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February 6, 2008

360346

Christopher Meyer
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Chula Vista Energy Upgrade Project (07-AFC-4)
Response to Environmental Health Coalition Data Requests 1 through 35

Dear Mr. Meyer:

Attached please find one original and 12 copies of MMC Energy, Inc. responses to Environmental Health Coalition's Data Requests 1 through 35 for the Application for Certification for the Chula Vista Energy Upgrade Project (07-AFC-04).

If you have any questions about this matter, please contact me at (916) 286-0278 or Sarah Madams at (916) 286-0249.

Sincerely,

CH2M HILL

Douglas M. Davy, Ph.D.
AFC Project Manager

Attachment

cc: S. Madams

Supplemental Filing

Response to Environmental Health Coalition Data Requests 1 through 35

In support of the

Application for Certification

for the

Chula Vista Energy Upgrade Project

Chula Vista, California
(07-AFC-4)

Submitted to the:
California Energy Commission

Submitted by:

MMC

With Technical Assistance by:

CH2MHILL
Sacramento, California

February 2008

Contents

Introduction

Attached are MMC Energy Inc.'s (MMC) responses to Environmental Health Coalition (EHC) Data Requests 1 through 35 regarding the Chula Vista Energy Upgrade Project (CVEUP) (07-AFC-4). EHC served the data requests on January 11, 2008, as part of the Discovery Phase of California Energy Commission (CEC) site certification for the CVEUP project.

The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as EHC presented them and are keyed to the Data Request numbers (1 through 35). New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 15 would be numbered Table DR15-1. The first figure used in response to Data Request 28 would be Figure DR28-1, and so on.

Additional tables, figures, or documents submitted in response to a data request or workshop query (supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

Air Quality (1-13)

Chula Vista General Plan

1. *Explain how the project conforms to Chula Vista General Plan policy E 6.4.*

Response: As described in Section 5.6.2.2.2 of the AFC, the General Plan Policy E 6.4 states that the Agency should "Avoid siting new or re-powered energy facilities and other major toxic emitters within 1,000 feet of a sensitive receiver..." Although the project is within 1,000 feet of a residence, and this would be considered a sensitive receiver, the CVEUP does not qualify as a "major toxic emitter." The most reasonable and appropriate definition of this term is that it means the same as the term "major source" of air emissions under the federal Clean Air Act (CAA) and San Diego Air Pollution Control District (SDAPCD) regulations (42 U.S.C. Section 7412[a][1]; SDAPCD Rules 14 and 20). The CAA and SDAPCD regulations are the applicable regulations for CVEUP for air emissions permitting. Table DR1-1 compares the major source definitions of the Clean Air Act and SDAPCD with the CVEUP's potential to emit, assuming (1) 500 hours per year of likely operation and (2) 4,400 hours of operation, which is the maximum number of hours permitted, but is unlikely to occur.

TABLE DR1-1
Major Source Definition Thresholds, Compared with CVEUP Potential to Emit, tons per year

Pollutant	Major Source Definition Threshold		CVEUP Potential to Emit (tpy)	
	SDAPCD Rule 20	SDAPCD Rule 20	500 hours	4,400 hours
NO_x	100	50	3.3	23.2
CO	100	100	3.8	29.9
VOC	100	50	0.6	5.0
SO_2	100	100	0.5	4.8
PM10	100	100	1.6	13.2

As the table shows, CVEUP would not be a major source under the Clean Air Act and SDAPCD Rules 14 and 20. It is a peaking plant with a relatively low capacity factor (operating hours per year) and low annual emissions. Even if the CVEUP were to operate at the extremely unlikely maximum permitted rate of 4,400 hours per year, it would not emit even close to half of the pollutants necessary to qualify as a major source. At the likely operating rate of 500 hours per year, the facility could increase its emissions by a factor of 15 for NO_x, 26 for CO, 83 for VOCs, 199 for SO_2, and 62 for PM10 and still be under the major source threshold. This does not take into consideration the fact that the emissions estimates are based on manufacturer's guarantees, and so are conservative. Actual emissions will be less.

Therefore, Policy E 6.4 does not apply to the CVEUP, as it is a peaking power plant and will not be a major source for hazardous air pollutants as those terms are defined in the CAA and local SDAPCD regulations.

Chula Vista Zoning Ordinance

2. *Explain how the project conforms to current Chula Vista zoning designations.*

Response: Both the existing facility and the CVEUP are located in an area zoned Limited Industrial ("I-L"). The IL zoning's purpose is to "encourage sound limited industrial development by providing and protecting an environment free from nuisances created by some industrial uses and to insure the purity of the total environment of Chula Vista and San Diego County and to protect nearby residential, commercial, and industrial uses from any hazards or nuisances" (City of Chula Vista Municipal Code § 19.44.010). CVEUP would further the purpose of the IL zoning by upgrading the existing power facilities with cleaner and more efficient equipment, thereby reducing air emissions.

As a peaking power plant that would operate, at most, 5 percent of the time, the CVEUP provides a use that is fully consistent with definition of "limited industrial development" and the land use intensity designated for uses in the I-L zone. Other permitted or uses in this zone, for example, include the following (City of Chula Vista Municipal Code §§ 19.44.020):

- Manufacture of electronic instruments, food products, drugs, and pharmaceuticals
- Manufacturing, assembling, and packaging of products
- Wholesale storage and warehousing
- Laundry dyeing and cleaning plants
- Exterminating services
- Electrical substations
- Gas regulating stations

The CVEUP is also similar in land use intensity to uses that are conditionally permitted in the I-L zone include the following (City of Chula Vista Municipal Code §§ 19.44.040):

- Hazardous waste facilities
- Trucking yards, terminals and distributing operations
- Plastics and other synthetics manufacturing
- Steel fabrication
- Machine shops and sheet metal shops
- Major auto repair, engine rebuilding and paint shops
- Retail distribution centers
- Recycling collection centers

As a peaking power plant with limited operation, the CVEUP is very consistent and compatible with these types of uses as designated for the I-L zone in the City's Zoning Ordinance. In addition, the CVEUP does not share any of the objectionable characteristics of uses that are specifically prohibited in the I-L zone, such as the manufacturing of asphalt, cement, rubber, chemicals, coal products, explosives, and fertilizers, the tanning of hides, the storage of fireworks, or refining of petroleum products. These prohibited uses are all

much more intensive and prone to causing public nuisances than the CVEUP, a peaking power plant that uses natural gas-fired combustion turbine technology.

