

# **APPENDIX D**

## **SOCIOECONOMIC ANALYSIS FOR PROPOSED RULE 4570 (CONFINED ANIMAL FACILITIES)**

**June 15, 2006**

**SOCIOECONOMIC ANALYSIS  
PROPOSED RULE 4570:  
CONFINED ANIMALS FACILITIES**

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*Prepared for*

**San Joaquin Valley Unified Air Pollution Control District  
1990 E. Gettysburg Avenue  
Fresno, CA 93726**

*Prepared by*

**Applied Development Economics**  
2029 University Avenue • Berkeley, California 94704 • (510) 548-5912  
1029 J Street, Suite 310 • Sacramento, California 95814 • (916) 441-0323  
[www.adeusa.com](http://www.adeusa.com)

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## **1. EXECUTIVE SUMMARY**

The San Joaquin Valley Unified Air Pollution Control District (“District”) seeks to adopt Draft Rule 4570 to meet certain United States Environmental Protection Agency (US EPA) mandates and timelines with regards to improved air quality in the region. This section of the report summarizes the findings of the socioeconomic analysis of Rule 4570.

Large CAFs subject to Draft Rule 4570 generate an estimated \$4.5 billion per year in revenues, from which \$249.6 million in net profit is earned annually. The analysis indicates that, although there are approximately 524 large confined animal facilities (CAFs) that will be subject to the rule, there are only approximately 247 of the 524 total large CAFs subject to Draft Rule 4570 that would need to implement additional mitigation measures in Draft Rule 4570 to comply with rule requirements. The table below summarizes the number and type of CAFs that would need to implement additional mitigation measures to comply with the rule and its estimated annual compliance costs.

<b>TABLE 1</b>		
<b>Summary of Estimated Total Annual Compliance Cost for CAFs that Would Need to Implement Additional Mitigation Measures</b>		
<b>Type of CAF</b>	<b>Number of CAFs</b>	<b>Estimated Total Annual Compliance Costs</b>
Dairy	233	\$18,324,074
Beef Feedlots	6	\$590,112
Other Cattle Facilities	5	\$7,147,266
Swine	3	\$540
<b>TOTAL</b>	<b>247</b>	<b>\$26,061,922</b>
Source: District and stakeholder comments		

The socioeconomic impact analysis shows that the total annual compliance costs represents <1 percent of the net profits for large CAF swine stakeholders; 9.6 percent of the net profits of large CAF dairy stakeholders; 13.0 percent of the net profits of large cattle stakeholders (beef feedlots); and 13.5 percent of the net profits of other large CAF cattle stakeholders. Annual compliance costs associated with the District’s costs for impacted other cattle

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industries exceed the threshold of significance, resulting in direct employment impacts of approximately 17 jobs. Factoring in indirect impacts associated with the direct loss of 17 jobs, the rule could result in the loss of an additional 23 jobs across different industries, for a total job impact of 40 jobs, which represents less than one percent of all jobs in the cattle industry in the region.

However, the expected costs of the rule are primarily labor costs (e.g. labor for increased cleaning; inspection for leaks; covering of manure piles; and covering of silage piles). Therefore, the rule requirements are expected to create additional jobs. Based on Minnesota and Kansas State University data, the rule requirements will result in the following:

- At least 0.17 hrs/yr/cow for cleaning of housing at affected facilities, on the average (considering approximately 29% of cows on dairies are at facilities without freestalls)
- At least 0.03 hrs/yr/cow for covering solid manure, feed, and silage at affected facilities, on the average (considering some facilities do not store manure onsite and some facilities do not use silage)
- Total hours = at least 0.20 hrs/yr/cow at affected facilities, on the average
- Total full time jobs (job gains)= at least 150 positions <sup>1</sup>  
This does not take into consideration any job losses caused by rule costs.

Additionally, several of the measures may have the added benefit of improving animal health (e.g. measures reducing ammonia emissions may reduce respiratory health ailments and measures minimizing manure-based bedding may reduce calving intervals.)

The analysis also examines whether small businesses are disproportionately impacted by the draft rule and concludes that these sources are not disproportionately impacted.

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<sup>1</sup> [(1,878,720 dairy cows at large CAFs x 233 large dairy CAFs that will need to implement practices ÷ 430 large dairy CAFs) + (174,848 beef cattle at large CAFs x 6 large beef feedlots that will need to implement practices ÷ 16 large beef feedlots) + (1,524,750 other cattle at large CAFs x 5 large other cattle CAFs that will need to implement practices ÷ 16 large other cattle CAFs)] x 0.20 hours per head ÷ 40 hours per week ÷ 52 weeks per year = 150 full time equivalents



