3.4 Air

3.4.1 Introduction

General NEPA significance criteria (as listed in 40 C.F.R. 1508.27) identify impacts and their significance caused by emissions of criteria air pollutants. The Federal Clean Air Act, which was last amended in 1990, requires the USEPA to set National Ambient Air Quality Standards (NAAQS) for criteria pollutants. The significance of potential air quality impacts of the Proposed Action includes conformance determinations with the NAAQS as applicable under Section 309 of the Federal Clean Air Act. These ambient air quality standards are presented in this section along with discussions on climate, ambient air quality, emission sources on Nation lands, regulatory compliance, and a mobile source analysis.

3.4.2 Climate

The climate of Oneida and Madison Counties, the location of the Proposed Action, is typical of the Great Lakes Plains found in western New York State. The waters of Lakes Erie and Ontario warm slowly in the spring, the effect of which is to reduce the warming of the atmosphere over adjacent land areas. In the fall season, the lake waters cool more slowly than the land areas and thus serve as a heat source (National Oceanographic and Atmospheric Administration, 1982). As cold air moves across the water in Lakes Erie and Ontario, the air is warmed in the lower layers, picks up moisture, and reaches the land in an unstable condition. Precipitation in the form of snow is released as the air stream moves inland over the gradually sloping terrain. Snow produced in part from air masses moving across Lakes Erie and Ontario is an important and central aspect of New York State's climate. Heavy snow squalls frequently occur, generating from one to two feet of snow and occasionally four feet or more. Near Lakes Erie and Ontario, monthly snowfall amounts in excess of 24 inches are experienced in most winters and accumulations of more than 50 inches within two consecutive months are not uncommon (National Oceanographic and Atmospheric Administration, 1982). In general, winters are usually cold and are sometimes severe.

There are several climatic elements that have an impact on air quality. These elements include winds, temperature, precipitation, and visibility. These four elements are discussed in detail below.

The prevailing wind is generally from the west in New York State. A southwest component becomes evident in winds during the warmer months, while a northwest component is characteristic of the colder half of the year. Occasionally, well-developed storm systems moving across the continent or along the Atlantic Coast are accompanied by very strong winds (National Oceanographic and Atmospheric Administration, 1982).

There is significant variability in the average seasonal temperatures in Oneida and Madison Counties. Table 3.4-1 presents the maximum and minimum average normal temperatures that are representative of Oneida County on a seasonal basis; temperature ranges for Madison

County, which is adjacent to Oneida County, are in a similar range. The temperature data presented in this table were taken at the Utica meteorological station located in Oneida County, New York; a meteorological station is a location where meteorological observations such as surface, upper air, and climatological observations are recorded. These normal temperatures were based on five decades of climate data, from 1950 to 2002. During the winter months of December through February, the minimum average normal temperature is 16.3 degrees Fahrenheit (° F). Temperatures drop below 0° F on an average of approximately ten times each winter in Oneida County. During the summer months of June through August, the maximum average normal temperature is 78.2° F. Typically, this region experiences only a few days of 90° F or higher each summer.

Table 3.4-1
Average Temperature Data for Oneida County

	Winter (December-February) (° F)	Spring (March-May) (° F)	Summer (June-August) (° F)	Fall (September-November) (° F)
Average Maximum Seasonal Temperature	31.2	54.2	78.2	57.6
Average Minimum Seasonal Temperature	16.3	35.5	57.9	40.8

Source: New York State Climatologist, 2005.

Precipitation data for Oneida County is also collected at the Utica meteorological station. The annual normal precipitation for Oneida County is approximately 45.3 inches. The average normal monthly total precipitation is 3.54 inches during the winter months, 3.67 inches during the spring months, 3.83 inches during the summer months, and 4.04 inches during the fall months. Based on this data, there is not a high degree of seasonal variability in the distribution of precipitation in Oneida County.

Visibility is a measure of the opacity of the atmosphere, which is a measure of the distance that can be seen clearly at any given time. Visibility conditions in Oneida and Madison Counties are generally good. The climate of central New York State features a lot of cloudy weather during the months of November, December, and January. From June through September, however, approximately 60 to 70 percent of the possible sunshine hours are received in Oneida and Madison Counties. The occurrence of heavy, dense fog is variable over New York State. The influence of Lakes Erie and Ontario in the Great Lakes Plain and the northern valleys contribute to the formation of fog, with occurrences averaging about 10 to 20 days annually.

3.4.3 Ambient Air Quality Standards and Criteria

The Proposed Action is the transfer of Nation lands into trust with the BIA. Once these lands are transferred into trust, they would not be subject to New York State, local and municipal zoning and land use laws and regulations. However, Federal air quality laws and regulations would apply to all lands accepted into trust for the Nation.