As described in the AFC, the project would meet applicable laws regulations and standards in regard to air quality and public health, noise, and traffic, and would not have an adverse effect on visual resources, because it would not be visible or would barely be visible from sensitive viewpoints. In addition, CVEUP would not create odors, unlike a refuse dump or several kinds of manufacturing facilities.

Variances and Executive Orders

3. *Given the close proximity to many sensitive receptors, what enforceable guarantees will MMC offer to ensure that no variances, Executive Orders, or other expansion or allowance of additional air emissions, will ever occur.*

Response: MMC has no intention to increase the CVEUP's generation capacity beyond what is proposed in the CVEUP AFC because such increase could not occur without significant and expensive changes to the site's configuration, infrastructure, and air permit.

MMC cannot, however, provide enforceable guarantees stating that no variances or Executive Orders could ever occur at the site. In the event of an equipment breakdown or failure at the facility, it could be necessary for MMC to request a variance from the San Diego Air Pollution Control District (SDAPCD) on a temporary or short-term basis. Issuance of such a variance would be dependant on SDAPCD approval. In addition, Executive Orders are only issued during very unusual circumstances or states of emergencies, and only the Governor can issue them. Although it is very unlikely that the Governor will issue Executive Order to operate the CVEUP beyond its permit limits, MMC cannot rule out the possibility that there could be a major emergency or natural disaster that would require this. Operation under such an Executive Order would, of course, be temporary and would not result in any long-term expansion of the facility's operation. It would also be in the public interest.

Schools and Day Care Facilities

4. *Please provide a revised assessment of how many schools and day care facilities are located within a 2 miles radius of the project.*

Response: A map and table identifying sensitive receptors within a 6-mile radius from the project site is found in the Application for Certification, Volume 2, Appendix 5.1D (Health Risk Assessment Support Data). In addition, the following schools and day care centers have been identified as being located within a 2-mile radius of the project site (Table DR4-1).

TABLE DR4-1
Schools and Daycares Located Within a 2-Mile Radius of CVEUP

Name	Address	Distance from CVEUP
Evelyn's Childcare	841 Humphrey PL Chula Vista, CA	1.5 m (N)
Mireyas Family Daycare	909 Taber Ct. Chula Vists, CA	1.6 m (N)
Parent Helper Daycare	Spruce Street Chula Vista, CA	1.8 m (NW)
Child Development Associates	3950 Byrd Street San Diego, CA	1.9 m (W)

TABLE DR4-1
Schools and Daycares Located Within a 2-Mile Radius of CVEUP

Name	Address	Distance from CVEUP
Fries Family Daycare	461 Oak Pl Chula Vista CA	1.8 m (NW)
Fifi's Day Care	522 Hibiscus Ct. Chula Vista, CA	1.6 m (NW)
R Blanca Bystrak Family Daycare	24 Tourmaline St. Chula Vista, CA	1.9 m (W)
Ocean View Hills School	4919 Del Sol Blvd San Diego, CA	1.5 m (S)
Hedenkamp (Anne and William) Elementary School	930 E. Palomar St. Chula Vista, CA	1.6 m (N)
San Ysidro High School	5353 Airway Rd San Diego, CA	1.9 m (S)

Demographic Study

5. *Please provide a more accurate demographic study of the surrounding community. Provide current economic and ethnic information for community residents and workers within 0.5 miles, within 1 mile, and within 2 miles.*

Response: The analysis provided in the Application for Certification is based on US Census Bureau data (see AFC Section 5.10.2.4.9 and Appendix 5.10A) and is accurate to the limits of this data source. Appendix 5.10A of the AFC contains minority and poverty population data by Census Block Group (CBG) for all CBG's within six miles of the project site. The radius of six miles was chosen because this is the distance that the CEC Staff has, in previous siting cases, defined as the radius of potential public health effects resulting from air emissions (per CEC Data Adequacy requirements). Maps identifying the 0.5-mile, 1-mile and 2-mile radii for both the Minority Population Distribution by Census Block Groups and Low Income Population Distribution by Census Block Groups are included here as Figures DR5-1 and DR5-2, respectively.

Cumulative Impacts

6. *Please provide details regarding the cumulative impacts to the surrounding community including but not limited to traffic, hazards materials risks, cumulative air quality impact.*

Response: With the exception of Air Quality, discussions of potential cumulative impacts are provided in Section 5 of the AFC for each of the discipline areas. For example, Traffic and Transportation Cumulative Impacts are discussed in Section 5.12.3, and Hazardous Materials Cumulative Impacts are discussed in Section 5.5.3. In order to conduct the cumulative air impact modeling analysis, it is necessary first to obtain a list of new or proposed sources from the San Diego County Air Pollution Control District (SDAPCD). MMC has obtained this list, and has been working with CEC Staff to determine which sources on the list are applicable for a cumulative impacts analysis. MMC will be working with the SDAPCD to obtain the emissions and stack parameter data for the applicable sources. MMC will then conduct the cumulative air emissions modeling analysis. This analysis will be docketed with the CEC when completed.