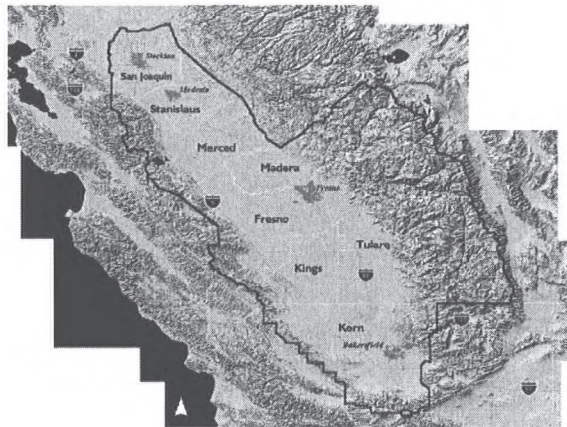
## 2. INTRODUCTION

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This report describes the socioeconomic impacts of Draft Rule 4570 (Confined Animal Facilities). Following this introduction, the report summarizes the proposed rule and describes the methodology for the socioeconomic analysis. In Section 5, the report describes the economic characteristics of sources affected by Draft Rule 4570. The sixth section analyzes the socioeconomic impacts of compliance costs on the affected sources and the regional economy. This report is based on the version of Draft Rule 4570 that was published on March 13, 2006 in preparation for the board hearing June 15, 2006.

The report is prepared pursuant to the provisions of AB2051 (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 District staff in understanding the socioeconomic impacts of Draft Rule 4570, and can assist staff in preparing a refined version of the rule. A final draft report will be published prior to a public hearing on June 15, 2006 for the District Governing Board to consider the adoption of the proposed rule. Figure 1 is a map of the eight-county region that comprises the San Joaquin Valley Air Basin. As indicated in the map, Kern County is not completely within the District.

**FIGURE 1**  
**San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) Air Basin**



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### **3. DESCRIPTION OF DRAFT RULE 4570**

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The San Joaquin Valley Unified Air Pollution Control District's (District) 2004 Extreme Ozone Attainment Plan and the 2002 and 2005 Rate and Progress Plan (ROP) identify the need to address VOC emissions from confined animal facilities in the San Joaquin Valley Air Basin (SJVAB). Annual VOC emissions from confined animal facilities (CAF) are estimated to be over 27,000 tons. Draft Rule 4570 (Confined Animal Facilities) would require owners and operators of confined animal facilities to reduce VOC emissions by implementing various mitigation measures based on the type of facility.

Draft Rule 4570 would provide CAF operators with the flexibility to comply with the VOC control requirements by choosing any mitigation measures from a list of multiple measures, or by implementing alternative mitigation measures provided such alternative measures achieve equivalent emissions reductions as those listed in the rule and provided the alternative measures have been approved by the District. District staff indicate that the draft rule should result in a limited number of dairies (233 dairies out of a total of 1,500 in the region), cattle facilities (11 facilities out of a total of 5,290 in the region) and swine animal facilities (1 to 3 out of a total of 313 in the region) implementing additional mitigation measures not already used on the facility. In all likelihood, only one swine facility will be subject to the rule, but to conservatively estimate the compliance cost, staff assumed all three swine facilities would be subject to the rule. District staff issued a report that discusses, in detail, the costs resulting from the mitigations that affected stakeholders may likely implement to comply with Draft Rule 4570, and this report is called "Appendix C: Cost Effectiveness Analysis for Rule 4570."



## 4. METHODOLOGY

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The socioeconomic analysis involves the use of information provided directly by affected sources, as well as secondary data used to describe the industries affected by the proposed provisions of Draft Rule 4570. The approach is briefly described below.

Applied Development Economics (ADE) began the analysis by preparing a statistical description of the industry groups of which the affected sources are a part, and by analyzing data on the number of jobs, sales levels, the typical profit ratios, and other economic indicators for each industry.

This report relies heavily on the most current data available from a variety of sources, such as the 2002 Agricultural Census, 1997 Agricultural Census, Minnesota IMPLAN Group, and the State of California's Employment Development Department (EDD) Labor Market Information Division. Global trends data is available from the United Nations Food and Agriculture Organization (UN FAO). For purposes of estimating profits, ADE relied on Dun and Bradstreet and the United States Department of Agriculture (USDA).

With the above information, ADE was able to estimate net after tax profit ratios for sources affected by the draft 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 job losses are estimated using a regional IMPLAN input-output model.

When analyzing the socioeconomic impacts of proposed new rules and amendments, ADE works closely within the parameters of accepted methodologies discussed in a 1995 California Air Resources Board 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 California Air Resources Board (ARB) has incorporated the methodologies

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described in this report in its own assessment of socioeconomic impacts of rules generated by 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, 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."

## **5. IMPACTED INDUSTRIES SUBJECT TO NEW RULE 4570 (CONFINED ANIMAL FACILITIES)**

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This section of the socioeconomic analysis describes demographic and economic trends in the San Joaquin Valley region. Subsection 5.1 compares the demographics and economics of the San Joaquin Valley region against California as a whole, and provides a context for understanding demographic and economic changes that occurred within the San Joaquin Valley region between 1994 and 2004. Subsection 5.2 provides a context to understanding the inflation that occurred between 1994 and 2004. The subsequent subsections narrow the focus of the socioeconomic analysis to industries affected by Draft Rule 4570 and describes the economic characteristics of potentially impacted industries subject to Rule 4750.

