BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re:	)	
Russell City Energy Center	)	PSD Appeal Nos. 10-02, 10-03, 10-04 & 10-05
PSD Permit No. 15487	)	

RUSSELL CITY ENERGY COMPANY, LLC'S
EXHIBITS TO ITS SUR-REPLY BRIEF

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RUSSELL CITY ENERGY COMPANY, LLC'S
EXHIBITS TO ITS SUR-REPLY BRIEF
(PSD APPEAL NOS. 10-02, 10-03, 10-04 & 10-05)

EXHIBIT INDEX

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03/00/2008	U.S. EPA, "Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers in Diameter (PM2.5), Response to Comments" [Excerpt]	60
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Exhibit 60

Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers in Diameter ($PM_{2.5}$)

Response to Comments

Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers in Diameter ($PM_{2.5}$)

Response to Comments

New Source Review Group
Air Quality Policy Division
Office of Air Quality Policy and Standards
U. S. Environmental Protection Agency
Research Triangle Park, NC 27711

March 2008

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(0096.1) said that retaining the existing threshold levels will avoid having different levels for the same criteria pollutant, whether it is PM or other precursor emissions that may be regulated under the NSR program.

A coalition of environmental organizations (0154.1) argued that EPA should use a lower threshold for PSD than the one set forth in section 169(1) to protect public health and welfare notwithstanding compliance with the NAAQS.

Response:

As described above, EPA believes section 169(1) of CAA is controlling for $PM_{2.5}$ and thus the PSD threshold for this pollutant must be 100 tpy for listed source categories and 250 tpy for unlisted categories. If EPA had the authority to selected different thresholds for $PM_{2.5}$, we agree that having different major threshold for this pollutant would add more complexity to the PSD regulations. As stated earlier, EPA has proposed a separate PSD regulation containing increments for $PM_{2.5}$ that are intended to fulfill the "health and welfare goal" cited by the opposing commenter. Once the minor source baseline date for a pollutant is triggered in an area, the increments for that pollutant are consumed by subsequent emissions increases at all sources (regardless of whether they are classified as major or minor).

3.2.2 Nonattainment NSR Major Source Threshold

Supporting Comments:

One state/local agency (0117.1) supported EPA's recommendation of setting the major source threshold for $PM_{2.5}$ at 100 tpy under NA NSR.

Two industry commenters (0083.1, 0140) believe that EPA should allow the NA NSR threshold to remain set at 100 tpy. One of the industry commenters (0140) added that changing this applicability level would add more complexity to the rule with little benefit.

One group of industry commenters (0096.1) believes that there are strong policy reasons for retaining the current major source threshold. The commenters stated that one important consideration is the minimal environmental gains of lowering the major source threshold for $PM_{2.5}$, and indicated that lowering the threshold from 100 tpy to 70 tpy in $PM_{2.5}$ nonattainment areas, for example, would not increase significantly the number of sources covered under the NA NSR program. The commenters added that lowering the threshold would just add regulatory complexity with marginal benefit to air quality, at most. Among other things, the commenters noted that retaining the existing threshold level would avoid having different levels for the same criteria pollutant, whether it is PM or other precursor emissions that may be regulated under the NSR program.

Opposing Comments:

Six state/local agency commenters (0079.1, 0080.1, 0084.1, 0142, 0164, 0168) and two state/local agency association commenters (0136.2, 0165) did not agree with the proposed major source threshold of 100 tpy for direct $PM_{2.5}$ emissions under NA NSR.

One state/local agency commenter (0153) believes that EPA did not provide an adequate technical defense of its selection of the major source thresholds for PSD and NA NSR and cannot support any level without a sufficient defense. The commenter indicated that common sense would dictate that a fraction of PM would have lower equivalent thresholds, noting that this principle was demonstrated in the levels of NAAQS with each smaller PM fraction having a lower NAAQS. Another of the state/local agency commenters (0164) pointed out that $PM_{2.5}$ is a subset of PM_{10} and should have correspondingly lower thresholds.

Other state/local agency commenters stated that lower major source thresholds were justified on the basis of the significant number of sources with $PM_{2.5}$ emissions between 25-99 tpy and the potential for a source with this level of emissions to cause a significant impact on ambient $PM_{2.5}$ concentrations and public health. (We discuss these particular justifications in more detail in our response, below.)

A coalition of environmental groups commented that, since EPA has repeatedly found $PM_{2.5}$ to be at least as potent, if not more potent, in terms of mass concentration than PM_{10}, it would be arbitrary for EPA to not at least adopt the 70 tpy major source threshold in section 189(b)(3) for all $PM_{2.5}$ nonattainment areas.

One Federal agency commenter (0068) supported an NSR policy on $PM_{2.5}$ components and precursors that is consistent with the nonattainment area plan requirements. As to what constitutes appropriate major source thresholds of $PM_{2.5}$ or precursor emissions for the purpose of the major NSR program, the commenter encouraged EPA to look at all relevant parts of the Act for guidance on developing its policy. If EPA were not constrained from considering provisions of the act that may help ensure attainment and maintenance of the $PM_{2.5}$ NAAQS, such as the more stringent emissions thresholds Congress required in subpart 4 for PM_{10} nonattainment areas, then the commenter would support that approach. The commenter indicated that the increased risk of adverse health effects from fine PM, generally, as well as consideration for other well-documented pollutant effects that would need to meet requirements of section 110(a)(2)(D) of the Act, may help justify the use of lower thresholds for direct $PM_{2.5}$ and $PM_{2.5}$ precursors emissions.[1]

Response:

Although we have considered the technical merit of the 100 tpy major source threshold *for $PM_{2.5}$ in nonattainment areas, as discussed above, we do not interpret the CAA to give the Administrator the authority to establish a lower threshold for $PM_{2.5}$ based on technical considerations. Since Congress established the major source thresholds for the NA NSR permitting program in the Act, it is ultimately not material whether there is an adequate technical justification for the levels because we are not authorized to establish an alternative level for $PM_{2.5}$ based on technical considerations. Section 302(j) is explicit that "except as otherwise expressly provided," the term major source, means a source that has the PTE 100 tpy. Even if subpart 4 were applicable to $PM_{2.5}$, this would at most give us the authority to establish a*

[1] Section 110(a)(2)(D) of the Act requires SIPs to include provisions prohibiting sources from contributing significantly to nonattainment in another State or interfering with another State's measures for PSD or to protect visibility.

major source threshold of 70 tpy in only serious nonattainment areas. No other provision of the CAA expressly provides EPA with the discretion to establish a major source threshold for $PM_{2.5}$ in the range of 25-50 tpy for nonattainment areas.

We agree that the greater health risk posed by $PM_{2.5}$ and the fact that $PM_{2.5}$ is a fraction of total PM both justify lower air quality standards for $PM_{2.5}$, but we do not agree that these facts necessarily require EPA to establish a lower major source threshold under the NA NSR program to achieve attainment or RFP. The major source threshold serves a different function than the NAAQS. The major source definition determines which large sources are subject to the mandatory preconstruction permitting program under subpart D of the Act. Congress made the judgment that those sources emitting greater than the major source level in the Act should be subject to a mandatory permitting programs with specific requirements. For sources with emissions below the statutory level, Congress left the states with the discretion to define the requirements needed for a construction permitting program (or other measures) in order to reach attainment with the NAAQS and to achieve RFP toward the same. Thus, the major source threshold is simply a level that determines the sources subject to the mandatory permitting requirements and this does not necessarily mean that there will not otherwise be sufficient measures in place to protect air quality. Furthermore, since $PM_{2.5}$ particles have distinct health and welfare impacts from PM_{10}, we do not interpret subpart 4 of the CAA to apply to $PM_{2.5}$ simply because $PM_{2.5}$ is a subset of the particles that make up PM_{10}. The EPA's interpretation is explained more fully on pages 12-14 of EPA's Response to Comments document for the Clean Air Fine Particle Implementation Rule (EPA-HQ-OAR-2003-0062-251).

We do not believe that using 100 tpy for the NA NSR program for $PM_{2.5}$ will adversely affect attainment of the $PM_{2.5}$ NAAQS. Data from EPA's emissions inventory indicate that a significant number of sources have actual direct $PM_{2.5}$ emissions greater than 100 tpy range. Thus, the mandatory permitting requirements for major sources will have an impact and hold down emissions increases from new or modified sources with emissions of $PM_{2.5}$ above the 100 tpy level. Furthermore, the exclusion of sources with $PM_{2.5}$ emissions below 100 tpy from the NA NSR program does not preclude states from taking other measures to address the $PM_{2.5}$ emissions from these sources if necessary to achieve attainment or RFP. As we discuss elsewhere in this document, states that believe such sources should be subject to requirements similar to those in section 173 have the discretion to establish such requirements in preconstruction permit programs for minor sources.

