks of NuScale's new SMR design and questionable oversight by NRC!
Excerpt: 'Unlike any nuclear power plant that's already online, NuScale would house the reactor core – the nuclear fuel – and steam generator in the same vessel. This would be a departure from the traditional design, in which the steam generator is separated from the fuel, outside the reactor vessel but inside the secondary containment.

The NRC has preliminarily approved NuScale's design, despite serious questions about the steam generator. And NuScale still hasn't produced the necessary analysis of all the accidents that could occur.

As Makhijani and Ramana write:

[T]the NRC staff stated that further analysis or testing results to 'demonstrate the design and performance of the steam generators' could be included as part of the application for the license to construct and operate the reactor, even though '[s]ome uncertainty will remain until a NuScale Power Module is built and operated.'

A major accident is a little late to determine whether the reactor and its steam generator will operate safely.'

Source of above excerpt: https://www.ewg.org/news-insights/news/2023/07/small-size-big-problems-nuscales-troublesome-small-modular-nuclear

Spent fuel pools may be likely targets for terrorist attack.
Excerpt: 'Spent-fuel pools may be more vulnerable than the reactors with which they are associated. The spent fuel in such pools can catch fire if the water is removed. Such fires can be difficult to extinguish and could release large quantities of cesium-137 and other radionuclides. An analysis published in 2003 found that spent-fuel pools in the United States currently hold an average of 400 tons of spent fuel each, containing 35 megacuries (MCi) of cesium-137.40 A 1997 Brookhaven National Laboratory study concluded that a fire at such a spent-fuel pool could release between 10 and 100 percent of the cesium-137 inventory.41 Hence, in an average case, between 3.5 and 35 MCi would be released. This amount can be compared to the approximately 2 MCi of cesium-137 that was released in the Chernobyl accident.'
Link to source: https://nap.nationalacademies.org/read/11848/chapter/8

Source: National Academies of Sciences, Engineering, and Medicine. 2007. Science and Technology to Counter Terrorism: Proceedings of an Indo-U.S. Workshop. Washington, DC: The National Academies Press. https://doi.org/10.17226/11848.

Spent fuel pools are a necessity for the industry to store waste on site for at least a decade while the waste becomes less radioactive and thermally cooler. Loss of power to maintain cooling, such as occurred at the nuclear reactors at Fukushima Daiichi nuclear plant in 2011, can lead to major releases of radioactivity. Moreover, these pools are vulnerable to intentional sabotage and terrorist attacks.

There is no permanent repository for spent fuel in the United States
The Nuclear Blueprint correctly identifies the as-yet unsolved problem of the "disposal" of highly radioactive nuclear waste (p.22):
"Currently, nearly all nuclear waste is managed on-site at the generation facility in the form of solid spent fuel rods stored in deep pools of water for approximately 10 years after generation, and then placed in steel-lined concrete casks on the reactor site. While on-site storage is intended to be temporary …there are no available permanent disposal sites in the U.S., and virtually all nuclear fuel used for electricity generation still sits at the facilities where it was generated. While this approach has been successful in preventing waste leakage, as dry casks approach their maximum licensing period, the risks of their failure increase."

All nuclear fission reactors produce highly radioactive waste; SMRs produce more waste due to inefficiencies inherent to the process.

4) Nuclear power has huge uncertainty with many questions

Does US have the trained, experienced workforce to build new nuclear plants effectively?
Excerpts: 'More decisive is the unresolved question of whether the U.S. actually has the practical ability to build new nuclear plants at all. … For one thing, the 13,000 workers who assembled Vogtle may not all be available for a new gig.

"The trained workforce is a rapidly depreciating asset for the nuclear industry," said John Quiggin, an economist at the University of Queensland, in an email. "Once the job is finished, workers move on or retire, subcontractors go out of business, the engineering and design groups are broken up and their tacit knowledge is lost. If a new project is started in, say, five years, it will have to do most of its recruiting from scratch." '
Source of above excerpts: https://grist.org/energy/plant-vogtle-georgia-nuclear/

What is risk of Liquid Sodium Metal coolant in SMR reactor coming into contact with water, due to a leak, which could cause an explosion? Section 3.2, page 8 of Draft Blueprint.
Excerpt: 'However, sodium has a high reactivity with air and water. Specifically, sodium leak in air could lead to the production of toxic sodium-oxide aerosols caused by sodium fires. In addition, sodium's fast and exothermic reaction with water produces sodium hydroxide and hydrogen that could cause hydrogen explosions. To meet fire protection regulatory objectives, adequate evaluation and verification is required to be performed. This ensures that fires and explosions that may be associated with sodium's reactivity are prevented or adequately controlled not to compromise nuclear safety, damage safety related structures, systems and components and put personnel at risk.'

