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Socioeconomic Impact Analysis of Proposed Regulation 9, Rule 14: Petroleum Coke Calcining Operations

Prepared for:

Bay Area Air Quality Management District

Prepared by:

Applied Development Economics, Inc.

255 Ygnacio Valley Road, #200, Walnut Creek, CA 94596 ■ 925.934.8712

99 Pacific Street, #200 J, Monterey, CA 93940 ■ 831.324.4896

www.adeusa.com

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INTRODUCTION

The Bay Area Air Quality Management District (BAAQMD or Air District) seeks to adopt a new regulation that would control sulfur dioxide (SO₂) emissions from the Phillips 66 petroleum coke calcining plant in the town of Rodeo. This proposed new regulation is called Regulation 9 Rule 14 ("Petroleum Coke Calcining Operations"). The draft rule would apply generally to petroleum coke plants; however, Phillips 66 currently operates the only such plant within the jurisdiction of the Air District. After this introduction, this report discusses in greater detail how the Air District proposes to adopt Regulation 9-14 (Section Two). After that discussion, the report describes the socioeconomic impact analysis methodology and data sources (Section Three). The report describes population and economic trends in the nine-county San Francisco Bay Area (Section Four), which serves as a backdrop against which the Air District is contemplating adopting Regulation 9-14. Finally, the socioeconomic impacts stemming from the proposed rule are discussed in Section Five.

The report is prepared pursuant to Section 40728.5 of the California Health and Safety Code, which requires an assessment of socioeconomic impacts of proposed air quality rules. The findings in this report can assist Air District staff in understanding the socioeconomic impacts of the proposed requirements, and can assist staff in preparing a refined version of the rule. Figure 1 is a map of the nine-county region that comprises the San Francisco Bay Area Air Basin.

Figure 1: Map of San Francisco Bay Area Region



BACKGROUND: REGULATION 9 RULE 14

According to the Draft Staff Report issued in October 2015 by BAAQMD staff, Regulation 9, Rule 14 would apply generally to petroleum coke plants; however, Phillips 66 currently operates the only such plant within the jurisdiction of the Air District. This facility, commonly referred to as the “Carbon Plant,” operates two rotary kilns in its calcining operation. The Carbon Plant is the single largest emitter of SO₂ in the Air District’s air basin. The Carbon Plant has SO₂ control equipment currently in operation, but the degree to which SO₂ emissions are controlled does not meet the emission limit the Air District is considering for this rule.

Regulation 9, Rule 14 proposes an SO₂ mass emission limit of 144 pounds per hour that would apply to each kiln. It would also require that the Carbon Plant either meet a mass emission rate of 770 tons per year of SO₂ or demonstrate an 80% control efficiency of SO₂ on an annual basis. Staff estimates SO₂ emissions at the Carbon Plant will be reduced by between 1.9 and 2.7 tons per day. If adopted, Regulation 9, Rule 14 would go be fully implemented by January 2020.

BAAQMD staff has determined that cost-effective technologies are readily-available to help operators of the Carbon Plant achieve the proposed SO₂ emission limits required by Regulation 9, Rule 14. Such technologies are used in the petroleum coke calcining industry and other industries such as coal fired power plants and Portland cement manufacturing facilities.

The gaseous emissions generated from coke calcining operations are typically minimized by using one of three types of scrubbing control systems: wet scrubbers, semi-dry scrubbers or dry scrubbers. The Carbon Plant uses a dry scrubbing system, which is also called dry sorbent injection. Wet and semi-dry scrubbing systems can better handle acid gas waste stream with higher concentrations and higher volumes than dry scrubbing systems while, at the same time, achieving greater emissions reductions. However, these systems cost considerably more to purchase, to install, and to operate.

METHODOLOGY

Applied Development Economics (ADE) began this analysis by preparing a statistical description of the industry groups of which the affected sources are a part, analyzing data on the number of establishments, jobs, and payroll. We also estimated sales generated by impacted industries, as well as net profits for each affected industry.

This report relies heavily on the most current data available from a variety of sources, particularly the State of California's Employment Development Department (EDD) Labor Market Information Division. In addition, this report relies on data from the US Census County Business Patterns, as well as from the US Internal Revenue Service.

