

SOCIOECONOMIC
ANALYSIS
PROPOSED RULE

REGULATION 9, RULE 8:
NITROGEN OXIDES AND CARBON MONOXIDE FROM
STATIONARY INTERNAL COMBUSTION ENGINES

May 29, 2007

Prepared for
Bay Area Air Quality
Management District

Prepared by

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1. EXECUTIVE SUMMARY

INTRODUCTION

This report describes the socioeconomic impacts of proposed Regulation 9, Rule 8 that, if implemented, will help the Bay Area Air Quality Management District (District) to achieve and maintain state ambient air quality standards for ozone and particulate matter. Following this summary, the report summarizes the proposed rule requirements and describes the methodology for the socioeconomic analysis. The report also describes the economic characteristics of sites affected by the proposed rule along with the socioeconomic impacts of the proposed rule.

SUMMARY

The proposed rule affects 65 private sector sites in 24 Bay Area industries. The proposed amendments also impact 27 local government and non-profit agencies in the Bay area, as well as a number of state and federal government agencies. Combined, the impacted private sector sites generate sales of approximately \$34.3 billion annually. Annual profits for these businesses are estimated at nearly \$1.88 billion.

Revenues for the impacted local government and non-profit sites are approximately \$7.4 billion. Revenues for state and federal government agencies are subject to annual budget processes at the state and federal level. Impacts to these agencies have not been analyzed for this report.

The analysis concludes that the costs associated with compliance will not result in significant economic dislocation or job losses. The total annual cost of compliance is far below the 10 percent of profits threshold for significant impact for affected private sector sites. For affected local government and non-profit sites, the annual compliance costs are below the 10 percent of revenues threshold for significant impact. Additionally, it is believed that small businesses will not be disproportionately impacted by the proposed rule.

2. DESCRIPTION OF THE PROPOSED RULE

CURRENT STATUS OF THE RULE

Regulation 9, Rule 8 was originally adopted in 1993. It regulates the emissions of NO_x and CO from stationary internal combustion engines of 250 bhp or greater powered by gaseous fuels such as natural gas or LPG. The current rule does not include emissions limits for liquid-fueled engines, such as those using diesel, or engines below 250 bhp. The rule also exempts engines used in agriculture, emergency standby engines, and low usage engines – engine less than 1000 bhp are limited to 200 hours of operation per year, and engines greater 1000 bhp are limited to 100 hour per year.

PROPOSED RULE AMENDMENTS

The proposed amendments will change the current rule in three primary ways:

- 1) Emission limits will be expanded to include IC engines of 50 to 250 bhp
- 2) The emission limits will now also apply to liquid-fueled engines, such as those using diesel
- 3) NO_x emission limits will be reduced to reflect the most stringent limits in the State

EMISSIONS REDUCTIONS

BAAQMD estimates that the proposed rule will reduce NO_x emissions by 9.6 tons per day (tpd). PM emission reductions are expected to total 1.2 tpd.

3. IMPACT OF PROPOSED RULE AMENDMENTS

This section of the socioeconomic analysis describes demographic and economic trends in the San Francisco Bay Area (Bay Area) region. Following an overview of the methodology for the socioeconomic analysis, the first part of this section compares the Bay Area against California and provides a context for understanding demographic and economic changes that have occurred within the Bay Area between 1995 and 2005. After an overview of Bay Area industries, we focus on the following industries:

- NAICS 2123, Nonmetallic Mineral Mining and Quarrying
- NAICS 213112, Support Services for Oil and Gas Operations
- NAICS 2211, Electric Power Generation, Transmission, and Distribution
- NAICS 237, Heavy and Civil Engineering Construction
- NAICS 23891, Site Preparation Contractors
- NAICS 32411, Petroleum Refineries
- NAICS 324121, Asphalt Paving Mixture and Block Manufacturing
- NAICS 325, Chemical Manufacturing
- NACIS 327, Nonmetallic Mineral Product Manufacturing
- NACIS 331, Food Manufacturing
- NACIS 332, Fabricated Metal Product Manufacturing
- NACIS 33341, Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing
- NACIS 334, Computer and Electronic Product Manufacturing
- NACIS 3391, Medical Equipment and Supplies Manufacturing
- NACIS 42471, Petroleum Bulk Stations and Terminals
- NACIS 4521, Department Stores
- NACIS 481, Air Transportation
- NACIS 484, Truck Transportation
- NACIS 531, Real Estate
- NACIS 5617, Services to Buildings and Dwellings
- NACIS 5622, Waste Treatment and Disposal
- NACIS 622, Hospitals
- NACIS 623, Nursing and Residential Care Facilities

- NACIS 812, Personal and Laundry Services

Then the impacts from the proposed changes to Regulation 9, Rule 8 on businesses within these industries are analyzed. For the purposes of this report, the Bay Area region is defined as Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, and portions of Solano, and Sonoma Counties.

METHODOLOGY

The socioeconomic analysis of the proposed rule concerning nitrogen oxides and carbon monoxide from stationary internal combustion engines involves the use of information provided directly by BAAQMD. In addition, it utilizes secondary data used to describe the industries affected by the proposed rule. Based on information provided by BAAQMD staff, ADE determined that the impacts would affect businesses in 24 Bay Area industries (listed in the preceding section).

With this information we began to prepare economic descriptions of the industry groups of which the impacted sites are a part, as well as to analyze data on the number of jobs, sales levels, the typical profit ratios and other economic indicators for the Bay Area businesses. ADE also reviewed and summarized documents available to the public such as annual reports for publicly traded companies.