Link to source of above excerpt:
https://www.cnsc-ccsn.gc.ca/eng/resources/research/technical-papers-and-articles/2019/overview-of-liquid-sodium-fires/

What would be the amount of public opposition to building nuclear power plants across NY State, especially within or close to population centers, such as cities and villages? This is an especially important question, because many of the good grid connections are at old fossil-fuel fired power plant locations.

The cost of existing nuclear plants is subsidized by ratepayers, and one of the main reasons new nuclear is even being considered is because of subsidies being offered by the federal government. What is the likelihood that these subsidies would end? How soon? Who then pays the high cost of nuclear power?

The following is text of important questions actually raised within the Draft Blueprint (labeled here with letters for easy reference):

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A) How can the State and its stakeholders access sufficiently objective and transparent information on technical readiness?

B) At what level of technical readiness should the State begin more intensive consideration of new advanced reactors within energy plans?

C) How can the State participate in or monitor NRC safety licensing processes for each design that may be built within New York?

D) How can the State adopt and improve best practices in nuclear safety?

E) Do advanced nuclear facilities pose any significant physical security risks for the State, and if so, how can they be managed?

F) Do recent cyber security events in other sectors highlight a need to assess potential cyber security risks for advanced nuclear facilities?

G) What process should the State use to engage in siting conversations with stakeholders?

H) What role should the State play in promoting environmental and climate justice in the fuel cycle of advanced nuclear facilities in view of the fact that almost all of this activity will occur out-of- state?

I) How should siting advanced nuclear technologies incorporate the environmental and climate justice concerns of surrounding communities?

J) How can New York's planning and oversight processes ensure that underserved and historically marginalized populations have equitable access to training and job opportunities in new nuclear projects?

K) What is the likely realistic cost range for each technology, and how does this enter into the State's consideration?

L) How should the State assess the factors that affect the cost of new plants? The DOE Supply Chain Deep Dive report suggests "nuclear construction costs depend more on overall project management, experience accumulated over multiple units, regulatory interactions, contracting approaches, and local prices for labor and commodity inputs than on the direct costs of the reactor or any other equipment." Ref. #79 of Draft Blueprint: See p.27, U.S. Dept of Energy, Nuclear Energy Supply Chain Deep Dive Assessment (February 14, 2022) EERE Technical Report Template (energy.gov).

M) How should the State consider construction supply chain issues in its consideration of advanced options? If so, what level of plant- or design-specific examination is appropriate?

N) How do national supply chain shortages impact economic development of advanced nuclear technologies in the State?

O) Can State-level policies influence supply chain improvements?

P) Do national supply chain shortages create an opportunity for economic development of supply chain-related business into the State?

Q) How can the State assess and improve nuclear workforce readiness, and is there an opportunity to export readiness training nationally?

R) The Clean Energy Investment Tax Credit (ITC) can credit developers 30% of a plant's initial capital cost if meeting wage and apprenticeship requirements, with additional bonuses of 10% each for use of domestic content and location within energy communities.

S) The Clean Energy Production Tax Credit (PTC) offers developers credits of up to 2.75 cents per kWh assuming satisfaction of wage and apprenticeship requirements, with similar bonus categories to the ITC, except with a 3 cent per kWh addition per criteria met.

T) What is the nature of and level of development and cost risk that the state can consider in advanced nuclear technology projects?

U) What policies and policy levers does the State have to reduce or allocate these risks?

V) How can the value of federal incentives be maximized?

W) Beyond workforce and supply chain opportunities, what could be the potential value in advancing demonstration sites?

X) What level of assessment of fuel supply chain issues do stakeholders think is appropriate for further consideration of advanced nuclear technology options?

Y) What form and level of fuel supply assurance should be part of future state considerations of specific advanced nuclear technology options?

Z) What steps are appropriate for monitoring the progress of fusion power plants?

AA) At what point should further steps be taken by the State either to promote fusion as an option or to consider how fusion would fit into its energy planning and permitting processes?

BB) How can the State evaluate and prioritize advanced nuclear technologies based on their waste management capabilities and overall environmental impact?

CC) How can the State work with the federal government to manage nuclear waste?

