§51.853(i)]. The proposed action is considered to be a "regionally significant action" subject to full conformity analysis only if the emissions exceed the 10 percent threshold. The SIP total for Imperial County is approximately 19,000 tons per year of PM_{10} (U.S. EPA 1999AIRData). The nine tons per year of PM_{10} emissions estimated to result from the construction and maintenance of the transmission lines that comprise this project in Imperial County is considerably less than 10 percent of the regional emissions of 19,000 tons per year. Thus, pursuant to the provisions of 40 CFR §51.853(b)(1) and 40 CFR §51.853(i), the proposed action is exempt from any further review for conformity determination.

4.2.4 Power Plant Impacts

Both the SER and BCP transmission lines would export power to the United States from electric generating facilities located in Mexico. The SER transmission line would transmit power from the TDM turbines and the BCP transmission line would transmit power from the EBC turbine and the EAX turbine designated for export. Both power plants are located approximately three miles (5 kilometers) south of the international border. Both power plants have received the necessary environmental permits from the relevant Mexican regulatory agencies in accordance with Mexican regulations. The TDM turbines would consist of two natural gas-fired combustion turbines and would be used exclusively to export power over the SER transmission line to the U.S. The EBC turbine and the EAX turbine designated for export also are fired by natural gas and will be used to export power over the BCP transmission line to the U.S. A diagram of the relationships of the generation facilities and transmission lines is shown earlier in Figure 1.2.

4.2.4.1 Annual Emissions of Air Pollutants

The estimated maximum annual emissions of the criteria air pollutants NO_2, CO, and PM_{10} are shown in Table 4.2.1. Listed are the annual emissions from the TDM facility, annual emissions from the EBC and EAX export units, as well as annual emissions from all four units at LRPC (i.e., the EBC and EAX export units plus the two EAX units used for Mexican power distribution to CFE).

The regulatory jurisdiction of the U.S. EPA does not pertain to air pollutant emissions in Mexico; nevertheless, a useful benchmark in found within U.S. EPA air permitting regulations and permitting guidance can be drawn upon to help assess the significance of these predicted increases from Mexican sources at the U.S. border and points north. In the context of permitting a major source or major modification in the U.S., U.S. EPA has established significance levels (henceforth SLs) for the criteria pollutants NO_2, SO_2, CO, and PM_{10} below which a major source or modification will not be considered to cause or contribute to a violation of a NAAQS at any locality that does not meet NAAQS *(40 CFR 51.165)*. In addition, U.S. EPA permitting guidance describes the impact area required

TABLE 4.2.1
AIR POLLUTANT EMISSIONS FROM TDM AND LRPC

	Termoeléctrica de Mexicali (TDM)	La Rosita Power Complex (LRPC)		
	Two Turbines for U.S. Export Only (600 MW)	Two Turbines for U.S. Export: EBC Turbine EAX Turbine (560 MW)	Two Turbines for CFE, Mexico: EAX Turbines (500 MW)	All Four LRPC Turbines: EBC Turbine and EAX Turbine for U.S. Export, Plus Two EAX Turbines for CFE, Mexico (1,060 MW)
NO_2– Annual	170 tons	282 tons	1,502 tons	1,785 tons
CO– Annual	165 tons	924 tons	957 tons	1,881 tons
PM_{10}– Annual	216 tons	410 tons	314 tons	744 tons

air quality analysis to be a geographical area that exceeds these SLs. Where air dispersion modeling is performed, the U.S. EPA does not require a full impact analysis when emissions of a pollutant from a proposed source or modification would not increase ambient concentrations by more than these prescribed SLs. Thus SLs may be generally regarded as thresholds of impact below which impact is not viewed to be significant.

Termoeléctrica de Mexicali Power Plant

The TDM generation facility connected to the SER transmission line would be equipped with air emission control technology and would be comprised of two General Electric 7FA machines equipped with dry low-NO_x combustor technology to minimize NO_x and CO emissions from the combustion of natural gas, the exclusive fuel for the facility. Both turbines would also be equipped with selective catalytic reduction systems to further reduce NO_x emissions and with oxidizing catalyst systems to further reduce CO emissions. Heat Recovery Steam Generators associated with each turbine and one steam turbine generator completes the main components of the facility. In its environmental permit application to the Mexican regulatory agencies, the TDM facility proposed a 2.5 ppm NO_x emission rate and a 4.0 ppm CO emission rate. It should be noted that these levels of emissions are the same as those being routinely permitted in the United States and specifically, in California.