If EPA had the authority to select different thresholds for $PM_{2.5}$, we agree that having a major threshold for $PM_{2.5}$ other than 100 tpy would add more complexity to the NA NSR regulations.

Comments:

Several state agency and association commenters (0136.2, 0142, 0165, 0168) disagreed with our analysis in the proposed rule that "the more current inventory data shows that the number of sources that would be covered as major sources by a lower major source threshold would not increase substantially unless the threshold were lowered to 20 tpy or below" (70 FR 66037). These commenters referred to state analyses, which they argue supports a contrary conclusion that a lowered major threshold level in the 25-50 tpy range would significantly

increase (i.e., essentially double) the number of sources subject to major NSR review. One of these commenters (0136.2) said that a number of state agencies reviewed their emission inventories and found a significant number of sources that emit at levels between 45-99 tpy. However, the commenter did not identify the specific states. The other commenters (0142, 0165, 0168) all cited to a single analysis performed by the State of New Jersey. Based on a review of its emissions inventory, New Jersey concluded that there are approximately 26 facilities in New Jersey with allowable PM_{10} emissions greater than 100 tpy and approximately 56 facilities within this state with allowable PM_{10} emissions between 45-99 tpy.

Response:

Commenters have not provided sufficient information to persuade us that our analysis is not reliable. The EPA's analysis was based on a nationwide inventory and used $PM_{2.5}$ emissions, whereas most commenters rely on an analysis from a single state based on an inventory of PM_{10} emissions. The use of PM_{10} emissions tends to bias the New Jersey analysis upwards, increasing the number of sources in the 45-99 ton per year range, and decreasing the number of sources below this range. The EPA's national inventory data for $PM_{2.5}$ show that the number of sources that would be covered as major sources by a lower major source threshold would not increase substantially unless the $PM_{2.5}$ threshold were lowered to 20 tpy or below. Thus, even if EPA had the authority to adopt a 25-50 tpy major source threshold for $PM_{2.5}$ nonattainment areas, we still do not believe that many additional sources would be subject to the major NSR program in $PM_{2.5}$ nonattainment areas, notwithstanding the analysis cited by the commenters. The commenters that cursorily refer to analyses in more than one state did not provide enough information about such analyses to enable EPA to evaluate these assessments or compare the results with EPA's assessment.

Even if the commenters could show that a 25 tpy cutoff would double the number of sources subject to major NSR across the country, we do not believe that our lack of authority to adopt such a major source threshold for $PM_{2.5}$ will have significant adverse impact on attainment of the $PM_{2.5}$ NAAQS. Section 110(a)(2)(C) of the Act and 40 CFR 51.160(b)(2) require state minor NSR programs to assure compliance with the NAAQS, and these programs can be implemented to prevent attainment problems that might be caused by source actions that are not subject to the major NSR program. In addition, as previously noted, the Act does not constrain states from setting lower major source thresholds for $PM_{2.5}$ in their major NSR programs. States also may develop other SIP provisions to regulate direct $PM_{2.5}$ and precursor emissions from sources with lower emissions.

Comments:

Three state/local agency and association commenters (0142, 0165, 0168) believe that a lower major source threshold is justified by the potential of sources with direct $PM_{2.5}$ emissions of 25 to 99 tpy to cause high ambient $PM_{2.5}$ impacts. These commenters said this impact justifies a lower major source threshold to avoid adverse health effects caused by relatively low ambient concentrations of $PM_{2.5}$ and to ensure RFP toward attainment of the $PM_{2.5}$ NAAQS in nonattainment areas.

According to two of these commenters (0142, 0165), section III.M.5.b of EPA's proposal (70 FR 66038) describes a modeling analysis conducted by EPA to compare $PM_{2.5}$ stack emissions to the resulting ambient impact. Based on the results of this modeling [15 tpy of PM_{10} emissions results in up to 0.8 microgram per cubic meter ($\mu g/m^3$) annual PM_{10} concentration], one can conclude that a 99 tpy source of direct $PM_{2.5}$ could have up to a 5.3 $\mu g/m^3$ annual $PM_{2.5}$ impact. This represents 35 percent of the current $PM_{2.5}$ annual NAAQS of 15 $\mu g/m^3$. A similar problem is found for short-term $PM_{2.5}$ impacts, when scaling the results of the 24-hour modeling presented in section III.M.5.b (70 FR 66038). A 99 tpy $PM_{2.5}$ source could have up to a 39.6 $\mu g/m^3$ 24-hour $PM_{2.5}$ impact. This concentration is approximately 61 percent of the current $PM_{2.5}$ 24-hour NAAQS of 65 $\mu g/m^3$. The issue becomes even more problematic if the standards are lowered in the future. Under the recently proposed $PM_{2.5}$ 24-hour NAAQS of 35 $\mu g/m^3$, emissions from a 99 tpy $PM_{2.5}$ source could violate the 24-hour NAAQS.[2]

Response:

The potential for a source emitting less than 100 tpy of $PM_{2.5}$ to cause high ambient $PM_{2.5}$ impacts provides a justification for the state to address the construction of such a source through its minor source permitting program or other measures in its SIP. However, it does not necessarily require mandatory application of the NA NSR requirements under the CAA. As discussed above, EPA does not read the Act to authorize the agency to lower the major source threshold for $PM_{2.5}$ on the basis of the potential for a source less than 100 tpy to have a high ambient impact on $PM_{2.5}$. We do not see any provision in the Act (under either subpart 1 or subpart 4) that gives EPA the authority to lower the major source threshold on the basis of the potential ambient air impact of a source emitting less than 100 tpy of $PM_{2.5}$.

With respect to the health impacts, EPA has established the $PM_{2.5}$ NAAQS at a level requisite to protect health with an adequate margin of safety. States are obligated to submit implementation plans to achieve attainment with the NAAQS and to achieve RFP toward attainment. Public health is protected by states complying with these requirements of the Act and meeting the NAAQS. To the extent implementation of the NA NSR program, using the major source threshold reflected in the Act, is insufficient to attain the NAAQS, it is incumbent upon states to develop additional measures to attain the NAAQS. Congress did not authorize EPA to lower the 100 tpy major source level for NA NSR to make up for a failure of states to include such measure in their plans. To the extent that commenters are concerned about transport from other states that do not have measures as effective as their own, EPA has established the CAIR to ensure that states control their contribution to downwind nonattainment of the $PM_{2.5}$ NAAQS.

As discussed above, for major NSR in nonattainment areas, the RFP requirement is integrated with the offset requirement in section 173(a)(1)(A) of the Act. In light of the way Congress defined "major source" under the CAA, EPA does not have the authority to lower the major source threshold for NA NSR on the basis of concerns about RFP. States have the obligation to establish additional measures in their SIPs (including the minor NSR program) where such measures are necessary to achieve RFP. The EPA does not read the Act to give it

[2] On October 17, 2006 (after these comments were submitted), we finalized our proposal to lower the 24-hour NAAQS for $PM_{2.5}$ to 35 $\mu g/m^3$.

the authority to mandate major NSR permitting requirements for source below 100 tpy based on concerns regarding RFP.

Comment:

One of the state/local agency commenters (0142) believes that an appropriate major source threshold for $PM_{2.5}$ emissions can be calculated using the current SO_2 and NO_x definitions of major source and SER. The commenter suggested that the ratio of these values (100 tpy and 40 tpy) can be multiplied by the proposed $PM_{2.5}$ SER of 10 tpy (see section 4 below for more on the $PM_{2.5}$ SER), resulting in a $PM_{2.5}$ major source threshold of 25 tpy. The commenter indicated that this 25 tpy major source value would provide consistency with those of the $PM_{2.5}$ precursors SO_2 and NO_x. The commenter pointed out that EPA has recognized the need to define a $PM_{2.5}$ SER at a lower level than those of SO_2 and NO_x, and suggested that common sense would dictate that the same logic be used to define a $PM_{2.5}$ major source at a lower level than 100 tpy. The commenter (0142) noted that the levels of $PM_{2.5}$ that produce adverse health effects are much lower than most other criteria pollutants regulated by us under NA NSR.

Response:

We reiterate that we do not believe that the Act gives EPA the authority to establish a lower $PM_{2.5}$ major source threshold for NA NSR, whether such level is based on the SO_2 and NO_x thresholds and SERs or some other methodology. In any case, the major source thresholds and SERs for SO_2 and NO_x were not defined in relation to one another, and therefore their relationship would not provide a suitable basis for developing the $PM_{2.5}$ major source threshold from the $PM_{2.5}$ SER. Major source thresholds are defined in the Act, while the significant emissions rates were codified independently in regulations based on an analysis of ambient impacts relative to the applicable NAAQS.