With the annual reports and data from the US Economic Census and the IRS, ADE was able to estimate revenues and profit ratios for the sites impacted by the proposed rule. In calculating aggregate revenues generated by impacted businesses in the Bay Area, ADE estimated average annual revenues using the 2002 US Economic Census¹ and Dunn and Bradstreet data. Using the IRS Statistics and Income Integrated Business Data and other publicly available data, ADE calculated ratios of profit per dollar of sales for the businesses on which the analysis focused. To estimate

¹ The average revenue estimates were calculated per Bay Area establishment and inflated to current dollars.

employment, ADE used employment data from the California Employment Development Department.

The result of the socioeconomic analysis shows what proportion of profit the compliance costs represent. Based on a given threshold of significance, ADE discusses in the report whether the affected sites are likely to reduce jobs as a means of recouping the cost of compliance or as a result of reducing business operations. To the extent that such job losses appear likely, the indirect multiplier effects of the job losses are estimated using a regional IMPLAN input-output model.

REGIONAL DEMOGRAPHIC TRENDS

The Bay Area experienced moderate population growth from 1995 to 2005. Between 1995 and 2000, the nine-county region increased by nearly 7.2 percent, from 6.3 million in 1995 to almost 6.8 million in 2000. From 1995 to 2005, the population increase was from 6.3 million to close to 7.1 million for an increase of approximately 11.2 percent. During the same time period, California had population growth of over 16 percent.

Within the Bay Area, the greatest percentage increase occurred in Contra Costa County. From 1995 to 2005 Contra Costa increased its population by over 17 percent. All other Bay Area counties had population increases slower than the State. The smallest percentage increase occurred in Marin County where population grew less than 6 percent from 1995 to 2005. Table 1 shows the population changes that have occurred in the Bay Area and California from 1995 to 2005.

Table 1
Population Growth: San Francisco Bay Area

	Population			Percent Change		
	1995	2000	2005	95-00	00-05	95-00
California	31,617,000	33,871,648	36,728,196	7.1%	8.4%	16.2%
Bay Area	6,329,800	6,783,760	7,067,403	7.2%	4.2%	11.2%
Alameda County	1,332,900	1,443,741	1,500,228	8.3%	3.9%	12.6%
Contra Costa County	869,200	948,816	1,019,101	9.2%	7.4%	17.2%
Marin County	238,100	247,289	251,820	3.9%	1.8%	5.8%
Napa County	116,800	124,279	132,990	6.4%	7.0%	13.9%
San Francisco County	741,600	776,733	792,952	4.7%	2.1%	6.9%
San Mateo County	673,300	707,161	719,655	5.0%	1.8%	6.9%
Santa Clara County	1,568,200	1,682,585	1,752,653	7.2%	4.2%	11.8%
Solano County	368,000	394,542	420,307	7.2%	6.5%	14.2%
Sonoma County	421,700	458,614	477,697	8.9%	4.2%	13.3%

Source: Applied Development Economics, based on household population estimates from The California Department of Finance

REGIONAL ECONOMIC TRENDS

The Bay Area is one of the world’s greatest regional economies. It benefits from pre-eminent knowledge-based industries, with competitive strength flowing from an unmatched culture of entrepreneurship, world-leading research institutions, and some of the nation’s best educated and most highly skilled workforce. With these remarkable advantages, it has led through innovation in a wide range of research and industrial fields.

Many of the Bay Area’s most prominent industries are manufacturing related. From Intel to PowerBar, Bay Area manufacturers are often high profile companies with world-renowned recognition. From small to large, Bay Area industry has been dynamic, creating wealth and jobs in both the export sector and local serving industries.

The economic base is typically comprised of export industries within the manufacturing, minerals-resource extraction, and agricultural sectors. There are also the “local support industries” such as retail or service sectors, the progress of which is a function of the economic base and demographic changes, and more so the latter than the former. As population increases in a given area, demand for services – such as realtors, teachers, healthcare – increases, as does

demand for basic retail items like groceries, gas for commuting, or clothing at the local apparel shops.

As of 2005, the professional and business services sector was the largest employer in the region, at 529,100 jobs or 17 percent of all private and public sector jobs. This is a change from 1995 when professional and business services accounted for 16 percent of all Bay Area employment. During the same period, professional and business services increased 14 percent. The next largest industry in the Bay Area is public service, or government, with 468,100 jobs. In 2005, government accounted for 15 percent of all Bay Area employment. From 1995 to 2005, government had one of the lowest growth rates of all industries at less than 6 percent. Two other industries came close to manufacturing in total employment. Retail trade and education & health care both made up 11 percent of total employment and had only a few thousand jobs less than manufacturing. Unlike manufacturing, both retail trade and education & health care had significant job gains from 1995 to 2005. All other industries made up less than manufacturing in total employment in 2005. Table 2 shows Bay Area industry sectors and their trends from 1995 to 2005.

