Caiazza Comments on
Draft Chapter XVIII, Title 19 of NYCRR Part 900
Office of Renewable Energy Siting
Subparts 900-1 – 900-5; 900-7 – 900-14
November 16, 2020

Introduction

These comments address shortcomings and inadequacies in the proposed regulation. The public welfare and environment are threatened by the lack of a cumulative environmental impact analysis. I don't understand why applicants don't have to provide capability information in the applications. At a minimum, electrical energy capabilities should be required and that information should not be treated as a trade secret. It is unclear why New York should offer accelerated renewable energy development to facilities that are built for out-of-state renewable energy credit. I believe the wind turbine set-backs are inadequate. The aggressive review deadlines for applications and the provision that if agency review is not completed the applications shall be deemed complete require a provision for a safety valve if agency staff are overwhelmed by a large number of applications. Finally, I note that the most recent version of the World Health Organization Guidelines for Community Noise is not incorporated by reference to the detriment of affected residents.

I am following the implementation of the Climate Leadership and Community Protection Act (CLCPA) and the Accelerated Renewable Energy Growth and Community Benefit Act (AREGCBA) because I believe they will not only affect the affordability and reliability of New York's energy but also have much worse short-term and long-term environmental impacts than can ever be attributed to climate change due to New York's emissions. I am a retired utility meteorologist with nearly 45 years environmental assessment experience. The opinions expressed in these comments 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.

Deficiencies

There are three significant deficiencies in the implementation of the CLCPA and the proposed AREGCBA regulations. Firstly, I think it is necessary for the State to consider the cumulative environmental impact of the wind and solar resources necessary to replace the fossil-fired electric generating capacity of New York. Secondly, as far as I can tell, renewable facility applications don't have to provide any of the capability information included in Article 10 §1001.8 Exhibit 8: Electric System Production Modeling. Finally, because AREGCBA has been implemented to expedite New York's CLCPA targets but reduces protections for New Yorkers the regulation should only be applicable to permit applications for projects that will produce renewable energy credits for New York.

Cumulative Environmental Impacts

The greatest deficiency of the Climate Leadership and Community Protection Act (CLCPA) and the Accelerated Renewable Energy Growth and Community Benefit Act (AREGCBA) is the failure to consider the cumulative environmental impact of the wind and solar resources necessary to replace the fossil-fired electric generating capacity of New York. It can be argued that on an individual or even facility basis that most environmental impacts are acceptable. It is clear that applicants should not be required to address cumulative impacts. Nonetheless, cumulative environmental impacts are a concern and should be considered with respect to these regulations so ORES should provide that analysis.

In order to assess the potential impacts on power system reliability in 2040 when meeting the CLCPA target for 100% zero-emissions electric generation, the New York Independent System Operator (NYISO) contracted with ITRON and the Analysis Group to develop estimates of the necessary resources. On October 8, 2020 Kevin DePugh, Senior Manager for NYISO Reliability Planning, made a presentation to the Executive Committee of the New York State Reliability Council that summarized their work and provides an estimate of the Generation Capacity resource mix (Table A). The resource mix for the climate change phase II, CLCPA case is extraordinary. At the end of 2019 the total New York State wind nameplate capacity was 1,985 MW but this case projects that 35,200 MW will be needed which is the National Renewable Energy Lab (NREL) projected total technical potential land-based capacity. Governor Cuomo has announced offshore wind targets totaling 9,000 MW by 2035 but this case projects a need for 21,063 MW by 2040 which is another technical potential estimate limit. There are 6,000 MW of solar by 2025 in the CLCPA targets but this projection estimates that 10,878 MW of behind-the-meter solar and 29,262 MW of grid connected solar will be needed.