With the above information, ADE was able to estimate net after tax profit ratios for sources affected by the proposed rule. ADE calculated ratios of profit per dollar of revenue for affected industries. The result of the socioeconomic analysis shows what proportion of profits the compliance costs represent. Based on assumed thresholds of significance, ADE discusses in the report whether the affected sources are likely to reduce jobs as a means of recouping the cost of rule compliance or as a result of reducing business operations. To the extent that such job losses appear likely, the indirect multiplier effects of the jobs losses are estimated using a regional IMPLAN input-output model. In some instances, particularly where consumers are the ultimately end-users of goods and services provided by the affected sources, we also analyzed whether costs could be passed to households in the region.

When analyzing the socioeconomic impacts of proposed new rules and amendments, ADE attempts to work closely within the parameters of accepted methodologies discussed in a 1995 California Air Resources Board (ARB) report called "Development of a Methodology to Assess the Economic Impact Required by SB513/AB969" (by Peter Berck, PhD, UC Berkeley Department of Agricultural and Resources Economics, Contract No. 93-314, August, 1995). The author of this report reviewed a methodology to assess the impact that California Environmental Protection Agency proposed regulations would have on the ability of California businesses to compete. The ARB has incorporated the methodologies described in this report in its own assessment of socioeconomic impacts of rules generated by the ARB. One methodology relates to determining a level above or below which a rule and its associated costs is deemed to have significant impacts. When analyzing the degree to which its rules are significant or insignificant, the ARB employs a threshold of significance that ADE follows. Berck reviewed the threshold in his analysis and wrote, "The Air Resources Board's (ARB) use of a 10 percent change in [Return on Equity] ROE (i.e. a change in ROE from 10 percent to a ROE of 9 percent) as a threshold for a finding of no significant, adverse impact on either competitiveness or jobs seems reasonable or even conservative."

REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS

This section of the report tracks the larger economic and demographic contexts within which the Air District is contemplating new Regulation 9-14. This section begins with a broad overview of demographic and economic trends, with discussion then narrowing to industries and sources affected by Regulation 9-14.

REGIONAL DEMOGRAPHIC TRENDS

Table 1 tracks population growth in the nine-county San Francisco Bay Area between 2004 and 2014, including data for the year 2009. Between 2004 and 2009, the region grew by approximately 1 percent a year. Between 2009 and 2014, the region grew annually at a much slower rate of 0.1 percent per year. Overall, there are 7,510,942 people in the region. At 1,889,638, Santa Clara County has the most people, while Napa has the least, at 140,362.

Table 1: Regional Demographic Trends: 2004-2014: Population Growth: San Francisco Bay Area

AREAS	2004	2009	2014	04-09 CAGR	09-14 CAGR	04-14 CAGR
California	36,810,358	38,648,090	38,714,725	1.0%	0.03%	0.5%
SF Bay Area	7,096,575	7,459,858	7,510,942	1.0%	0.1%	0.6%
Alameda County	1,507,500	1,574,857	1,594,569	0.9%	0.2%	0.6%
Contra Costa County	1,020,898	1,073,055	1,102,871	1.0%	0.5%	0.8%
Marin County	252,485	260,651	258,972	0.6%	-0.1%	0.3%
Napa County	133,294	138,917	140,362	0.8%	0.2%	0.5%
San Francisco County	799,263	856,095	845,602	1.4%	-0.2%	0.6%
San Mateo County	723,453	754,285	753,123	0.8%	-0.03%	0.4%
Santa Clara County	1,759,585	1,880,876	1,889,638	1.3%	0.1%	0.7%
Solano County	421,657	427,837	429,552	0.3%	0.1%	0.2%
Sonoma County	478,440	493,285	496,253	0.6%	0.1%	0.4%

Source: Applied Development Economics, based on California Department of Finance Population Estimates E-5 Reports (2005, 2010, and 2015)(Note: CAGR = Compound Annual Growth Rate)

