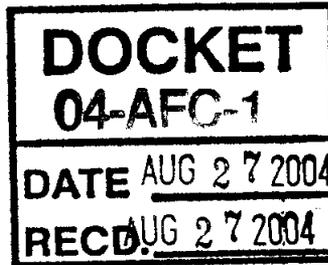




CH2MHILL

August 27, 2004
184288



CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833-2937
Tel 916.920.0300
Fax 916.920.8463

Mr. William Pfanner
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814-5504

RE: Data Response, Set 1D
San Francisco Electric Reliability Project (04-AFC-1)

Dear Bill:

On behalf of the City of San Francisco, please find attached 12 copies and one original of the Data Responses, Set 1D, in response to Staff's Data Requests dated June 4, 2004. We are filing copies of this Data Response both electronically and in hard copy.

Please call me if you have any questions.

Sincerely,
CH2M HILL

John L. Carrier, J.D.
Program Manager

c: Project File
Proof of Service List

**SAN FRANCISCO ELECTRIC
RELIABILITY PROJECT
(04-AFC-1)**

DATA RESPONSE, SET 1D
(Response to Data Request 5)

Submitted by
CITY AND COUNTY OF SAN FRANCISCO

August 27, 2004



2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

**SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
(04-AFC-1)
DATA RESPONSES, SET 1D**

Technical Area: Air Quality

Author: Tuan Ngo, P.E.

SFERP Author: Gary Rubenstein

BACKGROUND

Applicant needs to provide background information on the Cumulative Air Impact Analysis.

DATA REQUEST

5. Please provide the progress for the cumulative air quality impact analysis following the protocol proposed in the AFC, Appendix 8.1G and a schedule for when this information will be completed.

Response: The cumulative impacts analysis is provided as Attachment AQ-5.

**SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
(04-AFC-1)
DATA RESPONSES, SET 1D**

ATTACHMENT AQ-5

Cumulative Impacts Analysis

As discussed in the cumulative impacts analysis protocols (Appendix 8.1-G of the AFC), potential cumulative air quality impacts from the San Francisco Energy Reliability Project (SFERP) and other reasonably foreseeable projects are both regional and localized in nature. Regional air quality impacts are possible for pollutants such as ozone, which is formed through a photochemical process that can take hours to occur. Carbon monoxide, oxides of nitrogen (NO_x) and oxides of sulfur (SO_x) impacts are generally localized in the area in which they are emitted. Particulate Matter (PM₁₀) can create a local air quality problem in the vicinity of its emission source, but can also be a regional issue when it is formed in the atmosphere from precursor organic compounds (POC), SO_x and NO_x.

This cumulative impacts analysis considers the potential for both regional and localized impacts due to emissions from proposed operation of SFERP. Regional impacts were evaluated by comparing maximum daily and annual emissions from SFERP with emissions of ozone and PM₁₀ precursors in both San Francisco County and the entire BAAQMD. Localized impacts were evaluated by looking at other local sources of pollutants that are not included in the background air quality data to determine whether these sources in combination with SFERP would be expected to cause significant cumulative air quality impacts.

Regional Impacts

Regional impacts are evaluated by assessing SFERP's contribution to regional emissions. Although the relative importance of POC and NO_x emissions in ozone formation differs from region to region and from day to day, state law requires reductions in emissions of both precursors to reduce both Bay Area and downwind air basin ozone levels. The change in the sum of emissions of these pollutants, equally weighted, provides a rough estimate of the impact of SFERP on regional ozone levels. Similarly, a comparison of the emissions of PM₁₀ precursor emissions from SFERP with regional PM₁₀ precursor emissions provides an estimate of the impact of SFERP on regional PM₁₀ levels.

Under BAAQMD regulations, SFERP will be required to provide offsets for increases in NO_x emissions from the project at a 1.0 to 1.0 ratio. SFERP will also provide an additional 7.7 tons of NO_x Emission Reduction Credits (ERC) to mitigate the potential impacts of 7.7 tons per year of POC emissions from the project. Therefore, emissions of ozone precursors from the project will be fully mitigated. While SFERP is developing a mitigation program to address potential PM₁₀ impacts from the project, the benefits of this mitigation program have not been considered in this cumulative impact analysis. Regulatory offset requirements are calculated based on tons per year of emissions from the project. The inventories are expressed in tons per day of emissions; comparisons are shown on both a daily and annual basis.

