Cassadaga Wind Project

Case No. 14-F-0490

1001.10 Exhibit 10

Consistency with Energy Planning Objectives

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EXHIBIT 10 CONSISTENCY WITH ENERGY PLANNING OBJECTIVES

(a) Consistency with State Energy Plan

In 2014, Governor Cuomo launched New York's signature energy policy, Reforming the Energy Vision (REV). REV is designed to protect the environment, lower energy costs, and create opportunities for economic growth. On June 25, 2015 the State Energy Plan was updated to provide a roadmap for REV and foster economic prosperity and environmental stewardship.

The Facility will help the State achieve the goals of the 2015 State Energy Plan. The State Energy Plan contains a series of policy objectives and coordinates with the REV initiative and the objectives to increase the use of energy systems that enable the State to significantly reduce greenhouse gas (GHG) emissions while stabilizing energy costs. According to the State Energy Plan, the Plan is a "comprehensive strategy to create economic opportunities for communities and individual customers throughout New York." Through the 2015 State Energy Plan and the REV initiative New York has committed to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the 2015 State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030, also known as the 50 by 30 goal (NYSEPB, 2015).

Overall the State Energy Plan seeks to reduce energy demand while cleaning up the energy supply by getting more electricity from renewable sources. The Facility will play a key role in helping New York achieve its energy goals.

In December 2015 Governor Cuomo directed the Department of Public Service (DPS) to establish a Clean Energy Standard (CES) that ensures New York gets 50% of its electricity from renewable sources by 2030 as outlined in the State Energy Plan. In January 2016 DPS issued a white paper on CES and set forth a process designed to allow for Commission consideration of a CES at the June 2016 session. The white paper determined that in order for the 50 by 30 goal to be met, slightly more than 33,700 GWh of incremental renewable generation must be added to the State's fuel mix. The Facility helps the state achieve this goal by increasing the State renewable generation with a maximum generating capacity of 126 Megawatts (MW).

On April 8, 2016 DPS released the finalization of its Cost Study for the CES. The Cost Study concludes "New York can meet its clean energy targets with less than a 1% impact on electricity bills (or less than $1 per month for the typical residential customer) in the near term and shows net positive benefit of $1.8 billion by 2023." The net benefit reflects program costs and the benefits associated with lower carbon emissions.

The Cassadaga Wind Project fully advances the objectives of the State Energy Plan and assists the State in achieving the 50% renewable energy generation objective.

(1) Five Guiding Principles of the State Energy Plan

REV, as a core initiative as part of the Plan, is guided by a set of principles that will drive the shift in the State's approach to energy policy. These principles are described on pages 49-54 of the 2015 State Energy Plan, and summarized as follows:

- *Market Transformation* – REV, regulatory reforms, initiatives, and programs will focus on market transformation, allowing for a new, integrated, and self-sustaining private sector-driven clean energy market.
- *Community Engagement* – communities across New York State play a vital role in REV, and one of its fundamental strategies will be for the State to engage with communities.
- *Private Sector Investment* – by removing market obstacles, REV will facilitate development of competitive markets, and will look to increase the leverage of private sector capital investment per ratepayer dollar.
- *Innovation and Technology* – REV will align energy innovation with market demand. New York State Energy and Research Development Authority (NYSERDA) and New York Power Authority (NYPA) will partner with New York's academic research institutions and the private sector to support the development of clean energy technology and innovative business and financing models, along with training the next generation to support the growth of the clean energy economy.
- *Customer Value and Choice* – REV aims to empower customers and enable the private sector to provide the services and energy options that customers value. Residential, commercial, and industrial customers will have the tools to easily and efficiently manage when and how much power they will consume.

Facilities like the Cassadaga Wind Project fully advance the principles of the State Energy Plan. The Facility is a private sector-driven clean energy project, which provides services and energy options that customers value. Wind power is sustainable, clean energy that encourages competitive energy markets. Large scale renewables, such as wind power, are part of a more cost effective and clean energy system.