REGIONAL ECONOMIC TRENDS

Data in Table 2 describe the larger economic context within which officials are contemplating new Rule 9-14. Businesses in the region employ over three million workers, or 3,525,910. The number of private and public sector jobs in the region grew annually by 1.8 percent between 2009 and 2014, after having increased somewhat slightly between 2004 and 2009 by 0.2 percent a year. Of the 3,525,910 workers, 429,768, or 12.2 percent, are in the public sector, meaning 87.8 percent of all employment is in the private sector. Economic sectors in the table below are sorted by the share of total employment. The top-five sectors in the Bay Area are Health and Social Assistance (NAICS 62) (427,982 workers), Professional/Technical Services (NAICS 54) (399,834 workers), Retail (NAICS 44-45) (335,791), Manufacturing (NAICS 31-33) (318,909) and Public Sector except Education. Of the

top-ten leading sectors in terms of employment, five exhibited high rates of annual growth from 2009 to 2015, growing annually by more than four percent. These sectors are Health and Social Assistance, Professional/Technical Services, Eating and Drinking Places, Administrative Support (NAICS 561), and Information (NAICS 51). Combined, these five sectors employ 41 percent of total employment, or 1,444,160 out of 3,525,910. In the state, only Healthcare and Social Assistance and Administrative Support grew annually by faster than four percent, and, relative to the Bay Area, employment in these five sectors at the state level represent a lesser share of total employment, i.e. 37 percent, or 5,865,991 out of 15,809,083. In other words, the leading sectors in the Bay Area perform better than comparable sectors in the state as a whole. Moreover, of the top-ten leading sectors in the Bay Area, only one (Public Sector except Education) had less workers in 2014 than in 2009, underscoring the resilience of the regional economy in the aftermath of the Great Recession. By way of comparison, of the top ten leading sectors in the state, three (Manufacturing, Public Sector excluding Education, and Public Sector Education) still have not recovered from the Great Recession, exhibiting less workers now than in 2009.

Table 2: San Francisco Bay Area Employment Trends By Sector and Select Industries: 2004 - 2014

