ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037

TEL: (650) 589-1660
FAX: (650) 589-5062
gsmith@adamsbroadwell.com

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715
TEL: (916) 444-6201
FAX: (916) 444-6209

DANIEL L. CARDOZO
RICHARD T. DRURY
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
OSHA R. MESERVE
SUMA PEESAPATI
GLORIA D. SMITH

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL

January 2, 2008

DOCKET
07-AFC-1
DATE JAN 0 2 2008
RECD. JAN 0 2 2008

California Energy Commission
Attn: John Kessler, Project Manager
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Re: **Comments on the Preliminary Staff Assessment for the Victorville 2 Hybrid Power Project, 07-AFC-1**

Dear Mr. Kessler:

On behalf of California Unions for Reliable Energy ("CURE"), this letter provides comments on the preliminary staff assessment ("PSA") for the Victorville 2 Hybrid Power Project. These comments show that the PSA's LORS assessment for the Project's air quality impacts is deeply flawed with respect to PM10 mitigation. Specifically, the Commission cannot approve the City's proposal to offset its PM10 emissions by paving unpaved roads because the offset plan directly violates the federal Clean Air Act. In addition, the Commission must evaluate the project-specific environmental impacts associated with the PSA's PM10 offset plan.

I. The PSA's PM10 Offset Plan Violates the Federal Clean Air Act

According to the PSA, the Project must mitigate its PM10/2.5 operational emissions in the amount of 132.7 tons per year.[1] The City has proposed, and the PSA concurred, that these combustion-related emissions can be fully mitigated by paving unpaved roads within the Mojave Desert Air Basin pursuant to the Mojave Desert Air Pollution Control District's ("District") recently adopted Rule 1406.[2]

[1] PSA, at 4.1-16.

[2] *Id.* The Mojave Air Basin covers over 20,000 square miles.

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However, as CURE described in comments on the Air District's PDOC, the Project's PM10 offsets cannot be lawfully issued pursuant to Rule 1406 because the rule itself does not comply with federal requirements for ERCs and the federal Clean Air Act's new source review ("NSR"). EPA clearly specified the legal defects associated with relying on road paving to offset combustion-related PM10 emission in the Commission's licensing proceeding for the Blythe Energy Project II. There, like here, the Air District proposed issuing PM10 offsets in exchange for paving roads. EPA rejected the proposal as legally inconsistent with the Clean Air Act:

> To ensure creditability of non-traditional ERCs, such as those generated by road paving, **the SIP must contain an approved protocol for quantifying and guaranteeing the permanence, surplus nature and enforceability of such credits**. The PM10 credits in the BEPII PDOC cannot be allowed to offset the PM10 increases. Therefore, you must require the applicant to obtain and publicly notice valid PM10 ERCs before issuing the FDOC.[3]

In August 2007, the Air District adopted Rule 1406, but failed to take the additional necessary steps to update its SIP to ensure that it meets federal Clean Air Act requirements.

Given that any offsets issued pursuant to Rule 1406 will have the same legal deficiencies as those issued in the BEPII case, Staff is poised to recommend that the Commission again approve the use of illegal offsets in the Mojave Air Basin absent an approved protocol for quantifying and guaranteeing the permanence, surplus nature and enforceability of the paving-generated ERCs. Given these flaws, Rule 1406 will not be approved by either the EPA or California Air Resources Board. Accordingly, any credits generated pursuant to Rule 1406 will be illegal under federal law.

A. The District's Rule 1406 Does Not Satisfy Specific Federal Requirements

Under the Clean Air Act, if a new or modified source triggers NSR for areas in nonattainment for particular pollutants, the source must secure ERCs so that the increased emissions are offset by an equal or greater reduction in actual emissions

[3] Letter from Gerardo C. Rios, EPA, to Charles Fryxell, MDAQMD (December 26, 2002).

from the same source or other sources in the area.[4] A new or modified source may obtain ERCs, but only from sources in areas with an equal or higher nonattainment classification.[5]

Here, the District's Rule allows new or modified sources to obtain ERCs by paving unpaved roads. This type of ERC is referred to as a nontraditional offset. Offsets for new or modified stationary sources have traditionally been obtained by controlling or shutting down stationary sources, similar to the facility in need of the offsets. For example, emissions from a new combustion source, such as a power plant, have normally been offset by reducing emissions at other existing combustion sources by installing new control equipment or reducing the hours of operation of another existing source. In this case, the physical properties of road PM10 emissions, e.g., particle size and chemical composition, are substantially different than those of traditional stationary source PM10 emissions, such as from a power plant. Likewise, traditional stationary sources have well-developed calculations, stack testing and reporting procedures. In contrast, the calculation, monitoring and reporting methodologies for road emissions are either nonexistent or less sophisticated because air quality permits are not required for new roads nor have they been historically used for offsets. In short, nontraditional offsets are more difficult to calculate qualitatively, quantitatively and geographically.

In order for the District to create and use nontraditional ERCs in compliance with the Clean Air Act and EPA policy, the Rule needed to meet certain fundamental requirements. Below are examples of Clean Air Act requirements the District failed to satisfy before adopting the Rule.

First, **the District was required to have an EPA-approved nonattainment plan or maintenance plan before adopting the Rule** for the nonattainment area in which the ERCs will be created and used. The Clean Air Act requires that Districts prepare nonattainment plans for EPA approval that provide for attainment of the national ambient air quality standards ("NAAQS") for areas that have been designated as not attaining these standards.[6] That plan must be based on an inventory of all emissions[7] and a plan to reduce specific portions of that

[4] 42 U.S.C. § 7503(a)(1)(A),(c).

[5] *Id.* at § 7503(c).

[6] Section 172 of the CAA.

[7] CAA Section 172(c)(3).

inventory. Without such an inventory and plan, it is impossible to know if any source of ERCs is otherwise needed to reach attainment.

In response to this requirement, the District adopted the following three plans more than a decade ago: the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan (July 31, 1995); the Searles Valley PM10 Plan (June 28, 1995); and the Final Attainment Demonstration, Maintenance Plan, and Redesignation Request for the Trona Portion of the Searles Valley PM10 Nonattainment Area (March 25, 1996). Significantly, **EPA has not approved any of the three plans.** In fact, due to profound deficiencies contained in each, EPA will not be approving the plans as written.[8]

In addition, in July 2001, EPA issued findings of attainment for the Mojave Desert Planning Area and for the Trona Portion of the Searles Valley PM10 Nonattainment Area in August 2002. EPA based these findings on PM10 air quality data for the two areas during the 2001-2002 monitoring period. However, in violation of the Clean Air Act, the District has not submitted maintenance plans or requests for formal redesignation of the nonattainment areas to attainment to EPA for approval.[9] For the District to make a redesignation request now, it would need to consider air quality data collected after EPA's findings.

Because the District has not submitted to EPA, thus EPA has not approved, attainment and/or maintenance plans for the previously designated PM10 nonattainment areas in the District, the District cannot use the Rule to create nontraditional ERCs. The EPA's approval of attainment and/or maintenance plans is a fundamental requirement for creating ERCs. Significantly, the District is well aware that EPA cannot approve the Rule for this reason. On August 24, 2007, EPA again warned the District of this problem, stating: "...EPA would like to reiterate that there are still outstanding issues related to the PM SIP that must also be resolved before the rule can be considered for SIP approval."[10] And, as mentioned above, EPA put the District on notice of this issue in 2002, in comments quoted above on Page 2 concerning the PDOC for the Blythe Energy Project II.

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[8] See Howekamp Letter, Attached to Exhibit A. The Blythe/Palo Verde Valley portion of the District is unclassified for PM10. No attainment or maintenance plan is listed on the MDAQMD website for this portion of the District.

[9] This action is required pursuant to CAA Section 175.

[10] Email from Laura Yannayon, EPA Region 9 to Alan De Salvio, Mojave Desert Air Quality Management District (August 24, 2007) (Attached to Exhibit A.)

EPA has also made this clear to other districts. For example, in 2002, the Sacramento Metropolitan Air Quality Management District ("SMAQMD") proposed using road-paving ERCs for the Cosumnes Power Plant project. In a letter to SMAQMD, EPA stated: "The PM10 ERCs, primarily road pavement credits, are not valid because SMAQMD does not have an approved PM10 State Implementation Plan."[11] Absent an approved attainment plan, the District cannot implement the Rule to create PM10 ERCs until EPA has approved the District's PM10 plan.

A federally-approved PM10 plan is central to proper creation and use of ERCs because it provides the overall legal and regulatory framework for an NSR program, especially the provision of an emission inventory that identifies in detail the emissions from, as well as control requirements for, each source category including unpaved roads if they contribute to the nonattainment problem.[12]

The District based the Rule on a similar rule Maricopa County, Arizona recently adopted. However, the regulatory framework under which that rule will operate is very different because EPA has approved a PM10 nonattainment plan for Maricopa County. Importantly, the Maricopa PM10 plan includes a very detailed emission inventory (including unpaved roads) and a thorough control strategy which provides the necessary information to identify whether any proposed ERCs are indeed surplus to existing requirements. In contrast, **the District's Rule is fatally flawed because the District provided no mechanism for establishing whether the Rule's implementation will satisfy federal requirements.**

Second, in order to create and use non-traditional ERCs, the District was required to develop an economic incentive program consistent with EPA 2001 policy, *Improving Air Quality with Economic Incentive Programs* ("EIP").[13] EPA established the EIP policy in order to provide state and local agencies with guidance on developing revisions to their plans and rules that would provide sources with compliance flexibility. This policy includes EPA approval criteria, which must be met if such agencies adopt rules or plans that provide for the creation and use of

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[11] Gerardo C. Rios, Chief, Permits Office, Region 9, USEPA, September 30, 2002 letter to Jorge DeGuzman, Permitting Program Supervisor, Sacramento Metropolitan Air Quality Management District (attached to Exhibit A).

[12] Section 172(c)(3)).

[13] See http://www.epa.gov/ttn/caaa/t1/memoranda/eipfin.pdf.

non-traditional ERCs such as road paving offsets. **Compliance with the EIP is not optional.**

The District adopted the Rule absent any showing that it actually complied with the EIP. At a minimum, the Rule should have contained EIP elements that would periodically evaluate whether the road paving ERC program is actually achieving emission reductions. Moreover, the real purpose of the policy is to require air districts to retrospectively evaluate the performance of their ERC programs on actual emissions and other aspects of program performance. As shown in the rulemaking materials prepared by Maricopa County for their Rule 242,[14] such rules must, at a minimum, incorporate the following elements for each evaluation period:

- Total number of applications received
- Total miles of roads paved
- Total number of reductions achieved (tons/yr)
- Average distances between paved road(s) and user of credits
- Map identifying the location of the paved projects and the user of the credits

The evaluation report must also answer the following questions, as applicable:

- Has it been difficult to make a surplus determination on any application? Why was it difficult? Should the rule be revised to provide additional clarity and if so, how?
- What changes, if any, are appropriate for the equations, emission factors, constants, or default values?
- Describe any situation where: the paved road was not subsequently adopted by the local authority, the paved road was not being properly maintained, or the emission reductions were subsequently deemed invalid. What happened to those emission reductions and how was the problem resolved?
- Have there been any unintentional beneficial or detrimental effects from the program?
- What changes, if any, are appropriate to streamline or improve the administrative process?

[14] Maricopa County Air Quality Department, proposed Rule 242 - Emission Offsets Generated by the Voluntary Paving of Unpaved Roads adopted on June 20, 2007.

- Did the District have sufficient resources to implement this program?
- What have been the lessons learned?

Nevertheless, the District approved the Rule absent **any** EIP approval criteria that, at a minimum, incorporated the above elements.

Third, before an air district can create and issue ERCs, it must show that the ERCs are real, quantifiable, permanent, enforceable and surplus.[15] The District's Rule utterly omits any such showing of these requirements. Instead, the only rationale the District provided before adopting the Rule was: "The FCAA requires ERCs be real, quantifiable, permanent, enforceable and surplus . . . **Rule 1406 is designed to satisfy these requirements** for reduction from the paving of existing unpaved roads." The Clean Air Act requires more. The District needed to explain how the Rule's internal design met the requirements so that sources, EPA, the public and decision makers fully understand how the Rule works and how it will ultimately reduce PM10 emissions from power plants and other industrial facilities. This detailed information is required so that EPA may approve it for inclusion into the SIP.

1. Surplus

Clean Air Act section 173(c)(2) requires offsets to be surplus so that "emission reductions otherwise required by this Act shall not be creditable as emissions reductions for purposes of any such offset requirement." Thus, the District was required to make a showing that the ERCs created from the paving of unpaved roads will in fact be surplus.

According to EPA, the surplus requirement is particularly difficult to demonstrate for nontraditional offsets. In its 2002 letter to SMAQMD discussed above, EPA stated: "it is particularly problematic to demonstrate that non-traditional ERCs, resulting from the road paving, satisfy the surplus requirement." EPA was clear on what is required:

> To demonstrate that emission reductions are surplus, the District must include, among other things, a comprehensive emission inventory, identify roads to pave, include the schedule for road pavement, and elaborate on the

[15] 40 CFR 51 Appendix S at section (IV)(C)(3)(i)(1).

> control measures that are responsible for the emission reduction credits. EPA policy requires that nontraditional credits, such as those from road paving, be created and used pursuant to rules approved by EPA into State Implementation Plans which contain quantification protocols, proper monitoring, record keeping and reporting requirements, and mechanisms to enforce the creation and validity of the credits.[16]

In this way, EPA provided the District with clear direction on the level of specificity it was required to meet in developing a rule to render emission reductions from the paving of unpaved roads surplus; and, thus, federally approvable as ERCs. In sum, the Rule failed to adequately address the Clean Air Act requirement that the District demonstrate its offsets are in fact surplus.

Similarly, the District's own policies indicate that it cannot show that the ERCs it will create from the paving of unpaved roads will in fact be surplus. One of the Rule's definitions for "surplus" is the amount of emission reductions that are not "[s]ubject to be included in ... the latest locally-adopted rules or PM10 Plan: District Rule 403.1, District 403.2, or contingency measures." However, the proposed Rule fails to specify how the District would determine whether proposed emission reduction credits are not subject to District Rules 403.1 or 403.2 and are, indeed, "surplus."

In fact, it appears that reducing emissions from unpaved roads is not surplus at all, but is instead already required by the District's Rules. In particular, District Rule 403.1 specifies fugitive dust control for the Searles Valley planning area, and District Rule 403.2 specifies fugitive dust control for the Mojave Desert planning area ("MDPA"). Both rules contain requirements to reduce emissions stabilizing unpaved roads within these nonattainment areas. Methods to stabilize unpaved roads include paving, chemically treating, watering, or compacting. District Rule 403.2 requires cities, towns, and the County of San Bernardino to collectively stabilize sufficient publicly maintained heavily traveled unpaved roads to reduce fugitive dust entrainment and wind erosion by at least 1,541 tons per year of PM10 emissions within the MDPA.[17]

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[16] Gerardo C. Rios, Chief, Permits Office, Region 9, USEPA, September 30, 2002 letter to Jorge DeGuzman, Permitting Program Supervisor, Sacramento Metropolitan Air Quality Management District (attached to Exhibit A).

[17] See Rule 403.2(C)(4)(a).

In response to Energy Commission staff data adequacy comments on the Project AFC, the District provided a list of potential unpaved roads within the Mojave Desert air basin that could be candidates for paving.[18] This list is based on data taken from the San Bernardino County average daily traffic emissions ("ADT") dated November 17, 1994, and the San Bernardino County Traffic Maintained Road Book dated December 6, 1994. District Rule 403.2 was adopted on July 22, 1996, and compliance with the emissions reductions of 1,541 tons per year of PM10 emissions was expected by December 31, 1997.[19] Based on the list of potential candidate roads which the District supplied to the Project's applicant, presumably the most up-to-date list available to the District, it appears that the District does not have adequate documentation to demonstrate which roads have been stabilized to achieve compliance with Rule 403.2 since the latest available data pre-date the compliance date of December 31, 1997.

This means that given Rule 403's mandates, Rule 1406 could potentially cover an unpaved, non-gravel road segment that was subject to Rule 403.2 and has already been stabilized by chemical treating, watering, or compacting. The resulting emission reductions from paving such a stabilized unpaved road surface would be considerably lower than those from an untreated unpaved road. The Rule will not require an application for ERCs to demonstrate that unpaved road segments are not stabilized for purposes of achieving compliance with District Rule 403.2 or required to be stabilized in the future.

Next, the Rule defined "surplus" as the amount of emission reductions that are not "required by federal, state, or local law, or the Clean Air Act; included, required, or relied upon in the existing federally approved SIP; included in an agricultural best management plan; used by any source to meet any other regulatory requirement; required by any other legal settlement or consent decree; included in any SIP-related requirements; or subject to be included in District Rules 403.1 and 403.2, or contingency measures as contained in the SIP-approved Plan or in the latest locally-adopted rules or PM Plan."

The problem with the District's definition of "surplus," in addition to there being no federally approved SIP for which it could be surplus, is that it failed to

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[18] Response to CEC Staff Data Adequacy Comments, Technical Area: Air Quality, April 2007, p. 6.3-94 and Attachment for 07-AFC-1.

[19] Rule 403.2(I)(d).

account for planned road paving in the District that would occur under local initiatives such as street improvement programs initiated by cities or counties. For example, San Bernardino County has collected a one half-cent sales tax for transportation improvements under Measure I since 1989. Measure I funds include paving previously unpaved roads in the Mountain Desert Region of San Bernardino County. Similarly, the City of Hesperia also has a road pavement program. Since 1999, the City of Hesperia's pavement rehabilitation program has committed approximately $2 million per year toward the improvement of residential roadways. The budget for fiscal year 2006/2007 was considerably expanded to $31 million for improving 30.5 miles of road. Many roads targeted for improvement under this program are currently unpaved or graveled. These initiatives, and others, would be implemented regardless of potential paving under the Rule.

Finally, road paving to new destinations such as residential developments or malls is typically paid for by developers at no cost to counties or cities. Thus, the Rule could potentially result in sources in need of ERCs paving roads that would have been paved anyway by developers or other entities. Consequently, the amount of "surplus" emission reductions that could be achieved by paving under the Rule should have been defined to exclude unpaved and/or graveled roads targeted for improvement under City or County improvement programs and roads that would be reasonably foreseeable to be paved by a developer or other entity.

2. "Real" PM10 Offsets

The District's own definition of "real" is: "able to be demonstrated to have actually occurred." As shown below, the locations, use and conditions of the District's unpaved roads differ drastically. As a result, it is essentially impossible to demonstrate that ERCs created through paving are "real." For example, the Rule specifies that the PM10 emissions reduction associated with paving an unpaved road is calculated as the difference, in tons per year ("ton/year"), between the estimated entrained road dust emissions from a road segment before and after paving.[20] However, this methodology fails to account for fugitive dust and combustion PM10 emissions resulting from the actual paving, and from road maintenance such as periodic repaving, striping and patching. These emissions can be considerable, as shown below, and therefore should have been included in the calculation that determines actually occurring emissions reductions. Therefore, any ERCs from road paving will not be "real" because a considerable portion of the

[20] Rule 1406(C)(3)(a)(iv).

calculated emission reductions would be offset by PM10 emissions occurring in the year of construction of the paved road and in the years when maintenance activities such as re-paving are carried out.

The District cannot show that ERCs created under the Rule are real because it failed to take this analysis into account and adjust the Rule accordingly in response to public comment. Thus, no entity availing itself of the Rule will be able to show that claimed reductions "actually occurred."

Similarly, the Rule set out a methodology to calculate ERCs from PM10 emission factors in pounds per vehicle mile traveled ("lb/VMT") on unpaved and paved roads, multiplied by annual vehicle miles traveled ("VMT").[21] It also set out the procedures to determine annual average VMT for road segments based on actual traffic counts requiring that traffic counts be conducted over a 48-hour period.[22] The problem is the Rule also allowed counts to consist of "two non-consecutive 24-hour periods on non-holiday weekdays," and contained no requirements for which time of year these traffic counts are to be conducted. Two non-consecutive 24-hour traffic counts conducted at a random time of year and restricted to non-holiday weekdays are unlikely to be representative for the unpaved roads in the District because of temporal and geographic variations of vehicle traffic.

Unpaved roads sustain a variety of vehicular traffic and traffic counts vary considerably depending on the season, day-of-week, or geographical location. For example, most vehicle travel for agricultural purposes occurs during field preparation, planting, and harvesting. In between these activities, few agricultural vehicles travel the roads to and from the fields. Similarly, vehicle traffic for recreational purposes such as travel to and from off-roading or camping areas is higher during school vacations, long weekends and during periods of the year when temperatures in the desert are agreeable, such as spring or fall. Thus, traffic counts on roads leading to agricultural, off-roading or camping areas conducted during off-season periods will considerably overestimate average annual average VMT. Consequently, actual or "real" emission reductions will be considerably lower than calculated ERCs.

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[21] *Id.* at (C)(3)(a)(iii).

[22] *Id.* at (C)(2)(a).

Similarly, vehicle traffic for recreational purposes also exhibits distinct weekly traffic patterns with travelers often arriving late Thursday night and leaving Sunday. The Rule restricted traffic counts to non-holiday weekdays, which is not representative. This is so because depending on which weekdays the two non-consecutive 24-hour traffic counts are conducted, actual annual average VMT may be considerably over- or underestimated. Accordingly, calculated ERCs will be over- or underestimated compared to actual "real" emissions. Other types of traffic may experience similar variations in seasonal or weekly traffic patterns.

The Rule failed to address variability in traffic patterns by requiring the "average daily traffic count" to be adjusted by "daily and monthly seasonal adjustment factors for paved roads to calculate the annual vehicle miles traveled."[23] These seasonal adjustment factors could have been obtained from the most recent highway performance monitoring system ("HPMS") data provided by the California Department of Transportation ("Caltrans").

Short duration volume counts usually require a number of adjustments in order to reduce the effects of temporal bias and convert a daily traffic volume "raw" count into an estimate of annul average daily travel or annual average vehicle miles traveled. The specific set of adjustments needed is a function of the equipment used to collect the count and the duration of the count itself. In addition to seasonal and day-of-the week factors, these include the applicable axle-correction factor for the location and the applicable growth factor to project future annual average vehicle miles traveled.

The Rule is flawed because it did not specify the procedures and type of equipment needed for future traffic counts. Because future traffic volumes on the newly paved road will depend on population growth in the region, possibly resulting in decreasing ERCs over time, annual average VMT must be adjusted by the region's applicable growth factor. The Rule omitted any adjustment for growth, and therefore will overestimate the future amount of actual, "real" emission reductions, and, consequently, will overestimate the amount of ERCs available.

Vehicle type also varies from road to road. Not only do roads carry different volumes of traffic, but the characteristics of vehicles using those roads vary. One road with 5,000 vehicles per day may carry little truck traffic, while another road with the same volume of vehicles may have 1,000 trucks per day mixed in with

[23] Rule 1406(C)(3)(a)(v).

4,000 passenger cars. Similarly, one road section may be traversed by 1,000 heavily loaded trucks per day while a nearby road is used by 1,000 partially loaded trucks. The number of trucks and their average weight influence the calculation of fugitive dust emissions from paved roads. In effect, heavier trucks are responsible for higher emissions.

The Rule did not require any monitoring of vehicle classes, or any determination of the average weight of vehicles traveling the selected unpaved roads. Instead, the Rule used a default factor of 3.74 tons. For many roads in the District with higher truck traffic volumes, e.g., quarries, agricultural areas, etc., this default value may considerably underestimate actual average vehicle weight on the street and, consequently, underestimate emissions from the newly paved roads. In turn, subtracting the underestimated emissions from paved roads from the estimated emissions from unpaved roads will result in an overestimation of fugitive dust emissions reductions available for ERCs. This ERC inflation renders any ERCs generated from the Rule invalid because they cannot be shown to be "real."

Next, the Rule specified that emissions from unpaved and paved roads will be estimated based on equations derived from the EPA's Compilation of Air Pollution Emission Factors ("AP-42").[24] The calculation of emissions from unpaved roads requires road-specific surface material silt content in percent. The Rule specified the EPA test methods to determine actual silt content on the road surface. However, the Rule also allowed using default values of 11.0% on non-gravel roads and 6.2% on gravel roads. These default values may not be representative for the specific unpaved road selected for purposes of ERC paving. Surface silt content on public unpaved roads ranges from 1.8 to 35%. According to EPA, "the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is *strongly discouraged when it is feasible to obtain locally gathered data.* Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions."[25] For example, many unpaved roads exhibit corrugation of the surface, so-called washboarding. This condition results from excessively dry conditions on the driving surface. Corrugations develop when surface materials fail to cohere and fines are lost from the surface. Thus, silt content on such roads may be lower than the 11% assumed by the District. Use of the District's default factor

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[24] See AP-42 sections 13.2.2 and 13.2.1, respectively.

[25] AP-42 13.2.2, at p. 13.2.2-1 (emphasis added).

may, thus, considerably under- or overestimate the amount of actual "real" emission reductions available for ERCs.

For the Energy Commission licensing proceeding for the Blythe Energy Project II, the District experimentally determined the surface soil silt content for three roads ranging from 5 percent to 12 percent. These results illustrate the variability of silt content and the need for actual measurements rather than default factors. Under the Rule, the District left the option of using a default factor rather than measuring actual silt content to the applicant for ERCs. This is problematic because familiarity with prior analyses for silt content in a project area may influence an applicant to choose one option over the other if that option would result in the determination of the higher unpaved road emissions and, thus, more ERCs.

Similarly, the calculation of emissions from paved roads requires a road surface silt loading value in grams per square meter ("g/m^2"). The Rule failed to specify a test method to determine actual silt loading on the road, but instead only proposes a default silt loading factor of 0.23 g/m^2.[26] The same EPA test methods used to determine silt content in percent can also be used to determine silt loading in g/m2. Again, EPA emphasizes that "the collection of site-specific silt loading (sL) data for public paved road emission inventories are strongly recommended. ... In the event that site-specific values cannot be obtained, an appropriate value for a paved public road may be selected from the values in Table 13.2.1-3."[27] The default silt loading for unpaved roads with average daily trips of less than 500 vehicle trips per day is 0.6 g/m^2. Most unpaved roads in the District likely experience considerably less than 500 vehicles per day. The default silt loading of 0.23 g/m^2 chosen by the District would therefore underestimate typical emissions from paved roads and, consequently, overestimate "real" available emission reductions for ERCs.

Finally, the MDPA is currently designated as unclassifiable/attainment for PM2.5 24-hour and annual NAAQS and non-attainment for the annual California ambient air quality standard ("CAAQS") for PM2.5. Review of PM2.5 ambient air quality measurements from the Victorville monitoring station for the past 7 years shows that PM2.5 concentrations have improved in this area over the past years. In 2006, the three-year annual average PM2.5 concentration was determined at

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[26] Rule 1406(E).

[27] AP-42, Section 13.2.1, Unpaved Roads.

10.3 micrograms per cubic meter ("µg/m^3"), less than two µg/m^3 below the CAAQS of 12 µg/m^3.

Depending on the type, number, and location of new or modified emission sources relying on the Rule's ERCs, the potential cumulative emissions increases of PM2.5 may be considerable. Since most sources would likely be located close to the major population centers, emissions of PM2.5 would increase in these areas and result in increased ambient PM2.5 concentrations potentially in new violations of the CAAQS and NAAQS. For example, the AFC for the Project estimated an increase of annual ambient PM2.5 concentration of 0.3 µg/m^3 over the background and an increase of the 24-hour ambient PM2.5 concentration of 5.9 µg/m^3 over the background. The 24-hour ambient background concentration was determined at 26 µg/m^3. Thus, emissions from the Project would raise the 24-hour ambient PM2.5 concentrations to 32 µg/m^3, just 2 µg/m^3 shy of the 24-hour NAAQS. Therefore, one additional source in the Victorville area relying on PM10 ERCs to offset PM2.5 emissions would likely result in exceeding the annual NAAQS.

The final staff assessment must not rely upon the District's Rule 1406 to mitigate the Project's PM10 combustion-related impacts because the Rule's current form runs afoul of the federal Clean Air Act and, thus, EPA will not consider it for SIP approval. In this way, the PSA's assessment that ERCs generated in accordance with Rule 1406 complies with all LORS is simply wrong. EPA has been unequivocally clear on this point for nearly 5 years.

II. If The Commission Approves the Use of Road Paving Offsets, It Must Conduct Project-level Environmental Review and Evaluate Any Significant Impacts

The above analysis provides overwhelming evidence that the PSA's PM10 offset proposal violates the federal Clean Air Act. Accordingly, staff should not recommend a positive LORS finding until the Air District requests and receives EPA's approval for the District's SIP. However, if staff ignores these defects and continues to recommend road paving as a viable offset plan, the Commission must evaluate any environmental impacts associated with the proposed option for two reasons. First, the Air District failed to conduct programmatic CEQA review of Rule 1406 prior to its approval. In this connection, neither the Commission nor the public has any understanding of the Rule's environmental impacts. Unequivocally, paving unpaved roads in the desert will have environmental impacts.

Second, and related, are the unaddressed project-related environmental impacts associated with the PM10 mitigation. The PSA recommends approval of the AFC's list of candidate roads for paving located in the communities of Victorville, Adelanto, Apple Valley, Hesperia, Hellendale, Hinkley, Lucerne Valley and Phelan.[28] The PSA vaguely recommends that the precise location of specific roads be provided along with a traffic count "prior to the decision being made to pave the identified road."[29] The PSA goes on to recommend that road paving accounting be done in accordance with Rule 1406; however, the Rule's accounting requirements were not incorporated into the actual conditions of approval, despite the PSA claim otherwise.[30] AQ-SC9 states in total: "The project owner shall pave, with asphalt concrete, unpaved local roads to provide emission reductions of 132.7 tons per year of PM2.5,[31] prior to start of construction of the project."[32] This cursory discussion of recommended measures to mitigate the Project's PM10 emissions is vague and confusing. More importantly, it ignores the potential impacts associated with the road paving mitigation itself.

CEQA requires that the Commission evaluate the project-specific environmental impact associated with paving each of the unpaved road segments. Indeed, to ensure LORS compliance, the Commission must look at whether road paving, as mitigation, will ***cause*** one or more significant effects.[33] For example, the Project is located just over one mile from the Mojave River in an area populated with wildlife and important native plant communities.[34] If the Commission

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[28] PSA, at p. 4.1-16.

[29] *Id.*

[30] *Id.* "Staff has incorporated [Rule 1406's] requirements into Condition of Certification AQ-SC9."

[31] It is unclear why the Commission is now recommending that all of the offsets secured must be for PM2.5 only. We assume this is simply a typographical error. Note the District adopted Rule 1406 to provide PM10 offsets only. The District expressly exempted PM2.5 from the Rule: "The proposed rule does not address or impact PM2.5 emissions in any way. The District has no planning or New Source Review requirement for PM2.5." See Staff Report, Response to Comments at p. C-94. This point must be clarified in the final staff assessment because it is unclear whether additional road paving would be required to achieve 132.7 tons per year of PM2.5 because the District's formula in Rule 1406 only quantifies PM10.

[32] PSA, at p. 4.1-26.

[33] CEQA Guideline § 15126.4(D) ("If a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation shall be discussed...")

[34] See AFC section 6.4.

approves road paving at or near the Project, it will have to analyze any significant impacts to wildlife species such as desert tortoise, Mohave ground squirrel and burrowing owl, among others, and native plant communities. Likewise, the Commission will need to analyze any significant impacts associated with paving and maintaining roads draining into the Mojave River.