As part of its environmental permit application to the Mexican regulatory agencies, TDM prepared and submitted an air dispersion modeling analysis using the U.S. Environmental Protection Agency's (U.S. EPA) Industrial Source Complex Short-Term 3 model, Version 00101, (hereafter ISCST3). The ISCST3 model is the U.S. EPA's current regulatory model for many New Source Review and other air permitting applications. The ISCST3 model is based on a steady-state Gaussian plume algorithm, and is applicable for estimating ambient impacts from point, area, and volume sources out to a distance of about 30 miles (50 kilometers), and includes algorithms for addressing building downwash influences, dry and wet deposition, and complex terrain (see Appendix B). Short term source emissions rates at TDM (from which the annual emission rates shown Table 4.2.1 were constructed) were used in the ISCST3 modeling analysis. The results are shown in Table 4.2.2 and in Appendix B.

As can be seen in Table 4.2.2, the air dispersion analysis demonstrates that TDM's air quality impacts at the international border are below SLs. Impacts further away from the international border, inside the U.S., would be lower than those at the border.

EBC and EAX Export Turbine

These turbines are Model 501F machines provided by Siemens-Westinghouse (SW). The SW machines utilize dry, low-NO_x combustion technology to reduce emissions of oxides of nitrogen. The EBC and EAX export turbine would generate a nominal 560 MW of

TABLE 4.2.2
POLLUTANT INCREASES FROM TDM

Pollutant	Averaging Period	Significance Level (SL)	Concentration Increase at U.S. Receptors*
Nitrogen dioxide	1-hour	N/A	6.00 $\mu g/m^3$
Nitrogen dioxide	Annual	1.0 $\mu g/m^3$	0.09 $\mu g/m^3$
Carbon monoxide	8-hour	500 $\mu g/m^3$	2.16 $\mu g/m^3$
Particulate matter	24-hour	5.0 $\mu g/m^3$	1.12 $\mu g/m^3$
Particulate matter	Annual	1.0 $\mu g/m^3$	0.11 $\mu g/m^3$

*Maximum predicted values by ISCST3 using complex terrain algorithm.

power for export to the U.S. These units would be fitted with selective catalytic reduction technology that would further reduce the emissions of NO_x to approximately 4 parts per million. These emission levels are well below the Mexican standards (Norma Oficial Mexicana – 085) of 139 ppm. In addition, these emission levels are below the latest guidelines for new power plants published by the World Bank in July, 1998, which are 155 ppm. The CO emissions would be 30 ppm.

To predict air emissions impacts on the surrounding areas, an Air Quality Impact Analysis (AQIA) was conducted which uses computer models to simulate the plume from the generation facilities. The AQIA used the Industrial Source Complex (ISCST3) model described earlier. Table 4.2.3 shows the predicted concentration increases.

As can be seen in Table 4.2.3, all predicted increases in pollutant concentrations from the export turbines are below SLs at distinct points along the U.S./Mexico border and points north. As described earlier, SLs may be generally regarded as thresholds of impact below which impact is not viewed to be significant.

Appendix B (BCP) shows the methodology, assumptions, and results of the AQIA for the export turbines associated with the BCP transmission line. Figures B1 through B5 in Appendix B show the predicted impacts of selected criteria pollutants on points north and south of the U.S./Mexico border. This modeling shows that no substantial degradation of air quality would occur at or north of the U.S. border as a result of the generation facilities associated with BCP's transmission line, as predicted levels decline even further below the SLs at points north and east.

4.2.4.2 Combined Impacts from TDM, EBC, and EAX Export Turbines

The SER and BCP transmission lines that connect to the IV Substation would transmit power exported from the Mexican TDM and the EBC and EAX export turbines respectively. ISCST3 modeling analyzed the combined impact of the TDM facility and the EBC and EAX export turbines. The LRPC is made up of four Siemens-Westinghouse combustion turbines, but as described earlier, only two would be used to export power to the U.S., namely an EBC turbine and an EAX turbine (see earlier Figure 1.2). The meteorological driver and receptor and grids were the same as those in the ISCST3 modeling described in Appendix B. The results of this combined SER- and BCP- related analysis were consistent with the results obtained by adding the two separate SER-related and BCP-related analyses. The results are shown in Table 4.2.4.

