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July 1, 2022

Draft Scoping Plan Comments
NYSERDA, for the Climate Action Council
17 Columbia Circle
Albany, NY 12203-6399

Dear Ms. Harris (NYSERDA) and Mr. Seggos (NYSDEC), Co-Chairs:

Please accept the comments below on the Climate Action Council's Draft Scoping Plan. I am commenting on my own behalf as a concerned citizen.

INTRODUCTION

I am an environmental attorney in western New York. I have represented municipalities and community-based environmental organizations participating in the review of large-scale renewable energy facilities for fifteen years. These matters include municipal review pursuant to the State Environmental Quality Review Act, ("SEQRA"), prior to Public Service Law Article 10; Article 10 siting proceedings; and most recently siting proceedings under the Office of Renewable Energy Siting ("ORES"). These matters include original administrative proceedings and civil appeals.

Fifteen years ago I was initially reluctant to include clients with concerns about the potential adverse impacts of renewable energy projects, but as I learned about the subject I came to appreciate that these very large projects can have very large adverse effects on the environment and host communities, and these projects face serious obstacles to achieving their stated environmental benefits because, in New York, an integrated state electrical system (an integrated "grid") does not exist. As a result, for the foreseeable future there will be serious physical obstacles to achieving the State's energy goals by means of this pathway to decarbonization. Numerous alternative pathways exist that are under active review and analysis in this country and internationally, but most of these are ignored or considered secondary measures in the Draft Plan. The reason for this neglect appears to be the identification of numerical targets for renewable energy generation in the 2019 Climate Leadership and Community Protection Act ("CLCPA"). The CLCPA created the Council and requires the Draft Plan to propose strategies for decarbonizing New York's economy by 2050. With its Plan, the Council has an opportunity to inform the Legislature and the public about the limits of achieving the 2050 decarbonization with a strategy that relies heavily on further build-out of large-scale renewables upstate in order to serve downstate demand.

My comments are focused on two broad reasons why the Draft Plan's emphasis on large-scale renewables is unrealistic and will jeopardize the state's ability to achieve its 2050 goal. The first is the physical constraints on the grid's ability to deliver energy from upstate

to downstate. As discussed below, the state's grid is bifurcated into upstate and downstate components with limited ability to deliver energy across the upstate-downstate divide. The upstate grid currently enjoys 90% carbon-free electricity. The downstate grid currently provides 3% carbon-free electricity. For several years, the New York Independent System Operator ("NYISO"), the non-profit corporation that operates the state grid, has consistently said that achieving the state's decarbonization goal will be jeopardized by local and regional transmission constraints likely to take many years to overcome. Even if that can be accomplished, NYISO points to several adverse effects on the grid of increasing the share of renewables that make doing so a progressively ineffective pathway to decarbonization.

The second reason that a focus on large-scale renewables is unrealistic is the significant adverse effects these projects have on the rural environments and communities that must host them. Chief among these adverse impacts is wind turbine noise, which poses a threat to public health. However, the adverse effects on natural resources, relied by all residents of the state, is just as serious. Upstate communities now have experience with siting these projects and are, for these reasons, increasingly resisting new proposals. As a result, New York is unlikely to meet the CLCPA's land-based renewable technology targets without draconian procedures designed to eliminate local control and participation in project reviews. Recent ORES proceedings summarily eliminating municipal participation confirm this conclusion.

TRANSMISSION CONSTRAINTS TO ACHIEVING DECARBONIZATION IN NEW YORK'S ELECTRIC SECTOR

In 2016 NYISO 2016 commented on the Clean Energy Standard ("CES") goal to achieve 50% zero emissions electricity over 1990 levels by 2030 (the 50 X 30 goal), now superseded by the CLCPA goal of 70 X 30.[1]

NYISO states that the scope of transmission upgrades needed jeopardizes the ability to achieve the CES goal, and that further penetration of large-scale renewables will require substantial over-building of generation capacity. In addition, according to NYISO, to ensure system reliability, further build-out of large-scale renewables will require that older renewables be increasingly curtailed.

Significant additional transmission system investment will be required to deliver energy from anticipated new renewable resources beyond the AC Transmission and Western New York public policy initiatives now underway, which are important steps to improving operation of the bulk power system that were not included in the DPS SEIS.[2]

. . . In order to achieve 50% by 30, the bulk power transmission system must have the

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1 *See* PSC Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, NYISO Supplemental Comments on the Clean Energy Standard (July 8, 2016).