These are just a few examples of the environmental impacts the Commission will have to look at for roads paved at or near the Project. Significantly, the City is proposing to pave roads throughout the region, i.e., in Victorville, Adelanto, Apple Valley, Hesperia, Hellendale, Hinkley, Lucerne Valley and Phelan. The Commission will have to evaluate the project-specific impacts associated with road paving at all of these locations as well. For this reason, it is essential that the actual road segments for paving be identified in the FSA rather than recommending that the City simply identify the road segments prior to the actual paving.

To illustrate the need for CEQA evaluation, below is a list of sixteen categories of impacts that may be associated with paving all or some of the proposed unpaved roads. CURE identified these impacts for the Air District requesting it perform CEQA analysis for Rule 1406, and set them forth here in abbreviated form because these impacts may apply equally to the Project:

1 The qualitative, quantitative and geographical distribution differences between road emissions and combustion emissions will result in a significant effect on the environment. For example, combustion-related PM10 is qualitatively different from entrained road dust PM10. Indeed, particulates emitted from internal combustion engines are predominantly PM2.5, whereas entrained road dust tends to be predominantly coarse particles, with a very small fraction of PM2.5. Also, the Rule would allow sources to offset PM10 emissions anywhere in the District, regardless of the location of the source or the type of PM10 emissions.

2 An increase in PM2.5 emissions in the District is a significant effect on the environment. The Rule would offset PM10 emissions at a 1:1 ratio regardless of the source of emissions. This offset ratio is not acceptable for offsetting combustion-related PM because of the dissimilar particle size distribution in dust from unpaved roads and emissions from stationary, combustion-related sources.

3 PM10 ERCs generated from road dust emission reductions by paving unpaved roads cannot be used to offset non-road dust PM2.5 emissions such as vehicle exhaust or stationary source combustion emissions because of the different health effects of fine and coarse particulates. The District's own published rules and reports have long recognized the disparity between the two types of particulate matter. (See List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d).)

4 Stationary sources such as power plants generate continuous year-round emissions from baseload operations and additional emissions during high peak demand such as hot summer days. In contrast, emission reductions due to road paving exhibit seasonal variations depending on vehicle traffic patterns and moisture content of the road. Road paving credits are ineffective in a seasonal mitigation scheme because of road surface moisture that limits their effectiveness during the rainy season. Therefore, road-paving credits are not an acceptable form of offsets for combustion PM10.

5 The Rule will have a significant effect on the environment because fugitive dust PM10 from roads and combustion PM2.5 from stationary sources result in different atmospheric transport and distribution. This means that most of the population in the District will not benefit from reducing emissions from an unpaved road if that particular part of the air district is not impacted by a new or modified combustion source.

6 Construction emissions of criteria air pollutants associated with road paving will result in significant effects on the environment. The District's methodology to calculate ERCs simply subtracts emissions estimates after paving roads from emissions estimates of unpaved roads. This overly simplistic approach fails to account for emissions associated with the act of road paving itself. Construction emissions from road-paving include asphalt fumes, fugitive dust, and combustion emissions from vehicles and construction equipment. These emissions are considerable and may result in significant impacts.

7 Road paving emits hazardous air pollutants and will likely have a significant effect on the environment. Asphalt is a complex mixture which encompasses emissions of a broad spectrum of organic contaminants including several VOCs and semi-volatile organic compounds such as

aromatics, aliphatics, alicyclics, and polynuclear aromatic hydrocarbons. Many of these compounds are also hazardous air pollutants ("HAPs"). The EPA estimates that VOCs emitted from road paving operations contain 12% xylene, 6.4% toluene, and 2.3% ethylbenzene.

8 Paving roads increases urban heat island effect resulting in a significant effect on the environment. The Rule would indirectly increase ozone by replacing unpaved roads with blacktop. This, in turn, would increase local ambient temperatures and, hence, local formation of ozone.

9 The Rule will have a significant effect on the environment because the definition of "paving" for purposes of creating ERCs is vague. For example, it does not contain parameters of the types of roads that can be paved in exchange for ERCs. The Rule fails to identify any design and construction standards for road paving to address road conditions such as right-of-way width, traveled way width, depth of base, drainage considerations, types of surfacing, and so forth.

10 Paving dirt or gravel roads may result in a number of adverse direct and indirect impacts on biological resources. Direct impacts include mortality during road construction and increased frequency of road kill from vehicle travel on paved roads.

11 Direct mortality to wildlife and plant species during paving is a potentially significant impact. Road paving involves improvements to the existing sub-base of the road bed, including removal of gravel surface layers, widening of the road footprint, and heightening of the road base. Any vegetation along the unimproved road will be removed, as well as any species living in that vegetation or on the unimproved road shoulders. These activities will often result in the death of any sessile or slow-moving organisms in the path of the road.

12 Increased wildlife mortality on paved roads is a potentially significant impact because increased speed and volume of traffic on newly paved roads will result in increased incidents of wildlife mortality. Increased speeds reduce drivers' ability to see wildlife on roads or on shoulders, resulting in increased incidents of road kill. Unpaved roads, particularly when "unimproved," are typically less dangerous for wildlife.

13 Increased habitat fragmentation and alteration at paved roads is a potentially significant impact because some species are reluctant to cross the barrier presented by paved roads; other species are physically unable to cross road embankments. For these species, a road can effectively cut a population in half. A network of paved roads fragments the population further.

14 Increased spread of invasive plant species is a potentially significant impact because paving roads increases the spread of invasive non-native and opportunistic native plant species. Vehicles carry and distribute seeds on their tires and undercarriages. The establishment of invasive species along roads is promoted by changing habitat by altering conditions, stressing or removing native species during road improvement, and allowing easier movement by wild or human vectors.

15 Increased roadside pollution in desert habitat is a potentially significant impact because paved roads typically require more roadside management compared to unpaved roads. This includes mowing and herbicide application to keep the shoulders of the road clear of vegetation. Chemicals used in the maintenance of roadways contaminate roadside ecosystems. While many state departments of transportation have begun to reduce the use of herbicides and other chemicals, the use of herbicides continues to damage roadside ecosystems. Those chemicals may also promote the invasion of weedy and exotic species, which are resistant to herbicides.

16 Growth-inducing impacts associated with road paving are potentially significant because road paving may encourage land development by improving access to properties that are at present only accessible via unpaved roads. Consequently, newly paved roads would facilitate the already rampant urban sprawl in southwestern San Bernardino and eastern Riverside Counties and associated adverse impacts on the environment.

As shown above, the PM10 offsets, as authorized by Rule 1406, do not comply with the federal Clean Air Act. In addition, the PSA acknowledges that Rule 1406 has been challenged in court on CEQA, grounds, but nonetheless "believes that the project complies with current applicable LORS..."[35] To date, there has been no CEQA analysis for implementing Rule 1406, thus the Commission must comply

[35] PSA, at p. 4.1-16.

with the CEQA Guidelines and evaluate any significant environmental effects associated with the proposed PM10 mitigation plan to pave unpaved roads in the communities of Victorville, Adelanto, Apple Valley, Hesperia, Hellendale, Hinkley, Lucerne Valley and Phelan.

Sincerely,

/s/

Gloria D. Smith

GDS:bh
Attachment

PROOF OF SERVICE

I, Bonnie Heeley, declare that on January 2, 2008, I emailed the foregoing CURE's Comments on the Preliminary Staff Assessment for the Victorville 2 Hybrid Power Project, 07-AFC-1 (without attachment) to those identified on the Proof of Service list provided below. Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5 and 1210.

On January 2, 2008, I deposited copies of the Comments (with attachment) in the United States mail at South San Francisco, California, with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list below.

Via email (without exhibit)
docket@energy.state.ca.us
Jroberts@ci.victorville.ca.us
Tbarnett@inlandenergy.com
Shead@ensr.aecom.com
Michael.Carroll@lw.com
esaltmarsh@eob.ca.gov
Jboyd@energy.state.ca.us
Jpfannen@energy.state.ca.us
rrenaud@energy.state.ca.us
Jkessler@energy.state.ca.us
Chomes@energy.state.ca.us
PAO@energy.state.ca.us

Via US Mail (with exhibit)

CALIFORNIA ENERGY COMMISSION Attn: Docket No 07-AFC-1 1516 Ninth Street, MS-4 Sacramento, CA 95814-5512	Jon B. Roberts City Manager City of Victorville 14343 Civic Drive PO Box 5001 Victorville, CA 92393-5001

Thomas M. Barnett Inland Energy, Inc. South Tower, Suite 606 3501 Jamboree Road Newport Beach, CA 92660	Sara Head Environmental Manager ENSR 1220 Avenida Acaso Camarillo, CA 90012
Michael J. Carroll, Project Attorney Latham & Watkins LLP 650 Town Center Drive, Suite 2000 Costa Mesa, CA 92626	Electricity Oversight Board 770 L Street, Suite 1250 Sacramento, CA 95814
Alliance for a Cleaner Tomorrow (ACT) C/o Arthur S. Moreau Klinedinst PC 501 West Broadway, Suite 600 San Diego, CA 92101	

I declare under penalty of perjury that the foregoing is true and correct. Executed at South San Francisco, California, on January 2, 2008.

_____/s/_____
Bonnie Heeley

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037

TEL: (650) 589-1660
FAX: (650) 589-5062
gsmith@adamsbroadwell.com

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715
TEL: (916) 444-6201
FAX: (916) 444-6209

DANIEL L. CARDOZO
RICHARD T. DRURY
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
OSHA R. MESERVE
SUMA PEESAPATI
GLORIA D. SMITH

FELLOW
STEPHEN R. MILLER

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL

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October 2, 2007

VIA OVERNIGHT MAIL

Mojave Desert Air Quality Management District
Eldon Heaston
Supervising Air Quality Engineer
14306 Park Avenue
Victorville, CA 92392

Re: Comments on the District's Preliminary Determination of Compliance for the Victorville 2 Power Plant Project

Dear Mr. Heaston:

On behalf of California Unions for Reliable Energy ("CURE"), this letter provides comments on the Mojave Desert Air Quality Management District's preliminary determination of compliance ("PDOC") for the Victorville 2 Hybrid Power Project currently undergoing licensing with the California Energy Commission.[1] This letter details several fatal flaws we have identified in the PDOC that stem from the District's premature and, therefore, unlawful approval of PM10 offsets for the Project. These legal deficiencies must be corrected before the District issues a final determination of compliance for the Project.

Specifically, the District's Rule 1406, adopted on August 27, 2007, authorized the creation of PM10 emission reduction credits ("ERCs") for new sources from the paving of unpaved public roads.[2] The Rule contains procedures to quantify

[1] Mojave Desert Air Quality Management District, Preliminary Determination of Compliance (Preliminary New Source Review Document), Victorville 2 Hybrid Power Project, Victorville, California, August 29, 2007.

[2] Rule 1406 – Emission Reduction Credits For Paving Unpaved Roads, Request for Review and Comment (April 26, 2007). http://www.mdaqmd.ca.gov/rules_plans/documents/Draft1406.pdf.

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reductions of road dust PM10 after paving roads within the District for use by sources to offset combustion-related emissions subject to the federal Clean Air Act's ("CAA") new source review program ("NSR"), or for projects subject to CEQA.

As shown below, the Rule is illegal because it does not comply with federal requirements for ERCs and NSR; and, thus, cannot be adopted into California's state implementation plan ("SIP") under the CAA. Similarly, the District did not comply with CEQA before adopting the Rule. Finally, even if the District did have a lawful rule whereby the Project could obtain valid PM10 offsets in the manner described in the Rule, neither the City of Victorville nor the District have taken any steps to fulfill the necessary requirements to prove that the Project is actually offsetting its 124 tons per year of PM10.

We have prepared these comments with the assistance of Dr. Petra Pless and David Howekamp. This letter reflects portions of the expert testimony contained in our June 14, 2007, letter commenting on the District's rulemaking proceeding for Rule 1406. We hereby incorporate that letter by reference and provide it as Exhibit A. Please find the experts' supplemental comment letters along with their curriculum vitae in Exhibit A, as well.

I. The District Cannot Implement Rule 1406 because it Violates the Clean Air Act

The District cannot lawfully issue the Project PM10 offsets pursuant to the Rule because, in violation of the CAA, the District does not have an EPA-approved PM10 nonattainment plan which is required before the District can adopt rules that will generate ERCs. The Rule also does not comply with EPA's economic incentive program; and, the Rule's methodology to calculate ERCs is flawed and, if implemented, would result in considerable overestimates of the available emission reductions from paving unpaved roads. In this fashion, any ERCs calculated for the Project under the Rule would be neither "real" nor "surplus." The following comments address these issues.

A. The District's Rule 1406 Does Not Satisfy Specific Federal Requirements

Under the CAA, if a new or modified source triggers NSR for areas in nonattainment for particular pollutants, the source must secure ERCs so that the increased emissions are offset by an equal or greater reduction in actual emissions

from the same source or other sources in the area.[3] A new or modified source may obtain ERCs, but only from sources in areas with an equal or higher nonattainment classification.[4]

Here, the District's Rule allows new or modified sources to obtain ERCs by paving unpaved roads. These types of ERCs are referred to as nontraditional offsets. Offsets for new or modified stationary sources have traditionally been obtained by controlling or shutting down stationary sources, similar to the facility in need of the offsets. For example, emissions from a new combustion source, such as a power plant, have normally been offset by reducing emissions at other existing combustion sources by installing new control equipment or reducing the hours of operation of another existing source. In the case of nontraditional offsets, such as road paving ERCs, the physical properties of road PM10 emissions, e.g., particle size and chemical composition, are substantially different than those of traditional stationary source PM10 emissions, such as from a power plant. Likewise, traditional stationary sources have well-developed calculations, stack testing and reporting procedures. In contrast, the calculation, monitoring and reporting methodologies for road emissions are either nonexistent or less sophisticated because air quality permits are not required for new roads nor have they been historically used for offsets. In short, nontraditional offsets are more difficult to calculate qualitatively, quantitatively and geographically.

In order for the District to create and use nontraditional ERCs in compliance with the CAA and EPA policy, the Rule needed to meet certain fundamental requirements. Below are examples of CAA requirements the District failed to satisfy before adopting the Rule.

First, **the District was required to have an EPA-approved nonattainment plan or maintenance plan before adopting the Rule** for the nonattainment area in which the ERCs will be created and used. The CAA requires that Districts prepare nonattainment plans for EPA approval that provide for attainment of the national ambient air quality standards ("NAAQS") for areas that have been designated as not attaining these standards.[5] That plan must be based

[3] 42 U.S.C. § 7503(a)(1)(A),(c).

[4] *Id.* at § 7503(c).

[5] Section 172 of the CAA.

on an inventory of all emissions[6] and a plan to reduce specific portions of that inventory. Without such an inventory and plan, it is impossible to know if any source of ERCs otherwise is needed to reach attainment.

In response to this requirement, the District adopted the following three plans more than a decade ago: the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan (July 31, 1995); the Searles Valley PM10 Plan (June 28, 1995); and the Final Attainment Demonstration, Maintenance Plan, and Redesignation Request for the Trona Portion of the Searles Valley PM10 Nonattainment Area (March 25, 1996). Significantly, **EPA has not approved any of the three plans.** In fact, due to profound deficiencies contained in each, EPA will not be approving the plans as written.[7]

In addition, in July 2001, EPA issued findings of attainment for the Mojave Desert Planning Area and for the Trona Portion of the Searles Valley PM10 Nonattainment Area in August 2002. EPA based these findings on PM10 air quality data for the two areas during the 2001-2002 monitoring period. However, in violation of the CAA, the District has not submitted maintenance plans or requests for formal redesignation of the nonattainment areas to attainment to EPA for approval.[8] For the District to make a redesignation request now, it would need to consider air quality data collected after EPA's findings.

Because EPA has not approved attainment and/or maintenance plans for the previously designated PM10 nonattainment areas in the District, the District cannot use the Rule to create nontraditional ERCs. The EPA's approval of attainment and/or maintenance plans is a fundamental requirement for creating ERCs. Significantly, the District is well aware that EPA cannot approve the Rule for this reason. On August 24, 2007, EPA warned the District of this problem, stating: "...EPA would like to reiterate that there are still outstanding issues related to the PM SIP that must also be resolved before the rule can be considered

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[6] CAA Section 172(c)(3).

[7] See Howekamp Letter, Attached to Exhibit A. The Blythe/Palo Verde Valley portion of the District is unclassified for PM10. No attainment or maintenance plan is listed on the MDAQMD website for this portion of the District.

[8] This action is required pursuant to CAA Section 175.

for SIP approval."[9] Moreover, EPA put the District on notice of this issue back in 2002, in comments on the PDOC for the Blythe Energy Project II. There, like here, the District intended to issue PM10 offsets to a power plant in exchange for paving roads. EPA rejected the proposal: "To ensure creditability of non-traditional ERCs, such as those generated by road paving, the SIP must contain an approved protocol for quantifying and guaranteeing the permanence, surplus nature and enforceability of such credits. The PM10 credits in the BEPII PDOC cannot be allowed to offset the PM10 increases. Therefore, you must require the applicant to obtain and publicly notice valid PM10 ERCs before issuing the FDOC."[10]

EPA has also made this clear to other districts. For example, in 2002, the Sacramento Metropolitan Air Quality Management District ("SMAQMD") proposed using road-paving ERCs for the Cosumnes Power Plant project. In a letter to SMAQMD, EPA stated: "The PM10 ERCs, primarily road pavement credits, are not valid because SMAQMD does not have an approved PM10 State Implementation Plan."[11] Absent an approved attainment plan, the District cannot implement the Rule to create PM10 ERCs until EPA has approved the District's PM10 plan.

A federally-approved PM10 plan is central to proper creation and use of ERCs because it provides the overall legal and regulatory framework for an NSR program, especially the provision of a detailed emission inventory that identifies in detail the emissions from, as well as control requirements for, each source category including unpaved roads if they contribute to the nonattainment problem.[12] The District based the Rule on a similar rule Maricopa County, Arizona recently adopted. However, the regulatory framework under which that rule will operate is very different because EPA has approved a PM10 nonattainment plan for Maricopa County. Importantly, the Maricopa PM10 plan includes a very detailed emission inventory (including unpaved roads) and a thorough control strategy which provides the necessary information to identify whether any proposed ERCs are indeed surplus to existing requirements. In contrast, **the District's Rule is fatally**

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[9] Email from Laura Yannayon, EPA Region 9 to Alan De Salvio, Mojave Desert Air Quality Management District (August 24, 2007) (Exhibit B).

[10] Letter from Gerardo C. Rios, EPA, to Charles Fryxell, MDAQMD (December 26, 2002) (Exhibit C).

[11] Gerardo C. Rios, Chief, Permits Office, Region 9, USEPA, September 30, 2002 letter to Jorge DeGuzman, Permitting Program Supervisor, Sacramento Metropolitan Air Quality Management District (Exhibit D).

[12] Section 172(c)(3)).

flawed because the District provided no mechanism for establishing whether the Rule's implementation will satisfy federal requirements.

Second, in order to create and use non-traditional ERCs, the District was required to develop an economic incentive program consistent with EPA 2001 policy, *Improving Air Quality with Economic Incentive Programs* ("EIP").[13] EPA established the EIP policy in order to provide state and local agencies with guidance on developing revisions to their plans and rules that would provide sources with compliance flexibility. This policy includes EPA approval criteria, which must be met if such agencies adopt rules or plans that provide for the creation and use of non-traditional ERCs such as road paving offsets. **Compliance with the EIP is not optional.**

Nevertheless, the District adopted the Rule absent any showing that it actually complied with the EIP. At a minimum, the Rule should have contained EIP elements that would periodically evaluate whether the road paving ERC program is actually achieving emission reductions. Moreover, the real purpose of the policy is to require air districts to retrospectively evaluate the performance of their ERC programs on actual emissions and other aspects of program performance. As shown in the rulemaking materials prepared by Maricopa County for their Rule 242,[14] such rules must, at a minimum, incorporate the following elements for each evaluation period:

- Total number of applications received
- Total miles of roads paved
- Total number of reductions achieved (tons/yr)
- Average distances between paved road(s) and user of credits
- Map identifying the location of the paved projects and the user of the credits

[13] See http://www.epa.gov/ttn/caaa/t1/memoranda/eipfin.pdf.

[14] Maricopa County Air Quality Department, proposed Rule 242 - Emission Offsets Generated by the Voluntary Paving of Unpaved Roads adopted on June 20, 2007.

The evaluation report must also answer the following questions, as applicable:

- Has it been difficult to make a surplus determination on any application? Why was it difficult? Should the rule be revised to provide additional clarity and if so, how?
- What changes, if any, are appropriate for the equations, emission factors, constants, or default values?
- Describe any situation where: the paved road was not subsequently adopted by the local authority, the paved road was not being properly maintained, or the emission reductions were subsequently deemed invalid. What happened to those emission reductions and how was the problem resolved?
- Have there been any unintentional beneficial or detrimental effects from the program?
- What changes, if any, are appropriate to streamline or improve the administrative process?
- Did the District have sufficient resources to implement this program?
- What have been the lessons learned?

Nevertheless, the District approved the Rule absent **any** EIP approval criteria that, at a minimum, incorporated the above elements.

Third, before an air district can create and issue ERCs, it must show that the ERCs are real, quantifiable, permanent, enforceable and surplus.[15] The District's Rule utterly omits any such showing of these requirements. Instead, the only rationale the District provided before adopting the Rule was: "The FCAA requires ERCs be real, quantifiable, permanent, enforceable and surplus . . . **Rule 1406 is designed to satisfy these requirements** for reduction from the paving of existing unpaved roads." The CAA requires more. The District needed to explain how the Rule's internal design met the requirements so that sources, EPA, the public and decision makers fully understand how the Rule works and how it will ultimately reduce PM10 emissions from power plants and other industrial facilities. This detailed information is required so that EPA may approve it for inclusion into the SIP.

[15] 40 CFR 51 Appendix S at section (IV)(C)(3)(i)(1).

1. Surplus

CAA section 173(c)(2) requires offsets to be surplus so that "emission reductions otherwise required by this Act shall not be creditable as emissions reductions for purposes of any such offset requirement." Thus, the District was required to make a showing that the ERCs created from the paving of unpaved roads will in fact be surplus.

According to EPA, the surplus requirement is particularly difficult to demonstrate for nontraditional offsets. In its 2002 letter to SMAQMD discussed above, EPA stated: "it is particularly problematic to demonstrate that non-traditional ERCs, resulting from the road paving, satisfy the surplus requirement." EPA was clear on what is required:

> "To demonstrate that emission reductions are surplus, the District must include, among other things, a comprehensive emission inventory, identify roads to pave, include the schedule for road pavement, and elaborate on the control measures that are responsible for the emission reduction credits. EPA policy requires that nontraditional credits, such as those from road paving, be created and used pursuant to rules approved by EPA into State Implementation Plans which contain quantification protocols, proper monitoring, record keeping and reporting requirements, and mechanisms to enforce the creation and validity of the credits."

In this way, EPA provided the District with clear direction on the level of specificity it was required to meet in developing a rule to render emission reductions from the paving of unpaved roads surplus; and, thus, federally approvable as ERCs. In sum, the Rule failed to adequately address the CAA requirement that the District demonstrate its offsets are in fact surplus.

Similarly, the District's own policies indicate that it cannot show that the ERCs it will create from the paving of unpaved roads will in fact be surplus. One of the Rule's definitions for "surplus" is the amount of emission reductions that are not "[s]ubject to be included in ... the latest locally-adopted rules or PM10 Plan: District Rule 403.1, District 403.2, or contingency measures." However, the proposed Rule fails to specify how the District would determine whether proposed emission reduction credits are not subject to District Rules 403.1 or 403.2 and are, indeed, "surplus."

District Rule 403.1 specifies fugitive dust control for the Searles Valley planning area, and District Rule 403.2 specifies fugitive dust control for the MDPA. Both rules contain requirements to reduce emissions stabilizing unpaved roads within these nonattainment areas. Methods to stabilize unpaved roads include paving, chemically treating, watering, or compacting. District Rule 403.2 requires cities, towns, and the County of San Bernardino to collectively stabilize sufficient publicly maintained heavily traveled unpaved roads to reduce fugitive dust entrainment and wind erosion by at least 1,541 tons per year of PM10 emissions within the MDPA.[16]

In response to Energy Commission staff data adequacy comments on the Project AFC, the District provided a list of potential unpaved roads within the MDAB that could be candidates for paving.[17] This list is based on data taken from the San Bernardino County average daily traffic emissions ("ADT") dated November 17, 1994, and the San Bernardino County Traffic Maintained Road Book dated December 6, 1994. District Rule 403.2 was adopted on July 22, 1996, and compliance with the emissions reductions of 1,541 tons per year of PM10 emissions was expected by December 31, 1997.[18] Based on the list of potential candidate roads which the District supplied to the Project's applicant, presumably the most up-to-date list available to the District, it appears that the District does not have adequate documentation to demonstrate which roads have been stabilized to achieve compliance with Rule 403.2 since the latest available data pre-date the compliance date of December 31, 1997.

This means that given Rule 403's mandates, Rule 1406 could potentially cover an unpaved, non-gravel road segment that was subject to Rule 403.2 and has already been stabilized by chemical treating, watering, or compacting. The resulting emission reductions from paving such a stabilized unpaved road surface would be considerably lower than those from an untreated unpaved road. The Rule will not require an application for ERCs to demonstrate that unpaved road segments are not stabilized for purposes of achieving compliance with District Rule 403.2.

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[16] See Rule 403.2(C)(4)(a).

[17] Response to CEC Staff Data Adequacy Comments, Technical Area: Air Quality, April 2007, p. 6.3-94 and Attachment for 07-AFC-1.

[18] Rule 403.2(I)(d).

Next, the Rule defined "surplus" as the amount of emission reductions that are not "required by federal, state, or local law, or the CAA; included, required, or relied upon in the existing federally approved SIP; included in an agricultural best management plan; used by any source to meet any other regulatory requirement; required by any other legal settlement or consent decree; included in any SIP-related requirements; or subject to be included in District Rules 403.1 and 403.2, or contingency measures as contained in the SIP-approved Plan or in the latest locally-adopted rules or PM Plan."

The problem with the District's definition of "surplus," in addition to there being no federally approved SIP for which it could be surplus, is that it failed to account for planned road paving in the District that would occur under local initiatives such as street improvement programs initiated by cities or counties. For example, San Bernardino County has collected a one half-cent sales tax for transportation improvements under Measure I since 1989. Measure I funds include paving previously unpaved roads in the Mountain Desert Region of San Bernardino County. Similarly, the City of Hesperia also has a road pavement program. Since 1999, the City of Hesperia's pavement rehabilitation program has committed approximately $2 million per year toward the improvement of residential roadways. The budget for fiscal year 2006/2007 was considerably expanded to $31 million for improving 30.5 miles of road. Many roads targeted for improvement under this program are currently unpaved or graveled. These initiatives, and others, would be implemented regardless of potential paving under the Rule.

Finally, road paving to new destinations such as residential developments or malls is typically paid for by developers at no cost to counties or cities. Thus, the Rule could potentially result in sources in need of ERCs paving roads that would have been paved anyway by developers or other entities. Consequently, the amount of "surplus" emission reductions that could be achieved by paving under the Rule should have been defined to exclude unpaved and/or graveled roads targeted for improvement under City or County improvement programs and roads that would be reasonably foreseeable to be paved by a developer or other entity.

2. "Real" PM10 Offsets

The District's own definition of "real" is: "able to be demonstrated to have actually occurred." As shown below, the locations, use and conditions of the District's unpaved roads differ drastically. As a result, it is essentially impossible to demonstrate that ERCs created through paving are "real." For example, the Rule

specifies that the PM10 emissions reduction associated with paving an unpaved road is calculated as the difference, in tons per year ("ton/year"), between the estimated entrained road dust emissions from a road segment before and after paving.[19] However, this methodology fails to account for fugitive dust and combustion PM10 emissions resulting from the actual paving, and from road maintenance such as periodic repaving, striping and patching. These emissions can be considerable, as demonstrated below, and therefore should have been included in the calculation that determines actually occurring emissions reductions. Therefore, any ERCs from road paving will not be "real" because a considerable portion of the calculated emission reductions would be offset by PM10 emissions occurring in the year of construction of the paved road and in the years when maintenance activities such as re-paving are carried out.

The District cannot show that ERCs created under the Rule are real because it failed to take this analysis into account and adjust the Rule accordingly in response to public comment. Thus, no entity availing itself of the Rule will be able to show that claimed reductions "actually occurred."

Similarly, the Rule set out a methodology to calculate ERCs from PM10 emission factors in pounds per vehicle mile traveled ("lb/VMT") on unpaved and paved roads, multiplied by annual vehicle miles traveled ("VMT").[20] It also set out the procedures to determine annual average VMT for road segments based on actual traffic counts requiring that traffic counts be conducted over a 48-hour period.[21] The problem is the Rule also allowed counts to consist of "two non-consecutive 24-hour periods on non-holiday weekdays," and contained no requirements for which time of year these traffic counts are to be conducted. Two non-consecutive 24-hour traffic counts conducted at a random time of year and restricted to non-holiday weekdays are unlikely to be representative for the unpaved roads in the District because of temporal and geographic variations of vehicle traffic.

Unpaved roads sustain a variety of vehicular traffic and traffic counts vary considerably depending on the season, day-of-week, or geographical location. For example, most vehicle travel for agricultural purposes occur during field

[19] Rule 1406(C)(3)(a)(iv).

[20] *Id.* at (C)(3)(a)(iii).

[21] *Id.* at (C)(2)(a).

preparation, planting, and harvesting. In between these activities, few agricultural vehicles travel the roads to and from the fields. Similarly, vehicle traffic for recreational purposes such as travel to and from off-roading or camping areas is higher during school vacations, long weekends and during periods of the year when temperatures in the desert are agreeable such as spring or fall. Thus, traffic counts on roads leading to agricultural, off-roading or camping areas conducted during off-season periods will considerably overestimate average annual average VMT. Consequently, actual or "real" emission reductions will be considerably lower than calculated ERCs.

Similarly, vehicle traffic for recreational purposes also exhibits distinct weekly traffic patterns with travelers often arriving late Thursday night and leaving Sunday. The Rule restricted traffic counts to non-holiday weekdays, which is not representative. This is so because depending on which weekdays the two non-consecutive 24-hour traffic counts are conducted, actual annual average VMT may be considerably over- or underestimated. Accordingly, calculated ERCs will be over- or underestimated compared to actual "real" emissions. Other types of traffic may experience similar variations in seasonal or weekly traffic patterns.

The Rule failed to address variability in traffic patterns by requiring the "average daily traffic count" to be adjusted by "daily and monthly seasonal adjustment factors for paved roads to calculate the annual vehicle miles traveled."[22] These seasonal adjustment factors could have been obtained from the most recent highway performance monitoring system ("HPMS") data provided by the California Department of Transportation ("Caltrans").

Short duration volume counts usually require a number of adjustments in order to reduce the effects of temporal bias and convert a daily traffic volume "raw" count into an estimate of annul average daily travel or annual average vehicle miles traveled. The specific set of adjustments needed is a function of the equipment used to collect the count and the duration of the count itself. In addition to seasonal and day-of-the week factors, these include the applicable axle-correction factor for the location and the applicable growth factor to project future annual average vehicle miles traveled.

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[22] Rule 1406(C)(3)(a)(v).

The Rule is flawed because it did not specify the procedures and type of equipment needed for future traffic counts. Because future traffic volumes on the newly paved road will depend on population growth in the region, possibly resulting in decreasing ERCs over time, annual average VMT must be adjusted by the region's applicable growth factor. The Rule omitted any adjustment for growth, and therefore will overestimate the future amount of actual, "real" emission reductions, and, consequently, will overestimate the amount of ERCs available.