(2) Seven Initiatives and Goals of the State Energy Plan

The Initiatives and Goals section of the 2015 State Energy Plan identifies the following distinct goals and initiatives:

- Renewable Energy
- Buildings and Energy Efficiency
- Clean Energy Financing
- Sustainable and Resilient Communities
- Energy Infrastructure Modernization
- Innovation and R&D
- Transportation

The Facility will advance the Renewable Energy initiative through providing a source of pollution-free renewable energy to the New York power grid for the operating life of the Facility. Within the Renewable Energy section of the State Energy Plan, there are eight recommended actions and programs that are or will be implemented, including the large-scale renewables (LSR) strategy.

As a commercial scale wind energy project, development of the Facility is consistent with the LSR strategy outlined by in the Renewable Energy section of the State Energy Plan. Immediate benefits of LSRs like the Facility include economic development and jobs for communities, greater stability in customer bills, cleaner air, a healthier environment, compliance with Federal mandates, and in the long run, benefits may include below-market electricity prices. Wind projects like the Facility help New York's economy over the lifetime of these facilities and create statewide benefits.

(3) Three 2030 Targets in the State Energy Plan

As mentioned above, the 2015 State Energy Plan establishes statewide clean energy targets to be met by 2030; REV is intended to be the framework through which these goals may actually be achieved. The 2030 goals are described on page 112 of the State Energy Plan, and include:

- 40% reduction in GHG emissions from 1990 levels
- 50% of electricity generation from renewable energy sources
- 600 trillion British thermal unit (BTU) increase in statewide energy efficiency.

The Facility advances the first of these two initiatives by providing a reliable source of electricity from clean, renewable energy sources with zero GHG emissions. According to an extrapolation of 2012 data released in 2015 by the U.S. Environmental Protection Agency *Emissions and Generation Resource Integrated Database*

(eGRID2012), the Facility is expected to displace approximately 244,086.4 tons of carbon dioxide (CO2) emissions from conventional power plants on an annual basis (USEPA, 2015a). Please see Exhibit 17(d) for an explanation of how this figure was calculated. The Facility will provide enough electricity to meet the average annual consumption of between approximately 36,422 and 55,915 households, based on the average annual electric consumption of 10.9 megawatt-hours (MWh) for the U.S. and 7.1 MWh for New York State, respectively (USEIA, 2015). Of the three 2030 clean energy targets set forth in the State Energy Plan, the Facility will support the first two, which target clean energy production rather than efficient energy consumption.

(b) Impact on Reliability

Siemens Power Technologies International prepared a System Reliability Impact Study (SRIS) for the Facility on behalf of the New York Independent System Operator (NYISO) in 2015. The SRIS was conducted in order to evaluate the impact of the proposed Cassadaga Wind on the reliability of the New York State Transmission System in proximity to the POI in the NYISO West Region (Zone A) and the Genesee Region (Zone B), which are most likely to be affected by the Facility (referred to as the "Reliability Study Area" in this Exhibit). The SRIS was conducted in accordance with applicable North American Electric Reliability (NERC), Northeast Power Coordinating Council, Inc. (NPCC), New York State Reliability Council (NYSRC), National Grid and Affected Systems(s) reliability and design standards; and also in accordance with applicable NYISO and Affected System(s) study guidelines, procedures, and practices. The NYISO Operating Committee approved the SRIS Scope on January 17, 2014. A variety of analyses were performed for the SRIS; a discussion of each of the studies in relation to transmission reliability is provided below.

Power Flow Analysis

A power flow steady-state analysis was conducted using proprietary Siemens PTI PSS®E and PSS®MUST software to determine the impact of the proposed Facility (e.g., branch overloading, voltage violations) within the Reliability Study Area under both normal and contingency conditions. The SRIS evaluated a number of power flow base cases, as provided by NYISO, including 2018 summer peak, winter peak, and light load. The base case includes the baseline system as well as proposed higher queued projects listed in the SRIS Scope.