2 *Id.*, 4.

capability to deliver all renewable resources' energy production simultaneously. The bulk power transmission system's transfer capability is limited by engineering principles based on the physical capability of the system designed to maintain safe, reliable operations and protect equipment. If the system is undersized at any point between the renewable generator locations and the load centers, renewable generation may likely be curtailed, jeopardizing achievement of 50% by 30 based on the projected build-out in the DPS SEIS."[3]

. . . Undersized sub-transmission systems may result in renewable energy generation being curtailed to maintain local electric system reliability. . . . but there are, as of this date, no findings for the Commission, the NYISO, and the other affected stakeholders to consider and critique. Given the potential gravity and magnitude of the CES-related transmission additions, the NYISO believes it would be prudent for the Commission to study this question in depth before taking any final action to implement the 50% by 30 initiative."[4]

NYISO states additionally that in order to accommodate further build-out of renewables, the Installed Capacity Margin ("IRM") in New York will need to be substantially increased, regardless of transmission constraints. The IRM is "the amount of capacity required to maintain a 1 day-in-10 year loss of load expectation ('LOLE')." The IRM "has generally ranged between 15% and 18% in recent years", but to accommodate the projected renewables build-out the IRM must increase "to between 40% and 45% . . . to maintain reliability." Land-based wind by itself will require the IRM to increase to 26%. Thus, the energy system impacts of generators with low capacity factors that cannot control their output more than doubles the installed capacity reserve that must be maintained by the system operator. "The increased capacity requirement will be largely met by the additional capacity contribution of the proposed renewable resources."[5]

In *Power Trends 2019*, NYISO states: "Even with the Western New York and AC [bulk] Transmission projects already selected by the NYISO, congestion on the system will persist, complicating the state's ability to meet its renewable energy goals. The inability of the transmission system to deliver increasing amounts of renewable supply from upstate New York to downstate consumers jeopardizes achieving the state's public policy goals."[6] Every annual issue of *Power Trends* since restates this point.

In *Power Trends 2021*, NYISO provides a graphic representation of current "transmission constraints that may prevent the delivery of renewable energy to achieve the CLCPA's 70% renewable energy mandate for 2030."[7] These are largely sub-bulk transmission constraints.

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3 *Id.*, 4-5.

4 *Id.*, 7.

5 *Id.*, 9-10.

6 NYISO, *Power Trends 2021*, 44, available at <https://www.nyiso.com/library> (under Corporate Reports, Power Trends).

7 *Id.*, 39.

In the context of the CES, Potomac Economics, NYISO's Market Monitoring Unit ("MMU"), concluded that four bulk transmission projects to resolve congestion across the Central-East interface would not be cost-effective and would not reduce carbon emissions as expected "if state policies shift more investment to offshore wind and energy storage in downstate areas".[8] Since 2019, the finalization of the Champlain Hudson Power Express project (which will deliver Quebec hydropower to New York City) and the Clean Path NY project (connecting the Delhi substation in the Catskills to Queens) tip the scales considerably further against the cost and policy effectiveness of further build-out of large-scale renewables upstate.

Potomac Economics also warned that the ability of renewable energy projects to achieve the state's goals is "heavily dependent on the placement of new renewable generation and the locations of retiring generation".[9] Importantly, to date there has been no effort by any agency in New York to coordinate the siting of renewable generation facilities upstate with existing and planned transmission upgrades. As a result, there has been minimal improvement in the ability to deliver upstate energy downstate. Instead, the siting of generation is driven by generous RECs contracts and outright grants from NYSERDA without serious consideration of how these projects advance New York's public policy goals. This has resulted in substantial environmental, social and economic burdens on rural communities asked to host large-scale renewable generation projects without any commensurate reduction in carbon emissions. Indeed, as reported by NYISO in *Power Trends 2021*, upstate energy remains bottled upstate, achieves 90% carbon-free electricity, congested local and regional distribution transmission constraints remains unaddressed, and new bulk transmission projects to relieve congestion south of Albany have been ineffective in unbottling upstate energy.

At the same time, downstate energy has become substantially more polluting, as Indian Point nuclear power has been replaced by several gas-fired power plants, causing downstate energy to decline from 29% zero-emissions to 3%.[10] Clearly, this outcome is inconsistent with New York's energy policy.