Vehicle type also varies from road to road. Not only do roads carry different volumes of traffic, but the characteristics of vehicles using those roads vary. One road with 5,000 vehicles per day may carry little truck traffic, while another road with the same volume of vehicles may have 1,000 trucks per day mixed in with 4,000 passenger cars. Similarly, one road section may be traversed by 1,000 heavily loaded trucks per day while a nearby road is used by 1,000 partially loaded trucks. The number of trucks and their average weight influence the calculation of fugitive dust emissions from paved roads. In effect, heavier trucks are responsible for higher emissions.

The Rule did not require any monitoring of vehicle classes, or any determination of the average weight of vehicles traveling the selected unpaved roads. Instead, the Rule used a default factor of 3.74 tons. For many roads in the District with higher truck traffic volumes, e.g., quarries, agricultural areas, etc., this default value may considerably underestimate actual average vehicle weight on the street and, consequently, underestimate emissions from the newly paved roads. In turn, subtracting the underestimated emissions from paved roads from the estimated emissions from unpaved roads will result in an overestimation of fugitive dust emissions reductions available for ERCs. This ERC inflation renders any ERCs generated from the Rule invalid because they cannot be shown to be "real."

Next, the Rule specified that emissions from unpaved and paved roads will be estimated based on equations derived from the EPA's Compilation of Air Pollution Emission Factors ("AP-42").[23] The calculation of emissions from unpaved roads requires road-specific surface material silt content in percent. The Rule specified the EPA test methods to determine actual silt content on the road surface. However, the Rule also allowed using default values of 11.0% on non-gravel roads and 6.2% on gravel roads. These default values may not be representative for the specific unpaved road selected for purposes of ERC paving. Surface silt content on

[23] See AP-42 sections 13.2.2 and 13.2.1, respectively.

public unpaved roads ranges from 1.8 to 35%. According to EPA, "the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is *strongly discouraged when it is feasible to obtain locally gathered data*. Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions."[24] For example, many unpaved roads exhibit corrugation of the surface, so-called washboarding. This condition results from excessively dry conditions on the driving surface. Corrugations develop when surface materials fail to cohere and fines are lost from the surface. Thus, silt content on such roads may be lower than the 11% assumed by the District. Use of the District's default factor may, thus, considerably under- or overestimate the amount of actual "real" emission reductions available for ERCs.

For the Energy Commission licensing proceeding for the Blythe Energy Project II, the District experimentally determined the surface soil silt content for three roads ranging from 5 percent to 12 percent. These results illustrate the variability of silt content and the need for actual measurements rather than default factors. Under the Rule, the District left the option of using a default factor rather than measuring actual silt content to the applicant for ERCs. This is problematic because familiarity with prior analyses for silt content in a project area may influence an applicant to choose one option over the other if that option would result in the determination of the higher unpaved road emissions and, thus, more ERCs.

Similarly, the calculation of emissions from paved roads requires a road surface silt loading value in grams per square meter ("g/m^2"). The Rule failed to specify a test method to determine actual silt loading on the road, but instead only proposes a default silt loading factor of 0.23 g/m^2.[25] The same EPA test methods used to determine silt content in percent can also be used to determine silt loading in g/m2. Again, EPA emphasizes that "the collection of site-specific silt loading (sL) data for public paved road emission inventories are strongly recommended. ... In the event that site-specific values cannot be obtained, an appropriate value for a paved public road may be selected from the values in Table 13.2.1-3."[26] The default silt loading for unpaved roads with average daily trips of less than 500 vehicle trips per day is 0.6 g/m^2. Most unpaved roads in the District likely experience

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[24] AP-42 13.2.2, at p. 13.2.2-1 (emphasis added).

[25] Rule 1406(E).

[26] AP-42, Section 13.2.1, Unpaved Roads.

considerably less than 500 vehicles per day. The default silt loading of 0.23 g/m^2 chosen by the District would therefore underestimate typical emissions from paved roads and, consequently, overestimate "real" available emission reductions for ERCs.

Finally, the MDPA is currently designated as unclassifiable/attainment for PM2.5 24-hour and annual NAAQS and non-attainment for the annual California ambient air quality standard ("CAAQS") for PM2.5. Review of PM2.5 ambient air quality measurements from the Victorville monitoring station for the past 7 years shows that PM2.5 concentrations have improved in this area over the past years. In 2006, the three-year annual average PM2.5 concentration was determined at 10.3 micrograms per cubic meter ("$\mu g/m^3$"), less than two $\mu g/m^3$ below the CAAQS of 12 $\mu g/m^3$.

Depending on the type, number, and location of new or modified emission sources relying on the Rule's ERCs, the potential cumulative emissions increases of PM2.5 may be considerable. Since most sources would likely be located close to the major population centers, emissions of PM2.5 would increase in these areas and result in increased ambient PM2.5 concentrations potentially in new violations of the CAAQS and NAAQS. For example, the AFC for the Project estimated an increase of annual ambient PM2.5 concentration of 0.3 $\mu g/m^3$ over the background and an increase of the 24-hour ambient PM2.5 concentration of 5.9 $\mu g/m^3$ over the background. The 24-hour ambient background concentration was determined at 26 $\mu g/m^3$. Thus, emissions from the Project would raise the 24-hour ambient PM2.5 concentrations to 32 $\mu g/m^3$, just 2 $\mu g/m^3$ shy of the 24-hour NAAQS. Therefore, one additional source in the Victorville area relying on PM10 ERCs to offset PM2.5 emissions would likely result in exceeding the annual NAAQS.

For all of these reasons, the PDOC cannot rely on implementation of Rule 1406 to provide the Project with PM10 offsets.

II. The District Did Not Comply With CEQA Prior to Adopting Rule 1406

The District cannot lawfully issue the Project PM10 offsets pursuant to the Rule because the District failed to comply with CEQA prior to adopting the Rule. Instead, the District disregarded its legal obligation to analyze the environmental impacts associated with paving up to 5,000 miles of unpaved roads throughout the District's 20,000 square-miles. The District unlawfully exempted the Rule from CEQA on grounds that:

> "The adoption of proposed Rule 1406 is exempt from CEQA because it will not create any adverse impacts on the environment. Because there is not [sic] potential that the adoption might cause the release of additional air contaminants or create any adverse environmental impacts, a Class 8 categorical exemption (14 Cal. Code Reg. §15308) applies."[27]

For the rulemaking proceeding, CURE submitted detailed written comments, and testified at the District's hearing on August 27, 2007. We identified sixteen reasons why a categorical exemption under CEQA was inapplicable, and set forth these reasons below in abbreviated form:

1 The qualitative, quantitative and geographical distribution differences between road emissions and combustion emissions will result in a significant effect on the environment. For example, combustion-related PM10 is qualitatively different from entrained road dust PM10. Indeed, particulates emitted from internal combustion engines are predominantly PM2.5, whereas entrained road dust tends to be predominantly coarse particles, with a very small fraction of PM2.5. Also, the Rule would allow sources to offset PM10 emissions anywhere in the District, regardless of the location of the source or the type of PM10 emissions.

2 An increase in PM2.5 emissions in the District is a significant effect on the environment. The Rule would offset PM10 emissions at a 1:1 ratio regardless of the source of emissions. This offset ratio is not acceptable for offsetting combustion-related PM because of the dissimilar particle size distribution in dust from unpaved roads and emissions from stationary, combustion-related sources.

3 PM10 ERCs generated from road dust emission reductions by paving unpaved roads cannot be used to offset non-road dust PM2.5 emissions such as vehicle exhaust or stationary source combustion emissions because of the different health effects of fine and coarse particulates. The District's own published rules and reports have long recognized the disparity between the

[27] Staff Report Proposed Adoption of Rule 1406 – Emission Reduction Credits for Paving Unpaved Roads (for adoption on June 25, 2007, revised July 30, 2007).

two types of particulate matter. (See List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d).)

4 Stationary sources such as power plants generate continuous year-round emissions from baseload operations and additional emissions during high peak demand such as hot summer days. In contrast, emission reductions due to road paving exhibit seasonal variations depending on vehicle traffic patterns and moisture content of the road. Road paving credits are ineffective in a seasonal mitigation scheme because of road surface moisture that limits their effectiveness during the rainy season. Therefore, road-paving credits are not an acceptable form of offsets for combustion PM10.

5 The Rule will have a significant effect on the environment because fugitive dust PM10 from roads and combustion PM2.5 from stationary sources result in different atmospheric transport and distribution. This means that most of the population in the District will not benefit from reducing emissions from an unpaved road if that particular part of the air district is not impacted by a new or modified combustion source.

6 Construction emissions of criteria air pollutants associated with road paving will result in significant effects on the environment. The District's methodology to calculate ERCs simply subtracts emissions estimates after paving roads from emissions estimates of unpaved roads. This overly simplistic approach fails to account for emissions associated with the act of road paving itself. Construction emissions from road-paving include asphalt fumes, fugitive dust, and combustion emissions from vehicles and construction equipment. These emissions are considerable and may result in significant impacts.

7 Road paving emits hazardous air pollutants and will likely have a significant effect on the environment. Asphalt is a complex mixture which encompasses emissions of a broad spectrum of organic contaminants including several VOCs and semi-volatile organic compounds such as aromatics, aliphatics, alicyclics, and polynuclear aromatic hydrocarbons. Many of these compounds are also hazardous air pollutants ("HAPs"). The EPA estimates that VOCs emitted from road paving operations contain 12% xylene, 6.4% toluene, and 2.3% ethylbenzene.

8 Paving roads increases urban heat island effect resulting in a significant effect on the environment. The Rule would indirectly increase ozone by replacing unpaved roads with blacktop. This, in turn, would increase local ambient temperatures and, hence, local formation of ozone.

9 The Rule will have a significant effect on the environment because the definition of "paving" for purposes of creating ERCs is vague. For example, it does not contain parameters of the types of roads that can be paved in exchange for ERCs. The Rule fails to identify any design and construction standards for road paving to address road conditions such as right-of-way width, traveled way width, depth of base, drainage considerations, types of surfacing, and so forth.

10 Paving dirt or gravel roads may result in a number of adverse direct and indirect impacts on biological resources. Direct impacts include mortality during road construction and increased frequency of road kill from vehicle travel on paved roads.

11 Direct mortality to wildlife and plant species during paving is a potentially significant impact. Road paving involves improvements to the existing sub-base of the road bed, including removal of gravel surface layers, widening of the road footprint, and heightening of the road base. Any vegetation along the unimproved road will be removed, as well as any species living in that vegetation or on the unimproved road shoulders. These activities will often result in the death of any sessile or slow-moving organisms in the path of the road.

12 Increased wildlife mortality on paved roads is a potentially significant impact because increased speed and volume of traffic on newly paved roads will result in increased incidents of wildlife mortality. Increased speeds reduce drivers' ability to see wildlife on roads or on shoulders, resulting in increased incidents of road kill. Unpaved roads, particularly when "unimproved," are typically less dangerous for wildlife.

13 Increased habitat fragmentation and alteration at paved roads is a potentially significant impact because some species are reluctant to cross the barrier presented by paved roads; other species are physically unable to cross road embankments. For these species, a road can effectively cut a

population in half. A network of paved roads fragments the population further.

14 Increased spread of invasive plant species is a potentially significant impact because paving roads increases the spread of invasive non-native and opportunistic native plant species. Vehicles carry and distribute seeds on their tires and undercarriages. The establishment of invasive species along roads is promoted by changing habitat by altering conditions, stressing or removing native species during road improvement, and allowing easier movement by wild or human vectors.

15 Increased roadside pollution in desert habitat is a potentially significant impact because paved roads typically require more roadside management compared to unpaved roads. This includes mowing and herbicide application to keep the shoulders of the road clear of vegetation. Chemicals used in the maintenance of roadways contaminate roadside ecosystems. While many state departments of transportation have begun to reduce the use of herbicides and other chemicals, the use of herbicides continues to damage roadside ecosystems. Those chemicals may also promote the invasion of weedy and exotic species, which are resistant to herbicides.

16 Growth-inducing impacts associated with road paving roads are potentially significant because road paving may encourage land development by improving access to properties that are at present only accessible via unpaved roads. Consequently, newly paved roads would facilitate the already rampant urban sprawl in southwestern San Bernardino and eastern Riverside Counties and associated adverse impacts on the environment.

The District rejected our comments and approved the rule and the categorical exemption under CEQA unanimously on August 27, 2007. Nevertheless, the District cannot lawfully implement the Rule until it performs full environmental review under CEQA.

III. Even if the District Had Complied with Environmental Laws in Approving the Rule, the District Still May Not Issue PM10 Offsets to the Project Until It Complies With Its Own Rules

Even if the District had approved a lawful Rule, which it did not, it cannot accept PM10 offsets from road paving because the District failed to follow its own rules, including Rule 1406, and SIP procedures for approving offsets.

For example, the District's Rule 1302 identifies the steps that an air pollution control officer ("APCO") must take when a new facility requires offsets. ***Before*** issuing a PDOC, or other NSR document, the APCO must:

(1) Obtain from the applicant a proposed offset package which contains evidence of offsets eligible for use pursuant to Rule 1305;

(2) Analyze the offset package to determine, among other things, whether the particular offsets proposed are real, enforceable, surplus, permanent and quantifiable; and

(3) Make any permit modifications required by Rule 1305 or Regulation XIV. Only *after* taking these three steps have been fully and properly completed may the APCO circulate an NSR document for comment, and "approve the use of the Offsets subject to the approval of CARB and USEPA..."[28]

Here, the APCO circulated an NSR document, the PDOC, without taking any of these steps. Instead, the PDOC simply restates the AFC's summary of the amount and type of offsets required for the Project then stops there.[29] Put differently, the PDOC utterly fails to demonstrate compliance with Rule 1302 as set forth above. As it stands, the PDOC's proposed approval of PM10 offsets violates Rule 1302(C)(5)(b).

Again, Rule 1302 requires the Project applicant to provide the APCO with a proposed offset package **which contains evidence of offsets eligible for use pursuant to District Rule 1305**.[30] Ignoring this specific requirement, the sum

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[28] Rule 1302, Procedure, Amended August 28, 2007; Section (C)(5)(b), (b)(iii).

[29] PDOC, pp. 10-13.

[30] Rule 1302(C)(5)(b).

total of the PDOC's analysis consists of: "VV2 has identified ERCs from the paving of unpaved roads as a source of PM10 ERCs." It failed, but was required, to evaluate a specific, detailed offset package proposed by the Project applicant containing the required evidence of eligible offsets.

Consistent with the CAA, Rule 1302 directs the APCO to determine that a particular offset proposal contains offsets that are "real, enforceable, surplus, permanent and quantifiable" *before* approving their use.[31] Like Rule 1406 itself, this determination is completely absent from the PDOC because the document omits specific offsets, opting instead to asserts that "adequate existing unpaved roads are present within the District to offset the proposed project."[32] Bald assertions rather than analysis showing that the proposed road paving offsets are, in fact, "real, enforceable, surplus, permanent, and quantifiable" is illegal.

A. The PDOC Fails to Demonstrate that the Purported PM10 Offsets are "Real"

It cannot be disputed that the PM10 offsets referred to in the PDOC do not yet exist. The PDOC simply asserts that "adequate existing unpaved roads are present within the District to offset the proposed project."[33] Until the District performs proper analyses and follows its own procedures, it cannot show that the proposed offsets are "real" as required by CAA and Rules 1406 and 1401 because they cannot be "demonstrated to have actually occurred."[34]

Likewise, it is impossible for the District to comply with the requirements of Rule 1302(C)(5)(b) until emission reduction credits for the relevant pollutants are entered into the District Registry, *i.e.* are "banked" and available for use. Offsets are ***not eligible*** for use under Rule 1305 ***until*** the "credits have been calculated and issued by the District pursuant to the provisions in Regulation XIV."[35] Regulation XIV prohibits using offsets unless the reductions have been banked.[36]

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[31] Rule 1302(C)(3)(b)(iii).

[32] PDOC, at p. 11.

[33] Id.

[34] Rule 1406 (B)(5); Rule 1401(W), Definitions, adopted June 28, 1995, defines "real" as "[a]ctually occurring, implemented, and not artificially devised."

[35] Rule 1305(B)(1)(a).

[36] Rule 1400, General, adopted June 28, 2005; Section (C)(1).

Therefore, the District cannot currently comply with this requirement of Rule 1302(C)(3)(b).

B. The PDOC Fails to Demonstrate that the Purported PM10 Offsets are "Surplus"

The District cannot demonstrate that the proposed PM10 offsets would be "surplus."[37] Instead, the District's assertion that "adequate roads are present within the District"[38] appears to rely upon outdated inventories of unpaved road segments, daily vehicle miles traveled ("DVMT") and average daily trips ("ADT") within the District. In response to CEC staff data adequacy comments, the Project applicant provided sample calculations of road paving ERCs based on a list of candidate unpaved road segments provided by the District to the City on March 26, 2007.[39] This list, presumably the most up-to-date list available to the District, contains 13-year old inventories of San Bernardino County maintained, unpaved road segments and corresponding ADT and DVMT within the District.[40] Such outdated and overbroad information is not adequate to determine whether the specific PM10 offsets necessary for licensing the Project would, in fact, be surplus.

In sum, the PDOC's proposal to approve using road paving offsets violates the District's own rules. A new PDOC that meets District requirements must be circulated for comment before an FDOC can be issued.

IV. Conclusion

The PDOC violates the federal Clean Air Act, the SIP and the District's own rules. In addition, the foundation of the PDOC's PM10 offset authority, Rule 1406, is not CEQA compliant. The PDOC must be revised to remedy these illegalities. Due to the substantial changes required to bring the PDOC into legal compliance, a revised PDOC should be recirculated for public comment.

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[37] Rule 1406(B)(7).

[38] PDOC, at p. 11.

[39] Response to CEC Staff Adequacy Comments, Technical Area Air Quality, Air-2. Appx. B(g)(8)(J)(ii) and (iii), April 2007; Table 6.3-48, p. 6.3-94.

[40] Response to CEC Staff Adequacy Comments, Technical Area Air Quality, Air-2. Appx. B(g)(8)(J)(ii) and (iii), April 2007; footnotes to Attachment AQ-4.

Thank for the opportunity to provide comments on the PDOC.

Sincerely,

Gloria D. Smith

GDS:bh
Attachments

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037

TEL: (650) 589-1660
FAX: (650) 589-5062
gsmith@adamsbroadwell.com

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715
TEL: (916) 444-6201
FAX: (916) 444-6209

DANIEL L. CARDOZO
RICHARD T. DRURY
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
OSHA R. MESERVE
SUMA PEESAPATI
GLORIA D. SMITH

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL

June 14, 2007

VIA OVERNIGHT MAIL

Mojave Desert Air Quality Management District
Alan De Salvo,
Supervising Air Quality Engineer
14306 Park Avenue
Victorville, CA 92392

Re: Comments on Proposed Rule 1406

Dear Mr. De Salvo:

On behalf of California Unions for Reliable Energy ("CURE"), the Center for Biological Diversity ("Center"), and Communities for a Better Environment ("CBE"), this letter provides comments on the Mojave Desert Air Quality Management District's ("District") proposed Rule 1406, the adoption of which would create federally approvable PM10 emission reduction credits ("ERCs") for new sources from the paving of unpaved roads.[1] Specifically, the proposed rule would establish procedures for calculating ERCs for reductions of road dust PM10[2] emissions through voluntary paving of unpaved roads within the District. These ERCs would then be used to offset emissions from new or modified sources subject to the federal Clean Air Act's ("CAA") new source review program ("NSR"), or for projects subject to review under the California Environmental Quality Act ("CEQA").

According to the District's staff report, the rulemaking is proposed in response to a request by the U.S. Environmental Protection Agency ("EPA") Region 9 and "historical federal approval problems with 'non-traditional' offset sources such as unpaved roads."[3] The District has based the rule on a similar rule

[1] Draft New Rule 1406 – Emission Reduction Credits For Paving Unpaved Roads, Request for Review and Comment (April 26, 2007).
http://www.mdaqmd.ca.gov/rules_plans/documents/Draft1406.pdf.

[2] Particulate matter with an aerodynamic diameter equal to or less than 10 micrometers.

[3] Draft New Rule 1406 – Emission Reduction Credits For Paving Unpaved Roads, Request for Review and Comment (April 26, 2007).

being promulgated by Maricopa County, Arizona (Rule 242 – Emission Offsets Generated by the Voluntary Paving of Unpaved Roads).[4]

Our review of the proposed Rule and staff report indicates that the Rule has significant problems and, if approved will violate both state and federal law. Specifically, as shown below, the proposed Rule must comply with CAA requirements for ERCs and NSR. Similarly, because the proposed Rule is not eligible for a categorical exemption under CEQA, the District must prepare an environmental document that analyzes whether the Rule may have significant effects on the environment and includes analysis of alternatives and feasible mitigation of impacts.[5]

CURE is a coalition of unions whose members construct and maintain industrial projects throughout California, including the southeastern portion of the state, much of which is encompassed by the Mojave Desert air basin. Any changes to the District's rules affect the way power plants and other emission sources operate within the District. Union members work and live in areas that suffer the impacts of environmentally detrimental projects. Union members breathe the same polluted air that others breathe and suffer the same adverse health and safety impacts. Increasing the availability of ERCs can result in increased emissions and unmitigated air quality impacts. In short, District rule changes impact union members' economic and environmental interests.

The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 32,000 members worldwide, including members within the District's boundaries.

CBE is a non-profit environmental health and justice advocacy organization whose mission is to achieve environmental health and justice by building grassroots power in and with communities of color and working-class communities. In pursuit of its mission, CBE works to secure clean air and reduce pollutant emissions in its members' communities. CBE members live, work, recreate and breathe the air

[4] Mojave Desert Air Quality Management District, Draft New Rule 1406 – Emission Reduction Credits For Paving Unpaved Roads, Request for Review and Comments, April 26, 2007.

[5] Public Resources Code §§ 21000 *et seq.*

throughout California, and are severely impacted by new and increased emissions of small particulate matter.

We have prepared these comments with the assistance of Dr. Petra Pless and David Howekamp. These experts' comments along with their *curriculum vitae* are provided herein as Attachments 1 and 2. Please note that the experts' comments supplement the issues addressed below, thus their comments should be addressed and responded to separately.

I. The District's Proposed Rule Violates the Clean Air Act

The proposed Rule is inconsistent with the requirements of the CAA because the District does not have an EPA-approved PM10 nonattainment plan, and therefore cannot adopt a rule that will generate ERCs. The Rule is further inconsistent with California's state implementation plan ("SIP") under the CAA because it fails to restrict ERCs to the designated PM10 nonattainment area within the District. The proposed Rule does not comply with EPA's economic incentive program. And, the methodology presented in the proposed Rule to calculate ERCs is flawed and would result in considerable overestimates of the available emission reductions from paving unpaved roads. In this fashion, the ERCs calculated under the proposed Rule are neither "real" nor "surplus." The following comments address these issues.

A. The District May Not Approve Rule 1406 until it Satisfies Specific Federal Requirements

Under the CAA, if a new or modified source triggers NSR for areas in nonattainment for particular pollutants, the source must secure ERCs so that the increased emissions are offset by an equal or greater reduction in actual emissions from the same source or other sources in the area.[6] A new or modified source may obtain ERCs, but only from sources in areas with an equal or higher nonattainment classification.[7]

Here, the District is proposing that new or modified sources obtain its ERCs by paving unpaved roads. These types of ERCs are referred to as nontraditional

[6] 42 U.S.C. § 7503(a)(1)(A),(c).

[7] *Id.* at § 7503(c).

noted, the proposed Rule is based on a similar rule proposed in Maricopa County in Arizona. However, the regulatory framework under which that rule will operate is very different because EPA has approved a PM10 nonattainment plan for Maricopa County. Importantly, the Maricopa PM10 plan includes a very detailed emission inventory (including unpaved roads) and a thorough control strategy which provides the necessary information to identify whether any proposed ERCs are indeed surplus to existing requirements. In contrast, **the proposed Rule is fatally flawed because the District has no mechanism for establishing whether the Rule's implementation will satisfy federal requirements.**

Second, the Rule runs afoul of the SIP because it does not restrict the new ERCs to the designated PM10 nonattainment portion of the District. Instead, the proposed Rule would permit generation of PM10 ERCs from paving unpaved roads anywhere within the boundaries of the District. The District's geographical area covers a large portion of the Mojave Desert Air Basin ("MDAB"), specifically the desert portion of San Bernardino County and the Palo Verde Valley portion of Riverside County.[13] Effective January 20, 1994, the EPA designated a significant portion of the MDAB as a nonattainment area with respect to the National Ambient Air Quality Standards ("NAAQS") for PM10. This nonattainment area covers the urban areas of Victor Valley and Barstow, the Morongo Basin, and the rural desert environments reaching to the Nevada and Arizona state lines within San Bernardino County.[14] The District also has jurisdiction over a small portion of the Searles Valley Planning area, located in the far northeast corner of San Bernardino County, which is also classified as a moderate federal nonattainment area for PM10. These nonattainment areas do not include the Palo Verde Valley portion of Riverside County, which is currently an unclassified area for PM10. Therefore, the area in which ERCs are generated must be restricted to the nonattainment portion of the District located in San Bernardino County. The proposed Rule contains no such restriction and is therefore inconsistent with the CAA requirements for state SIPs.

According to the District, the EPA's designation of the San Bernardino County portion of the MDAB as nonattainment was based on a number of violations of NAAQS which occurred during the period from 1989 through 1991. The vast

[13] Mojave Desert Air Quality Management District, Rule 103, Description of Boundaries, amended June 28, 1995.

[14] Federal Register, Vol. 58, No. 243, Designation of Areas for Air Quality Planning Purposes, 58 FR 67334, December 21, 1993; http://www.epa.gov/air/oaqps/greenbk/5867334.html.

majority of the nonattainment area's population and associated anthropogenic PM10 sources (97% in 1995) is located in the southwestern corner of the nonattainment area. With the exception of two military bases, most major PM10 sources, including unpaved roads, fall within this southwest corner of the District. Sixty-four percent of District-wide PM10 emissions occurred in this area. Consequently, in consideration of the location of the observed violations and the major sources of PM10, the District identified a smaller nonattainment area surrounding the heavily populated cities and towns in San Bernardino County in its 1995 PM10 Attainment Plan. This region includes Victor Valley, Morongo Basin, Barstow, and Lucerne Valley and is referred to as the Mojave Desert Planning Area ("MDPA").[15] Any ERCs generated by paving of unpaved roads should be limited to the MDPA nonattainment area and not be permitted for paving roads in other parts of the District.

Third, the creation and use of non-traditional ERCs requires the development of an economic incentive program consistent with EPA 2001 policy, *Improving Air Quality with Economic Incentive Programs* ("EIP").[16] EPA established the EIP policy in order to provide state and local agencies with guidance on developing revisions to their plans and rules that would provide sources with compliance flexibility. This policy includes EPA approval criteria, which must be met if such agencies adopt rules or plans that provide for the creation and use of non-traditional ERCs such as road paving offsets. Compliance with the EIP is not optional.

Nevertheless, the District omitted any showing that its Rule 1406 will comply with EIP. At a minimum, the Rule must include EIP elements that periodically evaluate whether the road paving ERC program is actually achieving emission reductions. Moreover, the real purpose of the policy is to require air districts to retrospectively evaluate the performance of their ERC programs on actual emissions and other aspects of program performance. As shown in the rulemaking materials prepared by Maricopa County for their Rule 242,[17] any draft rule should, at a minimum, incorporate the following elements for each evaluation period:

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[15] Mojave Desert Air Quality Management District, Final Mojave Desert Planning Area, Federal Particulate Matter (PM10) Attainment Plan, July 31, 1995.

[16] See http://www.epa.gov/ttn/caaa/t1/memoranda/eipfin.pdf.

[17] Maricopa County Air Quality Department, proposed Rule 242 - Emission Offsets Generated by the Voluntary Paving of Unpaved Roads scheduled for adoption on June 20, 2007.

- Total number of applications received
- Total miles of roads paved
- Total number of reductions achieved (tons/yr)
- Average distances between paved road(s) and user of credits
- Map identifying the location of the paved projects and the user of the credits

The evaluation report must also answer the following questions, as applicable:

- Has it been difficult to make a surplus determination on any application? Why was it difficult? Should the rule be revised to provide additional clarity and if so, how?
- What changes, if any, are appropriate for the equations, emission factors, constants, or default values?
- Describe any situation where: the paved road was not subsequently adopted by the local authority, the paved road was not being properly maintained, or the emission reductions were subsequently deemed invalid. What happened to those emission reductions and how was the problem resolved?
- Have there been any unintentional beneficial or detrimental effects from the program?
- What changes, if any, are appropriate to streamline or improve the administrative process?
- Did the District have sufficient resources to implement this program?
- What have been the lessons learned?

The District may not approve the proposed Rule until it includes EIP approval criteria that, at a minimum, incorporate the above elements.

Fourth, before an air district can create and issue ERCs, it must show that the ERCs are real, quantifiable, permanent, enforceable and surplus.[18] The District's staff report and proposed Rule utterly omit any semblance of a showing that the Rule satisfies these requirements. Instead, the staff report simply declares: "The FCAA requires ERCs be real, quantifiable, permanent, enforceable and surplus . . . **Rule 1406 is designed to satisfy these requirements** for

[18] 40 CFR 51 Appendix S at section (IV)(C)(3)(i)(1).

reduction from the paving of existing unpaved roads." The CAA requires more. The District must explain how the Rule's internal design works to meet the requirements so that sources, EPA, the public and decision makers fully understand how the Rule will operate and ultimately reduce PM10 emissions from power plants and other industrial facilities. All of this information must be approved by EPA and put into the state implementation plan.

1. Surplus

CAA section 173(c)(2) requires offsets be surplus so that "emission reductions otherwise required by this Act shall not be creditable as emissions reductions for purposes of any such offset requirement." Thus, the District is required to make a showing that the ERCs created from the paving of unpaved roads are in fact surplus.

According to EPA, the surplus requirement is particularly difficult to demonstrate for nontraditional offsets. In its 2002 letter to SMAQMD discussed above, EPA stated: "it is particularly problematic to demonstrate that non-traditional ERCs, resulting from the road paving, satisfy the surplus requirement." EPA was clear on what is required:

> "To demonstrate that emission reductions are surplus, the District must include, among other things, a comprehensive emission inventory, identify roads to pave, include the schedule for road pavement, and elaborate on the control measures that are responsible for the emission reduction credits. EPA policy requires that nontraditional credits, such as those from road paving, be created and used pursuant to rules approved by EPA into State Implementation Plans which contain quantification protocols, proper monitoring, record keeping and reporting requirements, and mechanisms to enforce the creation and validity of the credits."

In this way, EPA has provided the District with clear direction on the level of specificity it must meet in developing a rule to render emission reductions from the paving of unpaved roads surplus and thus federally approvable as ERCs. In sum, the District's proposed Rule does not adequately address the CAA requirement that the District show its proposed offsets will in fact be surplus.

Similarly, the District's own policies indicate that it cannot show that the ERCs it will create from the paving of unpaved roads will in fact be surplus. One of

the Rule's definitions for "surplus" is the amount of emission reductions that are not "[s]ubject to be included in ... the latest locally-adopted rules or PM10 Plan: District Rule 403.1 District 403.2, or contingency measures." However, the proposed Rule fails to specify how the District would determine whether proposed emission reduction credits are not subject to District Rules 403.1 or 403.2 and are, indeed, "surplus."