The Clean Air Act is the primary Federal legislation controlling air quality standards. Within the New York State tribal communities, including the Nation, the Clean Air Act program is administered by the USEPA. Federal regulations also require that individual states have plans, known as State Implementation Plans (SIPs) in place which provide for the implementation, maintenance, and enforcement of the ambient air quality standards promulgated under the Clean Air Act. The State of New York's regulatory scheme for air quality consists of the Clean Air Act and its implementing regulations, the Federally-enforceable SIP and New York State's own air quality laws and regulations.

As required by the Federal Clean Air Act and its amendments, the USEPA has established primary and secondary NAAQS for six air pollutants, which are called criteria pollutants. These criteria pollutants include carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), lead (Pb), and particulates (PM_{10} and $PM_{2.5}$, particulate matter with aerodynamic diameters less than or equal to 10 micrometers (μm) and 2.5 μm, respectively). Nitrogen oxides (NOx) are of principal concern because of their role as precursors in the formation of ozone. Ozone is formed when volatile organic compounds (VOCs) and NOx undergo slow photochemical reactions in the presence of sunlight.

As identified above, primary and secondary standards were developed for the NAAQS. Primary standards set limits to protect public health including the health of sensitive populations such as asthmatics, children, and the elderly. The primary standards represent levels at which there are no known significant effects on human health. Secondary standards are intended to protect public welfare including protection against visibility impairment and damage to animals, crops, vegetation, and buildings.

New York State has adopted these primary standards as the New York State Ambient Air Quality Standards (NYSAAQS). In addition, New York State regulates ambient air concentrations of hydrogen sulfide (H_2S), beryllium (Be), fluorides, and total suspended particulates (TSP). The NAAQS and NYSAAQS for each pollutant and the averaging time period utilized to obtain these values are presented in Table 3.4-2. The NYSAAQS are prescribed a numerical contaminant level that will not be exceeded in a specified area of New York State. Under 6 NYCRR Part 257, the parts of contaminant per million (ppm) of air by volume for SO_2, CO, O_3, Non-Methane Hydrocarbons, and NO_2 corresponds to the NAAQS in micrograms of contaminant per cubic meter ($\mu g/m^3$) of air at a temperature of 25 degrees Celsius and a pressure of 760 millimeters of mercury.

For non-criteria pollutants such as air toxics, there are no established regulatory standards. However, New York State seeks to regulate the ambient levels of air toxics under 6 NYCRR Part 212. The NYSDEC publishes maximum allowable guideline concentrations for these compounds; these one-hour and annual guideline concentrations are called Short-Term Guideline Concentrations and Annual Guideline Concentrations, respectively. The methodology for assessing the impact due to air toxic emissions is found in Air Guide 1:

Table 3.4-2
National and New York State Ambient Air Quality Standards

Pollutant[1]	Averaging Period	NYSAAQS			NAAQS					
					Primary Standard			Secondary Standard		
		Conc.	Units	Statistic[2]	Conc.	Units[3]	Statistic[5]	Conc.	Units	Statistic
Sulfur Dioxide	12 consecutive months	0.03	ppm	A.M.	80	µg/m³	A.M.			
	24-hour	0.14	ppm	Max.	365	µg/m³	Max.			
	3-hour	0.50	ppm	Max.				1300	µg/m³	Max.
Carbon Monoxide	8-hour	9	ppm	Max.	10,000	µg/m³	Max.	10,000	µg/m³	Max.
	1-hour	35	ppm	Max.	40,000	µg/m³	Max.	40,000	µg/m³	Max.
Ozone[4]	1-hour	0.12	ppm	Max.	235	µg/m³	Max.	235	µg/m³	Max.
	8-hour	0.08	ppm	Max.	157	µg/m³	Max.	157	µg/m³	Max.
Hydrocarbons (non-methane)	3-hour (6-9 am)	0.24	ppm	Max.						
Nitrogen Dioxide	12 consecutive months	0.05	ppm	Max.	100	µg/m³	A.M	100	µg/m³	A.M.
Lead	3 consecutive months				1.5	µg/m³	Max.			
Fine Particulate Matter ($PM_{2.5}$)	12 consecutive months				15	µg/m³	A.M.	15	µg/m³	A.M.
	24-hour				65	µg/m³	Max.	65	µg/m³	Max.
Inhalable Particulates (PM_{10})	12 consecutive months				50	µg/m³	A.M.	50	µg/m³	A.M.
	24-hour				150	µg/m³	Max.	150	µg/m³	Max.
Total Suspended Particulates (TSP)	12 consecutive months	75	µg/m³	G.M.						
	24-hours	250	µg/m³	Max.						