Table A: Generation Capacity – Climate Change Phase II Analysis, CLCPA Case

Nameplate Capacity by Zone, MW	A	B	C	D	E	F	G	H	I	J	K	Total
Land-based Wind	10,815.9	1,566.9	7,726.2	7,774.5	7,316.4	-	-	-	-	-	-	**35,200.0**
Offshore Wind	-	-	-	-	-	-	-	-	-	14,957.8	6,105.2	**21,063.0**
Solar (Behind-the-meter)	1,408.5	436.4	1,192.8	138.2	1,345.5	1,653.4	1,367.3	121.2	179.4	1,343.1	1,692.2	**10,877.8**
Solar (Grid Connected)	11,496.0	1,312.0	7,170.0	-	4,536.0	9,322.0	5,272.0	-	-	-	154.0	**39,262.0**
Hydro Pondage	2,675.0	-	-	856.0	-	-	41.6	-	-	-	-	**3,572.6**
Hydro Pumped Storage	-	-	-	-	-	1,170.0	-	-	-	-	-	**1,170.0**
Hydro Run-of-River	4.7	63.7	70.4	58.8	376.2	282.5	57.1	-	-	-	-	**913.4**
Nuclear	-	581.7	2,782.5	-	-	-	-	-	-	-	-	**3,364.2**
Imports	-	-	-	1,500.0	-	-	-	-	-	1,310.0	-	**2,810.0**
Storage	4,232.0	20.0	3,160.0	4,168.0	2,296.0	292.0	84.0	-	-	1,096.0	252.0	**15,600.0**
Price Responsive Demand (Summer)	949.9	205.2	510.1	357.7	211.1	433.9	246.3	58.6	134.9	1,940.8	187.6	**5,236.0**
Price Responsive Demand (Winter)	619.0	133.7	332.4	233.1	137.5	282.7	160.5	38.2	87.9	1,264.7	122.3	**3,412.0**
DE Resources	465.4	674.2	1,513.4	370.0	312.7	3,390.4	6,887.2	79.8	-	11,848.1	6,595.4	**32,136.6**

Most concerning to me is that an analysis done for NYSERDA on wind power and biodiversity found that: "5,430 square kilometers (1.3 million acres) of land in New York that are both suitable for wind power development and avoid areas that are likely to have high biodiversity value. Using an estimate of 3.0 MW/square kilometers, this translates to a megawatt capacity estimate of 16,300 MW (± 9,000 MW) for New York's terrestrial landscape." The difference between these numbers suggests that wind turbines will have to be sited within the areas of high biodiversity value.

The potential cumulative environmental impacts for facilities sited inside the areas flagged for their biodiversity status could have devastating consequences for all avian species and particularly for bald eagles. The requirements in §900-6.4(o)(6) are inadequate:

> (1) To avoid and minimize impacts to bald eagles), the permittee shall implement the following:
>
> (i) If, at any time during construction and operation of the facility, an active bald eagle nest or roost is identified within the facility site, the NYSDPS and the Office shall be notified within forty-eight (48) hours of discovery and prior to any disturbance of the nest or immediate area. An area one quarter (0.25) mile for nests without a visual buffer and six hundred sixty (660) feet in radius for nests with a visual buffer from the nest tree shall

be posted and avoided to the maximum extent practicable until notice to continue construction at that site is granted by the NYSDPS and the Office.

(ii) Tree removal is not allowed:

(a) Within six hundred sixty (660) feet from an active nest during breeding season (January 1 – September 30);

(b) Within one quarter (0.25) mile from an important winter roost during the wintering period (December 1 – March 31); or

(c) Of overstory trees within three hundred thirty (330) feet of an active nest at any time.

(iii) Operational Impacts from Wind Facilities. If at any time during the operation of the facility a bald eagle is injured or killed due to collision with project components, the permittee shall pay the required mitigation fee into the Endangered and Threatened Species Mitigation Bank Fund commensurate with number of eagles taken with the sole purpose to achieve a net conservation benefit to the impacted species.

It beggars the imagination that wind turbines just over a quarter of a mile, much less six hundred sixty-one feet won't have serious impacts on bald eagles whose ranges surely exceed those limits. The final insult is the Endangered and Threatened Species Mitigation Bank Fund that gives a license for turbines to kill eagles "commensurate with number of eagles taken with the sole purpose to achieve a net conservation benefit to the impacted species". Clearly, a cumulative environmental impact study that includes an evaluation of industrial wind facilities in areas with high biodiversity value" and addresses the specific needs of bald eagles is needed. It could very well be that no amount of spending to achieve conservation benefits will out-weigh the carnage of wind turbine "Cuisinarts of the Air".