In modeling of normal summer peak operating conditions, no thermal or voltage violations were caused by the proposed Facility. It was noted, however, that the Facility had an impact from -17% to +39% on the loadings of branches near the POI. Similarly, no voltage violations were found with the addition of the Facility. The largest voltage impact under summer peak operating conditions was noticed on the Hartfield 115 kV bus. In addition, no thermal violations were caused by the Facility under modeling of normal winter peak operating conditions, however, the Facility had an impact from -18% to +39% on the loadings of branches near the POI. Similarly, no voltage violations were found with the

addition of the Facility in normal winter peak operating conditions. The largest voltage impact of 2.8% was noticed on the Moon-162 115 kV bus.

Under contingency operating conditions without the Facility, the summer peak case shows some overloads on the 230 kV and 115 kV lines under several contingencies. The addition of the Facility reduced the overload on these lines, resulting in a positive impact on the system. The addition of the Facility increased the 34.5 kV post-contingency voltage by as much as 2% and exceeded its 105% limit. Post-contingency load tap changes in the 115/34.5 kV transformers reduced the 34.5 kV voltages to acceptable levels. For the winter peak case, the Facility caused an adverse impact of about 11% on the Hartfield 115/34.5 kV transformer following the double circuit contingency. However, this overload can be mitigated by the construction of a new sub-T station 'West Asheville' (115-34.5kV 25 MVA), located at the junction of Dunkirk-Falconer Line 160 and Sherman-Ashville Line 863, a reliability project approved by National Grid. Consequently, the Facility does not require any additional network upgrades for interconnection. Voltage violations at some buses near the point of interconnection also occurred under several contingencies with the addition of the Facility, but as with the summer peak case, load tap changes in the 115/34.5 kV transformers reduced most of the 34.5 kV voltage to acceptable levels.

Stability Analysis

The SRIS also included a stability analysis performed using Siemens PTI proprietary software PSS®E for summer peak and light load conditions to assess the impact of the proposed Facility on the transient stability performance of the system. A number of local and normal criteria contingencies were simulated. The system was found to be stable for all local contingencies and normal design stability contingencies, in both summer peak and light loading conditions, both with and without the proposed Facility.

Extreme Contingency Analysis

An extreme contingency analysis was also performed in the SRIS, which included steady-state power flow and stability analyses, performed as described above, but using extreme contingency criteria. Results of the steady state analysis showed that the Facility will have a positive thermal impact on the system under extreme contingency conditions. Impacts to system voltage shows that the Facility increases the voltage on the Sherman 34.5 kV bus to above 105% under summer peak conditions. The stability analysis showed that the response of the system to the extreme contingencies modeled was stable both with and without the proposed Facility. Therefore, the Facility would not have an adverse impact on the stability performance of the system under the extreme contingency conditions tested.

Transfer Limit Analysis

A transfer limit analysis, performed to determine the incremental impact of the proposed Facility on the transfer limits of the Dysinger East and NY-PJM interfaces, was also included in the SRIS. Details on methodology are provided in the SRIS. The transfer limit analysis modeling showed that the Facility did not cause any impact on the Dysinger East interface for both normal and emergency thermal transfer limits. The Facility would decrease the voltage transfer limit of this interface by approximately 140 MW. For the PJM-NY interface, the Facility would decrease the normal and emergency thermal transfer limits by 48 MW. System stability was not limiting for any of the interface levels tested.

Short Circuit Analysis

The SRIS included a short-circuit analysis, performed to assess the impact of the proposed Facility on the adequacy of existing circuit breakers and related equipment in the Reliability Study Area. The analysis was performed using the ASPEN One-Liner/Batch Short-Circuit program, and simulated three-phase-to-ground, two-phase-to-ground, and single-phase-to-ground faults, with the Facility and without the Facility. Assumptions are further described in the SRIS. Results of the analysis showed that the Facility will not cause any substation to exceed the lowest breaker rating.

NPCC A-10 Test

An NPCC A-10 test was performed to identify any existing or proposed stations within the vicinity of the Facility that could be classified as Bulk Power Systems (BPS) based on NPCC classification. Three busses were tested in the analysis: Falconer 115kV, East Dunkirk 115 kV, and Moon/Q387 Cassadaga 115 kV Substations. The analysis showed that the proposed Facility will not change the current NPCC classification of these substations, which are currently classified as non BPS elements.