District Rule 403.1 specifies fugitive dust control for the Searles Valley planning area, and District Rule 403.2 specifies fugitive dust control for the MDPA. Both rules contain requirements to reduce emissions stabilizing unpaved roads within these nonattainment areas. Methods to stabilize unpaved roads include paving, chemically treating, watering, or compacting. District Rule 403.2, requires cities, towns, and the County of San Bernardino to collectively stabilize sufficient publicly maintained heavily traveled unpaved roads to reduce fugitive dust entrainment and wind erosion by at least 1,541 tons per year of PM10 emissions within the MDPA.[19]

In response to California Energy Commission staff data adequacy comments on the application for certification for the proposed Victorville II power plant project, the District provided a list of potential unpaved roads within the MDAB that could be candidates for paving.[20] This list is based on data taken from the San Bernardino County average daily traffic emissions ("ADT") dated November 17, 1994, and, the San Bernardino County Traffic Maintained Road Book dated December 6, 1994. District Rule 403.2 was adopted on July 22, 1996 and compliance with the emissions reductions of 1,541 tons per year of PM10 emissions was expected by December 31, 1997.[21] Based on the list of potential candidate roads which the District supplied to the applicant for the proposed Victorville II project, presumably the most up-to-date list available to the District, it appears that the District does not have adequate documentation to demonstrate which roads have been stabilized to achieve compliance with Rule 403.2 since the latest available data pre-date the compliance date of December 31, 1997.

[19] See Rule 403.2(C)(4)(a).

[20], Response to CEC Staff Data Adequacy Comments, Technical Area: Air Quality, April 2007, p. 6.3-94 and Attachment for 07-AFC-1.

[21] Rule 403.2(I)(d).

This means that given Rule 403's mandates, Rule 1406 could potentially cover an unpaved, non-gravel road segment that was subject to Rule 403.2 and has already been stabilized by chemical treating, watering, or compacting. The resulting emission reductions from paving such a stabilized unpaved road surface would be considerably lower than those from an untreated unpaved road. Proposed Rule 1406 does not require that the application for ERCs demonstrate that unpaved road segments are not stabilized for purposes of achieving compliance with District Rule 403.2. The District must address these shortcomings in the Rule before its approval.

Next, the proposed Rule defines "surplus" as the amount of emission reductions that are not "required by federal, state, or local law, or the CAA; included, required, or relied upon in the existing federally approved SIP; included in an agricultural best management plan; used by any source to meet any other regulatory requirement; required by any other legal settlement or consent decree; included in any SIP-related requirements; or subject to be included in District Rules 403.1 and 403.2, or contingency measures as contained in the SIP-approved Plan or in the latest locally-adopted rules or PM Plan." The problem with the District's definition of "surplus" is that it fails to account for planned road paving in the District that would occur under local initiatives such as street improvement programs initiated by cities or counties. For example, San Bernardino County has collected a one half-cent sales tax for transportation improvements under Measure I since 1989. Measure I funds include paving previously unpaved roads in the Mountain Desert Region of San Bernardino County. Similarly, the City of Hesperia also has a road pavement program. Since 1999, the City of Hesperia's pavement rehabilitation program has committed approximately $2 million per year toward the improvement of residential roadways. The budget for fiscal year 2006/2007 was considerably expanded to $31 million for improving 30.5 miles of road. Many roads targeted for improvement under this program are currently unpaved or graveled. These initiatives, and others, would be implemented regardless of potential paving under proposed Rule 1406.

Finally, road paving to new destinations such as residential developments or malls is typically paid for by developers at no cost to counties or cities. Developers looking for a suitable location for their projects in the Mojave Desert would likely select a site with paved road access over a site with an unpaved or graveled road to reduce expenses. Thus, Rule 1406 could potentially result in sources in need of ERCs paving roads that would have been paved anyway by developers or other entities. Consequently, the amount of "surplus" emission reductions that would be

achieved by paving under proposed Rule 1406 must be defined to exclude unpaved and/or graveled roads targeted for improvement under City or County improvement programs and roads that would be reasonably foreseeable to be paved by a developer or other entity.

2. Real

The District's definition of 'real' is "able to be demonstrated to have actually occurred." As shown below, the locations, use and conditions of the District's unpaved roads differ drastically. As a result, it is essentially impossible to demonstrate that ERCs created through paving are "real." For example, the proposed Rule specifies that the PM10 emissions reduction associated with paving an unpaved road is calculated as the difference, in tons per year ("ton/year"), between the estimated entrained road dust emissions from a road segment before and after paving.[22] However, this methodology fails to account for fugitive dust and combustion PM10 emissions resulting from the actual paving, and from road maintenance such as periodic repaving, striping and patching. These emissions can be considerable, as demonstrated below, and must therefore be included in the calculation to determine actually occurring emissions reductions. Therefore, the proposed ERCs from road paving are not "real" because a considerable portion of the calculated emission reductions would be offset by PM10 emissions occurring in the year of construction of the paved road and in the years when maintenance activities such as re-paving are carried out. Before the District can show that ERCs created under the Rule are real, it must take this analysis into account and adjust the Rule accordingly in order to show that the claimed reductions "actually occurred."

Similarly, the proposed Rule sets out a methodology to calculate ERCs from PM10 emission factors in pounds per vehicle mile traveled ("lb/VMT") on unpaved and paved roads, multiplied by annual vehicle miles traveled ("VMT").[23] It also sets out the procedures to determine annual average VMT for road segments based on actual traffic counts requiring that traffic counts be conducted over a 48-hour period.[24] The problem is the rule also allows counts to consist of "two non-consecutive 24-hour periods on non-holiday weekdays," and contains no requirements for which time of year these traffic counts are to be conducted. Two

[22] Proposed Rule 1406(C)(3)(a)(iv).

[23] *Id.* at (C)(3)(a)(iii).

[24] *Id.* at (C)(2)(a).

non-consecutive 24-hour traffic counts conducted at a random time of year and restricted to non-holiday weekdays are unlikely to be representative for the unpaved roads in the District because of temporal and geographic variations of vehicle traffic.

Unpaved roads sustain a variety of vehicular traffic and traffic counts will vary considerably depending on the season, day-of-week, or geographical location. For example, most vehicle travel for agricultural purposes will occur during field preparation, planting, and harvesting. In between these activities, few agricultural vehicles will travel the roads to and from the fields. Similarly, vehicle traffic for recreational purposes such as travel to and from off-roading or camping areas is likely higher during school vacations, long weekends and during periods of the year when temperatures in the desert are agreeable such as spring or fall. Thus, traffic counts on roads leading to agricultural, off-roading or camping areas conducted during off-season periods, would considerably overestimate average annual average VMTs. Consequently, actual or "real" emission reductions would be considerably lower than calculated ERCs.

Vehicle traffic for recreational purposes also exhibits distinct weekly traffic patterns with travelers often arriving late Thursday night and leaving Sunday. The proposed Rule would restrict traffic counts to non-holiday weekdays, which is not representative. This is so because depending on which weekdays the two non-consecutive 24-hour traffic counts are conducted, actual annual average VMT may be considerably over- or underestimated. Accordingly, calculated ERCs would be over- or underestimated compared to actual "real" emissions. Other types of traffic may experience similar variations in seasonal or weekly traffic patterns.

To address variability in traffic patterns, the proposed Rule would require the "average daily traffic count" to be adjusted by "daily and monthly seasonal adjustment factors for paved roads to calculate the annual vehicle miles traveled."[25] These seasonal adjustment factors would be obtained from the most recent highway performance monitoring system ("HPMS") data provided by the California Department of Transportation ("Caltrans"). Overall, this subsection is confusing and the adjustment is insufficient. The proposed Rule must be clarified.

Short duration volume counts usually require a number of adjustments in order to reduce the effects of temporal bias and convert a daily traffic volume "raw"

[25] Rule 1406(C)(3)(a)(v).

count into an estimate of annul average daily travel or annual average vehicle miles traveled. The specific set of adjustments needed is a function of the equipment used to collect the count and the duration of the count itself. In addition to seasonal and day-of-the week factors, these include the applicable axle-correction factor for the location and the applicable growth factor to project future annual average vehicle miles traveled. The proposed Rule does not specify the procedures and type of equipment for the proposed traffic counts. Because future traffic volumes on the newly paved road will depend on population growth in the region, possibly resulting in decreasing ERCs over time, annual average VMT must be adjusted by the region's applicable growth factor. The proposed Rule is flawed because it does not require that adjustment for growth and therefore likely overestimates the future amount of actual, "real" emission reductions, and, consequently, overestimates the amount of ERCs available.

Traffic also varies from road to road. Not only do roads carry different volumes of traffic, but the characteristics of vehicles using those roads vary. One road with 5,000 vehicles per day may carry little truck traffic, while another road with the same volume of vehicles may have 1,000 trucks per day mixed in with 4,000 passenger cars. Similarly, one road section may be traversed by 1,000 heavily loaded trucks per day while a nearby road is used by 1,000 partially loaded trucks. The number of trucks and their average weight influence the calculation of fugitive dust emissions from paved roads. In short, heavier trucks are responsible for higher emissions.

The proposed Rule does not require any monitoring of vehicle classes, or any determination of the average weight of vehicles traveling the selected unpaved roads. Instead, the proposed Rule uses a default factor of 3.74 tons. For many roads in the District with higher truck traffic volumes, e.g., quarries, agricultural areas, etc., this default value may considerably underestimate actual average vehicle weight on the street and, consequently, underestimate emissions from the newly paved roads. In turn, subtracting the underestimated emissions from paved roads from the estimated emissions from unpaved roads, will result in an overestimation of fugitive dust emissions reductions available for ERCs. This ERC inflation must be corrected for the ERCS to be "real" and the Rule to be valid.

Next, the proposed Rule specifies that emissions from unpaved and paved roads be estimated based on equations derived from the EPA's Compilation of Air

Pollution Emission Factors ("AP-42").[26] The calculation of emissions from unpaved roads requires road-specific surface material silt content in percent. The proposed Rule specifies the EPA test methods to determine actual silt content on the road surface. However, the proposed Rule also allows for using default values of 11.0% on non-gravel roads and 6.2% on gravel roads. These default values may not be representative for the specific unpaved road selected for purposes of ERC paving. Surface silt content on public unpaved roads ranges from 1.8 to 35%. According to EPA, "the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is *strongly discouraged when it is feasible to obtain locally gathered data*. Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions."[27] For example, many unpaved roads exhibit corrugation of the surface, so-called washboarding. This condition results from excessively dry conditions on the driving surface. Corrugations develop when surface materials fail to cohere and fines are lost from the surface. Thus, silt content on such roads may be lower than the 11% assumed by the District. Use of the District's default factor may, thus, considerably under- or overestimate the amount of actual "real" emission reductions available for ERCs.

For the Energy Commission licensing proceeding for the Blythe Energy Project II, the District experimentally determined the surface soil silt content for three roads ranging from 5 percent to 12 percent. These results illustrate the variability of silt content and the need for actual measurements rather than default factors. Under the proposed Rule, the District leaves the option of using a default factor rather than measuring actual silt content to the applicant for ERCs. This is problematic because familiarity with prior analyses for silt content in the project area may influence an applicant to choose one option over the other if that option would result in the determination of the higher unpaved road emissions, and, thus more ERCs.

Similarly, the calculation of emissions from paved roads requires a road surface silt loading value in grams per square meter ("g/m^2"). The proposed Rule fails to specify a test method to determine actual silt loading on the road, but instead only proposes a default silt loading factor of 0.23 g/m^2.[28] The same EPA test

[26] See AP-42 sections 13.2.2 and 13.2.1, respectively.

[27] AP-42 13.2.2, at p. 13.2.2-1 (emphasis added).

[28] Proposed Rule 1406(E).

for projects where adverse impacts may occur would be incompatible with CEQA's mandate that any project that may have an adverse effect must go through the CEQA process.

Under the CEQA Guidelines, there are 32 classes of categorical exemptions.[33] Class 8, the exemption the District invokes, consists of:

> "actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment. Construction activities and relaxation of standards allowing environmental degradation are not included in this exemption."[34]

CEQA's exemptions are to be construed narrowly and are not to be expanded beyond the scope of their plain language.[35] If there is any reasonable possibility that a project or activity may have a significant effect on the environment, an exemption is improper.[36]

According to the District, there is "no potential that the adoption might cause the release of additional air contaminants or create any adverse environmental impacts." However, the District cannot rely on this bold assertion alone. Instead, it must provide substantial evidence showing that the Rule falls within a Class 8 categorical exemption.[37] If the District provides an administrative record showing that an exemption is warranted, then the burden shifts to any party challenging the exemption. Challengers then must produce substantial evidence showing that the project falls within the "significant effects" (or "unusual circumstances") exception under CEQA.[38]

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[33] CEQA Guidelines, §§ 15300-15332.

[34] CEQA Guidelines § 15308.

[35] *Castaic Lake Water Agency v. City of Santa Clarita* (1995) 41 Cal.App.4th 1257, 1268 (rejecting "attempt to use limited exemptions contained in CEQA as a means to subvert the rule regulating the protection of the environment.").

[36] *Azusa Land Reclamation Company v. Main San Gabriel Basin Watermaster* (1997) 52 Cal.App.4th 1165, 1191.

[37] *Magan v. County of Kings* (2002) 105 Cal.App.4th 468.

[38] *Apartment Assoc. of Greater Los Angeles v. City of Los Angeles* (2001) 90 Cal.App.4th 1162, 1175.

Given that the District has provided ***no*** evidence whatsoever in defense of its reliance upon a Class 8 categorical exemption, and because this letter provides abundant, substantial evidence below showing that adoption of the Rule will cause significant environmental effects, the District may not finalize the Rule until it fully complies with CEQA.

B. A Project Cannot be Categorically Exempt from CEQA if there Is a Reasonable Possibility that the Activity Will Have a Significant Effect on the Environment Due to Unusual Circumstances

None of the categorical exemptions applies if there is a "reasonable possibility" that significant environmental impacts will result due to "unusual circumstances."[39] Thus, even though a category of projects will, under normal circumstances, pose no environmental threat, if there are unusual circumstances associated with a particular project that could present such a threat, that project will fall outside the usual categorical exemption. Courts employ a two-part test for determining whether the "unusual circumstance" exception applies to a project. Under the test, an agency (and ultimately a court) must determine whether "the circumstances of a particular project:

(i) Differ from the general circumstances of the projects covered by a particular categorical exemption, and

(ii) Those circumstances create an environmental risk that does not exist for the general class of exempt projects."[40]

[39] CEQA Guidelines § 15300.2(c).

[40] *Azusa*, 52 Cal.App.4th at 1207; see also *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 129.

C. The District's Proposed Rule 1406 Presents at Least 16 Sets of Unusual Circumstances, Each of Which Creates a Reasonable Possibility of a Significant Adverse Effect on the Environment

The District must investigate and disclose the following 16 potential significant impacts in an EIR so that it considers and adopts any and all feasible mitigation and alternatives to the proposed Rule.

1. The Qualitative, Quantitative and Geographical Distribution Differences between Road Emissions and Combustion Emissions Will Result in a Significant Effect on the Environment

The proposed Rule would permit applicants to create ERCs for new or modified sources of PM10 emissions by paving unpaved roads, thereby reducing PM10 from entrained road dust. The Rule would allow sources to offset PM10 emissions anywhere in the District, regardless of the location of the source or the type of PM10 emissions. This would allow sources subject to NSR, particularly power plants or other industrial facilities, and smaller sources subject to CEQA mitigation requirements to offset combustion-related PM10 emissions with road dust PM10 ERCs. Combustion-related PM10 is qualitatively different from entrained road dust PM10. Indeed, particulates emitted from internal combustion engines are predominantly fine particles with a diameter of 2.5 micrometer or less ("PM2.5"), whereas entrained road dust tends to be predominantly coarse particles, with a very small fraction of PM2.5. As discussed in more detail below, the dissimilar size distribution and chemical composition of combustion and fugitive dust particulate matter result in drastically different atmospheric transport behavior and distinctive health impacts. The District must analyze the impacts associated with this inherent disparity in the proposed Rule and propose alternatives and mitigation as necessary. Based on the geographic scope of the proposed Rule and dissimilar behaviors and chemical compositions of the two types of PM10 involved, these unusual circumstances create the possibility of significant adverse impacts.

2. An Increase in PM2.5 Emissions in the District Is a Significant Effect on the Environment

The proposed Rule would offset PM10 emissions at a 1:1 ratio regardless of the source of emissions. This offset ratio is not acceptable for offsetting combustion-

related PM because of the dissimilar particle size distribution in dust from unpaved roads and emissions from stationary, combustion-related sources.

The EPA has adopted default values for the PM2.5 fraction of PM10 of 10% on unpaved roads for the fugitive dust sections of AP-42.[41] Studies indicate that a size fraction of PM2.5 of PM10 as low as 5% may be appropriate for very dusty sources. In contrast, combustion of diesel, gasoline, or natural gas in stationary internal combustion engines generates particulate matter emissions ranging from about 98%, 99%, and close to 100% PM2.5 of PM10, respectively. In case of a natural gas-fired power plant, PM10 ERCs generated under the proposed Rule would effectively replace 0.90 to 0.95 tons per ton of ERC of coarse particulate matter emissions with a diameter between 2.5 and 10 micrometers with PM2.5 emissions. Thus, the District is effectively trading one air pollution problem for another.

An acceptable offset ratio for emissions from a natural-gas fired plant based on particle size would be at least 1:10 (and possibly up to 1:20) to account for the smaller size fraction of PM2.5 in fugitive dust from roads compared to combustion emissions. Offset ratios based on the PM2.5 fraction in PM10 emissions for other source categories can be determined analogously using the EPA's speciation profiles. Given the unusual circumstances of disparate particulate size, a full CEQA analysis of significant impacts is required.

3. Due to Dissimilar Health Effects, Using PM10 ERCs from Paving to Offset PM2.5 Emissions from Non-fugitive Dust Sources Creates a Significant Effect on the Environment

PM10 ERCs generated from road dust emission reductions by paving unpaved roads cannot be used to offset non-road dust PM2.5 emissions such as vehicle exhaust or stationary source combustion emissions because of the different health effects of fine and coarse particulates. The District itself has long recognized the disparity between the two types of particulate matter:

[41] U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, Section 13.2.2, Unpaved Roads, November 2006; Western Governors' Association, Western Regional Air Partnership (WRAP), Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors, MRI Project No. 110397, February 1, 2006, finalized November 1, 2006; http://www.epa.gov/ttn/chief/ap42/ch13/bgdocs/b13s02.pdf.

> "PM emissions can be suspended in the air and carried long distances. Thus, PM can be an air pollutant that exists over large geographical expanses, potentially affecting numerous people. The health threat from these emissions arises because PM can be inhaled deep into the lungs, where they can persist and cause respiratory damage. **The health risk from an inhaled dose of PM depends on the size, composition, and concentration of the particulate**. Larger particles tend to deposit in the tracheal-bronchial region, and smaller ones in the alveolar region of the lungs. Although everyone is potentially affected by PM exposure, certain sensitive groups are especially vulnerable to its effects. These at-risk individuals include people with chronic obstructive lung disease or cardiovascular disease, individuals with influenza and asthma, elderly individuals, and children."[42]

The District's own analyses confirm there are unusual circumstances presented by failing to differentiate between PM10 and PM2.5 in the proposed Rule; thus, the rulemaking has the potential to significantly affect human health and the environment.

The health impacts associated with the different types of particulate matter are not new. Since 1996, more than 2,000 peer-reviewed studies have been published validating earlier epidemiologic studies that link both acute and chronic fine particle pollution with serious morbidity and mortality. This research has also expanded the list of health effects associated with fine particle pollution and has identified health effects at considerably lower exposure levels than previously reported. Overwhelming scientific evidence shows that long-term exposure to fine particulate air pollution contributes to pulmonary and systemic oxidative stress, inflammation, progression of atherosclerosis, and risk of ischemic heart disease and death.

A recent study found that each 10 micrograms per cubic meter ("$\mu g/m^3$") increase in PM2.5 air pollution was associated with approximately a 6% increase in cardiopulmonary mortality and an 8% increase in lung cancer mortality.[43] Short-

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[42] List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d) (emphasis added).

[43] A.A. Pope III, R.T. Burnett, M.J. Thun, E.E. Calle, D. Krewski, K. Ito, G.D. Thurston, Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution, Journal of the American Medical Association, v. 287, no. 9, pp. 1132-1141, 2002.

term exposure is equally damaging and contributes to complications of atherosclerosis, such as plaque vulnerability, thrombosis, and acute ischemic events. The EPA concluded with respect to short-term exposure studies that epidemiological evidence supported likely causal associations between PM2.5 and both mortality and morbidity from cardiovascular and respiratory diseases.[44] In response to this new information, the EPA recently tightened the 24-hour PM2.5 NAAQS from 65 $\mu g/m^3$ to 35 $\mu g/m^3$, effective December 17, 2006.[45]

Also, a recently published study of 12,865 patients evaluated the role of fine particulate matter exposure in triggering acute ischemic heart disease event. The study found a sharply elevated risk of heart attacks for people with clogged arteries after just a day or two of short-term exposure to fine particulate matter. This study was published in the American Heart Association's peer-reviewed journal *Circulation*.[46] One coauthor of the study stated that the results should prompt heart doctors to advise those with coronary heart disease to stay indoors as much as possible on particularly sooty days and that he was already changing his advice to patients based on the results, even advising in severe cases to move to a less polluted environment.[47]

Particularly damaging are the fine particles contained in diesel exhaust, which contain nearly 40 toxic substances. As early as 1988, the National Institute for Occupational Safety and Health identified diesel exhaust as a potential occupational carcinogen. In 1998, the California Air Resources Board ("CARB") formally identified the particulate fraction of diesel exhaust as a toxic air

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[44] U.S. Environmental Protection Agency, National Center for Environmental Assessment, Office of Research and Development, Provisional Assessment of Recent Studies on Health Effects of Particulate Matter Exposure, EPA/600/R-06/063, July 2006.

[45] U.S. Environmental Protection Agency, Office of Air Quality Standards and Planning, September 2006 Revisions to the National Ambient Air Quality Standards for Particle Pollution, September 2006; *see also* U.S. Environmental Protection Agency, National Ambient Air Quality Standards for Particulate Matter, Final Rule, Federal Register, 40 CFR Part 50, Vol. 71, No. 200, pp. 61144-61233, October 17, 2006.

[46] Pope C.A. III, Muhlestein J.B., May H.T., Renlund D.G., Anderson J.L., Horne B.D., Ischemic Heart Disease Events Triggered by Short-Term Exposure to Fine Particulate Air Pollution, Circulation, No. 114, pp. 2443–2448; abstract available at http://circ.ahajournals.org/cgi/content/abstract/114/23/2443, accessed December 9, 2006.

[47] Los Angeles Times, Dire Health Effects of Pollution Reported, Diesel Soot from Construction Equipment Is Blamed for Illnesses and Premature Deaths, December 6, 2006.

contaminant and concluded that exposure to diesel exhaust particulate matter ("DPM") causes cancer and acute respiratory effects.[48] The EPA followed suit in 2002 and determined diesel exhaust as a probable human carcinogen. Diesel exhaust is estimated to contribute to more than 75% of the added cancer risk from air toxics in the United States.[49] Lagging emission standards and very old equipment in the fleet have made construction equipment one of the largest sources of toxic DPM pollution in California. An estimated 70% of California's construction equipment is currently not covered by federal and state regulations because it is too old.[50] Rule 1406 would result in additional emissions of diesel exhaust from construction vehicles and equipment necessary to pave roads.

Heavy-duty diesel-powered construction equipment exhaust would release considerable amounts of DPM, which is 89% PM2.5, particularly during the initial earthmoving phase. Clouds of soot emitted by heavy-duty construction equipment can travel downwind for miles, then drift into heavily populated areas. A recent analysis found that air pollution from diesel construction equipment is already taking a heavy toll on the health and economic well-being of Californians resulting in well over 1,000 premature deaths per year and close to 10 billion dollars total cost.[51] The proposed Rule would contribute DPM/PM2.5 emissions during construction, and from maintenance activities and potentially from operational emissions of new sources, further increasing ambient concentrations of this pollutant and increasing the associated adverse impacts on public health and welfare.

In June 2000, CARB sent a letter to all air pollution control officers to express concerns regarding the use of course particulate matter emission reductions to offset combustion-generated fine particulate matter increases. CARB specifically pointed out that "[f]ine particulates, those equal to or smaller than 2.5 microns in diameter (PM2.5) have unique pulmonary dynamics. They selectively penetrate

[48] California Air Resources Board, Initial Statement of Reasons for Rulemaking, Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Staff Report, June 1998.

[49] Environmental Defense Fund, Cleaner Diesel Handbook, Bring Cleaner Fuel and Diesel Retrofits into Your Neighborhood, April 2005, p. IV; http://www.environmentaldefense.org/documents/4941_cleanerdieselhandbook.pdf.

[50] Los Angeles Times, Dire Health Effects of Pollution Reported, Diesel Soot from Construction Equipment Is Blamed for Illnesses and Premature Deaths, December 6, 2006.

[51] Union of Concerned Scientists, Digging Up Trouble, The Health Risks of Construction Pollution in California, November 2006.

into lung alveoli. Whatever chemicals the particulates have absorbed, either at their source or from ambient air, are also transported into the body. Fine particulate matter emissions are a serious human health concern ... **We believe there is no technical justification for allowing PM emission reductions from road paving to offset PM10 increases from natural gas combustion. Any ERC granted for reductions in non-combustion particulate matter should contain conditions to limit the use of the ERC to similar sized non-combustion particulate matter sources. If ERCs have been granted for paving roads, those ERCs should not be allowed to be used to mitigate the impacts of combustion particulate ... In the future, we intend to negatively comment on proposals that allow non-combustion particulate matter emissions to be used to offset combustion-generated particulate matter emissions."**[52]

The District chose to ignore CARB and its own guidance when it drew the unsubstantiated conclusion that the proposed Rule would not result in any adverse impacts on the environment.

4. Because PM10 ERCs Obtained from Road Dust Emission Reductions Are Not Contemporaneous with Combustion Emissions, the Rule Will Have a Significant Effect on the Environment

Stationary sources such as power plants generate continuous year-round emissions from baseload operations and additional emissions during high peak demand such as hot summer days. In contrast, emission reductions due to road paving exhibit seasonal variations depending on vehicle traffic patterns and moisture content of the road. Road paving credits are ineffective in a seasonal mitigation scheme because of road surface moisture that limits their effectiveness during the rainy season. Therefore, road-paving credits are not an acceptable form of offsets for combustion PM10. This disparity must be analyzed in a CEQA document.

[52] Michael Kenny, California Air Resources Board, Letter to Air Pollution Control Officers, June 16, 2000 (emphasis added).

5. The Rule Will Have a Significant Effect on the Environment Because Fugitive Dust PM10 from Roads and Combustion PM2.5 from Stationary Sources Result in Different Atmospheric Transport and Distribution

Local and regional transport of particulate matter is dependent on a number of factors, including particle size, emissions height, wind speed, humidity, and atmospheric stability. Dry deposition, or gravitational settling of particles in the atmosphere, is highly dependent on the particle size. The larger particles in entrained road dust are kicked up only a short distance and settle out relatively quickly. Therefore, most of the entrained road dust PM10 typically spreads only a few hundred meters from the roads and contributes little to the regional background. In contrast, the smaller particles emitted from stationary combustion sources typically exit through tall stacks with high exit velocities and are regionally distributed.

This means that most of the population in the District will not benefit from reducing emissions from an unpaved road if that particular part of the air district is not impacted by a new or modified combustion source. On the contrary, while PM10 concentrations will likely stay the same because of the short transport distances for entrained road dust, PM2.5 concentrations will increase throughout the District because of regional transport. This important issue must be investigated in an EIR.

6. Construction Emissions of Criteria Air Pollutants Associated with Road Paving Will Result in Significant Effects on the Environment

The District's methodology to calculate ERCs simply subtracts emissions estimates after paving roads from emissions estimates of unpaved roads. This overly simplistic approach fails to account for emissions associated with the act of road paving itself. In other words, construction emissions from road-paving include asphalt fumes, fugitive dust, and combustion emissions from vehicles and construction equipment. These emissions are considerable and may result in significant impacts.

For example, fugitive dust emissions during paving of city and county roads result predominantly from site preparation work which may include scraping, grading, loading, digging, compacting, light-duty vehicle travel, and other operations. Fugitive dust PM10 emissions from road construction have been

roughly estimated at 15.4 tons per mile ("tons/mile") assuming a typical project duration of 18 months. This emission factor is assumed to include the effects of routine dust suppression measures such as watering with a dust control effectiveness of 50%. Thus, construction emissions generated during road paving would exceed the District's annual CEQA significance threshold for PM10 emissions of 15 tons/year. Assuming a smaller project with a project duration of only one month, paving of one mile of unpaved road would result in daily PM10 emissions of 85.8 pounds per day ("lb/day"), exceeding the District's daily CEQA significance threshold for PM10 of 82 lb/day.[53] Thus, fugitive dust PM10 emissions associated with road paving would result in a significant impact on air quality that must be properly evaluated and mitigated. In addition, entrained road dust emissions result from movement of trucks and construction worker commuter vehicles to and from the construction site.

The use of asphalt for road paving also results in considerable emissions of reactive organic gases ("ROGs") at the asphalt plant and at the construction site. Emissions from asphalt paving occur when asphalt mixtures are applied and as they cure. VOC emissions from asphalt paving have been estimated at 9.2 pounds per barrel ("lb/barrel") applied for emulsified asphalt, 88 lb/barrel applied for cutback asphalt, and 0.9 lb/barrel applied for hot-mix asphalt. It takes between 7 and 17 tons of asphalt to pave a mile of road. Assuming the use of hot-mix asphalt, the most common type of asphalt, a typical density for hot-mix asphalt of 9 pounds per gallon ("lb/gallon"), and the CARB-recommended default factor of 10 tons of asphalt per mile, paving of one mile of road results in VOC emissions of about 48 pounds of VOC. The use of even small amounts of cutback would considerably increase this emissions estimate. For example, using just one percent of cutback would more than double these emissions. These estimates also do not include VOC emissions at the asphalt plant. Further, large amounts of particulate matter are emitted during asphalt preparation at the asphalt plant.

Finally, construction equipment and vehicles used to transport asphalt from the asphalt plant, road base from aggregate processing plants, and workers to the construction site would generate exhaust emissions from diesel and gasoline combustion. In particular, emissions of the ozone precursors nitrogen oxides ("NOx") and volatile organic compounds ("VOCs") have the potential to exceed the MDAQMD's daily CEQA significance thresholds, and contribute to the MDPA's state and federal ozone non-attainment status. Emissions from construction and

[53] See Pless Comment II.B.6.

maintenance of paved roads should be estimated in an EIR and adequately mitigated.

7. Road Paving Emits Hazardous Air Pollutants and Will Likely Have a Significant Effect on the Environment

Asphalt is a complex mixture which encompasses emissions of a broad spectrum of organic contaminants including several VOCs and semi-volatile organic compounds such as aromatics, aliphatics, alicyclics, polynuclear aromatic hydrocarbons. Many of these compounds are also hazardous air pollutants ("HAPs"). The EPA estimates that VOCs emitted from road paving operations contain 12% xylene, 6.4% toluene, and 2.3 ethylbenzene. Thus, adoption of Rule 1406 would increase the emissions inventory of HAPs in the District.

8. Paving Roads Increases Urban Heat Island Effect Resulting in a Significant Effect on the Environment

The proposed Rule would indirectly increase ozone by replacing unpaved roads with blacktop. This would increase local ambient temperatures and, hence, local formation of ozone. Black surfaces absorb about 85% to 95% of the sunlight that falls on them, becoming one of the hottest surfaces in urban areas. The hot surfaces of pavement and similarly dark roofs quickly warm the air over urban areas, leading to the creation of summer urban "heat islands." On a clear summer afternoon, the air temperature in urban areas can be 2°F to 9°F hotter than the surrounding rural areas. The elevated temperatures increase cooling energy demand, accelerate the rate of smog production, and increase evaporative losses of organic compounds from gasoline tanks of vehicles parked over the hot surfaces. Road paving in the District's towns and cities would contribute to a local heat island effect, increasing local ambient temperatures and exacerbating existing ozone exceedances in the District.