5) **Nuclear fuel is a limited resource which will run out well before 2050 if the world decides to build huge numbers of reactors for power.**

If New York decides to pave the way for construction of substantial numbers of new reactors in order to power a large share of its future energy needs, then other states and countries may also decide to follow this risky idea and try to build thousands of reactors around the world, which could cause known uranium reserves to be used up in just a few decades.

The following excerpt is from page 189 of the book titled "No Miracles Needed, How Today's Technology Can Save Our Climate and Clean Our Air", by Mark Z. Jacobson, 2023: 'If the world's all-purpose energy were converted to electricity and electrolytic hydrogen by 2050, the 9 trillion watts (TW) in resulting annual average end-use electric power demand would require about 12,500 850-megawatt nuclear reactors (31 times the number of active reactors today), or one installed every day for 34 years. Not only is this construction timeline impossible given the long planning-o-operation times of nuclear, but it would also result in all known reserves of uranium worldwide for once-through reactors running out in about 3 years.'
Link to source: [No Miracles Needed - How Today's Technology Can Save Our Climate and Clean Our Air]

The book based the amount of years of nuclear fuel available to power the world, from the International Atomic Energy Administration's (IAEA) 2021 report that stated that as of 2019, about 8.1 million tons of uranium reserves were available that are practical to extract (see top of page 159 of No Miracles Needed book). **Even if only one tenth of the world's forecast electrical energy needs were to be met with nuclear power, the world would then run out of known reserves of uranium, the primary nuclear fuel, in about 30 years! This means that pursuing nuclear power is a risky dead end. Nuclear power should not be considered as a form of renewable energy and is not a viable climate solution.**

6) **Nuclear Power has Irreconcilable Environmental and Social injustices**

The production of nuclear energy is an environmental injustice. This issue is discussed in less than 272 words of the draft blueprint, yet it may be the most important consideration of whether we use the technology. The "Environmental and Climate Justice" section completely fails to acknowledge the real, deadly harms faced by the Onondaga Nation, the Seneca Nation, the Ramapough Munsee Lenape Nation, and other environmental justice communities along the entire fuel chain of nuclear energy, including those who live close to existing reactors, uranium mines, enrichment sites, and nuclear waste dumps. Read the Red Paper by the Onondaga Nation, Haudenosaunee Environmental Task Force, and American Indian Law Alliance (https://drive.google.com/file/d/1WxZiW8Kgv4n15m4zGHmwC2oKSO2NSDXe/view?usp=drivesdk). The Red Paper provides one of the best compilations of environmental injustices experienced by Indigenous peoples in New York and across the U.S., perpetrated by the nuclear industry and the governments that support it.

7) **Diverting attention, effort and money to nuclear power, risks causing delay in implementing proven solutions for meeting CLCPA mandates, such as solar, wind and battery based storage. Worse yet, is that delaying transformation of the electric grid to be based mainly on renewable energy, has a compounding effect. This is because fully realizing the maximum Greenhouse Gas (GHG) emission reductions of other programs involving electrification of industry, building heat**

(via heat pumps), and transportation (via Electric Vehicles), depends on eliminating GHG emissions of our electric grid.

Excerpts from MIT Energy Initiative 1/25/2024 article titled, "Decarbonizing the U.S. power grid": ' To help curb climate change, the United States is working to reduce carbon emissions from all sectors of the energy economy. Much of the current effort involves electrification, for example, switching to electric cars for transportation, electric heat pumps for home heating, and so on. But in the United States, the electric power sector already generates about a quarter of all carbon emissions. "Unless we decarbonize our electric power grids, we'll just be shifting carbon emissions from one source to another," says Amanda Farnsworth, a PhD candidate in chemical engineering and research assistant at the MIT Energy Initiative (MITEI).

But decarbonizing the nation's electric power grids will be challenging. The availability of renewable energy resources such as solar and wind varies in different regions of the country. Likewise, patterns of energy demand differ from region to region. As a result, the least-cost pathway to a decarbonized grid will differ from one region to another.' …

' The need to decarbonize the electric power sector is both urgent and challenging. Now, an online model developed by an MIT Energy Initiative team enables other researchers and operators of U.S. regional grids to explore possible pathways to decarbonization.'

Link to source of above MIT Energy Initiative article excerpts:
https://energy.mit.edu/ews/decarbonizing-the-u-s-power-grid/

8) **California is showing the way on how renewable energy, backed up by adequate energy storage, enabled by grid upgrades can transform the electric grid to be 100% based on renewable energy. NY should learn from this example.**

California has 45% of its grid generation from renewable energy, backed up by over 10GW of energy storage, with 38% from fossil fuel, and just 9% from nuclear energy!
Excerpt from CalMatters 8/19/2024 article: ' California has given America a glimpse at what running one of the world's largest economies on renewable energy might look like.