Table 2
Employment Profile of the San Francisco Bay Area, 1995-2005

Industry	1995	2000	2005	% of Total Employment in 2005	% Change 1995 - 2000	% Change 2000 - 2005
Farm	21,100	25,800	20,000	1%	22%	-22%
Natural Resources & Mining	2,920	4,600	4,560	0%	58%	-1%
Construction	105,200	165,700	164,100	5%	58%	-1%
Manufacturing	428,800	484,500	351,300	11%	13%	-27%
Wholesale Trade	121,700	138,800	122,900	4%	14%	-11%
Retail Trade	304,900	350,600	336,600	11%	15%	-4%
Transportation, Warehousing and Utilities	116,600	125,600	100,400	3%	8%	-20%
Information	92,100	151,600	112,300	4%	65%	-26%
Financial Activities	189,300	198,500	213,000	7%	5%	7%
Professional and Business Services	464,400	670,300	529,100	17%	44%	-21%
Educational and Health Services	299,300	334,300	361,600	11%	12%	8%
Leisure and Hospitality	260,400	297,700	311,000	10%	14%	4%
Other Services	100,700	110,800	109,900	3%	10%	-1%
Government	442,100	465,200	468,100	15%	5%	1%
Total	2,949,520	3,524,000	3,204,860	100%	19%	-9%

Source: Applied Development Economics from data supplied by the Labor Market Information Division of the California Employment Development Department

DESCRIPTION OF AFFECTED INDUSTRIES

The proposed amendments to Regulation 9, Rule 8 affect industries in the following NAICS codes:

- NAICS 2123, Nonmetallic Mineral Mining and Quarrying
- NAICS 213112, Support Services for Oil and Gas Operations
- NAICS 2211, Electric Power Generation, Transmission, and Distribution
- NAICS 237, Heavy and Civil Engineering Construction
- NAICS 23891, Site Preparation Contractors
- NAICS 32411, Petroleum Refineries
- NAICS 324121, Asphalt Paving Mixture and Block Manufacturing
- NAICS 325, Chemical Manufacturing
- NACIS 327, Nonmetallic Mineral Product Manufacturing
- NACIS 331, Food Manufacturing
- NACIS 332, Fabricated Metal Product Manufacturing
- NACIS 33341, Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing
- NACIS 334, Computer and Electronic Product Manufacturing
- NACIS 3391, Medical Equipment and Supplies Manufacturing
- NACIS 42471, Petroleum Bulk Stations and Terminals
- NACIS 4521, Department Stores
- NACIS 481, Air Transportation
- NACIS 484, Truck Transportation
- NACIS 531, Real Estate
- NACIS 5617, Services to Buildings and Dwellings
- NACIS 5622, Waste Treatment and Disposal
- NACIS 622, Hospitals
- NACIS 623, Nursing and Residential Care Facilities
- NACIS 812, Personal and Laundry Services

What follows is a description of these industries, along with their economic trends in the Bay Area, and it provides a comparison between 2001 and 2005. Data in Table 3 below are for all sources, not just the major sites that have been focused on in the Bay Area. Table 3 also shows each of the

impacted industries relative to their larger economic sectors. Between 2001 and 2005, employment in ten of the impacted industries has been increasing. In half of these industries, the increase has been despite employment decreases in their larger economic sectors. For the fourteen industries that have experienced employment decreases, nine of them have been in larger economic sectors that also declined in employment during this period. Statewide, employment has increased in nine of the industries; and, only one of the increasing industries part of a was larger sector that was declining.

Table 3
Employment Trends: Industries Affected by Proposed Amendments, 2001 – 2005

		2001	2005	% Change from 2001 to 2005	Annual % Change from 2001 to 2005
BAY AREA REGION					
21	MINING	3,699	1,997	-46.00%	-11.60%
2123	Nonmetallic Mineral Mining and Quarrying	579	839	44.87%	7.70%
213112	Support Services for Oil and Gas Operations	77	343	345.67%	34.84%
22	UTILITIES	3,821	5,876	53.79%	8.99%
2211	Electric Power Generation, Transmission, and Distribution	3,007	2,771	-7.85%	-1.62%
23	CONSTRUCTION	192,338	188,473	-2.01%	-0.41%
237	Heavy and Civil Engineering Construction	18,848	17,571	-6.78%	-1.39%
23891	Site Preparation Contractors	5,092	5,903	15.93%	3.00%
31 – 33	MANUFACTURING	454,329	351,300	-22.68%	-5.01%
32411	Petroleum Refineries	6,424	6,031	-6.12%	-1.25%
324121	Asphalt Paving Mixture and Block Manufacturing	18	190	957.78%	60.28%
325	Chemical Manufacturing	19,262	20,301	5.39%	1.06%
327	Nonmetallic Mineral Product Manufacturing	9,593	9,411	-1.90%	-0.38%
331	Food Manufacturing	5,601	4,263	-23.89%	-5.31%
332	Fabricated Metal Product Manufacturing	28,898	21,626	-25.16%	-5.63%
33341	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	650	706	8.63%	1.67%
334	Computer and Electronic Product Manufacturing	218,922	149,374	-31.77%	-7.36%
3391	Medical Equipment and Supplies Manufacturing	14,769	13,395	-9.30%	-1.93%
42	WHOLESALE TRADE	135,436	122,900	-9.27%	-1.93%
42471	Petroleum Bulk Stations and Terminals	175	753	330.29%	33.89%
44 – 45	RETAIL TRADE	349,816	335,744	-4.02%	-0.82%
4521	Department Stores	41,871	37,324	-10.86%	-2.27%
48	TRANSPORTATION AND WAREHOUSING	52,337	80,530	53.87%	9.00%
481	Air Transportation	30,431	19,735	-35.15%	-8.30%
484	Truck Transportation	18,985	16,750	-11.77%	-2.47%
53	REAL ESTATE AND RENTAL AND LEASING	61,312	61,402	0.15%	0.03%
531	Real Estate; this appears to be a subsidiary of chevron texaco	41,369	44,557	7.71%	1.50%
561	ADMINISTRATIVE AND SUPPORT SERVICES	191,228	170,727	-10.72%	-2.24%
5617	Services to Buildings and Dwellings	49,759	48,762	-2.00%	-0.40%
562	WASTE MANAGEMENT AND REMEDIATION SERVICES	9,718	10,333	6.33%	1.23%
5622	Waste Treatment and Disposal	4,457	4,510	1.19%	0.24%