N-1-1 Contingency Analysis

The SRIS also included an N-1-1 Contingency Analysis, performed in accordance with the NYSRC *Reliability Rules E-R4 Post-Contingency Operation* and NPCC *Basic Criteria for Design and Operation of Interconnected Bulk Power Systems 6.3 Post Contingency Operations*. This type of analysis evaluates secondary contingencies, and models the system's response with and without the Facility under these scenarios. The N-1-1 contingency analysis indicates that the addition of the Facility would reduce the N-1-1 post-contingency overloads before the system adjustments in most cases.

Power Factor Evaluation

A power factor evaluation was performed in order to test whether the proposed Facility meets the power factor requirements at the point of interconnection. The analysis was conducted according to the three-step procedure described in *NYISO Test Procedure for Evaluating Power Factor Requirements for Wind Generation Interconnection*

Projects for both the summer peak and winter peak cases. For the purposes of the analysis, a change in voltage at the POI or adjacent buses of greater than +/- 0.5% of nominal voltage was considered significant. Six contingencies were tested in the power factor evaluation. The results of the test showed the reactive capability prosed for the Facility is adequate and the Facility meets power factor requirements at the point of interconnection.

(c) Impact on Fuel Diversity

The Facility will improve fuel diversity within the state by increasing the electric capacity from wind power. The New York electric utility system relies on supply from numerous fuel sources, including natural gas, hydroelectric, nuclear, wind, oil, and coal, as well as interconnections with its neighbors and demand-response resources. According to the NYISO *2015 Load and Capacity Data* (also known as the "Gold Book"), total electricity generating capacity in New York State in the summer of 2015 was 38,665 MW (NYISO, 2015a). Table 10-1 shows the generating capacity and percent of total for each of the fuel types included in the NYISO report.

Table 10-1. 2015 Installed Generating Capacity by Fuel Type in New York State[1]

Generator Fuel Type	2015 Capacity (MW)	Percent of Total Capacity
Gas	3781	9.8
Oil	2660	6.9
Gas & Oil	17,684	45.7
Coal	1,469	3.8
Nuclear	5,400	14.0
Pumped Storage	1,407	3.6
Hydro	4,292	11.1
Wind	1,461	3.8
Other	511	1.3
Total	38,665	100

[1]Data are from NYISO *2015 Load and Capacity Data,* Table II-1a (NYISO, 2015a).

Despite development of wind energy facilities over the past two decades, currently wind energy comprises only 3.8% of total generating capacity in New York State. Development of the Facility would add an additional 126 MW to the existing 1461 MW of generating capacity from wind projects in the State, helping to diversify New York's energy economy.

(d) Impact on Regional Requirements for Capacity

The regional capacity requirements of New York's wholesale electricity markets and location-based pricing encourage investments in areas where the demand for electricity is the highest. As a result, over 80 percent of the generating capacity brought online since 2000 is located in New York City, on Long Island, and in the Lower Hudson Valley. Other additions to New York's power-producing resources are determined by physical factors, such as the suitability of wind conditions in the northern and western regions of the state, and upgrades to existing nuclear and hydropower plants in upstate regions (NYISO, 2015b). The proposed Facility falls into the latter category, with siting driven by available wind resource. The Facility is located within NYISO Zone A. Upstate New York as a whole, which includes NYISO Zones A-F, has a total generating capacity of approximately 19,000 MW, but a peak electric load of just over 10,000 MW (NYISO, 2015b). The Facility is not proposed to be constructed in a location where additional capacity is required to meet local or regional demands for electricity. However, downstate electricity consumption depends on reliable electricity generation. Wind resource is sufficient in western New York to make wind projects viable, and wind energy is an important component of federal and state renewable energy initiatives (see 1001.10(g) below for a discussion of state and federal renewable energy initiatives).