SECTORS	BAY AREA							CALIFORNIA						
	2004	2009	2014	DISTRI BUTION. 2014	RANK	04-09 CAGR	09-14 CAGR	2004	2009	2014	DISTRI BUTION 2014	RANK	04-09 CAGR	09-14 CAGR
Private & Public Sectors	3,191,935	3,225,980	3,525,910	100.0%		0.2%	1.8%	17,218,905	16,970,214	15,809,083	100.0%		-0.3%	-1.4%
Private Sector	2,750,092	2,784,163	3,096,142	87.8%		0.2%	2.1%	14,875,824	14,546,383	13,501,711	85.4%		-0.4%	-1.5%
Public Sector	441,843	441,817	429,768	12.2%		0.0%	-0.6%	2,343,081	2,423,831	2,307,372	14.6%		0.7%	-1.0%
62 Health, Social Assist	281,219	311,429	427,982	12.1%	1	2.1%	6.6%	1,284,158	1,435,436	2,000,372	12.7%	1	2.3%	6.9%
54 Professional, Tech.	277,827	321,808	399,834	11.3%	2	3.0%	4.4%	911,684	1,012,533	1,171,165	7.4%	6	2.1%	3.0%
44-45 Retail	332,742	309,241	335,791	9.5%	3	-1.5%	1.7%	1,613,395	1,513,767	1,623,371	10.3%	2	-1.3%	1.4%
31-33 Manufacturing	353,215	314,263	318,909	9.0%	4	-2.3%	0.3%	1,517,533	1,275,752	1,264,114	8.0%	4	-3.4%	-0.2%
Public Sector exc. Educ.	293,586	301,289	285,923	8.1%	5	0.5%	-1.0%	1,279,867	1,331,656	1,280,253	8.1%	3	0.8%	-0.8%
722 Eating, Drinking Pl	209,204	225,123	280,016	7.9%	6	1.5%	4.5%	996,086	1,053,084	1,260,661	8.0%	5	1.1%	3.7%
561 Admin. & Support	170,698	154,174	188,502	5.3%	7	-2.0%	4.1%	899,139	798,632	976,801	6.2%	8	-2.3%	4.1%
23 Construction	182,894	142,030	160,702	4.6%	8	-4.9%	2.5%	845,747	618,068	669,766	4.2%	10	-6.1%	1.6%
51 Information	114,908	111,333	147,826	4.2%	9	-0.6%	5.8%	482,608	438,640	456,992	2.9%	13	-1.9%	0.8%
Public Sector Education	148,257	140,528	143,845	4.1%	10	-1.1%	0.5%	1,063,214	1,092,175	1,027,119	6.5%	7	0.5%	-1.2%
42 Wholesale	121,948	115,992	123,664	3.5%	11	-1.0%	1.3%	650,334	645,959	709,154	4.5%	9	-0.1%	1.9%
81 Other Services	140,657	157,003	120,053	3.4%	12	2.2%	-5.2%	666,102	740,659	504,176	3.2%	12	2.1%	-7.4%
52 Finance & Insurance	147,378	128,158	119,297	3.4%	13	-2.8%	-1.4%	619,396	539,753	515,504	3.3%	11	-2.7%	-0.9%
611 Private Education	63,445	76,295	91,463	2.6%	14	3.8%	3.7%	232,470	279,124	317,066	2.0%	16	3.7%	2.6%
55 Mgt of Companies	63,228	59,185	73,268	2.1%	15	-1.3%	4.4%	233,847	197,752	225,792	1.4%	19	-3.3%	2.7%
48-49 Trnsprt\Warhsng	53,541	49,753	68,367	1.9%	16	-1.5%	6.6%	409,583	399,259	446,430	2.8%	14	-0.5%	2.3%
71 Entertainmnt & Rec	49,505	50,679	59,064	1.7%	17	0.5%	3.1%	236,527	243,203	276,312	1.7%	17	0.6%	2.6%
53 Real Estate, Leasing	60,592	53,776	56,598	1.6%	18	-2.4%	1.0%	276,460	254,863	264,129	1.7%	18	-1.6%	0.7%
721 Accommodations	45,832	45,556	48,669	1.4%	19	-0.1%	1.3%	197,036	197,496	211,139	1.3%	20	0.0%	1.3%
99 Misc	48,243	45,602	43,443	1.2%	20	-1.1%	-1.0%	53,008	64,639	60,738	0.4%	21	4.0%	-1.2%
11 Agriculture	16,005	18,502	14,754	0.4%	21	2.9%	-4.4%	369,951	373,603	415,444	2.6%	15	0.2%	2.1%
562 Waste Managemnt	10,340	10,796	11,606	0.3%	22	0.9%	1.5%	37,679	40,330	46,329	0.3%	23	1.4%	2.8%
22 Utilities	4,710	6,423	4,758	0.1%	23	6.4%	-5.8%	55,960	59,705	57,627	0.4%	22	1.3%	-0.7%
21 Mining	1,961	876	1,576	0.0%	24	-15%	12.5%	21,239	23,865	28,629	0.2%	24	2.4%	3.7%

Source: Applied Development Economics, based on California EDD LMID QCEW 2004, 2009, and 2014 (note: CAGR = Compound Annual Growth Rate)

Of the top ten leading sectors in the Bay Area, four can be categorized as knowledge-based industries that tend to exhibit average higher-pay and have more educated and skilled workforce. These industries (Health and Social Assistance, Professional\Technical Services, Manufacturing, and Information) employ 1,294,551 workers, or 37 percent of total public and private sector workers. Of the top-ten sectors in the state, three are knowledge-based industries (Health and Social Assistance, Manufacturing, and Professional\Technical Services), but their combined workforce represents 28 percent of total employment in the state.

TRENDS FOR INDUSTRIES SUBJECT TO THE PROPOSED NEW RULE

Proposed Regulation 9-14 affects one particular industry in the Bay Area, namely "All Other Petroleum and Coal Products Manufacturing" (NAICS 324199). According to the California EDD LMID and US Census County Business Patterns, there are only two establishments that fall under the NAICS 324199 code in the nine-county region. Moreover, of the two establishments, only one operates a coke calcining plant. The table below shows NAICS 324199 trends per the County Business Patterns and EDD-LMID. What is striking about the table below is the high average pay workers garner in this industry, although average pay has declined since 2009.