9. The Rule Will Have a Significant Effect on the Environment Because the Definition of "Paving" for Purposes of Creating ERCs is Vague, and The Rule Does Not Contain Parameters for the Types of Roads that Can Be Paved in Exchange for ERCs

The Rule does not adequately define the term "paving" for purposes of creating ERCs. What is considered a "paved road" can vary considerably from a

light chip seal coat to four or more inches of bituminous hot-mix asphalt. Depending on the condition of the existing gravel or dirt road and the projected load of the road once paved, the existing sub-base may have to be considerably reinforced to provide adequate support. Reinforcing the existing sub-base would require increasing the depth of its base and widening of the existing road. The proposed Rule fails to identify any design and construction standards for road paving to address road conditions such as right-of-way width, traveled way width, depth of base, drainage considerations, types of surfacing, and so forth. These are issues that must be addressed in a CEQA document.

The proposed Rule does not contain any restrictions concerning which unpaved roads would be eligible for paving to create ERCs. Thus, a source would be free to pave any dirt or gravel road within the District, regardless of the daily vehicle travel, or whether the location of the road justifies paving. The proposed Rule must contain priority criteria that identify those unpaved roads that would result in the maximum beneficial impacts to air quality in the District.

10. Impacts on Biological Resources Are Significant

Paving dirt or gravel roads may result in a number of adverse direct and indirect impacts on biological resources. Direct impacts include mortality during road construction and increased frequency of roadkill from vehicle travel on paved roads. In contrast, many indirect effects of roads are cumulative and involve changes in community structure and ecological processes. These indirect impacts include spread of invasive plant species; air, water, soil, and noise pollution; soil disturbance and erosion; and increase of roadway pollutants and associated habitat loss, degradation and fragmentation; alteration of wildlife movement; and changes in wildlife populations.

11. Direct Mortality to Wildlife and Plant Species During Paving is Potentially Significant Impact

Road paving involves improvements to the existing sub-base of the road bed, including removal of gravel surface layers, widening of the road footprint, and heightening of the road base. Any vegetation along the unimproved road will be removed, as well as any species living in that vegetation or on the unimproved road shoulders. These activities will often result in the death of any sessile or slow-moving organisms in the path of the road.

A number of animal species live in or adjacent to road shoulder berms of unimproved roads in the District. These include the Western burrowing owl (*Athene cunicularia hypgugea*), a state and federal species of concern. Burrowing owls do not create their own burrows but prefer to adopt vacant tortoise, kit fox, ground squirrel, or other rodent dens or burrows, frequently found in unimproved road shoulders or adjacent vegetation. Burrowing owls are very susceptible to burrow disturbance, particularly during their breeding season from the beginning of February through end of August. Similarly, the desert tortoise (*Gopherus agassizii*), listed as threatened under the federal and state Endangered Species Acts, frequently constructs burrows along the elevated berms of unpaved roads because the topography mimics that formed along the banks of desert washes, a preferred site for burrow construction.[54] Many other species may be adversely affected during the construction phase, including the Mojave ground squirrel (*Spermophilus mohavensis*), listed as threatened under the California Endangered Species Act.

The proposed Rule implementation has the potential to impact these and other species because it contains no requirements that road paving contractors conduct burrowing owl, desert tortoise, or Mojave ground squirrel surveys prior to disturbing unpaved road shoulders. Nor does the proposed Rule contain any seasonal restrictions or mitigation measures to minimize impacts on burrowing owl, desert tortoise, or ground squirrel populations. Thus, it is likely that construction activities associated with paving roads under the Rule would adversely impact active owl burrows and result in direct mortality of individuals. This is a significant impact that must be avoided or mitigated to the extent feasible. At a minimum, pre-construction surveys should be required following accepted protocols, *e.g.*, the *Burrowing Owl Survey Protocol and Mitigation Guidelines* [55] and the *Field Survey Protocol for Desert Tortoise.*[56] During construction, mortality could be minimized if qualified biologists accompany heavy equipment operators. While not preferred, mitigation measures such as relocating impacted animals and securing suitable habitat elsewhere must be analyzed in a CEQA document. Adverse impacts on

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[54] Luckenbach R.A, Ecology and Management of the Desert Tortoise (*Gopherus agassizii*) in California. In: Bury R.B. (Ed.), North American Tortoises: Conservation and Ecology, Washington, D.C., U.S. Fish and Wildlife Service Wildlife Research Report 12, pp. 1-39.

[55] California Burrowing Owl Consortium, Burrowing Owl Survey Protocol and Mitigation Guidelines, 2001.

[56] U.S. Fish and Wildlife Service, Field Survey Protocol for Any Non-federal Action that May Occur Within the Range of the Desert Tortoise, January 1002.

these species can also be minimized by imposing seasonal restrictions to road paving with late fall and winter, *i.e.* outside of the breeding season for these species, being the best time for these activities. All of these issues require in-depth CEQA analyses.

12. Increased Wildlife Mortality on Paved Roads Is a Potentially Significant Impact

Animals are attracted to paved roads for a variety of reasons, often to their demise. Dark pavement absorbs radiant heat and releases it at night, creating a "heat island" around roads. This can attract heat-seeking species such as birds and reptiles to roads, increasing their mortality by vehicle collision. Paving an unpaved road can elevate the road to higher service levels and may divert traffic from nearby unpaved roads. Vehicles also travel faster on paved roads. The increased speed and volume of traffic on the newly paved roads will result in increased incidents of wildlife mortality. Increased speeds reduce drives' ability to see wildlife on roads or on shoulders, resulting in increased incidents of road kill. Unpaved roads, particularly when "unimproved," are typically less dangerous for wildlife.

Road kill is the greatest directly human-caused source of wildlife mortality throughout the U.S., with more than a million vertebrates killed every day. In the Mojave Desert, the slow-moving desert tortoise is particularly at risk for collisions with fast-moving vehicles. Vehicle collisions are also the leading cause of mortality in mountain lions (*Puma concolor*)[57] and burrowing owls.

CEQA analysis is necessary to analyzing whether District roads can be designed to minimize impacts by, for example, requiring specialized under-crossing to accommodate wildlife migrating across roads. Caltrans has established standard designs that allow for the passage of various species sizes. When properly installed, these designs decrease wildlife mortality.[58] Because the proposed Rule does not contain any design requirements for road paving, or any other mitigation, to minimize road kill, wildlife mortality poses an unusual circumstance that requires an EIR.

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[57] Dickson B.G., Jenness J.S., and Beier P., Influence of Vegetation, Topography, and Roads on Cougar Movement in Southern California, Journal of Wildlife Management, Vo. 69, No. 1, January 2005, pp. 264–276.

[58] Chuck Morton, Caltrans, Presentation at UC Davis, Road Ecology, Integrating Transportation and the Natural Environment, The Roads' Footprint, TTP 289A/B, April 12, 2007.

13. Increased Habitat Fragmentation and Alteration on Paved Roads Is a Potentially Significant Impact

Not all wildlife is attracted to roads. Some species are reluctant to cross the barrier presented by paved roads; other species are physically unable to cross road embankments. For these species, a road can effectively cut a population in half. A network of paved roads fragments the population further. The remaining small populations are then vulnerable to problems associated with rarity: genetic deterioration from inbreeding and random drift in gene frequencies, environmental catastrophes, fluctuations in habitat conditions, and demographic stochasticity (*i.e.* chance variation in age and sex ratios). Thus, paved roads contribute to what many conservation biologists consider the major threat to biological diversity: habitat fragmentation. Such fragmentation may be especially ominous in the face of rapid climate change. If organisms are prevented from migrating to track shifting climatic conditions, and cannot adapt quickly enough because of limited genetic variation, then extinction is inevitable.

In general, adding a paved road to the landscape automatically fragments the habitat. The road becomes a physical barrier to many of the natural processes, such as drainage and wildlife movement, that are present on the landscape. The paved road will create a break in the plant landscape that may separate populations of plants and animals and may affect reproductive success. Fragmentation may also allow predators to hunt and thrive along the new edge habitats.[59]

Paving unpaved roads increases habitat fragmentation for at least some species in the Mojave Desert. For example, studies have shown that dirt roads facilitate movement of mountain lions through their habitat, but traveling mountain lions avoid 2-lane paved roads.[60] Thus, paving roads could lead to further habitat fragmentation and associated increased population pressure for mountain lions. Embankments of paved roads are also typically steeper than those of unpaved roads, which for many species, including desert tortoises, increase the difficulty to crossing these roads and, as a result, may lead to habitat fragmentation and the

[59] Chuck Morton, Caltrans, Presentation at UC Davis, Road Ecology, Integrating Transportation and the Natural Environment, The Roads' Footprint, TTP 289A/B, April 12, 2007.

[60] Dickson B.G., Jenness J.S., and Beier P., Influence of Vegetation, Topography, and Roads on Cougar Movement in Southern California, Journal of Wildlife Management, Vo. 69, No. 1, January 2005, pp. 264–276.

above-discussed associated consequences. As mentioned before, roads can be designed with the addition of specialized undercrossing to accommodate wildlife crossings, which would minimize habitat fragmentation. The Rule omits any requirements for undercrossings to minimize habitat fragmentation pressure on desert wildlife populations.

In addition to habitat fragmentation, habitat along the roads would also be permanently altered. During construction, impacts on habitat from road paving include soil compaction, soil excavation, stripping and stockpiling of topsoil, drying out of topsoil, and vegetation removal. Long-term impacts from paving to the roadside environment would result in changes in the immediate microclimate due to changes in stormwater runoff patterns such as flooding or drainage effects, increased paved area, higher temperatures, and drier conditions along roads. Microclimates along paved roads have been observed to change between 30 and 120 feet from the road surface, in turn, effecting specialized habitats.

In this way, the presence of a paved road may cause wildlife to shift home ranges, alter their migration pattern, reproductive behavior, escape response, and physiological state. When roads act as barriers to movement, they also bar gene flow where individuals are reluctant to cross for breeding. For example, animals rely on hearing to avoid predators, obtain food, and communicate. Desert animals, in particular, require a very acute sense of hearing to survive. Noise pollution and vibration from roads, initially from construction equipment and later from increased and faster traffic, can degrade wildlife habitat and impair biodiversity. Most frequently, noise pollution leads wildlife to avoid roads, but it has also been shown to change reproductive behavior and other patterns of activity. Animals respond to noise pollution by altering activity patterns, and with an increase in heart rate and production of stress hormones. Exposure to chronic noise has been shown to lead to hearing loss in some species, thereby reducing their ability to avoid predators and obtain food.[61] Sometimes animals become habituated to increased noise levels, and apparently resume normal activity. But birds and other wildlife that communicate by auditory signals may be at a disadvantage near roads. In short, all of these potential significant impacts are unusual circumstances under CEQA and require full analysis prior to rule adoption.

[61] Noise Pollution Clearinghouse, Noise Effects on Wildlife, Fact Sheet.

14. Increased Spread of Invasive Plant Species Is a Potentially Significant Impact

Paving roads increases the spread of invasive non-native and opportunistic native plant species. Vehicles carry and distribute seeds on their tires and undercarriages. The establishment of invasive species along roads is promoted by changing habitat by altering conditions; stressing or removing native species during road improvement; and allowing easier movement by wild or human vectors.

The new edge habitats created by paving roads are often unsuitable for native species, but attractive to invasive, non-native species or opportunistic native species from where they can spread into open areas.[62] In general, plant productivity is greater along paved than dirt roads. A study analyzing roads with varying degrees of improvement in a desert ecosystem found that each foot of road improvement converted an area of natural habitat to roadside habitat, from which non-native weeds spread into adjacent natural ecosystems. Nonnative cheatgrass, for instance, was three times more abundant in verges beside paved roads than in those bordering four-wheel-drive tracks. Verges along improved roads were also wider—about 3 feet on each side of a four-wheel-drive track versus 23 feet on a paved road.[63]

Non-native or invasive species pose a significant threat to our nation's biological diversity, and are causing substantial economic burdens. Each year, approximately $137 billion nationwide is lost to the effects of invasive plants on agriculture, industry, recreation, and the environment. An estimated 4,600 acres of land are invaded daily by invasive plants. Invasive species impact nearly half the species currently listed as threatened or endangered under the federal Endangered Species Act.

Annual plant invaders already commonly occur in high amounts on berms along most paved roads in the Mojave Desert and severely threaten ecosystem integrity. Improved roads can act as conduits for the invasion of adjacent

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[62] Chuck Morton, Caltrans, Presentation at UC Davis, Road Ecology, Integrating Transportation and the Natural Environment, The Roads' Footprint, TTP 289A/B, April 12, 2007.

[63] Matthew L. Brooks and Bridget Lair, United States Geological Survey, Ecological Effects of Vehicular Routes in a Desert Ecosystem, March 2, 2005; http://www.dmg.gov/documents/Desert_Road_Ecology_report.pdf.

ecosystems.[64] Non-native invasive mustards including London Rocket (*Sisymbrium irio*), Sahara mustard (*Brassica tournefortii*), and Indian hedge mustard (*Sisymbrium orientale*) have in the past years been spreading at an alarming rate and are entirely covering many previously sparsely vegetated roadsides and desert areas. Native creosote bush is an abundant species that opportunistically exploits the increased moisture levels along roadsides. A study investigating productivity and diversity relationships in the Mojave Desert roadside vegetation found that the edge effect of a paved road increases productivity as reflected by standing crops, by approximately 17 times on the basis of the vegetated area alone and 6 times when the area of the bare road surface was included as part of the productive unit. An unpaved road showed only an increase of approximately 6 and 3 times in the respective categories. The increase in vigor has been shown to attract herbivorous insects, so it is conceivable that the herbivorous desert tortoise selects burrows in close proximity to high densities of food plants as well.[65] This complex relationship constitutes unusual circumstances and requires full CEQA analysis prior to Rule adoption.

15. Increased Roadside Pollution in Desert Habitat Is a Potentially Significant Impact

Paved roads typically require considerably increased roadside management compared to unpaved roads. This includes mowing and herbicide application to keep the shoulders of the road clear of vegetation. Chemicals used in the maintenance of roadways contaminate roadside ecosystems. While many state departments of transportation have begun to reduce the use of herbicides and other chemicals, the use of herbicides continues to damage roadside ecosystems. Those chemicals may also promote the invasion of weedy and exotic species, which are resistant to herbicides.

Another source of pollution is direct leaching of PAHs (polycyclic aromatic hydrocarbons) from the asphalt road itself. In the past, PAHs in roadside runoff were solely attributed to deposition from car exhaust fumes. However, research from Australia indicates that relatively high concentrations of PAHs can be

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[64] *Ibid.*

[65] Johnson H.B., Vasek F.C., and Yonkers T., Productivity, Diversity and Stability Relationships in Mojave Desert Roadside Vegetation, Bulletin of the Torrey Botanical Club, Vol. 102, No. 3, 1975, pp. 106-115.

introduced into soils through leaching from bitumen surfaces.[66] PAHs are known to have potential for adverse effects on a large number of animals, including invertebrates, birds, and mammals.

Increased vehicular travel on paved roads would increase the amount of NOx emissions from exhaust fumes, which has been positively correlated with increased levels of nitrogen in the soil. Experiments in the Mojave Desert suggest that increased soil nitrogen can promote the growth of non-native annual plants and reduce growth and diversity of native annual plants.[67]

16. Growth-inducing Impacts of Paving Roads Are Potentially Significant

Paving gravel or dirt roads in the District would likely have consequences beyond the direct impacts discussed above. Paving roads may also encourage land development by improving access to properties that are at present only accessible via unpaved roads. Consequently, newly paved roads would facilitate the already rampant urban sprawl in southwestern San Bernardino County and associated adverse impacts on the environment. The District's staff report for the Rule does not address the growth-inducing impacts of paving roads within the District. This is an impact that must be investigated and disclosed in a CEQA document.

As shown above, because this rulemaking is characterized by an abundance of unusual circumstances, any one of which presents a very real possibility of environmental harm, and because implementation of the Rule will involve significant construction activities, the Rule as a whole must fall outside the Class 8 categorical exemption. That exemption, as a matter of law, is not available for this rulemaking. Thus, the District must comply with CEQA for the promulgation of Rule 1406.[68]

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[66] Sadler R., Delamont C., White P., and Connell D., Contaminants in Soil as a Result of Leaching from Asphalt, Toxicological and Environmental Chemistry, Vol. 68, 1997, pp. 71-81; in: Criley M. and Postelli K., From Gravel to Pavement — The Impacts of Upgrading; The Road-RIPorter, Vol. 5, No. 4, July/August 2000.

[67] Brooks M.L. and Lair B., Ecological Effects of Vehicular Routes in a Desert Ecosystem, United States Geological Service, March 2, 2005.

[68] Pub. Res Code §§ 21000(g), 21001(f)&(g), 21092, 21106; 14 Cal.Code Regs. § 15168(a)(3); *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 195.

III. The Proposed Rule Is Internally Inconsistent and its Terms are Frequently Ill-defined

The proposed Rule appears to be hastily put together, and, as result, poorly worded and confusing. It also contains inaccurate or ill-defined definitions, and incorrect internal cross-references, and fails to specify units for factors in equations. To be enforceable, the proposed Rule must be revised to address the following problems:

- Subsection (C)(3)(a)(iv) sets out a procedure to calculate daily traffic on a particular roadway segment, and specifies that "daily traffic for each Roadway Segment shall be calculated by multiplying the average hourly traffic for that Roadway Segment by the Roadway Segment's length in miles." However, this calculation fails to take into account the fact that the average hourly traffic occurs over 24 hours on any given day, and, therefore, if calculators followed the actual language of the proposed Rule, they would underestimate daily traffic by a factor of 24. By extension, the calculation of annual VMT suffers from the same problem. Therefore, in order to properly calculate daily emissions, the Rule must be revised to account for 24 hours per day, multiplied by the average hourly vehicle miles traveled and a given roadway segment's length in miles. These errors must be rectified.

- Subsections (F)(1) and (F)(3) contain equations "to estimate the quantity of PM10 emissions" from paved and unpaved road segments. But this definition is incorrect; these sections address the calculation of "PM10 emission factors," not the "quantities of PM10 emissions" from paved and unpaved roads. The latter is addressed in subsection (C)(3)(iii). Similarly, subsections (C)(3)(i) and (C)(3)(ii) incorrectly refer to PM10 emission factors as "quantity" or "emissions." These errors must be rectified.

- Subsection (C)(2)(a)(i) requires that traffic counts measure vehicular traffic over a 48-hour period, which may consist of two non-consecutive 24-hour periods. The subsection continues, "[f]or averaging purposes, vehicular traffic shall be considered zero for each hour not monitored continuously during any given 24-hour period." The reference to "each hour not monitored continuously" directly contradicts the requirement of a 24-hour period monitoring period. Presumably, the statement refers to

the "hours not monitored between two non-consecutive 24-hour periods" or the "hours not monitored continuously during any given 48-hour period." The District must clarify this discrepancy.

- Subsection (B)(4) refers to the quantification protocol set forth in Subsection (D)(1). Subsection (D)(1) discusses recordkeeping requirements, not the quantification protocol. This error must be rectified.

- Subsection (C)(2)(a) refers to "VMT information required by subsection (C)(1)(v)." This subsection does not exist. Presumably, subsection (C)(2)(a) refers to subsection (C)(1)(b)(v), which requires the submission of calculations that quantify VMT for each roadway segment. This must be clarified.

- Subsection (C)(3)(a), refers to "[e]missions from unpaved and paved roads required by subsection (C)(1)(v)." This subsection also does not exist. The correct part is subsection (C)(1)(b)(vi), which requires the submissions from each roadway segment before and after paving. This must be rectified.

- Proposed Rule 1406 specifies that emissions for unpaved roads be estimated according to Equation 1, which is derived from the EPA's Compilation of Air Pollution Emission Factors ("AP-42"), Section 13.2.2, as demonstrated in Rule 1406 Equation 2. (Rule 1406, Sec. F(1) and F(2).) The Rule fails to provide units for the default values for surface material silt content s for gravel and non-gravel roads (percent) and for the empirical particle size multiplier k for PM10 (pounds per vehicle mile traveled). This must be rectified.

IV. Conclusion

For the reasons outlined above, the District may not finalize Rule 1406 until it has adopted an EPA-approved PM10 nonattainment or maintenance plan for the nonattainment area in which the new ERCs will be created and used. In addition, the District acknowledges that its rulemaking proceeding is a "project," which therefore activates CEQA obligations. The "significant effect" exception bars the District from finding that its action is categorically exempt from CEQA analyses.

Based on the evidence provided, the rulemaking is not exempt, and CEQA therefore requires the District to prepare an environmental document.

Sincerely,

Gloria D. Smith

GDS:bh
Attachments

ATTACHMENT

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Comments

on

Mojave Desert Air Quality Management District Proposed Draft Rule 1406: Emission Reduction Credits for Paving Unpaved Roads

Prepared for

Gloria Smith
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Prepared by

Petra Pless, D.Env.
440 Nova Albion Way
San Rafael, CA 94903

June 1, 2007

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COMMENTS

The Mojave Desert Air Quality Management District ("MDAQMD" or "District") is proposing to adopt Rule 1406[1] "Emission Reduction Credits for Paving Unpaved Roads." Proposed Rule 1406 establishes procedures for calculating Emission Reduction Credits ("ERCs") for reductions of entrained fugitive road dust PM10[2] emissions through voluntary paving of unpaved roads within the District. These ERCs would be used to offset emissions from new or modified sources subject to New Source Review ("NSR") requirements under the Clean Air Act ("CAA") or for projects subject to review under the California Environmental Quality Act ("CEQA").

The District stated that it is proposing to adopt Rule 1406 in response to a request by the U.S. Environmental Protection Agency ("U.S. EPA") Region IX and historical federal approval problems with "non-traditional" offset sources such as unpaved roads. The District has based draft Rule 1406 on a similar rule being promulgated by Maricopa County, Arizona (Rule 242 – Emission Offsets Generated by the Voluntary Paving of Unpaved Roads).[3] The underlying motivation for the District to develop proposed Rule 1406 was the need of the proposed Victorville II power plant project for federally enforceable offsets under the NSR program for the proposed plant's operational emissions of PM10. The Applicant for the proposed Victorville II power plant had been working closely with the District to develop proposed Rule 1406.[4]

As discussed in the following comments, proposed Rule 1406 is flawed, inconsistent with the State Implementation Plan ("SIP"), and violates the NSR provisions under the CAA and requires CEQA review.

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[1] Mojave Desert Air Quality Management District, Emission Reduction Credits for Paving Unpaved Roads, http://www.mdaqmd.ca.gov/rules_plans/documents/Draft1406.pdf.

[2] Particulate matter with an aerodynamic diameter equal to or less than 10 micrometers.

[3] Mojave Desert Air Quality Management District, Draft New Rule 1406 – Emission Reduction Credits or Paving Unpaved Roads, Request for Review and Comments, April 26, 2007.

[4] Inland Energy, Inc., Application for Certification, Victorville 2 Hybrid Power Project, Volume III Data Adequacy Supplement, 6.3 Technical Area: Air Quality, April 2007, p. 6.3-94.

I.C.1 ERCs Are Not Surplus Because Proposed Rule 1406 Fails to Account for Local Road Paving Initiatives or Road Paving by Developers

Proposed Rule 1406 defines "Surplus" as the amount of emission reductions that are not required by federal, state, or local law, or the CAA; include, required, or relied upon in the existing federally approved SIP; included in an agricultural best management plan; used by any source to meet any other regulatory requirement; required by any other legal settlement or consent decree; included in any SIP-related requirements; or subject to be included in District Rules 403.1 and 403.2, or contingency measures as contained in the SIP-approved Plan or in the latest locally-adopted rules or PM Plan.[11]

This definition of "Surplus" fails to account for road paving in the District that would occur due to local initiatives such as street improvement programs initiated by cities or counties. For example, San Bernardino County collects a half-cent sales tax for transportation improvements under Measure I since 1989. Measure I funds include paving previously unpaved roads in the Mountain Desert Region of San Bernardino County.[12] Similarly, the City of Hesperia implements a road pavement program. Since 1999, the City of Hesperia's Pavement Rehabilitation Program has committed approximately $2 million per year toward the improvement of residential roadways. For fiscal year 2006/2007, the budget was considerably expanded to $31 million for improving 30.5 miles of road.[13] Many roads targeted for improvement under this program are currently unpaved or graveled. These initiatives, and others, would be implemented regardless of potential paving under proposed Rule 1406.

Similarly, road paving to new destinations such as residential developments or malls is typically paid for by developers at no cost to counties or cities. Developers looking for a suitable location for their projects in the Mojave Desert would likely select a site with paved road access over a site with an unpaved or graveled road to reduce expenses. Thus, paving unpaved roads under Rule 1406 could potentially pave roads that would otherwise be paved by developers or other entities.

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[11] Subsection (B)(7)(a) through (B)(7)(g).

[12] San Bernardino Associated Governments, Measure I: Local Money for Local Projects; http://www.sanbag.ca.gov/news/measure_i.pdf, accessed May 22, 2007.

[13] City of Hesperia, FY 2006/2007 - Street Improvements; http://www.cityofhesperia.us//images/Site005/documents/Streets/FY%202006-2007%20Public%20List.pdf; accessed May 22, 2007.

Consequently, the amount of "Surplus" emission reductions that would be achieved by paving under proposed Rule 1406 must be defined to exclude unpaved roads targeted for improvement under City or County improvement programs as well as roads that would be paved by a developer or other entity in the reasonably foreseeable future.

I.C.2 ERCs Are Not Surplus Because Proposed Rule 1406 Fails to Demonstrate that Unpaved Roads Are Not Subject to District Rules 403.1 and 403.2

One of the definitions in Proposed Rule 1406 for "Surplus", Subsection (B)(7)(g), is the amount of emission reductions that are not "[s]ubject to be included in ... the latest locally-adopted rules or PM10 Plan: District Rule 403.1 District 403.2, or contingency measures." Proposed Rule 1406 fails to specify how the District would determine whether proposed emission reduction credits are not subject to District Rules 403.1 or 403.2 and are, thus, "Surplus."

District Rule 403.1 specifies fugitive dust control for the Searles Valley Planning Area and District Rule 403.2 specifies fugitive dust control for the MDPA. Both rules contain requirements to reduce emissions stabilizing unpaved roads within these nonattainment areas. Methods to stabilize unpaved roads include paving, chemically treating, watering, or compacting. District Rule 403.2, Subsection (C)(4)(a), requires the cities, towns, and the county of San Bernardino to collectively stabilize sufficient publicly maintained heavily traveled unpaved roads to reduce fugitive dust entrainment and wind erosion by at least 1,541 tons per year of PM10 emissions within the MDPA. It appears that the District does not maintain an inventory which roads were stabilized under District Rule 403.2.

In response to California Energy Commission staff data adequacy comments on the Application for Certification ("AFC") for the proposed Victorville II power plant project, the District provided a list of potential unpaved roads within the MDAB that could be candidates for paving.[14] This list is based on data taken from the San Bernardino County Traffic average daily emissions ("ADT") printout dated November 17, 1994, and the San Bernardino County Traffic Maintained Road Book dated December 6, 1994. District Rule 403.2 was adopted on July 22, 1996 and compliance with the required emissions reductions of 1,541 tons per year of PM10 was expected by December 31, 1997 as specified in District Rule 403.2 Subsection (I)(d). Based on the list of potential candidate roads which the District supplied to the Applicant for Victorville II, presumably the most up-to-date list available to the District, it appears that the District does not have adequate documentation to

[14] Response to CEC Staff Data Adequacy Comments, Technical Area: Air Quality, April 2007, p. 6.3-94 and Attachment.

demonstrate which roads have been stabilized to achieve compliance with Rule 403.2 since the latest available data pre-date the compliance date of December 31, 1997. Thus, proposed Rule 1406 could potentially address unpaved non-gravel road segments that were subject to Rule 403.2 and has already been stabilized by chemical treating, watering, or compacting. The emission reductions due to paving such stabilized unpaved road surfaces would be considerably lower than those from an untreated unpaved road. Proposed Rule 1406 does not require that the application for ERCs demonstrate that unpaved road segments are not stabilized for purposes of achieving compliance with District Rule 403.2 and, thus, could lead to considerable overestimates of emission reduction credits.

I.C.3 ERCs Are Not Real Because Proposed Rule 1406 Fails to Account for PM10 Emissions from Road Construction and Maintenance

Proposed Rule 1406, Subsection (C)(3)(a)(iv) specifies that the PM10 emissions reduction associated with paving an unpaved roadway segment be calculated as the difference, in tons per year ("ton/year"), between the estimated entrained road dust emissions from a road segment before and after paving. This methodology fails to account for fugitive dust and combustion PM10 emissions resulting from paving of the road and from maintenance of the paved roadway including periodic repaving, patching, and striping. These emissions can be considerable, as demonstrated in Comment II.B.6 below, and must therefore be included in the calculation to determine actually occurring emissions reductions. Therefore, the proposed ERCs from road paving are not "Real" because a considerable portion of the calculated emission reductions would be offset by PM10 emissions occurring in the year of construction of the paved road and in the years when maintenance activities such as repaving are carried out.

I.C.4 ERCs Are Not Real Because Proposed Rule 1406 Traffic Count Procedures Are Not Representative and May Lead to Overestimates of Actual Emissions Reductions

Proposed Rule 1406, Subsection (C)(3)(a)(iii) sets out a methodology to calculate ERCs from PM10 emission factors in pounds per vehicle mile traveled ("lb/VMT") on unpaved and paved roads multiplied by annual vehicle miles traveled ("VMT"). Subsection (C)(2)(a) sets out the procedures to determine annual average VMT for road segments based on actual traffic counts requiring that traffic counts be conducted over a 48-hour period, which may consist of two non-consecutive 24-hour periods on non-holiday weekdays." Proposed Rule 1406 contains no requirements which time of year these traffic counts are to be conducted. Two non-consecutive 24-hour traffic counts conducted at a random time of year and restricted to non-holiday weekdays may not be representative for the

unpaved roads in the District because of temporal and geographic variations of vehicle traffic.

Unpaved roads sustain a variety of vehicular traffic and traffic counts will vary considerably depending on the season, day-of-week, or geographical location. For example, most vehicle travel for agricultural purposes will occur during field preparation, planting, and harvesting. In the time periods between these activities, few agricultural vehicles will travel the road to and from the fields. Similarly, vehicle traffic for recreational purposes such as travel to and from off-roading or camping areas is likely higher during school vacations, long weekends and during periods of the year when temperatures in the desert are agreeable such as spring or fall. Thus, traffic counts on roads leading to agricultural, off-roading or camping areas conducted during off-season periods, would considerably overestimate average annual average vehicle miles traveled ("VMT"). Consequently, actual or "Real" emission reductions would be considerably lower than calculated ERCs. Vehicle traffic for recreational purposes also exhibits distinct weekly traffic patterns with travelers often arriving late Thursday night and leaving Sunday. Proposed Rule 1406 restricts traffic counts to non-holiday weekdays, which is not representative. Depending which weekdays the two non-consecutive 24-hour traffic counts are conducted, actual annual average VMT may be considerably over- or underestimated. Accordingly, calculated ERCs would be over-or underestimated compared to actual "Real" emissions. Other types of traffic may experience similar variations in seasonal or weekly traffic patterns.

