

## 4.7 AIR QUALITY

### 4.7.A Adequacy of Impact Analysis

This response addresses comments O24-23, O24-25, O24-30, O28-94, O30-4, SA9-1, and SA9-5, as well as other similar comments, which concern the analysis of air quality impacts presented in the Draft EIR.

The air quality impact analysis was reviewed by the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the CARB. The SJVAPCD concurred with the findings of the Draft EIR impact analysis. The CARB commended the University for incorporating environmental concerns in the design of the new campus. In addition, other comments were received that support the LRDP and the environmental analysis contained in the Draft EIR. The Draft EIR concluded that most of the air quality impacts, with the exception of localized carbon monoxide (CO) impacts from traffic, would be significant.

Other commenters questioned the analysis methods used in the Draft EIR. The analyses in question were reviewed by the University's outside air quality experts, and revised using the recommended analytical models. The results of the new analysis were reviewed and confirmed by the CARB. The revised analysis does not change the Draft EIR's conclusions with respect to the significance of the impacts or their magnitude. The following discussion addresses those comments in detail.

#### 4.7.A.1 *Eight-Hour Ozone Concentrations*

The Draft EIR inadvertently overlooked reporting the 8-hour ozone concentrations and number of exceedances in Table 4.3-4, the table that summarized ambient air quality data. Below is a table summarizing the most recent 8-hour ozone data at the Merced South Coffee Avenue station, obtained from the CARB website at [www.arb.ca.gov](http://www.arb.ca.gov). Table 4.3-4 indicated a nonattainment status of the area for ozone, referring to the 1-hour ozone standard. The attainment status of the area with respect to the 8-hour ozone standard has not yet been determined by the USEPA, although the monitoring data show exceedances of the 8-hour standard.

**Maximum 8-Hour Ozone Concentrations  
at the Merced South Coffee Avenue Station**

	1997	1998	1999	2000
Ozone – 8-hr (ppm)	0.095	0.129	0.117	0.112
Days > National Standard (0.08 ppm)	1	35	40	37

#### 4.7.A.2 *Vehicle Emissions Modeled with EMFAC2000*

The vehicle emissions estimates for the Draft EIR were developed using URBEMIS for the Phase 1 project and BURDEN7G for the full development under the LRDP. These models were

recommended for use in this analysis by the SJVAPCD. Both models use vehicle emission factors from EMFAC7G. EMFAC2000 is a more recent vehicle emission factor model, and the comments requested the use of this model for estimating vehicle emissions impacts. The tables below summarize vehicle emissions, calculated using both EMFAC7G and EMFAC2000, for both the Phase 1 Campus and the LRDP. As can be seen from a comparison of the results in both tables, for the Phase 1 Campus, the emissions estimated using EMFAC2000 are lower for ROG and are higher for nitrogen oxides (NO<sub>x</sub>) and CO. For full LRDP development, modeling with EMFAC2000 yields results that are either not significantly different (particulate matter less than 10 microns in diameter [PM<sub>10</sub>]) from the previous analysis or are substantially lower (NO<sub>x</sub>, ROG, and CO).

**Total Operational Emissions (tons per year)  
(with vehicle emissions calculated with EMFAC7G)**

Source	Phase 1 Campus (2008)				Full LRDP			
	NO <sub>x</sub>	ROG	CO	PM <sub>10</sub>	NO <sub>x</sub>	ROG	CO	PM <sub>10</sub>
Construction	12.2	3.4	--	1.0	12.2	3.4	N/A	1.0
Vehicular (with EMFAC7G) <sup>1</sup>	6.1 (38.1)	24.6 (17.5)	71.0 (211.7)	0.1 (1.4)	65.8	25.5	281.0	Negligible
Area	1.5	12.9	8.8	1.1	12.7	129.0	99.2	12.8
Turbines	1.5	0.2	1.4	0.6	7.6	1.0	7.3	3.2
Boilers	2.1	1.1	17.0	1.5	6.4	3.3	50.9	4.6
<b>Total</b>	<b>23.4</b>	<b>42.2</b>	<b>98.2</b>	<b>4.3</b>	<b>104.7</b>	<b>162.2</b>	<b>438.4</b>	<b>21.6</b>