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Tables AQ-CUM-1 and AQ-CUM-2 summarize these comparisons; detailed calculations are shown in the attached tables. SFERP emissions are compared with regional emissions in 2005, as the project is expected to begin operation in the second quarter of 2006. San Francisco County and BAAQMD emissions projections for 2005 were taken from the Air Resources Board's web-based emission inventory projection software, available at www.arb.ca.gov/app/emsmv/emssumcat.php.

These comparisons show that even when mitigation is not accounted for, SFERP emissions will have an extremely small impact on regional ozone and PM₁₀ formation. Further, the City intends to develop mitigation that would render regional cumulative impacts negligible. An additional, unquantified benefit of the project will be the displacement of generation from older, less efficient and higher emitting generating facilities in San Francisco.

TABLE AQ-CUM-1
Comparison of SFERP Emissions to Regional Precursor Emissions in 2005: Daily Basis

| | San Francisco County | BAAQMD |
|---|----------------------|--------|
| Ozone Precursors – Daily Basis | | |
| Total Ozone Precursors, tons/day | 99.2 | 939.0 |
| Total SFERP Ozone Precursor Emissions, tons/day | 0.42 | |
| SFERP Ozone Precursor Emissions as Percent of Regional Total | 0.42% | 0.04% |
| SFERP Ozone Precursor Offsets, average tons/day | 0.13 | |
| SFERP Ozone Precursor Emissions after offsets, tons/day | 0.29 | |
| SFERP Ozone Precursor Emissions as Percent of Regional Total, after offsets | 0.29% | 0.03% |
| PM₁₀ Precursors – Daily Basis | | |
| Total PM ₁₀ Precursors, tons/day | 118.8 | 1218.0 |
| Total SFERP PM ₁₀ Precursors, tons/day | 0.55 | |
| SFERP PM ₁₀ Precursors as Percent of Regional Total | 0.46% | 0.04% |
| SFERP Offsets, average tons/day | 0.13 | |
| SFERP PM ₁₀ Precursors after offsets, tons/day | 0.35% | 0.03% |

**SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
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TABLE AQ-CUM-2

Comparison of SFERP Emissions to Regional Precursor Emissions in 2005: Annual Basis*

| | San Francisco County | BAAQMD |
|---|----------------------|---------|
| Ozone Precursors – Annual Basis | | |
| Total Ozone Precursors, tons/year | 36,208 | 342,735 |
| Total SFERP Ozone Precursor Emissions, tons/year | 47.5 | |
| SFERP Ozone Precursor Emissions as Percent of Regional Total | 0.13% | 0.01% |
| SFERP Ozone Precursor Offsets, tons/year | 47.5 | |
| SFERP Ozone Precursor Emissions after offsets, tons/year | 0 | |
| PM₁₀ Precursors – Annual Basis | | |
| Total PM ₁₀ Precursors, tons/year | 43,362 | 444,570 |
| Total SFERP PM ₁₀ Precursor Emissions, tons/year | 68.4 | |
| SFERP PM ₁₀ Precursor Emissions as Percent of Regional Total | 0.16% | 0.02% |
| SFERP Offsets, tons/year | 47.5 | |
| SFERP PM ₁₀ Precursor Emissions after offsets, tons/year | 0.05% | <0.01% |

Note: * County and BAAQMD emissions calculated as 365 times daily emissions.

Localized Impacts

The AFC presented the results of several dispersion modeling analyses to allow evaluation of the localized impacts of emissions from SFERP. The results are summarized in Table AQ-CUM-3 below (from Table 8.1-28 of the AFC).

TABLE AQ-CUM-3

Maximum Modeled Project Impacts and PSD Significance Thresholds

| Pollutant | Averaging Prd | Max Facility Impact, ug/m ³ | PSD Significance Threshold, ug/m ³ |
|-------------------------------|---------------|---|--|
| NO ₂ | 1-hour | 8.3 | 19 ^a |
| | annual | 0.1 | 1.0 |
| SO ₂ | 3-hour | 1.0 | 25 |
| | 24-hour | 0.1 | 5 |
| | annual | 0.006 | 1.0 |
| CO | 1-hour | 28.7 | 2000 |
| | 8-hour | 5.2 | 500 |
| PM ₁₀ ^b | 24-hour | 1.0 | 5 |
| | annual | 0.1 | 1.0 |

Notes:

- a. BAAQMD significance threshold only.
- b. Includes cooling tower.

SAN FRANCISCO ELECTRIC RELIABILITY PROJECT (04-AFC-1) DATA RESPONSES, SET 1D

As shown in the Table AQ-CUM-3, SFERP impacts are well below the BAAQMD significance thresholds. Thus, project impacts are not significant as that term is defined in federal air quality modeling guidelines, and no significant cumulative impacts are expected to occur. At present, there are no PSD significance thresholds for PM_{2.5}.

