

Pico Power Project

***Appendix 8.1-C
Protocol for Increments Analysis***

October 2002

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Overview of Requirements for Increments Analysis

The federal Prevention of Significant Deterioration (PSD) program is intended to ensure that economic growth in areas with good air quality occurs without causing the deterioration of that air quality to unhealthful levels. The PSD program contains a number of requirements that apply to new or modified sources of air pollution that are located in clean air areas. In the Bay Area, the Bay Area Air Quality Management District (BAAQMD) has been delegated authority by the USEPA to administer the PSD program for NO₂, SO₂ and PM₁₀, the pollutants for which federal ambient standards are currently being attained. These PSD program requirements, applied on a pollutant-specific basis, include conducting an increments analysis to demonstrate that no increments will be exceeded as a result of the proposed new or modified source.

The Pico Power Plant (PPP) project is not expected to trigger the requirements of the PSD program. Should the PPP trigger PSD, this increment analysis protocol will be used to analyze impacts of NO₂, SO₂ and PM₁₀.

Increments are the maximum increases in concentration that are allowed to occur above baseline concentrations for each pollutant for which an increment has been established. Currently, increments have been established for NO₂, SO₂ and PM₁₀. These allowable increments are shown in the Table 8.1C-1 below.

<u>Table 8.1C-1 Class II Increments</u>	
Pollutant/Averaging Time	Allowable Class II Increments ($\mu\text{g}/\text{m}^3$)
NO ₂	
Annual	25
SO ₂	
3-Hour	512
24-Hour	91
Annual	20
PM ₁₀	
24-Hour	30
Annual	17

The baseline concentrations are defined for each pollutant and averaging time, and are the ambient concentrations of each pollutant existing at the time that the first complete PSD application affecting the area is submitted. Federal regulations establish the dates after which major and minor source impacts on increment consumption need to be considered in an increments analysis, as follows:

Major source baseline date: The date after which actual emissions associated with modifications at a major stationary source affect the available increment.

Trigger date: The date after which the minor source baseline date may be established.

Minor source baseline date: The earliest date after the trigger date on which a complete PSD application is received by the reviewing agency. After this date, actual emission changes (including increases in throughput or production that do not require permit changes) from all sources (major and minor stationary sources, area sources and mobile sources) affect the available increment.

BAAQMD regulations require that before an Authority to Construct can be issued for a facility projecting significant increases in NO₂, SO₂ and PM₁₀, the applicant must perform an increments analysis to demonstrate that the project will not cause an exceedance of the applicable increment. As presently proposed, the PICO project's emissions will not trigger PSD review, and the ambient impacts from PICO for NO₂, SO₂ and annual PM₁₀ have been shown to be below significance levels for all averaging times; therefore, increments analyses are not required for these pollutants and averaging periods. Should further emissions analysis or impact modeling indicate that a significance level is exceeded, the following procedures will be used to perform the increment analysis.

Methodology

Establishing the Impact Area

The first step in the increments analysis is the establishment of the impact area for each pollutant and averaging period. The impact area includes the area where the emissions from the new source will cause a significant ambient impact. The impact area is a circular area with a radius extending from the source to the most distant point where modeling indicates that the ambient impact will be significant.

As described in the air quality modeling analyses contained in Section 8.1 of the AFC, affected emissions from PICO will be modeled using the appropriate short and/or long term emission rates, the ISCST3 model and the Union City meteorological data set. Based on these modeling analyses, a region surrounding the project site will be identified as the area in which PICO could have a "significant" air quality impact on ambient levels.

Identifying Sources Affecting the Impact Area

Once the impact area is established, sources consuming increment within the impact area must be identified and emission inventories developed for those sources. The sources include not only those located within the impact area, but also those located outside the impact area whose emissions could contribute to ambient impacts there. These inventories must account for the change in emissions between the pollutant-specific baseline date and the date of the permit application for the new source or modification. Based on these inventories, the changes in emissions are modeled to determine the amount of increment consumed for each pollutant.

In order to ensure that other emission sources that might have significant impacts on the impact area in conjunction with PICO are identified, we will request from District staff a list of facilities that meet the following criteria:

- **Major Sources:** All sources within 50 kilometers of the impact area (52 km of the project) that have had significant permitted increases in affected emissions (greater than 25 tons per year) since the applicable major source baseline date.

- **Minor Sources:** All sources within 20 kilometers of the identified impact area (22 km of the project) that have had any permitted increases in affected emissions since the applicable minor source baseline date.

Because the increments analysis is intended to evaluate changes in ambient impacts since the baseline date due to increment-consuming sources, the analysis should compare impacts from emissions during the appropriate baseline period (two years prior to the baseline date) and from current emissions. However, the District staff indicates that actual emissions data are not available from the District's inventory system for the appropriate baseline periods. Only the most current year of actual emissions data are available. Therefore, it will not be possible to determine the changes in actual emissions from the identified point sources. Based on consultations with District staff, it has been suggested that permitted changes in emissions from the identified point sources be modeled instead, if an increment analysis is required.

In addition to point sources, and based on recent draft USEPA guidelines, all area and mobile sources affecting increment are to be included in the increments analysis. We will also request a gridded inventory of mobile and area source emissions changes since the appropriate minor source baseline dates for use in modeling increment consumption from these sources. Emissions changes are allocated to pre-defined grid cell sizes in these inventories.

Data Used in the Increments Analysis

Stack Parameters for Sources

For the permitted changes in emissions, we anticipate that the computer printout will provide minimal stack data, especially when the emissions are fugitive in nature. The following default stack parameters will be used for sources identified as "fugitive" on the computer printout:

Release height:	1 meter
Temperature:	ambient (70 degF)
Stack cross-sectional area:	1 ft ²
Flow rate:	3000 ACFM

Modeling Area and Mobile Source Emissions

As discussed above, we expect to obtain from the District staff data on the change in affected emissions between the appropriate baseline date and the most recent available inventory for use in modeling increment consumption by area and mobile sources. These data will be provided for pre-defined grid cells for the project region. Gridded emission data for the grid cells that overlap the impact areas will be used in modeling increment consumption by these sources. The ISCST3 model and the Union City meteorological data will be used for modeling all increment-consuming sources.

The following exhaust temperatures and release heights will be used in modeling area and mobile source impacts:

Release height	2 meters
Exhaust temperature	298°K