The state recently hit a milestone: 100 days this year with 100% carbon-free, renewable electricity for at least a part of each day, as tracked by Stanford University engineering Professor Mark Z. Jacobson.

The state notched the milestone while — so far — avoiding blackouts and emergency power reductions this year, even with the hottest July on record.

That progress is largely due to the substantial public and private investments in renewable energy — particularly batteries storing solar power to use when the sun isn't shining, according to energy experts.

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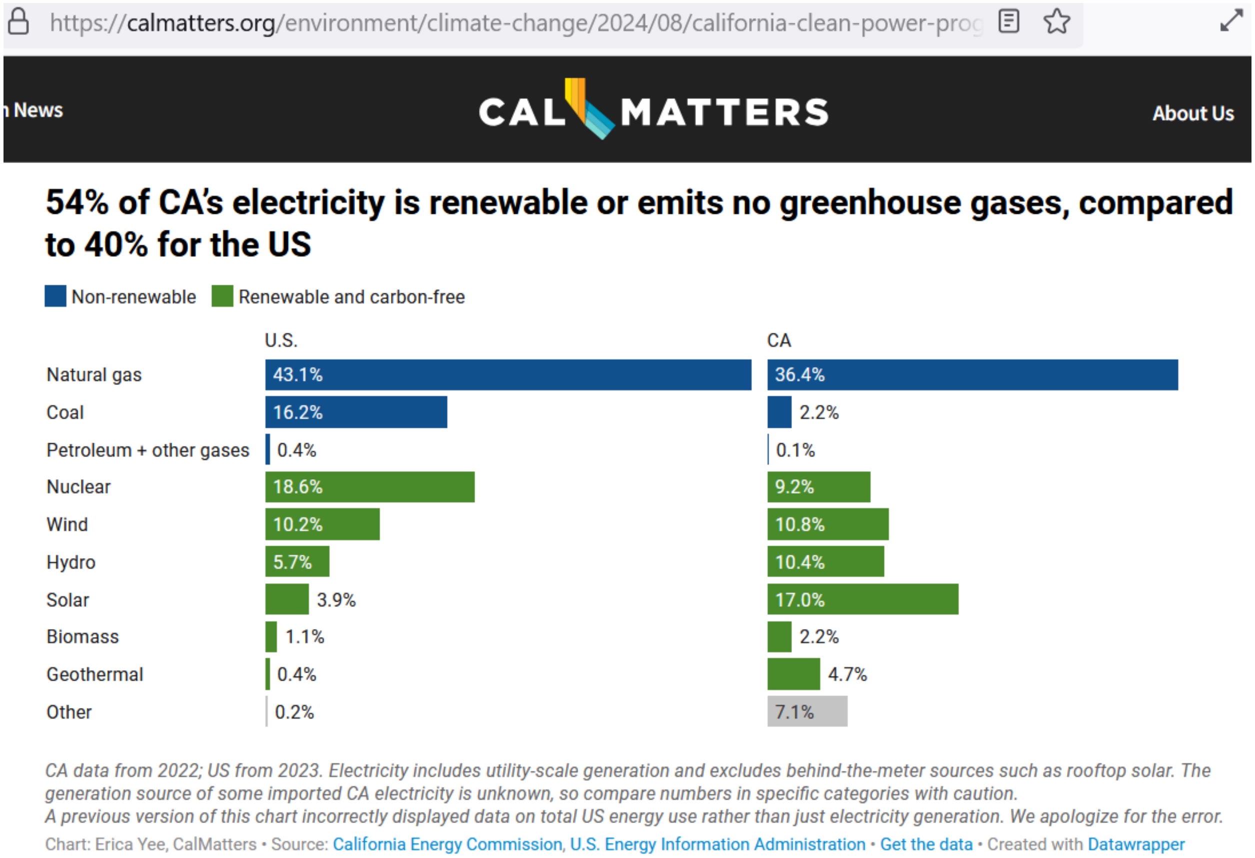

Source for above excerpted text and chart from CalMatters:
https://calmatters.org/environment/climate-change/2024/08/california-clean-power-progress-grid/

California plans to shut down its last nuclear power plant, Diablo Canyon, at the end of 2030!
https://fortune.com/2023/12/15/california-diablo-canyon-nuclear-power-plan-extend-operations-2030/

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Additional information.