Comment:

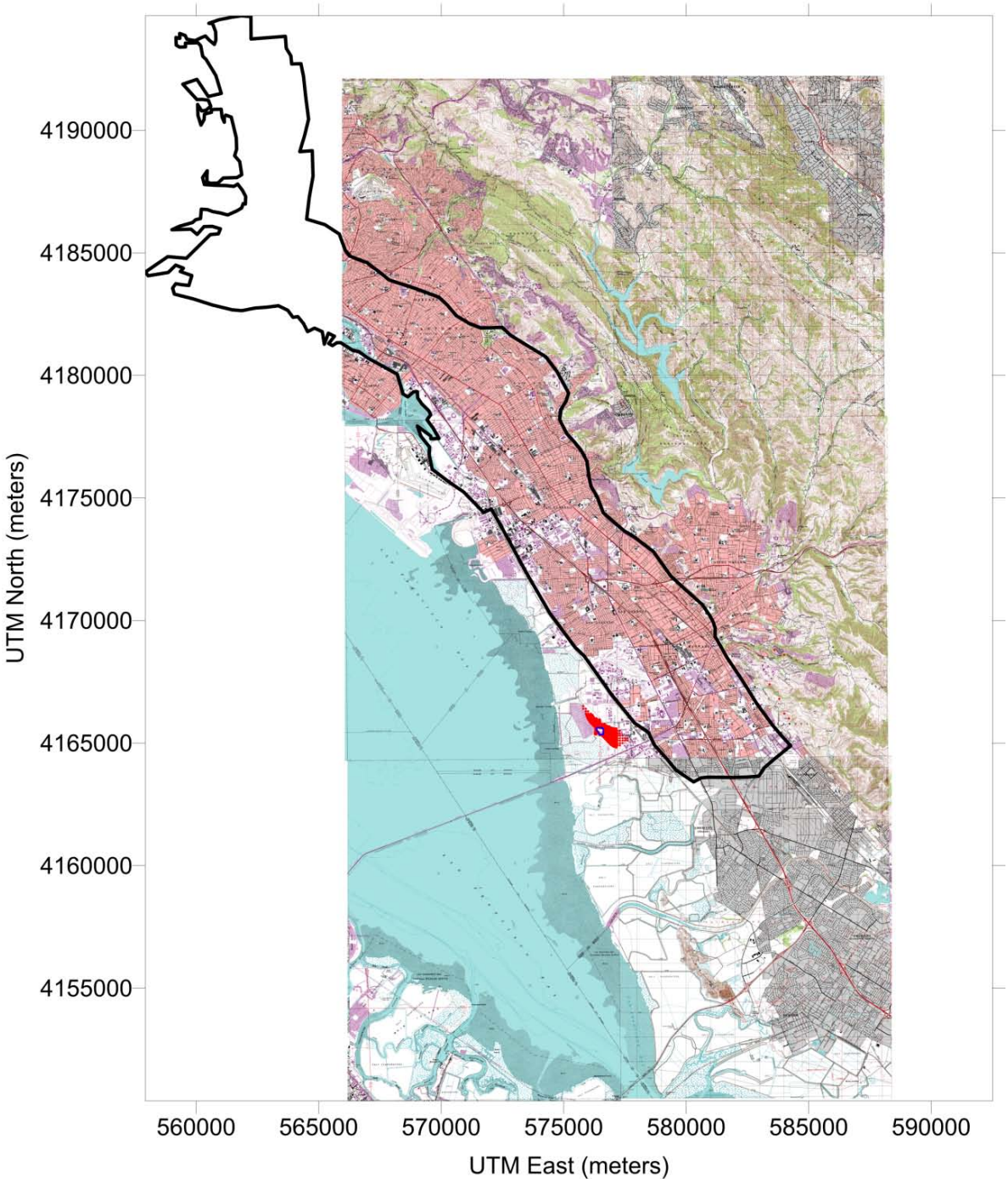
One state/local agency association (0136.2) recommended a major source threshold in the range of 25-50 tpy of direct $PM_{2.5}$ in areas that are likely to attain the $PM_{2.5}$ NAAQS within 5 years, and a level of 10-25 tpy in areas that are likely to take more than 5 years to achieve the NAAQS. One of the state/local agency commenters (0080.1) recommended direct $PM_{2.5}$ emission thresholds of 25 tpy for nonattainment areas showing attainment within 5 years and 15 tpy for areas showing attainment beyond 5 years. Another state/local agency commenter (0079.1) suggested a direct $PM_{2.5}$ emission threshold of between 25 and 50 tpy.

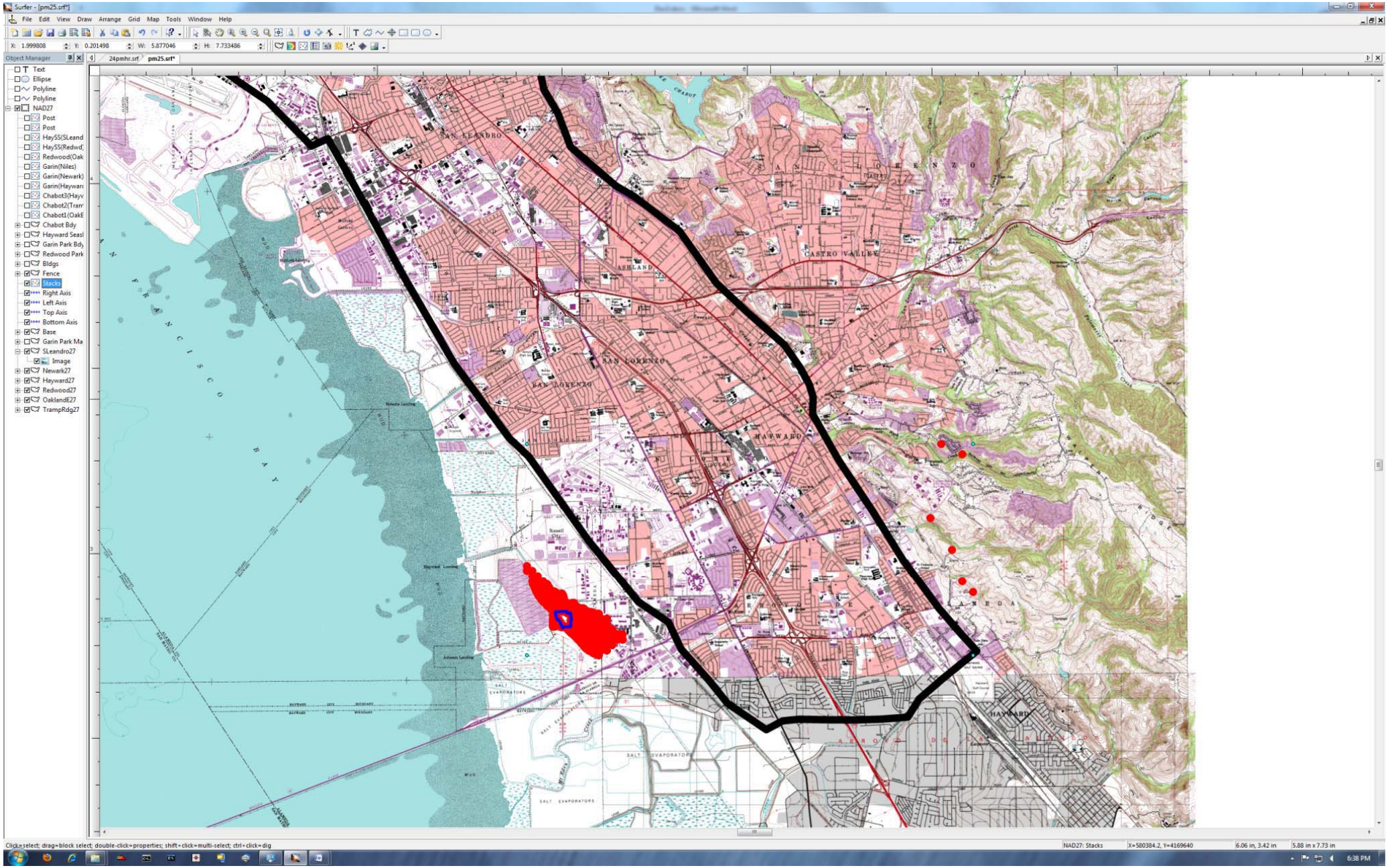
Response:

For reasons similar to those discussed above, we do not interpret subpart 1 of the CAA to provide EPA with the authority to require that all states use different major source thresholds on the basis of the projected time it will take for an area to achieve attainment. However, states that choose to do so have the discretion to include provisions in their SIPs that establish requirements modeled on the major NSR program for sources of this size based on the time projected for each area to reach attainment.