THE COST OF RELIANCE ON LARGE-SCALE RENEWABLES IS UNREALISTIC

The Council has declined to consider the costs of implementing the CLCPA at this time. This approach risks the commitment of resources that may never realize any meaningful benefits. The following comments suggest what the Council is missing.

In 2019, Potomac Economics evaluated the effects of cost recovery for projects

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8 Potomac Economics, *NYISO MMU Evaluation of the Proposed AC Public Policy Transmission Projects* (February 2019), 19.

9 *Id.*

10 NYISO, *Power Trends 2021*, 25, 29.

satisfying a Public Policy Transmission Need ("PPTN") on energy markets administered by NYISO and on the cost-effectiveness of new PPTN projects.[11] The evaluation report was required under NYISO's Open Access Transmission Tariff Section, then newly modified to comply with FERC Order 1000 and the December 2015 PSC Order Finding Transmission Needs Driven by Public Policy Requirements.[12] The purposes of PPTN projects include "serving more load in downstate areas from efficient and/or renewable resources upstate, promoting job growth, increasing tax receipts, and reducing generation with harmful environmental and health effects."[13] Potomac Economics concludes:

. . . There is considerable uncertainty regarding the benefits from the recommended transmission projects because the benefits would depend on where renewable resources are placed to satisfy the CES. The NYISO assumed that 14 GW of land-based wind and utility-scale solar additions would be made outside Southeast New York ("SENY") and that just 226 MW of offshore wind would be placed in downstate areas. However, after the NYISO's study was underway, NYSERDA announced plans to solicit 2.4 GW of offshore wind in downstate areas by 2030, including 800 MW in 2018 and 2019. Increased offshore wind in downstate areas would reduce the need for renewables outside SENY to satisfy the CES. Hence, the recent shift in the planned placement of renewable generation (from upstream to downstream of the projects) would make the recommended projects less beneficial. . . . The projects increase the transfer capability substantially over the UPNY/SENY interface, but will not result in large increases in power flows into SENY because of forecasted bottlenecks mostly downstream of these interfaces . . .[14]

. . . the proposed [four] transmission solutions facilitate a relatively modest amount of increased flows from upstate to downstate areas partly because of bottlenecks downstream of the proposed projects.[15]

In 2020, New York's transmission and delivery utilities filed their estimates for CLCPA related work. Assuming near term additions of wind and solar (8600 MW), or "phase 1" of the effort, the price to integrate that capacity into the grid is $6.8 billion. The utilities estimate the cost of all transmission and distribution work needed for implementing CLCPA is $17 billion. This cost addresses only transmission lines and substations, not the cost of the new generation facilities.[16] $6.8 billion to transmit power from 8600 MW of

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11 Potomac Economics, *MMU Evaluation of the Proposed AC Public Policy Transmission Projects* (February 2019), ii, available at <https://www.nyiso.com/library>.

12 See PSC Case 12-T-0502.

13 *Id.*

14 *Id.,* vi.

15 *Id.*, 3.

16 *See* Brattle Group, *Initial Report on the New York Power Grid Study* (January 19, 2021),

facilities that only run on average 26 percent of the time equates to $790,000 per MW.

These new facilities would in theory un-bottle generation, and thereby lower the cost of power downstate (and slightly raise it upstate). However, the identified investment for only phase 1 of a larger plan shows that reliance on renewable generation requires New Yorkers to shoulder unrealistic costs.

The timeframe within which transmission investments in New York will be made and become effective is unknown. In the meantime, downstate cannot benefit because upstate energy is not being delivered downstate. More large-scale wind and solar energy upstate will not displace carbon-emitting power upstate because upstate there is very little carbon-emitting power.

The most recent bulk transmission project to be approved in New York is Clean Path NY, jointly sponsored by Invenergy and NYPA, which will connect the Delhi substation in the Catskills to Queens. However, this project can deliver energy to New York City only if it reaches Delhi. A recent *Power Trends* report shows graphically that several transmission bottlenecks exist between currently operating or proposed central and western New York large-scale renewable facilities and Delhi.[17] A look at Clean Path NY's application for NYSERDA funding reveals that it is not upstate renewable energy that the project will deliver to New York City. Instead, the project proposes to deliver Renewable Energy Credits ("RECs") awarded by NYSERDA to Invenergy's upstate generating projects (and a few others) to New York City. The project's primary purpose is to ensure a dedicate revenue stream from New York City metro area utilities, who must purchase RECs, to renewable energy developers. This will have little or no effect on the poor performance of the downstate grid.