Table 3: SF Bay Area Trends for "All Other Petroleum and Coal Products Manufacturing" (NAICS 324199)

	2004	2009	2014	04-09 CAGR	09-14 CAGR
Establishments	3	3	2	0%	-8%
Employment	47	41	47	-3%	3%
Aggregate Wages	\$4,902,936	\$5,022,770	\$3,566,877	0%	-7%
Average Wage	\$104,318	\$122,507	\$75,891	3%	-9%

Source: Applied Development Economics, based on California EDD LMID QCEW and US Census County Business Patterns (note: CAGR = Compound Annual Growth Rate)

While in the Bay Area employment in NAICS 324199 grew annually by three percent between 2009 and 2014, in the state, employment declined annually by two percent over the same period. There are an estimated 150 workers employed in NAICS 324199 in the state as a whole, meaning that, at 47, almost one-third of all workers in this industry are in the Bay Area.

Table 4: Annual Trends in Employment: SF Bay Area Versus California: "All Other Petroleum and Coal Products Manufacturing" (NAICS 324991): 2004-2014

	BAY AREA	CALIFORNIA
09-14 CAGR	3%	-2%
04-09 CAGR	-3%	12%
2014	47	150
2013	32	151
2012	95	142
2011	32	132
2010	32	194
2009	41	164
2008	32	180
2007	32	175
2006	32	142
2005	32	116
2004	47	95

Source: Applied Development Economics, based on US Census County Business Patterns and California EDD LMID (note: CAGR = Compound Annual Growth Rate)

PROFILE OF SOURCE AFFECTED BY PROPOSED REGULATION 9 RULE 14

According to BAAQMD, there is one source that will be affected by proposed Regulation 9 Rule 14. This source is Phillip 66's coke calcining plant operated located in Rodeo, California, which is also known as the Carbon Plant. According to the InfoUSA SalesGenie database, the Carbon Plant employs 40 persons and generates \$94.1 million in annual gross sales, from which an estimated after-tax net profit of \$4.7 million is generated.

Table 5 Profile of Phillips 66 Coke Calcining Plant (Rodeo, California)