The only pollutants for which SFERP could be considered to have the potential for significant impacts are NO_x and PM₁₀, because the BAAQMD is currently classified as a nonattainment area with respect to state air quality standards for both ozone (for which NO_x is a precursor) and PM₁₀, and for the new national 8-hour ozone standard.¹ To evaluate potential cumulative impacts of SFERP in combination with other projects in the area, we requested from the BAAQMD staff information regarding projects in San Francisco County for which permits to construct have been issued but had not yet begun operation. The list provided by the District staff included 25 facilities. As discussed in the cumulative impacts protocol, projects for which the emissions changes are smaller than 5 tons per year are assumed to be *de minimis* and are not included in the dispersion modeling analysis. Therefore only three projects, with permitted NO_x emissions increases of 16.2, 18.9 and 7.1 tons per year, respectively, are included in the cumulative impacts analysis. However, two additional operating facilities, PG&E Hunters Point and Mirant Potrero power plants, were also considered in the dispersion modeling analysis to assess potential localized cumulative air quality impacts for NO₂ and PM₁₀.

Three different modeling analyses were performed to evaluate various future Hunters Point and Potrero operating scenarios. Maximum future emissions from SFERP and the three new facilities were modeled for each scenario. As Hunters Point and Potrero historical emissions are reflected in ambient background concentrations, future operating scenarios evaluate differences in NO_x and PM₁₀ emissions at the power plants relative to historical levels.

- Expected future emissions: Future generation at Hunters Point and Potrero would remain at historical levels²; however, future NO_x emissions from Hunters Point Unit 4 and Potrero Unit 3 would be lower to comply with BAAQMD regulatory requirements. The difference between average historical and projected future NO_x emissions from the boilers are treated as reductions. There is no change in PM₁₀ emissions.
- Maximum future emissions: Future generation at Hunters Point and Potrero would be increased to the maximum levels allowed under existing permits and equipment ratings. Future NO_x emissions from Hunters Point Unit 4 and Potrero Unit 3 would be controlled to comply with BAAQMD regulatory requirements, so NO_x emissions from these units are modeled as reductions. The difference between average historical and maximum future NO_x and PM₁₀ emissions from

¹ The Bay Area is designated as an attainment area for the national 1-hour average ozone standard and the national PM₁₀ air quality standards. The District is unclassified for the national PM_{2.5} air quality standards.

² The City does not expect Hunters Point Power Plant to continue to operate after the SFERP is in place. This analysis was undertaken solely to provide a very conservative estimate of the potential cumulative impacts of the SFERP.

**SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
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Hunters Point Units 1 and 4 and Potrero Units 3, 4, 5 and 6 are modeled as increases.

- Potrero and Hunters Point shut down: Average historical NO_x and PM₁₀ emissions from all units are modeled as reductions.

The results of the cumulative impact modeling analysis are summarized in Tables AQ-CUM-4A through AQ-CUM-4C below. These results show that the maximum modeled NO₂ and PM₁₀ impacts of SFERP are much smaller than the maximum modeled impacts of the other cumulative impact sources. These other sources, which are assumed to be backup Diesel engine generators, are expected to have very high but very localized one-hour and annual average NO₂ impacts. Because their impacts are localized, they do not overlap with impacts from SFERP, Mirant Potrero or Hunters Point. Modeled impacts from SFERP and the three other cumulative impact sources are shown in the attached isopleth figures. The available models do not correctly calculate the negative emission changes (reductions). The presence of the negative emission rates in each case prevents us from including the Potrero and Hunters Point units in the isopleths, although the results for these units are presented in the tables. Therefore, the results shown in the isopleths are conservatively high because they do not reflect the full benefits of the reduced operations at Hunters Point and Potrero.

The modeling also shows that because of the relative locations of the Mirant Potrero power plant and the SFERP, the Mirant Potrero modeled impacts overlap with the SFERP modeled impacts. However, the Hunters Point power plant is far enough away that its modeled impacts do not coincide with the maximum impact from the SFERP. If generation at Mirant's Potrero power plant remains at historical levels, the modeling shows that once the power plant boiler is retrofitted to meet the limitations of the District power plant NO_x rule the reductions in maximum modeled NO₂ impacts from this unit will be greater than the maximum modeled NO₂ increases from the proposed project. If generation at Potrero is increased to the maximum levels allowable under existing permits, the modeling shows that there will be localized increases in NO₂ and PM₁₀ concentrations due to the increased operation. If the existing power plants are shut down, the modeling shows that localized reductions in ambient NO₁ and PM₁₀ impacts would be approximately equal to or greater than the maximum modeled impacts of the SFERP. In summary, the modeling shows that the SFERP is not expected to contribute significantly to cumulative localized NO₂ or PM₁₀ ambient impacts.

**SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
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TABLE AQ-CUM-4A

Cumulative Air Quality Impacts: Scenario A (Potrero and Hunters Point Expected Future Emissions)

| Pollutant/ Avg. Prd. | Maximum Modeled Concentration, ug/m ³ At Location of SFERP Max Impact | | | | Maximum Modeled Concentration, ug/m ³ At Location of Maximum Combined Impact | | | | Current Background ^c | Total Cumulative Impact, All Sources, ug/m ³ |
|---|---|---|---------------------|-------|--|---|---------------------|-------|------------------------------------|---|
| | SFERP | Other Cumulative Sources ^a | POT/HP ^b | Total | SFERP | Other Cumulative Sources ^a | POT/HP ^b | Total | | |
| | NO ₂ : 1-hr avg | 8.3 | 0 | -20.6 | -12.3 | 0 | 139 | 0 | | |
| NO ₂ : annual avg ^d | 0.1 | 0.1 | -0.8 | -0.6 | 0.02 | 11.4 | -0.1 | 11.3 | 38 | 49 |
| PM ₁₀ : 24-hr avg | 1.0 | 0.01 | 0 | 1.0 | 0 | 8.7 | 0 | 8.7 | 74 | 82.7 |
| PM ₁₀ : annual avg | 0.1 | 0.01 | 0 | 0.1 | 0.01 | 0.6 | 0 | 0.6 | 26.3 | 26.9 |

Notes:

- a. SF Self Storage, SF Wave Exchange and UCSF.
- b. Potrero and Hunters Point future emissions based on historical generating levels; compliance with future regulations.
- c. Maximum monitored ambient concentrations at Arkansas Street, 2001-2003.
- d. 1-hr avg NO₂ ozone-limited using concurrent ozone data for hour of maximum modeled impact.
- e. Annual average NO₂ ozone-limited using ARM and national default factor of 0.75.

**SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
(04-AFC-1)
DATA RESPONSES, SET 1D**

TABLE AQ-CUM-4B

Cumulative Air Quality Impacts: Scenario B (Potrero and Hunters Point Maximum Future Emissions)

| Pollutant/ Avg. Prd. | Maximum Modeled Concentration, ug/m ³ At Location of SFERP Max Impact | | | | Maximum Modeled Concentration, ug/m ³ At Location of Maximum Combined Impact | | | | Current Background ^c | Total Cumulative Impact, All Sources, ug/m ³ |
|---|---|---|---------------------|-------|--|---|---------------------|-------|------------------------------------|---|
| | SFERP | Other Cumulative Sources ^a | POT/HP ^b | Total | SFERP | Other Cumulative Sources ^a | POT/HP ^b | Total | | |
| | NO ₂ : 1-hr avg | 8.3 | 0 | 34.4 | 42.7 | 0 | 139 | 0 | | |
| NO ₂ : annual avg ^e | 0.1 | 0.1 | 0.4 | 0.6 | 0.02 | 11.4 | 0.01 | 11.4 | 38 | 49 |
| PM ₁₀ : 24-hr avg | 1.0 | 0.01 | 1.2 | 2.2 | 0 | 8.7 | 0 | 8.7 | 74 | 82.7 |
| PM ₁₀ : annual avg | 0.1 | 0.01 | 0.2 | 0.3 | 0.01 | 0.6 | 0.03 | 0.7 | 26.3 | 27.0 |

Notes:

- a. SF Self Storage, SF Wave Exchange and UCSF.
- b. Potrero and Hunters Point future emissions based on maximum allowable generating levels; compliance with future regulations.
- c. Maximum monitored ambient concentrations at Arkansas Street, 2001-2003.
- d. 1-hr avg NO₂ ozone-limited using concurrent ozone data for hour of maximum modeled impact.
- e. Annual average NO₂ ozone-limited using ARM and national default factor of 0.75.

**SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
(04-AFC-1)
DATA RESPONSES, SET 1D**

TABLE AQ-CUM-4C

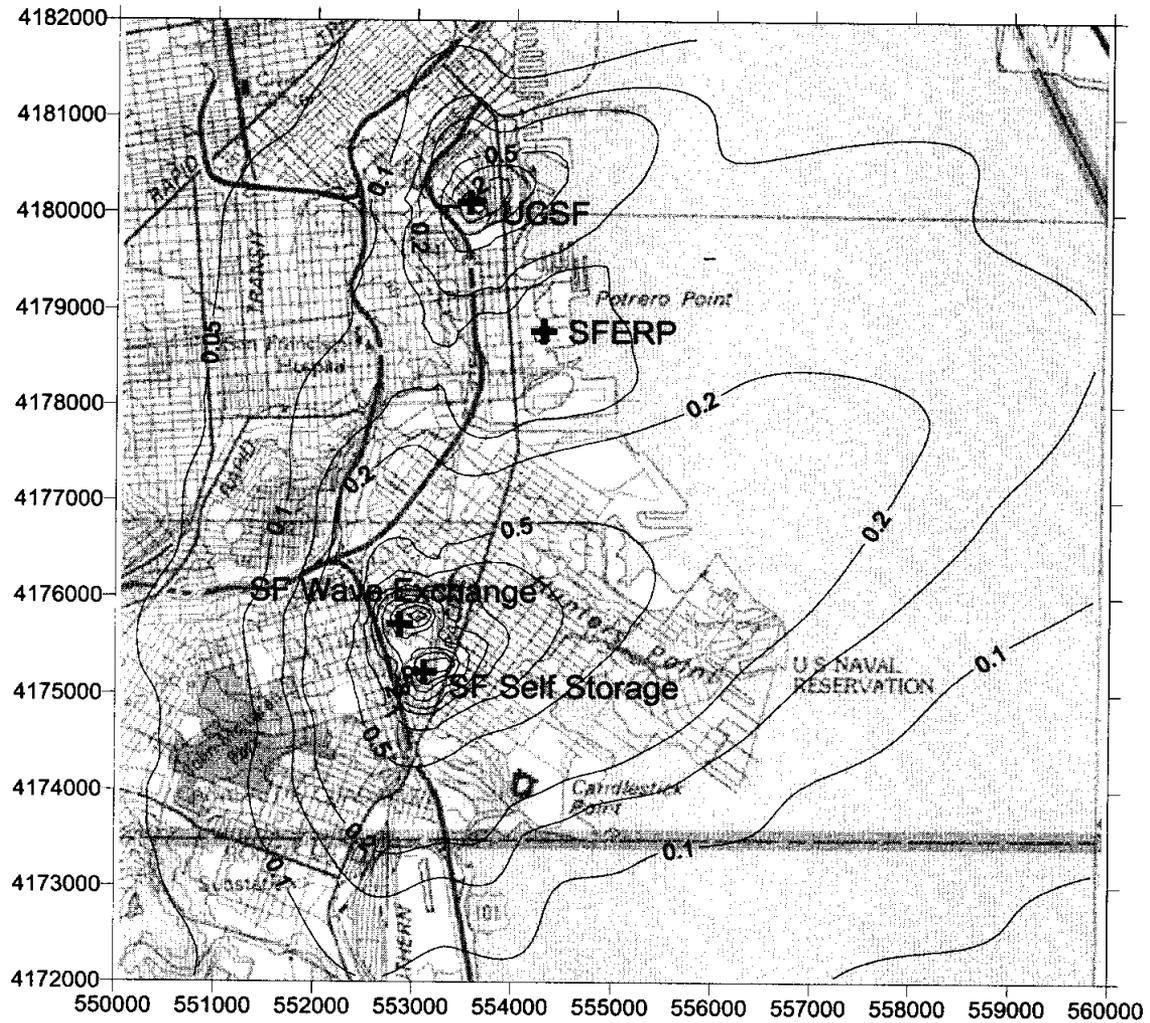
Cumulative Air Quality Impacts: Scenario C (Potrero and Hunters Point Shut Down)

| Pollutant/ Avg. Prd. | Maximum Modeled Concentration, ug/m ³ At Location of SFERP Max Impact | | | | Maximum Modeled Concentration, ug/m ³ At Location of Maximum Combined Impact | | | | Current Background ^c | Total Cumulative Impact, All Sources, ug/m ³ |
|---|---|---|---------------------|-------|--|---|---------------------|-------|------------------------------------|---|
| | SFERP | Other Cumulative Sources ^a | POT/HP ^b | Total | SFERP | Other Cumulative Sources ^a | POT/HP ^b | Total | | |
| | NO ₂ : 1-hr avg | 8.3 | 0 | -63.7 | -55.4 | 0 | 139 | 0 | | |
| NO ₂ : annual avg ^e | 0.1 | 0.1 | -1.24 | -1.0 | 0.02 | 11.4 | -0.3 | 11.1 | 38 | 49 |
| PM ₁₀ : 24-hr avg | 1.0 | 0.01 | -0.9 | 0.1 | 0 | 8.7 | 0 | 8.7 | 74 | 82.7 |
| PM ₁₀ : annual avg | 0.1 | 0.01 | -0.1 | <0.01 | 0.01 | 0.6 | -0.02 | 0.6 | 26.3 | 26.9 |