To address variability in traffic patterns, proposed Rule 1406, Subsection (C)(3)(a)(v) requires that the" average daily traffic count" be adjusted by "daily and monthly seasonal adjustment factors for paved roads to calculate the annual vehicle miles traveled." These seasonal adjustment factors are to be obtained from the most recent Highway Performance Monitoring System ("HPMS") data provided by the California Department of Transportation ("Caltrans"). This subsection is poorly worded and the adjustment is insufficient.

To calculate annual vehicle miles traveled, HPMS adjustment factors must be multiplied by the "average daily vehicle miles traveled," not the "average daily traffic count." Further, the "daily and monthly adjustment factors" are typically and more accurately referred to as "seasonal and weekday adjustment factors."

Short duration volume counts usually require a number of adjustments in order to reduce the effects of temporal bias and convert a daily traffic volume "raw" count into an estimate of annul average daily travel or annual average vehicle miles traveled. The specific set of adjustments needed is a function of the equipment used to collect the count and the duration of the count itself. In addition to seasonal and

day-of-the week factors, these include the applicable axle-correction factor for the location and the applicable growth factor to project future annual average vehicle miles traveled. Proposed Rule 1406 fails to specify the procedures and type of equipment for the proposed traffic counts. Because future traffic volumes on the newly paved road will depend on population growth in the region, possibly resulting in decreasing ERCs over time, annual average VMT must be adjusted by the region's applicable growth factor.[15] Proposed Rule 1406 does not require that adjust for growth and therefore likely overestimates the future amount of actual "Real" emission reductions, and, consequently, overestimates the amount of ERCs generated by paving unpaved roads.

I.C.5 ERCs Are Not Real Because Proposed Rule 1406 Default Values for Average Vehicle Weight on Paved Roads May Result in Overestimates of Actual Emissions Reductions

Traffic also varies from road to road. Not only do roads carry different volumes of traffic, but the characteristics of vehicles using those roads are variable. One road with 5,000 vehicles per day may have hardly any truck traffic, while another road with the same volume of vehicles may have 1,000 trucks per day mixed in with 4,000 passenger cars. Similarly, one road section may be traversed by 1,000 heavily loaded trucks per day while a nearby road is used by 1,000 partially loaded trucks. The number of trucks and their average weight factor into the calculation of fugitive dust emissions from paved roads, with heavier trucks being responsible for higher emissions. Proposed Rule 1406 does not require any monitoring of vehicle classes or determination of the average weight of vehicles traveling the selected unpaved roads instead using a vehicle weight default factor of 3.74 tons. For many roads in the District with higher truck traffic volumes, *e.g.*, quarries, agricultural areas, etc. this default value may considerably underestimate actual average vehicle weight on the newly paved street and, consequently, underestimate emissions from the newly paved roads. In turn, when subtracting the underestimated emissions from paved roads from the estimated emissions from unpaved roads, this results in an overestimate of fugitive dust emissions reductions from road paving available for ERCs.

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[15] U.S. Department of Transportation, Federal Highway Administration, Office of Highway Policy Information, Traffic Monitoring Guide, May 1, 2001; http://www.fhwa.dot.gov/ohim/tmguide/index.htm.

I.C.6 ERCs Are Not Real Because Proposed Rule 1406 Determination of Road Surface Silt Loading and Silt Content May Result in Overestimates of Available Emissions Reductions

Proposed Rule 1406 specifies that emissions from unpaved and paved roads be estimated based on equations derived from the U.S. EPA's *Compilation of Air Pollutant Emission Factors* ("AP-42"), Sections 13.2.2 and 13.2.1, respectively.

The calculation of emissions from unpaved roads requires road-specific surface material silt content in percent. Proposed Rule 1406, Subsection (E) specifies U.S. EPA test methods to determine actual silt content on the road surface. However the proposed rule also allows for using default values of 11.0% on non-gravel roads and 6.2% on gravel roads instead of experimentally determining road-specific surface material silt content. (The District's staff report for proposed Rule 1406 does not address how these default values were determined and whether they are reasonably conservative.) These default values may not be representative for the specific unpaved road selected for purposes of ERC paving. Surface silt content on public unpaved roads has been determined to range from 1.8 to 35%.[16] The U.S. EPA notes that "the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. *Use of this data is strongly discouraged when it is feasible to obtain locally gathered data.* Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions."[17] For example, many unpaved roads exhibit corrugation of the surface, so-called washboarding. This condition results from excessively dry conditions on the driving surface. Corrugations develop when surface materials fail to cohere and fines are lost from the surface. Thus, silt content on such roads may be considerably lower than the 11% assumed by the District. Estimated PM10 emissions from unpaved roads are proportional to silt content. Thus, use of the District's default factor may considerably over- or underestimate the amount of actual "Real" emission reductions available for ERCs. For the Blythe Energy Project II, the MDAQMD experimentally determined the surface soil silt content for three roads varying from 5 percent to 12 percent.[18] These results illustrate the variability of silt content and the need for actual measurements rather than default factors. Under proposed Rule 1406, the District leaves the option of using a

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[16] U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, Section 13.2.2 Unpaved Roads, Table 13.2.2-2, p. 13.2.2-5.

[17] U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, Section 13.2.2 Unpaved Roads, p. 13.2.2-1; *emphasis* added.

[18] Alan De Salvio, Mojave Desert Air Quality Management District, Letter to Gerardo Rios, U.S. Environmental Protection Agency Region IX, Re: Blythe Energy Project II and Requested USEPA Approval, District Company No.: 1437, District Facility No.: 2472, January 5, 2006.

default factor rather than measuring actual silt content to the applicant for ERCs. This is problematic because familiarity with prior analyses for silt content in the project area may influence an applicant to choose one option over the other if that option would result in the determination of higher unpaved road emissions, and, thus more ERCs.

Similarly, the calculation of emissions from paved roads requires a road surface silt loading value in grams per square meter ("g/m^2"). Proposed Rule 1406, Subsection (E) fails to specify a test method to determine actual silt loading on the road and instead only proposes a default silt loading factor of 0.23 g/m^2. (Again, the District's staff report for proposed Rule 1406 does not contain a discussion of silt loading and whether the selected default value is conservative.) The same U.S. EPA test methods used to determine silt content in percent can also be used to determine silt loading in g/m^2. Again, the U.S. EPA emphasizes that "the collection of site-specific silt loading (sL) data for public paved road emission inventories are strongly recommended. ... In the event that site-specific values cannot be obtained, an appropriate value for a paved public road may be selected from the values in Table 13.2.1-3." Silt loading on paved public roads decrease considerably with traffic volume. The default silt loading provided in AP-42 for unpaved roads with average daily trips of less than 500 vehicle trips per day is 0.6 g/m^2; default silt loading for paved public roads with average daily trips of 500 to 5,000 is 0.2 g/m^2. Most unpaved roads in the District likely experience considerably less than 500 vehicles per day. The default silt loading of 0.23 g/m^2 chosen by the District would therefore underestimate typical emissions from paved roads and, consequently, overestimate actual "Real" available emission reductions for ERCs.

I.C.7 **Proposed Rule 1406 Is Internally Inconsistent and Ill-defined**

Proposed Rule 1406 appears to be hastily put together and poorly worded. It contains a number of inaccurate or ill-defined definitions and incorrect internal cross-references, and fails to specify units for factors in equations. To be enforceable, the proposed rule should be revised to address the following problems:

- Proposed Rule 1406, Subsection (C)(3)(a)(iv) sets out a procedure to calculate daily traffic on a particular roadway segment. This subsection specifies that "*daily traffic* for each Roadway Segment shall be calculated by multiplying the *average hourly* traffic for that Roadway Segment by the Roadway Segment's length in miles."[19] This calculation procedure fails to take into account that the average hourly traffic occurs for 24 hours on any given day and, therefore, if calculations followed the language of the

[19] *Emphasis* added.

proposed rule, would underestimate daily traffic by a factor of 24. By extension, the calculation of annual VMT suffers from the same problem. The language in proposed Rule 1406 to calculate daily emissions must be revised to account for 24 hours per day multiplied by the average hourly vehicle miles traveled and the roadway segment's length in miles.

- Proposed Rule 1406, Subsections (F)(1) and (F)(3), present equations to estimate the "quantity of PM10 emissions" from paved and unpaved road segments. This definition is incorrect; these sections address the calculation of "PM10 emission factors," not the "quantities of PM10 emissions" from paved and unpaved roads. The latter is addressed in Subsection (C)(3)(iii). Similarly, Subsections (C)(3)(i) (C)(3)(ii) incorrectly refer to PM10 emission factors as "quantity" or "emissions."

- Subsection (C)(2)(a)(i) requires that traffic counts measure vehicular traffic over a 48-hour period, which may consist of two non-consecutive 24-hour periods. The subsection clarifies that "[f]or averaging purposes, vehicular traffic shall be considered zero for each hour not monitored continuously during any given 24-hour period." The reference to "each hour not monitored continuously" directly contradicts the requirement of a 24-hour period monitoring period. Presumably, the statement refers to the "hours not monitored *between* two non-consecutive 24-hour periods" or the "hours not monitored continuously during any given *48-hour* period."

- Proposed Rule 1406, Subsection (B)(4), refers to the quantification protocol set forth in Subsection (D)(1). Subsection (D)(1) discusses recordkeeping requirements, not the quantification protocol.

- Proposed Rule 1406, Subsection (C)(2)(a) refers to "VMT information required by subsection (C)(1)(v)." This subsection does not exist. Presumably, Subsection (C)(2)(a) refers to Subsection (C)(1)(b)(v), which requires the submission of calculations that quantify VMT for each roadway segment.

- Subsection (C)(3)(a), refers to "[e]missions from unpaved and paved roads required by subsection (C)(1)(v)." This subsection does not exist. The correct part of proposed Rule 1406 is Subsection (C)(1)(b)(vi), which requires the submissions from each roadway segment before and after paving.

- Proposed Rule 1406, Sections F(1) specifies that emissions for unpaved roads be estimated according to Equation 1, which is based on AP-42,

Section 13.2.2, as demonstrated in Rule 1406 Section (F)(2) Equation 2. The rule fails to provide units for the default values for surface material silt content *s* for gravel and non-gravel roads (percent) and for the empirical particle size multiplier *k* for PM10 (pounds per vehicle mile traveled).

II. Proposed Rule 1406 Requires Review under the California Environmental Quality Act

The District declines to conduct environmental review under CEQA, claiming that adoption of proposed Rule 1406 is exempt from CEQA review because it would not create any adverse impacts on the environment. The District asserts that "there is not [sic] potential that adoption of the rule might cause the release of additional air contaminants or create any adverse environmental impacts" and intends to adopt the rule under a categorical Class 8 exemption pursuant to 14 Cal. Code Reg. Section 15308.[20] The District provides no analysis to demonstrate that there are in fact no potential adverse impacts on the environment.

The following comments demonstrate that adoption of Rule 1406 would, contrary to the District's assertion, indeed result in significant adverse impacts on the environment, specifically with respect to air quality, public health, and biological resources. Therefore, preparation of an Environmental Impact Report ("EIR") is required to examine the potential environmental impacts of the proposed rule and mitigate any impacts to the extent feasible.

II.A Proposed Rule 1406 Fails to Adequately Describe the Project

The Staff Report for Proposed Rule 1406 recognizes that proposed Rule 1406 constitutes a "Project" under CEQA. For purposes of CEQA, a Project is defined as the whole of an action which has the potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.[21] Neither the Staff Report nor proposed Rule 1406 adequately define the Project. Specifically, the rule does not adequately define the term "paving" for purposes of creating ERCs. What is considered a "paved road" can vary considerably from a light chip seal coat to four or more inches of bituminous hot-mix asphalt. Depending on the condition of the existing gravel or dirt road and the projected load of the road once paved, the existing sub-base may have to be considerably reinforced to provide adequate support. Reinforcing the existing

[20] Mojave Desert Air Quality Management District, Draft Staff Report, Proposed Adoption of Rule 1406 – Emission Reduction Credits for Paving Unpaved Roads, for adoption on June 25, 2007, p. 6.

[21] CEQA Guidelines Section 15378(a); Pub Res. Code Section 21065.

sub-base would require increasing the depth of its base and widening of the existing road. Proposed Rule 1406 fails to identify any design and construction standards for road paving to address road conditions such as right-of-way width, traveled way width, depth of base, drainage considerations, types of surfacing, and so forth. Impacts associated with paving unpaved roads depend on the amount of construction and the road characteristics after paving. Without an adequate Project description defining the design and construction standards for paved roads, impacts on the environment can not be assessed.

Proposed Rule 1406 also does not contain any restrictions which unpaved roads would be eligible for paving to create ERCs. Thus, the Applicant would be free to pave any dirt or gravel road within the District, regardless of whether the average daily vehicle travel on and the location of the road justifies paving. The proposed rule should contain prioritization criteria to identify those unpaved roads that would result in the maximum beneficial impacts to air quality in the District.

II.B Proposed Rule 1406 Would Result in Adverse Impacts on Air Quality

Proposed Rule 1406 would permit applicants to create ERCs for new or modified sources of PM10 emissions by voluntarily electing to reduce fugitive dust PM10 emissions in the District through select paving of unpaved roads. Under proposed Rule 1406, these ERCs would be acceptable for offsetting PM10 emissions anywhere in the District, regardless of the location of the source or the type of PM10 emissions. This would allow applicants subject to NSR, particularly power plants or other industrial facilities, as well as applicants subject to CEQA mitigation requirements to offset non-fugitive dust PM10 emissions with fugitive dust PM10 ERCs. Non-fugitive dust PM10 is qualitatively different from fugitive road dust particulate matter. For example, particulates emitted from internal combustion engines are predominantly fine particles with a diameter of 2.5 micrometer or less ("PM2.5"), whereas fugitive dust emissions from paved and unpaved roads tend to be predominantly coarse particles, with a very small fraction of PM2.5. The dissimilar size distribution and chemical composition of combustion and fugitive dust particulate matter result in drastically different atmospheric transport behavior and distinctive health impacts.

The following comments demonstrate that the use of ERCs created under Rule 1406 would result in significant adverse impacts on air quality and public health.

II.B.1 Proposed Rule 1406 Would Result in Increased PM2.5 Emissions in the District

Proposed Rule 1406 proposes to offset PM10 emissions at a 1:1 ratio regardless of the source of emissions. This offset ratio is not acceptable for offsetting non-fugitive dust particulate matter because of the dissimilar particle size distribution in fugitive dust from unpaved roads and emissions from stationary sources, particularly from combustion sources.

The U.S. EPA has adopted default values for the PM2.5 fraction of PM10 of 10% on unpaved roads for the fugitive dust sections of AP-42.[22,23] Studies suggest that a size fraction of PM2.5 of PM10 as low as 5% may be appropriate for very dusty sources.[24] In contrast, combustion of diesel, gasoline, or natural gas in stationary internal combustion engines generates particulate matter emissions ranging from about 98, 99, and close to 100% PM2.5 of PM10, respectively.[25] In case of a natural gas-fired power plant, PM10 ERCs generated under Rule 1406 would replace 0.90 to 0.95 tons per ton of ERC of coarse particulate matter emissions (diameter between 2.5 and 10 micrometers) with PM2.5 emissions. Thus, the District would effectively trade one air pollution problem for another.

An acceptable offset ratio for emissions from a natural-gas fired plant based on particle size would be at least 1:10[26] (and possibly up to 1:20[27]) to account for the smaller size fraction of PM2.5 in fugitive dust from roads compared to combustion emissions. Offset ratios based on the PM2.5 fraction in PM10 emissions for other source categories can be determined analogously using the U.S. EPA's speciation profiles.

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[22] U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, Section 13.2.2, Unpaved Roads, November 2006.

[23] Western Governors' Association, Western Regional Air Partnership (WRAP), Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors, MRI Project No. 110397, February 1, 2006, finalized November 1, 2006; http://www.epa.gov/ttn/chief/ap42/ch13/bgdocs/b13s02.pdf.

[24] Western Governor's Association, Western Regional Air Partnership (WRAP), Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, MRI Project No. 110397, October 12, 2005.

[25] U.S. Environmental Protection Agency, SPECIATE 4.0, January 18, 2007.

[26] 1.0/0.10 = 10

[27] 1.0/0.05 = 20

II.B.2 Cumulative PM2.5 Emissions Increases May Result in Violations of California Annual PM2.5 Ambient Air Quality Standard

The MDPA is currently designated as unclassifiable/attainment for PM2.5 24-hour and annual NAAQS and non-attainment for the annual California ambient air quality standard ("CAAQS") for PM2.5.[28] Review of PM2.5 ambient air quality measurements from the Victorville monitoring station for the past 7 years shows that PM2.5 concentrations have improved in this area over the past years. In 2006, the three-year annual average PM2.5 concentration was determined at 10.3 micrograms per cubic meter ("$\mu g/m^3$"), less than two $\mu g/m^3$ below the CAAQS of 12 $\mu g/m^3$.[29] Depending on the type, number, and location of new or modified emission sources relying on Rule 1406 ERCs, the potential cumulative emissions increases of PM2.5 may be considerable. Since most sources would likely be located close to the major population centers, emissions of PM2.5 would increase in these areas and result in increased ambient PM2.5 concentrations potentially in new violations of the CAAQS and NAAQS. For example, the proposed Victorville II project estimated an increase of annual ambient PM2.5 concentration of 0.3 $\mu g/m^3$ over the background and an increase of the 24-hour ambient PM2.5 concentration of 5.9 $\mu g/m^3$ over the background. The 24-hour ambient background concentration was determined at 26 $\mu g/m^3$. Thus, emissions from Victorville II would raise the 24-hour ambient PM2.5 concentrations to 32 $\mu g/m^3$, just 2 $\mu g/m^3$ shy of the 24-hour NAAQS. Therefore, one additional source in the Victorville area relying on PM10 ERCs to offset PM2.5 emissions would likely result in an exceedance of the annual NAAQS. These potentially significant impacts on air quality due to proposed Rule 1406 must be evaluated in an EIR.

II.B.3 PM10 ERCs from Paving Unpaved Roads Can Not Be Used to Offset PM2.5 Emissions from Non-fugitive Dust Sources Because of Dissimilar Health Effects

PM10 ERCs generated from fugitive dust emission reductions by paving unpaved roads can not be used to offset non-fugitive dust PM2.5 emissions such as vehicle exhaust or stationary source combustion emissions because of the different health effects of fine and coarse particulates. The District elaborated in *List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d)*:

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[28] California Air Resources Board, 2006 Area Designations for National Ambient Air Quality Standards, PM2.5; 2004 Area Designations for State Ambient Air Quality Standards, PM2.5; 2006 Proposed Area Designations for State Ambient Air Quality Standards, PM2.5; *see* http://www.arb.ca.gov/desig/adm/adm.htm.

[29] California Air Resources Board, Air Quality Data Statistics; http://www.arb.ca.gov/adam/welcome.html.

> "PM emissions can be suspended in the air and carried long distances. Thus, PM can be an air pollutant that exists over large geographical expanses, potentially affecting numerous people. The health threat from these emissions arises because PM can be inhaled deep into the lungs, where they can persist and cause respiratory damage. The health risk from an inhaled dose of PM depends on the size, composition, and concentration of the particulate. Larger particles tend to deposit in the tracheal-bronchial region, and smaller ones in the alveolar region of the lungs. Although everyone is potentially affected by PM exposure, certain sensitive groups are especially vulnerable to its effects. These at-risk individuals include people with chronic obstructive lung disease or cardiovascular disease, individuals with influenza and asthma, elderly individuals, and children."[30]

Since 1996, more than 2,000 peer-reviewed studies have been published validating earlier epidemiologic studies that link both acute and chronic fine particle pollution with serious morbidity and mortality. This research has also expanded the list of health effects associated with fine particle pollution and has identified health effects at considerably lower exposure levels than previously reported. Overwhelming scientific evidence shows that long-term exposure to fine particulate air pollution contributes to pulmonary and systemic oxidative stress, inflammation, progression of atherosclerosis, and risk of ischemic heart disease and death. A recent study found that each 10-$\mu g/m^3$ increase in PM2.5 air pollution was associated with approximately a 6% increase in cardiopulmonary mortality and an 8% increase in lung cancer mortality.[31] Short-term exposure is equally damaging and contributes to complications of atherosclerosis, such as plaque vulnerability, thrombosis, and acute ischemic events. The U.S. EPA concluded with respect to short-term exposure studies, that epidemiological evidence supported likely causal associations between PM2.5 and both mortality and morbidity from cardiovascular and respiratory diseases."[32] In response to this new information, the U.S. EPA recently tightened the

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[30] Mojave Desert Air Quality Management District, List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d), adopted June 27, 2005; p. 2.

[31] A.A. Pope III, R.T. Burnett, M.J. Thun, E.E. Calle, D. Krewski, K. Ito, G.D. Thurston, Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution, Journal of the American Medical Association, v. 287, no. 9, pp. 1132-1141, 2002.

[32] U.S. Environmental Protection Agency, National Center for Environmental Assessment, Office of Research and Development, Provisional Assessment of Recent Studies on Health Effects of Particulate Matter Exposure, EPA/600/R-06/063, July 2006.

24-hour PM2.5 NAAQS from 65 micrograms per cubic meter ("µg/m^3") to 35 µg/m^3, effective December 17, 2006.[33,34].

A recently published study of 12,865 patients evaluated the role of fine particulate matter exposure in triggering acute ischemic heart disease event. The study found a *sharply elevated risk of heart attacks for people with clogged arteries after just a day or two of short-term exposure to fine particulate matte*r. This study was published in the American Heart Association's peer-reviewed journal *Circulation.*[35] One coauthor of the study stated that the results should prompt heart doctors to advise those with coronary heart disease to stay indoors as much as possible on particularly sooty days and that he was already changing his advice to patients based on the results even advising in severe cases to move to a less polluted environment.[36]

Particularly damaging are the fine particles contained in diesel exhaust, which contains nearly 40 toxic substances. As early as 1988, the National Institute for Occupational Safety and Health identified diesel exhaust as a potential occupational carcinogen. In 1998, CARB formally identified the particulate fraction of diesel exhaust as a toxic air contaminant and concluded that exposure to diesel exhaust particulate matter ("DPM") causes cancer and acute respiratory effects.[37] The U.S. EPA followed suit in 2002 and determined diesel exhaust as a probable human carcinogen. Diesel exhaust is estimated to contribute to more than 75% of the added cancer risk from air toxics in the United States.[38] Lagging emission standards and very old equipment in the fleet have made construction equipment one of the largest sources of toxic DPM pollution in California. An estimated 70% of California's

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[33] U.S. Environmental Protection Agency, Office of Air Quality Standards and Planning, September 2006 Revisions to the National Ambient Air Quality Standards for Particle Pollution, September 2006.

[34] U.S. Environmental Protection Agency, National Ambient Air Quality Standards for Particulate Matter, Final Rule, Federal Register, 40 CFR Part 50, Vol. 71, No. 200, pp. 61144-61233, October 17, 2006.

[35] Pope C.A. III, Muhlestein J.B., May H.T., Renlund D.G., Anderson J.L., Horne B.D., Ischemic Heart Disease Events Triggered by Short-Term Exposure to Fine Particulate Air Pollution, Circulation, No. 114, pp. 2443–2448; abstract available at http://circ.ahajournals.org/cgi/content/abstract/114/23/2443, accessed December 9, 2006.

[36] Los Angeles Times, Dire Health Effects of Pollution Reported, Diesel Soot from Construction Equipment Is Blamed for Illnesses and Premature Deaths, December 6, 2006.

[37] California Air Resources Board, Initial Statement of Reasons for Rulemaking, Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Staff Report, June 1998.

[38] Environmental Defense Fund, Cleaner Diesel Handbook, Bring Cleaner Fuel and Diesel Retrofits into Your Neighborhood, April 2005, p. IV; http://www.environmentaldefense.org/documents/4941_cleanerdieselhandbook.pdf.

construction equipment is currently not covered by federal and state regulations because it is too old.[39] Rule 1406 would result in additional emissions of diesel exhaust from construction vehicles and equipment necessary to pave roads. Heavy-duty diesel-powered construction equipment exhaust would release considerable amounts of DPM, which is 89% PM2.5, particularly during the initial earthmoving phase. Clouds of soot emitted by heavy-duty construction equipment can travel downwind for miles, then drift into heavily populated areas. A recent analysis found that air pollution from diesel construction equipment is already taking a heavy toll on the health and economic well-being of Californians resulting in well over 1,000 premature deaths per year and close to 10 billion dollars total cost.[40] Proposed Rule 1406 would contribute DPM/PM2.5 emissions during construction and from maintenance activities and potentially from operational emissions of new sources, further increasing ambient concentrations of this pollutant and increasing the associated adverse impacts on public health and welfare.

In June 2000, the California Air Resources Board ("CARB") sent a letter to all air pollution control officers to express concerns regarding the use of course particulate matter emission reductions to offset combustion-generated fine particulate matter increases. The CARB specifically pointed out that "[f]ine particulates, those equal to or smaller than 2.5 microns in diameter (PM2.5) have unique pulmonary dynamics. They selectively penetrate into lung alveoli. Whatever chemicals the particulates have absorbed, either at their source or from ambient air, are also transported into the body. Fine particulate matter emissions are a serious human health concern. ... We believe there is *no technical justification* for allowing PM emission reductions from road paving to offset PM10 increases from natural gas combustion. Any ERC granted for reductions in non-combustion particulate matter should contain conditions to limit the use of the ERC to similar sized non-combustion particulate matter sources. If ERCs have been granted for paving roads, those ERCs should not be allowed to be used to mitigate the impacts of combustion particulate. ... In the future, we intend to negatively comment on proposals that allow non-combustion particulate matter emissions to be used to offset combustion-generated particulate matter emissions."[41] The District chose to ignore this advice when it concluded that proposed Rule 1406 would not result in any adverse impacts on the environment.

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[39] Los Angeles Times, Dire Health Effects of Pollution Reported, Diesel Soot from Construction Equipment Is Blamed for Illnesses and Premature Deaths, December 6, 2006.

[40] Union of Concerned Scientists, Digging Up Trouble, The Health Risks of Construction Pollution in California, November 2006.

[41] Michael Kenny, California Air Resources Board, Letter to Air Pollution Control Officers, June 16, 2000; *emphasis* added.

II.B.4 PM10 ERCs Obtained from Fugitive Dust Emissions Reductions by Paving Unpaved Roads Are Not Contemporaneous with Combustion Emissions

Stationary sources such power plants generate continuous year-round emissions from baseload operations and additional emissions during high peak demand such as hot summer days. In contrast, emission reductions due to road paving exhibit seasonal variations depending on vehicle traffic patterns and moisture content of the road. Road paving credits are ineffective in a seasonal mitigation scheme because of road surface moisture that limits their effectiveness during the rainy season. Therefore, road paving credits are not an acceptable form of offsets for combustion PM10.

II.B.5 Fugitive Dust PM10 from Roads and Combustion PM2.5 from Stationary Sources Experience Different Atmospheric Transport and Distribution

Local and regional transport of particulate matter is dependent on a number of factors, including particle size, emissions height, wind speed, humidity, and atmospheric stability. Dry deposition, or gravitational settling of particles in the atmosphere, is highly dependent on the particle size. The larger particles in entrained road dust are kicked up only a short distance and settle out relatively quickly. Therefore, most of the entrained road dust PM10 typically spreads only a short distance from the roads and contributes little to the regional background. In contrast, the smaller particles emitted from stationary combustion sources typically exit through tall stacks with high exit velocities and are regionally distributed.

Thus, most of the population in the District will not benefit from reducing emissions on an unpaved road in another part of the air district. On the contrary, while PM10 concentrations will likely stay the same because of the short transport distances for entrained road dust, PM2.5 concentrations throughout the District will increase because of regional transport.

II.B.6 Construction Emissions of Criteria Air Pollutants Associated with Road Paving Are Significant

The methodology to calculate ERCs in proposed Rule 1406 simply subtracts emissions estimates after paving of roads from emissions estimates of unpaved roads. The methodology fails to account for emissions associated with paving roads. Emissions during the construction phase of road paving include asphalt fumes, fugitive dust, and combustion emissions from vehicles and construction equipment. These emissions are considerable and, may result in significant impacts.

Fugitive dust emissions during road paving for city and county roads result predominantly from site preparation work which may include scraping, grading, loading, digging, compacting, light-duty vehicle travel, and other operations. Fugitive dust PM10 emissions from road construction have been roughly estimated at 15.4 tons per mile ("tons/mile") assuming a typical project duration of 18 months.[42,43] This emission factor is assumed to include the effects of routine dust suppression measures such as watering with a dust control effectiveness of 50%.[44] Thus, construction emissions generated during paving of roads would exceed the MDAQMD's annual CEQA significance threshold for PM10 emissions of 15 tons/year. Assuming a smaller project with a project duration of only one month, paving of one mile of unpaved road would result in daily PM10 emissions of 85.8 pounds per day ("lb/day")[45], exceeding the MDAQMD's daily CEQA significance threshold for PM10 of 82 lb/day. Thus, fugitive dust PM10 emissions associated with road paving would result in a significant impact on air quality that must be properly evaluated and mitigated. In addition, entrained road dust emissions result from movement of trucks and construction worker commuter vehicles to and from the construction site.

The use of asphalt for paving of roads also results in considerable emissions of reactive organic gases ("ROGs") at the asphalt plant and at the construction site. Emissions from asphalt paving occur when asphalt mixtures are applied and as they cure. Emissions of VOCs from asphalt paving have been estimated at 9.2 pounds per barrel ("lb/barrel") applied for emulsified asphalt, 88 lb/barrel applied for cutback asphalt, and 0.9 lb/barrel applied for hot-mix asphalt.[46,47] It takes between 7 and

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[42] (7.8 acres/mile) × (18 months) × (0.11 ton PM10/acre-month) = **15.4 ton/mile**

[43] California Air Resources Board, Emissions Inventory Methodologies, Section 7.8, Road Construction Dust, updated August 1997; http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-8.pdf.

[44] *Ibid.*

[45] (7.8 acres/mile) × (1 month) × (0.11 ton PM10/acre-month) = **0.86 ton/mile**;
(0.86 ton/mile) × (1 mile) / (20 working days/month) × (2,000 lb/ton) = **85.8 lb/day**

[46] Asphalt surfaces and pavements are composed of compacted aggregate and an asphalt binder in the form of either asphalt cement (residue from distillation of crude oils, or liquefied asphalts). To be used for pavement, asphalt cement, which is semisolid, must be heated prior to mixing with aggregate. The resulting hot mix asphalt concrete is generally applied in thicknesses of 2 to 6 inches. Liquefied asphalts are either asphalt cutbacks (asphalt cement thinned with volatile petroleum distillates such as naptha, kerosene, etc.) or asphalt emulsions (nonflammable liquids produced by combining asphalt and water with an emulsifying agent, such as soap). Liquefied asphalts are used in tack and seal operations, in priming roadbeds for hot mix application, and for paving operations up to several inches thick.

[47] California Air Resources Board, Asphalt Paving and Roofing; arbis.arb.ca.gov/ei/areasrc/ccosmeth/att_c_asphalt.doc.

17 tons of asphalt to pave a mile of road. Assuming the use of hot-mix asphalt, the most commonly type of asphalt, a typical density for hot-mix asphalt of 9 pounds per gallon (lb/gallon")[48], and the CARB-recommended default factor of 10 tons of asphalt per mile, paving of one mile of road results in VOC emissions of about 48 pounds.[49] The use of even small amounts of cut-back would considerably increase this emissions estimate. For example, using just one percent of cutback would more than double these emissions.[50] These estimates also do not include VOC emissions at the asphalt plant.[51] Further, large amounts of particulate matter are emitted during asphalt preparation at the asphalt plant.