(e) Impact on Electric Transmission Constraints

New York State has a diverse mix of generation resources compared to many other states. However, much of the renewable power is provided by hydroelectric projects and wind farms located in western and northern localities, while the southeastern region hosts power plants fueled primarily by natural gas. Taking full advantage of statewide fuel diversity will require upgrades and enhancements of the transmission system. These transmission enhancements will help move energy from upstate regions with a surplus of generating capacity to more populous areas with higher power demands, such as the Hudson Valley, New York City, and Long Island (NYISO, 2015b). A NYISO study entitled *Growing Wind*: *Final Report of the NYISO 2010 Wind Generation Study*, released in 2010, examined the potential future impact of the integration of up to 8000 MW into the New York State's transmission grid from new installed wind plants. The study concluded that wind generation could supply reliable clean energy at a very low cost production to the New York power grid, and addition of wind to the resource mix would reduce energy production costs. However, the reduction in production costs resulting from wind would be greater if transmission constraints between upstate and downstate New York were eliminated. NYISO found that approximately 9% of potential upstate New York wind energy production will be "bottled" or not deliverable because of this transmission constraint. However, the most congested transmission areas were in NYISO Zones C, D, and E, while the Facility is located within Zone A (NYISO, 2010). Although transmission constraints are important context for Facility planning, they will continue to exist regardless of whether or not the Facility is constructed, and the Facility will not result in new electric transmission system constraints.

New York's transmission infrastructure is aging, and much of it is in need of replacement or upgrades. The *New York State Transmission Assessment and Reliability Study* (STARS) predicted the need for replacement of approximately 4700 miles of 115kV and above transmission lines in New York State within 30 years as of 2012. The 115kV line to which the Facility will connect was among the transmission lines predicted to need replacement within 10 years (STARS Technical Working Group, 2012). The need for replacement or upgrades to the existing transmission system would exist regardless of whether or not the Facility was ultimately constructed.

(f) Impact on Fuel Delivery Constraints

The proposed Facility will generate electricity without the use of fuel. Consequently, there will be no adverse fuel delivery impacts. By producing additional electricity that does not require fuel, the Facility will contribute toward reducing overall demand for fuel and easing fuel delivery constraints.

(g) Impact on Energy Policy

Development of the Facility is consistent with a number of State and Federal mandates. The Facility will help the State achieve the goals of the 2015 State Energy Plan. State Energy Law 6-104 requires the State Energy Planning Board to adopt a State Energy Plan. The latest iteration of the New York State Energy Plan was announced on June 25, 2015. The State Energy Plan contains a series of policy objectives and coordinates with the REV initiative and the objectives to increase the use of energy systems that enable the State to significantly reduce GHG emissions while stabilizing energy costs. As recognized by the State Energy Plan, long-term benefits of new renewable energy may be similar to those New York currently enjoys from the State's hydroelectricity facilities: below-market electricity prices and a healthier environment. Through the State Energy Plan, New York has committed to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030 (NYSEPB, 2015). The Cassadaga Wind Project fully advances objectives of the State Energy Plant and assists the State in achieving the 50% renewable energy generation objective.

In an effort to encourage and incentivize the shift of New York State's energy sector from reliance on GHG emitting fuel sources to renewable energy sources, the State has established a Renewable Portfolio Standard (RPS) which initially called for an increase in renewable energy used in the State to 25% by the year 2013 (PSC, 2004). In an Order issued in January 2010, the New York Public Service Commission (PSC) expanded the RPS target from 25% to 30% and extended the target date from 2013 to 2015. The RPS is expected to reduce CO2 emissions by 50 million tons

over the life of the projects (NYSERDA, 2015b). NYSERDA has proposed a comprehensive Clean Energy Fund (CEF) to ensure continuity of the State's clean energy programs after 2015. The CEF is one part of New York State's REV initiative, a 10-year $5 billion funding program to support clean energy market development and innovation and to secure renewable energy resources as part of New York's clean energy future. As stated by the PSC in the REV Order, "A significant increase in the penetration of renewable resources is essential to meeting our objectives, state goals and proposed federal requirements" (PSC, 2015).