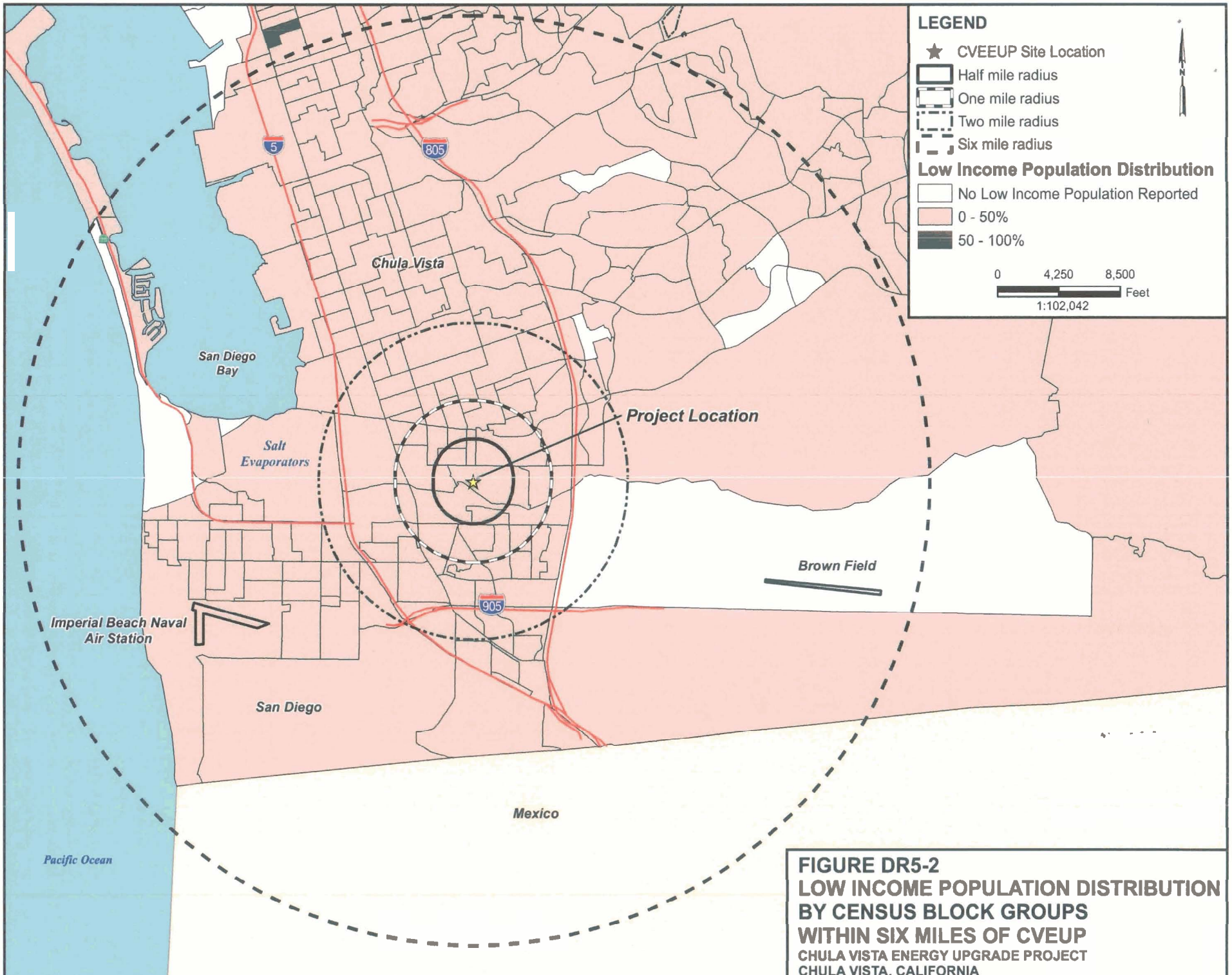

FIGURE DR5-2
LOW INCOME POPULATION DISTRIBUTION BY CENSUS BLOCK GROUPS WITHIN SIX MILES OF CVEUP
CHULA VISTA ENERGY UPGRADE PROJECT
CHULA VISTA, CALIFORNIA

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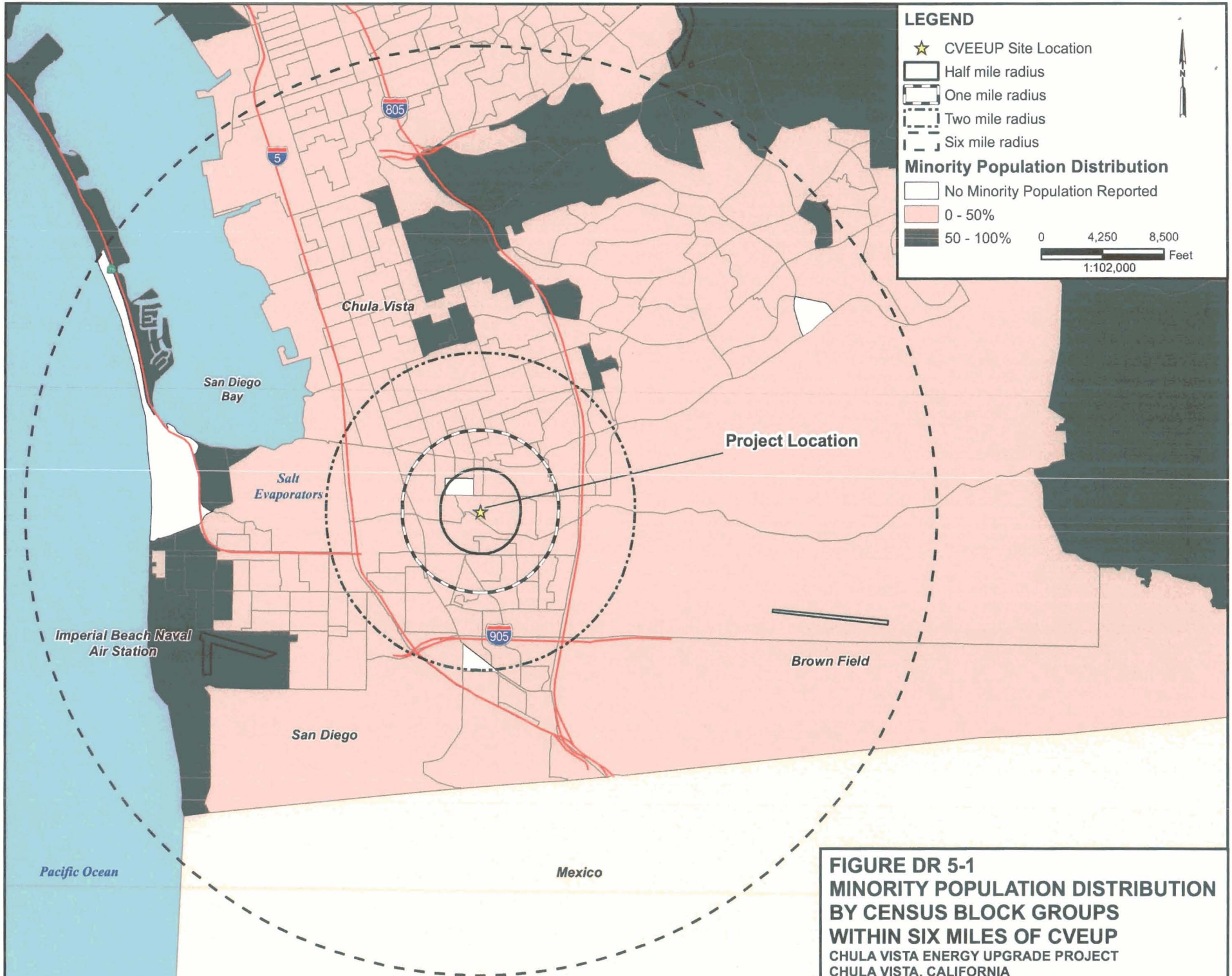