1 Phase 1 Campus estimates calculated using URBEMIS; numbers in parentheses calculated using BURDEN.

**Total Operational Emissions (tons per year)  
(with vehicle emissions calculated with EMFAC2000)**

Source	Phase 1 Campus (2008)				Full LRDP			
	NO <sub>x</sub>	ROG	CO	PM <sub>10</sub>	NO <sub>x</sub>	ROG	CO	PM <sub>10</sub>
Construction	12.2	3.4	--	1.0	12.2	3.4	N/A	1.0
Vehicular (with EMFAC2000)	17.8	9.0	105.1	0.7	17.3	6.6	69.7	2.2
Area	1.5	12.9	8.8	1.1	12.7	129.0	99.2	12.8
Turbines	1.5	0.2	1.4	0.6	7.6	1.0	7.3	3.2
Boilers	2.1	1.1	17.0	1.5	6.4	3.3	50.9	4.6
<b>Total</b>	<b>35.1</b>	<b>26.6</b>	<b>132.3</b>	<b>4.9</b>	<b>56.2</b>	<b>143.3</b>	<b>227.1</b>	<b>23.8</b>

URS contacted CARB to obtain an explanation as to why the use of EMFAC2000 resulted in higher estimates of vehicular emissions from the Phase 1 Campus compared to the emissions from the full development under the LRDP, and also why the emissions from the full development scenario *decrease* substantially compared to the estimates developed using EMFAC7G.

The reason year 2008 vehicular emissions are higher than full LRDP development emissions is because although the vehicle miles traveled at full development are higher than those in 2008,

the emission factors for 2008 are substantially higher than the factors in 2025, which is the modeling year for full development (ROG 0.79 g/m and NO<sub>x</sub> 1.42 g/m in 2008 compared to ROG 0.17 g/m and NO<sub>x</sub> 0.44 g/m in 2025). The lower emission factors for 2025 are reflective of projected improvements in vehicles. The substantially lower emissions in 2025 using EMFAC2000 are because the model incorporates many factors into the calculation of emissions: (1) vehicle age distribution, (2) temperature, (3) speed, (4) vehicle fleet mix, and (5) countywide vehicle miles traveled. The model uses what is characteristic of the County. Merced County emissions actually decreased with the use of EMFAC2000 versus EMFAC7G.

#### 4.7.A.3 *Impacts to Yosemite National Park*

Comments were received regarding air quality impacts at Yosemite National Park, which is located 40 miles east of Merced County and is the closest Class I area to the project site. Class I areas are specific national parks and wilderness areas recognized by the USEPA and U.S. Forest Service (USFS) as having pristine air quality meriting additional consideration regarding environmental impacts. The commenters were concerned with impacts to both the ambient air quality and biological resources at the park.

Class I area “air quality related values” analyses include nitrogen and sulfur deposition, and impacts on visibility. Under the Clean Air Act, the Phase 1 Campus and LRDP full-development emissions would not trigger these Class I value assessments under prevention of significant deterioration requirements because the annual NO<sub>x</sub> emissions are below 250 tons per year. Hence, applicable air quality regulations treat these potential UC Merced emissions as insignificant in terms of Class I area impacts. However, the following analyses were performed using emissions from the full development under the LRDP to quantitatively assess these potential impacts at Yosemite National Park, the closest Class I area to the proposed UC Merced Campus.

For the proposed project, the pollutant of concern is NO<sub>x</sub>. NO<sub>x</sub> reacts readily with soils and is usually converted to nitrate. A change in soil nitrate levels can cause numerous biochemical and physiological effects in plants. For Class I areas in California, the USFS has published annual nitrogen deposition of less than 3 kilograms per hectare per year (kg/ha-yr) for most terrestrial ecosystems as the “no injury levels” (USFS 1992a).

Sulfate deposition is also generally a concern to vegetation, aquatic, and biological resources. However, sulfur dioxide (SO<sub>2</sub>) emissions from the Campus are minimal (less than 1 ton per year) and were not modeled for potential impacts at such a great distance from the source because significant concentrations would not occur at that distance.

Yosemite National Park is approximately 40 miles from the proposed campus location. A screening-level dispersion modeling analysis was performed using the USEPA-approved model SCREEN3 to calculate pollutant concentrations at Yosemite National Park boundary closest to the proposed Campus location. A surrogate point source was modeled that includes emissions from all concurrently operating sources at the Campus: (1) area sources (fireplaces, landscaping equipment, and space heating), (2) point sources (the cogeneration facility and boilers), and (3) vehicular sources. This surrogate point source was conservatively placed at the eastern edge of Merced County, which is approximately 32 miles from Yosemite National Park. The SCREEN3 model calculated a 24-hour unit emission rate (“X/Q”) concentration using the Valley algorithm for modeling impacts in complex terrain, i.e., terrain above stack height. This 24-hour

concentration was conservatively used to represent an annual concentration. Emissions of  $\text{NO}_x$  from the full development under the LRDP were then multiplied by the modeled 24-hour concentration to estimate nitrate deposition at the closest park boundary of Yosemite National Park.