Table 3 (cont.)
Employment Trends: Industries Affected by Proposed Amendments, 2001 – 2005

HEALTH CARE AND SOCIAL					
62	ASSISTANCE	276,359	283,210	2.48%	0.49%
622	Hospitals	73,395	95,187	29.69%	5.34%
623	Nursing & Residential Care Facilities	45,715	45,103	-1.34%	-0.27%
OTHER SERVICES, EXCEPT					
81	PUBLIC ADMINISTRATION	130,973	140,159	7.01%	1.36%
812	Personal and Laundry Services	29,464	28,757	-2.40%	-0.48%
CALIFORNIA					
21	MINING	23,620	22,083	-6.51%	-1.34%
2123	Nonmetallic Mineral Mining and Quarrying	6,493	6,239	-3.91%	-0.79%
213112	Support Services for Oil and Gas Operations	6,335	5,654	-10.75%	-2.25%
22	UTILITIES	54,468	55,742	2.34%	0.46%
2211	Electric Power Generation, Transmission, and Distribution	17,488	19,206	9.82%	1.89%
23	CONSTRUCTION	774,145	900,684	16.35%	3.07%
237	Heavy and Civil Engineering Construction	88,649	89,319	0.76%	0.15%
23891	Site Preparation Contractors	22,441	28,727	28.01%	5.06%
31-33	MANUFACTURING	1,779,012	1,498,497	-15.77%	-3.37%
32411	Petroleum Refineries	13,447	12,442	-7.47%	-1.54%
324121	Asphalt Paving Mixture and Block Manufacturing	747	612	-18.07%	-3.91%
325	Chemical Manufacturing	82,035	81,985	-0.06%	-0.01%
327	Nonmetallic Mineral Product Manufacturing	47,767	46,990	-1.63%	-0.33%
331	Food Manufacturing	29,010	24,975	-13.91%	-2.95%
332	Fabricated Metal Product Manufacturing	163,395	139,678	-14.52%	-3.09%
33341	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	7,347	5,924	-19.37%	-4.21%
334	Computer and Electronic Product Manufacturing	419,819	320,196	-23.73%	-5.27%
3391	Medical Equipment and Supplies Manufacturing	51,841	47,762	-7.87%	-1.63%
42	WHOLESALE TRADE	652,968	671,375	2.82%	0.56%
42471	Petroleum Bulk Stations and Terminals	1,614	1,860	15.24%	2.88%
44-45	RETAIL TRADE	1,571,994	1,650,052	4.97%	0.97%
4521	Department Stores	195,490	208,878	6.85%	1.33%
48-49	TRANSPORTATION AND WAREHOUSING	440,042	413,500	-6.03%	-1.24%
481	Air Transportation	68,001	47,556	-30.07%	-6.90%
484	Truck Transportation	115,134	112,939	-1.91%	-0.38%
53	REAL ESTATE AND RENTAL AND LEASING	266,783	283,520	6.27%	1.22%
531	Real Estate; this appears to be a subsidiary of chevron texaco	180,331	204,943	13.65%	2.59%

Table 3 (cont.)
Employment Trends: Industries Affected by Proposed Amendments, 2001 – 2005

561	ADMINISTRATIVE AND SUPPORT SERVICES	918,008	917,051	-0.10%	-0.02%
5617	Services to Buildings and Dwellings	196,080	202,559	3.30%	0.65%
562	WASTE MANAGEMENT AND REMEDICATION SERVICES	34,960	38,793	10.96%	2.10%
5622	Waste Treatment and Disposal	16,364	13,074	-20.11%	-4.39%
62	HEALTH CARE AND SOCIAL ASSISTANCE	1,201,718	1,296,611	7.90%	1.53%
622	Hospitals	332,386	374,904	12.79%	2.44%
623	Nursing & Residential Care Facilities	217,941	216,956	-0.45%	-0.09%
81	OTHER SERVICES, EXCEPT PUBLIC ADMINISTRATION	587,115	685,603	16.77%	3.15%
812	Personal and Laundry Services	132,811	136,954	3.12%	0.62%

Source: Calculations by Applied Development Economics; Based upon California Employment Development Department, Quarterly Census of Employment and Wages, BAAQMD

Table 4 identifies the economic characteristics of the specific sites affected by the proposed amendments to Regulation 9, Rule 8. This table shows that there are 65 impacted private sector businesses; and, that they employ an estimated 4,158 workers. These sites have an estimated aggregate payroll of more than \$244 million, and estimated revenues of nearly \$34.3 billion. In calculating aggregate revenues generated by impacted businesses, the consultant utilized a combination of Dunn and Bradstreet data and the 2002 US Economic Census to estimate an average revenue figure per establishment, expressed in current dollars.