FIGURE DR 5-1
MINORITY POPULATION DISTRIBUTION BY CENSUS BLOCK GROUPS WITHIN SIX MILES OF CVEUP
CHULA VISTA ENERGY UPGRADE PROJECT
CHULA VISTA, CALIFORNIA

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SAC\\GLACIER\PROJ\360346_MMC\MAPFILES\FIGURE5_10_1.MXD FIGURE5_10_1.PDF 7/30/2007

Growth-Inducing Impacts

7. Please provide growth-inducing impacts of this project for the site, area, and region.

Response: Electric power is distributed regionally on a network of transmission lines, instead of serving only a restricted local area as other infrastructure resources do (highways, harbors, shopping areas, industrial parks, etc.). A power plant's generation enters the grid at a specific point, but serves and supports the entire grid regionally. Peaking power plants such as the CVEUP are developed in response to a need to support and supplement existing load on the grid over an entire region. Absence of a power generation plant in a particular local area may mean that the electrical supply can be less reliable in that area and it is more susceptible to outages, but would not limit growth and development in that area. Conversely, the injection of power to the grid at a particular power plant site would not suddenly make development in the power plant's vicinity more attractive or feasible. This is in contrast with the development of major highways and freeway interchanges or harbor facilities, for example, which provide improved access to a specific location and that can become nodes for local growth and development. Although power plants are most efficiently and effectively located as close as possible to the electrical load areas they serve, there are examples of power plants serving a distant load that have experienced little growth and development surrounding them. New power generation development follows and supports economic growth and development, rather than inducing growth.

Current Air Quality

8. Please provide detailed information of the current air quality in the surrounding community.

Response: Detailed information on background air quality in the surrounding community is provided in AFC Section 5.1.5.6, Background Air Quality.

Maximum Running Hours

9. Please give an accurate assessment of the maximum number of hours the plant expects to run per year. Please give an accurate assessment of the maximum number of hours the plant could technically run per year. Provide air emission and hazards materials impacts for both of these.

Response: The air quality analysis and health risk assessment presented in the AFC assumed CVEUP would operate 4,400 hours per year because this is the maximum number of hours that will be allowed in the permit that MMC will obtain from the SDAPCD. Per the requirements of the California Environmental Quality Act, MMC is obligated to present an environmental analysis that assumes the worst-case operating scenario. The permit limit of 4,400 hours per year (4,000 operation and 400 startup), however, is a requirement of generators who develop power purchase agreements with San Diego Gas and Electric Company. This requirement is based on the worst-case potential emergency needs for a peaking power plant over an entire year. In fact, it is extremely unlikely that the CVEUP will ever operate at a capacity factor that would be anything close to this number of hours. Peaking power plants that have been licensed by the California Energy Commission have rarely operated more than about 5 percent of the time (438 hours per year), ten times less than the permitted amount. The operational records of other, similar peaking power plants in the San Diego region corroborate this. The Larkspur Energy Facility, for example, operated 373 hours (4.3 percent of the time) in 2004, according to the California Energy

Commission, and this plant is very similar in design and technology to the CVEUP.[1] The Calpeak Border plant operated 194 hours (2.2 percent of the time) in 2004. As pointed out in the AFC (Table 1.1-1), peaking power plants greater than 50 MW in California averaged 538 hours of operation per year (6.2 percent of the time) in 2004.

In selecting 500 hours as a reasonable operating scenario for the CVEUP, MMC has selected a number of hours that comfortably exceeds the reported five-year average at the existing Chula Vista Power Plant of 213 hours per year. Current plans to meet the California Energy Commission's requirements for emissions offsetting will be based on this number and also on an estimated operating hours scenario that will intentionally over-mitigate by offering mitigation offset fees based on 1,000 hours of operation (See MMC's responses to CEC Staff Data Requests 2 through 5, filed January 25, 2008). This number was chosen for offsetting, not because MMC believes that it will be necessary to operate this much, but in order to make certain that MMC is mitigating for the worst-case scenario and will not have to revise mitigation requirements or amend the project's certification in case it is necessary to operate more than expected due to emergency conditions.

Impacts to air quality and hazardous materials are discussed in detail within section 5.1 Air Quality and Section 5.5 Hazardous Materials Handling, as well as Section 1.5.1 of the Executive Summary. The AFC analyses, as stated above, assume the unrealistic maximum permitted case of 4,400 hours and, therefore, grossly overestimate the actual project emissions. Table DR9-1, below, provides a sample comparison of the existing facility's actual emissions with the new facility's potential to emit, per generating unit, operating at 500 hours per year. Note that the existing facility has a rated capacity of 44.5 MW and the new units will have a capacity of 48 MW each.

TABLE DR9-1
Emissions per Generating Unit, tons per year, 500 Hours Per Year of Operation

Pollutant	Current Plant Emissions	CVEUP Potential Emissions	Emissions Decrease (tpy)	Percent Decrease
NO_x	1.8	1.35	-0.45	-25.0%
CO	13.0	1.70	-11.3	-86.9%
VOC	0.3	0.30	0.0	0.0%
SO_2	0.4	0.30	-0.1	-25.0%
PM_{10}	1.1	0.75	-0.35	-31.8%

The table shows that the CVEUP will result in significant reductions in air emissions per generating unit for each criteria pollutant. Even when comparing the existing unit with the two new CVEUP units combined, the emissions of carbon monoxide will be significantly lower with the new plant, despite the fact that the new plant will generate more than twice as much electricity as the existing one. Furthermore, the comparisons in the table do not show the full extent of the reductions in emissions that will actually occur. The table compares the actual emissions of the existing facility to the potential emissions from the proposed project. The actual emissions from the proposed facility will be less than the

[1] California Energy Commission. 2006. Errata to the Presiding Member's Proposed Decision, Application for Certification for the Pastoria Energy Facility 160 MW Expansion (05-AFC-1). November 16, 2006.

potential emissions shown in the table. Therefore, the actual reductions will be even greater than those shown in Table DR9-1.