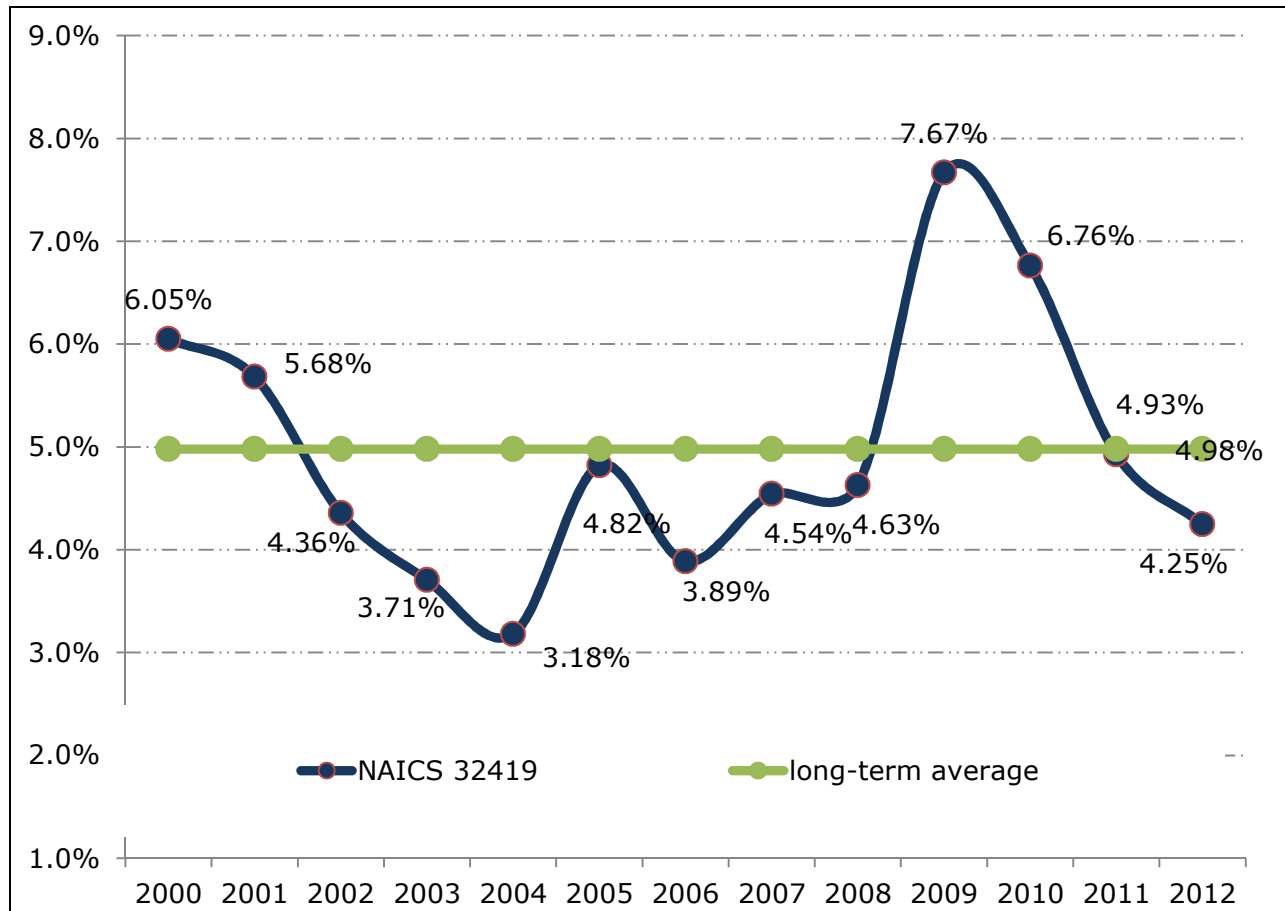
PHILLIP 66 COKE CALCINING PLANT (RODEO, CA)	
Number of Employees	40
Annual Gross Revenues	\$94,123,000
Estimated After Tax Net Profit Rate	4.98 percent
Estimated After Tax Net Profits	\$4,685,877

Source: Applied Development Economics, based on InfoUSA SalesGenie database and US IRS SOI

The estimated net profit amount of \$4.7 million is based on a national net profit rate of 4.98 percent for "Other Petroleum Products and Coal Products" (NAICS 32419), data for which comes from the US IRS Statement of Income Tax.¹ The 4.98 percent figure is a weighted average arrived at after having analyzed data for each year from 2000 to 2012.

¹ US IRS SOI "Table 1--Number of Returns, Selected Receipts, Cost of Goods Sold, Net Income, Deficit, Income Subject to Tax, Total Income Tax Before Credits, Selected Credits, Total Income Tax After Credits, Total Assets,

Figure 2: Long-Term Trends in After-Tax Net Profit Rates for "Other Petroleum Products and Coal Products" (NAICS 32419): United States



Source: Applied Development Economics, based on US IRS Statement of Income Tax States - Return of Active Corporations - Tables 1 and 7 (2000 - 2012)

Net Worth, Depreciable Assets, Depreciation Deduction, and Coefficients of Variation, by Minor Industry" [many years] (<http://bit.ly/1FwDGGf>)

SOCIOECONOMIC IMPACT ANALYSIS

This section of the report analyzes the socioeconomic impact of proposed Regulation 9 Rule 14. The analysis begins with a discussion of the costs associated with the proposed regulation. Then, the section compares the costs stemming from the proposed rule against estimated net profits generated by Phillips 66, to determine if costs associated with the rule are significant. The section also analyzes potential job losses stemming from the new rule. Finally, this section of the report examines if small businesses are disproportionately affected by Regulation 9 Rule 14.