Exhibit 61

Russell City Energy Center
Environmental Justice Boundary
with PM2.5 24-hour Significant Receptors

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Hay55(SLeand
Hay55(Redwd
Redwood(Oak
Garin(Niles)
Garin(Newark)
Garin(Hayward
Chabot3(Hayv
Chabot2(Tranr
Chabot1(OakE
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Hayward Seasl
Garin Park Bdy
Redwood Park
Bldgs
Fence
Stacks
Right Axis
Left Axis
Top Axis
Bottom Axis
Base
Garin Park Ma
SLeandro27
Image
Newark27
Hayward27
Redwood27
OaklandE27
TrampRdg27
SAN LEANDRO
SAN LORENZO
ASHLAND
CASTRO VALLEY
HAYWARD
SAN FRANCISCO BAY
SALT EVAPORATORS
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5.88 in x 7.73 in
6:38 PM

Exhibit 62

Applied Method for Developing Polygon Boundaries for CARE Impacted Communities

Technical Memorandum

Bay Area Air Quality Management District

December 2009

This memorandum describes a methodology for identifying communities within the San Francisco Bay Area that are likely to face the highest health risks from toxic air contaminants (TAC). The methodology was developed through the Bay Area Air Quality Management District's (BAAQMD or District) Community Air Risk Evaluation (CARE) program. The methodology is based on identifying areas that (1) are close to or within areas of high TAC emissions, (2) have sensitive populations, defined as youth and seniors, with significant TAC exposures, and (3) have significant poverty.

Step 1 – Development of Datasets

TAC Emissions. Starting in 2006, the District developed gridded TAC emissions inventories (Reid et al. 2006, Reid 2008) for year 2005 on a one kilometer by one kilometer grid system for the entire Bay Area. TAC emissions estimates include more than 90 gaseous and particulate compounds (Reid et al. 2006) from stationary sources, such as power plants, refineries, back-up diesel generators, and gas stations, as well as both on- and off-road mobile sources, such as cars, trucks, construction equipment, locomotives, and ships.

Modeling Cancer Risk and Exposure of Sensitive Populations. In 2009, the District completed regional modeling of TAC concentrations using the gridded TAC emissions (Emery et al. 2008, Tanrikulu et al. 2009). The modeling yielded estimates of annual concentrations of five key compounds that collectively contributed more than 90 percent of the potential cancer risk from TAC emissions: diesel particulate matter, benzene, 1,3-butadiene, formaldehyde, and acetaldehyde. Like the emissions, the modeled concentrations approximated conditions in 2005 for each one kilometer grid cell. The concentrations for each compound were multiplied by the corresponding unit cancer risk factor for the compound, as established by the State's Office of Environmental Health Hazard Assessment (OEHHA) to assign an estimated excess cancer risk per million people from these compounds to each grid cell (Figure 1).

Sensitive populations from the 2000 U.S. Census database were identified as youth (under 18) and seniors (over 64) and mapped to the same one kilometer grid used for the toxics modeling. Excess cancers from TAC exposure were determined by multiplying these sensitive populations by the model-estimated excess risk to establish a data set representing sensitive populations with high TAC exposures.

Poverty. Block-group level household income data from the U.S. Census database were used to identify block groups with family incomes where more than 40% of the population was below 185% of the federal poverty level (FPL).

Step 2 – Mapping

1. The three datasets were mapped to a common projection and plotted together (Figure 2).
2. The top quartile of emissions was plotted as outlined grid cells.
3. The top two quartiles of sensitive population exposure data were plotted as shaded grid cells.
4. The poverty level data were plotted as shaded block-group polygons.

Step 3 – Identification of Impacted Communities

1. High exposure cells (top 50%) that are within one grid cell of a high emissions cell (top 25%) and that intersect high poverty level polygons were used to identify impacted areas.
2. Polygon boundaries (colored polygons in Figure 2) were constructed along major roads, highways, shorelines, or county boundaries that encompass nearby high exposure cells, high emission cells, and low income areas (as defined above).
3. Knowledge of local areas was used to make judgments in selecting bounding roadways.

Impacted Communities

This method identified the following six areas as impacted communities (Figure 3):

1. portions of the City of Concord;
2. western Contra Costa county, including portions of the Cities of Richmond and San Pablo;
3. western Alameda County along the Interstate-880 corridor, including portions of the Cities of Berkeley, Oakland, San Leandro, San Lorenzo, and Hayward;
4. portions of the City of San Jose;
5. eastern San Mateo County, including portions of the Cities of Redwood City and East Palo Alto; and
6. eastern portions of the City and County of San Francisco.

An electronic shapefile that can be used with geographical information systems software provides the polygon boundaries of the CARE impacted communities. This file is available on the Internet via anonymous ftp at ftp://ftp.baaqmd.gov/CARE/Impacted_communities_boundaries/impacted_boundaries.zip.

References

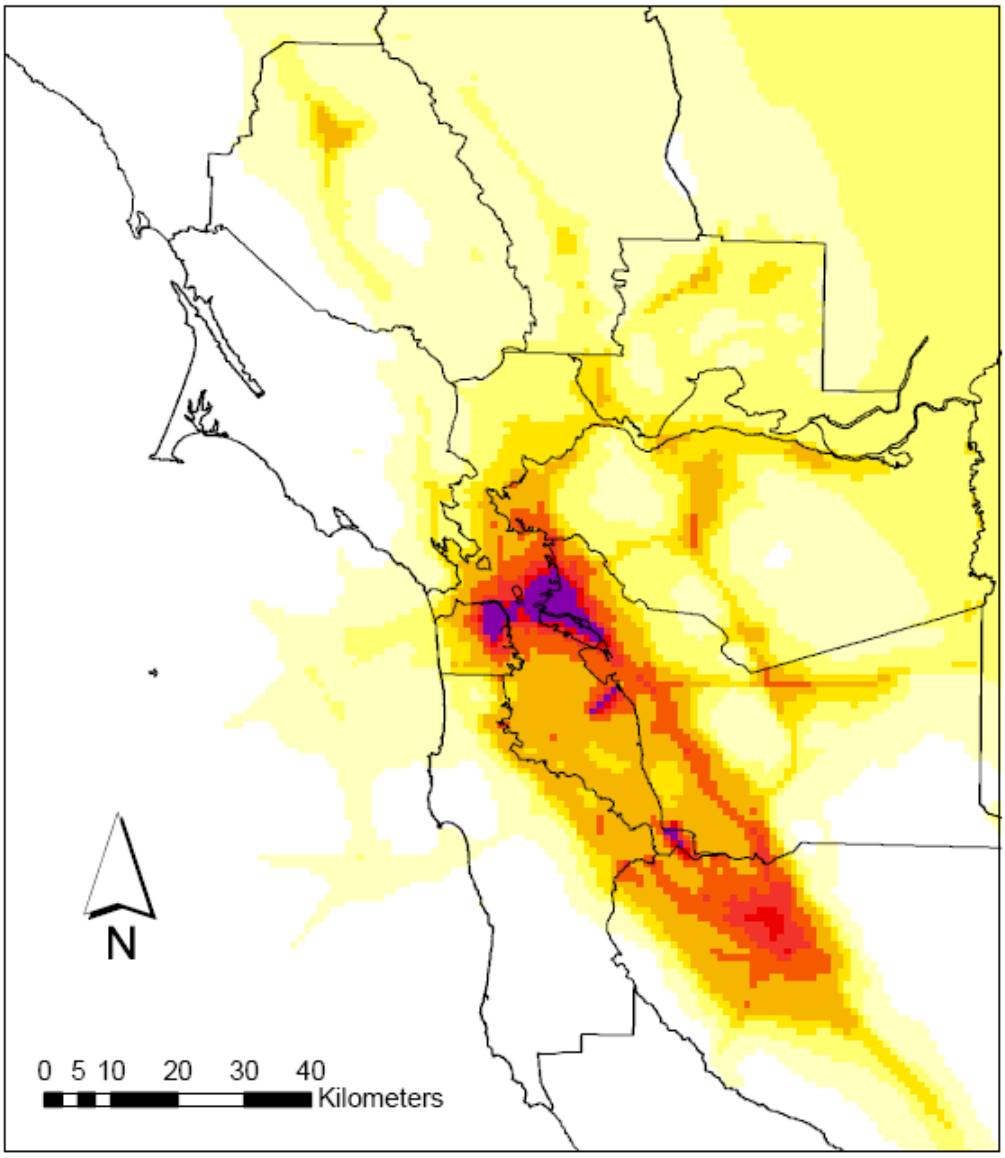
Bay Area Air Quality Management District (2006). *Community Air Risk Evaluation Program, Phase I Findings and Policy Recommendations Related to Toxic Air Contaminants in the San Francisco Bay Area.* San Francisco. September 2006. Available online: <http://www.baaqmd.gov/Divisions/Planning-and-Research/Planning-Programs-and-Initiatives/~/media/54D434A0EB8348B78A71C4DE32831544.ashx.> Accessed October 7, 2009.

Emery C., Tai E., and Yarwood G. (2008) Demonstration toxics modeling for the Bay Area using CAMx. Final Report prepared for the Bay Area Air Quality Management District, San Francisco, CA, by ENVIRON International Corp., Novato, CA. February 14, 2008.