'SMRs also can be expected to take much longer to build than proponents claim. Instead of waiting a decade or longer for SMRs, we should add all of the wind, solar, geothermal and storage capacity that we can, as quickly as we can. Greenhouse gas emission reductions achieved in the near term have a bigger impact than ones that might be obtained a decade or more in the future.'

Above is from David Schlissel, opinion essay in Utility Dive 3/21/2023, titled: NuScale power, the canary in the small modular reactor market.

https://www.utilitydive.com/news/nuscale-power-small-modular-reactor-smr-ieefa-uamps/645554/?fbclid=IwY2xjawFgF2lleHRuA2FlbQIxMAABHdSU1OVlQKOR0wwWf3VWLJqRPGZuR8aPsp8t22rJou9IkM6Ksh5OY_mC8w_aem_Aa5BemOjRubtICiov2wmsA

Risk of preventing GHG Emissions reductions

Per NYSERDA's July 2024 "Draft Energy Standard Biennial Review", NY is likely to achieve just 73,292 GWh of renewable energy production in 2030, far short of the 115,437 GWh needed to meet the 2030 CLCPA-mandated target of 70% renewable grid electricity. Math shows the NY grid would achieve only 44% renewable electricity in 2030. That means that NY would still be producing a 36% share of its electricity by fossil fuel power and maybe 20% from nuclear if all of the three operating nuclear reactors in NY are still on-line. However, two of the three reactors are only licensed until 2029. Per NY State's Climate Act Dashboard https://climate.ny.gov/dashboard, in 2021, electricity generation produced 58,698,000 metric tons of CO2 equivalent (CO2eq) Greenhouse Gas (GHG) emissions (rounded to nearest thousand metric ton). Assuming that 36% share of electricity in 2030 will be coming from fossil fuels, also means that all of the GHG emissions for electricity sector of NY State's GHG emissions will come from fossil fuels (in other words that remaining nuclear and the renewable generation produce zero GHG emissions). In that case, for the emissions in 2030, we can then estimate that 0.36 x 58,698,000 metric tons CO2eq = 21,131,000 metric tons of CO2eq will be produced by NY grid electricity generation. If NY State actually met its 2030 mandate for 70% of its electricity being from renewable sources, then we could say that only 30% would be from fossil fuels in 2030 (again, assuming that all three nuclear reactors were still on-line). The GHG emissions for 30% of NY grid electricity coming from fossil fuels would then be 0.3 x 58,698,000 = 17,609,000 metric tons of CO2eq.

Conclusion

Meeting NY State's ambitious climate targets under the CLCPA are a difficult but necessary task that is important because our state's economy is the tenth largest in the world if it was ranked as a separate country. What NY State does is important in inspiring other states and nations to do their part, as they see us doing our part to save a habitable climate. Achieving the renewable energy goals of our electrical grid and greenhouse gas reduction goals will be difficult enough without distracting relevant state agencies and environmental activists with expensive, false solutions. Diverting precious ratepayer and taxpayer funds to subsidize new nuclear power facilities in New York would prolong efforts to achieve our climate goals and at ***many*** times the cost of renewable energy such as wind and solar, backed up by energy storage and enabled by efficiency projects. Steering toward nuclear power would be a turn down a dead-end path that would slow the growth of safe renewable energy projects and commit New York to centuries of environmental risk as we will be forced to safeguard thousands of tons of radioactive waste. New York is already burdened by the environmental and economic costs of misadventure with the nuclear industry. The leaking nuclear disposal site in West Valley, NY comes with a $10 Billion price tag for clean up and remediation. Long Island ratepayers are still financing the $6 billion Shoreham Nuclear powerplant, whose construction began in 1973, but closed in 1989 without ever producing significant power, due to safety concerns. And cost overruns on the $6.4 billion Nine Mile Point 2 reactor caused electricity prices to spike, tanked Niagara Mohawk's stock value, and eventually led to the utility's near-bankruptcy. New York cannot afford another multi-billion debacle that does nothing to support our electrical grid or advance our climate goals.

I encourage NYSERDA, DEC and PSC as well as other state agencies and officials to ignore the federal subsidies that are offered for nuclear energy, and instead listen to the Climate Action Council (CAC) and environmental organizations to follow and accelerate the path toward an electrified economy based on renewable energy that was laid out in the CAC's Scoping Plan . Nuclear power is risky, dangerous, very expensive, and too slow to implement to be a viable climate solution.

Thank you for consideration of these comments

Sincerely,
Valdi Weiderpass
[redacted]