



Baron Winds Project

Case No. 15-F-0122

1001.17 Exhibit 17

Air Emissions

EXHIBIT 17 AIR EMISSIONS

Global climate change has been recognized as one of the most important environmental challenges of our time (NYSCAC, 2010; NYSDEC, 2009, 2010). There is scientific consensus that human activity is increasing the concentration of greenhouse gases (GHGs) in the atmosphere and that this, in turn, is leading to serious climate change (IPCC, 2013). Historically, New York State has been proactive in establishing goals to reduce GHG emissions, including the 2015 State Energy Plan, which has committed the State to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing total GHG emissions 80% by 2050. In addition, the 2015 State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030 (NYSEPB, 2015). Fuel combustion accounts for approximately 83% of total GHG emissions in New York State (NYSERDA, 2016).

Fossil fuel combustion results in the production of other pollutants in addition to GHGs, including nitrogen oxides and sulfur dioxide, which contribute to the problems of acid rain and/or ground-level ozone pollution (i.e., smog). Fossil fuel combustion also produces certain toxic air pollutants such as lead and mercury.

Operation of the Facility will not generate any air emissions. As a result, this Exhibit is not applicable to the Facility once it become operational. However, some emissions will be generated during construction of the Facility.

(a) Compliance with Applicable Federal, State, and Local Regulatory Requirements

Several air emission sources will be on-site during construction of the Facility. In particular, one or more fossil fuel-fired generators may be used during facility construction to power general construction activities (i.e., batch plant, lighting). Assuming the generators are: (1) liquid or gaseous fueled with a maximum mechanical power rating less than 400 brake horsepower (bhp); (2) gasoline powered with a maximum mechanical power rating less than 50 bhp; and/or (3) will not be on-site for longer than 90 days, these generators will not require an air registration or other permit from the New York State Department of Environmental Conservation (NYSDEC). See 6 NYCRR §§ 201-3.2(c)(3) (exempt stationary or portable internal combustion engines); 201-1.11 (exemption for temporary emission sources); 201-2.1(b)(29) (definition of temporary emission source).

Because the generator(s) are considered nonroad engines and will not be located at the Facility for more than 12 months, they are not regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) (40 CFR Part 63, subpart ZZZZ) or the New Source Performance Standards (NSPS) for Stationary Compression or Spark Ignition Internal Combustion Engines (40 CFR Part 60, subparts IIII and JJJJ). See 40 CFR §§ 63.6585(a) (RICE NESHAP applicability); 63.6675 (definition of stationary

RICE); 60.4200(a) (NSPS applicability); 60.4219 (definition of stationary internal combustion engine); 1068.30 (definition of nonroad engine).

In addition, construction of the Facility may require use of a concrete batch plant. No air registration or permit is required for concrete batch plants “where the cement weigh hopper and all bulk storage silos are exhausted through fabric filters, and the batch drop point is controlled by a shroud or other emission control device.” 6 NYCRR § 201-3.2(c)(37). Any concrete batch plant used to construct the Facility will be equipped as specified in the exemption and so will not require a permit or registration.

(b) Assessment of Existing Ambient Air Quality Levels and Trends in the Region

The NYSDEC Division of Air Resources publishes air quality data for New York State annually. The most recent summary of air quality data available for the State is the *New York State Air Quality Report for 2015* (NYSDEC, 2016). Included in this report are the most recent ambient air quality data, as well as long-term air quality trends derived from data that have been collected and compiled from numerous state and private (e.g., industrial, utility) monitoring stations across the State. These trends are assessed and reported by NYSDEC regions. The proposed facility is located in NYSDEC Region 8, which encompasses Monroe, Seneca, Schuyler, Wayne, Chemung, Steuben, Livingston, Ontario, Orleans, Yates and Genesee Counties. There are five monitoring stations in Region 8, two in Monroe County (Rochester Near Road and Rochester 2), one in Chemung County (Elmira), one in Wayne County (Williamson) and one in Steuben County (Pinnacle). The Pinnacle Station measures carbon monoxide (CO), ozone (O₃), sulfur dioxide (SO₂), and particulate matter smaller than 2.5 microns (PM_{2.5}); the Williamson Station measures O₃; the Elmira Station measures O₃, and SO₂; the Rochester 2 station measures CO, O₃, SO₂, lead, particulate matter smaller than 10 microns (PM₁₀), and PM_{2.5}; and the Rochester Near Road station measures CO, PM_{2.5}, and nitrogen dioxide (NO₂).

The Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS)—thresholds that define acceptable air quality for various air pollutants based on health and environmental impacts. In 2015, all Region 8 sampling points were within the acceptable levels established by the NAAQS for all tested parameters (NYSDEC, 2016). No local air monitoring data is available to further characterize air quality in the immediate vicinity of the proposed Facility.

(c) Emissions by Combustion Sources Table

As previously noted, wind turbines generate electricity without combusting fuel or releasing pollutants into the atmosphere. Therefore, the table required by this Section summarizing the rate and amount of emissions is not applicable to the Facility and is not included in this Application.

(d) Potential Impacts to Ambient Air Quality

As indicated above, wind turbines generate electricity without combusting fuel or releasing pollutants into the atmosphere. However, an analysis of potential impacts to ambient air quality associated with site preparation and construction of the Facility is set forth below. This section also includes an analysis of the broader impact of operation of the proposed emission-free electricity generating source on ambient air quality.