Reid S.B., Sullivan D.C., and Penfold B.M. (2006) *Preparation of emission inventories of toxic air contaminants for the Bay Area.* Final Report 2 prepared for the Bay Area Air Quality Management District, San Francisco, CA, by Sonoma Technology, Inc., Petaluma, CA, (STI-906020.07-2771-FR2). August 9, 2006.

Reid, S.B. (2008) *Final documentation of the preparation of year-2005 emission inventories of toxic air contaminants for the San Francisco Bay Area.* Technical Memorandum prepared for the Bay Area Air Quality Management District, San Francisco, CA, by Sonoma Technology, Inc., Petaluma, CA, (Bay Area Air Quality Management District Contract No. 2006-019; STI-906020.08-3288). February 15, 2008.

Tanrikulu S., Martien P., Tran C. (2009) *Toxics Modeling to Support the Community Air Risk Evaluation (CARE) Program*. Bay Area Air Quality Management District. San Francisco, CA. (Research and Modeling Section Publication No. 200906-01-TX). June 2009.



Air Distric Boundaries	300 - 400
Cancer Risk	400 - 600
Expected number per million	600 - 800
0 - 100	800 - 1000
100 - 200	1000 - 1200
200 - 300	> 1200

Figure 1. Model-estimated excess cancer risk in 2005 from inhalation of diesel particulate matter, benzene, 1,3-butadiene, formaldehyde, and acetaldehyde in the Bay Area, assuming a 70-year lifetime exposure.

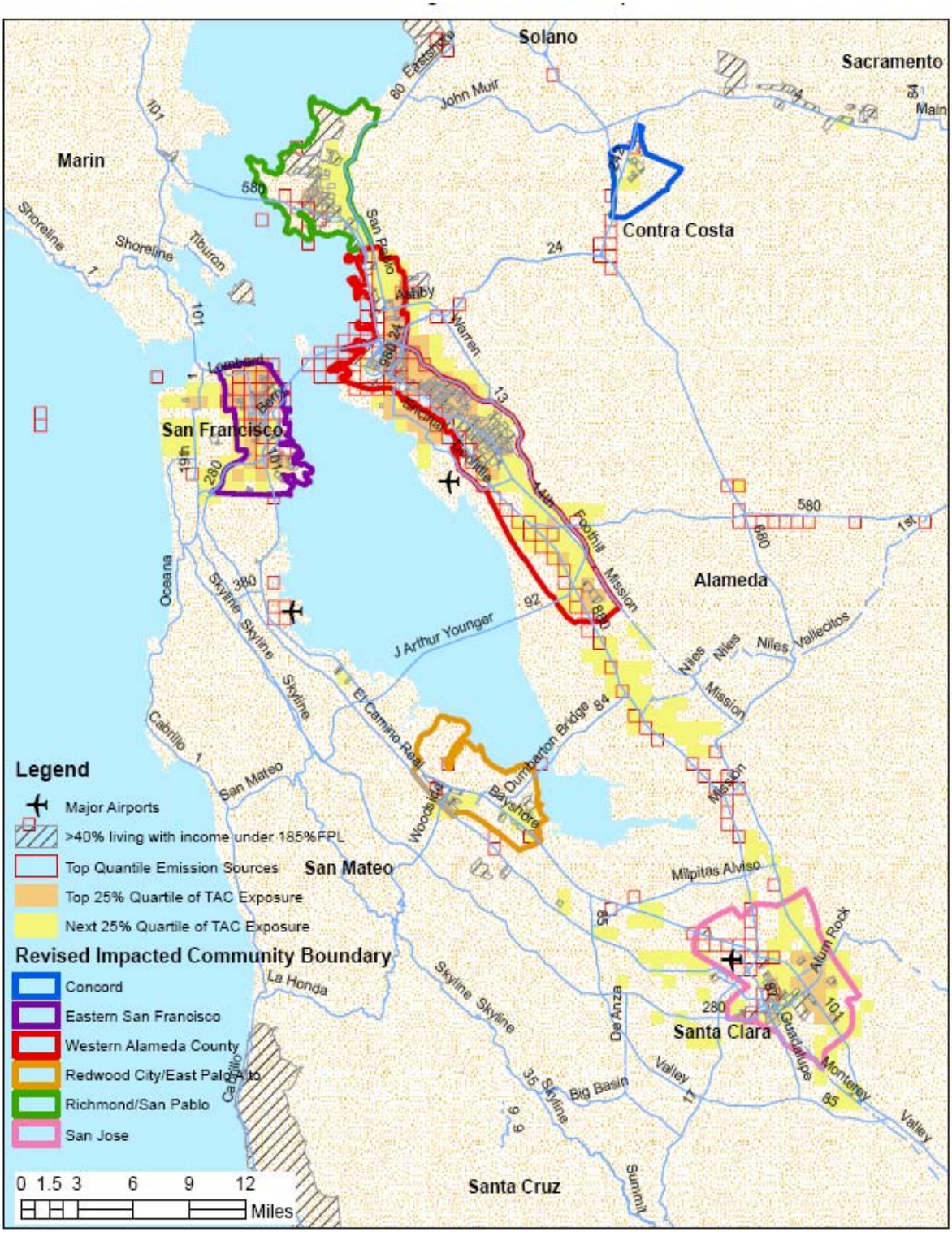


Figure 2. Boundaries of impacted communities based on emissions, poverty level, and exposure of sensitive populations in Bay Area counties in 2005 to toxic air contaminants. Sensitive population includes people under the age of 18 and over 64. Toxic air contaminants include diesel PM, benzene, 1,3-butadiene, formaldehyde, and acetaldehyde.

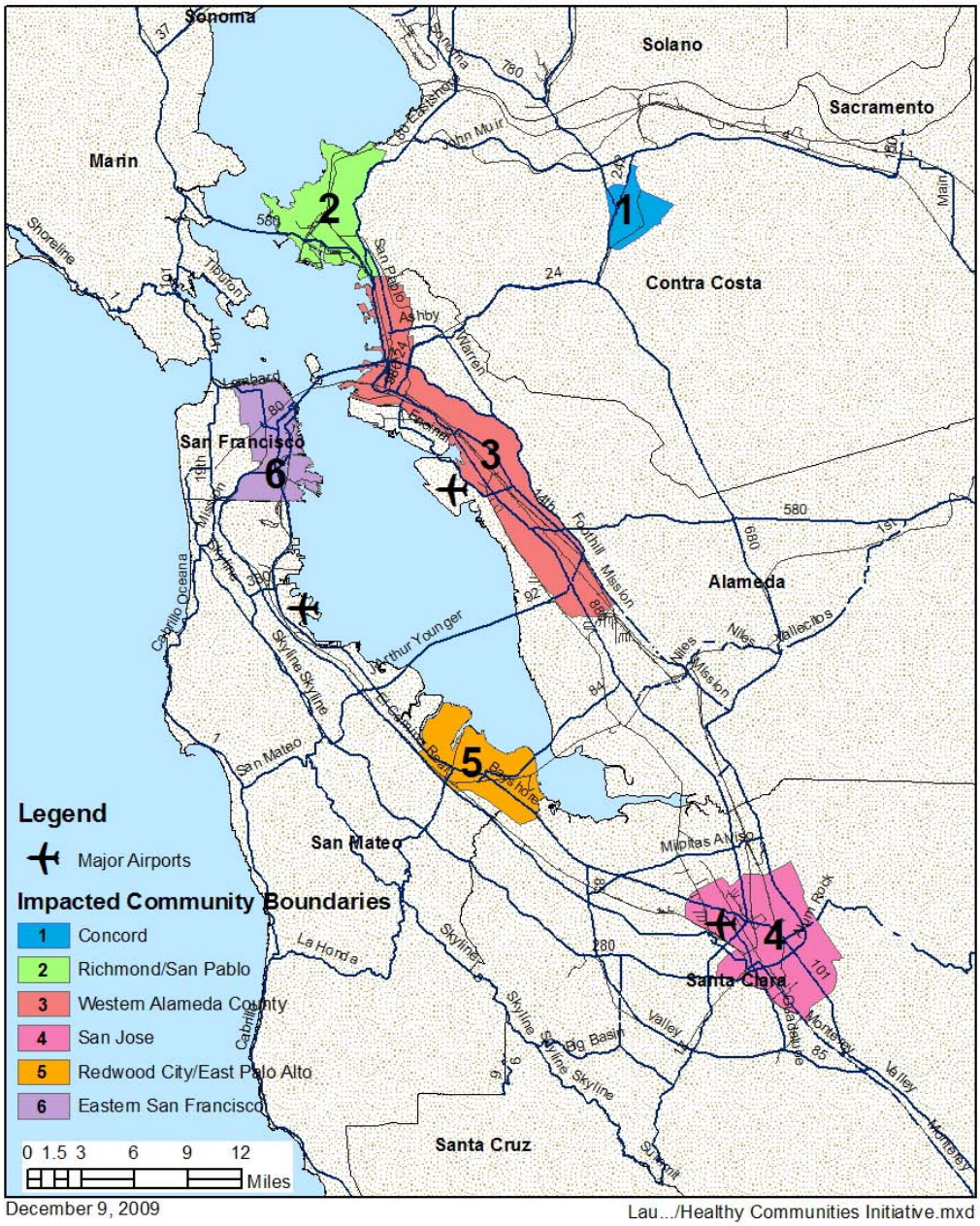


Figure 3. Impacted Community Boundaries.