Table 4
Economic Characteristics of Impacted Businesses in the San Francisco Bay Area

	No. of Businesses	Estimated Sales	Estimated Employment	Estimated Payroll
Heavy and Civil Construction	3	\$ 61,928,026	67	\$ 4,800,948
Food Manufacturing	3	\$ 152,442,365	130	\$ 7,108,765
Nonmetallic Mineral Product Manufacturing	5	\$ 204,308,770	151	\$ 7,444,445
Fabricated Metal Product Manufacturing	6	\$ 129,041,369	92	\$ 4,557,756
Computer and Electronic Product Manufacturing	3	\$ 79,668,321	264	\$ 31,991,328
Air Transportation	3	\$ 29,447,524,079	559	\$ 31,367,405
Real Estate	3	\$ 16,504,282	16	\$ 843,018
Nonmetallic Mineral Mining & Quarrying	3	\$ 22,536,866	79	\$ 5,053,160
Electric Power Generation, Transmission, & Distribution	11	\$ 437,684,575	802	\$ 15,110,207
Waste Treatment & Disposal	8	\$ 56,681,313	469	\$ 29,240,304
Other ¹	17	\$ 3,658,282,215	1,528	\$ 106,526,998
TOTAL	65	\$ 34,266,602,180	4,158	\$ 244,044,334

Source: California Employment Development Department Quarterly Census of Employment and Wages; Minnesota IMPLAN Group; BAAQMD; Calculations by Applied Development Economics.

¹Includes: Chemical Manufacturing (NAICS 325); Truck Transportation (NAICS 484); Hospitals (NAICS 622); Nursing & Residential Care Facilities (NAICS 623); Medical Equipment and Supplies Manufacturing (NAICS 3391); Department Stores (NAICS 4521); Services to Buildings and Dwellings (NAICS 5617); Site Preparation Contractors (NAICS 23891); Petroleum Refineries (NAICS 32411); Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 33341); Petroleum Bulk Stations and Terminals (NAICS 42471); Support Services for Oil and Gas Operations (NAICS 213112); Asphalt Paving Mixture and Block Manufacturing (NAICS 324121); Other services, except public administration (NAICS 812)

As Table 5 shows, the businesses impacted by the rule amendments represent less than one percent of employment for all impacted industries. Though this overall share is low, some impacted industries are represented at a higher degree. For example, impacted Electric Power Generation, Transmission, and Distribution businesses represent nearly 30 percent of all Bay Area employment in that industry. The impacted sites also represent less than one percent of the State's employment in these industries.

**Table 5
Employment at Impacted Sites Relative to Bay Area and California**

	No. of Businesses	Estimated Employment	Impacted Sites as a % of Bay Area Total	Impacted Sites as a % of California Total
Heavy and Civil Construction	3	67	0.38%	0.08%
Food Manufacturing	3	130	3.06%	0.52%
Nonmetallic Mineral Product Manufacturing	5	151	1.60%	0.32%
Fabricated Metal Product Manufacturing	6	92	0.43%	0.07%
Computer and Electronic Product Manufacturing	3	264	0.18%	0.08%
Air Transportation	3	559	2.83%	1.17%
Real Estate	3	16	0.04%	0.01%
Nonmetallic Mineral Mining and Quarrying	3	79	9.38%	1.26%
Electric Power Generation, Transmission, and Distribution	11	802	28.95%	4.18%
Waste Treatment and Disposal	8	469	10.39%	3.58%
Other ¹	17	1,528	0.48%	0.11%
TOTAL	65	4,158	0.70%	0.18%

Source: U.S. Economic Census 2002; California Employment Development Department Quarterly Census of Employment and Wages; Minnesota IMPLAN Group; BAAQMD; Calculations by Applied Development Economics.

¹Includes: Chemical Manufacturing (NAICS 325); Truck Transportation (NAICS 484); Hospitals (NAICS 622); Nursing & Residential Care Facilities (NAICS 623); Medical Equipment and Supplies Manufacturing (NAICS 3391); Department Stores (NAICS 4521); Services to Buildings and Dwellings (NAICS 5617); Site Preparation Contractors (NAICS 23891); Petroleum Refineries (NAICS 32411); Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 33341); Petroleum Bulk Stations and Terminals (NAICS 42471); Support Services for Oil and Gas Operations (NAICS 213112); Asphalt Paving Mixture and Block Manufacturing (NAICS 324121); Other services, except public administration (NAICS 812)

The proposed amendments to Regulation 9, Rule 8 also impact a number of local, state, and federal government and non-profit agencies. Table 6 identifies these agencies and divides them into two groups: 1) local governments and non-profits and 2) state and federal governments.

Table 6
List of Impacted Government Agencies and Non-profits

LOCAL GOVERNMENT AND NON-PROFIT

2200 Pacific Homeowner's Association	Pinole-Hercules Wastewater Treatment Plant
Central Contra Costa Sanitary District	San Francisco, City & County, PUC
City & County of San Francisco	San Mateo Water Quality Control Plant
City of Santa Rosa Wastewater Treatment	San Ramon Valley Fire District
City of Sunnyvale Water Pollution Control	Solano County
Contra Costa Water District	Sonoma County
Delta Diablo Sanitation District	South Bayside System Authority
City of San Jose	South San Francisco-San Bruno Water Quality Plant
East Bay Municipal Utility District	The City of Brentwood
Fairfield-Suisun Sewer District	Town of Windsor
Coastside County Water District (San Mateo County)	University of San Francisco
Las Gallinas Valley Sanitary District	West Contra Costa County Landfill
Napa Sanitation District - Soscol	West County Wastewater District
Oro Loma Sanitary District	