Construction-Related Impacts

During the site preparation and construction phases of the Facility, temporary minor adverse impacts to air quality could result from the operation of construction equipment and vehicles. Such impacts could occur as a result of emissions from engine exhaust and from the generation of fugitive dust during earth moving activities and travel on unpaved roads. The increased dust and exhaust emissions will not be of a magnitude or duration that would significantly impact local air quality. Any impacts from fugitive dust emissions from travel on unpaved roads are anticipated to be short-term and localized and will be corrected quickly using dust control measures, consistent with NYSDEC's Standards and Specifications for Erosion and Sediment Control. See Exhibit 12 for additional information on potential dust-related impacts and control measures during construction.

As previously noted, in addition to emissions from construction vehicles and equipment, two temporary emissions sources that may result from Facility construction include an on-site concrete batch plant and fossil fuel-fired generators. Depending on the proximity of an acceptable ready-mix concrete plant, the Facility may require the use of an on-site concrete batch plant. If an on-site concrete batch plant is used, the Balance of Plant (BOP) contractor will not be required to obtain a registration provided the plant meets the criteria for exemption under 6 NYCRR § 201-3.2(c)(37). In the Applicant's experience, temporary concrete batch plants typically do not require an air registration or permit. Nevertheless, the BOP contractor will be obligated to limit the operation of the temporary concrete batch plant to the extent needed for construction and will not allow the batch plant to remain operational/idling for any extended periods of time in order to minimize adverse impacts. In addition, the Applicant will instruct the BOP contractor to maintain the fabric filter, shroud and/or other air pollution control equipment in accordance with manufacturer recommendations and/or best management practices. Therefore, adverse impacts to air quality are not anticipated and additional control or mitigation measures are not required.

Fossil fuel-fired generators may be used by the BOP contractor to provide temporary electrical service to the construction trailers that are typically located at the contractor staging/laydown yard and to provide power to other construction and related equipment. Diesel generators may also be used during turbine commissioning activities.

Turbine commissioning activities that require the use of diesel generators typically span a period of only two to three months and only occur during daylight hours. As long as the generator (1) does not exceed the exemption thresholds summarized in Section (a) above and (2) will not be operated for a single consecutive period of 90 days or more, it will not require a registration or permit from NYSDEC. In the Applicant's experience, fossil fuel-fired generators do not require any air emissions permits given their size, transient nature and limited emissions. To minimize adverse impacts, the Applicant will instruct the BOP contractor to not leave fossil fuel-fired generators idling when they are not in active use providing power to a source. In addition, the Applicant will instruct the BOP contractor to maintain the generators in accordance with manufacturer instructions and/or best management practices. Therefore, adverse impacts to air quality are not anticipated and additional control or mitigation measures are not required.

Operation-Related Impacts

The Applicant does not anticipate installing/operating any air emission sources, including emergency generators, in association with operation of the collection or interconnection substations or with the Facility generally. From a broader air emissions perspective, the Facility is anticipated to have a positive impact on air quality by producing electricity with zero emissions (except for very small emissions from vehicles servicing the Facility). Electricity delivered to the grid from wind energy projects can offset the generation of energy at existing conventional power plants. According to a 2008 U.S. Department of Energy National Renewable Energy Laboratory report, "Wind energy is a preferred power source on an economic basis, because the operating costs to run the turbines are very low and there are no fuel costs. Thus, when the wind turbines produce power, this power source will displace generation at fossil fueled plants, which have higher operating and fuel costs." On a long-term basis, wind generated power also reduces the need to construct and operate new fossil fueled power plants (Jacobsen & High, 2008).

Natural gas is the most frequent marginal fuel unit in New York's power pool, or the one that is turned on or off as the load fluctuates (Patton et al., 2016). When the proposed Facility is generating power, electricity generation from natural gas would be reduced within the region, thereby eliminating the associated emissions.

The USEPA's Emissions and Generation Resource Integrated Database (EPA eGRID) provides comprehensive data on the environmental characteristics of almost all electric power generated in the United States. Data from eGRID are organized into subregions, including the upstate New York subregion. Utilizing these data to calculate emissions offsets provides a region-specific analysis of environmental air-quality benefits that will result from Facility operation. According to the 2012 eGRID data released in 2015, the five largest sources of electricity generation in upstate New York are: natural gas (30.4%), hydroelectric (29.4%), nuclear (28.9%), coal (5.5%), and wind (3.6%). The average non-baseload output emission rates for the upstate New York eGRID subregion in 2012 were approximately equal to the following: carbon dioxide (CO₂) at 1,228.56 pounds per megawatt hour (lbs./MWh), nitrogen oxides (NO_x) at 1.0062 pounds

lbs./MWh, and SO₂ at 2.3801 lbs./MWh (USEPA. 2015). Using these figures and assuming maximum annual electricity generation of 300 MW and a capacity factor of ■%, the Facility will annually displace approximately:

- 546,127.1 tons of carbon dioxide (CO₂)
- 447.3 tons of NO_x
- 1,058.0 tons of SO₂

Annual displacement of mercury and lead compounds resulting from offsets of conventional power plants was calculated using the Abraxas Emissions Calculator (Abraxas Energy Consulting, 2017), which utilizes data on average pollutant emissions by state. Although the eGRID data are more region-specific than the Abraxas Emissions Calculator and are therefore likely more accurate, information on mercury and lead emissions is not available through eGRID. Assuming maximum annual electricity generation of 300 MW and a capacity factor of ■%, the Facility is anticipated to annually displace approximately:

- 5,045.0 tons of mercury compounds (22.2 lbs. of mercury)
- 12,199.0 tons of lead compounds (53.8 lbs. of lead)

(e) Offsite Consequence Analysis for Ammonia Stored Onsite

No ammonia will be stored onsite during Facility construction or operation. Therefore, the offsite consequence analysis required by Section (e) is not applicable to the Facility and is not included in this Application.

REFERENCES

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