The maximum annual  $\text{NO}_x$  concentration calculated at this location was assumed to deposit as nitrate, expressed as  $\text{HNO}_3$ , per IWAQM guidance (USEPA 1993).  $\text{HNO}_3$  was calculated by multiplying the modeled  $\text{NO}_x$  by the  $\text{HNO}_3$ -to-nitrogen dioxide ( $\text{NO}_2$ ) molecular weight ratio (1.37). This calculated  $\text{HNO}_3$  concentration was then converted to potential annual deposition by multiplying by (1) an assumed deposition velocity of 0.02 meter per second (CAPCOA 1993), (2) the number of seconds in a year ( $3.1536 \times 10^7$  seconds), and (3) a factor of two to account for both wet and dry deposition. This gives deposition in units of  $\mu\text{g}/\text{m}^2$ , which is converted to  $\text{kg}/\text{ha}$  by multiplication by  $10^{-5}$ . These calculations result in an estimated annual nitrate impact of 1.22  $\text{kg}/\text{ha}\text{-yr}$ :

$$0.071 \mu\text{g}/\text{m}^3 \text{ (from SCREEN3)} \times 1.37 \times 2 \times 0.05 \text{ m/s} \times (3.1536 \times 10^7 \text{ s/yr}) \times 10^{-5} \text{ (kg/ha)/}(\mu\text{g}/\text{m}^2)$$

Since the above modeled deposition levels are less than the “no injury levels,” the maximum estimated nitrate deposition should not present significant ecosystem impacts.

LRDP full development emissions were also assessed for potential visibility impacts at Yosemite National Park. Visibility degradation occurs when light is scattered by small airborne PM suspended between an observer and an object (i.e., terrain) such that a perceptible change in contrast occurs between the object and background brightness. The USEPA VISCREEN model was applied to assess potential visibility changes at Yosemite National Park due to the project emissions. The VISCREEN manual *Workbook for Plume Visual Impact Screening and Analysis* (USEPA-450/4-88-015, NTIS Document PB89-151286, September 1988, updated October 1992) suggests significance criteria for contrast and perception in a Level I screening analysis. The Level I analysis, which uses the worst-case meteorological condition of Class F atmospheric stability and 1.0 meter per second wind speed, predicted changes in contrast and perception within the screening-level significance criteria, which indicates an insignificant visibility impact. The results of the visual impact analysis are presented in Appendix A of this final EIR and show that no impacts would occur to visibility at Yosemite National Park from the proposed project.

VISCREEN uses two scattering angles to calculate potential plume visual impacts for cases where the plume is likely to be the brightest (10 degree azimuth for the forward scatter case) and darkest (140 degree azimuth for the backward scatter case). The forward scatter case produces a very bright plume when the sun is placed directly in front of the observer, while the backward scatter case produces a dark plume when the sun is directly behind the observer.

For viewing backgrounds, the terrain is assumed to be black and located as close to the observer and the plume as possible. This assumption yields the darkest possible background against which plumes are likely to be most visible. In reality, actual viewing backgrounds would be much less dark and would be located farther from the observer. A background visual range is used in these VISCREEN calculations. Visual range is defined as the distance at which a large black object would just disappear from view. The greater the background visual range, the clearer background visibility is, and the smaller the changes in PM concentrations need to be to cause perceptible visibility changes. A current published value of reference visual range for Yosemite National Park was obtained from the *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report* (December 2000) co-authored by the USFS National

Park Service, and USFWS. The largest seasonal value for reference visual range for Yosemite National Park was a summertime value of 158 miles, which was among the largest reference visual ranges of the 156 identified national parks, monuments, seashores, and wilderness areas in the document.

Ozone and other photochemical oxidants associated with tropospheric ozone has documented effects on vegetation. In Class I areas, such as Yosemite National Park, effects of elevated ozone can be one or more of the following: foliar injury, decreased leaf longevity, reduced carbon gain of foliage, and reduced plant growth, which could create a greater susceptibility to environmental stresses (USFS 1992b). Ozone is a regional air pollutant created by complex atmospheric photochemical reactions from numerous NO<sub>x</sub> and ROG emission sources dispersed throughout an air basin. Ozone forms when these pollutants react with sunlight as they travel downwind. Higher ozone levels are expected downwind of urbanized areas under hot, stagnant (high atmospheric stability) conditions.

Potential ozone levels at a particular location associated with particular emission sources cannot be predicted within any degree of accuracy. Rather, air pollution control agencies like the SJVAPCD run complex regional-scale photochemical computer models that take into account wind flow patterns over regionally dispersed emissions of NO<sub>x</sub> and ROG to arrive at predictions of ozone concentrations. For air quality planning purposes, potential emission reductions associated with proposed control measures are introduced into the regional emissions database along with population growth projections to arrive at predictions of future ozone levels. In this way, the potential effectiveness of proposed control measures can be evaluated, and control measures selected for future implementation are ultimately incorporated into the State Implementation Plan (SIP). With respect to development under the UC Merced LRDP, these projects will conform to the SIP, which means conformance with regional efforts to reduce ozone levels. Application of NO<sub>x</sub> and ROG control measures and technologies consistent with the SIP, therefore, is part of the overall effort to reduce precursor emissions to ozone, which would contribute to reduced ozone transport to Yosemite National Park.