Notes: [1]New York State also has standards for beryllium, fluorides, hydrogen sulfide, and settleable particulates (dustfall). Ambient monitoring for these pollutants is not currently conducted.
[2]All maximum values are concentrations not to be exceeded more than once per calendar year. (Federal Ozone Standard not to be exceeded more than three days in three calendar years).
[3]Gaseous concentrations for Federal standards are corrected to a reference temperature of 25°C and to a reference pressure of 760 millimeters of mercury.
[4]Former NYS Standard for ozone of 0.08 ppm was not officially revised via regulatory process to coincide with the Federal standard of 0.12 PPM which is currently being applied by NYS to determine compliance status.
[5]A.M. is arithmetic mean, Max. is maximum, and G.M. is geometric mean.
Source: New York State Department of Environmental Conservation, 2005.

Guidelines for the Control of Toxic Air Contaminants (New York State Department of Environmental Conservation, 1997). While not yet a promulgated regulation, Air Guide 1 is utilized to evaluate sources of air contaminants for permitting purposes.

3.4.4 Ambient Air Quality

The fundamental mechanism by which the USEPA and the NYSDEC track compliance with the ambient air quality standards is by monitoring and designating areas as either in attainment or non-attainment for a particular pollutant. This designation is assigned to describe the air quality in a given area for any of the seven criteria pollutants. Other pollutants, such as Be, H2S, fluorides and TSP, although regulated by the state, are not currently monitored and therefore are not considered for the determination of an area's attainment status. For each of the monitored pollutants, areas that meet primary or secondary NAAQS are considered to be in attainment. Areas that do not meet or that contribute to ambient air quality in a nearby area that does not meet the primary or secondary NAAQS for a pollutant is designated as non-attainment. Oneida and Madison Counties, which are located in the Central Air Quality Control Region (AQCR) are currently in attainment for all of the NAAQS with the exception of O3 (United States Environmental Protection Agency, 2005). New York and other northeastern states are designated as part of the Northeast Ozone Transport Region (OTR); an OTR is defined by the U.S. Congress as a non-attainment area for ozone precursors. As a result, the Central AQCR is also designated as non-attainment for ozone.

The NYSDEC operates over 80 air quality monitoring stations located throughout New York State to measure ambient levels of criteria and other regulated pollutants. Each of these air quality monitoring stations takes measurements of one or more regulated air pollutants. There are several air quality monitoring stations located within the Central AQCR from which ambient concentration data was obtained for this EIS including Nick's Lake in Herkimer County, Utica in Oneida County, and Camp Georgetown in Madison County (Figure 3.4-1); data for CO and NO2 was obtained from air quality monitoring stations located in Buffalo and Syracuse because these stations were located the closest to Oneida and Madison Counties that measures these pollutants. The last three years (2003 through 2005) of available monitoring data was obtained for each of the six air quality monitoring stations. Table 3.4-3 presents a summary of the ambient air concentrations for each of the monitored pollutants. A comparison of the ambient concentrations of SO2, CO, NO2, PM10, PM2.5, and O3 in this table with the corresponding NAAQS and NYSAAQS indicates that there were no violations of any Federal or New York State standards during the four-year monitoring period.

Table 3.4-3
Summary of Selected Ambient Air Quality Monitoring Data[1]

Pollutant		Monitoring Station	NYSAAQS	NAAQS	2003	2004	2005
SO_2	3-hour	Nick's Lake	0.50 ppm	0.0112 ppm	0.0143 ppm	0.0115 ppm	0.0108 ppm
	24-hour		0.14 ppm	0.0084 ppm	0.0061 ppm	0.0064 ppm	0.0063 ppm
	Annual		0.03 ppm	0.001 ppm	0.001 ppm	0.0009 ppm	0.0009 ppm
SO_2	3-hour	Camp Georgetown	0.50 ppm	0.019 ppm	0.020 ppm	0.020 ppm	0.024 ppm
	24-hour		0.14 ppm	0.013 ppm	0.013 ppm	0.011 ppm	0.012 ppm
	Annual		0.03 ppm	0.002 ppm	0.002 ppm	0.002 ppm	0.002 ppm
NO_2	Annual	Buffalo	0.05 ppm	0.020 ppm	0.020 ppm	0.018 ppm	0.019 ppm
CO	1-hour	Syracuse	35 ppm	3.4 ppm	3.2 ppm	3.0 ppm	2.8 ppm
	8-hour		9 ppm	2.1 ppm	1.7 ppm	1.4 ppm	1.9 ppm
PM_{10}	24-hour	Nick's Lake	NA	54 µg/m^3	32 µg/m^3	40 µg/m^3	NA
	Annual		NA	12 µg/m^3	11 µg/m^3	13 µg/m^3	NA
$PM_{2.5}$	24-hour	Utica	NA	40.1 µg/m^3	30.8 µg/m^3	40.6 µg/m^3	38 µg/m^3
	Annual		NA	12.2 µg/m^3	11.5 µg/m^3	11.2 µg/m^3	11.4 µg/m^3
O_3	1-hour	Nick's Lake	0.12 ppm	0.094 ppm	0.093 ppm	0.075 ppm	0.078 ppm
	8-hour		0.08 ppm	0.079 ppm	0.075 ppm	0.064 ppm	0.068 ppm
O_3	1-hour	Camp Georgetown	0.12 ppm	0.095 ppm	0.103 ppm	0.080 ppm	0.081 ppm
	8-hour		0.08 ppm	0.085 ppm	0.080 ppm	0.067 ppm	0.074 ppm