As can be seen in Table 4.2.4, the increase in ambient concentrations of air pollutants at the U.S./Mexico border, associated with the emissions from the export turbines, are below SLs established by U.S. EPA. As described previously in detail, SLs may be generally regarded as thresholds of impact on air quality below which impact is not viewed to be significant. Hence, in reference to these benchmark SLs, it may be viewed

TABLE 4.2.3
POLLUTANT INCREASES FROM EBC AND EAX EXPORT TURBINES

Pollutant	Averaging Period	Significance Level (SL)	Concentration Increase at U.S. Receptors
Nitrogen dioxide	1-hour	N/A	4.72 $\mu g/m^3$
Nitrogen dioxide	Annual	1.0 $\mu g/m^3$	0.15 $\mu g/m^3$
Carbon monoxide	1-hour	2,000 $\mu g/m^3$	24.6 $\mu g/m^3$
Carbon monoxide	8-hour	500 $\mu g/m^3$	10.7 $\mu g/m^3$
Particulate matter	24-hour	5.0 $\mu g/m^3$	1.70 $\mu g/m^3$
Particulate matter	Annual	1.0 $\mu g/m^3$	0.10 $\mu g/m^3$

TABLE 4.2.4
POLLUTANT INCREASES FROM TDM, EBC, AND EAX EXPORT TURBINES

Pollutant	Averaging Period	Significance Level (SL)	Concentration Increase at U.S. Receptors
Nitrogen dioxide	1-hour	N/A	7.04 $\mu g/m^3$
Nitrogen dioxide	Annual	1.0 $\mu g/m^3$	0.33 $\mu g/m^3$
Carbon monoxide	1-hour	2,000 $\mu g/m^3$	29.7 $\mu g/m^3$
Carbon monoxide	8-hour	500 $\mu g/m^3$	14.7 $\mu g/m^3$
Particulate matter	24-hour	5.0 $\mu g/m^3$	3.0 $\mu g/m^3$
Particulate matter	Annual	1.0 $\mu g/m^3$	0.20 $\mu g/m^3$

that the combined impacts on air quality from the generating facilities in Mexico exporting power to the U.S. are minimal.

4.2.4.3 Ozone Formation

The potential impact of a so-called "secondary" air pollutant, ozone, should also be considered. Fossil-fueled power plants emit a variety of air pollutants, primarily NO, CO, and PM_{10}. Nitric oxide, NO, is initially produced in the turbine combustion zones, and when vented into the atmosphere will undergo subsequent oxidation to nitrogen dioxide, NO_2. These two compounds also interchange in the atmosphere. Ozone, O_3, a photochemical oxidant, is not directly emitted as an air pollutant. Rather, O_3 is a secondary pollutant, formed in the presence of sunlight from a variety of precursors that include NO_x (where NO_x = NO + NO_2 + other oxides of nitrogen), volatile organic compounds (VOCs), and carbon monoxide.

The chemical processes in O_3 formation are quite slow and are favored by sunshine and stagnant air. A simple synopsis of O_3 formation is the breaking down of NO_2 by ultraviolet radiation to NO and O (where O is an oxygen atom), followed by the oxygen atom O reacting with an oxygen molecule to form O_3. However, the entire process is much more complex and is also non-linear (i.e., output is not necessarily proportional to input). A series of tropospheric photochemical reactions involving reactive OH and HO_2 radicals all play a role in producing O_3 along with oxygenated products such as nitric acid, peroxy acetyl nitrate, aldehydes, and organic acids. NO_2 can also be regenerated by these series of reactions. Particulates and short-lived radicals form as well. VOCs could be regarded to act as a "fuel" for O_3 formation in more urban environments where there is plenty of available NO_2. In addition, CO that originates from incomplete combustion in fossil fuels, or that is formed from the oxidation of methane in the atmosphere, can produce O_3 in a NO-rich environment, but can also remove O_3 in a NO-depleted environment. Freshly emitted NO can scavenge O_3, producing NO_2, and high NO_2 levels can form other products such as nitric acid that block the initial oxidation step for VOCs and thence prevent the net formation of O_3. Although it may seem to be counter-intuitive, sometimes a decrease in NO_x in emissions may lead to an increase in O_3. O_3 formation in urban environments tends to be VOC-limited (that is, adding VOCs may increase O_3, whereas adding NO_x may not). As air masses move away from industrial urban centers, the VOC/NO_x ratio tends to become higher and at the high VOC/NO_x ratios typical of more rural settings, O_3 formation tends to be NO_x-limited (i.e., adding NO_x may increase O_3 levels, whereas adding VOCs may not).

In more rural regions, such as Imperial County, O_3 formation does generally tend to be NO_x-limited—i.e., adding more NO_x increases O_3. (If, on the other hand, a region was VOC-limited, then additional NO_x would not increase O_3 levels.) The four turbines exporting power to the U.S. cumulatively increase NO_x levels at the U.S. border at an annual average of 0.33 $\mu g/m^3$ (see Table 4.2.4). This amount is less than the U.S. EPA

SL annual average of 1.0 $\mu g/m^3$ described as a benchmark of impact, and hence this increase could be regarded to be *de minimis.* Therefore, on an annual basis any effect on increased O_3 formation in Imperial County could also be regarded to be very small.