Impacts of specific ROG compounds on vegetation and ecosystems have not been studied. ROG emissions are of greater concern with respect to regional ozone formation than near-field human health impacts associated with specific organic compounds. With respect to Yosemite National Park, any potential concentrations of individual ROG compounds associated with the UC Merced LRDP would be negligible, due to dispersion and atmospheric transformation to ozone and other photochemical oxidants. Therefore, ROG emissions are not of concern to the ecosystems of Yosemite National Park, except for its role in ozone formation, and the UC Merced LRDP's conformance with the SIP will contribute to regional ozone reduction efforts.

#### **4.7.A.4      *Potential Toxic Risks Associated with Diesel-Fueled Engines***

Diesel-fueled engines and vehicles would be associated with both construction and operation of the Phase 1 Campus, as well as subsequent projects proposed under the LRDP.

For the Phase 1 Campus, diesel engines would include equipment associated with construction of the Phase 1 Campus, and once in operation, potential diesel-fired vehicles and several emergency generators estimated to total approximately 1,500 kilowatts would be included. In addition, a small number of diesel on-road vehicles would travel to and from the Campus and diesel trucks would deliver materials to the Campus.

Construction emissions associated with the Phase 1 Campus will be temporary in duration, estimated to take place over a 24-month period starting in 2002. To minimize diesel particulate emissions, Phase 1 construction equipment will be required to be well-maintained and tuned. In addition, the CARB has been developing programs to reduce public exposures to diesel PM, as described in *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (October 2000). To the extent feasible, some of the construction equipment used for the Phase 1 Campus will employ the latest catalyst-based diesel particulate filters discussed in Appendix IX of the above-referenced CARB document, which would provide approximately 90 percent control of the diesel PM. This statement has been added to Mitigation Measure 4.3-2 (a) in response to this comment. See Volume 2, Section 7 of this final EIR.

During the operational phase of the Phase 1 Campus, a small number of diesel-fueled vehicles would be used and would not contribute significantly to overall ambient diesel particulate concentration levels. For some campus vehicles, however, the University will investigate alternative-fuel vehicles (compressed natural gas [CNG] and electric vehicles), as per Mitigation Measure 4.3-2(c). In addition, some diesel-fueled vehicles may be used by students and faculty, and diesel trucks would likely be used to deliver materials to the Campus. The number of delivery trucks expected to travel to the Campus is not known at this point. However, a pound per mile emission factor is presented here to provide a general idea of the level of emissions from delivery trucks. The EMFAC2000 emission factors for medium heavy-duty trucks (> 10,000 pounds gross vehicle weight) are shown below.

#### Diesel Delivery Truck Emission Factors

	Phase 1 Campus (2008)		Full LRDP	
	(lb/mi)	(g/mi)	(lb/mi)	(g/mi)
ROG	$1.0 \times 10^{-3}$	0.47	$6.4 \times 10^{-4}$	0.29
CO	$6.3 \times 10^{-3}$	2.84	$5.3 \times 10^{-3}$	2.41
NO <sub>x</sub>	$2.2 \times 10^{-2}$	9.92	$1.4 \times 10^{-2}$	6.37
PM <sub>10</sub>	$8.4 \times 10^{-4}$	0.38	$6.4 \times 10^{-4}$	0.29

Several emergency generators totaling a capacity of about 1500 kilowatts will also be at the Phase 1 Campus. These generators will be CARB- and USEPA-certified engines, which currently must meet a PM emissions level of 0.1 gram of PM per brake-horsepower-hour (g/bhp-hr) or less during a steady-state engine certification test (ISO 8178). This level will be verified by the SJVAPCD, which must issue air permits for these engines. A listing of current certified engines can be found in Appendix 5 of *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* (CARB, October 2000). Appendix 2 of the above-referenced CARB document provides an estimate of potential lifetime cancer risks from engine sizes ranging from 100 to 1,400 hp, representative of the potential range of Phase 1 Campus generators. Dispersion modeling was performed for CARB with Southern California meteorological data sets to points of maximum predicted concentrations for engines meeting the current 0.1 g/bhp-hr certified engine level and assumed to be operating 50 hours per year. Actual results for specific locations would depend on site-specific topography, receptors, and meteorological conditions, but the CARB study resulted in maximum estimated lifetime cancer risk values of 4 to 4.5 in one million for 200-300 hp engines (smaller engines have lower emissions, while larger engines have higher emissions but also higher exhaust flow to enhance