Exhibit 63

U.S. EPA - Bay Area Air Quality Management District

Agreement for Delegation of Authority to Issue and Modify Prevention of Significant Deterioration Permits Subject to 40 CFR 52.21

The undersigned, on behalf of the Bay Area Air Quality Management District (District) and the United States Environmental Protection Agency (EPA), hereby agree to the partial delegation of authority to issue Prevention of Significant Deterioration (PSD) initial permits and to modify existing PSD permits, subject to the terms and conditions of this Agreement. This partial delegation is executed pursuant to 40 CFR 52.21(u), Delegation of Authority.

I. Background Recitals

1. On April 23, 1986, EPA delegated authority to implement the federal PSD regulations at 40 CFR 52.21 to the District. This delegation was based on EPA's determination that the PSD portion of District Regulation 2 – Rule 2 (Readopted and Renumbered July 17, 1991, amended June 15, 1994) generally met the requirements of 40 CFR 52.21; therefore District permits issued in accordance with the provisions of Regulation 2 – Rule 2 were deemed to meet the federal PSD permit requirements pursuant to the provisions of the delegation agreement.
2. On December 31, 2002, EPA finalized revisions to the regulations at 40 CFR 52.21, which became effective on March 3, 2003. See 67 FR 80186. After discussions with the California Air Resources Board and the District, EPA informed the District that it would need to adopt revisions to Regulation 2 – Rule 2 to address the recent PSD revisions and continue to implement the federal PSD program pursuant to 40 CFR 52.21. Accordingly, on March 3, 2003, EPA withdrew the delegation of federal PSD authority from the District. See 68 FR 19371 (April 21, 2003).
3. On June 24, 2005, the District of Columbia Court of Appeals vacated two provisions of the revised federal PSD regulations related to Clean Units and Pollution Control Projects. The provisions upheld by the Court provide new additional calculation methodologies for determining if a proposed project will result in a major modification and the application

of a Plantwide Applicability Limit (PAL). On June 13, 2007, EPA issued a direct final rule revising the federal PSD regulations to remove the vacated portions.

II. Scope of Partial Delegation

1. The provisions upheld by the court (additional calculation methodologies and PALs) are not specifically addressed by Regulation 2 – Rule 2. Therefore, this partial delegation of authority to issue and modify PSD permits does not delegate authority to the District to modify PSD permits when the applicant seeks to use the additional calculation methodologies promulgated in 40 CFR 52.21 but not set forth in Regulation 2 – Rule 2 and does not delegate authority to issue new or modified PSD permits based on PALs.
2. For all applications for new or modified PSD permits other than those set forth in paragraph 1 above, the existing District regulations continue to generally meet the requirements of 40 CFR 52.21 for issuing PSD permits; therefore District permits issued in accordance with the provisions of Regulation 2 – Rule 2 shall be deemed to meet federal PSD permit requirements pursuant to the provisions of this delegation agreement.

III. Applicability

1. EPA and the District have agreed to this partial delegation of PSD authority to allow the District to issue initial and modified PSD permits, except for modifications seeking to determine PSD applicability based on the additional calculation methodologies set forth in 40 CFR 52.21 and new or modified PSD permits seeking PALs. (Modifications include Administrative Amendments, Major Modifications, and non-Major Modifications.)
2. Pursuant to this partial delegation agreement, the District shall have primary responsibility for issuing all new and modified PSD permit(s).
3. The authority to issue a PSD permit containing a PAL is not delegated to the District as part of this delegation agreement. If any facility subject to this agreement requests a permit modification to incorporate conditions for a PAL, as provided in 40 CFR 52.21(aa), EPA shall process the application and issue the final PAL permit for the modification.

4. If any source seeks a PSD permit modification based on determining applicability with the additional calculation methodologies set forth in 40 CFR 52.21 (as revised in 2002), EPA shall issue the PSD permit.

5. This partial delegation of PSD authority becomes effective upon the date of the signatures of both parties to this Agreement.

IV. General Delegation Conditions

1. The District shall issue PSD permits under this partial delegation Agreement in accordance with the PSD requirements of the District's Regulation 2 – Rule 2 and 40 CFR 52.21, as amended on December 31, 2002; except as provided in subsection III.

2. This partial delegation may be amended at any time by the formal written agreement of both the District and the EPA, including amendments to add, change, or remove terms or conditions of this Agreement.

3. EPA may review the PSD permit(s) issued by the District to ensure that the District's implementation of this delegation Agreement is consistent with federal PSD regulations for major sources and major modifications (40 CFR 52.21).

4. If the EPA determines that the District is not implementing or enforcing the PSD program in accordance with the terms and conditions of this partial delegation agreement, the requirements of Regulation 2 – Rule 2, 40 CFR 52.21, 40 CFR 124 or the Clean Air Act, this partial delegation agreement may be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the District.

5. If the District determines that issuing a PSD permit in accordance with the terms and conditions of this agreement, the requirements of Regulation 2 – Rule 2, 40 CFR 52.21, 40 CFR 124 or the Clean Air Act conflicts with State or local law, or exceeds the District's authority or resources to fully and satisfactorily carry out such responsibilities, the District after consultation with EPA, may remand administration of these permits to EPA. Any such remand shall be effective as of the date specified in a Notice of Remand to EPA.

6. The permit appeal provisions of 40 CFR 124, including subpart C thereof, pertaining to the Environmental Appeals Board (EAB), shall apply to all federal PSD permitting action appeals to the EAB for permits issued by the District under this partial delegation agreement. For purposes of implementing the federal permit appeal provisions under this partial delegation, if there is a public comment requesting a change in a draft preliminary determination or draft permit conditions, the final permit issued by the District shall contain a statement that for federal PSD purposes and in accordance with 40 CFR 124.15 and 124.19, (1) the effective date of the permit shall be 30 days after the date of the final decision by the District to issue, modify, or revoke and reissue the permit; and (2) if an appeal is made to the EAB, the effective date of the permit shall be suspended until such time as the appeal is resolved. Failure by the District to comply with the terms of this paragraph shall render the subject permit invalid for PSD purposes.

V. Communication Between EPA and the District

The District and EPA will use the following communication procedures:

1. The District will forward to EPA copies of (1) the findings related to the PSD application, (2) the justification for the District's preliminary determination, (3) the draft permit and (4) all public notices required by 40 CFR 124. Such copies shall be provided at or prior to the beginning of the public comment period for each PSD preliminary determination. EPA will provide comments to the District as soon as possible prior to the close of the public comment period.
2. The District will forward to EPA copies of the final action for each PSD permit application at the time of issuance, as well as a summary of public comments and, upon request by EPA, copies of substantive public comments.
3. The District will send to EPA a copy of all PSD non-applicability determinations that utilize netting. All such determinations must be accompanied by a written justification.

VI. EPA Policies Applicable to PSD Review

1. EPA is responsible for the issuance of PSD permits on Indian Lands, under Sections 110 and 301 of the Clean Air Act and for those situations set forth in Section III above. This

agreement in no way grants or delegates any authority under the Clean Air Act on Indian Lands to the District.

2. All PSD BACT determinations are required to perform a "top-down" BACT analyses. EPA will consider as deficient any BACT determination that does not begin with the most stringent control options available for that source category.

3. The District must consult with the appropriate Federal, State and local land use agencies prior to issuance of a PSD permit preliminary determination. For the purposes of the Endangered Species Act (ESA), the District shall:

   a. Notify the appropriate Federal Land Manager (FLM) within 30 days of receipt of a PSD permit application. If the proposed project will impact a Class I area, notify the appropriate Federal Land Manager (FLM) no later than 60 days prior to issuing a public notice for the project.

   b. Notify the Fish and Wildlife Service (FWS) and EPA when a submitted PSD permit application has been deemed complete, in order to assist EPA in caring out its non-delegable responsibilities under Section 7 of the ESA (PL 97-304).

   c. Notify applicants of the potential need for consultation between EPA and FWS if an endangered species may be affected by the project.

   d. Refrain from issuing a final PSD permit unless FWS has determined that the proposed project will not adversely affect any endangered species.