ANNUAL COMPLIANCE COSTS AND SOCIOECONOMIC IMPACT ANALYSIS FINDINGS

Given the significant capital costs associated with putting into place a semi-dry scrubbing system or a wet scrubber, and the low profit margin of the facility. Air District staff has determined that the Carbon Plant is most likely to meet the proposed limits through upgrades to the existing DSI system.

This will involve new annual recurring costs having to do with increased sorbent purchases and sorbent disposal costs, and capital cost associated with purchasing new equipment to upgrade the existing sorbent delivery system.

The plant operators have indicated that upgrading the sorbent delivery system will cost \$5 million. Air District staff has concluded that this would provide sufficient capacity to meet the 144 lb/hr limit. The proposed rule has two annual limits: 770 tpy (Scenario One) or 80percent control efficiency (Scenario Two). As indicated below, the annual cost associated with meeting the 770 tpy annual limit (Scenario One) in Year One alone is an estimated \$2.2 million. This cost includes a one-time expenditure of \$250,000 for an engineering study. Starting in Year Two through Twenty, the annual cost for meeting the 770 tpy annual mass limit (Scenario One) falls by \$250,000, to \$1.9 million. After Year Twenty, the annual cost for upgrading the system (Scenario One) ranges will be an estimated \$1.7 million.

Air District staff believes that the 80 percent control requirement could also be met with an upgraded DSI system, but significantly more sorbent would be required than to meet the 770 tpy limit. It is possible that the engineering study required in the rule will determine that there is a more cost-effective method. But, for the purposes of this analysis, we'll assume the limit would be met by significantly more sorbent injection. Should Phillips decide to meet the 80 percent reduction requirement in this way (Scenario Two), the annual cost will be an estimated \$2.9 million in Years Two through Twenty, which doesn't include an engineering study paid for in Year One. Then, Scenario Two annual costs are estimated at \$2.7 million beyond Year Twenty.

Table 6: Socioeconomic Impact Analysis: Proposed New Regulation 9, Rule 14: Estimated Cost of Compliance Scenarios: Annual Recurring Costs, Total Capital Costs, and Capital Costs Annualized

	ANNUAL RECURRING OPERATING COSTS		CAPITAL COST				TOTAL COST (ANNUAL RECURRING OPERATING COSTS AND ANNUALIZED CAPITAL COSTS)	
	SCENARIO ONE (1) *	SCENARIO Two (2) ^	SCENARIO ONE: TOTAL (3)	SCENARIO ONE: ANNUALIZED (4)	SCENARIO TWO: TOTAL (5)	SCENARIO TWO: ANNUALIZED (6)	SCENARIO ONE (1+4)*	SCENARIO TWO (2+6)^
YEAR 1 ALONE								
Upgrade Current System	\$1,953,576	\$2,961,212	\$5,000,000	\$250,000	\$5,000,000	\$250,000	\$2,203,576	\$3,211,212
YEARS 2 THROUGH 20								
Upgrade Current System	\$1,703,576	\$2,711,212	\$5,000,000	\$250,000	\$5,000,000	\$250,000	\$1,953,576	\$2,961,212
BEYOND YEAR 20								
Upgrade Current System	\$1,703,576	\$2,711,212	\$5,000,000		\$5,000,000		\$1,703,576	\$2,711,212

Source: Bay Area Air Quality Management District (Note: * = upgrade current system to 770 tpy / ^ = upgrade current system to 80 percent control)

As summarized below, costs stemming from the proposed rule are significant across the board. Even after ten years, costs remain significant. In all cases the cost-to-net profit ratio exceeds the ten percent cost-to-net profit threshold utilized for purposes of the socioeconomic analysis.