STATE AND FEDERAL GOVERNMENT

Chabot Community College	Presentation High School
Clean Air Vehicle Test Center (an EPA facility)	Santa Rosa Junior College
East Side Unified High School District	SF State University, Main Campus
Fremont Union High School District	SFSU Housing Facilities (Cogeneration Plant)
DOE-KAO Sandia National Laboratories	SJ Unified School Dist - Leland High
Lawrence Livermore National Laboratory	Skyline Colleges
NASA-AMES Research Center	Travis AFB
National Park Service	

Source: BAAQMD

Table 7 then estimates the annual revenues for the local government and non-profit agencies. State and federal government agency revenues are subject to annual budgeting at the state and federal level. They are not approximated for this analysis.

Estimated revenues for impacted local governments and non-profits total nearly \$7.4 billion. The City and County of San Francisco, the City of San Jose, and the Contra Costa County constitute approximately two-thirds of the total. Sonoma County represents approximately seven percent. East Bay Municipal Utility District constitutes five percent. None of the other agencies represent more than five percent of the total.

Table 7
Local Government General Fund and Operating Revenues

Agency	Revenues
2200 Pacific Homeowner's Association	\$ 2,318,653
Central Contra Costa Sanitary District	\$ 54,200,000
City & County of San Francisco	\$ 2,664,546,000
City of Santa Rosa Wastewater Treatment	\$ 126,333,000
City of Sunnyvale Water Pollution Control	\$ 186,261,551
Contra Costa Water District	\$ 92,481,000
Delta Diablo Sanitation District	\$ 28,803,147
City of San Jose	\$ 956,829,159
East Bay Municipal Utility District	\$ 368,421,000
Fairfield-Suisun Sewer District	\$ 17,257,000
Las Gallinas Valley Sanitary District	\$ 5,956,546
Napa Sanitation District - Soscol	\$ 14,143,778
Oro Loma Sanitary District	\$ 26,640,000
Pinole-Hercules Wastewater Treatment Plant	\$ 11,899,397
San Francisco, City & County, PUC	\$ 188,800,000
San Mateo Water Quality Control Plant	\$ 75,100,000
San Ramon Valley Fire District	\$ 40,984,317
Solano County	\$ 193,061,207
Sonoma County	\$ 518,479,924
South Bayside System Authority	\$ 118,968,199
South San Francisco-San Bruno Water Quality Plant	\$ 88,437,083
The City of Brentwood	\$ 6,924,951
Town of Windsor	\$ 11,147,661
University of San Francisco	\$ 247,853,000
Contra Costa County	\$ 1,307,505,097
West County Wastewater District	\$ 12,191,151
TOTAL	\$ 7,365,542,820

Source: See Appendix A to the report

COMPLIANCE COSTS

This section discusses the compliance costs associated with the proposed rule. The compliance costs include both capital and operating costs; and, are amortized over ten years. Both the size of the engine and the fuel it uses impact the costs associated with compliance. Table 8 details the annualized costs by engine size and fuel type.

**Table 8
Annualized Control Costs**

Engine Size Ranges	No. of Impacted Engines	Annualized Quarterly Monitoring Costs	Annualized Capital Cost of Control	Annualized Operating Cost of Control	Total Annualized Costs
DIESEL ENGINES					
51-150	34	\$ 47,396	\$ 272,043	\$ 30,530	\$ 349,969
151-300	32	\$ 44,608	\$ 256,041	\$ 78,633	\$ 379,282
301-500	15	\$ 20,910	\$ 160,027	\$ 108,273	\$ 289,210
501-1000	15	\$ 20,910	\$ 397,403	\$ 292,936	\$ 711,249
1001-2000	3	\$ 4,182	\$ 101,715	\$ 117,979	\$ 223,876
< 2001	6	\$ 8,364	\$ 243,672	\$ 1,007,083	\$ 1,259,119
Totals	105	\$ 146,370	\$ 1,430,901	\$ 1,635,434	\$ 3,212,705
SPARK-IGNITED ENGINES (FOSSIL FUEL)					
51-150	35	\$ 48,790	\$ 130,551	\$ 52,624	\$ 231,965
151-300	42	\$ 58,548	\$ 195,992	\$ 172,387	\$ 426,927
301-500	8	\$ 11,152	\$ 41,898	\$ 42,539	\$ 95,590
501-1000	25	\$ 34,850	\$ 236,164	\$ 283,722	\$ 554,735
1001-2000	10	\$ 13,940	\$ 148,256	\$ 254,850	\$ 417,046
< 2001	14	\$ 19,516	\$ 326,827	\$ 502,135	\$ 848,478
Totals	134	\$ 186,796	\$ 1,079,688	\$ 1,308,257	\$ 2,574,742
SPARK-IGNITED (WASTE FUEL)					
51-150	6	\$ 8,364	\$ 21,556	\$ 29,205	\$ 59,125
151-300	0	\$ -	\$ -	\$ -	\$ -
301-500	0	\$ -	\$ -	\$ -	\$ -
501-1000	22	\$ 30,668	\$ 151,869	\$ 220,207	\$ 402,744
1001-2000	30	\$ 41,820	\$ 179,701	\$ 304,316	\$ 525,837
< 2001	15	\$ 20,910	\$ 164,436	\$ 342,161	\$ 527,507
Totals	73	\$ 101,762	\$ 517,562	\$ 895,890	\$ 1,515,213

Source:
BAAQMD

The proposed rule amendments will impact 312 engines operated by the 65 private sector businesses and 42 government agencies and non-profits. The total cost of compliance for all 312 engines is \$7.3 million. Approximately 94 percent of this cost will be borne by the 65 private sector businesses and 27 local government and non-profit agencies.