Startup Emissions

10. *Please provide information for NOx, CO, VOC, SOx, and PM 10/2.5 emissions for include likely start up emissions.*

Response: A start-up and shutdown impacts analysis including emission rates for NOx, CO and VOCs is provided in Section 5.1.5.11, Start-up and Shutdown Impacts Analysis. During start-up, PM10/PM2.5 and SO_x emissions were conservatively assumed to be equal to full-load operation and are presented in Section 5.1.5.9.

Emission Comparison

11. *MMC claims the project is cleaner than the existing plant, yet a lbs/hr analysis of the five criteria pollutants show that three of the five would have more emissions per hour in the new plant than in the old plant. Please explain.*

Response: The new facility will have lower emissions than the existing facility and this can be demonstrated using several different criteria for measurement. For example, if we compare the actual emissions from the existing power plant with projected emissions from the CVEUP that are based on actual emissions from an LM6000 turbine identical to the ones that will be installed for the CVEUP, the new project results in significant reductions in all pollutants but one (Table DR11-1), despite the fact that the CVEUP will use two turbines and produce more than twice as much electricity as the existing facility.

TABLE DR11-1
Comparison of Existing and New Facility Hourly Emissions Based on Source Test Data (lb/hr)

Pollutant	Existing Facility (44.5 MW)[a]	CVEUP (96 MW)[b]	Difference	Percent Difference
NO_x	7.2	6.4	-0.8	-11.1%
CO	42.8	1.3	-41.5	-97.0%
VOC	0.7	0.3	-0.4	-57.1%
SO_x	1.58	1.34	-0.24	-15.2%
PM10	4.5	4.9	0.4	8.9%

[a] Based on source test data for NO_x, CO, and VOC for the existing turbine-generator system.
[b] Based on source test data for NO_x ,CO, VOC, PM10 and SO_2 and adjusted to reflect two turbines

If we compare the emissions on the basis of individual generating units, which produce approximately the same power output (existing facility rated at 44.5 MW, each turbine at the new facility rated at 48 MW), the dramatic reductions in emissions with the new plant are also apparent, as is shown above in the response to Data Request 9, Table DR9-1.

Similarly, comparing the two facilities on a pounds per megawatt-hour basis, there are significant reductions in air emissions for all pollutants except for VOC, for which emissions are about the same (Table DR11-2). Note, however, that this comparison uses actual source test data and generating capacity for the existing plant and manufacturer's guarantees and nominal capacity for the CVEUP. Actual or source-tested emissions for the CVEUP would be much lower.

TABLE DR11-2
Comparison of Existing and New Facility Emissions per MW-Hour (lb/MW-hr)

Pollutant	Current Facility[a]	CVEUP[b]	Difference	Percent Difference
NO_x	0.21	0.09	-0.12	-57.1%
CO	1.2	0.13	-1.07	-89.2%
VOC	0.02	0.02	0	0.0%
SO_x	0.05	0.02	-0.03	-60.0%
PM10	0.13	0.06	-0.07	-53.8%

[a] Based on source test data for NO_x, CO, and VOC, at maximum actual output of 35 MW
[b] Based on manufacturer's guarantees for NO_x ,CO, VOC, PM10 and SO_2 at the maximum turbine rating of 48 MW.

Ambient Air Quality Standards

12. *Please provide information relating how the total 24-hour PM 2.5 air quality impacts (background levels in Southwest Chula Vista combined with the CVEUP's incremental impacts) compared to the new NAAQS?*

Response: The new National Ambient Air Quality Standard (NAAQS) for PM2.5 is 35 $\mu g/m^3$, for a 24-hour averaging period. Summarizing the last three years of 24-hour PM2.5 monitoring data in the Chula Vista area (2004-2006), the maximum background 24-hour PM2.5 concentration is 34 $\mu g/m^3$. The air quality modeling results, assuming a worst-case operating day of up to 10 hours, calculated a 24-hour impact of 0.71 $\mu g/m^3$. Adding this to the PM2.5 background of 34 $\mu g/m^3$ produces a total of 34.71 $\mu g/m^3$ on a 24-hour basis. This complies with the new federal standard of 35 $\mu g/m^3$.

Comparison of CAAQS and NAAQS

13. *Please provide information regarding how the proposed CVEUP will affect local compliance with the CAAQS and the NAAQS.*

Response: A discussion regarding how CVEUP will affect local compliance with California Ambient Air Quality Standard (CAAQS) and NAAQS is provided in Sections 5.1.5.6, Background Air Quality, through Section 5.1.5.11 Start-up and Shutdown Impacts Analysis.

Hazardous Materials Handling (14-18)

Emissions from Ammonia Trucks

14. Please provide data regarding likely emissions from the ammonia trucks.

Response: Applicant has no information to indicate that ammonia would be emitted from the ammonia supply trucks. When the trucks are in transit to the CVEUP, the ammonia is contained in a secure, sealed tank, so that emissions are unlikely. The record of ammonia transport from suppliers to power plants, furthermore, is nearly perfect. It is therefore unlikely that there will be any ammonia emissions from the trucks that transport ammonia to the CVEUP. If this were to happen, the ammonia would disperse quickly in the air without forming annoying or harmful concentrations.

Offsite Consequence Analysis

15. Please provide information regarding the toxicity levels and likely affected area following a worst-case ammonia tank catastrophe and the levels and area following an ammonia hose leak.