Notes:

- a. SF Self Storage, SF Wave Exchange and UCSF.
- b. Potrero and Hunters Point shut down.
- c. Maximum monitored ambient concentrations at Arkansas Street, 2001-2003.
- d. 1-hr avg NO₂ ozone-limited using concurrent ozone data for hour of maximum modeled impact.
- e. Annual average NO₂ ozone-limited using ARM and national default factor of 0.75.

Figure AQ-CUM-1
San Francisco Electric Reliability Project
Cumulative Impacts for Annual Average NO₂ (µg/m³)



Note: Modeled concentrations shown are not ozone limited.

Figure AQ-CUM-2
San Francisco Electric Reliability Project
Cumulative Impacts for Annual Average PM₁₀ (μg/m³)

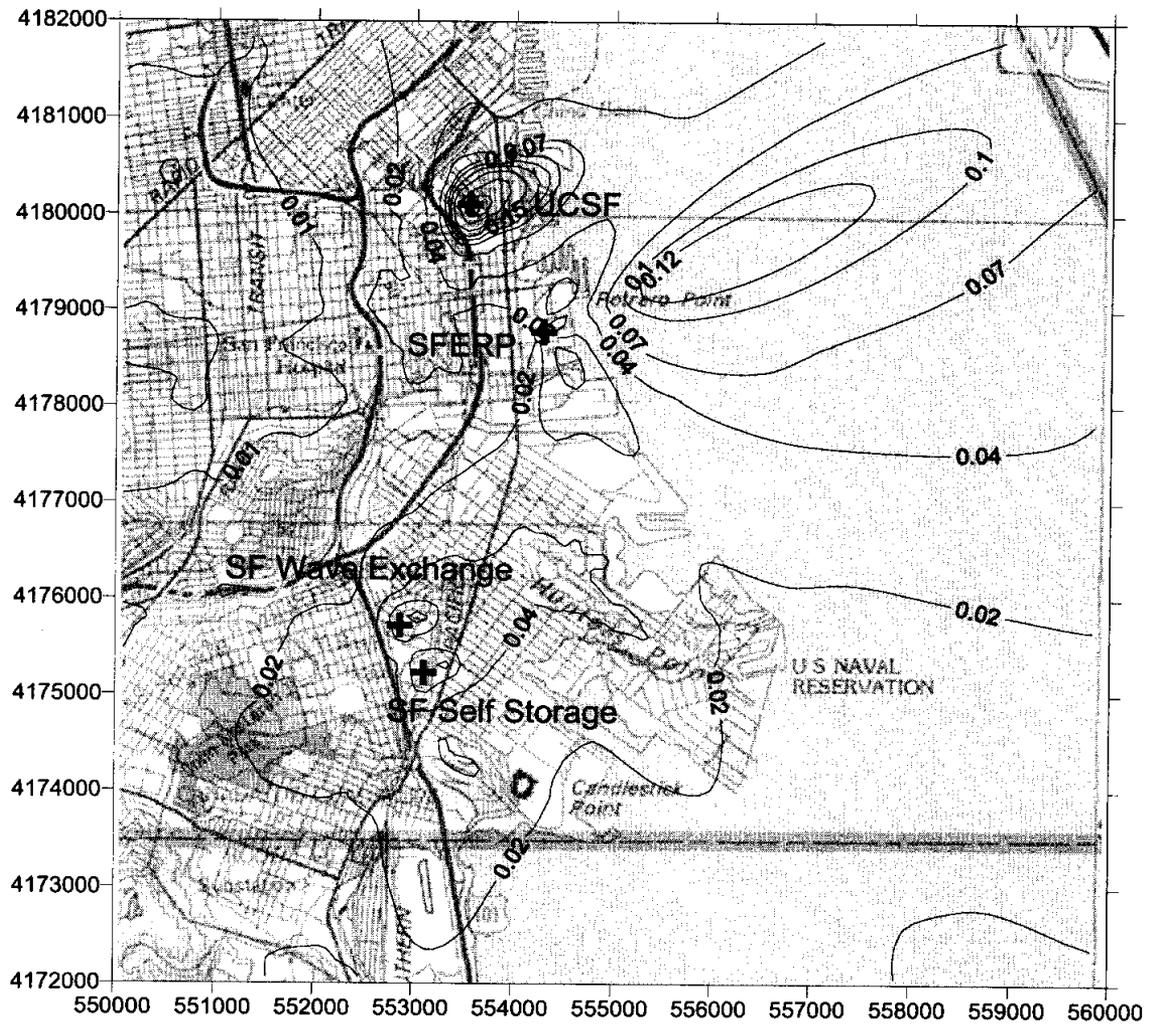
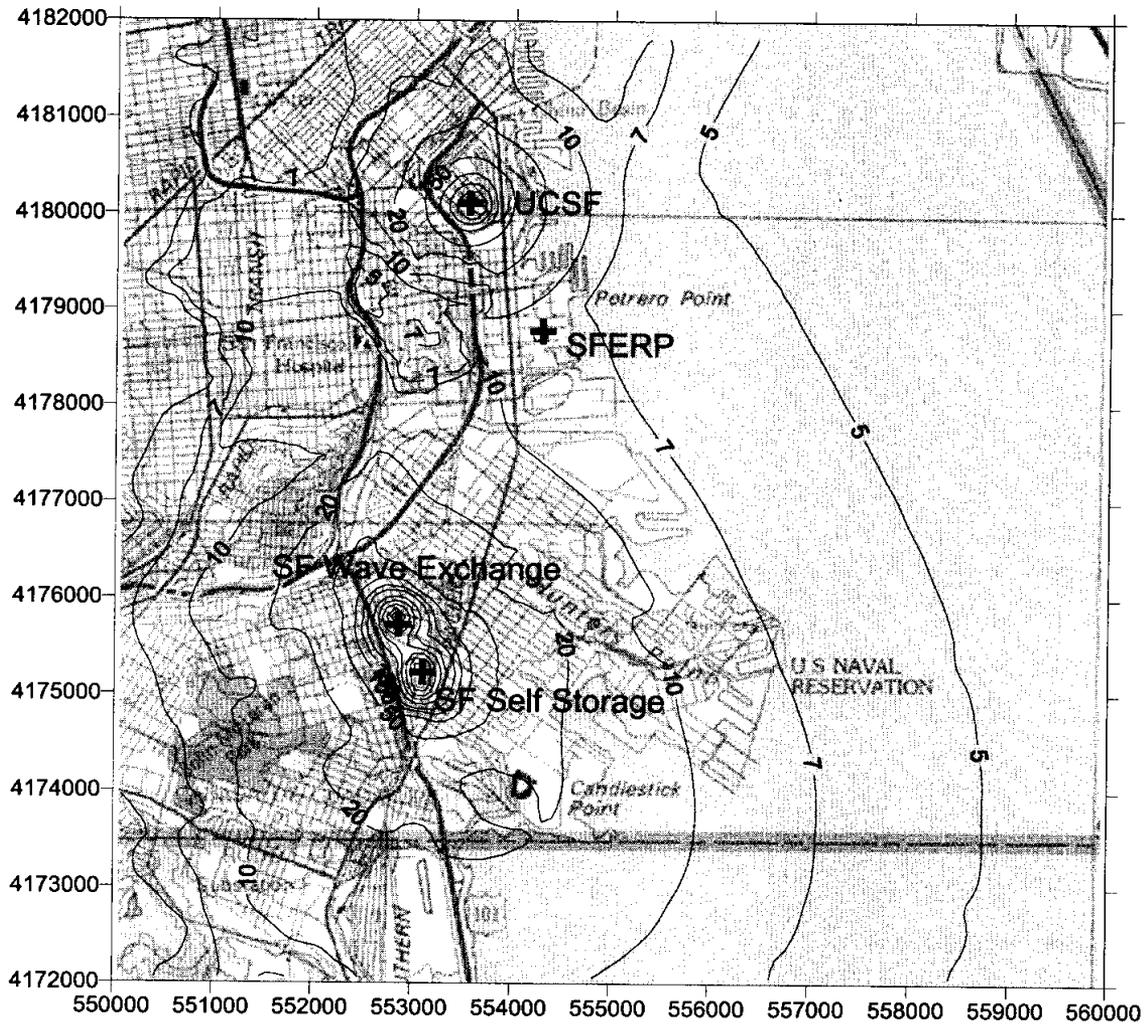
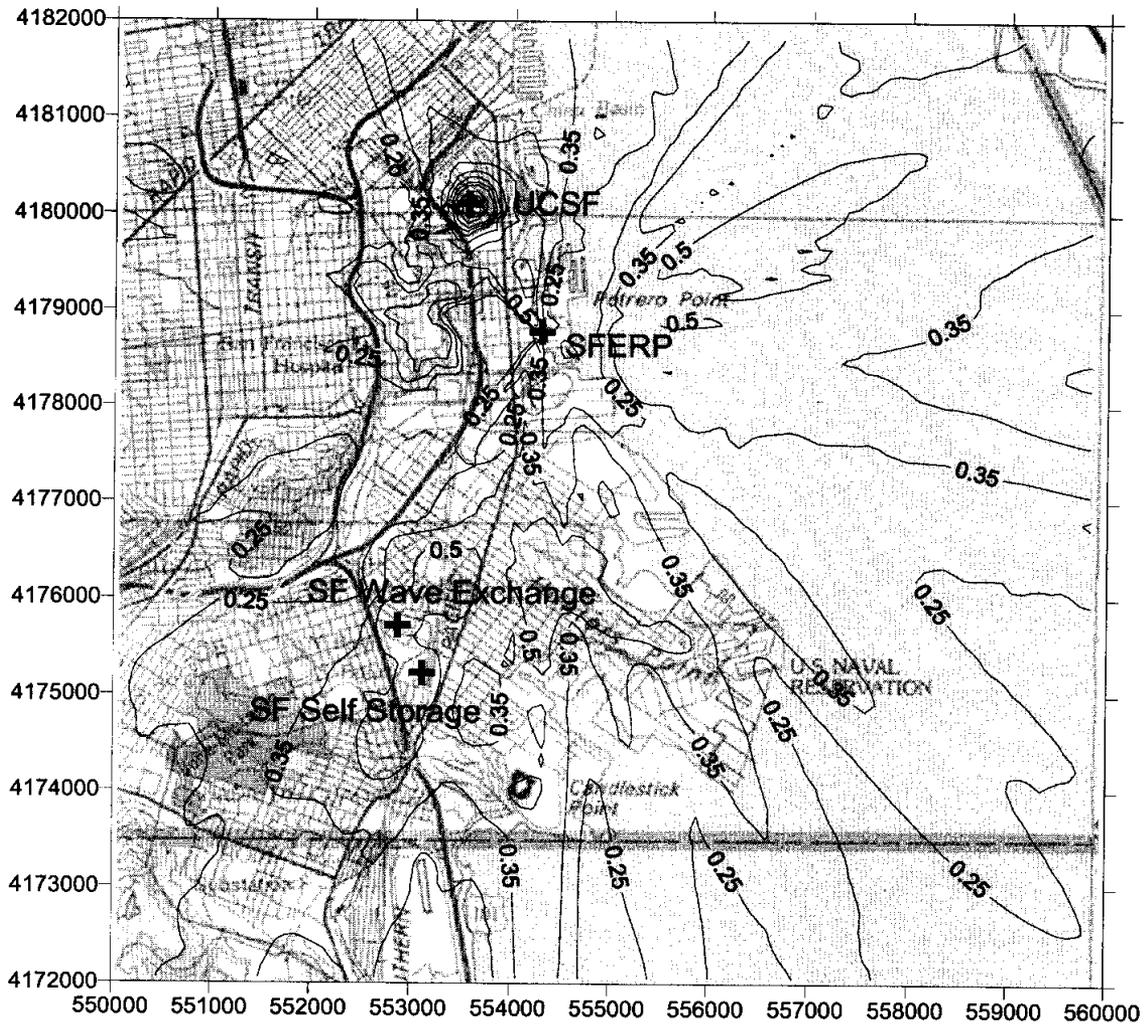


Figure AQ-CUM-3
San Francisco Electric Reliability Project
Cumulative Impacts for One-Hour Average NO₂ (µg/m³)



Note: Modeled concentrations shown are not ozone limited.

Figure AQ-CUM-4
San Francisco Electric Reliability Project
Cumulative Impacts for 24-Hour Average PM₁₀ (µg/m³)



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

APPLICATION FOR CERTIFICATION
FOR THE SAN FRANCISCO ELECTRIC
RELIABILITY PROJECT

) Docket No. 04-AFC-1
)
)

) PROOF OF SERVICE
) *Revised 7/9/04
)

I, Sarah Madams, declare that on August 27, 2004, I deposited copies of the attached Data Response Set 1D in the United States mail at Sacramento, CA with first class postage thereon, fully prepaid, and addressed to the following:

DOCKET UNIT

Send the original signed document plus 12 copies to the following address:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 01-AFC-17
DOCKET UNIT, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

In addition to the documents sent to the Commission Docket Unit, also send individual copies of all documents to:

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



Sarah Madams