Note: [1] Maximum concentrations over the years 2003-2005 are reported for annual averages; maximum second highest concentrations over the years 2003-2005 are reported for all other averaging periods, except for 8-hour O_3 where the 4th highest maximum concentration is reported.
Source: New York State Department of Environmental Conservation, Division of Air Resources, 2005 New York State Air Quality Reports Ambient Air Monitoring System.

3.4.5 Emission Sources on Nation Lands

Group 1 Lands

Group 1 lands are comprised of 3,428 acres proposed for conveyance into trust. These Group 1 lands contain the Nation's gaming and resort properties, which are identified in Section 2.2.1.2 Existing Use of Alternative A Lands Entering Trust. The Turning Stone Resort & Casino, which is located on Group 1 lands, is the Nation's largest air emission source. The Turning Stone Resort & Casino operates two natural gas-fired boilers that are each 20.4 million (MM) British Thermal Units (BTU) per hour (hr) in size and six diesel-fired emergency generators that range in size from approximately 2 MMBtu/hr to 15 MMBtu/hr. The recently constructed cogeneration electric station at the Turning Stone Resort & Casino facility operates the following sources of combustion:

- One natural gas-fired turbine generator with a heat recovery steam generator that is 59.86 MMBtu/hr in size;
- One natural gas-fired package boiler that is 33.48 MMBtu/hr in size;

- One natural gas/distillate oil-fired package boiler that is 33.48 MMBtu/hr in size; and
- One diesel-fired emergency generator that is 3.62 MMBtu/hr in size.

The three natural gas-fired boilers and one gas/distillate oil-fired boiler produce steam/hot water at the Turning Stone Resort & Casino. The new natural gas-fired electricity generating turbine also produces steam. The seven emergency generators, ranging from approximately 2 MMBtu/hr to 15 MMBtu/hr in size, produce power during periods of electricity outages; each emergency generator is limited to operate less than 1,000 hours in a year due to permit restrictions, which are discussed in Section 3.4.6 Regulatory Compliance. These combustion sources (boilers, gas turbines, and emergency generators) emit criteria pollutants, VOCs and air toxics.

Mobile sources can also contribute to air pollution. Mobile sources include both on-road vehicles such as cars, trucks, and buses and off-road equipment such as boats, airplanes, and agricultural and construction equipment. Emissions of NOx, VOCs and CO from motor vehicles have the potential to impact local air quality. An analysis of the contribution of mobile source emissions at the Turning Stone Resort & Casino is discussed in Section 3.4.7 Mobile Source Analysis.

Refueling emissions or evaporative emissions can emanate from motor vehicle fuel tanks during refueling operations. The USEPA has estimated that vehicle refueling emissions account for as much as two percent of the overall VOC emissions in urban areas. Spillage emissions result when fuel is spilled during the refueling process. Some or all of the spilled fuel can subsequently vaporize, adding hydrocarbon compounds to the atmosphere.

Other potential sources of air emissions are generated from golf course operations. The Nation owns three 18-hole golf courses, which are the Atunyote, Kaluhyat, and Shenendoah Golf Courses. The Kaluhyat and Shenendoah Golf Courses are located in the Town of Verona while the Atunyote Golf Course is located in the Town of Vernon. The Nation also owns two nine-hole golf courses (Pleasant Knolls and Sandstone Hollow Golf Courses) located in the Town of Verona. Air emissions generated from the daily operation and maintenance activities associated with these golf courses were not accounted for since these emissions are considered minimal in comparison to the contribution of air emissions to local and regional air quality which were considered from the Turning Stone Resort & Casino operations.