Response: MMC submitted an Offsite Consequence Analysis (OCA) to the CEC on December 7, 2007 as the response to Workshop Query #1 (Workshop Query #1 is part of the Supplemental Filing titled, *Response to CEC Staff Data Requests 1 through 47 and Workshop Query 1*). This OCA examines two release scenarios under worst-case conditions: (1) ammonia tank rupture, and (2) the alternative release scenario of a tank or hose failure during ammonia tank loading. The OCA analysis took into consideration the safety and security measures that MMC already has in place for the handling of ammonia. These include:

- The CVEUP will use a highly diluted form of aqueous ammonia (19 percent ammonia and 81 percent water), which ensures that, in the event of an accident, the ammonia will evaporate much more slowly than undiluted (anhydrous) ammonia would and will not easily form concentrations in the air that are irritating or hazardous to people.
- The plant's ammonia tank has a concrete containment basin surrounding it that would capture any ammonia spilled in an accident in the basin. The basin contains the spill and also minimizes the surface area of the spilled ammonia pool. Minimizing surface area available for the ammonia to evaporate also minimizes the potential for the ammonia to form concentrations in the air that are irritating or hazardous to people.
- There is a container-sump system at the connection point between the tanker truck and the ammonia tank, so that if a spill were to occur during loading, the ammonia would be captured and drained into a containment basin.
- The tank's containment basin is filled with polyethylene balls. If ammonia were spilled into the containment basin, the poly balls would float on top of the aqueous ammonia, greatly reducing the pool's surface area, thereby further reducing the ability of the ammonia to evaporate quickly enough to concentrate in the air and reach irritating or hazardous concentrations.

The OCA is based on very conservative modeling assumptions of stable meteorological conditions that disperse the ammonia in all directions, and slowly. Because of the protection measures built into the existing design, however, the results of the modeling indicate that, even in the event of a rupture of the ammonia tank, ammonia would not form concentrations in the air above the California Energy Commission's very stringent significance criterion of 75 ppm outside of the project fenceline. For comparison, the odor threshold for ammonia is 5 ppm, and concentrations of 30-50 ppm will cause minor irritation of the nose and throat. At this point, most people would move away from the source of irritation. The American Industrial Hygiene Association's Emergency Response Planning Level 2 Guideline (ERPG-2) is 150 ppm, twice the CEC's significance threshold. This ERPG-2 is the

> ...maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action (American Industrial Hygiene Association 2008).

The results of the OCA show that, in either scenario, and under very conservative modeling assumptions, the ammonia concentrations would not exceed 150 ppm at a distance from the release point greater than 30 meters (23.49 meters for the tank rupture scenario, and 28.52 meters for the offloading hose rupture scenario). These distances are well within the plant boundary. Additionally, the 75 ppm concentration isopleth is entirely within the project site boundary for the tank rupture scenario and would extend beyond the site boundary in the hose rupture scenario only by a few feet. This is evaluated as an insignificant impact because the affected area is very small, contains no sensitive receptors, and has low use by and little accessibility to the public.

EHC's Data Request background section states:

> MMC has repeatedly used the Larkspur peaker plant as a model for likely operations of the new power plant. However, using Larkspur's information regarding worst-case scenario of either an emptying of the ammonia tank or of a less catastrophic (but more likely) yet still toxic leak from an ammonia hose, it indicates the release of toxic levels of ammonia over 1,000 feet away (EHC Data Requests, Page 3, Background: Aqueous Ammonia).

The EHC Data Request package also includes a map showing what purports to be the hazard radius from an OCA of ammonia use at the Larkspur power plant, superimposed upon a map showing the CVEUP project site and its boundary. The map uses a radius of 1,056 feet as the radius of hazard and also shows this radius from the property line. The map, however, does not identify the concentration of ammonia that would be present at that radius, according to accidental release modeling for the Larkspur facility, and so it also does not identify level of hazard at that distance. Also, in the event of a tank rupture, the ammonia would emanate from the point source of the leak (the tank area), so that the radial distance from the property line has no bearing on the analysis of ammonia hazards.

Although the CVEUP and Larkspur plants are generally similar in design and use the same combustion turbine technology, that does not mean that they use the same design for

ammonia leak retention and detection or have incorporated the same safety design features for containing ammonia and limiting the speed of its evaporation to form harmful concentrations in air that the CVEUP design incorporates.

Regardless of the outcome of the OCA or the ammonia tank design or modeling methods used, the CVEUP will be required to meet the same stringent safety standards that are protective of public health and safety for ammonia transport and use that the CEC has applied to the Larkspur project.

Ammonia Tank Lifespan

16. *Please provide information on the lifespan for an ammonia tank such as the one that is being planned for the CVEUP and is currently used by the existing plant.*

Response: Tanks such as the existing double-walled ammonia tank at the Chula Vista Power Plant that the CVEUP will reuse, are designed for a 20-year life span. With normal use, care, and maintenance, this life span can be extended to the typical life of a power plant (approximately 30 years). The existing tank has been in place since 2000 (8 years), and with normal use, care and maintenance should last until 2030.

Ammonia Dilution

17. *Please provide information regarding the feasibility of a further diluted solution of ammonia to be used in the tank.*

Response: The proposed 19 percent solution is the lowest concentration of ammonia that is used in the industry and provides a significant margin of safety for ammonia handling. This is underscored by the fact that federal regulations do not require a risk management plan for facilities using aqueous ammonia solutions of 19 percent ammonia. A more diluted solution would require more deliveries of ammonia, and is not cost effective. In addition, if a more diluted solution were used, the Selective Catalytic Reduction (SCR) unit would need to be larger, and would use more ammonia, resulting in greater ammonia slip (atmospheric release of small amounts of ammonia used for air emissions control).

SCONOx

18. *Please provide more detailed information regarding why SCONOx is not a viable alternative to ammonia.*

Response: SCONOx is not a viable alternative because the current SCONOx technology works in an exhaust temperature range between 280 and 650 °F. The CVEUP turbines will operate between 715 and 858 °F. Therefore SCONOx is not appropriate for the use at CVEUP. In addition, SCONOx is costly to install and to operate, and has an unproven reliability record.

References Cited

American Industrial Hygiene Association. 2008. AIHA internet site. Accessed January 25, 2008. http://www2.umdnj.edu/eohssweb/aiha/technical/emerg.htm.