dispersion). These estimated cancer risk levels are within SJVAPCD acceptable levels for engines employing toxic best available control technology, which will be verified by the SJVAPCD at the time that the engines are proposed for permitting. Thus, these engines should pass SJVAPCD health risk assessment requirements when they are permitted by the SJVAPCD. Prior to the installation of the actual Phase 1 Campus emergency generators, these units will be evaluated by the SJVAPCD with source-specific dispersion modeling and any SJVAPCD-imposed conditions, such as operating hour limitations, pursuant to SJVAPCD permitting requirements.

For subsequent projects under the LRDP, the University will consult with the SJVAPCD and future applicable CARB guidance. The anticipated implementation of more stringent emission standards in the future should contribute to future reductions to diesel PM exposures.

#### **4.7.A.5 Cumulative Impacts**

The Draft EIR describes the combined air pollutant emissions that would result from development and operation of the Campus, the University Community, and the Campus Parkway. In addition, the Draft EIR acknowledges that population growth throughout the air basin would contribute to emissions of air pollutants. The SJVAPCD publishes such projections and accounts for those increases in preparing its attainment plans.

SJVAPCD thresholds for determining whether an air quality impact is significant and the mitigation measures that the District and CARB recommend in this region account for the expected air pollutant emissions from all sources in the air basin, including those identified by a commenter (O28), gas-fired power plants and the burning of agricultural waste. Accordingly, the Draft EIR recognizes that the Campus will contribute to a significant cumulative air quality impact. The LRDP includes policies that will minimize air pollutant emissions, and the Final EIR identifies additional air quality mitigation measures for the Campus. The County's EIR identifies numerous air quality mitigation measures for the University Community. Many other projects in the air basin similarly will include air quality mitigation measures. Nevertheless, because the SJVAPCD has not yet been able to achieve attainment with all state and federal air quality standards, the LRDP EIR concludes that the cumulative impact is considered *significant and unavoidable*.

#### **4.7.B Consistency with Attainment Plans and Conformity Issues**

This response addresses comments O24-20, O24-21, O24-22, O24-24, O28-100, and SA9-4, as well as other similar comments, which concern consistency of the proposed project with air quality attainment plans. Text revisions in response to these comments and internal review of more current information are presented in Volume 2, Section 7 of this Final EIR.

##### **4.7.B.1 Status of Air Quality Plans in San Joaquin Valley**

San Joaquin Valley has an ozone attainment plan that was approved by the USEPA on February 7, 1994. On October 23, 2001, the USEPA formally announced the reclassification of San Joaquin Valley from serious to severe status for ozone. This reclassification was published in the Federal Register on November 8, 2001 (Earth Matters 2001). San Joaquin Valley is currently

developing a new ozone plan to address the severe status and demonstrate attainment of the ozone plan by 2005.

On November 15, 2001, the SJVAPCD board directed staff to conduct workshops to address the request of a voluntary reclassification to "extreme" for San Joaquin Valley, because air quality modeling analyses show that 2005 may not be a feasible attainment date. The workshops have been scheduled for January 8, 9, and 16, 2002. However, it should be noted that the approved 1994 ozone plan is considered to be the applicable plan until it is superseded by USEPA approval of a new plan. The new plan is currently scheduled for release in May 2002. Approval normally takes about 1 year.

No PM<sub>10</sub> plan is approved although the emission projections in the 1997 PM<sub>10</sub> Attainment Demonstration Plan for 2006 have not been disputed by the USEPA. The transportation conformity emission budgets for years beyond 2006 were deemed inadequate by the USEPA. Earth Justice filed suit on November 1, 2001, against the USEPA for the continued delays in preparing an approvable PM<sub>10</sub> attainment plan.

A maintenance plan for CO is approved (March 31, 1998).

The ozone, PM<sub>10</sub>, and CO plans all assume high population growth rates in nearly all parts of San Joaquin Valley, including the Lake Yosemite area. In comments submitted by the SJVAPCD on October 4, 2001, on the Draft EIR, the SJVAPCD states that "the project is included in the growth rates for Merced County." Both the SJVAPCD and the transportation planning agencies in San Joaquin Valley utilize California Department of Finance (CDOF) growth rates in their planning processes. The growth rates assumed in the applicable air quality plans are significantly higher than current estimates by the CDOF for the Campus population plus the Campus-induced population. For example, in 1993 the CDOF estimated that Merced County would grow at a rate of 2.75 percent per year between 2000 and 2010. This estimate was used in the ozone plan. In 1998 the estimate was revised downwards to 2.08 percent for the same period (Fell 2001). Therefore, the applicable plans assume even more direct and indirect Campus-related growth than is currently projected. Merced Council of Governments, the official transportation planning agency for Merced County, has confirmed that the UC Merced Campus is explicitly included in their transportation plans and has been for some years. The CDOF estimate is actually increased to account for the Campus. The Merced Council of Governments' average annual growth rate from 2000 to 2010 is 2.44 percent (Earth Matters 2001).