The smallest percentage of Nation lands that are categorized as being utilized for agricultural purposes are located in Group 1. Some of these agricultural Group 1 lands are utilized to grow crops, the Nation's traditional crops (Three Sisters - white corn, beans, and squash), and some land is vacant. Professional products such as herbicides, insecticides, and fungicides are commonly used in commercial agriculture. Air emissions could be generated from the agricultural equipment used to apply these professional products and from the volatilization of utilizing these professional products. However, Nation lands are less than one percent of the

total land area of Oneida and Madison Counties, therefore the air emissions associated with these agricultural activities would be considered minimal and these air emissions were not considered for further analysis.

Group 2 Lands

Group 2 lands are comprised of 6,475 acres proposed for conveyance into trust. These Group 2 lands contain the Nation's non-gaming properties, which are identified in Section 2.2.1.2 Existing Use of Alternative A Lands Entering Trust. Air emissions are generated from the operation of agricultural properties and marinas; other Group 2 land uses do not contribute to or do not include significant sources of air emissions. The generation of air emissions from these agricultural properties and marinas is discussed below.

Some of the Group 2 lands that are categorized as agricultural are being utilized to grow crops, for livestock operations, and some are vacant. As identified under the discussion for Group 1 lands, professional products such as herbicides, insecticides, and fungicides are commonly used in commercial agriculture. Overall, air emissions associated with the utilization of these products are expected to be low. Primary sources of odors, gases, and dust from production agriculture could include livestock operations (poultry and pig shelters, open cattle feedlots), manure storage facilities; and land application of manure.

The Nation has proposed to construct an anaerobic digester to biologically process the manure from its open cattle feedlots. Anaerobic digesters are very effective at controlling odors, nearly eliminating them from associated manure storage structures as odors remain within the sealed digester. Assuming that the system is completely leak-free, no air emissions or odor nuisances will occur from the anaerobic digestion process. The proposed anaerobic digestion system will promote the decomposition of manure in the absence of oxygen, producing simple organics and gaseous biogas products. The biogas can either be burned off in a flare system or can supply useful energy in the form of hot water, steam or electricity. Potential sources of air emissions from anaerobic digesters are primarily from the combustion of the biogas via the flare, boiler or engine generator. Biogas normally consists of 50 to 70 percent methane and is water saturated. The balance of the biogas mixture is carbon dioxide with trace amounts of hydrogen sulfide, nitrogen gas, and volatile organic compounds. The Nation has indicated that it does not have designs or construction contracts for the anaerobic digester. The Nation has not selected a technology for the system or chosen a site location at the Angus cattle farm in Stockbridge.

The Nation owns three marina facilities located on Oneida Lake. During marina operations, emissions of criteria air pollutants emissions can be generated from motorboats powered by diesel or gasoline fuel. The contribution of air emissions from these marina motorboats to local and regional air quality is considered insignificant since these boats normally use small engines and operate over short travel distances with limited hours per day, as compared to cars. Therefore, these emissions were not considered for further analysis.

Group 3 Lands

Group 3 lands are comprised of 7,467 acres proposed for conveyance into trust. These Group 3 lands contain the Nation's non-gaming other properties, which are identified in Section 2.2.1.2 Existing Use of Alternative A Lands Entering Trust. Air emissions are generated from agricultural operations. Some of the Group 3 lands that are categorized as agricultural are being utilized for pasture, to grow crops, and for livestock operations. As identified under the discussion for Group 1 lands, professional products such as herbicides, insecticides, and fungicides are commonly used in commercial agriculture. Overall, air emissions associated with the utilization of these products are expected to be low. As identified under the discussion for Group 2 lands, livestock operations generate odors, gases, and dust.

3.4.6 Regulatory Compliance

The Clean Air Act provided the USEPA with the authority to issue a Part 71 permit for the Nation under 40 C.F.R. Part 71.4. This permit was issued to ensure compliance with all applicable Federal regulations. Currently, the Turning Stone Resort & Casino operates two natural gas-fired boilers and six diesel-fired emergency generators at its facility and has recently constructed a new cogeneration electric station consisting of a natural gas-fired turbine generator, two boilers (one natural gas-fired and the other natural gas/distillate oil-fired) and a diesel-fired emergency generator. Prior to the construction of the cogeneration electric station, the Turning Stone Resort & Casino was an existing non-major facility for NOx with a potential to emit of approximately 90 tons per year. With the construction of the cogeneration electric station, the Turning Stone Resort & Casino added 60 tons per year to its NOx emission potential and, therefore, qualified as a major source; a designation that required the Turning Stone Resort & Casino to obtain a major source operating permit. Accordingly, the Nation applied for an operating permit from USEPA Region 2 under Title V of the Clean Air Act. On February 22, 2006, USEPA Region 2 issued the Title V air permit pursuant to 40 C.F.R. Part 71 to the Turning Stone Resort & Casino (Permit Number: ONEIDA001) and responded to comments from the NYSDEC and others during the preceding public comment period. The Title V Permit includes the one turbine generator, four boilers, and seven emergency generators at the Turning Stone Resort & Casino. A summary of these emission sources and their corresponding emissions is presented in Table 3.4-4.