Electric System Production Modeling

The Article 10 §1001.8 Exhibit 8: Electric System Production Modeling regulation states that: "the Applicant shall consult with DPS and DEC to develop an acceptable input data set, including modeling for the Applicant's proposed facility and inputs for the emissions analysis, to be used in the simulation analyses". Clearly any references necessary for emissions analysis are inappropriate but this section also requires information modeling the effect of the project on the electric system. It is not clear to me why this kind of modeling won't also be necessary for these applicants. However, state law needs these resources so I think a state agency should provide that modeling because it is not the applicant's problem.

I believe that there are some requirements in the Article 10 §1001.8 Exhibit 8 (a) that are still appropriate for the applicant to provide. That section states:

The following analyses that shall be developed using GEMAPS, PROMOD or a similar computer-based modeling tool:

(1) estimated statewide levels of SO2, NOx and CO2 emissions, both with, and without the proposed facility;

(2) estimated minimum, maximum, and average annual spot prices representative of all NYISO Zones within the New York Control Area, both with and without the proposed facility;
(3) an estimated capacity factor for the facility;
(4) estimated annual and monthly, on peak, shoulder and off-peak MW output capability factors for the facility;
(5) estimated average annual and monthly production output for the facility in MWhs;
(6) an estimated production curve for the facility over an average year;
(7) an estimated production duration curve for the facility over an average year; and
(8) estimated effects of the proposed facility on the energy dispatch of existing must-run resources, defined for this purpose as existing wind, hydroelectric and nuclear facilities, as well as co-generation facilities to the extent they are obligated to output their available energy because of their steam hosts.

Most of this information is unnecessary for this regulation. However, I suggest that some of this information is still needed. In the case of a fossil-fired power plant application the estimated capacity factor of the power plant is a function the electric system, thus the requirement for electric production modeling. However, for a solar or wind facility the capacity factor is a function of the resources available at the facility and that is clearly something that any application should include. I recommend that the regulation include a requirement for the applicant to provide an estimated capacity factor for the facility; estimated annual and monthly, on peak, shoulder and off-peak MW output capability factors for the facility; and the estimated average annual and monthly production output for the facility in MWhs;

AREGCBA Applicability

The website for the Office of Renewable Energy Siting overview states that the Office will "Streamline and expedite the siting of major renewable energy projects and associated transmission facilities to help achieve the State's clean energy and climate goals, while maintaining the State's strong environmental and public participation standards" and that it will "Ensure that renewable energy projects deliver economic benefits to the local communities where they are built". New York's Article Ten permitting process for electric generating facilities ensured that there were strong environmental and public participation standards but according to Governor Cuomo AREGCBA "will dramatically speed up the siting and construction of major renewable energy projects to combat climate change". I believe that will be accomplished essentially by over-ruling local participation and concerns. However, at least the accelerated schedule will speed-up renewable resource development that can be used to meet the State's CLCPA targets. Local residents can then at least have some solace that the renewable benefits to New York are a trade-off for the loss of their control with these developments.

Unfortunately, that may not always be the case. Robert Bryce, writing on the Real Clear Energy blog recently wrote about an aspect of New York wind development that is applicable to the AREGCBA regulations. He explains that New York is becoming "a wind-energy plantation for New England" with massive projects proposed in the state's poorest counties. In particular, he describes one project:

"The 126-megawatt Cassadaga Wind Project is now being built in Chautauqua County, New York's westernmost county. The project includes 37 turbines, each standing about 500 feet high,

spread over 40,000 acres (62 square miles). The project is owned by Innogy, a subsidiary of the Essen, German-based utility E.On."

On January 18, 2018 the New York Department of Public Service published the Order Granting Certificate of Environmental Compatibility and Public Need, With Conditions for the Cassadaga Wind Project which approves the application to build the facility. Buried in this document is the following: "the output of the Facility is contracted for out-of-state purchase". Mr. Bryce explains that generation will be credited toward renewable goals in Massachusetts, Connecticut and Rhode Island. He notes that in an email:

> "a spokesperson for Innogy confirmed that the buyer of the power to be produced by Cassadaga 'is a group of seven New England utilities procured through the New England Clean Energy request for proposals' in 2016. How will the juice from New York get to New England? It won't. Instead, the Innogy spokesperson told me that the energy produced by the turbines at Cassadaga 'will be used to serve local energy requirements in areas surrounding the project. Export to areas outside New York would require dedicated point-to-point transmission lines'."