In this report, the San Joaquin Valley region is defined as Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare counties. Data for Kern County in Tables 1 and 2 are for all of Kern County, although Kern County is only partially in the San Joaquin Valley Air Basin. Starting with Table 3, data for Kern County are for the part of Kern County that is within the San Joaquin Valley Air Basin.

### **5.1 REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS**

#### **REGIONAL DEMOGRAPHIC TRENDS**

The San Joaquin Valley region experienced tremendous population growth during the 1990s. Many came to this area because of affordable housing. As a result, population increased significantly. The eight-county region's population increased by 22 percent (or approximately 2.0 percent annually), from 3.0 million in 1994 to 3.6 million in 2004. While the State of California's population increased by 15 percent (or approximately 1 percent annually), all the counties in the region experienced faster rates of growth than California, and two counties grew at rates that were triple the State's growth rate, as Table 1 shows. While, by many standards, Madera County continues to be a small county— at 136,923 residents according to the Department of Finance—it still experienced an annual growth rate of three percent between 1994 and 2004. Kings County also grew by three percent per year between 1999 and 2004. As demonstrated in

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the following section on regional economic trends, the demographic changes that occurred in the San Joaquin Valley region during the 1990s significantly influenced the economy of this eight-county region.

**TABLE 2**  
**Population Growth: San Joaquin Valley Region, 1994 - 2004**

	1994	1999	2004	Distribution, 2004	Annual % Chng 94-99	Annual % Chng 99-04	Annual % Chng 94-04
California	31,661,024	33,765,185	36,271,091		1%	1%	1%
SJV Region	3,012,026	3,238,675	3,642,937		1%	2%	2%
Fresno	735,187	789,680	866,523	24%	1%	2%	2%
Kern	604,183	645,881	732,401	20%	1%	3%	2%
Kings	111,942	125,762	141,510	4%	2%	2%	2%
Madera	103,779	115,649	136,923	4%	2%	3%	3%
Merced	195,863	205,725	234,169	6%	1%	3%	2%
San Joaquin	513,135	557,086	636,466	17%	2%	3%	2%
Stanislaus	407,103	435,459	494,822	14%	1%	3%	2%
Tulare	340,834	363,433	400,123	11%	1%	2%	2%

Source: Applied Development Economics, based on California Department of Finance

## REGIONAL ECONOMIC TRENDS

Economic development practitioners and planners have traditionally divided economies into two broad industrial categories—the economic base and local support industries. Economic base industries are the drivers of local and regional economies in that these industries draw income into a local economy by selling products outside of the local economy, much like the export industries of a national economy. Accrued earnings then circulate throughout the local area in the form of wages and salaries; investments; purchases of fixed assets, goods, and services; and generation of more jobs and wealth.

The economic base is typically comprised of 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, and healthcare—increases, as does demand for basic

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

Agriculture is the economic base of the San Joaquin Valley region by virtue of the amount of goods this sector produces and exports throughout the nation and the globe. Fourteen percent of all workers in the region are employed by industries within agriculture, as Table 2 shows. However, in 1999 the proportion of workers in agriculture was 17 percent. In fact, over the five-year period between 1999 and 2004, employment in agriculture declined by three percent per year, or by 15 percent over five years.

Between 1999 and 2004, local support industries gained in prominence within the San Joaquin Valley region. Service-rendering industries employed the most workers as a proportion of total employment in the region. As Table 2 shows, excluding wholesale, retail, and transportation, service-rendering industries comprise the largest employment sector in the region, at 661,900 or 53 percent of all jobs. With retail, transportation and wholesale, services accounting for almost 69 percent of all jobs. In 1999, service-rendering industries represented 50 percent of all jobs, and when including retail, wholesale, and transportation in the mix, 66 percent.

Increases in employment in service-rendering industries are consistent with regional population growth. In the region, local support industries of construction, education and health, financial activities, and government increased annually by six percent, three percent, two percent, and two percent respectively between 1999 and 2004.

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**TABLE 3  
Employment Profile Of The San Joaquin Valley Region 1999 – 2004**

<b>MAJOR SECTORS</b>	<b>San Joaquin Valley Region Employment 1999</b>	<b>San Joaquin Valley Region Employment 2004</b>	<b>San Joaquin Valley Region Employment Distribution, 2004</b>	<b>Annual Percent Change 1999 to 2004</b>	<b>California Employment Distribution, 2003</b>	<b>Annual Percent Change (California) 1998 to 2003</b>
Agriculture	199,400	172,200	14%	-2.9%	2%	-1.7%
Resources, Mining and Construction	62,400	85,100	7%	6.4%	6%	4.2%
Manufacturing	114,600	113,400	9%	-0.2%	10%	-3.5%
Wholesale	35,300	39,000	3%	2.0%	4%	0.8%
Retail	123,300	135,300	11%	1.9%	11%	1.4%
Transportation/Warehousing/Utilities	39,500	44,700	4%	2.5%	3%	-1.0%
Information	15,300	16,100	1%	1.0%	3%	-1.4%
Financial Activities	41,700	46,000	4%	2.0%	6%	2.6%
Professional and Business Services	92,800	98,300	8%	1.2%	14%	-0.2%
Educational and Health Services	105,300	124,300	10%	3.4%	10%	2.7%
Leisure, Hospitality and Other Srvs	115,400	127,000	10%	1.9%	13%	1.9%
Government	228,300	250,200	20%	1.8%	16%	1.3%
<b>Total Employment</b>	<b>1,173,300</b>	<b>1,251,600</b>	<b>100.0%</b>	<b>1.3%</b>	<b>100.0%</b>	<b>0.7%</b>