Table 3.4-4
Total Stationary Source Emissions from the Turning Stone Resort & Casino

Source	NOx	CO	PM_{10}	SO_2	VOC
(2) 20.4 MMBtu/hr Boilers	17.52	14.72	1.33	0.11	0.96
(2) 33.48 MMBtu/hr Boilers	32.99	31.97	4.99	75.67	6.75
(7) Emergency Diesel Generators	81.73	20.78	3.28	11.19	3.25
(1) Turbine Generator	21.46	21.46	12.88	1.04	3.37
Total	**153.71**	**88.93**	**22.47**	**88.00**	**14.33**

All lands accepted into trust will be subject to the provisions of Title 40 C.F.R. Part 60 New Source Performance Standards (NSPS). A summary of the applicable requirements listed in the permit for each of the combustion units is provided below. The new natural gas-fired turbine generator is subject to the monitoring, record-keeping and reporting provisions of 40 C.F.R. Part 60 Subpart GG – Standards of Performance for Stationary Gas Turbines. 40 C.F.R. Part 60 Subpart GG requires monitoring of the nitrogen content and sulfur content of the fuel being fired in this turbine. The permit also requires NOx emissions testing every five years. The three natural gas-fired and one natural gas/distillate oil-fired boiler are subject to 40 C.F.R. Part 60 Subpart Dc – Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units. 40 C.F.R. Part 60 Subpart Dc requires that fuel use be monitored and recorded. An opacity limit is required when a boiler is firing distillate fuel oil.

The provisions of the Air Pollution Control Title V Permit to Operate requires the Nation to monitor and record the number of hours each emergency generator at the Turning Stone Resort & Casino is operated. In general, fuel use is measured and recorded and emissions are estimated by multiplying fuel use amount with its heat content and appropriate emission factor. This permit does not address any New York State air quality policies.

3.4.7 Mobile Source Analysis

There are a number of passenger vehicle trips generated each day to and from the Turning Stone Resort & Casino. The emissions from these trips are primarily associated with patron and employee motor vehicles traversing the roadways and potentially congregating in the Turning Stone Resort & Casino parking areas. There are also vendor, contractor, and construction worker vehicle trips resulting from ongoing daily service, management, and facility improvement activities.

Since the large majority of traffic is associated with patrons and employees, an estimation of emissions for the on-road mobile source activities associated with the Turning Stone Resort & Casino was performed. Emission factors were developed based upon specific emission factor tables for Oneida County provided by the New York State Department of Transportation (New York State Department of Transportation, 2004). These emission factors were developed using the USEPA's emissions model, MOBILE6.2 (United States Environmental Protection Agency, 2003), and the latest model input parameters provided by the NYSDEC.

The MOBILE6.2 model was designed by the USEPA to calculate average in-use fleet emission factors. The model calculates emission rates under various conditions affecting in-use emission levels, such as average traffic speeds. The MOBILE6.2 model also accounts for the impact of factors such as changes in vehicle emission standards, changes in vehicle populations and activity, and variation in local conditions such as temperature, humidity, and fuel quality on emissions. The model allows site-specific inputs in order to adapt the emission factors to local conditions, and to model special situations that are not reflected in the model's default parameters. MOBILE6.2 provides emission factors for CO, hydrocarbons (expressed as

VOCs), and NOx. This model also has the ability to estimate particulate matter emissions (PM_{10} and $PM_{2.5}$) including particulate emissions from the exhaust and from brake and tire wear.

The MOBILE6.2 emission factors for on-road vehicles provided by New York State Department of Transportation were expressed in terms of grams per vehicle mile traveled (g/mi). These emission factors were then multiplied by the distance each vehicle was assumed to travel in order to determine the emissions. Additionally, idle emissions, expressed in units of grams per hour (g/hr) were determined from the MOBILE6.2 emission factor tables. The idling emissions were conservatively calculated using emission factors at 2.5 miles per hour (MPH) and multiplying this emission factor by the 2.5 MPH speed to get an idling emission factor in g/hr, then multiplying this by the idling time (three minutes) to determine idling emissions.

The emissions estimation provided annual average emission rates for each pollutant of concern due to operations at the Turning Stone Resort & Casino. Emission estimates were obtained for the year 2006. Total emissions in terms of tons per year (tpy) were calculated considering both the free flow and idling emission components for the employee and patron vehicles. The analysis included the emissions of CO, VOCs, NOx, PM_{10}, and $PM_{2.5}$ and consisted of both a regional emissions component for vehicles traveling from various origins to the Turning Stone Resort & Casino and emissions associated with travel within the Turning Stone Resort & Casino site for vehicles traveling from the Turning Stone Resort & Casino entrance to their respective parking areas.