Finally, construction equipment and vehicles used to transport asphalt from the asphalt plant, road base from aggregate processing plants, and workers to the construction site would generate exhaust emissions from combustion of diesel and gasoline. Particularly emissions of the ozone precursors nitrogen oxides ("NOx") and volatile organic compounds ("VOCs") have the potential to exceed the MDAQMD's daily CEQA significance thresholds and contribute to the MDPA's state and federal ozone non-attainment status. Emissions from construction and from maintenance of paved roads should be estimated in an EIR and adequately mitigated.

II.B.7 **Paving Roads Results in Emissions of Hazardous Air Pollutants**

Asphalt is a complex mixture whose emissions encompass a broad spectrum of organic contaminants including several VOCs and semi-volatile organic compounds ("SVOCs") such as aromatics, aliphatics, alicyclics, polynuclear aromatic hydrocarbons ("PAHs"). Many of these compounds are also hazardous air pollutants ("HAPs"). The U.S. EPA estimates that VOCs emitted from road paving operations contain 12% xylene, 6.4% toluene, and 2.3% ethylbenzene.[52] Thus,

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[48] *Ibid.* (Asphalt densities of vary between 7 to 9 lb per gallon, with hot-mix asphalts at the heavier end of the scale.)

[49] (10 ton asphalt/mile) × (2,000 lb/ton) / (9 lb/gallon asphalt) / (42 gallons/barrel) × (0.9 lb VOC/barrel asphalt) = **47.6 lb VOC/mile**

[50] (10 ton asphalt/mile) × (2,000 lb/ton) / (9 lb/gallon asphalt) / (42 gallons/barrel) × (88 lb VOC/barrel asphalt) × 0.01= **59.9 lb VOC/mile**

[51] California Air Resources Board, Asphalt Paving and Roofing; arbis.arb.ca.gov/ei/areasrc/ccosmeth/att_c_asphalt.doc.

[52] State and Territorial Air Pollution Program Administrators, Association of Local Air Pollution Control Officials, and U.S. Environmental Protection Agency, Emission Inventory Improvement Program, Volume III, Chapter 17, Asphalt Paving, revised Final, January 2001, p. 17.5-8; http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii17_apr2001.pdf.

adoption of Rule 1406 would increase the emissions inventory of HAPs in the District.

II.B.8 Paving Roads Increases Urban Heat Island Effect

Proposed Rule 1406 would indirectly increase ozone by replacing unpaved roads with blacktop. This would increase local ambient temperatures and hence, local formation of ozone.

Black surfaces absorb about 85% to 95% of the sunlight that falls on them, becoming one of the hottest surfaces in urban areas. The hot surfaces of pavement and similarly dark roofs quickly warm the air over urban areas, leading to the creation of summer urban "heat islands." On a clear summer afternoon, the air temperature in urban areas can be 2°F to 9°F hotter than the surrounding rural area. The elevated temperature increases cooling energy demand, accelerates the rate of smog production, and increases evaporative losses of organic compounds from gasoline tanks of vehicles parked over the hot surfaces. Paving of unpaved roads in the towns and cities of the District would contribute to a local heat island effect, increasing local ambient temperatures and exacerbating existing exceedances of the ozone standards in the District.

II.C Growth-inducing Impacts of Paving Roads Are Potentially Significant

Paving gravel or dirt roads in the District would likely have consequences beyond the above discussed direct impacts. Paving roads may also induce land development by improving access to properties that are at present only accessible via unpaved roads. In consequence, newly paved roads could facilitate the already rampant urban sprawl in southwestern San Bernardino County and associated adverse impacts on the environment. The Staff Report for Proposed Rule 1406 does not address the growth-inducing impacts of paving roads within the District.

II.D Proposed Rule 1406 Would Result in Adverse Impacts on Biological Resources

Paving dirt or gravel roads may result in a number of adverse direct and indirect impacts on biological resources. Direct impacts include mortality during road construction and increased frequency of roadkill from vehicle travel on paved roads. In contrast, many indirect effects of roads are cumulative and involve changes in community structure and ecological processes. These indirect impacts include spread of invasive plant species; air, water, soil, and noise pollution; soil disturbance and erosion; and increase of roadway pollutants and associated habitat loss, degradation and fragmentation; alteration of wildlife movement; and changes in wildlife populations.

II.D.1 Paving Roads Would Result in Direct Mortality during Construction

Paving of unpaved roads in the District would involve improvement of the existing sub-base including removal of gravel surface layers, widening of the road footprint, and heightening of the road base. Any vegetation along the unimproved road would be removed as well as any organisms living in that vegetation or the unimproved road shoulders. These activities will often result in the death of any sessile or slow-moving organisms in the path of the road.

A number of animals live in or adjacent to road shoulder berms of unimproved roads in the District. These include the Western burrowing owl (*Athene cunicularia hypgugea*), a state and federal species of concern. Burrowing owls do not dig their own burrows but prefer to adopt vacant tortoise, kit fox, ground squirrel, or other rodent dens or burrows, frequently found in unimproved road shoulders or adjacent vegetation. Burrowing owls are very susceptible to burrow disturbance, particularly during their breeding season from the beginning of February through end of August. Similarly, the desert tortoise (*Gopherus agassizii*), listed as threatened under the federal and state Endangered Species Acts, frequently constructs burrows along the elevated berms of unpaved roads because the topography mimics that formed along the banks of desert washes, a preferred site for burrow construction.[53] Many other species may be adversely affected during the construction phase, including the Mojave ground squirrel (*Spermophilus mohavensis*), listed as threatened under the California Endangered Species Act.

For example, proposed Rule 1406 contains no requirements that road paving contractors conduct burrowing owl, desert tortoise, or Mojave ground squirrel surveys prior to disturbing unpaved road shoulders. Proposed Rule 1406 also does not contain any seasonal restrictions or mitigation measures to minimize impacts on burrowing owl, desert tortoise, or ground squirrel populations. Thus, it is likely that construction activities associated with paving roads under proposed Rule 1406 would impact active burrows of these species and result in direct mortality of individuals. This is a significant impact that should be mitigated to the extent feasible. Pre-construction surveys should be required following accepted protocols, *e.g.*, the *Burrowing Owl Survey Protocol and Mitigation Guidelines* [54] and the *Field*

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[53] Luckenbach R.A, Ecology and Management of the Desert Tortoise (*Gopherus agassizii*) in California. In: Bury R.B. (Ed.), North American Tortoises: Conservation and Ecology, Washington, D.C., U.S. Fish and Wildlife Service Wildlife Research Report 12, pp. 1-39.

[54] California Burrowing Owl Consortium, Burrowing Owl Survey Protocol and Mitigation Guidelines, 2001.

Survey Protocol for Desert Tortoise[55]. During construction, operators of heavy equipment should be accompanied by a qualified biologist to minimize mortalities. Mitigation measures such as relocating impacted animals and securing suitable habitat elsewhere should be required and implemented according to accepted guidelines. Adverse impacts on these species can also be minimized by imposing seasonal restrictions to road paving with late fall and winter, *i.e.* outside of the breeding season for these species, being the best time for these activities.

II.D.2 **Paving Would Lead to Increased Incidents of Roadkill**

Animals are attracted to paved roads for a variety of reasons, often to their demise. Dark pavement absorbs radiant heat and releases it at night, creating a "heat island" around roads. This can attract heat-seeking species such as birds and snakes to roads, increasing their mortality by vehicle collision. Paving an unpaved road can elevate the road to higher service levels and may divert traffic from nearby unpaved roads. The increased volume of traffic on the newly paved section of the road would result in increased incidents of wildlife mortality. Further, paving typically increases traffic speed on this section of the road. Traveling at greater speeds reduces the ability of the driver to see animals on the road or on the shoulders, resulting in increased incidents of road kill. Unpaved roads, particularly when "unimproved," are typically less dangerous for wildlife.

Roadkill is the greatest directly human-caused source of wildlife mortality throughout the U.S. with more than a million vertebrates every day. In the Mojave Desert, the slow-moving desert tortoise is particularly at risk for collisions with fast-moving vehicles. Vehicle collisions are also the leading cause of mortality in mountain lions (*Puma concolor*)[56] and burrowing owls.

Roads can be designed to minimize impacts with the addition of specialized undercrossing to accommodate wildlife wanting to get from one side to the other. Caltrans has established standard designs that allow for the passage of various animal sizes. When properly used, these designs will decrease the amount of

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[55] U.S. Fish and Wildlife Service, Field Survey Protocol for Any Non-federal Action that May Occur Within the Range of the Desert Tortoise, January 2002.

[56] Dickson B.G., Jenness J.S., and Beier P., Influence of Vegetation, Topography, and Roads on Cougar Movement in Southern California, Journal of Wildlife Management, Vo. 69, No. 1, January 2005, pp. 264–276.

roadkill.[57] Proposed Rule 1406 does not contain any design requirements for road paving to minimize roadkill.

II.D.3 Paving Unpaved Roads Would Increase Habitat Fragmentation and Alteration

Not all animals are attracted to roads. Some species associate roads with negative experiences and are reluctant to cross the barrier presented by roads; other species are physically unable to cross road embankments. For these species, a road effectively cuts the population in half. A network of roads fragments the population further. The remaining small populations are then vulnerable to problems associated with rarity: genetic deterioration from inbreeding and random drift in gene frequencies, environmental catastrophes, fluctuations in habitat conditions, and demographic stochasticity (*i.e.*, chance variation in age and sex ratios). Thus, roads contribute to what many conservation biologists consider the major threat to biological diversity: habitat fragmentation. Such fragmentation may be especially ominous in the face of rapid climate change. If organisms are prevented from migrating to track shifting climatic conditions, and cannot adapt quickly enough because of limited genetic variation, then extinction is inevitable.

In general, adding a road to the landscape automatically fragments the habitat. The road becomes a physical barrier to many of the natural processes, such as drainage, wildlife movement, that are present on the landscape. The road will create a 'break in the plant landscape that may separate populations of plants and animals and may affect reproductive success. Fragmentation may also allow predators to hunt and thrive along the new edge habitats.[58]

Paving unpaved roads would increase habitat fragmentation for at least some species in the Mojave Desert. For example, studies have shown that dirt roads facilitate movement of mountain lions through their habitat but traveling mountain lions avoid 2-lane paved roads.[59] Thus, paving roads could lead to further habitat fragmentation and associated increased population pressure for mountain lions. Embankments of paved roads are also typically steeper than those of unpaved roads, which for many species, including desert tortoises, increase the difficulty to crossing these roads and, as a result, may lead to habitat fragmentation and the

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[57] Chuck Morton, Caltrans, Presentation at UC Davis, Road Ecology, Integrating Transportation and the Natural Environment, The Roads' Footprint, TTP 289A/B, April 12, 2007.

[58] *Ibid.*

[59] Dickson B.G., Jenness J.S., and Beier P., Influence of Vegetation, Topography, and Roads on Cougar Movement in Southern California, Journal of Wildlife Management, Vo. 69, No. 1, January 2005, pp. 264–276.

above-discussed associated consequences. As mentioned before, roads can be designed with the addition of specialized undercrossing to accommodate wildlife crossings, which would minimize habitat fragmentation. Proposed Rule 1406 contains no provisions to require undercrossings to minimize habitat fragmentation pressure on desert wildlife populations.

In addition to habitat fragmentation, habitat along the roads would also be permanently altered. During construction, impacts on habitat from road paving include soil compaction, soil excavation, stripping and stockpiling of topsoil, drying out of topsoil, and vegetation removal. Long-term impacts from paving to the roadside environment would result in changes in the immediate microclimate due to changes in stormwater runoff patterns such as flooding or drainage effects, increased paved area, higher temperatures, and drier conditions along roads. Microclimates along paved roads have been observed to change between 30 and 120 feet from the road surface. The presence of a paved road may cause wildlife to shift home ranges, and alter their movement pattern, reproductive behavior, escape response and physiological state. When roads act as barriers to movement, they also bar gene flow where individuals are reluctant to cross for breeding.

For example, animals rely on hearing to avoid predators, obtain food, and communicate. Desert animals, in particular, require a very acute sense of hearing to survive. Noise pollution and vibration from roads, initially from construction equipment and later from increased and faster traffic, can degrade wildlife habitat and impair biodiversity. Most frequently, noise pollution leads wildlife to avoid roads, but it has also been shown to change reproductive behavior and other patterns of activity. Animals respond to noise pollution by altering activity patterns, and with an increase in heart rate and production of stress hormones. Exposure to chronic noise has been shown to lead to hearing loss in some species, thereby reducing their ability to avoid predators and obtain food.[60] Sometimes animals become habituated to increased noise levels, and apparently resume normal activity. But birds and other wildlife that communicate by auditory signals may be at a disadvantage near roads.

II.D.4 **Paving Unpaved Roads Increases Spread of Invasive Plant Species**

Paving roads has been found to increase the spread of invasive non-native and opportunistic native plant species. Vehicles carry and distribute seeds on their tires and undercarriages. The establishment of invasive species along roads is promoted by changing habitat by altering conditions; stressing or removing native

[60] Noise Pollution Clearinghouse, Noise Effects on Wildlife, Fact Sheet.

species during road improvement; and allowing easier movement by wild or human vectors.

The new edge habitats created by paving roads are often unsuitable for native species, but attractive to invasive, non-native species or opportunistic native species from where they can spread into open areas.[61] In general, plant productivity is greater along paved than dirt roads. A study analyzing roads with varying degrees of improvement in a desert ecosystem found that each step of road improvement converted an increasing area of natural habitat to roadside habitat, from which non-native weeds spread into adjacent natural ecosystems. Nonnative cheatgrass, for instance, was three times more abundant in verges beside paved roads than in those bordering four-wheel-drive tracks. Verges along improved roads were also wider—about 3 feet on each side of a four-wheel-drive track versus 23 feet on a paved road.[62]

Non-native or invasive species pose a significant threat to our nation's biological diversity, and are causing substantial economic burdens. Each year, approximately $137 billion nationwide is lost to the effects of invasive plants on agriculture, industry, recreation, and the environment. An estimated 4,600 acres of land are invaded daily by invasive plants. Invasive species impact nearly half the species currently listed as threatened or endangered under the federal Endangered Species Act.

Annual plant invaders already commonly occur in high amounts on berms along most paved roads in the Mojave Desert and severely threaten ecosystem integrity. Improved roads can act as conduits for the invasion of adjacent ecosystems.[63] Non-native invasive mustards including London Rocket (*Sisymbrium irio*), Sahara mustard (*Brassica tournefortii*), and Indian hedge mustard (*Sisymbrium orientale*) have in the past years been spreading at an alarming rate and are entirely covering many previously sparsely vegetated road sides and desert areas. Native creosote bush is abundant species that opportunistically exploits the increased moisture levels along roadsides. A study investigating productivity and diversity relationships in the Mojave Desert roadside vegetation found that the edge effect of a paved road increases productivity as reflected by standing crop, by approximately 17 times on the basis of the vegetated area alone and 6 times when the area of the

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[61] Chuck Morton, Caltrans, Presentation at UC Davis, Road Ecology, Integrating Transportation and the Natural Environment, The Roads' Footprint, TTP 289A/B, April 12, 2007.

[62] Matthew L. Brooks and Bridget Lair, United States Geological Survey, Ecological Effects of Vehicular Routes in a Desert Ecosystem, March 2, 2005; http://www.dmg.gov/documents/Desert_Road_Ecology_report.pdf.

[63] *Ibid.*

bare road surface was included as part of the productive unit. An unpaved road showed only an increase of approximately 6 and 3 times in the respective categories. The increase in vigor has been shown to attract herbivorous insects, so it is conceivable that the herbivorous desert tortoise selects burrows in close proximity to high densities of food plants as well. [64]

II.D.5 **Paving Roads Would Increase Roadside Pollution**

Paved roads typically require considerably increased roadside management compared to unpaved roads. This includes mowing or herbicide application to keep the shoulders of the road clear of vegetation. Chemicals used in the maintenance of roadways contaminate roadside ecosystems. While many state departments of transportation have begun to reduce the use of herbicides and other chemicals, the use of herbicides continues to damage roadside ecosystems. Those chemicals may also promote the invasion of weedy and exotic species, which are resistant to herbicides.

Another source of pollution is direct leaching of PAHs from the asphalt road itself. In the past, PAHs in roadside runoff were solely attributed to deposition from car exhaust fumes. However, research from Australia indicates that relatively high concentrations of PAHs can be introduced into soils through leaching from bitumen surfaces.[65] PAHs are known to have potential for adverse effects to a large number of animals, including invertebrates, birds, and mammals.

Increased vehicular travel on paved roads would increase the amount of NOx emissions from exhaust fumes, which has been positively correlated with increased levels of nitrogen in the soil. Experiments in the Mojave Desert suggest that increased soil nitrogen can promote the growth of non-native annual plants and reduce growth and diversity of native annual plants.[66]

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[64] Johnson H.B., Vasek F.C., and Yonkers T., Productivity, Diversity and Stability Relationships in Mojave Desert Roadside Vegetation, Bulletin of the Torrey Botanical Club, Vol. 102, No. 3, 1975, pp. 106-115.

[65] Sadler R., Delamont C., White P., and Connell D., Contaminants in Soil as a Result of Leaching from Asphalt, Toxicological and Environmental Chemistry, Vol. 68, 1997, pp. 71-81; in: Criley M. and Postelli K., From Gravel to Pavement — The Impacts of Upgrading; The Road-RIPorter, Vol. 5, No. 4, July/August 2000.

[66] Brooks M.L. and Lair B., Ecological Effects of Vehicular Routes in a Desert Ecosystem, United States Geological Service, March 2, 2005.

Petra Pless, D.Env.

440 Nova Albion Way, Suite 2
San Rafael, CA 94903
(415) 492-2131 voice
(775) 254-5849 fax
petra@ppless.com

Dr. Pless has over 10 years of experience in environmental engineering and science conducting and managing interdisciplinary environmental research projects and preparing and reviewing environmental permits and other documents for U.S. and European stakeholder groups. This broad-based experience includes air quality and air pollution control; water quality, water supply, and water pollution control; biology; public health and safety; and noise studies. National Environmental Policy Act ("NEPA"), California Environmental Quality Act ("CEQA"), and Clean Air Act ("CAA") review; industrial ecology and risk assessment; and use of a wide range of environmental software.

EDUCATION

Doctorate in Environmental Science and Engineering (D.Env.), University of California, Los Angeles, 2001

M.S. Biology (with focus on botany/ecology/limnology), Technical University of Munich, Germany, 1991

PROFESSIONAL HISTORY

Environmental consultant 2006-present

Leson & Associates (previously Leson Environmental Consulting), Kensington, CA, Environmental Scientist/Project Manager, 1997-2005

University of California Los Angeles, Graduate Research Assistant/Teaching Assistant, 1994-1996

ECON Research and Development, Environmental Scientist, Ingelheim, Germany, 1992-1993

Biocontrol, Environmental Projects Manager, Ingelheim, Germany, 1991-1992

REPRESENTATIVE EXPERIENCE

Air Quality and Pollution Control

Projects include CEQA/NEPA review; attainment and non-attainment new source review ("NSR"), prevention of significant deterioration ("PSD") and Title V permitting; control technology analyses (BACT, LAER, RACT, BARCT, MACT); technology evaluations and cost-effectiveness analyses; criteria and toxic pollutant emission inventories; emission offsets; ambient and source monitoring; analysis of emissions estimates and ambient air pollutant concentration modeling. Some typical projects include:

- Critically reviewed and prepared technical comments on the air quality, biology, noise, water quality, and public health and safety sections of CEQA/NEPA documents for numerous commercial, residential, and industrial projects (*e.g.*, power plants, airports, residential developments, retail developments, hospitals, refineries, quarries, and mines).
- Critically reviewed and prepared technical comments on the air quality and public health sections of the Los Angeles Airport Master Plan (Draft, Supplement, and Final Environmental Impact Statement/Environmental Impact Report) for the City of El Segundo. Provided technical comments on the Draft and Final General Conformity Determination for the preferred alternative submitted to the Federal Aviation Administration.
- For several California refineries, evaluated compliance of fired sources with Bay Area Air Quality Management District ("BAAQMD") Rule 9-10. This required evaluation and review of hundreds of source tests to determine if refinery-wide emission caps and compliance monitoring provisions were being met.
- Critically reviewed and prepared technical comments on Draft Title V permits for several refineries and other industrial facilities in California.
- Evaluated the public health impacts of locating big-box retail developments in densely populated areas in California and Hawaii. The impacts of diesel exhaust emissions and noise on surrounding residential communities were measured and evaluated.
- In conjunction with the permitting of several residential and commercial developments, conducted studies to determine baseline concentrations of diesel exhaust particulate matter using an aethalometer.
- For an Indiana steel mill, evaluated technology to control NOx and CO emissions from fired sources, including electric arc furnaces and reheat furnaces, to establish BACT. This required a comprehensive review of U.S. and European operating experience. The lowest emission levels were being achieved by steel mills using selective catalytic reduction ("SCR") and selective non-catalytic reduction ("SNCR") in Sweden and The Netherlands.
- For a California petroleum coke calciner, evaluated technology to control NOx, CO, VOCs, and PM10 emissions from the kiln and pyroscrubbers to establish BACT and LAER. This required a review of state and federal clearinghouses, working with regulatory agencies and pollution control vendors, and obtaining and reviewing permits and emissions data from other similar facilities. The best-controlled facilities were located in the South Coast Air Quality Management District ("SCAQMD").
- For a Kentucky coal-fired power plant, identified the lowest NOx levels that had been permitted and demonstrated in practice to establish BACT. Reviewed operating experience of European, Japanese, and U.S. facilities and evaluated continuous emission monitoring data. The lowest NOx levels had been permitted and achieved in Denmark and in the U.S. in Texas and New York.
- In support of efforts to lower the CO BACT level for power plant emissions, evaluated the contribution of CO emissions to tropospheric ozone formation and co-authored report on same.
- Critically reviewed and prepared technical comments on applications for certification ("AFCs") for several natural-gas fired and geothermal power plants in California permitted by

the California Energy Commission ("CEC"). The comments addressed construction and operational emissions inventories and dispersion modeling, BACT for turbines, etc.

- Critically reviewed and prepared technical comments on draft PSD permits for several natural gas-fired power plants in California, Indiana, and Oregon. The comments addressed emission inventories, BACT, case-by-case MACT, compliance monitoring, cost-effectiveness analyses, and enforceability of permit limits.
- For a California refinery, evaluated technology to control NOx and CO emissions from CO Boilers to establish RACT/BARCT to comply with BAAQMD Rule 9-10. This required a review of BACT/RACT/LAER clearinghouses, working with regulatory agencies across the U.S., and reviewing federal and state regulations and State Implementation Plans ("SIPs"). The lowest levels were required in a SCAQMD rule and in the Texas SIP.
- In support of several federal lawsuits filed under the Clean Air Act, prepared cost-effectiveness analyses for SCR and oxidation catalysts for simple cycle gas turbines and evaluated opacity data.
- Critically reviewed draft permits for several ethanol plants in California, Indiana, and Ohio and prepared technical comments.
- Provided comprehensive environmental and regulatory services for an industrial laundry chain. Facilitated permit process with the SCAQMD. Developed test protocol for VOC emissions, conducted field tests, and used mass balance methods to estimate emissions. Reduced disposal costs for solvent-containing waste streams by identifying alternative disposal options. Performed health risk screening for air toxics emissions. Provided permitting support with SCAQMD. Renegotiated sewer surcharges with wastewater treatment plant. Identified new customers for shop-towel recycling services.
- Designed computer model to predict performance of biological air pollution control (biofilters) as part of a collaborative technology assessment project, co-funded by several major chemical manufacturers. Experience using a wide range of environmental software, including air dispersion models, air emission modeling software, database programs, and geographic information systems ("GIS").

Water Quality and Pollution Control

Experience in water quality and pollution control, including surface water and ground water quality and supply studies, evaluating water and wastewater treatment technologies, and identifying, evaluating and implementing pollution controls. Some typical projects include:

- For a homeowner's association, reviewed a California Coastal Commission staff report on the replacement of 12,000 linear feet of wooden bulkhead with PVC sheet pile armor. Researched and evaluated impact of proposed project on lagoon water quality, including sediment resuspension, potential leaching of additives and sealants, and long-term stability. Summarized results in technical report.
- For a 500-MW combined-cycle power plant, prepared a study to evaluate the impact of proposed groundwater pumping on local water quality and supply, including a nearby stream, springs, and a spring-fed waterfall. The study was docketed with the CEC and summarized in a journal article.

noise monitoring and assessing the impact of noise, brine handling and disposal, and air emissions on local biota, public health, and welfare.

- Designed research protocols for a coastal ecological inventory; developed sampling methodologies, coordinated field sampling, determined species abundance and distribution in intertidal zone, and analyzed data.
- Designed and conducted limnological study on effects of physical/chemical parameters on phytoplankton succession; performed water chemistry analyses and identified phytoplankton species; co-authored two journal articles on results.
- Conducted technical, ecological, and economic assessments of product lines from agricultural fiber crops for European equipment manufacturer; co-authored proprietary client reports.
- Developed life cycle assessment methodology for industrial products, including agricultural fiber crops and mineral fibers; analyzed technical feasibility and markets for thermal insulation materials from plant fibers and conducted comparative life cycle assessments.
- Conducted and organized underwater surveying and mapping of plant species in several lakes and rivers in Sweden and Germany as ecological indicators for the health of limnological ecosystems.

PRO BONO ACTIVITIES

Member of "SecondAid," a non-profit organization providing tsunami relief for the recovery of small family businesses in Sri Lanka. (www.secondaid.org)

PROFESSIONAL AFFILIATIONS

Association of Environmental Professionals

SELECTED PUBLICATIONS

Fox J.P. and Pless P., Cost-effectiveness of catalytic oxidation for the control of VOCs and CO from power generation facilities, to be submitted to Journal of the Air & Waste Management Association.

Fox J.P. and Pless P., Fuel and energy penalties associated with catalytic pollution control systems used in power generation, to be submitted to Power Engineering.

Fox J.P., Rose T.P., Sawyer T.L., and Pless P., Isotope hydrology of a spring-fed waterfall in fractured volcanic rock, to be submitted to Journal of Hydrology.

Leson G. and Pless P., Hemp seeds and hemp oil, in: Grotenhermen F. and Russo E. (eds.), Cannabis und Cannabinoids, Pharmacology, Toxicology, and Therapeutic Potential, The Haworth Integrative Healing Press, New York, 2002.

Leson G., Pless P., Grotenhermen F., Kalant H., and ElSohly M., Evaluating the impact of hemp food consumption on workplace drug tests, Journal of Analytical Toxicology, Vol. 25, No. 11/12, pp. 1-8, 2001.

Leson G. and Pless P., Assessing the impact of THC uptake from hemp oil cosmetics on workplace drug testing, Report to the Agricultural Research and Development Initiative ("ARDI"), Morris, MB, 2001.

Pless P., Technical and environmental assessment of thermal insulation materials from fiber crops, doctoral dissertation in Environmental Science and Engineering, University of California, Los Angeles, 2001.

Center for Waste Reduction Technologies in the American Institute of Chemical Engineers, Collaborative Biofilter Project, Technical Report, co-author with Leson G. of sections 'Compound Database,' 'Design Manual,' and 'Literature Database,' 1998.

Hantke B., Domany I., Fleischer P., Koch M., Pless P., Wiendl M., and Melzer M., Depth profiles of the kinetics of phosphatase activity in hardwater lakes of different trophic level, Arch. Hydrobiologia, vol. 135, pp. 451–471, 1996.

Hantke B., Fleischer P., Domany I., Koch M., Pless P., Wiendl M., and Melzer M., P-release from DOP by phosphatase activity in comparison to P-excretion by zooplankton: studies in hardwater lakes of different trophic level, Hydrobiologia, vol. 317, pp. 151–162, 1996.

Pless P., Untersuchungen zur Phytoplanktonentwicklung im Herrensee (investigations on phytoplankton succession in an oligotrophic hardwater lake), Masters Thesis in biology with focus on botany/ecology/limnology, Technical University of Munich, Germany, 1991.

ATTACHMENT

2

David P. Howekamp
4191 Coraiee Lane
Lafayette, CA 94549
Tel: 925-284-8045
Email: howekamp@gmail.com

June 6, 2007

Gloria D. Smith
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco CA 94080

Dear Ms. Smith:

You have requested that I review Mojave Desert Air Quality Management District (MDAQMD) draft new Rule 1406 – *Emission Reduction Credits for Paving Unpaved Roads*. The Request for Review and Comments on Draft Rule 1406, issued by the District on April 26, 2007, purports to "contain requirements intended to render emission reductions from the paving of unpaved roads federally approvable as emission reduction credits (for subsequent use as new source offsets)".

I am an environmental consultant specializing in air quality management. In my practice I have provided expert advice to companies, governmental agencies, nongovernmental organizations and citizen groups. I have significant experience interpreting, implementing and enforcing air quality requirements and I am intimately familiar with policies, interpretations and regulations regarding the CAA. Much of my practice involves issues regarding stationary and mobile combustion sources. Also, I have provided expert advice to organizations regarding air quality permitting requirements for new sources of air pollution. I have a Master's Degree in Business Administration and a Bachelor's Degree in Mechanical Engineering from the University of California, Berkeley. My CV is included as an attachment.

Prior to becoming an environmental consultant in April 2000, I was a career employee at the U.S. Environmental Protection Agency for 31 years. From 1982 to 2000, I was the Director of the Air Division for USEPA's Region 9 office in San Francisco. In this position, I was the principal advisor to the Regional Administrator on policy, political and technical issues involving air quality management. I managed a budget of over $40 million and directed a staff of 120 scientists, engineers and planners in implementing the requirements of the Clean Air Act. My specific responsibilities included issuing permits for complex new sources and developing and implementing policies regarding offsets for new sources. In my position, I also provided direct oversight of the State of California and all local California air pollution control districts. As such, I became intimately familiar with the rules and regulations of the California Air Resources Board and the Mojave Desert Air Quality Management District.

In order for nontraditional ERCs to be created and used in compliance with the Clean Air Act and EPA policy, three fundamental requirements must be met.

1. An EPA-approved nonattainment plan or maintenance plan must be in place for the nonattainment area in which the ERCs are intended to be created and used.

Section 172 of the Clean Air Act (the Act) requires that nonattainment plans be prepared by state or local governments and approved by EPA that provide for attainment of the National Ambient Air Quality Standards for areas that have been designated as not attaining these standards. Section 172(c)(5) specifically requires that such plans must include provisions that require permits for the construction and operation of new or modified major stationary sources anywhere in the nonattainment area, in accordance with section 173 of the Act.

In response to this requirement, the Mojave Desert Air Quality Management District adopted the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan on July 31, 1995, the Searles Valley PM10 Plan on June 28, 1995 and the Final Attainment Demonstration, Maintenance Plan, and Redesignation Request for the Trona Portion of the Searles Valley PM10 Nonattainment Area on March 25, 1996. None of these documents has been approved by EPA. It is my understanding from discussions with EPA staff that these plans are not approvable because of numerous deficiencies. The Blythe/Palo Verde Valley portion of the District is unclassified for PM10. No attainment or maintenance plan is listed on the MDQMD website for this portion of the District.

EPA issued findings of attainment for the Mojave Desert Planning Area in July, 2001 and for the Trona Portion of the Searles Valley PM10 Nonattainment Area in August, 2002 based on PM10 air quality data for the two areas. However, even though provided for by Section 175A of the Act, the MDAQMD has not submitted maintenance plans or requests for formal redesignation of the nonattainment areas to attainment to EPA for approval. Of course, any redesignation request submitted at this point in time would need to consider air quality data collected since EPA's findings in the 2001-2002 timeframe.