Source: Applied Development Economics, based on data from California Employment Development Department LMID

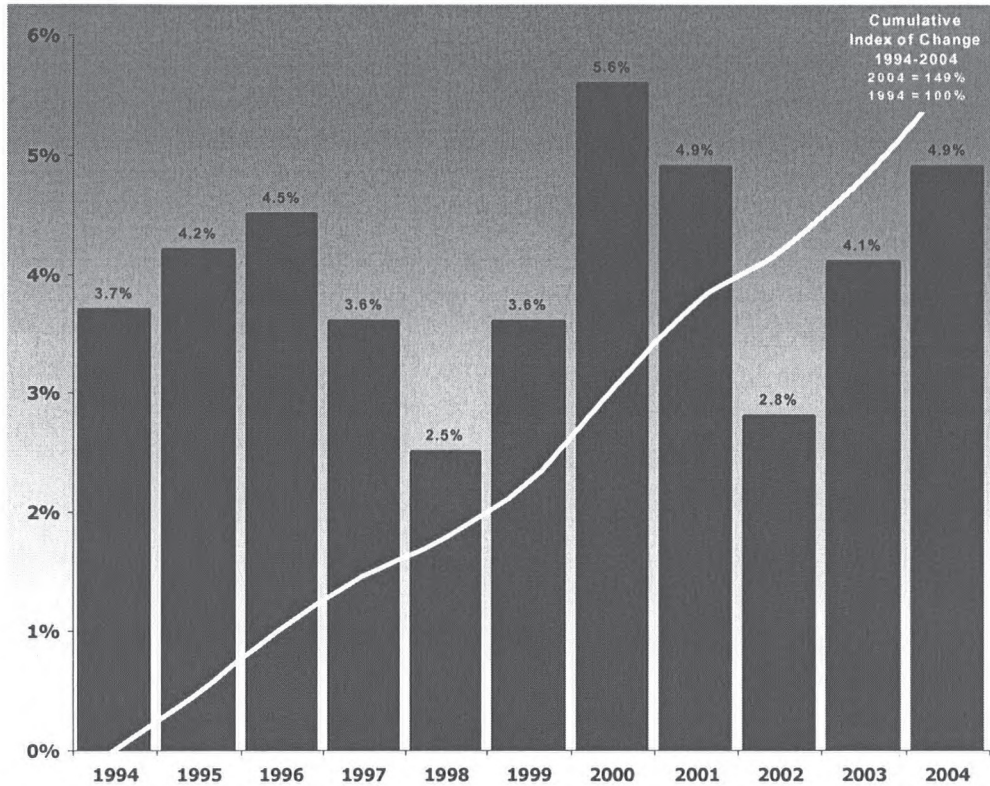
The emergence of local support industries in the San Joaquin Valley region mirrors and leads statewide trends, as Table 2 shows. In the region, construction, health-education, and government increased annually by six percent, three percent, and two percent, whereas, statewide, these industries grew by four percent, slightly under three percent, and one percent per year between 1999 and 2004. In short, while agriculture remains the leading edge of the economy, the San Joaquin Valley region’s economy has become more diverse, with the growth occurring within population-driven local support industries rather than the export-focused economic base industries of manufacturing and agriculture.

**5.2 GENERAL INFLATION TRENDS**

Figure 2 below tracks annual inflation between 1994 and 2004. Inflation is presented in this figure on a discrete annual basis (bars), as well as on cumulative and compounded bases (lines). This report converts both 1994 and 1999 revenue data into 2004 dollars using the inflation trends presented in Figure 2. For a detailed explanation on converting 1994 and 1999 revenue, see Attachment A.



**FIGURE 2**  
**United States Bureau of Labor Statistics:**  
**Consumer Price Index (US Urban Wages), 1994-2004**



**5.3 DESCRIPTION OF AFFECTED INDUSTRIES**

The analysis below discusses global, national, state, and regional trends with respect to industries subject to Draft Rule 4570. For purposes of context, the discussion below starts with broad global and national trends, focusing particularly on world export market for cattle, poultry, and hogs. Then, the discussion moves to state and regional trends.

**Global Trends**

Tables 3, 4, 5 and 6 below track trends of the 20 leading world exporters of cattle, chickens, and hogs. Table 3 tracks milk and cheese exports of the United States and the top twenty leading exporters of these products. These countries export \$2.3 billion of milk and \$14.1 billion of whole milk cheese to markets across the globe. As the world supply of milk and cheese increased between 1999 and 2004, the unit per metric ton price fell: milk by 5.5 percent per year and cheese by 4.0 percent per year. While the United States

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exports milk abroad, its share of the global market is relatively small at one percent. In fact, the United States dropped out of the UN FAO's 2004 list of top twenty exporters of milk. US cheese exports is also small at 2.6 percent of the global market. In other words, US milk and cheese producers sell their products primarily to the domestic market.