On a short-term basis, the highest recently measured short term 1-hour level for NO_x recorded near the international border at the Calexico Ethel Street Monitoring Site in Imperial County was 483 $\mu g/m^3$ (just above the State standard of 470 $\mu g/m^3$), as shown in Table CAQMA.1 in Appendix B. The highest short term 1-hour increment NO_x at the U.S. border area predicted by ICSCT3 air dispersion modeling of NO_x emissions from the four export turbines in Mexico is 7.04 $\mu g/m^3$ (1.5 percent of the California State standard of 470 $\mu g/m^3$) (as seen in Table 4.2.4). Therefore, in an extreme short term case reflective of highest 1-hour NO_x levels recorded at the U.S. border, the additional impact on O_3 formation associated with NO_x emissions from the turbines in Mexico exporting power to the U.S. could also be regarded to be very small, particularly if O_3 formation were no longer NO_x limited due to the high availability of NO_x.

There is presently no U.S. EPA-approved modeling procedure for determining the impact of individual emission sources on downwind ozone levels. Regulators have used resource-intensive ozone modeling procedures to evaluate the combined impacts of numerous sources on regional ozone levels (e.g., the UAM-V and CAM-X reactive grid models). These grid models have limited resolution to estimate incremental impacts resulting from the relatively low levels of emissions of ozone precursors from an individual source, and there is no U.S. EPA-approved methodology for adjusting the parameters of these models to try to estimate small impacts from low-emitting sources. These modeling tools have therefore not been recommended for use in evaluating impacts from ozone sources. If ozone formation were modeled on the small amount of precursors transported to the U.S. from these generation facilities in Mexico, the impact would be virtually indistinguishable from background ozone levels.

EBC and EAX, jointly the LRPC, have committed to the goal of sustainable development. In support of this commitment the LRPC will be initiating an Imperial Valley Ozone Reduction Program. Although this program is still under development, the following outlines its preliminary details:

- Conceptual overview. The purpose of this program is to examine effective, scientifically based methods to reduce ozone creation along the border region of Imperial County, CA and Mexicali, Mexico, through cooperative relationships from academia, government, industry and non-governmental organizations.

- LRPC is formally entering into a contract with the Latin American Scholarship Program of American Universities (LASPAU), a non-profit organization affiliated with Harvard University, to act as administrator of the program. LASPAU designs, develops, and implements academic and professional exchange programs on behalf of individuals and institutions in the U.S., Canada, Latin America, and the Caribbean.

The program would establish an independent Scientific Advisory Board. This Board would consist of five to seven members and would provide independent scientific input and verification of the progress of the program. This Board would ostensibly draw its members from the following groups:

- Universities/academics from the US and Mexico
- US and Mexican Government officials (possibly the US EPA and SEMARNAT)
- Local, regional, and international non-governmental organizations.

- LRPC would, consistent with applicable laws, commit to funding the program through a grant over a period of 3 years. LRPC is also committed to seek further funding for the program through "matching" funds, possibly from multi-national financing institutions, governments, industry, and other non-government organizations.

It must be noted that the above Program has been developed and proposed voluntarily by the developers of the LRPC. At this time, no assumptions can be made concerning the efficacy of the Program and the impacts on air quality presented in this EA do not consider any potential benefits from the Program.

In addition to the Ozone Reduction Program, LRPC has offered to provide initial funding and support the start-up of a Cross-Border Sustainable Development Committee. The LRPC is willing, in accordance with applicable laws, to provide funding to an independent body established to pursue studies, programs and other measures that address cross-border sustainable development issues. The membership of the Committee would be established with involvement of officials from Imperial County and the Municipality of Mexicali. It is anticipated that the Committee would be composed of all parties concerned with cross-border issues.

4.2.4.4 Summary

No U.S. federal or state agencies have jurisdiction over the regulation, permitting, or control of air pollutant emissions in Mexico—such as those from LRPC and the TDM facility—regardless of any impact in the U.S. (As described earlier in this section and in Appendix B, emissions from LRPC and TDM comply with Mexican regulations.) Nonetheless, consistent with the role of this EA to assess the impacts in the U.S. of the construction and operation of the BCP and SER transmission lines, this EA includes an assessment of the impacts in the U.S. of air pollutant emissions transported to the U.S. from the associated Mexican generating facilities.