As a result, the Cassadaga Wind Farm cannot be considered as part of the renewable energy that counts towards the CLCPA zero-emission by 2040 goal because that would be double counting.

Mr. Bryce also reviewed data published by the Department of Energy and the New England Power Pool to look at the overall picture. He found that "of the nearly 4 million megawatt-hours of wind energy produced in New York in 2018, the state exported 1.2 million megawatt-hours, or 30 percent, to New England. When the Cassadaga wind project begins operating, it will likely add another 364,000 megawatt-hours per year in renewable-energy credits to that export total". That means even a portion of existing renewables are unavailable to meet New York's goals.

I recommend that the accelerated permitting afforded under the AREGCBA only be available to projects earmarked for New York. In the first place it is an equity issue for New Yorkers. There clearly are issues with sprawling wind and solar energy facilities but those impacts are a trade-off for New York to meet its goals. Furthermore, the amount of renewable energy resource development needed to meet New York's goal is massive and will likely push the economically available siting limit. Therefore, New York's interests should come first by offering the incentive of enhanced siting and construction schedules only to facilities that will provide renewable energy credits to New York.

§900-1.3 Pre-application procedures

I believe that one of the major differences between this regulation and Article 10 is that Article 10 had a process that ensured that the public was aware of the project. Article 10 applications include a Public Involvement Plan report requirement that documents the project and public outreach efforts. One of the arguments for the AREGCBA is that some requirements can be standardized and it is unnecessary for each applicant to "re-invent the wheel" to meet them all. However, that means that ORES has to specify what is need to meet any standard requirements in sufficient detail that the intent of the requirement is met.

The only specifications for public involvement are contained in two paragraphs in §900-1.3 (b) and (c). That is clearly insufficient. While there is a specific requirement to provide written notice to all persons residing within one (1) mile of the proposed solar facility or within five (5) miles of the proposed wind facility that the application has been filed, there is nothing explicit requiring notification of those persons about the public meeting describing the project in §900-1.6. I think that it is clearly insufficient that the requirement is for a single public meeting especially without specific notification requirements. If those people cannot attend that meeting or get to the library to read the hard copy in the short time frame, they are not getting adequate notification. ORES should provide more detailed requirements for applicants to insure that affected persons are aware of the project.

In Article Ten applicants were required to set up a web site and provide all the necessary documentation there. Here is an instance where ORES can provide that service for the applicants. Moreover, it would be appropriate for ORES to maintain a single repository of all application documentation. As an aside, I implore ORES to develop a more user-friendly interface for such a repository than the Department of Public Service DMM web page. All the application descriptive information should be in one location, filings in another location, and comments in a third location for starters. Please don't make users scroll through many filings to find the key documents.

§900-1.4 General requirements for applications

Subsection (5) states: "Identify any information that the applicant asserts is critical infrastructure information or trade secrets pursuant to Article 7 of the New York State Public Officers Law, or other applicable state or federal laws, which the applicant requests the Office not to disclose and reasons why such information should be excepted from disclosure." In many of the solar and wind Article Ten applications the applicants have claimed that the capacity factor data in sections 3, 4, and 5 of Exhibit 8 is critical infrastructure information or a trade secret. Their applications have redacted that information. I believe that the capacity factor and capability information transcend any confidentiality arguments for a number of reasons.

Most importantly, I believe that residents in the vicinity of any renewable project have a right to know just how much power the applicant's project will provide to New York's electric system. The CLCPA emphasizes public engagement and this information is necessary for independent assessment of the adequacy of resources. Finally, I don't think redacting this information meets the critical energy infrastructure information, trade secret or confidential commercial information arguments. All the applicants in the Article 10 process use the same methodology, if not the same models, to estimate future capacity factors. Therefore, I suspect that if a competitor wanted to determine the capability at any location, they could independently calculate a value very close to the applicant's number.