It is important to note that the transportation plans that include UC Merced have been demonstrated to conform to the emission budgets in the ozone and CO plans, as well as meeting the PM<sub>10</sub> emission reduction requirements applicable when no emission budget is in place (Earth Matters 2001). The fact that transportation plans including the Campus are able to demonstrate conformity to the applicable emission budgets shows that emissions resulting from the Campus are consistent with the emission projections in the federally applicable air quality plans.

San Joaquin Valley is not under a sanctions clock with respect to air quality plans. Rather it is on schedule to update the ozone plan. The outcome of the PM<sub>10</sub> lawsuit will be the development of a schedule to complete an approvable PM<sub>10</sub> plan. Therefore, no current sanctions clocks related to air quality plans would result in highway sanctions or an inability to make conformity findings. A sanctions clock is running for the fugitive dust rule (Regulation 8). If the SJVAPCD Board does not approve a new version of the regulation and gain USEPA approval of the regulation before April 2002, highway sanctions will go into effect. However the SJVAPCD

Board had 2 days of hearings on Regulation 8 on October 31 and November 1. On November 15, 2001, the SJVAPCD Board approved amendments to the PM<sub>10</sub> control strategy referred to as Regulation 8. Regulation 8 applies to primary PM<sub>10</sub> sources that include construction and unpaved roads. In general, the amendments provide broader applicability and reduce the visible dust emission opacity threshold from 40 to 20 percent (Earth Matters 2001).

The USEPA has indicated they will propose to approve the amendments. The proposed approval will stop the sanctions clock and final approval will eliminate the sanctions clock. As a result, it is unlikely that highway sanctions will be imposed that could affect roadways serving the Campus. Also a sanctions clock is running with respect to some of the control measures in the 1994 ozone plan. The SJVAPCD has resolved all the issues associated with those measures and is on schedule to complete rules that will stop the clock well before it “runs out” (Earth Matters 2001).

#### 4.7.B.2 Conformity Determination

The project has been reviewed to determine whether it meets the requirements set forth in the USEPA’s General Conformity regulations. The regulations provide that conformity determinations are required when the total of applicable direct and indirect emissions exceed specified *de minimis* levels. Emissions attributable to the LRDP under the regulations fall far below the *de minimis* emission levels. As a result, under the regulations, no conformity determination is required. Additionally, the project is not a “regionally significant action” under the regulations, because it represents less than 10 percent of regional emissions. In fact, the project emissions were compared to emission levels listed in the ozone, CO, and PM<sub>10</sub> plans and found to range from 0.02 to 0.09 percent of total regional emissions (Earth Matters 2001).

The applicable *de minimis* emission levels are 25 tons per year for ozone precursors (ROG and NO<sub>x</sub>), 70 tons per year for PM<sub>10</sub>, and 100 tons per year for CO. The *de minimis* levels are based upon the attainment classification and resulting major source definitions identified in the 1990 Clean Air Act Amendments. San Joaquin Valley has just been reclassified to severe status for ozone (applicable as of October 23, 2001). It is a serious area for PM<sub>10</sub>. It is a maintenance area for CO.

The emission sources related to the Campus include construction, motor vehicles, area sources, turbines, and boilers (for campus operation). Of these sources, only construction emissions may potentially be subject to General Conformity requirements. The General Conformity regulations cover direct and indirect emissions of criteria pollutants or their precursors that are directly caused by a federal action, or are “indirect” emissions that are reasonably foreseeable and can practicably be controlled by the federal agency through its continuing program responsibility (Earth Matters 2001).

The General Conformity regulations explicitly state (in the Preamble at I.1 and 51.853(a) [applicability] as well as in examples provided in the Preamble) that they do not apply to federal actions covered by the transportation conformity rule. Vehicle emissions associated with use of on-campus roadways and that would serve the Campus during operation are addressed through the transportation conformity requirements. Merced County’s 2001 RTP and associated conformity finding was approved in September 2001 (Earth Matters 2001).