Table 7: Socioeconomic Impact Analysis: Annual Cost to Net Profit Analysis

	COST TO NET PROFIT RATIO		COST TO NET PROFIT SUMMARY	
	SCENARIO ONE*	SCENARIO TWO^	SCENARIO ONE*	SCENARIO TWO^
YEARS 1 ALONE				
Scenario One: Upgrade Current System	47.0%	68.5%	significant impact	significant impact
YEARS 2 THRU 20				
Scenario One: Upgrade Current System	41.7%	63.2%	significant impact	significant impact
BEYOND YEAR 20				
Scenario One: Upgrade Current System	36.4%	57.9%	significant impact	significant impact

(Note: * = upgrade current system to 770 tpy / ^ = upgrade current system to 80 percent control)

INDIRECT AND INDUCED IMPACTS

In order to recoup costs associated with the proposed rule and return to profitability, affected sources may reduce either a portion of their workforce or outlays for maintaining operations where possible, or both. According to the IMPLAN Input Output Model, to recoup annual costs associated with Scenario One (\$2.2 million), in the first year alone, Phillips 66’s Carbon Plant may elect to reduce its workforce by 1.3 FTE workers, as well as reduce capital outlays. The Carbon Plant might also reduce some amount of purchases from vendors operating in the region. In the first year alone, these vendors, in turn, would reduce their own workforce (“indirect employment effect”) by 1.1 FTE workers. The reduction in purchasing power resulting from the direct and indirect loss of 2.4 FTE jobs could lead to another reduction in jobs, particularly in businesses such as retail and personal services that serve the 2.4 FTEs who were formerly directly and indirectly employed by the Carbon Plant. In total, the regional workforce in Year One could decline by 3.8 FTE workers as a result of costs associated with Scenario One. The total employment effect for Scenario Two is larger because costs associated with this scenario are larger than Scenario One. Scenario Two costs (\$3.2 million) could result in the direct loss of 2.0 jobs in Year One alone, as well as the indirect and induced loss of another 4.1 FTEs.

Table 8: Multiplier Effects Resulting From Costs Stemming from Regulation 9 Rule 14

	SCENARIO ONE*				SCENARIO TWO^			
	DIRECT EMPLOYMENT EFFECT	INDIRECT EMPLOYMENT EFFECT	INDUCED EMPLOYMENT EFFECT	TOTAL EMPLOYMENT EFFECT	DIRECT EMPLOYMENT EFFECT	INDIRECT EMPLOYMENT EFFECT	INDUCED EMPLOYMENT EFFECT	TOTAL EMPLOYMENT EFFECT
YEAR 1 ALONE								
1: Upgrade Current System	-1.3	-1.1	-1.4	-3.8	-2.0	-1.8	-2.2	-6.1
YEARS 2 THRU20								
1: Upgrade Current System	-1.1	-1.0	-1.2	-3.3	-2.0	-1.8	-2.2	-5.9
BEYOND YEAR 20								
1: Upgrade Current System	-0.9	-0.8	-1.0	-2.7	-1.6	-1.5	-1.8	-5.0

(Note: * = upgrade current system to 70% control / ^ = upgrade current system to 80 percent control)

It is important to note that, in the first year only, the affected source is expected to spend \$250,000 for an engineering study. Thus, the table above includes job impacts for two other periods (“Years Two through Twenty” and “Beyond Year Twenty”), to account for the discontinuation of certain costs at particular times. “Year Two through Twenty” possible job losses in the table above are already accounted for in the total employment effect included in “Year One Alone”, and therefore are not new job reductions on top of “Year One Alone.” For example, in Year One alone, Scenario One total job impact is 3.8 FTE. From Years Two through Twenty, Scenario One annual impacts will be an estimated -3.3 FTEs. The possible loss of 3.3 jobs starting in Year 2 is not on top of the Year One loss of 3.8, but is already included within the latter range. The impact lessened because the affected source is no longer spending the \$250,000 it spent in Year One alone for an engineering study. Beyond Year Twenty, employment impacts resulting from on-going costs range from a reduction 2.7 FTE workers in the region in Scenario One, to a possible reduction of 5.0 workers in the region in Scenario Two.

DISPROPORTIONATE IMPACTS TO SMALL BUSINESS

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. To be eligible for small business certification, a business:

- 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

In analyzing the revenue profiles of the Carbon Plant, we have determined that this facility does not generate less than \$10 million in annual revenues. Moreover, the Carbon Plant is not independently owned and operated, and the headquarters of the corporation to which it belong is outside of California. As a result, the Carbon Plant is not a small business. As such, proposed Regulation 9 Rule 14 does not disproportionately affect small businesses.