LSR, which are larger utility-scale renewable energy project developments, such as the Facility, are a key component of the REV Order, which outlines the issues and tasks to begin to resolve the technical, marketplace, and regulatory challenges necessary to achieve the REV plan and goals. REV recognizes that large-scale renewables, such as wind farms, which require more capital and take more planning than other facilities, will be critically important to meeting greenhouse gas emissions reduction goals. However, due to the issues and concerns raised about how to maximize the benefits associated with large-scale renewables, the REV Order created a separate REV LSR track devoted to addressing issues related to LSR. To begin development of the LSR track, PSC staff and NYSERDA worked together to develop an options and assessment paper, entitled "*Large-Scale Renewable Energy Development in New York: Options and Assessment* (NYSERDA, 2015a). This paper examines range of policies, frameworks and structures available for procuring and financing LSR resources. The public comment period on the paper was open until August 24, 2015. On December 2, 2015, Governor Andrew Cuomo directed the Department of Public Service (DPS) to develop a Clean Energy Standard (CES), which would change the targets identified in the State Energy Plan to required mandates. The CES is still under development, and it will be presented by the DPS to the PSC in the June, 2016 session. On January 21, 2016 the scope of the LSR proceeding was expanded to encompass the CES. DPS staff produced a *Staff White Paper on Clean Energy Standard* on January 25, 2016 that supported a requirement on electrical distribution companies to procure an appropriate percentage of the renewable energy credit targets through long term contracts with renewable energy generators, while also supporting opportunities to incent a fully-functioning, self-initiated renewable energy market for both suppliers and producers (DPS Staff, 2016). Shifting renewable energy goals to mandates in the CES only strengthens the consistency of the Cassadaga Wind Project with State policy. The Facility will contribute to State policy objectives (whether they are mandates or simply goals) by providing additional electrical capacity produced by renewable energy.

In addition to policies in New York State, federal policy has also recognized the need for increased supply of energy to the U.S., and for new renewable energy resources. The Facility is consistent with Executive Order 13212 (dated May 18, 2001), which states, "The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people. In general, it is the policy of this Administration that executive departments and agencies shall take appropriate actions, to the extent consistent with applicable law, to

expedite projects that will increase the production, transmission, or conservation of energy." On June 25, 2013, President Obama announced the Climate Action Plan, and on August 3, 2015, the final rule of EPA's Clean Power Plan was announced. The Plan represents a national strategy for tackling climate change. The Plan directs the Environmental Protection Agency (EPA) to establish the first ever restrictions on carbon pollution from power plants, the largest source of unregulated CO2 emissions in the U.S. The Plan states, "With abundant clean energy solutions available, and building on the leadership of states and local governments, we can make continued progress in reducing power plant pollution to improve public health and the environment while supplying the reliable, affordable power needed for economic growth. By doing so, we will continue to drive American leadership in clean energy technologies" (Executive Office of the President, 2013).

In fulfillment of President Obama's commitment under the 2013 Climate Action Plan, EPA proposed "Clean Power Plan" regulations in 2014 establishing a framework for states to regulate carbon dioxide emissions from existing fossil fuel-fired electric generating units (see 79 Federal Register 34830; June 18, 2014). Once the guidelines are finalized, states must develop plans that explain how they will achieve those guidelines. Nationwide, the Plan calls for reducing CO2 from the power sector by approximately 30% from 2005 emission levels by 2030. The Plan establishes emission rate-based CO2 goals for each state as well as guidelines for the development, submission and implementation of state plans to achieve those goals. Each state must then develop a plan that explains how they intend to achieve their state-specific CO2 emission rate goal that includes enforceable CO2 emission limits applicable to each affected unit. States would be expected to begin making CO2 emission reductions by 2022, with full compliance to be achieved by 2030. Reduction in CO2 emissions will be possible through development of renewable, zero carbon energy sources, such as the Facility.

(h) Comparison of Advantages and Disadvantages of Proposed and Alternative Locations

A comparison of alternative Facility configurations within the proposed Facility Site, including an alternative layout, alternative turbine height, and a no action alternative, is provided in Exhibit 9.

(i) Why the Proposed Location and Source Best Promotes Public Health and Welfare

This section is not applicable because it requires an evaluation of alternative fuel sources, which is beyond the scope stipulated for this Application. To the extent alternate locations are relevant, please see Exhibit 9.

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