

Article VII Application
Canisteo Wind Transmission Facility
Case No. 19-T-__

Exhibit 3
Alternatives

Invenergy

EXHIBIT 3 - ALTERNATIVES

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Figure 3-1: Alternatives

EXHIBIT 3 ALTERNATIVES

This Exhibit addresses the requirements of 16 NYCRR § 86.4.

3.1 Overview / Introduction

This exhibit explains the consideration CWE gave to alternative locations and routes for the proposed Transmission Facility. The explanation starts with a restatement of the Transmission Facility's purpose.

The purpose of the Transmission Facility is to reliably deliver the full production of the Wind Project to the bulk power grid so that the State's wholesale market receives all the renewably sourced power the Wind Project will produce. The Wind Farm's production will be centrally collected at a single Collection Substation where it will be stepped up to the voltage of the Transmission Facility for delivery into the Transmission Facility. The Transmission Facility will connect the Wind Farm's Collection Substation to a Point of Interconnection (POI) Switchyard on the existing Bulk Power System. The Bulk Power System is defined by NYISO as the transmission network over which electricity flows from suppliers to local distribution systems that serve end-users. New York's bulk power system includes electricity generating plants, high voltage transmission lines, and interconnections with neighboring electric systems located in the New York Control Area (NYCA) [2018 Power Trends]. The POI Switchyard must be at a location on the Bulk Power System with adequate voltage and capacity to receive the Project's energy and capacity and to deliver it to system load with the lowest losses reasonably achievable.

3.2 Point of Interconnection Switchyard Location

The starting point of this iterative siting and design process is an evaluation of the existing Bulk Power System in the Wind Project's vicinity to identify a line with sufficient capacity and deliverability to receive the wind farm's production that poses the least risk of curtailment. The NYISO's Open Access Transmission Tariff (OATT) gives new generators the right to receive interconnection service into the Bulk Power System subject to the conditions and obligations provided in the OATT. Based on the developer's knowledge and experience, consultations with NYISO and the connecting transmission owner, a location on the system is selected and an application for interconnection service is made. The NYISO procedures begin with a Feasibility Study that determines the upgrades required to interconnect at that location. This is followed by the more detailed System Reliability Impact Study. Interconnecting to an existing substation reduces land disturbance, land acquisition and makes use of pre-existing infrastructure, though interconnection sometimes necessitates constructing a new substation near or adjacent to the identified transmission line. In siting the exact location of the POI Switchyard the following factors must be accounted for.

- a. Land Availability – CWE (along with most wind developers) has no ability to exert eminent domain authority and must select locations where land rights may be negotiated with willing landowners.
- b. Ease of Construction – The POI Switchyard should be located reasonably close to the Wind Project with good accessibility and the site should not impose extraordinary construction difficulty in order to keep costs and other impacts to a minimum.

- c. Environmental Impacts – The location should minimize impacts to wetlands and other sensitive or protected habitat.

3.3 Collection Substation Criteria

After selecting the POI Switchyard, the voltage and location of the Collection Substation can be selected.

The Collection Substation is designed to be compatible with the POI and to minimize losses, and is located accounting for the following factors:

- a. Land Availability – CWE (along with most wind developers) has no ability to exert eminent domain authority and must select locations where land rights may be negotiated with willing landowners.
- b. Ease of Construction – The Collection Substation should be located reasonably close to the Wind Project with good accessibility and the site should not impose additional construction complications in order to keep costs and other impacts to a minimum.
- c. Environmental Impacts – The location should minimize impacts to wetlands and other sensitive or protected habitat.
- d. Location – The location should be reasonably central to the Wind Farm and accessible from turbine locations to minimize collection line length, electrical losses and construction impacts and, based on a desk-top review, be capable of being connected to the POI using ordinary routing and construction techniques.

3.4 Transmission Facility Route Criteria

Once the preferred locations for the POI Switchyard and Collection Substation are selected, the route of the Transmission Facility can be determined. The selection of cable routes is guided by similar criteria:

- a. Land Availability – CWE (along with most wind developers) has no ability to exert eminent domain authority and must select locations where land rights may be negotiated with willing landowners.
- b. Environmental Impacts - The route should avoid wetlands and other sensitive or protected habitat wherever practicable and minimize its environmental impact.
- c. Ease of Construction – The Transmission Facility route should not impose additional construction complications in order to keep costs and other impacts to a minimum.
- d. Land Use – The presence or absence of conflicting land and right-of-way uses examined from the perspectives of both construction and long-term operation & maintenance.

3.5 Alternative Routes and Locations

It is with this background in mind that the consideration given specific alternatives for the preferred Transmission Facility route is described below. Figure 3-1 indicates the alternative transmission line routes considered by the Applicant.

3.5(a) Point of Interconnection Alternatives

Canisteo Wind evaluated two other POI Switchyard alternative locations based on the factors outlined in Section 3.2 before choosing NYSEG's Bennett Substation as the preferred POI. Both NYSEG's Warriner substation and associated 34.5 kV distribution systems, and the Howard substation were considered as potential locations for bulk power system interconnection. Each of the aforementioned POI alternatives were not chosen for reasons specific to each asset.

3.5(a)(1) - Interconnecting at NYSEG's Warriner Substation

Interconnecting at Warriner which is located on State Route 36 in the Town of Canisteo would require rebuilding the 34.5 kV distribution line from Warriner to the Bennett Substation in order to handle the projected wind energy facility output. The anticipated costs to upgrade the lines and associated infrastructure to 115 kV were considered prohibitive. Additionally, the applicant did not have sufficient land control to interconnect the collection substation to a POI Switchyard at this location.