Because attainment and/or maintenance plans have not been approved for the previously designated PM10 nonattainment areas in the MDAQMD, a rule such as the draft new Rule 1406 cannot be used to create and use emission reduction offsets. As noted in its September 30, 2002 comments transmitted by EPA to the Sacramento Metropolitan Air Quality Management District regarding the proposed use of road paving ERCs for the Consumnes Power Plant Project[1], EPA clearly stated this fundamental requirement: "The PM10 ERCs, primarily road pavement credits, are not valid because SMAQMD does not have an approved PM10 State Implementation Plan."

Such a Federally approved PM10 plan is essential for proper creation and use of ERCs because it provides the overall legal and regulatory framework for a new source review program, especially the provision for a detailed emission inventory that identifies in detail the emissions from, as well as control requirements for, each

[1] Gerardo C. Rios, Chief, Permits Office, Region 9, USEPA, September 30, 2002 letter to Jorge DeGuzman, Permitting Program Supervisor, Sacramento Metropolitan Air Quality Management District

source category, including unpaved roads if they contribute to the nonattainment problem (Section 172(c)(3)). The Request for Review and Comments, as well as the Staff Report, indicate that draft rule 1406 is based on a similar rule being promulgated by Maricopa County in Arizona. In contrast, however, in that case EPA has approved a PM10 Nonattainment Plan for Maricopa County which includes a very detailed emission inventory (including unpaved roads) and a thorough control strategy which provides the information needed to identify that any proposed ERCs are indeed surplus to existing requirements.

2. Nontraditional ERCs, such as those from road paving, must be created and used pursuant to specific rules approved by EPA into the State Implementation Plan.

Based on the legal requirement for offsets established in Section 173(c) of the Act, EPA requires that all emission reduction credits (ERCs) used as offsets be real, permanent, quantifiable, surplus and federally enforceable. Section 173(c)(2) explicitly requires offsets be surplus, namely, that "emission reductions otherwise required by this Act shall not be creditable as emissions reductions for purposes of any such offset requirement."

In its 2002 letter to the Sacramento Metropolitan Air Quality Management District[2], EPA noted that "it is particularly problematic to demonstrate that non-traditional ERCs, resulting from the road paving, satisfy the surplus requirement." EPA went on to state: "To demonstrate emission reductions are surplus, the District must include, among other things, a comprehensive emission inventory, identify roads to pave, include the schedule for road pavement, and elaborate on the control measures that are responsible for the emission reduction credits. EPA policy requires that nontraditional credits, such as those from road paving, be created and used pursuant to rules approved by EPA into State Implementation Plans which contain quantification protocols, proper monitoring, record keeping and reporting requirements, and mechanisms to enforce the creation and validity of the credits.

These requirements, as clearly stated by EPA in the letter to the SMAQMD, must be met by the Mojave Desert AQMD in developing a rule to render emission reductions from the paving of unpaved roads federally approvable as emission reduction credits. While draft rule 1406 has provisions that may address EPA approval criteria for some of the requirements, not all the requirements have been addressed, especially those relating to determining that the ERCs are surplus.

3. The creation and use of non-traditional ERCs requires the development of an Economic Incentive Program consistent with the EPA 2001 policy document *Improving Air Quality with Economic Incentive Programs*[3].

EPA established the EIP policy in order to provide state and local agencies guidance as to how to develop revisions to their plans and rules that would provide sources with compliance flexibility. This policy includes the EPA approval criteria that must be met if such agencies adopt rules or plans that provide for the creation and use of non-traditional ERCs such as road paving offsets.

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[2] ibid.

[3] http://www.epa.gov/ttn/caaa/t1/memoranda/eipfin.pdf.

However, draft Rule 1406 does not address these requirements. At a minimum, the rule must include EIP elements that periodically evaluate the road paving offsets program. The purpose of the evaluation is to retrospectively assess the performance of the program on emissions and evaluate other aspects of program performance. As detailed in rulemaking materials prepared by Maricopa County for their Rule 242,[4] any draft rule should incorporate the following elements for each evaluation period:

- Total number of applications received
- Total miles of roads paved
- Total number of reductions achieved (tons/yr)
- Average distances between paved road(s) and user of credits
- Map identifying the location of the paved projects and the user of the credits

The evaluation report must also address the following, when applicable:

- Has it been difficult to make a surplus determination on any application? Why was it difficult? Should the rule be revised to provide additional clarity and if so, how?
- What changes, if any, are appropriate for the equations, emission factors, constants, or default values?
- Describe any situation where: the paved road was not subsequently adopted by the local authority, the paved road was not being properly maintained, or the emission reductions were subsequently deemed invalid. What happened to those emission reductions and how was the problem resolved?
- Have there been any unintentional beneficial or detrimental effects from the program?
- What changes, if any, are appropriate to streamline or improve the administrative process?
- Did the MDAQMD have sufficient resources to implement this program?
- What have been the lessons learned?

In addition to these three fundamental Clean Air Act and EPA policy requirements regarding the creation and use of road paving ERCs, the health impacts of using such ERCs should also be a key concern when reviewing the permitting of new natural gas-fired combustion stationary sources such as power plants. Fine particulates less than or equal to 2.5 microns in diameter (PM2.5) penetrate the respiratory system more efficiently than particles of a larger diameter and cause serious health effects, including premature death. Road dust is predominantly PM10 and has a relatively small fraction of PM2.5 particles.

As noted by the Air Resources Board in 2000[5], "...there is no technical justification for allowing PM emission reductions from road paving to offset PM increases from natural gas combustion. Any ERC granted for reductions in non-combustion source particulate

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[4] Maricopa County Air Quality Department, proposed Rule 242 - Emission Offsets Generated by the Voluntary Paving of Unpaved Roads scheduled for adoption on June 20, 2007.

[5] Michael Kenny, Executive Officer, Air Resources Board, June 16, 2000 memo to Air Pollution Control Officers.

matter should contain conditions to limit the use of the ERC to similar-sized non-combustion particulate matter sources. If ERCs have been granted for paving of roads, those ERCs should not be allowed to be used to mitigate the impacts of combustion particulate."

These vital health concerns should be analyzed in any CEQA documents and considered by the California Energy Commission during their licensing review of new power plants.

Please contact me if you have further questions regarding my review of this matter.

Sincerely,

David P. Howekamp
Air Quality Management Consultant

David P. Howekamp
4191 Coralee Lane
Lafayette, CA 94549
925-284-8045
email: howekamp@gmail.com

ENVIRONMENTAL CONSULTANT
2000-present

Provide expert witness analysis and testimony for an environmental organization regarding permitting requirements for a major deep water port LNG facility.

Provide expert witness analysis and testimony for an environmental organization regarding control technology permitting requirements for a major coal fired power plant.

Provide expert witness declarations for several environmental organizations regarding lawsuits against the Environmental Protection Agency.

Act as expert advisor to the Port Community Advisory Committee at the Port of Los Angeles providing advice and recommendations to the citizens regarding environmental studies and impacts and controls for port expansion projects.

As member of the Technical Working Group, participate in the development of the San Pedro Bay Clean Air Action Plan which describes the measures that the Ports of Los Angeles and Long Beach will jointly take toward reducing emissions related to port operations.

Participate on consultant team that analyzed the possibility of providing shore power for berthed ships at the Port of Long Beach.

Provide expert witness analysis of damage claims for a state attorney general in lawsuit regarding motor vehicle inspection program.

Provide expert witness analysis of Clean Air Act civil penalties for alleged violations by a major glass manufacturer and by a major wood products manufacturer.

Provide policy and regulatory advice to several electric utility clients and sugar refinery regarding air quality issues affecting their industry

Provide expert witness analysis of alleged Clean Air Act criminal violations for a major petroleum refinery and a gas/electric utility.

Prepare a voluntary Clean Air Plan for the cities of the Tri-Valley Area of Alameda County.

Analyze future toxic tort, groundwater/soil contamination and other environmental remediation costs for major national clients, including mineral extraction, waste disposal and airline companies.

ENVIRONMENTAL PROTECTION AGENCY
REGION 9, SAN FRANCISCO, CA

DIRECTOR, AIR DIVISION
1982-2000

Primary responsibility to oversee implementation of the Clean Air Act and radiation programs in California, Arizona, Nevada and Hawaii. For seven years, also responsible for pesticides and toxic substances programs.

Principal advisor to the Regional Administrator on policy, political and technical issues involving air quality management and radiation. As member of the senior management team, provided advice on broader, cross-media issues involving water pollution, toxic chemicals and hazardous waste.

Facilitate or negotiate settlements between agencies, industries and public interest groups.

Interpret applicable state and local laws and regulations and integrate with Federal laws. Work closely with elected officials in state legislatures and on local air district boards to adopt needed laws, regulations and measures.

Manage a budget of over $40 million and a staff of 120 scientists, engineers and planners to accomplish the following program activities:

- initiating Federal administrative or judicial enforcement against violating sources of air pollution
- reviewing project proposals and issuing Federal air quality permits to major industrial sources
- developing and approving State Air Quality Management Plans
- developing state motor vehicle emissions testing programs and other mobile source control programs
- providing program grants to state/local air management agencies
- delegation to, support and oversight of state/local air quality programs
- collection and quality assurance of ambient and source emission air quality data for planning or compliance
- implementation of public information and outreach programs
- developing emission limiting rules and regulations for source categories
- development of emissions trading and other economic incentive programs
- negotiation and implementation of international border agreements with the Government of Mexico

ENVIRONMENTAL PROTECTION AGENCY
REGION 9, SAN FRANCISCO, CA

Prior to 1982, held progressively more responsible positions in the following areas:

- Managing development and approval of Air Quality Management Plans.
- Managing all permit programs in Region 9 including permits for air quality, wastewater discharge, dredge and fill, hazardous waste, PCB disposal and ocean dumping
- Developing emission inventories, ambient data and control strategies.
- Conducting mechanical engineering research and development of control technologies for emissions from stationary combustion sources.

PACIFIC GAS AND ELECTRIC CO.
SAN FRANCISCO, CA

As staff engineer, measured meteorological phenomena to determine the diffusion patterns, possible temperature inversions, and other atmospheric characteristics of the future Diablo Canyon Power Plant.

ORGANIZATIONS

Air and Waste Management Association
Lafayette-Moraga Youth Association Board

AWARDS

Presidential Rank Award of Meritorious Executive
Awarded by the President of the United States
Environmental Protection Agency Bronze, Silver and Gold Medals
National Merit Scholar

EDUCATION

Master of Business Administration
University of California, Berkeley

BS, Mechanical Engineering
University of California, Berkeley

Laura
Yannayon/R9/USEPA/US
08/24/2007 01:40 PM

To Adesalivo@mdaqmd.ca.gov
cc Kerry Drake/R9/USEPA/US@EPA, Allan Zabel/R9/USEPA/US@EPA@EPA, Lily Wong/R9/USEPA/US@EPA
bcc
Subject Additional EPA comments on latest PERC rule draft

History: This message has been replied to.

Alan,

I left you a voice mail message, but I think today is your every other Friday off, so I thought I should send you an email as well. Please find attached the latest draft of Rule 1406 you provided a few weeks ago with additional track change edits and comments. Many of the changes are minor or provide clarification. For example, in several places the rule refers back to Rule 1402 on how certain actions are to be performed. Because of the different terminology used in Rule 1406, we think it is better to spell these requirements out in this rule, using the terminology of this rule. Please review and accept all of the changes you concur with so we can focus on the remaining issues. I edited the text to accept the 1% moisture content. (Note the rule was not consistent, in one place it stated you had to test to determine, and in another it said you had to use the default.)

The one technical issue remaining is how the traffic counts will be conducted and how this raw collected data will be used to determine annual traffic counts.

While I am hopeful we can work out the few remaining technical and rule language issues, EPA would like to reiterate that there are still outstanding issues related to the PM SIP that must also be resolved before the rule can be considered for SIP approval.

LY - Second Draft 1406 8-24-07.doc

Laura Yannayon
****
US EPA, Region 9 / Air Division, Permits Office (Air-3) / San Francisco, CA 94105-3901
yannayon.laura@epa.gov / (415) 972-3534 / (415) 947-3579 (fax)

Laura Yannayon/R9/USEPA/US
09/11/2007 06:15 PM

To "Karen Nowak" <k2nowak@mdaqmd.ca.gov>
cc "Alan De Salvio" <Adesalvio@mdaqmd.ca.gov>, "Eldon Heaston" <eheaston@mdaqmd.ca.gov>, Allan Zabel/R9/USEPA/US@EPA@EPA, Lily
bcc
Subject Re: MD 1406 Rehash

Karen,

I've been asked to forward you the following attachment which summarizes an additional program requirement for rules that fall under the category of Economic Incentive Programs (EIP). It is pretty basic stuff, but the requirement to perform an evaluation must be included either in your rule, or in your board letter. Please give me a call if you have any questions.

As for the current draft version of Rule 1406, there was one area EPA was still researching when I last sent you comments. The issue has to do with how the traffic survey data from the required 48 hour period is converted to annual traffic counts. I am not sure that CDOT has the local data needed to make the specified adjustments. There level of detail only goes down to state highways, which I am sure are the not roads anyone will be paving. Therefore some revisions will need to be made to the rule to specify how these annual adjustments are to be made.

MD 1406 prog eval.doc

Laura Yannayon
****
US EPA, Region 9 / Air Division, Permits Office (Air-3) / San Francisco, CA 94105-3901
yannayon.laura@epa.gov / (415) 972-3534 / (415) 947-3579 (fax)
"Karen Nowak" <k2nowak@mdaqmd.ca.gov>

"Karen Nowak" <k2nowak@mdaqmd.ca.gov>
09/11/2007 02:04 PM

To Laura Yannayon/R9/USEPA/US@EPA
cc "Alan De Salvio" <Adesalvio@mdaqmd.ca.gov>, "Eldon Heaston" <eheaston@mdaqmd.ca.gov>
Subject MD 1406 Rehash

Laura:

Its looking like we will be making most all of your suggested changes (as contained in your e-mail of 8/24/07) to 1406 in November. Technically it will be a readoption rather than an amendment do to some outside factors. We plan to adopt the PM10 attainment/maintenance plan at the same meeting.

We should have a rough draft shortly. I'll ship it up to you when we get it done.

Karen

Mojave Desert Proposed Rule 1406 (paving unpaved roads) should include provisions to periodically evaluate the program. The following describes the program evaluation purpose, scope, frequency, and follow-up tasks.

Program Evaluation

- Mojave Desert shall evaluate the program once every 3 years and submit the evaluation report to EPA within 60 days of completion. The purpose of the evaluation is to retrospectively assess the performance of this program on emissions and evaluate other aspects of program performance.

- The evaluation report should include the following elements for each evaluation period:
  - total number of applications approved
  - total miles of roads paved
  - total amount of reductions achieved (tons/yr)
  - cost of emission reductions (dollars/ton) for each approved application
  - cost savings, if any, experienced by sources from using these emission reduction credits
  - average cost of emission reductions during the evaluation period
  - average distances between paved road(s) and user of credits
  - map identifying location of paving projects and users of the credits

- The evaluation report should address the following:
  - Has it been difficult to make a surplus determination on any application? Why was it difficult? Should the rule be revised to provide additional clarity? How?
  - What changes, if any, are appropriate for the equations, emission factors, constants, or default values in Appendix A?
  - Describe any situation where: the paved road was not subsequently adopted by the local authority, the paved road was not being properly maintained, or the emission reductions were subsequently deemed invalid. What happened to those emission reductions and how was the problem resolved?
  - Have there been any unintentional beneficial or detrimental effects from the program?
  - What changes, if any, are appropriate to streamline or improve the administrative process?
  - Did the County have sufficient resources to implement this program?
  - What have been the lessons learned?

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

DOCKET
02-AFC-1
DATE NOV 21 2005
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November 21, 2005

Commissioners John Geesman and Arthur Rosenfield
California Energy Commission
1516 Nineth St.
Sacramento, CA 95814

Subject: Blythe Energy Project Phase II Proposed Decisions

Dear Commissioners Geesman and Rosenfeld:

Thank you for the opportunity to comment on your proposed decision to approve this application, subject to the restrictions in the proposed decision. We previously provided comments to the Mojave Desert Air Quality Management District that the offset proposal is seriously flawed (see attached letter, dated December 26, 2002) due to the use of proposed road paving as a source of Emissions Reduction Credits for PM10 is a major concern (as noted on p. 24 of the proposed decision). The proposed use of inter-precursor trading without a technical justification approved by EPA is another issue (p. 39 of the proposed decision). Therefore, we recommend that the Commission revise the proposed decision to require that the applicant obtain offsets that meet federal requirements.

If you have any questions regarding our comments, please have Commission staff contact me at (415) 972-3974, or Manny Aquitania of my staff at (415) 972-3977.

Sincerely,

Gerardo C. Rios
Chief, Air Permits Office

Enclosure

cc: CEC Docket
Robert Looper, Blythe II
Mr. Charles Fryxell, Mojave Desert AQMD
Mr. Mike Tollstrup, California Air Resources Board

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 26, 2002

Mr. Charles Fryxell
Air Pollution Control Officer
Mojave Desert AQMD
14306 Park Avenue
Victorville, CA 92392

Re: Comments on Preliminary Determination of Compliance for Blythe Energy Project II

Dear Mr. Fryxell:

Please find enclosed our comments on your Preliminary Determination of Compliance (PDOC) for the Blythe Energy Project II (BEPII). Our comments on the PDOC for this project, discuss several permit conditions that must be corrected prior to final permit issuance, including: (1) your BACT/LAER analysis for NO_x; (2) an ammonia slip concentration limit that exceeds ARB guidelines; (3) the enforceability of the cooling tower PM_{10} emission limit; (4) authorizing the use of invalid PM_{10} offsets; (5) inter-pollutant trading, (6) malfunction exemption from CO, NOx, and VOC emission limits and (7) the turbine power train Authority to Construct condition for CO. These permit deficiencies are explained in detail in the enclosed comments.

We appreciate the District's cooperation and look forward to working with you and your staff to correct the permit conditions prior to the issuance of the Final Determination of Compliance (FDOC). Please have your staff contact Curt Taipale at (415) 972-3966 in our Permits Office if you need further discussion on any of our comments.

Sincerely,

N. Zoneshtrah for

Gerardo C. Rios
Chief, Permits Office

enclosure

cc: Mike Tollstrup, CARB
Jim Bartridge, CEC
Larry Carpenter, Caithness Blythe II, LLC

EPA Comments on Preliminary Determination of Compliance (PDOC) for Blythe Energy Project II (BEPII)

1. EPA LAER/California BACT Evaluation:

NO_x: The PDOC contains a LAER/BACT limit of 2.5 ppm NO_x over one hour, but must be revised to require a limit of **2.0 ppm NO_x** over a one hour averaging time. Where, as here, a technology may achieve a range of control efficiencies, EPA's NSR Manual (Draft 1990), at B.23, states that "the applicant should use the most recent regulatory decisions and performance data for identifying the emissions performance level(s) to be evaluated in all cases." The Manual, at B. 24, concludes: "In the absence of a showing of differences between the proposed source and previously permitted sources achieving the lower emissions limits, the permitting agency should conclude that the lower emissions limit is representative for that control alternative." Several recently permitted California power plants, which are similar if not identical in all material respects to the BEPII facility, are required to meet a LAER/BACT emission rate of 2.0 ppm NO_x over a one hour average. These permits include the Sunrise Power Project (NSR Permit-SJVUAPCD, PSD Permit-EPA), the San Joaquin Valley Energy Center (FDOC) and the Avenal Energy Power Plant Project (PDOC) permitted by San Joaquin Valley Unified Air Pollution Control District; the East Altamont Energy Center (FDOC) and Tesla Power Project (PDOC) permitted by the Bay Area Air Quality Management District. Additionally, the ANP Blackstone units #1 and #2 in Massachusetts were permitted and since 2001 have been operating at a LAER rate of 2.0 ppm NO_x over one hour (excluding start-up and shut-down). Therefore, regulatory decisions and available performance data demonstrate that the LAER/BACT rate for BEPII is presumptively 2.0 ppm NO_x over one hour. Your engineering analysis does not explain any ways in which the BEPII units differ from the numerous units that have been permitted and are operating at a LAER/BACT emission rate of 2.0 ppm NO_x averaged over one hour. Please revise the PDOC to require BEPII to meet the LAER/BACT limit of 2.0 ppm NO_x over one hour.

2. Selective Catalytic NO_x Reduction System Authority to Construct (ATC) Conditions:

Condition 4: The District has proposed the ammonia slip shall not exceed 10 ppmvd (corrected to 15% O_2) averaged over three hours. We strongly recommend that the District lower the proposed ammonia slip limit from 10 ppm to 5 ppm. A number of power plants in California have accepted the 5 ppm limits, e.g., AES Huntington Beach, Metcalf Energy Center, and Three Mountain. The CARB's Power Plant Guidance also suggested the 5 ppm concentration, citing evidence that a couple of power plants in Massachusetts using SCR have been permitted at 2 ppm and that several SCR manufacturers have now guaranteed a 5 ppm ammonia slip.

3. Cooling Tower ATC Conditions:

Condition 3: The District has determined the use of mist eliminators to limit drift to 0.0006 percent as PM_{10} is LAER/BACT for the BEPII cooling towers. The Clean Air Act considers LAER as the most stringent controls identified in a SIP or achieved in practice. 42 U.S.C. § 7501(3). Dry cooling has been achieved in practice for many years, and various permitting authorities are currently deciding whether it is now considered LAER in PM_{10} non-attainment areas for new power plants. Even if EPA ultimately accepts wet cooling as LAER,

BEPII must propose and accept appropriate LAER limits for particulate emissions from the wet cooling tower that contemplate the use of mist eliminators and include enforceable total dissolved solids (TDS) concentration limits for the circulation water.

Condition 3, states that *"the maximum hourly PM_{10} emission rate shall not exceed 0.67 pounds per hour...."* This corresponds to about 1,500 ppm of total dissolved solids at a circulation rate of 146,000 gallons per minute and a drift rate of 0.0006 percent. The cooling tower PM_{10} emission limit of 0.67 pounds per hour, however, is practically unenforceable unless the permit includes an expressed limit on the TDS concentration. Therefore, we require you to add an additional permit condition specifying the maximum TDS concentration corresponding to the calculated maximum hourly PM_{10} LAER/BACT emission limit. A maximum TDS permit limit combined with conditions 4, 5 and 6 will ensure the enforceability of the maximum hourly PM_{10} emission limit.

4. PM_{10} Emission Reduction Credits From Road Paving:

The PM_{10} emissions (from twin F Class turbines and cooling tower) are estimated at 56 tons per year. You are proposing to offset these emissions at a 1:1 ratio by paving an unpaved road (identified as CRIT Road Paving). The District has indicated that the CRIT Road Paving would create 126 tons per year of PM_{10} ERCs, but no other details are provided in the PDOC. The road paving credits discussed in the PDOC do not satisfy the fundamental requirements for NSR offsets to be surplus, quantifiable, permanent, and federally enforceable. To ensure creditability of non-traditional ERC's, such as those generated by road paving, the SIP must contain an approved protocol for quantifying and guaranteeing the permanence, surplus nature and enforceability of such credits. The PM_{10} credits in the BEPII PDOC cannot be allowed to offset the PM_{10} increases. Therefore, you must require the applicant to obtain and publicly notice valid PM_{10} ERCs before issuing the FDOC.

5. Inter-pollutant Trading:

The District's proposal for BEPII's inter-pollutant offset trading cannot be allowed because it has not received EPA approval. It is clear from the language in Rule 1305(B)(6) that EPA must affirmatively approve the trade and a mere failure to object is irrelevant. The MDAQMD Rule 1305(B)(6) states:

> *(a) Emissions reductions of one type of Air Pollutant may be used as Offsets for another type of Air Pollutant upon approval of the APCO, in consultation with CARB and the* ***approval of USEPA****, on a case-by-case basis as long as the following apply:*
>
> *(i) The trade must be technically justified; and*
>
> *(ii) The applicant must demonstrate, to the satisfaction of the APCO, that the combined effect of the Offsets and emissions increases from the new or modified Facility will not cause or contribute to a violation of an Ambient Air Quality Standard.*

Moreover, the interpollutant offsets proposed in the PDOC are not approvable based on the criteria established in the Rule. The District proposes to establish an inter-pollutant offset ratio of 1:1 for NO_x to VOC and PM_{10} to SOx. The EPA has not approved a methodology for

determining the appropriate ratio for inter-pollutant offsets. Several methods might be acceptable in conjunction with other considerations for this specific project. The burden in seeking approval for inter-pollutant offsets rests with the applicant to demonstrate that the inter-pollutant offsets being proposed will ensure a beneficial effect on air quality levels in the area of the proposed project. Modeling is a critical component of this analysis, and several Urban Airshed Modeling methodologies have been considered and made available to applicants on a case-by-case basis. Nevertheless, each such trade must be affirmatively approved by EPA.

6. Malfunction Exemption from Emission Limits in Tubine Power Train ATC:

Under condition #4, the District has proposed CO, NO_x and VOC emission limits except during periods of startup, shutdown, and malfunction. The term "malfunction" does not appear in applicable District Rules. In PSD permits issued by Region 9, we define a malfunction as a sudden and unavoidable breakdown of equipment or of a process beyond reasonable control of the source. We allow an affirmative defense in the context of enforcement proceedings for a malfunction only under strict conditions. The District should either define what constitutes a malfunction consistent with federal guidelines or remove this language to avoid confusion.

7. Turbine Power Train ATC Condition for CO:

Under a separate action for this proposed project, the EPA will be performing a PSD review for CO and NO_2 and making a BACT determination. We anticipate that the BACT determination may require a lower CO concentration limit than proposed in this PDOC. A final permit for the facility will include the most stringent requirements.

The PDOC BACT discussion for CO, BEPII proposes a concentration of 5 ppm (at loads greater than 80%) and 8.4 ppm (at loads between 70-80%) **averaged over three hours**, without an oxidation catalyst. However, the District BACT determination and the proposed Turbine Power Train ATC permit condition #4(a)(ii) permits a higher averaging period in the following:

(ii) CO 35.20 lb/hr (based on 5.0 ppmvd (8.4 ppmvd with duct firing or when between 70 and 80 percent of full load) corrected to 15% O2 and ***averaged over 24 hours****)*

The 24-hour averaging period appears to be a typographical error and must be changed to the three hour averaging period.

FAX TRANSMITTAL

To ANDREW LEVINE
Dept/Agency
Fax (650) 599-5062
NSN 7540-01-317-7368 5099-101

From MANNY AQUITANIA
Phone # (415) 972-3911
Fax #

GENERAL SERVICES ADMINISTRATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

September 30, 2002

Mr. Jorge DeGuzman
Permitting Program Supervisor
Sacramento Metropolitan Air Quality Management District
777 12th Street, 3rd Floor
Sacramento, CA 95814-1908

Dear Mr. DeGuzman:

Thank you for the opportunity to comment on Sacramento Metropolitan Air Quality Management District's (SMAQMD) Preliminary Determination of Compliance (PDOC) for the Sacramento Municipal Utility District - Cosumnes Power Plant (CPP) project. The PDOC for CPP is dated August 27, 2002, and was received in our office on August 28, 2002. The CPP project is proposed as a two-phase project. Only the 530 MW -capacity Phase I, consisting of two combined cycle gas turbines, one condensing steam turbine, and one 9-cell cooling tower, is addressed at this time.

EPA agrees with the proposed Best Available Control Technology (BACT) limits for NO_x, 2.0 ppmvd @ 15% O_2, 1-hour average; CO, 4.0 ppmvd @ 15% O_2, 3-hour average; and ROC, 1.4 ppmvd @ 15% O_2 as methane. The applicant plans to use dry low NO_x combustors and a selective catalytic reduction system to achieve the NO_x, ROC and CO emission limits. PM_{10} will be controlled by using pipeline quality natural gas.

Also, we would like to acknowledge that SMAQMD, the permit applicant, and EPA's modeling staff worked together to determine that the interpollutant trade (IPT) ratios for VOC for NO_x of 3.9:1, and for SOx to PM_{10}, 2:1, would result in a net air quality benefit for the CPP project. EPA staff have concluded based on the specific information provided that the IPT is appropriate. We appreciate you working with Region 9 staff prior to release of the PDOC, in order to reach consensus on the approach leading to the final IPT ratios. Please note that this approval does not provide precedent for approving any other interpollutant trade (see enclosure).

Finally, while we agree with the control technology requirements on the SMUD-Cosumnes PDOC, we have also identified some issues (enclosed) that must be resolved prior to permit issuance. The primary permit deficiency centers on the proposed PM_{10} emission reduction credits. The PM_{10} ERCs, primarily road pavement credits, are not valid because SMAQMD does not have an approved PM_{10} State Implementation Plan, and approved rules that would allow innovative, non-traditional credits to be created and used. SMAQMD has two options: (1) submit some elements of a moderate area plan (e.g., RACT/RACM), and an

approvable request for redesignation to attainment for PM_{10}, which includes the necessary maintenance plan; or, (2) require the facility to provide the appropriate amount of valid PM_{10} credits to offset the new emissions of the proposed CPP.

If you have any questions regarding these comments, please contact me at (415)972-3974, or have your staff contact Manny Aquitania at (415)972-3977.

Sincerely yours,

Gerardo C. Rios
Chief, Permits Office

Enclosure

cc: Aleta Kennard, SMAQMD
Brigette Tollstrup, SMAQMD
Jan Schori, Sacramento Municipal Utility District
Paul Richins, Jr., California Energy Commission
Tuan Ngo, California Energy Commission

EPA Comments
on
Preliminary Determination of Compliance
SMUD-Cosumnes Power Plant

1. PM10 Emission Reduction Credits – In general, EPA requires that all ERCs used as offsets must be real, permanent, quantifiable, surplus, and federally enforceable. Phase I of the SMUD-Cosumnes Power Plant project will rely on both traditional and non-traditional emission reduction credits in Sacramento County to offset 79.5 TPY of PM_{10} emissions. It is particularly problematic to demonstrate that non-traditional ERCs, resulting from the road paving, satisfy the surplus requirement. The CPP is proposing to offset approximately 49.5 TPY of PM_{10} emissions by paving segments of eight roads that are currently unpaved. To demonstrate emission reductions are surplus, the District must include, among other things, a comprehensive emission inventory, identify roads to pave, include the schedule for road pavement, and elaborate on the control measures that are responsible for the emission reduction credits. EPA policy requires that nontraditional credits, such as those from road paving, be created and used pursuant to rules approved by EPA into State Implementation Plans which contain quantification protocols, proper monitoring, record keeping and reporting requirements, and mechanisms to enforce the creation and validity of the credits.

2. Modeling Issues – EPA is providing formal approval of interpollutant trades of VOC for NO_x (3.9:1), and SO_x for PM_{10} (2:1) ratios for this particular project. Despite shortcomings in the methods used to arrive at the ratios, they were the result of a consensus process involving EPA, ARB, and the District. This approval does not provide precedent for approving any other interpollutant trades. Each such request must be based on the specific modeling characteristics for the location and design of the project.

3 Combustion Turbine MACT – It is unclear whether SMUD-Cosumnes will be a major source of hazardous air pollutants. Until EPA promulgates a maximum achievable control technology (MACT) standard for combustion turbines, all new stationary combustion turbines that are major for hazardous air pollutants are subject to case-by-case MACT determinations in accordance with section 112(g) of the Clean Air Act. EPA clarified this requirement in an interpretive rule published in the Federal Register on April 21, 2000 (65 FR 21363), accessible through EPA website, "www.epa.gov/ttn/atw/combust/turbine/turbpg.html." If the combustion turbines are not major for HAPs, the permit must document that fact.