Any serious assessment of the feasibility of New York's reliance on large-scale renewables to achieve its energy goals requires not only a basic understanding of how the grid works, but an understanding of the adverse environmental health effects of siting large-scale renewables in quiet rural communities. Nothing in the Draft Plan indicates the Council has sought to educate itself on such matters. Indeed, the Draft Plan assumes incorrectly that upstate electricity can be delivered downstate.

UPSTATE POWER WILL NOT BECOME SUBSTANTIALLY MORE CARBON-FREE

More large-scale wind and solar energy upstate will not displace carbon-emitting power upstate because there is so little of such power. Upstate's carbon-free power currently includes six percent wind power; the remainder is hydropower and nuclear power. It will likely be an insurmountable challenge to improve on upstate's 90% carbon-free electricity

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Appx C, *Utility Transmission and Distribution Investment Working Group Report* (November 2, 2020), available at <https://www.nyserda.ny.gov/-/media/Files/Publications/NY-Power-Grid/full-report-NY-power-grid.pdf>.

17 NYISO, *Power Trends 2021*, 39.

with more renewables, for the following reasons.

In the first instance, nuclear and hydropower, and combined-cycle gas-fired power plants are "must run" resources, and under NYISO's rules they cannot be displaced by new energy facilities.

Second, NYISO rules require the least economic generation resources be curtailed in order to accommodate new resources. RECs revenue accounts for about half of the revenue of a wind or solar farm. RECs are awarded by NYSERDA to renewable project sponsors, generally under a 20-year contract. Project sponsors then sell RECs to utilities which are required to purchase them to offset the emissions caused by the generators of electricity they use. Ratepayers pay these costs through their utility bills. Because older wind farms whose RECs contracts with NYSERDA have expired are generally the least economic, NYISO rules require the operation of those wind farms to be curtailed to accommodate new wind and solar farms. In a bottled upstate grid, the growth in wind and solar farms will result in growth in the amount of curtailment of older wind and solar farms.

Third, because wind and solar power are weather-dependent and therefore unreliable, overbuilding of generation capacity will be needed, with reserve capacity needed for peak demand period remaining idle most of the time. The principle goal of operating the grid is to maintain a steady voltage and to avoid "loss of load" (i.e., power failures). In other words, a grid is operated in order to maintain reliability. "Installed reserve capacity" ("IRM") is necessary to ensure load during peak demand, the hottest summer periods and the coldest winter periods. These are a small fraction of 8,760 hours in a year but without sufficient IRM a blackout results. NYISO has said that the IRM "has generally ranged between 15% and 18% in recent years", but to accommodate the anticipated renewables build-out policy the IRM must increase "to between 40% and 45% . . . to maintain reliability."[18] "The increased capacity requirement will be largely met by the additional capacity contribution of the proposed renewable resources."[19] Land-based wind is unavailable during peak demand 86% of the time, solar power unavailable 55% of the time.[20] Once committed to an all-renewables grid, the build-out of renewable energy projects will need to spiral far beyond CLCPA's technology targets and far beyond the toleration of rural communities asked to host them.

Fourth, the need to overbuild renewables, curtail older renewables, and maintain combined-cycle gas-fired power plants is in addition to poor long-term average performance of renewables. Cloud cover and unpredictable wind make large-scale renewables intermittent. To balance the load, NYISO must regularly call on fast-starting gas-fired generators to fill the gaps caused by intermittent power. Thus, increasing intermittent generation on the grid will increase the utilization of gas-fired small power plants.

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18 NYISO, Supplemental Comments on the Clean Energy Standard, (above, note 1), 9.

19 *Id.*, 10.

20 *Id.*, 11, Table 1.

The poor performance of renewables starts with their inability to generate more than a third of what they are designed to generate. The "capacity" of a power plant is not the same as its actual generation rate. The "capacity factor" is the percentage of predictable electric generation compared to what is theoretically available if the plant operated 24/7/365 at its full design capacity. Renewables start with the lowest capacity factor of any energy resource. While nuclear and hydropower can operate reliably at more than 90% of their design capacity, wind operates at less than 30% and solar at less than 20%.[21] Those capacity factors are annual averages of the actual power each resource type provides, without regard to the grid's reserve capacity needs, its need to curtail some renewables, and its need to maintain an increasing reserve capacity for peak demand.