3.5(a)(2) – Interconnecting at NYSEG's Howard Substation

The Howard substation, on Coots Road in the Town of Howard, was difficult to access because of land control issues. Much of the land adjacent to Howard has already been leased as part of previous wind project developments. Furthermore, the approach to Howard from the Canisteo Wind Farm is a ravine with steep grades along County Road 27. Concerns about the environmental impacts and constructability precluded further evaluation of using the Howard substation as a POI Switchyard.

3.5(b) Collection Substation Alternative

Canisteo Wind considered an alternative location for the Collection Substation using the criteria established in Section 3.3. The location evaluated was approximately 5,600 feet southeast of the Warriner substation, west of State Route 36. Based on the proposed wind turbine layout, this site would have been less central to the wind energy facility than the proposed Collection Substation location. Accordingly, length of collection routes to connect wind turbines to the Collection Substation, and the associated construction costs and impacts would have increased. This substation location was initially considered because of its proximity to an existing NYSEG transmission line which the Applicant assumed was a possible route for the 115 kV transmission line to the Bennett substation. However, challenges with expanding the existing ROW from Warriner and acquiring easements for land on which to build the transmission line precluded additional evaluation of this Collection Substation as a preferred location.

3.5(c) Alternative Transmission Line Routes

Canisteo Wind examined two alternative routes for the transmission line connecting from the proposed Collection Substation location to the proposed POI Switchyard at NYSEG's Bennett

substation according to the Criteria in Section 3.4. Both alternative routes presented significant barriers that made them less promising than the proposed transmission line route.

3.5(c)(1) – Bush Hill Road to State Route 36

The first alternative route involved using the same path north from the Collection Substation as the proposed transmission line route until Bush Hill Road in the Town of Jasper, approximately one-tenth of a mile from the Town of Canisteo border. At that point, the route would follow a ridgeline west of Bush Hill Road and headed north approximately six miles until crossing State Route 36 and reconnecting with the proposed transmission line route outside of the Village of Canisteo. From there, the alternative route connected to the proposed POI Switchyard at the Bennett substation. The Applicant pursued land control along the alternative route and discovered several critical landowners were not interested in signing easements for the transmission line through their property.

3.5(c)(2) – Connecting to Eight Point Wind Transmission Facility

The second alternative transmission line route considered by Canisteo Wind involved connecting to the proposed Eight Point Wind transmission line (DPS Case Number 18-T-202) and either sharing the infrastructure or expanding the right of way for a parallel transmission line. This alternative route would have connected at the proposed Canisteo Wind Collection Substation location, traveled west, and crossed over SR 248 approximately 0.7 miles north of the Town of Greenwood. Continuing west, the transmission line would have intersected the Eight Point facility north of SR417 adjacent to Kelly Road in the Town of Greenwood. While the possibility of using existing infrastructure was appealing, there were significant challenges coordinating permitting and construction activities with Eight Point Wind, LLC. Additionally, the route would increase the Applicant's proposed transmission line route by two miles. Given the complexity, additional costs, and uncertainty associated with this alternative; this route was not selected.

3.6 Expansion of Any Existing Right-of-Way (ROW)

The proposed Canisteo Wind POI Switchyard will be built on a parcel owned by NYSEG. All permanent facilities associated with the Collection Substation and transmission line will be located on parcels leased or owned by the Applicant or on easements acquired by the Applicant. The proposed line will be built on entirely new ROW, though in areas it may run adjacent to existing ROW. No expansion of existing ROWs is anticipated as part of the project.

3.7 No Action Alternative

Under the No Action Alternative, the Canisteo Wind Farm and related Transmission Facility would not be constructed. This no action alternative would not affect current land use, water resources, community character, socioeconomic, or energy-generating conditions. However, the No Action Alternative is not the best alternative to protect air quality and promote public health because it would deprive the State and region of a source of clean, pollutant-free electricity. Unlike fossil fuel-fired power plants, the Canisteo Wind Farm and associated Transmission Facility will generate electricity without emitting conventional

and toxic air pollutants or heat-trapping greenhouse gasses (GHGs). Air pollution has both short-term and long-term adverse effects on public health. Short-term exposure to air pollution caused by fossil-fueled electricity generation may result in headaches, nausea, allergic reactions, asthma exacerbation, and irritation to the eyes, nose, and throat. Long-term exposures can lead to cancer, as well as a variety of adverse reproductive, development, respiratory, and cardiovascular effects (NYSDEC, 2016a). The impacts of climate change are well documented and include higher atmospheric temperatures, sea level rise, increases in extreme weather events, and other impacts on the environment and public health.

Additionally, the No Action Alternative is not the best alternative to promote public welfare, because it would deprive the State of a new source of renewable energy to help achieve the objectives of the State Energy Plan and the CES. The No Action Alternative would not contribute toward reducing GHG emissions or assist the State in achieving the “50 by 30” renewable energy generation objective. According to the New York State Department of Environmental Conservation (NYSDEC), “[f]or a sustainable future, we need an efficient energy system that taps clean sources to let us enjoy energy’s benefits, but use less and pay less. Solar and wind energy, geothermal heat and other renewable resources can power our lives with no cost for fuel and no harmful emissions” (NYSDEC, 2016b). Because the No Action Alternative will not help the State achieve its GHG reduction and renewable energy generation objectives or reduce emissions of conventional and toxic air pollutants, it is not in the best interest of the public and was eliminated from further consideration.

References

New York State Department of Environmental Conservation (NYSDEC). 2016a. *Controlling Sources of Toxic Air Pollutants*. Available at: <http://www.dec.ny.gov/chemical/89934.html> (Accessed March 2017).

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NYSPSC. 2016. *Order Adopting a Clean Energy Standard (CES Order)*. Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard. August 1, 2016.

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