§900-2.6 Exhibit 5: Design Drawings, (b) Table 1: Setback Requirements for Wind Turbine Towers

I only will address one setback consideration in detail. Wind turbines put people at risk:

> As with any developing technology, progress and understanding usually happen simultaneously. Blade throw, although it's rare these days thanks to design improvements, is a malfunction that occurs when a blade breaks free of the turbine and becomes a very large, very dangerous

projectile. Similarly, wind farms that operate in cold climates are also susceptible to ice formation. Accumulating ice can fall or be thrown from turbines, potentially endangering surrounding people and property.

The setback requirement in Table 1 may be appropriate for an individual turbine or facility in a location without ice formation susceptibility and a small number of potentially affected structures, but in New York the large number of turbines needed makes this problem much more likely to occur so the requirements are deficient. In order to get the projected 35,200 MW capacity over 10,000 3.5 MW turbines will be needed. While the American Wind Energy Association claims that no member of the public has ever been injured by a turbine, I believe that is in no small part due to the relatively small number of turbines currently in use. If New York in fact has to install 10,000 turbines the likelihood that a turbine will be close enough to cause damage or injure the public is so high that the Table 1 setback distances are unacceptable.

Table 1: §900-2.6 Setback Requirements for Wind Turbine Towers

Structure type	Wind Turbine Towers setback*
Substation	1.5 times
Any Above-ground Bulk Electric System**	1.5 times
Gas Wells (unless waived by landowner and gas well operator)	1.1 times
Public Roads	1.1 times
Property Lines	1.1 times
Non-participating, non-residential Structures	1.5 times
Non-participating Residences	2 times
*1.0 times Wind Turbine Towers setback is equal to the Total Height of the Wind Facility (at the maximum blade tip height). **Operated at 100 kV or higher, and as defined by North American Electric Reliability Corporation Bulk Electric System Definition Reference Document Version 3, August 2018 (see section 900- 15.1(e)(1)(i) of this Part)	

In a paper titled "A method for defining wind turbine setback standards", the authors calculated throw distances for three turbines. The authors selected three different sized turbines for their study, a 660 KW, a 1.5 MW and a 3.0 MW. Blade radius for each respectively was: 77 feet, 115 feet and 148 feet with hub heights of 164 feet, 262 feet and 262 feet. The wind turbines with lower power output have smaller rotors that rotate at higher speeds and that's an important point because they found higher velocity leads to longer blade fragment throws in the event of blade failure. In their example, the throw distances calculated for these three turbines were: 1440 feet for the 660 KW turbine, 1935 feet for the

1.5 MW turbine and 1726 feet for the 3.0 MW turbine. The shorter 1.5 MW turbine threw fragments even further than the larger 3.0 MW model, over 200 feet further.

If we consider the §900-2.6 setback requirement for non-participating residences this study indicates potential problems. The wind turbine tower setback (two times the maximum blade tip height) for the examples are much less than the predicted throwbacks: setback 482 feet and throw distance of 1440 feet for the 660 KW turbine, setback distance of 754 feet and throw distance of 1935 feet for the 1.5 MW turbine, and setback distance of 820 feet and throw distance of 1726 feet for the 3.0 MW turbine.

I will mention other reasons to revise the setback distances besides the threat of physical harm from ice shards. A World Health Organization Guideline recognizes that the wind turbine "noise" is more than an 'annoyance' (and "annoyance" is of lesser concern than sleep deprivation)–and that chronic noise contributes to cardiovascular disease; lack of sleep, hearing loss, tinnitus and stress; and increased changes in blood pressure and heart health. The wind turbine blades also produce shadow flicker by interrupting sunlight passing through them. One study evaluated the known parameters of the seizure provoking effect of flicker, i.e., contrast, frequency, markspace ratio, retinal area stimulated and percentage of visual cortex involved relative to wind turbine features and made recommendations about the flash frequency.

I recommend that the State develop a more nuanced setback policy. Ideally, the approach used in "A method for defining wind turbine setback standards" or something similar could be a requirement for each application and the setback distance determined not only based on height but also the speed of the blades. A speed constraint could also address the flash frequency concern. Another aspect that should be considered is elevation because if the wind turbine is elevated with respect to neighboring structures anything thrown off the blades will travel further. That, incidentally, is a fundamental flaw with Table 1 as proposed. There should be an elevation component included in the table for throw distance.