After completion, the Campus will be owned and operated by the State of California. The emissions associated with Campus operation such as boilers and turbines will not be under federal control of any kind and therefore do not meet the regulatory definition of “indirect emissions.” The area source emissions from on- and off-campus housing also will not be under federal control. The Campus will not be funded by or receive any federal monies. The regulations define emissions that a federal agency has continuing program responsibility for as “emissions that are specifically caused by the agency carrying out its authorities and does not include emissions that occur due to subsequent activities unless such activities are required by the federal agency.” The USEPA’s Preamble to the General Conformity regulations provide several examples of how this definition should be applied:

Where a COE [i.e., USACE] permit is needed to fill a wetland so that a shopping center can be built on the fill, generally speaking, the COE could not practicably maintain control over and would not have a continuing program responsibility to control indirect emissions from subsequent construction, operation or use of that shopping center. Therefore, only those emissions from the equipment and motor vehicles used in the filling operation, support equipment, and emissions from movement of the fill material itself would be included in the analysis.

Another similar example states:

Assume, for example, that the COE issues a permit and that permitted fill activity represents one phase of a larger nonfederal undertaking, i.e., the construction of an office building by a nonfederal entity. Under the conformity rule, the COE would be responsible for addressing all emissions from that one phase of the overall office development undertaking that the COE permits, i.e., the fill activity at the wetland site. However, the COE is not responsible for evaluating all emissions from later phases of the overall office development (the construction, operation, and use of the office building itself), because later phases generally are not within the COE’s continuing program responsibility and generally cannot be practicably controlled by the COE.

Based on the text of the regulations and the examples provided in USEPA’s preamble, it is clear that the General Conformity regulations do not apply to nonfederal actions unless they are permitted or licensed by a federal agency. The area sources, turbines, and boilers are not subject to any federal permits or program responsibility.

#### **4.7.B.3      *Ozone Standard***

In February 2001 the Supreme Court upheld the new 8-hour ozone standard and PM<sub>2.5</sub> standard. Some months prior to that, most states submitted a list of areas that violated the 8-hour ozone standard. San Joaquin Valley does violate the 8-hour ozone standard according to monitoring data. However, neither San Joaquin Valley nor any other area has been officially designated by USEPA as an 8-hour nonattainment area. According to USEPA, designations will not be made until 2005 and plans will not be due until 2007. The 1-hour severe area ozone plan currently under development shows that roughly 30 percent reductions in both ROG and NO<sub>x</sub> will be needed to attain the 1-hour standard. These reductions will contribute greatly to achieving the 8-hour standard although modeling to determine whether the reductions will result in attainment has not yet been completed.

It should also be noted that attainment of both ozone standards is projected to depend on more stringent control measures. The projected population growth in San Joaquin Valley is not something that can practicably be controlled by any air agency. Therefore, all air quality plans in San Joaquin Valley are based on achieving lower emissions per unit of activity. In addition to the mitigation measures proposed for the Campus, agencies with regulatory authority over emission sources such as the SJVAPCD, CARB, and USEPA will be applying new emission controls to sources throughout San Joaquin Valley. It is important to note that the cumulative emissions estimated for the Campus, University Community, and Campus Parkway are less than 1 percent of the regional emissions for San Joaquin Valley. Based on preliminary air quality modeling conducted by the SJVAPCD and CARB, the estimated emissions will not impact ozone concentrations or attainment.

#### 4.7.C Air Quality Mitigation

This response addresses comments LA12-5, O24-28, O24-29, SA4-2, SA4-3, SA9-2, and SA9-3, which suggest additional mitigation measures to reduce air pollutant emissions associated with the Campus.

The University is committed to reducing air emissions to the extent feasible. Several measures are considered as part of the overall design of the Campus. Some of these include features to reduce indoor air emissions and reduce CFCs in HVAC&R equipment. Additional measures involved in energy production for the Campus would also reduce air pollutant emissions:

- Optimization of energy performance - Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.
- Renewable energy sources – Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use.
- Green power – Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis.

The University's commitment to reducing air emissions is evidenced by the mitigation measures put forth in the LRDP Draft EIR. As San Joaquin Valley Air Basin is a nonattainment area for ozone and PM<sub>10</sub>, the LRDP EIR lists a number of mitigation measures the University is planning to employ to reduce air emissions of these pollutants to the extent practicable. With regard to reducing emissions from mobile sources, the University has planned several approaches to address this issue. The Main Campus has been designed to reduce the need for automobiles and encourage students and faculty to walk or use bicycles. Facilities will be provided that accommodate alternative-fueled vehicles such as electric cars and CNG vehicles, and the infrastructure has been designed to promote the use of public transportation. Additional transportation control measures are discussed in Section 4.18, Traffic. For reasons explained in Section 4.4.C, increasing the density of development on the Campus would hinder achievement of the project objectives; however, that alternative is studied in the EIR, and will be considered by The Regents. A number of objectives are being used to guide the Campus growth. The configuration of the proposed University represents a careful balancing of these objectives. One of the objectives of the project is to model environmental stewardship to the extent practicable.