BUSINESS RESPONSE TO COMPLIANCE COSTS

Sites impacted by the proposed amendments to the stationary internal combustion engine rule may respond in a variety of ways when faced with new regulatory costs. These responses may range from simply absorbing the costs and accepting a lower rate of return to shutting down the business operation all together. Businesses may also seek to pass the costs on to their customers in the form of higher prices. More likely, they may renew efforts to increase productivity and reduce costs elsewhere in their operation in order to recoup the regulatory costs and maintain profit levels.

IMPACT ANALYSIS

The businesses' responses to increased compliance costs hinge on the effect of the costs on the profits generated at the affected sites. An impact on estimated profits greater than 10 percent implies that the source would experience serious economic effects because of the compliance cost. When compliance costs are greater than 10 percent of estimated profits, companies typically respond to the impact by laying off some workers, reducing hours of operation, or, in the most drastic case, possibly closing operations. A similar response is assumed to occur when the compliance costs exceed 10 percent of the revenues for local government and non-profit agencies.

Using the annual compliance cost estimates developed for the proposed rule amendments, ADE calculated the socioeconomic impacts of the proposed actions. In calculating impacts on profits, ADE used the IRS Statistics of Income Integrated Business Data. Based on this information, we estimate that the impacted businesses generated a combined profit of \$1.88 billion on \$34.3 billion in revenues. Table 9 details the profit ration assumptions used in estimating the profits for impacted private sector sites.

Table 9
Private Sector Profit Margin Assumptions

NAICS	Description	Profit Margin
237	Heavy and Civil Construction	4.11%
311	Food Manufacturing	5.79%
325	Chemical Manufacturing	5.87%
327	Nonmetallic Mineral Product Manufacturing	5.87%
332	Fabricated Metal Product Manufacturing	5.87%
334	Computer and Electronic Product Manufacturing	5.87%
481	Air Transportation	5.25%
484	Truck Transportation	3.64%
531	Real Estate	38.83%
622	Hospitals	3.87%
623	Nursing & Residential Care Facilities	3.87%
2123	Nonmetallic Mineral Mining and Quarrying	9.82%
2211	Electric Power Generation, Transmission, and Distribution	13.24%
3391	Medical Equipment and Supplies Manufacturing	5.53%
4521	Department Stores	2.26%
5617	Services to Buildings and Dwellings	3.18%
5622	Waste Treatment and Disposal	7.22%
23891	Site Preparation Contractors	4.33%
32411	Petroleum Refineries	7.00%
33341	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	5.53%
42471	Petroleum Bulk Stations and Terminals	2.70%
213112	Support Services for Oil and Gas Operations	8.07%
324121	Asphalt Paving Mixture and Block Manufacturing	5.53%
812332	Industrial Launderers	6.08%

Source: ADE calculations based upon SEC 10k Annual Reports and IRS Statistics of Income Integrated Business Data

Table 10 details the projected impacts of compliance with the proposed rule amendments on the profits of affected sites. The annual costs associated with compliance do not result in a significant impact on affected private sector sites. For all impacted private sector sites, the annual cost of compliance represents less than one percent of profits. Furthermore, there is not a single industry for which the cost of compliance represents more than ten percent of profits. For most of the industries, the annual cost is well below five percent of profits. The cost is in excess of five percent for only two industries, Waste Treatment and Disposal (7.45 percent) and Nonmetallic Mineral Mining and Quarrying (6.73 percent).

Table 10
Impact of Estimated Compliance Cost on Estimated Private Sector Profits

Industry	No. of Businesses	Estimated Profits	Annual Compliance Cost	Cost as % of Profits
Heavy and Civil Construction	3	\$ 2,547,322	\$ 83,384	3.27%
Food Manufacturing	3	\$ 8,819,455	\$ 108,096	1.23%
Nonmetallic Mineral Product Manufacturing	5	\$ 11,988,162	\$ 184,286	1.54%
Fabricated Metal Product Manufacturing	6	\$ 7,571,720	\$ 138,532	1.83%
Computer and Electronic Product Manufacturing	3	\$ 4,674,673	\$ 117,200	2.51%
Air Transportation	3	\$ 1,545,576,827	\$ 147,380	0.01%
Real Estate	3	\$ 6,407,820	\$ 145,733	2.27%
Nonmetallic Mineral Mining and Quarrying	3	\$ 2,212,010	\$ 148,937	6.73%
Electric Power Generation, Transmission, and Distribution	11	\$ 57,929,408	\$ 814,345	1.41%
Waste Treatment and Disposal	8	\$ 3,472,217	\$ 258,797	7.45%
Other ¹	17	\$ 224,706,441	\$ 503,237	0.22%
TOTAL	65	\$ 1,875,906,056	\$ 2,649,927	0.14%

Source: ADE calculations, based upon 2002 US Economic Census; SEC 10k Annual Reports; IRS Statistics of Income Integrated Business Data; BAAQMD