Thus, apart from grid constraints, a 300 MW wind farm will provide about 100 MW of power on average, while a 300 MW nuclear power plant will provide close to 300 MW of power on average. If capacity on the grid is provided by more than 6% wind power, as is the case at present upstate, NYISO has said that reserve capacity must increase substantially.

These physical constraints on the ability to fully utilize weather-dependent, unreliable renewable power raise serious questions about precisely how much carbon emissions from fossil-fueled power plants can be displaced by large-scale renewables. If the answer is very little, a Climate Action Plan to reduce emissions that relies substantially on large-scale renewables (because they are a substantial source of capacity) will not be effective. This has been the experience in Europe. There the build-out of large-scale wind and solar energy has resulted in increasing idle capacity over time for both wind and natural gas-powered plants, making the entire electrical system more inefficient and resulting in a system that is unable to substitute wind power for fossil fuel power.[22]

THE NEW YORK STATE LEGISLATURE WAS UNINFORMED ABOUT THE PHYSICAL OBSTACLES TO ACHIEVING THE CLCPA TARGETS

The authors of the CLCPA were led to believe that with the use of enough intermittent renewables or by using long transmission lines sufficient transfer of electricity between locations would result to largely offset intermittency. However, in the third quarter of 2021, weak winds were a significant contributor to a power crunch through out Europe. Europe's largest wind producers (Britain, Germany and France) provided only 14% of their installed renewable energy capacity during this period, compared with an average of 20% to 26% in previous years. Because no one had planned for this kind of three-month shortfall, prices skyrocketed.[23]

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21 NYISO, *Power Trends 2020*, 18.

22 *See* António Cardoso Marques et al., "Have fossil fuels been substituted by renewables? An empirical assessment for 10 European countries," Energy Policy 116 (2018) 257-265, at 263b. *See also* M.R. Shaner, S.J. Davis, N.S. Lewis and K. Caldeira, "Geophysical constraints on the reliability of solar and wind power in the United States", 4 Energy & Environmental Science (2018).

23 See Nora Buli and Stine Jacobsen, "Analysis: Weak winds worsened Europe's power crunch; utilities need better storage" (Reuters December 22, 2021) (low or zero-emissions backup-

The CLCPA authors also believed that adequate storage for electricity could be developed within the CLCPA timeframes to resolve the problem of large-scale renewables' intermittency, but adequate storage is not feasible in any reasonable timeframe.[24] Electric batteries are highly toxic and require large volumes of carbon emissions to mine their materials; there is currently no capacity for their responsible disposal.[25]

More importantly, the Draft Plan fails to identify current energy system expenditures in New York, making it impossible to evaluate the Plan's conclusions about the net costs to New Yorkers of the different scenarios presented for achieving the CLCPA goals.[26] The Council is required to "quantify" and make "publicly available" the economic and social benefits and costs of the CLCPA goals "using the best available economic models, emission estimation techniques and other scientific methods".[27] Because these models and methods have not been made available in the Draft Plan, it is not possible to comment on the Plan's conclusions regarding the costs of the Plan.

The Council's use of the Social Cost of Carbon by itself indicates that the net benefits of achieving the CLCPA goals has been exaggerated in the Plan by multiples. The Social Cost of Carbon in 2020 is the net present benefit of reducing carbon dioxide emissions by one tonne in 2020. This benefit should be compared to the costs of reducing emissions in 2020. However, the Council's scoping plan relies on NYSERDA's method, calculating the benefit of reducing CO2 emissions based on the annual reduction amount multiplied by the expected lifetime of the investment, which is then multiplied by the value for Social Cost of Carbon. This approach to cost-benefit analysis is novel.

By contrast, a cost-benefit analysis is required under EPA's Reasonably Available Control Technology rule. EPA's rule calculates the benefit of an emissions control program by dividing the program cost by the annual emissions reduction, to obtain the cost in dollars per ton of emissions reduced. Under this method, the net present benefit of reducing carbon dioxide emissions by one tonne in 2020 is compared to the costs of reducing emissions in 2020. The Council's Plan departs from this method by counting the benefits of emissions reductions in one year multiple times. Correcting that error results in negative benefits comparable to the amount of positive benefits the Plan claims.