I recommend that the number of structures affected be considered as a general siting constraint. If there are a limited number and directions of affected structures between the setback distance proposed in §900-2.6 Table 1 and the calculated throw distance setback or setbacks recommended to reduce noise and flicker potential impacts it may be acceptable to use Table 1. However, if there are multiple structures in multiple directions within the zone between minimal protections and full protections, then I believe that it is inappropriate to site a turbine in that location without larger set-backs because the likelihood of negative impacts is much greater.

§900-2.21 Exhibit 20: Effect on Communications

This section requires that wind facilities, identify all existing broadcast communication sources within a two (2)- mile radius of the facility and the electric interconnection between the facility and the point of interconnection, unless otherwise noted, including Doppler/weather radar (all affected sources, not limited to a two (2)-mile radius). I note this because there is another unintended cumulative impact associated with the massive buildout of wind turbines necessary for the CLCPA.

From mid-November to mid-April New York residents downwind of Lake Ontario and Lake Erie have to deal with lake effect snowstorms. The difference between the relatively warm lake water temperature and colder air temperatures creates convection and under certain conditions lake effect snowstorms occur. My primary concern with 10,000 wind turbines is that false echoes from turbines across the landscape will make accurate tracking of the relatively small, low-level, and possibly intense lake-effect snow bands in downwind areas more difficult and affect the safety of local residents. Residents quickly learn that a check of the weather radar maps when lake-effect snow is forecast is a good way to avoid or prepare for the storms. However, if the landscape is covered by false echoes then it is likely there will be many more surprises which will affect travel. There should be some criteria for this in the regulation.

§900-4.1 Office of Renewable Energy Siting Action on Applications

There are aggressive deadlines for the Office to respond to applications in this section and a condition that "if the Office fails to provide notice of its determination of completeness or incompleteness within the time period set forth in subdivision (c) of this section, the application shall be deemed complete." It is very likely that there will be a large number of applications. I have learned in 40-years of experience in environmental permitting that reviewing these applications takes time and 60 days to review all the material in an application is ambitious. If there are insufficient staff available it could lead to inadequate time for review but the applications will be approved anyway. In addition, ORES is a new organization and has no staff, procedures, or operating history so there will be a learning curve. There is provision for an extension of 30 days but if staff are overwhelmed that will be insufficient. While I understand the desire for timely responses there has to be a safety valve to this requirement, otherwise the public welfare will not be protected.

Subpart 900-15 §900-15.1 Material Incorporated by Reference

In section (d) World Health Organization, of this subpart it notes that "the following publication published by the World Health Organization is incorporated herein by reference: Guidelines for Community Noise, publication date 1999". Why wasn't the more recent World Health Organization Guideline used instead? The fact that more recent guidance is not being used is disappointing.

Conclusions

My comments addressed three shortcomings in the proposed regulation. Unless a cumulative impact analysis is done by the Office of Renewable Energy Siting the public welfare and environment will be threatened. I believe that is particularly necessary to address concerns related to avian species especially bald eagles. It may be a misunderstanding on my part but I did not see any provision to require applicants to provide capability information in the applications. I don't think it is appropriate to short-change local participation and environmental issues for renewable facilities that will not provide renewable energy credit to New York so I recommend that if a facility cannot prove that the renewable energy credits generated by the facility will be used to meet New York's goals that they be required to go through the existing Article Ten process.

My review also described several inadequacies in the proposed regulation. More detailed requirements to insure adequate public notification are needed. Unless there is a provision for a safety value, the aggressive review deadlines for applications may mean applications are deemed complete without adequate review if agency staff are overwhelmed by a large number of applications. Finally, the most recent version of the World Health Organization Guidelines for Community Noise is not incorporated by reference.

Overall, I do not think this regulation as proposed is in the best interests of anyone near a proposed renewable energy facility. Without the thorough public participation requirements of Article Ten and with the threat of over-ruling any home rule limits on renewable energy development, the AREGCBA result may be New York's first climate refugees. The first Dutch climate refugees are a fact because local residents cannot cope with the noise of wind farms.

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