To that end the University is promoting smart growth that does not conflict with regional general plans, and has adopted policies in the LRDP to develop an energy efficient design. In addition, a transportation management office will be located on Campus. Also see Section 4.18.D, which describes mass transit and other alternative modes of travel to the Campus.

With regard to construction impacts, the Draft EIR lists a number of mitigation measures for construction sources that employ low-emission and alternative-fuel equipment. The measures listed, as defined by the SJVAPCD in the *Guide for Assessing and Mitigating Air Quality Impacts*, are to use alternative-fuel construction equipment and low-emission on-site stationary equipment where feasible. Other measures to be implemented include employing construction activity management techniques such as extending the construction period outside the ozone season of May through October, and to the extent practicable, managing the operation of heavy-duty equipment to reduce emissions. The Campus will consult with the SJVAPCD and review construction contracts as projects are proposed to make sure that the best available controls for NO<sub>x</sub> and PM<sub>10</sub> are used on heavy-duty construction equipment as construction proceeds. Although specific control measures are listed in Mitigation Measure 4.3-2(a), new control technology may be developed in the future that may be feasible for construction equipment used on future projects. This item has been added to Mitigation Measure 4.3-2(a). See Volume 2, Section 7 of the Final EIR.

The Sacramento Metropolitan Air Quality Management District mitigation measures for reducing emissions from heavy-duty construction vehicles have been reviewed. These measures are consistent with the mitigation measures in the Draft EIR, which provide:

- Consult with the SJVAPCD when future projects are proposed as to the best feasible construction equipment control technology at that time.
- Construction equipment rated greater than 100 horsepower shall have, to the extent feasible, diesel exhaust controlled by use of catalyst-based diesel particulate filters.

The Air Quality Management District measures focus on (1) reducing NO<sub>x</sub> and PM<sub>10</sub>, (2) equipment inventory, and (3) control of visible emissions. The first and third items are accounted for by the mitigation measure in the second bullet above to control diesel exhaust emissions, and the second item would not reduce environmental effects. Accordingly, no change is being made to these measures.

With respect to alternative technologies for electricity generation the University is looking at opportunities to generate some of the power using photovoltaics. The design of the campus central plant is flexible enough to accommodate alternative technologies in the future. These projects might be implemented initially as “pilot projects,” or, if research has demonstrated success elsewhere, they might be implemented at a broader scale. Furthermore, air emissions from generation of electricity would be minimized by the application of best available control technology. The University has added a mitigation measure that the Campus will use the guidance provided by the CARB with respect to selection of landscaping materials that do not produce smog or pollen. Also as suggested by the SJVAPCD, the Campus has added a mitigation measure allowing for the use of pellet stoves to reduce emissions from area sources. See Volume 2, Section 7 of the Final EIR for the new mitigation measures. Because the Campus would not be issuing permits or approvals to others, it cannot impose air quality impact fees.

Finally, with regard to the comment that the University should take the lead in researching new technologies to alleviate pollution control problems, the commenter is referred to the Project Description in the Draft EIR, which explains that promising areas for initial developments in the Division of Engineering include, among other things, energy/environmental resources engineering and environmental monitoring.

#### 4.7.D Relationship Between Project Objectives and Project Design and Air Quality Impacts

This response addresses comments O30-3 and SA4-1, which are specific to project objectives and design and air quality initiatives. Issues identified concerned the encroachment of roadway linkages and clarification of transportation alternatives and connectivity.

Proposed roadway linkages would not directly encroach upon agricultural land. The University will encourage regional van or bus service for out-of-town commuter students and agrees that all transit options be based on the cleanest transit vehicles available for that type of service. The University, as outlined in the LRDP Transportation Policies, is committed to working with local and regional transit providers to coordinate transit service and establish convenient transfers between transit and other modes of travel. University policy includes contributing to the development of a transit hub at the interface between the town center and campus core to facilitate transfers between local and regional transit connections. The selection of the type of vehicle regional transportation agencies choose to use is the jurisdiction of the agency in question, rather than under University control. However, the University is planning to provide facilities to accommodate alternative-fuel vehicles such as electric cars and CNG vehicles to address impacts from contributions to the regional emissions of criteria pollutants, as identified in Mitigation Measure 4.3-2(c).

Furthermore, as noted above, the Campus has been designed to encourage walking and bicycle use, with most of the academic facilities within a 10-minute walking distance. The University's goal is to provide on-campus housing for 50 percent of its students and faculty with the objective of (among others) reducing air emissions. These and numerous other measures already included in the Draft EIR would minimize air emissions. It should be noted that UC Merced's goal to house 50 percent of all students and faculty on campus is a high goal compared to other UC and non-UC campuses.

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