VII. Permits

1. The District shall follow EPA guidance on any matter involving the interpretation of Sections 160-169 of the Clean Air Act or 40 CFR 52.21, relating to applicability determinations, PSD permit issuance and enforcement.

2. The District will at no time grant any waiver to the PSD permit requirements.

3. Authorities to Construct must include appropriate provisions to ensure permit enforceability. Permit conditions shall, at a minimum, contain reporting requirements on initiation of construction, start-up, and source testing (where applicable).

4. When any conditions of a PSD permit are incorporated into a Title V permit, the District shall clearly identify PSD as the basis for those conditions.

5. The primary responsibility for the administration and enforcement of the following EPA-issued permits is delegated to the District:

Facility	EPA File Number	Permit Issuance Date
Calpine Gilroy Cogen	SFB 84-04	August 1, 1985
Cardinal Cogen	SFB 82-04	June 27, 1983
Crockett Cogen	SFB 82-05	February 9, 1983
IBM Corporation	SFB 82-01	June 9, 1982
Martinez Cogen Limited Partnership	SFB 83-01	December 13, 1983
Tosco Corporation	SFB 78-07	December 18, 1978
Tosco SF Area Refinery at Rodeo	SFB 85-03	March 3, 1986

District-issued modifications to these permits which meet the requirements of 40 CFR 52.21 will be considered valid by EPA. The District shall issue any permit modifications to the above listed sources pursuant to this agreement and using District Regulation 2 – Rule 2, which incorporates the requirements of 40 CFR 52.21.

VIII. Permit Enforcement

1. The primary responsibility for enforcement of the PSD regulations rests with the District. The District will enforce the provisions of the PSD program except in those cases where District rules or policy are more stringent. In that case, the District may elect to implement the more stringent requirements.

2. Nothing in this partial delegation agreement shall prohibit EPA from enforcing the PSD provisions of the Clean Air Act, 40 CFR 52.21 or any PSD permit issued by the District pursuant to this agreement.

3. In the event that the District is unwilling or unable to enforce a provision of this partial delegation agreement with respect to a source subject to the PSD regulations, the District will immediately notify the Air Division Director. Failure to notify the

Air Division Director does not preclude EPA from exercising its enforcement authority.

Jan. 29, 2008
Date

Jack P. Broadbent
Executive Officer/APCO
Bay Area Air Quality Management District

Feb. 6, 2008
Date

Deborah Jordan
Director, Air Division
U.S. EPA, Region IX

Exhibit 64

from Calpine 12/3/08

The proposed limits on RCEC's emissions of NO_x, CO and precursor organic compounds (POC) during start-up and shutdown events are based on the experience of RCEC's affiliate, Calpine, operating similarly designed combined-cycle facilities, and the duration of, and total emissions observed during, such events at those facilities.

Operating data submitted by Calpine on start-up events at similar combined-cycled facilities indicate a significant range of variability in both the duration of and total emissions observed during any particular start-up event. This variability is due to a number of factors, including ambient temperatures and limitations on the loading sequence prescribed by the gas turbine manufacturer to assure safe loading of the equipment, as well as on the steam cycle-side of the facility to assure proper warming of the steam turbine and associated piping. In addition, because the gas turbine must be operated at low load-levels for extended periods of time during these start-up sequences, emissions of NO_x may not be abated by the selective catalytic reduction (SCR) system because the catalyst will not be adequately heated to commence ammonia injection (without causing ammonia slip).

To assure compliance over this range of variability, the emissions limits proposed for start-up and shutdown events at RCEC have been set at the upper-bounds of emissions ranges observed at Calpine's other facilities, although average emissions over successive events are expected to be significantly lower. Although these limits may not reflect the lowest emissions demonstrated at Calpine's other facilities for each individual pollutant during each type of event (cold start-up, warm start-up and/or hot start-up), they do reflect the maximum controls achievable for all pollutants during such events.

Calpine reports that, for its Delta Energy Center (DEC), which also uses Siemens/Westinghouse F-class gas turbines, cold start-up events occur less than two times per year, on average, typically only after an annual outage. Since 2004, DEC has experienced only six cold start-up or combustor tuning events.[1] However, because emissions are significantly greater during such events than in steady-state operations or hot or warm start-up events, the District has focused on assuring that the limits imposed upon RCEC during cold start-up events represent the maximum degree of controls achievable for such periods.

In 2005, prior to the commercial operation of Metcalf Energy Center, LLC (MEC), which, like RCEC, uses Siemens/Westinghouse F-class gas turbines, Calpine applied for, and obtained, a change in its permit conditions to specify a higher limitation on emissions of each of NO_x, CO

[1] The following table presents duration and emissions data recorded during cold start-up events at DEC since 2004.

Date	Startup duration (min)	Total NOx (lbs)	Total CO (lbs)
5/23/2004	269	262	3225
5/22/2005	231	281	8288
4/17/2006	86	152	1202
5/16/2006	108	189	3198
4/28/2007	175	156	7298
6/5/2008	123	119	2599

and POC during a cold start-up event, to 480 lbs NO_x, 5,028 lbs CO, and 96 lbs POC.[2] These changes to MEC's permit followed similar conceptual changes to permit conditions for Calpine's Los Medanos Energy Center (LMEC) and DEC, which were made to address compliance issues observed during cold start-up and tuning events at Calpine's other facilities.[3] For DEC, which also uses Siemens/Westinghouse F-class gas turbines, the changed conditions authorized a 25% increase in NO_x emissions during cold start-up and combustor tuning events (240 vs. 300 lbs NO_x), and a 288% increase in CO emissions during such events (2,514 vs. 9,750 lbs CO). For LMEC, which uses General Electric (GE) F-class gas turbines, the changed conditions authorized a 150% increase in NO_x emissions during cold start-up or combustor tuning events (240 vs. 600 lbs NO_x), and no increase in the CO emissions during those periods. For MEC, Calpine applied for, and obtained, a 100% increase in permitted NO_x and CO emissions during cold start-up and combustor tuning periods (from 240 to 480 lbs NO_x and 2,514 to 5,028 lbs CO), as well as a significant increase in the permitted emission during shutdown events (to 80 lbs NO_x, 902 lbs CO, and 16 lbs POC).[4]

Since the time when the changes were made to MEC's permit conditions in 2005, Calpine has obtained significant additional experience and data on controlling emissions during start-up and shutdown events at its facilities. These data demonstrate that, for cold start-up events, the NO_x and CO emissions specified by MEC's permit (480 lbs NO_x and 5,028 lbs CO per turbine per cold start-up event) represent the lowest levels achievable for these two pollutants on a continuous basis. Although the levels of NO_x emissions during such events are somewhat higher than those achieved by DEC, the CO emissions limits applicable to MEC and proposed for RCEC – 5,028 lbs CO per turbine per cold start-up event – are substantially lower than the corresponding limits for DEC, as demonstrated by data on numerous cold start-up events for DEC, which has experienced CO emissions as high as 8,288 lbs CO for Unit No. 2 on May 22, 2005 and 7,298 lbs CO for Unit No. 1 on April 28, 2007.[5] Further, while Calpine has achieved significantly lower emissions of CO at LMEC during cold start-up events than at DEC or MEC, this comes at a substantial trade-off, in terms of controlling NO_x emissions, as indicated by LMEC's compliance with a substantially higher NO_x limit during such events (600 lbs NO_x per turbine per cold start-up or combustor tuning event, as opposed to 480 lbs for MEC and RCEC). These differences are largely attributable to differences between the GE and Siemens/Westinghouse F-class turbines and Calpine's observations of higher emissions of NO_x, but lower emissions of CO, during cold start-up events at those facilities using GE turbines, and vice-versa at those facilities using Siemens/Westinghouse turbines.

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[2] *Permit Evaluation and Emissions Calculations*, Metcalf Energy Center, LLC, District Engineering Division, Application 11251, February 3, 2005 (Metcalf Evaluation, 2005), at 1, available at: http://www.baaqmd.gov/pmt/public_notices/2005/11251/b2183_nsr_11251_eval_021005.pdf; *compare with Final Determination of Compliance*, Metcalf Energy Center, Application 27215, at 32, Condition No. 21, available at: http://www.baaqmd.gov/pmt/public_notices/1999_2001/27215/B2183_nsr_27215_fdoc_082400.pdf.

[3] Metcalf Evaluation, 2005, at 1. For a description of the compliance issues observed at Calpine's facilities, *see Order Granting Variance*, No. 3426, "In the Matter of the Application of Delta Energy Center, LLC for a Variance from Regulation 2, Rule 1, Section 307", District Hearing Board, May 14, 2003, at 2, available at: http://www.baaqmd.gov/brd/hearingboard/final_orders/3426ogv.pdf.

[4] Metcalf Evaluation, 2005, at 3, Table 1, "Current and Proposed Short-Term Emission Rate Limits for S-1 and S-3 Gas Turbines."