Project Description (19-22)

Construction of "Storage Shed"

19. *Please provide a timetable for the construction of the "storage shed" on the southern portion of the lot.*

Response: A new storage shed will not be constructed at the site. Instead, the existing control room building will be retrofitted to become the control room for the new plant, and the remainder of the building will be used for storage of spare parts for the turbine and other plant equipment.

Uses for Storage Shed

20. *Please provide the anticipated uses for the shed.*

Response: Please see the response to Data Request #19.

Planned Construction on Southern Portion of the Lot

21. *Please provide information regarding any other planned construction of the portion of the southern lot that is where the power plant is currently located.*

Response: There are no plans for MMC to expand the plant beyond the proposed upgrade. The existing plant, with the exception of the control room, ammonia tank, oil/water separator, gas compressors, and existing tie-in locations for the transmission and gas lines, will be demolished as part of the CVEUP project.

Feasibility Studies for Future Expansion

22. *Please provide any information regarding feasibility studies MMC had undertaken regarding a possible future expansion onto the southern portion of the lot currently occupied by the existing power plant.*

Response: There are no plans for MMC to expand the plant beyond the proposed upgrade.

Water Resources (23-32)

Water Use

23. *Detail what other purposes, apart from cooling, the water would be used for. How much water annually would go towards each purpose?*

Response: As identified in AFC Figures 2.1-6A and 2.1-6B, Simple-Cycle Water Balance, the CVEUP will use water specifically for three purposes: (1) water injection (required for NO_x control); (2) power augmentation; and (3) inlet air conditioning.

When reviewing the water balance diagrams, it is important to note that CVEUP's potential use of 85 acre-feet of water per year is based on the hypothetical maximum permitting operation time of 4,400 hours per year and this is much greater than expected actual water use will be. The likely actual plant operation will total approximately 500 hours per year. At this plant capacity factor, the plant would use less than 13 acre-feet of water per year.

Water for the Ammonia Solution

24. *Provide data regarding how much water annually would go towards creating the 19% aqueous ammonia solution.*

Response: The ammonia received from the supplier is already diluted, and transported as a solution of aqueous ammonia. No additional water is added to the ammonia tank once the ammonia is delivered to CVEUP. The amount of water per year that the ammonia supplier would use would be less than 12,000 gallons, assuming 1 to 2 aqueous ammonia deliveries per year (based on 500 hours of operation). No water entering the site is used in any way for dilution of the ammonia solution.

Seasonal Water Use

25. *Please provide information regarding whether there be differences in the time of year regarding water use.*

Response: Water use will be seasonal, as the CVEUP is a peaker plant. Peaker plants run only when there is a high demand for electricity, which typically occurs in the afternoons, particularly during summer months. As such, water use will be higher in the summer months due to the CVEUP's expected increased operating time during the summer. However, even with this seasonal increase of water use, the plant is anticipated to operate no more than 500 hours per year, and to use less than 13 acre-feet of water per year.

Annual Water Use

26. *Please provide a smaller range of likely annual water use.*

Response: Although the AFC identifies a worst-case scenario of 4,400 operating hours because this is the maximum number of hours allowed under the air permit, and a potential for the use of 85 acre-feet of water per year, operation at this level is highly unlikely. As a peaking power plant, it is much more likely that the CVEUP will operate approximately 500 hours per year and will use less than 13 acre-feet of water per year.

Water Use Comparison

27. *Please provide a comparison between CVEUP's projected water use and the existing plant's water use.*

Response: The maximum projected worst-case water use for the existing plant is 3.8 million gallons per year (or 11.7 acre-feet) based on 3,200 hours of operation per year. The maximum projected water use for CVEUP is 85 acre-feet (or 27.7 million gallons per year) for 4,400 hours of operation per year. In actuality, the existing plant has operated an average of 213 hours per year, for an estimated water use of 0.78 acre-feet (0.25 million gallons per year) and the CVEUP is projected to operate approximately 500 hours a year, and to use approximately 13 acre-feet of water (or 4.24 million gallons per year).

Air-Intake Cooling

28. *Please provide detailed justification regarding the choice of air-intake cooling for the CVEUP.*

Response: The output capability of a natural gas-fired combustion turbine-generator (CTG) is rated at "ISO Conditions" which typically include a 59 °F ambient air temperature. This results in two options for determining the electrical output of the CTG: (1) no inlet air "conditioning", or (2) provide some form of inlet "air conditioning." If no inlet "air conditioning" is selected, the output of the CTG is reduced because the air entering the turbine is at ambient (or outside temperature) conditions. If inlet "air conditioning" is used, the output of the CTG is greatly increased since the air entering the turbine has been cooled and is therefore of greater density. This increases the CTG output while minimally increasing the fuel intake, resulting in more efficient energy production, less fuel used, and fewer emissions per unit of electricity generated.

Cooling Alternatives

29. *Provide a detailed analysis of other cooling alternatives that would reduce water use.*

Response: In addition to inlet fogging, evaporative cooling and chilling can be used on the LM6000 turbines. Inlet foggers use the same quantity of water as evaporative coolers, but do not require the discharge of wastewater. Chillers using a refrigerant to cool the inlet air stream can also be used with the LM6000, but this alternative requires that the refrigerant be recondensed, using a large water or air-cooled condenser. The use of a chiller requires additional chemicals to be delivered, maintained, and used onsite and reduces the overall efficiency of the facility.

Cooling Water Quantity

30. *Please explain how much of the water would be used specifically for cooling.*

Response: The inlet air conditioning portion of the turbine will use an average of approximately 19 gallons per minute when CVEUP is running.

Percentage of Cooling Water

31. *Please state and explain the approximate percentage of water usage would go towards cooling as well as the approximate million gallons annually it would likely use.*

Response: Of the total water used by the three purposes identified in the response to Data Request #23, the inlet air conditioning utilizes 15.2 percent, which is about 570,000 gallons (0.57 million gallons) of water used, assuming 500 hours of operation per year.

Mold Growth

32. *Please provide information regarding the possible accumulation and emission of mold due to the cooling process.*

Response: Power plants using cooling towers generally adopt measures to control the growth of mold in the cooling towers. The CVEUP does not use a cooling tower, however, and instead uses an inlet fogging system. Mold does not grow in this type of cooling system because, when the CTG is running, the water used for cooling the incoming air stream is vaporized and is exhausted to atmosphere as water vapor at a high temperature of nearly 800 °F, which would not allow for mold growth.