¹Includes: Chemical Manufacturing (NAICS 325); Truck Transportation (NAICS 484); Hospitals (NAICS 622); Nursing & Residential Care Facilities (NAICS 623); Medical Equipment and Supplies Manufacturing (NAICS 3391); Department Stores (NAICS 4521); Services to Buildings and Dwellings (NAICS 5617); Site Preparation Contractors (NAICS 23891); Petroleum Refineries (NAICS 32411); Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 33341); Petroleum Bulk Stations and Terminals (NAICS 42471); Support Services for Oil and Gas Operations (NAICS 213112); Asphalt Paving Mixture and Block Manufacturing (NAICS 324121); Other services, except public administration (NAICS 812)

Table 11 illustrates the cost of compliance as a percent of revenue for affected local government and non-profit sites; and, shows that the rule amendments do not result in a significant impact for these agencies either. Total revenues for affected local governments and non-profits are \$7.4 billion. The total annual cost of compliance is \$4.3 million, less than one percent.

Table 11
Impact of Estimated Compliance Cost on Local Government and Non-Profit Revenues

Revenues¹	Annual Compliance Cost	Cost as % of Revenues
\$ 7,365,542,820	\$ 4,241,399	0.06%

Source: ADE Calculations, based upon BAAQMD

¹Sources for local government and non-profit revenue are cited in Appendix A to this report.

IMPACT ON SMALL BUSINESS

DEFINITION OF SMALL BUSINESS PER CALIFORNIA STATUTE

For purposes of qualifying small businesses for bid preferences on state contracts and other benefits, the State of California defines small businesses in the following manner:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California
- Must have its owners (or officers in the case of a corporation) domiciled in California; and,
- Together with its affiliates, be either:
 - A business with 100 or fewer employees, and an average gross receipts of \$10 million or less over the previous tax years, or
 - A manufacturer with 100 or fewer employees

SMALL BUSINESS IMPACT ANALYSIS

Most of the affected private sector sites generate annual revenues in excess of \$10 million. Less than one-third of them (31 percent; 20 sites) do not. Employment at each of these sites is estimated to be less than 100. Since the total cost of compliance for these 20 sites is less than \$475,000, or 18 percent of the total, small businesses are not disproportionately impacted by the proposed rule amendments.

APPENDIX A: LOCAL GOVERNMENT AND NON-PROFIT REVENUE SOURCE CITATIONS

Central Contra Costa Sanitary District	http://www.centrsan.org/organization/finance.html
2200 Pacific Homeowner's Association	2002 US Economic Census
City & County of San Francisco	City and County of San Francisco Consolidated Budget and Annual Appropriation Ordinance, Fiscal Year Ending June 30, 2007
City of Santa Rosa Wastewater Treatment	http://ci.santa-rosa.ca.us/default.aspx?PageId=2053
City of Sunnyvale Water Pollution Control	http://sunnyvale.ca.gov/Departments/Finance/Budget/
Contra Costa Water District	http://www.ccwater.com/welcome/financials.asp
Delta Diablo Sanitation District	http://www.ddsd.org/pdfs/Budget_Document.pdf
City of San Jose	http://www.sanjoseca.gov/budget/
East Bay Municipal Utility District	http://www.ebmud.com/about_ebmud/financial_information/default.htm
Fairfield-Suisun Sewer District	http://www.fssd.com/indexSub.cfm?page=1367700
Las Gallinas Valley Sanitary District	http://lafco.marin.org/District_revu.cfm?DistrictID=31
Napa Sanitation District – Soscol	http://www.napasanitationdistrict.com/about/finances.html
Oro Loma Sanitary District	http://www.oroloma.org/management/budget/budget.html
Pinole-Hercules Wastewater Treatment Plant	http://www.ci.pinole.ca.us/about/finance_issues.html
San Francisco, City & County, PUC	http://sfwater.org/detail.cfm/MC_ID/18/MSC_ID/133/C_ID/3281
San Mateo Water Quality Control Plant	http://www.cityofsanmateo.org/downloads/finance/2006-7_finances_at_a_glance.pdf
San Ramon Valley Fire District	Comprehensive Annual Financial Report, Year Ended June 30, 2005
Solano County	http://www.co.solano.ca.us/FileDownloads/Downloads.asp?NavID=183
Sonoma County	http://www.sonoma-county.org/auditor/financial_reports.htm#revenue
South Bayside System Authority	http://www.ci.san-carlos.ca.us/civica/filebank/blobdload.asp?BlobID=3093 http://www.belmont.gov/SubContent.asp?CatId=240001609&C_ID=240002235 http://www.belmont.gov/SubContent.asp?CatId=240001609&C_ID=240002235 http://www.westbaysanitary.org/pdf/AuditedApprovedBudget2005-06.pdf
South San Francisco-San Bruno Water Quality Plant	http://sanbruno.ca.gov/city_services/finance/Documents/06_07Budget.pdf
The City of Brentwood	http://www.ci.ssf.ca.us/civica/filebank/blobdload.asp?BlobID=9098 http://www.ci.brentwood.ca.us/departments/finance/past_fiscal_year_docs.cfm#2005
Town of Windsor	http://www.ci.windsor.ca.us/3031.html#GeneralFundFinancialOverview
University of San Francisco	Dunn and Bradstreet
Contra Costa County	http://www.co.contra-costa.ca.us/depart/cd/recycle/options/v5126.htm
West County Wastewater District	http://www.wc wd.org/index.htm