Table 4 shows that the aggregate and average values of cattle on the export market declined by three percent annually between 1999 and 2004, while the number cattle in the export market also declined by two percent annually between 1999 and 2004. US exports to the world declined precipitously in the year 2004, largely because of "mad cow" disease found in Canada; Canada stopped importing cattle in 2003 and into 2004, hurting American livestock producers. Canada is the largest market of US exports.

World exports of chicken by the twenty leading countries increased modestly by one percent annually between 1999 and 2004, although American exports dropped significantly by 12 percent (Table 5). Supply of chicken on the world market increased by four percent per year, going from 552 million to 734 million chickens. The increase in supply may have influenced the decline in world prices on a per unit basis. At \$1.25 per pound, world chicken prices are less than American prices of \$1.71, which may also partly explain the decline in American exports.

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**TABLE 4  
Milk and Cheese Trends: United States and Top Twenty Leading Exporters 1994-2004  
(\$2004)**

		1994	1999	2004	94-99	99-04	94-04
US exports	Milk		44,368	10,276	data unavailable	-25.4%	
			\$82,167,961	\$28,731,924	data unavailable	-19.0%	
			\$1,852	\$2,796	----	8.6%	
Top 20 Exporters	Milk		2,828,199	3,930,046	5,110,584	6.8%	5.4%
			\$2,276,796,892	\$2,907,676,944	\$2,338,231,000	5.0%	-4.3%
			\$805	\$740	\$458	-1.7%	-9.2%
US exports	Cheese		24,761	43,121	62,371	11.7%	7.7%
			\$141,648,453	\$461,068,729	\$201,410,000	26.6%	-15.3%
			\$5,721	\$10,692	\$3,229	13.3%	-21.3%
Top 20 Exporters	Cheese		2,254,202	2,649,151	3,537,665	3.3%	6.0%
			\$13,542,828,867	\$17,573,353,850	\$14,131,749,000	5.3%	-4.3%
			\$6,008	\$6,634	\$3,995	2.0%	-9.6%

Source: Applied Development Economics, based on UN Food and Agriculture Organization

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**TABLE 5  
Cattle Export Trends: United States and Top Twenty Leading Exporters 1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
US Exports						
Aggregate Value	\$277,974,364	\$216,460,012	Data unavailable	-5%		
Number of heads	468,715	329,437	15,721	-7%		
Per head Price	\$593	\$657	-----	2%		
Top 20 Exporters						
Aggregate Value	\$6,853,666,560	\$4,758,106,126	\$4,076,059,000	-7%	-3%	-5%
Number of heads	7,942,994	8,105,452	7,199,065	0%	-2%	-1%
Per head Price	\$863	\$587	\$566	-7%	-1%	-4%

Source: Applied Development Economics, based on UN Food and Agriculture Organization

**TABLE 6  
Chicken Industry Export Trends: United States and Top Twenty Leading Exporters 1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
US Exports						
Aggregate Value	\$167,963,235	\$127,290,942	\$66,514,000	-5%	-12%	-9%
Number of heads	62,443,000	45,159,000	39,011,000	-6%	-3%	-5%
Per head Price	\$2.69	\$2.82	\$1.71	1%	-10%	-4%
Top 20 Exporters						
Aggregate Value	\$1,001,053,610	\$857,081,816	\$919,656,000	-3%	1%	-1%
Number of heads	510,529,000	552,076,000	734,069,000	2%	6%	4%
Per head Price	\$1.96	\$1.55	\$1.25	-5%	-4%	-4%

Source: Applied Development Economics, based on UN Food and Agriculture Organization

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**TABLE 7**  
**Swine Industry Export Trends: United States and Top Twenty Leading Global Exporters 1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
United States						
Aggregate Value	\$59,629,458	\$35,126,192	\$32,140,630	-10%	-1.8%	-6%
Number of heads	386,380	348,109	337,983	-2%	-0.6%	-1%
Per head Price	\$154	\$101	\$95	-8%	-1.2%	-5%
Top 20 Exporters						
Aggregate Value	\$69,869,506	\$38,882,171	\$39,293,974	-11%	0.2%	-6%
Number of heads	463,000	399,000	352,000	-3%	-3%	-3%
Per head Price	\$151	\$97	\$112	-8%	3%	-3%

Source: Applied Development Economics, based on State of California Agricultural Commissioners Annual Report. Data includes federal subsidies (EWG. Farm Subsidies Database)



***National Trends***

Tables 7 through 11 track national trends with respect to production and value for cattle, dairy cows, broiler chickens, and hogs. Table 7 shows that, on average, dairy cows produced 19,107 pounds of milk in 2004, an improvement over five years before, when cows produced 18,109 pounds per milk. Between 1999 and 2004, the number of dairy cows declined slightly by 0.2 percent per year, while milk production increased from 140 billion to 147 billion pounds of milk.