Alternatives (33-34)

Proximity to Schools

33. *Please provide a more detailed analysis of the alternative locations reviewed in the AFC; specifically discuss these alternative locations' proximity to residential communities and schools.*

Response: Table DR33-1 identifies the locations and distances for each of the alternative sites to the nearest residence and school.

TABLE DR33-1
Alternative Locations' Proximity to Residents and Schools

Alternative Location	Location of Residence	Distance from Alternative (ft)	Name and Location of School	Distance from Alternative (ft)
Alternative Site 1: 4th Avenue Site	4th Avenue and Zenith Street	Approximately 340 feet north	John J. Montgomery Elementary School	Approximately 950 feet north
Alternative Site 2: Faivre Street Site	Corner of Broadway and Main Street	Approximately 800 feet north	John J. Montgomery Elementary School	Approximately 2300 feet northeast

Landfill Alternative

34. *Please provide an analysis regarding evaluation of alternative locations in the closed sections of the landfill and in the eastern section of Chula Vista.*

Response: According to the Warren-Alquist Act, evaluation of alternative sites is not required when a natural gas-fired thermal power plant is (1) proposed for development at an existing industrial site, and (2) the project has a strong relationship to the existing industrial site [Public Resource Code 25540.6(b)]. Because the CVEUP fits this description, an analysis of alternatives was technically not required to be included in the CEC Staff's analysis. The AFC included an analysis of technological and site alternatives for the sake of completeness and to comply with the CEC's data adequacy requirements. Please note, however, that alternatives analyzed must meet the owner's project objectives.

MMC's primary objective for the CVEUP is to continue to provide clean, efficient peaking power to the San Diego Region. Secondary objectives include replacing the existing power plant with updated, more efficient technology that will result in lower air emissions per unit of fuel burned and per unit of power generated. MMC's objectives also included the use of a site for which MMC holds site control, and for which there is existing infrastructure in the form of a transmission line with electrical capacity, a natural gas pipeline, and a sanitary sewer that currently serves the site. By definition, there are no other sites that meet these objectives. The existing site is uniquely capable of meeting MMC's objectives because it is currently served by a transmission line, natural gas pipeline, and sanitary sewer line and because it has sufficient available land area within which to construct the upgrade project.

CVEUP is therefore just the type of project that was envisioned by the Warren-Alquist Act code section cited above. It is reasonable not to analyze alternative sites for the project. CVEUP would be sited at the existing Chula Vista Power Plant, a known industrial site in Chula Vista, and will be using existing infrastructure from the current plant. Due to these strong relationships, evaluation of alternative sites outside the boundaries of the CVEUP is not legally required for MMC or the CEC Staff.

The engineering requirements for siting a power plant on a closed landfill site are cost prohibitive. The greatest concern of siting any type of facility on a landfill is the possibility for subsidence, or settling. Although the contents of a landfill are compacted to a certain degree, they still do not provide a solid enough foundation for a large and heavy facility such as a power plant. Therefore, a power plant on this type of foundation would require several large columns to be installed to stabilize the plant. This would, in turn, require disturbing the landfill containment liner and drainage system and complex engineering to prevent contaminants from leaking out of the landfill into the groundwater.

Another major difficulty with siting a power plant on a closed landfill would be that landfills generate methane gas and this gas would need to be vented away from the power plant so that they would not create significant explosion hazards. A methane protection alarm system would also need to be installed at the power plant to detect higher levels of methane which could become explosion hazards. Permitting for the plant would also involve not only the California Energy Commission, but also the California Integrate Waste Management Board (CIWMB), and a new Post Closure End Use report would need to be prepared and agreed to by the CIWMB. Between the permitting requirements and engineering requirements, it would not be feasible or cost effective to place the CVEUP at the Otay Mesa Landfill.

The eastern section of Chula Vista is a large area and there may be portions of eastern Chula Vista that would be appropriate sites for a power plant. Without specific sites to analyze, however, it is difficult to determine whether or not a site could be found that would not have objectionable environmental impacts. Although there are areas of Limited Industrial (I-L) General Plan designation and zoning in eastern Chula Vista near and surrounding the landfill site, power plant sites require access to the high-voltage transmission system and to natural gas transmission lines. Locations where there is a substation capable of handling a new power source and that are also located near a natural gas supply are not common. Many sites that might otherwise be acceptable sites could require the construction of long pipelines to convey high-pressure natural gas or high-voltage transmission lines to connect a power plant with the nearest substation or high-voltage transmission line. These linear appurtenances are very costly and may cause unacceptable environmental impacts that are difficult to foresee until and unless there is a specific proposal to review.

Transmission System Engineering (35)

South Bay Power Plant RMR

35. *Please provide information regarding the CVEUP's projected impact on RMR removal of SBPP and any guarantees of RMR removal by ISO. Please include all appropriate and supportive evidence.*

Response: MMC is waiting for confirmation from CAISO that the upgrade project would enable the removal of the Reliability Must Run (RMR) contract from the existing South Bay Power plant. It is MMC's understanding, however, that with the construction and operation of the CVEUP, the 100 MW of efficient peaking capacity added to the grid will contribute towards the removal of the existing South Bay RMR requirement.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

Application for Certification for the
CHULA VISTA ENERGY
UPGRADE PROJECT

Docket No. 07-AFC-4

PROOF OF SERVICE
(Revised 01/03/08)

INSTRUCTIONS: All parties shall 1) send an original signed document plus 12 copies OR 2) mail one original signed copy AND e-mail the document to the web address below, AND 3) all parties shall also send a printed OR electronic copy of the documents that shall include a proof of service declaration to each of the individuals on the proof of service:

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DECLARATION OF SERVICE

I, Sarah Madams, declare that on February 6, 2008, I deposited the required copies of the attached Response to Environmental Health Coalition Data Requests 1 through 35 filed in support of the Chula Vista Energy Upgrade Project (07-AFC-4) in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above. I declare under penalty of perjury that the foregoing is true and correct.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Sarah Madams