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capacity is "still more than a decade away from being available at scale."), available at <https://www.reuters.com/markets/commodities/weak-winds-worsened-europes-power-crunch-utilities-need-better-storage-2021-12-22/>.

24 *Id.* ("Such storage would require an amazingly large quantity of materials to produce.").

25 *See* Bruce Haedrich, "Batteries by NMC532-X" (January 7, 2022), at <https://stopthesethings.com/2022/02/12/ev-collision-course-more-big-batteries-means-more-major-environmental-destruction/>.

26 *See* Draft Plan, Appx. G, Figs. 45-55.

27 CLCPA § 75-0103(14)(b).

The consultants' report on which the Draft Plan is based estimates that to cut economy-wide greenhouse-gas emissions (from 1990 levels) by 40% by 2030 and 100% by 2040 will cost New York utilities $280-$340 billion. The report identifies benefits of $420-$430 billion, but more than half of that amount — $260 billion — is said to be global reductions in harm from climate change. New York carbon emissions are about 0.4% of global carbon emissions. That means the cost of the Plan would be borne by New Yorkers for slight gains in all parts of the world. China and India do not plan to start reducing emissions until 2030. They cannot avoid growing emissions in order to increase national wealth.

The New York-only benefits identified in the report are $170 billion. Compared to the cost to New York utilities of $280-$340 billion, largely passed on to ratepayers,[28] that's not a net benefit. And it may be much higher as projects get proposed, sited and built.

$280-$340 billion is far shy of the $15 billion in annual funding to implement the Climate Action Plan that was called for in the last Legislative budget sessions by CLCPA supporters. But no funding was included in the 2022-2023 state budget.

Beyond New York, other states have adopted aggressive emissions reduction targets. Currently, 36 states and the District of Columbia have a renewable portfolio standard or goal, and 10 states have a clean energy standard or goal. Numerous states have also adopted requirements or goals to reduce carbon or greenhouse gas emissions by a certain percentage. Some of these emissions reduction policies apply to the electricity sector specifically, while others apply economy-wide.[29] But no state is relying as heavily as New York on large-scale renewable energy facilities. Indeed, without altering their decarbonization goals, in the face of growing realization about the physical limits and adverse impacts of large-scale renewables, many states are abandoning principled reliance on large-scale renewables.

WIND TURBINE NOISE, PUBLIC HEALTH AND RURAL RESISTANCE

The local adverse impacts of large-scale renewables, the lack of meaningful local benefits, and the aggressive manner of energy developers embolden by generous subsidies and tax credits and the prospect that local laws will be routinely disregarded by siting agencies, can understandably led to widespread resistance to large-scale renewables in the rural communities that must host them.

The rural communities hosting land-based large-scale renewables have learned that

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28 *Cf.* PSC No. 22-M-0149, *In the Matter of Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act*, Order on Implementation of the Climate Leadership Act (May 12, 2022), 20 ("investments required to implement the CLCPA are becoming a significant driver of utility rate increases").

29 As of this writing, DSIRE lists 2,634 state programs driven by these goals. *See* North Carolina Clean Energy Technology Center, N.C. State University, Database of State Incentives for Renewables & Efficiency, at <https://programs.dsireusa.org/system/program>.

virtually no permanent jobs are created by such projects. Post-constriction jobs at wind farms are limited to part-time, no-benefit inspector jobs. Wind farms are operated remotely, for example from Chicago for several Invenergy-affiliated projects. If a tower needs to be climbed to repair the wind generator, specialists from out of state are called. No one operates a solar farm after it is built.

Local property taxes are typically discounted 75% when projects are financed through the local industrial development authority ("IDA"). Under the CLCPA, a state-mandated assessment methodology has been imposed on IDAs, further reducing local taxes. IDA sponsorship also results in waiving sales taxes for all materials purchased locally, and this can save project developers millions.