[5] *See supra at* note no. 1.

Based upon its review of the data reported by Calpine from its other facilities, the District believes that the NO_x and CO emissions limits applicable during cold start-up events at MEC (480 lbs NO_x, 5,028 lbs CO) represent the maximum degree of control for both pollutants achievable during such events. While not necessarily the lowest emissions of either NO_x or CO demonstrated at Calpine's other facilities during such events, these limits reflect the best degree of control that is achievable for both pollutants taking into account their respective environmental impacts and concerns regarding such impacts. For this reason, the District has found these limits to reflect the best available control technology (BACT) during cold start-up events for RCEC.

Moreover, RCEC's proposed limits for NO_x emissions during a hot or warm start-up event would be significantly lower than those applicable to DEC, LMEC and MEC (125 lbs vs. 240 lbs NO_x per turbine per warm or hot start-up event), representing approximately a 48% reduction in NO_x emissions for such events. Calpine has agreed to this reduction in start-up NO_x emissions based upon the data reported from its other facilities and its increased experience controlling NO_x emissions during start-up events. The proposed reduction in NO_x emissions will also be achieved while maintaining CO emissions at the same levels permitted for each of DEC, LMEC and MEC during warm and hot start-up events (2,514 lbs CO per turbine per start-up event). Given that warm and hot start-up events are expected to occur with significantly greater frequency than cold start-up events, the proposed warm and hot start-up limits proposed for RCEC will represent a significant reduction in permitted NO_x emissions from the levels authorized for Calpine's other facilities.

Similarly, RCEC's proposed limits on emissions of POC for both cold and hot start-up events are lower than the corresponding limits for DEC, LMEC and MEC (83 vs. 96 lbs POC for cold start-up or combustor tuning events and 35.3 vs. 48 lbs POC for hot start-up events). These reductions in POC emissions are also based upon data obtained by Calpine from its other facilities and its increasing confidence that start-up emissions at RCEC can be controlled to lower levels than required elsewhere. In light of this record of experience and demonstrated reductions achieved by Calpine in emissions of NO_x during hot and warm start-up events and in emissions of POC during both hot and cold start-up events, the District believes the lower emissions limits proposed for RCEC during these periods reflect the maximum degree of control achievable during such periods and therefore constitute BACT.

RCEC's proposed limits for shutdown events reflect the increases authorized for MEC in 2005, which Calpine applied for and obtained due to its experience operating Siemens turbines at Sutter Energy Center.[6] However, RCEC's limits on NO_x emissions during shutdown events would represent a 50% reduction on the corresponding limits for MEC (40 lbs vs. 80 lbs NO_x during shutdown events), again reflecting the experience and data obtained by Calpine at its other facilities and the level of control achieved at those facilities. For the foregoing reasons, the District has determined that the emissions limits proposed for RCEC represent the maximum level of controls achievable on a continuous basis during start-up, and shutdown events, in light of the significant range of variability observed at Calpine's other facilities and the interest in achieving an appropriate balance in the emissions of NO_x, CO and POC occurring during such events.

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[6] Metcalf Evaluation, 2005, at 2.

Exhibit 65

CALIFORNIA
ENERGY
COMMISSION

RUSSELL CITY ENERGY CENTER

Amendment No. 1 (01-AFC-7C)
Alameda County

FINAL COMMISSION DECISION

OCTOBER 2007
(01-AFC-7C)
CEC-800-2007-003-CMF

6. Deleting the requirement that restricts simultaneous start up of the combustion turbines.
7. Revising the project's PM10/PM2.5 mitigation plan to include the use of Emission Reduction Credits (ERCs) or interpollutant trading.
8. Administrative revisions to various air quality conditions of certification.

1. Construction Impacts

Staff reviewed the impacts from construction activities for the amended project and finds them to be no different than those analyzed in the 2002 Decision. It recommends, however, that the construction conditions in the 2002 Decision be updated to its current standard conditions, which reflect, among other things, current state and federal standards for construction engines. We have done so in Conditions **AQ-SC1** through **AQ-SC5**, below. With those mitigation measures in place, the impacts from construction emissions will be less than significant. (Ex. 100, p. 4.1-5.)

2. Operation Impacts

The Applicant's modeling analysis showed that the project does not cause any new violations of NO_2, CO or SO_2 air quality standards, even with recent worst-case ambient concentrations used as background. The project, however, would contribute to existing violations of the state 24-hour and annual PM10 standards, the state annual PM2.5 standard, and the state 1-hour and the federal 8-hour ozone standards. Staff recommends that mitigation, in the form of ERCs for particulate matter and its precursors and ozone and its precursors be provided. (Ex. 100, p. 4.1-6.)

The Applicant requested that its emissions limits be set on an annual basis only, without daily limitations. In effect, it desires no restrictions on its operations—the number of times the turbines are started and shut down periods—so long as its total emissions for the year do not exceed the limits. ERCs would be supplied to offset those emissions.

Staff does not believe that emission limits expressed only in annual terms will properly mitigate the emission impacts, however. For example, the Applicant proposes a NOx limit of 134.6 tons per year. Using the maximum operating scenario stated by the applicant—"24 hours per day, 7 days a week for a total of 8364 hours per year per turbine/HRSG" (Ex. 1, p. 3-5)—Staff calculates that the project's potential emissions would be 227.4 tpy. (Ex. 100, p. 4.1-6, Air Quality Table 2.) On a daily basis, Staff calculates the ERCs proposed by the Applicant to provide mitigation for 848 lbs of NOx emissions. The daily emissions projected by Staff, however, could be as much as 2,213 lbs. (Ex. 100, pp. 4.1-6 - 4.1-8.)

Staff proposed technological solutions (Siemens-Westinghouse Fast-Start and General Electric OpFlex) which it believes would significantly reduce emissions from start-up events, but they were rejected by the Applicant for economic reasons. (Ex. 100, pp. 4.1-8 – 4.1-9.)[14] To address Staff's concern, the Applicant has agreed to limit NOx emissions to 1,225 lbs per day during the June 1 through September 30 ozone season, with additional ERCs provided to make up the difference between 1,225 lbs and the already committed 848 lbs of mitigation and a general limitation on turbine hot or warm start-up NOx emissions to 125 lbs per event. (Ex. 100, pp. 4.1-7 – 4.1-8.) Those requirements are contained in Conditions **AQ-SC7** and **AQ-SC8**, below.

Due to the significant start-up emissions, Staff recommends that the prohibition of simultaneous start-up of both turbines (Condition **AQ-22** in the 2002 Decision, now **AQ-SC9**) be retained (unless fast start technology is incorporated into the project) because of the potential for the large ozone precursor emissions during a cold start-up (960 lbs of NOx and 192 lbs of POC) to contribute to violations of the 1 and 8-hour ozone air quality standards. (Ex. 100, p. 4.1-11.)

[14] Should the Applicant change its mind, Condition **AQ-SC10** holds open the option to use fast start technology, in which case the Applicant would be relieved from the restrictions of **AQ-SC7** and **AQ-SC8**, as well as the simultaneous start-up prohibition of **AQ-SC9**, discussed below.

Although not required by the District, the Applicant proposes to provide mitigation for the 86.8 tons of PM10 it would be permitted to emit with 43.4 tons of wintertime PM10 reductions. Those reductions would be obtained via a wood stove/fireplace improvement program. The program would be voluntary, initially open to Hayward residents and expanded to all Alameda County residents after 1 year. The precise design of the program is left to the Applicant but it would offer incentives for retrofitting or replacing wood stoves and fireplaces to burn natural gas instead of wood, or their permanent closure and improvement of an existing central heating and air conditioning unit, resulting in much lower PM10 emissions. Due to "uneven" results from similar past programs, Staff recommends that the program results be monitored and, if it fails to meet specified milestones and to ultimately provide the target reduction of 43.4 tons, the Applicant supply additional ERCs to make up the difference. See Conditions **AQ-SC12** and **AQ-SC13**. (Ex. 100, p. 4.1-12 – 4.1-13.)

3. Greenhouse Gases

The generation of electricity can produce air emissions known as greenhouse gases (GHGs) in addition to the criteria air pollutants. GHGs are known to contribute to the warming of the earth's atmosphere. These include primarily carbon dioxide, nitrous oxide (N_2O, not NO or NO_2, which are commonly know as NOx or oxides of nitrogen), and methane (unburned natural gas). Also included are sulfur hexafluoride (SF6) from transformers, and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chillers.

The California Global Warming Solutions Act of 2006 (AB32) requires the California Air Resources Board (ARB) to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990 to be achieved by 2020. By January 1, 2008, ARB is scheduled to adopt regulations requiring mandatory GHG emissions reporting and define the statewide GHG emissions cap for 2020. ARB would adopt a plan by January 1, 2009, that would indicate how emission reductions would be achieved from significant sources of GHGs