3.4.7.1 Regional Emissions Estimate

For patrons, estimates of the vehicle miles traveled were based upon trip data generated from the socio-economic analysis performed by the Louis Berger Group for fiscal year 2005. This trip data provided the total number of trips per year for patrons traveling to the Turning Stone Resort & Casino and the percentage of total trips from various regional origins. The majority of patrons (approximately 74 percent) traveling to and from the Turning Stone Resort & Casino are from the Cities of Utica and Syracuse and travel an average distance of 29 miles each way. The average driving distance traveled was determined using a commercial mapping program and was set as the driving distance from the center of each respective originating city to the entrance of the Turning Stone Resort & Casino at Patrick Road. The regional emissions estimates extended to travel originating approximately 400 miles from the Turning Stone Resort & Casino, where the socio-economic data indicated that approximately eight percent of patrons originated (e.g., from out of state areas such as Pennsylvania, Vermont, Maryland, and Ohio). Table 3.4-5 provides a summary of the patron trip information that was utilized for the determination of mobile source emissions.

Table 3.4-5
Regional Patron Trip Information

Region	Total Number of Trips per Year	Total Percentage of Trips	Average Distance Traveled[1] (miles)
Utica and Syracuse	1,781,127	74.4	29.1
Albany, Binghamton, Rochester, and Watertown	395,720	16.5	107.3
Kingston and Buffalo	33,713	1.4	171.7
Connecticut, Massachusetts, New Jersey, New York City, Pennsylvania, and Vermont	66,125	2.8	257.4
Glen Falls, Ohio, and Other	116,174	4.9	409.6

Note: [1]Average distance traveled determined via MapQuest © 2006.
Source: Personal Communication, David Aimen of the Louis Berger Group, July 31, 2006

It was assumed that patrons would largely use privately owned vehicles (classified as light-duty gasoline vehicles (LDGV) in MOBILE6.2) to transport themselves to and from the Turning Stone Resort & Casino. The patrons were assumed to travel along interstate routes to and from the Turning Stone Resort & Casino at a posted speed limit of 55 MPH.

For employees, estimates of the vehicle miles traveled were based upon employment statistics obtained as part of the socio-economic analysis as well. According to this information, 3,779 people were employed at the Turning Stone Resort & Casino during fiscal year 2005. Of the total employees, 60.2 percent live in Oneida County, 26.6 percent live in Madison County, and 13.2 percent live in central New York counties (with the majority of these 13.2 percent of employees living in Onondaga County). The average distance traveled for employees was determined using a commercial mapping program and was calculated as approximately half the distance from the entrance of the Turning Stone Resort & Casino at Patrick Road to the furthest town within each respective county. Table 3.4-6 provides a summary of the employee trip information that was utilized for the determination of emissions.

Table 3.4-6
Regional Employee Trip Information

Road Assignment	Percentage of Employees Assigned to Road	Annual Volume of Employee Trips per Year	Average Distance Traveled[1] (miles)
Oneida County	60.2	2,275	18.8
Madison County	26.6	1,005	20.2
Onondaga County	13.2	499	30.7

Note: [1]Average distance traveled determined via MapQuest © 2006.
Source: Calculated from data presented in Section 3.7 Socioeconomic Conditions.

It was assumed that employees would largely use LDGV to transport themselves to and from the Turning Stone Resort & Casino. The employees were assumed to travel on the arterial and local roads surrounding the Turning Stone Resort & Casino at an average speed of 40 MPH. This speed was based on a traffic study conducted by C&S Engineers during January 2006 along Route 365 between the Turning Stone Resort & Casino and I-90.

The emission factors used in the analysis for the patrons and employees traveling to the Turning Stone Resort & Casino are presented in Table 3.4-7.

Using the emission factors in Table 3.4-7 and the trip information from Tables 3.4-5 and 3.4-6, an estimate of the annual average emissions for each pollutant of concern was calculated. These total regional emissions are presented in Table 3.4-8.

Table 3.4-7
Emission Factors for Regional Patrons and Employees

Pollutant	Emission Factors (g/mi)	
	40 MPH	55 MPH
CO	20.27	22.03
NOx	0.68	0.71
VOCs	0.87	0.78
PM_{10}	0.03	0.03
$PM_{2.5}$	0.01	0.01

Source: New York State Department of Transportation, 2004.