Tables 8 and 9 track national trends with respect to cattle. Table 8 shows that during the ten-year period stretching from 1994 to 2004, the number of cattle declined relatively evenly at a smooth rate of 0.6 percent per year, and this rate of decline more or less held for most kinds of cattle. The unit price of different kinds of cattle declined at a faster rate in inflation-adjusted terms (Table 9).

Table 10 shows that on a per head or per pound basis, chicken prices in the United States have increased significantly between 1999 and 2004 in inflation-adjusted terms. The value of the chicken industry was \$24 billion in 2004, up \$5 billion from the figure for 1999. Chicken in 2004 sold for \$0.71 per pound, versus \$0.46 five years before, resulting in a nine-percent annual growth rate.



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**TABLE 8  
Dairy Industry Trends: United States, 1994-2004**

	1994	1999	2004	94-99	99-04	94-04
Nation						
Nos. of Milk Cows	7,861,833	7,734,333	7,712,962	-0.3%	-0.1%	-0.2%
Pounds of Milk	129,712,000,000	\$140,062,000,000	147,373,402,231	2%	1%	1%
Average Production	16,499	18,109	19,107	2%	1%	1%

Source: Applied Development Economics, based on USDA ERS Economic Outlook

**TABLE 9  
Cattle Industry Trends: United States, 1994-2004**

	1994	1999	2004	94-99	99-04	94-04
Milk cows	9,507,000	9,128,000	8,990,000	-0.8%	-0.3%	-0.6%
Dairy heifers	4,125,000	4,069,000	4,020,000	-0.3%	-0.2%	-0.3%
Beef cows	34,603,000	33,750,000	32,861,000	-0.5%	-0.5%	-0.5%
Beef Heifers	6,364,000	5,535,000	5,518,000	-2.8%	-0.1%	-1.4%
Other heifers	9,104,000	10,170,000	9,806,000	2.2%	-0.7%	0.7%
Steers > 500 lb.	17,086,000	16,891,000	16,277,000	-0.2%	-0.7%	-0.5%
Bulls	2,312,000	2,281,000	2,206,000	-0.3%	-0.7%	-0.5%
Calves	17,873,000	17,290,000	15,210,000	-0.7%	-2.5%	-1.6%
Total Cattle	100,974,000	99,114,000	94,888,000	-0.4%	-0.9%	-0.6%

Source: Applied Development Economics, based on USDA ERS Economic Outlook

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<b>TABLE 10</b> <b>Unit Price of Cattle, 1994-2004 (\$2004)</b>						
	1994	1999	2004	94-99	99-04	94-04
Cattle prices						
<b>Steers, Choice, 11-13 cwt</b>						
Texas Panhandle	\$103.68	\$81.93	\$83.51	-4.6%	0.4%	-2.1%
Nebraska Direct	\$102.55	\$81.53	\$84.69	-4.5%	0.8%	-1.9%
<b>Cows - Sioux Falls</b>						
Utility breaking 1200-1600 lbs.	\$71.92	\$56.38	\$53.88	-4.8%	-0.9%	-2.8%
Utility boning 800-1200 lbs.	\$70.78	\$45.00	\$46.62	-8.7%	0.7%	-4.1%
<b>Feeder Cattle - Oklahoma City</b>						
<b>Steers: Med. #1</b>						
500-550 lb	\$135.60	\$110.92	\$103.10	-3.9%	-1.5%	-2.7%
600-650 lb	\$124.00	\$102.77	\$95.21	-3.7%	-1.5%	-2.6%
750-800 lb	\$115.78	\$94.99	\$89.85	-3.9%	-1.1%	-2.5%
<b>Heifers: Med. #1</b>						
450-500 lb	\$124.63	\$101.40	\$95.23	-4.0%	-1.2%	-2.7%
700-750 lb	\$111.06	\$89.41	\$85.88	-4.2%	-0.8%	-2.5%

Source: Applied Development Economics, based on USDA ERS Outlook, "Red Meat Yearbook"

**TABLE 11**  
**Trends in Broilers: United States 1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
Number of heads	7,017,540,000	8,146,010,000	7,065,621,427	3.0%	-2.8%	0.1%
Pounds	48,456,290,168	50,773,370,162	34,083,000,000	1%	-8%	-3%
Gross Value	\$16,939,960,631	\$18,813,273,477	\$24,198,930,000	2%	5%	4%
Value per head	\$2.41	\$2.31	\$3.42	-1%	8%	4%
Value per pound	\$0.52	\$0.46	\$0.71	-2%	9%	3%

**TABLE 12**  
**Swine Trends: United States, 1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
Number of heads	59,738,000	59,335,000	60,975,000	-0.1%	0.5%	0.2%
Per head Price: Sow	\$47.48	\$23.95	\$28.24	-13%	3%	-5%
Per head Price: Lean Hogs	\$62.57	\$42.28	\$39.45	-8%	-1%	-5%

Source: Applied Development Economics, based on State of California Agricultural Commissioners Annual Report. Data includes federal subsidies (EWG. Farm Subsidies Database)

**State and Regional Trends**

The following discussion examines state and regional trends with respect to cattle, dairy, poultry and hogs. The tables identify broad trends in these industries in the eight-county San Joaquin Valley region. Milk production in the region is a \$4.3 billion and growing industry, increasing by 3.6 percent per year between 1999 and 2004 and, over a ten-year stretch, by 4.4 percent per year between 1994 and 2004 (see Table 12). The \$4.3 billion amount represents the value of milk and other dairy products, not the value of the dairy cows.

