6.0 AIR RESOURCES

The project will result in a significant net air quality benefit to Maine and the region by displacing a portion of regional electricity generation using fossil fuels or other combustion sources. This section describes the air quality impacts and benefits of the project.

6.1 Air Emissions from Construction-Related Activities

Project-related air quality impacts during construction are expected to include fugitive dust emissions and vehicle emissions from cement batch plant operations, ground excavation, access road construction and use, concrete pouring, and equipment erection. However, because the construction period is limited, these emissions will be temporary, and will be typical of similar construction projects.

Emissions of fugitive dust will depend on such factors as soil properties (e.g., moisture content, volume of spoils, and soil silt content), meteorological variables, and construction practices employed. Best management practices will be employed to minimize emissions of fugitive dust, including:

- Use of water or other wetting agents on areas of exposed and dry soils;
- Use of covered trucks for transport of soils or other dry materials;
- Controlled storage of spoils on the construction site; and
- Final grading and landscaping of exposed areas as soon as practical.

6.2 Air Quality Benefits Resulting from Project Operations

Direct project-related emissions during operation will be limited to fugitive dust emissions and vehicle emissions related to maintenance vehicles. Operation of the project will more than offset these emissions by displacing emissions from fossil fuel-fired power plants in Maine and in the region.

Generation of electricity from fossil fuels results in atmospheric emissions of a number of pollutants. Of particular concern in Maine are emissions of:

- NO_x, a precursor to the formation of ozone (smog) and a contributor to acid rain;
- Sulfur dioxide (SO_2), a contributor to acid rain; and
- CO_2, a contributor to global warming.

Although the project area is in attainment of the National Ambient Air Quality Standard (NAAQS) for ozone, much of New England is not. Through displacement of generation from sources within and upwind of New England's ozone non-attainment area, and upwind of Maine, the project will reduce regional emissions of NO_x, which will contribute to improvement in air quality in Maine and region-wide.

Maine, like most of the Northeast, is vulnerable to ecological damage from acid precipitation, which results in part from emissions of SO_2 and NO_x from fossil fuel-firing sources. Through displacement of generation from upwind sources, the project will reduce regional emissions of SO_2 and $NO_{x,}$, which will contribute to reduction in acid rain damage.

In response to concerns about global climate change, seven states in the Northeast and Mid-Atlantic, including Maine, announced an agreement to implement the RGGI, a cooperative effort to implement a regional cap-and-trade program initially covering CO_2 emissions from power plants in the region. On August 15, 2006, the participating states issued a model rule for the RGGI program. The model set of regulations will form the basis of individual state regulatory and/or statutory proposals to implement the program. The goals of RGGI are to stabilize CO_2 emissions from the power sector at approximately current levels from the start of the program in 2009 through the beginning of 2015. From 2015 through 2018 emissions will decline, achieving a 10 percent reduction by 2019. In addition, some of the program reductions will be achieved outside the electricity sector through emissions offset projects.

Maine has implemented the Maine Global Warming Action Plan (38 MRSA §576). By displacing regional generation of electricity from fossil fuels, the project will contribute to the fulfillment of Maine's RGGI obligations as well as the goals of the Global Warming Action Plan.

To quantify the amount of regional emissions that will be displaced by the project, TransCanada utilized data published by ISO-NE in its New England Marginal Emissions Rate Analysis (ISO-NE 2006). This study provides a means to obtain an accurate estimate of emissions offset by adding new sources of generation (or reducing demand) in the NEPOOL system.

Electric generation is "dispatched" by ISO-NE by ordering power plants to come on-line or off-line on a real-time basis. Least-cost units run on a base-load basis (they run around the clock), while more expensive units "cycle" (they come on- and off-line as the demand for electricity increases and decreases throughout each day). Wind power projects are considered least-cost units, though their actual hours of operation are dependent on meteorological conditions. Based on actual generation data from all electric generation units in NEPOOL, the "marginal" emission rate (the emission rate of the last unit turned on) can be calculated on an hour-by-hour basis. By estimating the frequency of operation of the project on an annual basis (capacity factor), the regional emissions that would be avoided can be calculated.

TransCanada's emissions displacement analysis is provided in Appendix 2-F. Results of that analysis are provided in Table 6-1.

Table 6-1: Annual Emissions Displacement Benefit from the Kibby Wind Power Project (2009-2013)

Analysis Year	Emissions Displacement (tons/year)		
	CO_2	SO_2	NO_x
2009	201,470	358	99
2010	201,470	358	99
2011	195,713	346	94
2012	191,876	333	88
2013	188,038	319	83

To put some perspective on these large numbers, an average car with typical use emits somewhere in the range of 5 to 6 tons of CO_2 each year.[1] Thus, the approximately 200,000 tons of CO_2 offset per year by the Kibby Wind Power Project is equivalent to removing about 35,000 cars from the road. Similarly, the approximately 90 tons of NO_X offset per year by the Kibby Wind Power Project is equivalent to the NO_X produced in New England to serve the electric needs of roughly 25,000 households.[2] Finally, it is important to note that the emission reduction benefits of the Kibby Wind Power Project will extend well beyond the 5-year study period. Although there is inherent uncertainty in any long-range forecast of marginal emission rates, assuming that these rates remain near current values, the project would displace about 5 million tons of CO_2 over its 25-year life.

6.3 References

ISO-NE, Inc. 2006. 2004 New England Marginal Emission Rate Analysis. This report is publicly available at http://www.ISO-NE.com.

[1] Assumes typical usage of 12,000 miles driven per year at 23 miles to the gallon.

[2] Assumes annual electric use of just over 10,000 kWh per household and average NO_X emission rates for 2005 (U.S. EPA data).