3.4.7.2 On-site Travel Emissions Estimate

For travel within the Turning Stone Resort & Casino complex, the emissions estimates accounted for vehicles (both patrons and employees) entering the parking lots to park and those vehicles exiting the parking lot. The emissions estimates included the idling emissions from a warm-up period prior to each vehicle leaving its parking spot. Emission rates per vehicle for travel within the parking lot were conservatively determined assuming a vehicle speed of 10 MPH. The travel distance within the parking lot was determined from a scaled site plan and was estimated as the approximate distance from the Turning Stone Resort & Casino entrance at Patrick Road to the center of the patron/employee parking lots (the Main Parking Lot for patrons and the Employee Lot for the employees). The three-minute warm-up period per trip was assumed for vehicles exiting the parking lot.

The emission factors used in the analysis for the patrons and employees traveling within the Turning Stone Resort & Casino are presented in Table 3.4-9.

Table 3.4-8
Annual Average Emission Rates for Regional Patrons and Employees

Region	Annual Average Emission Rates (tpy)				
	CO	NOx	VOCs	PM_{10}	$PM_{2.5}$
Patron Regional Emissions					
Utica and Syracuse	2,520	81	89	3.4	1.1
Albany, Binghamton, Rochester, and Watertown	2,062	66	73	2.8	0.9
Kingston and Buffalo	281	9.1	10	0.4	0.1
Connecticut, Massachusetts, New Jersey, New York City, Pennsylvania, and Vermont	827	27	29	1.1	0.4
Glen Falls, Ohio, and Other	2,311	75	82	3.1	1.0
Total Patron Regional	**8,001**	**258**	**283**	**11**	**3.5**
Employee Regional Emissions					
Oneida County	1.9	0.06	0.08	<0.01	<0.01
Madison County	0.9	0.03	0.04	<0.01	<0.01
Onondaga County	0.7	0.02	0.03	<0.01	<0.01
Total Employee Regional	**3.5**	**0.11**	**0.15**	**<0.01**	**<0.01**
Total Regional Emissions (Patrons and Employees)	**8,004.5**	**258.1**	**283.2**	**11.0**	**3.5**

Table 3.4-9
Emission Factors for On-Site Travel of Patrons and Employees

Pollutant	Emission Factor (g/mi) at 10 MPH	Idle Emission Factor (g/hr)
CO	24.13	133.23
NOx	1.07	4.10
VOCs	1.89	27.98
PM_{10}	0.03	N/A
$PM_{2.5}$	0.01	N/A

Source: New York State Department of Transportation, 2004.

Using the emission factors in Table 3.4-9 and the trip information from Tables 3.4-5 and 3.4-6, an estimate of the annual average emissions for each pollutant of concern due to on-site travel was calculated. These total on-site travel emissions are presented in Table 3.4-10.

Total mobile source emissions due to the Turning Stone Resort & Casino, considering regional and on-site travel from patrons and employees are summarized in Table 3.4-11.

Table 3.4-10
Annual Average Emission Rates for On-Site Travel of Patrons and Employees

Road Assignment	Annual Average Emission Rates (tons per year)				
	CO	NOx	VOCs	PM_{10}	$PM_{2.5}$
Patrons: Patrick Road to Main Parking Lot					
At 10 MPH	39.1	1.7	3.1	0.05	0.02
Idle	17.6	0.5	3.7	N/A	N/A
Total Patron On-Site Travel	**56.7**	**2.2**	**6.8**	**0.05**	**0.02**
Employees: Patrick Road to Employee Lot					
At 10 MPH	1.3	0.04	0.3	<0.01	<0.01
Idle	0.03	<0.01	0.01	N/A	N/A
Total Employee On-Site Travel	**1.3**	**0.04**	**0.3**	**<0.01**	**<0.01**
Total On-Site Travel Emissions (Patrons and Employees)	**58**	**2.2**	**7.1**	**0.05**	**0.02**

Table 3.4-11
Total Mobile Source Emissions from the Turning Stone Resort & Casino (Patrons and Employees)

Pollutant	Total Annual Emissions (tpy)
CO	8,058
NOx	260
VOCs	290
PM_{10}	11
$PM_{2.5}$	4

Additional emissions of VOCs may result from vehicle refueling. These refueling or evaporative emissions emanate from a motor vehicle fuel tank during a refueling operation. The USEPA has estimated that vehicle refueling emissions can account for as much as two percent of the overall VOC emissions inventory in urban areas. In addition, some spillage emissions may result when fuel is spilled on the ground during the refueling process. Some or all of the spilled fuel can subsequently vaporize, adding hydrocarbon compounds to the atmosphere. These secondary emissions were not accounted for in calculations since they were considered small in comparison to the tailpipe emissions from the patron and employee vehicles.