Table 12 shows that beef cattle generated approximately \$115.4 million in value in 2004, or less than three percent of the value of dairy industry in the region. Of the 4.2 million heads of cattle in the region, approximately four percent are beef cattle only. Because beef cattle are a small portion of the overall number of cattle in the region, greater aggregate value is found in cattle other than beef cattle, such as transactions involved in the buying and selling of dairy cows. As Table 13 and 14 show, all other cattle grew by 9.5 percent between 1999 and 2004, while the number of beef cattle declined by 1.8 percent per year. While the number and aggregate value of beef cattle in the region has declined and remains a small proportion of total cattle stock and aggregate value, at \$709 per head, the average value of beef cattle is higher than the \$598 average value of all other cattle.

Tables 15 and 16 track trends in swine and poultry industries. The swine industry in the region is considerably below peak production levels of 1994, when \$59.6 million in value was generated off of 386,400 heads of hogs. Ten years later in 2004, regional swine facilities generated \$27 million less value, or \$32.1 million off of 338,000 heads of hogs.

Similar to the dairy industry, producers of chicken broilers and eggs have enjoyed considerable growth in the region between the five years period spanning 1999 and 2004. The aggregate value of poultry has increased by 5.5 percent per year, while the per unit price increased by a respectable 2.9 percent per year. Overall, chicken is a \$468 million industry in the eight-county region as of 2004 (see Table 16).

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**TABLE 13**  
**Dairy Industry Trends: San Joaquin Valley Region and State of California, 1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
Region						
Aggregate Value	\$2,800,920,159	\$3,614,087,130	\$4,321,127,613	5.2%	3.6%	4.4%
Production (Cwt)	164,346,457	216,804,199	292,249,472	5.7%	6.2%	5.9%
Per Unit Price	\$17.01	\$16.63	\$14.72	-0.5%	-2.4%	-1.4%
Aggregate Value	\$3,752,975,256	\$4,600,277,044	\$5,304,938,310	4.1%	2.9%	3.5%
Production (Cwt)	218,037,547	274,337,967	358,445,714	4.7%	5.5%	5.1%
Per Unit Price	\$17.18	\$16.72	\$14.73	-0.5%	-2.5%	-1.5%

Source: Applied Development Economics, based on State of California Agricultural Commissioners Annual Report. Data includes federal subsidies (EWG. Farm Subsidies Database)

**TABLE 14**  
**Cattle and Calves Industry Trends: Beef Cattle Only: San Joaquin Valley Region and State of California 1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
Region						
Aggregate Value	\$148,326,932	\$126,636,712	\$115,441,165	-3.1%	-1.8%	-2.5%
Number of heads	170,470	195,578	162,800	2.8%	-3.6%	-0.5%
Per head Price	\$870	\$648	\$709	-5.7%	1.8%	-2.0%
Aggregate Value	\$791,190,182	\$542,886,300	\$544,104,000	-7.3%	0.0%	-3.7%
Number of heads	841,146	810,000	720,000	-0.8%	-2.3%	-1.5%
Per head Price	\$941	\$670	\$756	-6.6%	2.4%	-2.2%

Source: Applied Development Economics, based on State of California Agricultural Commissioners Annual Report. Data includes federal subsidies (EWG. Farm Subsidies Database)

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**TABLE 15**  
**Cattle and Calves Industry Trends: All Cattle Other than Beef and Dairy: San Joaquin Valley Region and State**  
**of California**  
**1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
Region						
Aggregate Value	\$829,410,576	\$854,776,429	\$1,346,087,835	0.6%	9.5%	5.0%
Number of heads	1,534,709	1,740,622	2,251,367	2.6%	5.3%	3.9%
Per head Price	\$540	\$491	\$598	-1.9%	4.0%	1.0%
State Totals						
Aggregate Value	\$1,311,021,059	\$1,309,106,879	\$1,917,232,892	0.0%	7.9%	3.9%
Number of heads	3,958,854	4,290,000	4,680,000	1.6%	1.8%	1.7%
Per head Price	\$331	\$305	\$410	-1.6%	6.1%	2.2%

Source: Applied Development Economics, based on State of California Agricultural Commissioners Annual Report. Data includes federal subsidies (EWG, Farm Subsidies Database)

**TABLE 16**  
**Swine Industry Trends: All Other Cattle: San Joaquin Valley Region and State of California**  
**1994-2004 (\$2004)**