The Supplemental Environmental Impact Statement prepared in support of the CES found that wind farms will have a significant adverse impact on community character in the rural towns that host them. However, it declined to consider the nature of the impact in any detail, concluding that doing so would be best left to case-by-case consideration as projects are reviewed.[30]

The environmental impacts of wind and solar farms are hardly benign. The hearing report for the Alle-Catt Wind Energy project in western New York found that the project area is 106 square miles and would kill 41 Bald Eagles, 26,000-39,500 thousand bats, including species on the verge of extinction, and thousands of birds. The report also found that the project would clear 1,550 acres of mature forest.[31]

The Horseshoe Solar Energy project in southern Monroe County would remove approximately 2,000 acres of active farmland to install 1,271 acres of solar panels and racks, 29.6 miles of fencing, and 17.2 miles of access roads.[32] The project would drive hundreds of piles to support the racking system 10 feet into the ground on land located over the densest collection of prehistoric and historical Native artifacts and human remains in the state.[33]

The Town of Rush, one of two towns that would host the Horseshoe Solar project,

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30 *See* PSC Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, and others*, Final Supplemental Environmental Impact Statement (May 19, 2016), at 9-9 to 9-10.

31 *See* PSC Case 17-F-0282, *Application of Alle-Catt Wind Energy LLC for a Certificate of Environmental Compatibility and Public Need Pursuant to Article 10 for a Proposed Wind Energy Project, Located in Allegany, Cattaraugus, and Wyoming Counties, New York, in the Towns of Arcade, Centerville, Farmersville, Freedom, and Rushford*, Hearing Examiners' Recommended Decision (Feb. 27, 2020), at 25 and 74.

32 *See* PSC Case No. 21-02480, *Application of Horseshoe Solar Energy LLC for a 94-c Permit*, "Article 10 to Section 94-C Transition Supplement Overview" (December 23, 2021), at 3.

33 PSC Case No. 21-02480, Invenergy Exhibit 21-6.

welcomes solar projects and under its zoning code limits each to 250 acres. Knowing the local law, Horseshoe proposed a 2,000-acre project. ORES has denied the town's request to be a party in the case, in order to defend its local law.

The same thing happened with the Heritage Wind project in western New York. After revising the local law to accommodate the project sponsor's plans, the project sponsor changed its plans in order to erect taller wind turbines, the town objected that the plan fails to comply with local law, and ORES denied the town an opportunity to defend its local law.[34]

Unsupported waivers of local laws by state siting agencies in order to ram through environmentally destructive projects with questionable benefits has elicited a wave of resistance to large-scale renewables upstate—away from southeastern New York, the Adirondacks and the Catskills, where they will never be built. Just as now-traditional urban environmental justice communities resist disproportionate environmental and health threats, so do rural communities.

The health threats of a wind farm to the host community are not insignificant. In the Alle-Catt Wind Energy case, the New York State Department of Health ("NYSDOH") testified as a party that wind turbine noise and exposure to "shadow flicker" are serious threats to local public health. Shadow flicker is the strobing effect as light from the sun at early morning or evening as it passes behind moving wind turbine blades. Some residence must vacate their homes during the times when shadow flicker occurs. Shadow flicker will trigger epileptic seizures for a smaller number of especially sensitive residents. New Hampshire limits shadow flicker exposure to eight hours per year. New York has no limit. NYSDOH testified that a limit of 30 hours per year and 30 minutes per day is the minimum need to protect public health.[35]

NYSDOH also testified that 45 decibels at residential property lines is the minimum noise limit need to protect public health, provided that the "day-night" metric is used. This metric requires nighttime noise to be penalized by adding 10 decibels and then averaged with the noise level during the remaining 24 hours of a day. NYSDOH noted that wind turbines create over 100 decibels of noise, requiring considerable distance to degrade to acceptable levels. NYSDOH's recommended limit is 7 or 8 decibels lower than developers request, and its recommendation would still leave about 10 percent of the community "highly annoyed". NYSDOH testified that chronic annoyance is an adverse health affect, linked to several poor health outcomes.

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34 ORES Case 21-00026, *Application of Heritage Wind, LLC for a Permit for a Major Renewable Energy Facility Pursuant to Section 94-c of the New York State Executive Law to Construct a 184.8 MW Wind Energy Facility located in the Town of Barre, Orleans County*, DMM No. 47, Ruling on Issues and Party Status (July 8, 2021).

35 PSC Case 17-F-0282, DMM No. 291, Direct Testimony of Henry M. Spliethoff, M.S. Research Scientist (September 2019, filed November 27, 2019).

NYSDOH's testimony was rejected by a Siting Board under Public Service Law, Article 10, and since then ORES has adopted the Siting Board's noise standard, 45 dBA Leq (equivalent average over a state period). NYSDOH's recommendation is the equivalent of 38-39 dBA Leq. Five studies of background sound levels in western New York were submitted in the Alle-Catt proceeding demonstrating that ambient sound levels at night are 25 dBA Leq or lower.[36] According to NYSDEC's noise policy, an increase of 6 dB over the existing sound level is a "significant" impact, and an increase of 10 dB is perceived as a doubling of the sound level. However the perceived increase is greater when the noise source is pulsating, occurs at night, or is composed substantially of low-frequency noise.[37] All three characteristics mark wind turbine noise.

In his testimony in that proceeding, Dr. Paul Schomer, chairman of both the ISO and the ANSI working groups on environmental noise assessment, and Standards Director, Emeritus, for the Acoustical Society of America, stated that a 10dB reduction in residential noise limits is prescribed by ISO 1996-1:2016/ANSI S12.9 part 4 for quiet rural, areas. This adjustment is to be applied to ANSI S12.9 Part 5, which prescribes 55 dBA DNL (day-night average) as a limit for residential land with extensive outdoor use. The resulting noise exposure limit is 45 dBA DNL, or 38-39 dBA Leq (24-hr.).[38]

If 55 DNL for road traffic noise is calculated, the applicable national acoustic standard associates that level with 5.3% of the community exposed becoming "highly annoyed".[39] "CTL . . . contains functions for road noise, aircraft noise, two forms of railroad noise, and wind turbine noise."[40] The level for 5.3% HA for wind turbine noise is 38 DNL.[41] A "survey of national and international wind turbine noise limits and setback distances" issued by the state of Minnesota reveals an average limit of 36 dBA.[42]

NYSDOH agreed, but acknowledged that the State's energy goals may conflict with public health goals. As noted, current siting standards conflict with what NYSDOH states is the minimum needed to protect public health. The obvious effect on community character when a rural community is subjected to industrial noises at industrial levels, in addition to

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36 PSC Case 17-F-0282, DMM No. 223 (submissions of Richard James past INCE member).

37 NYSDEC, *Assessing and Mitigating Noise Impacts* (2001), available at <https://www.dec.ny.gov/docs/permits_ej_operations_pdf/noise2000.pdf>.

38 PSC Case 17-F-0282, DMM No. 223, Direct Testimony of Dr. Paul D. Schomer (October 4, 2019, filed October 7, 2019), 14.

39 *See* ISO 1996-1:2016 (the "Community Tolerance Level").

40 PSC Case 17-F-0282, DMM No. 223, Direct Testimony of Dr. Paul D. Schomer, 16.

41 *Id.*, 15-16.

42 *Id.*, 16-17.

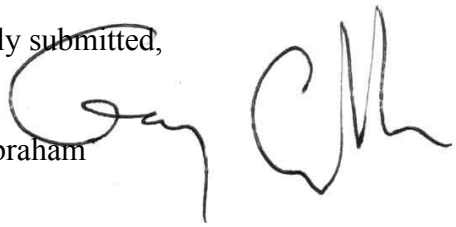
adverse health effects on a substantial fraction of the community, and the absence of jobs or other meaningful economic benefits is driving rural resistance.

The Council should provide a clear signal that it will not adopt the disrespectful if not discriminatory view that upstate land is essentially vacant, not needed for food production, and farming is not an economic anchor for upstate rural communities (and an essential resource for urban communities). It should also signal some sympathy for the environmental injustice of relying on rural communities whose local government is disregarded in order to site a new energy technology that has yet to prove it can play more than a marginal role in battling climate change.

ALTERNATIVES

Over 1,000 emissions reduction measures are being considered in an international effort called the Deep Decarbonization Project.[43] It is likely that a generation from now we will have turned to effective solutions like these. Worse, a single-minded focus on large-scale intermittent renewables will have starved these other solutions of resources and oxygen in the carbon emissions policy debate. Obsolete wind farms may be left scattered across the countryside to remind future generations of their past leaders' policy failure.

Respectfully submitted,



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43 *See* Michael B. Gerrard and John C. Dernbach, eds., *Pathways to Deep Decarbonization in the United States: Summary and Key Recommendations* (ELI 2018). This is a compilation of recommendations found in James H. Williams, et al., *Pathways to Deep Decarbonization in the United States* (November 2015). The current work of the Project is available at <https://www.iddri.org/en/project/deep-decarbonization-pathways-project>. (IDDRI is the Institut du Développement Durable et des Relations Internationales, or Institute for Sustainable Development and International Relations.)