	1994	1999	2004	94-99	99-04	94-04
Region						
Aggregate Value	\$59,629,458	\$35,126,192	\$32,140,630	-10.0%	-1.8%	-6.0%
Number of heads	386,380	348,109	337,983	-2.1%	-0.6%	-1.3%
Per head Price	\$154	\$101	\$95	-8.1%	-1.2%	-4.7%
State Totals						
Aggregate Value	\$69,869,506	\$38,882,171	\$39,293,974	-11.1%	0.2%	-5.6%
Number of heads	463,000	399,000	352,000	-2.9%	-2.5%	-2.7%
Per head Price	\$151	\$97	\$112	-8.4%	2.8%	-3.0%

Source: Applied Development Economics, based on State of California Agricultural Commissioners Annual Report. Data includes federal subsidies (EWG, Farm Subsidies Database)



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**TABLE 17  
Poultry and Eggs Industry Trends: San Joaquin Valley Region and State of California, 1994-2004**

	1994	1999	2004	94-99	99-04	94-04
Region						
Aggregate Value: Poultry	\$352,813,215	\$359,030,294	\$468,232,000	0.3%	5.5%	2.9%
Pounds of poultry	641,431,000	700,211,319	791,409,389	1.8%	2.5%	2.1%
Poultry value per pound	\$0.55	\$0.51	\$0.59	-1.4%	2.9%	0.7%
Aggregate Value: Eggs	\$162,733,051	\$84,810,472	\$132,460,000	-12.2%	9.3%	-2.0%
Dozens	192,527,246	132,268,002	187,341,125	-7.2%	7.2%	-0.3%
Eggs value per dozen	\$0.85	\$0.64	\$0.71	-5.4%	2.0%	-1.8%
Aggregate Value: Poultry	\$391,348,691	\$389,761,080	\$689,303,956	-0.1%	12.1%	5.8%
Pounds of poultry*	1,131,000,000	Data unavailable	Data unavailable			
Poultry value per pound	\$0.35					
Aggregate Value: Eggs	\$374,008,792	\$265,620,390	\$268,459,200	-6.6%	0.2%	-3.3%
Dozens	525,177,391	464,225,339	421,083,000	-2.4%	-1.9%	-2.2%
Eggs value per dozen	\$0.71	\$0.57	\$0.64	-4.3%	2.2%	-1.1%

Source: Applied Development Economics, based on State of California Agricultural Commissioners Annual Report and Annual Crop Report (various counties) (\*Cal stopped publishing pounds for reasons of confidentiality)

**5.4 NET PROFIT RATIOS**

Table 17 tracks net profit ratios for industries subject to Draft Rule 4570 from 1992 to 2002. Data comes from Dun and Bradstreet. Dun and Bradstreet tracks a wide variety of business and financial indicators, including after tax net profit, and these indicators are based on performance of a representative sample of establishments from across the country in a particular industry at the four-digit Standard Industrial Classification (SIC) level. Dun and Bradstreet track information on annual bases, allowing us to calculate a weighted average after tax net profit ratio that smoothens out the affects of economics booms and recessions. We also examined net profit ratios calculated by the United States Department of Agriculture (USDA). According to the USDA, dairy and hogs farmers across the country performed relatively well over the 10-year period stretching from 1994 to 2004, recording a ten-year net profit average of 6.2 percent and 10.8 percent respectively. In the table below, “upper quartile” refers to the top performing businesses within an industry in terms of net profit ratios, specifically those in the top 25 percent. “Lower quartile” refers to businesses with the lowest net profit ratios.

<b>TABLE 18</b>			
<b>Net Profit Ratios: Dun and Bradstreet 1992-2002</b>			
Description	SIC Code	Level	10-year avg.
		Upper Quartile	14.9
General farms, primarily crops	0191	Median	5.9
		Lower Quartile	1.2
		Upper Quartile	6.0
Beef cattle feedlots	0211	Median	2.7
		Lower Quartile	1.0
		Upper Quartile	18.4
Beef cattle, except feedlots	0212	Median	5.6
		Lower Quartile	-2.3
		Upper Quartile	9.3
Hogs	0213	Median	2.9
		Lower Quartile	-2.5
		Upper Quartile	11.1
Dairy farms	0241	Median	3.7
		Lower Quartile	0.4
Source: Dun and Bradstreet			

### **5.5 ECONOMIC CHARACTERISTICS OF AFFECTED SOURCES**

Table 18 through 20 apply the ten-year average after tax net profit ratio discussed above to industries affected by Rule 4750, to generate an economic profile of affected industries in the region in terms of their respective numbers, employment, revenue, and net profits.

Table 18 shows that there are approximately 1,500 dairy farmers operating in the eight-county region, and these farmers employ an estimated 16,800 workers.<sup>2</sup> These dairy farms recorded \$4.3 billion in value, off of which \$266 million in net profits was generated. It is important to note that the economic activity tracked in Table 18 involved milk production, not purchase or sale of dairy cows. Table 19 tracks transactions involving the sale of cattle in general and beef cattle in particular.

The cattle industry in the region is not as large as dairy, employing less number of workers and generating less revenues and net profit (see Table 19). The beef cattle and other cattle industry employ an estimated 10,474 workers in the region, out of 18,144 who are employed throughout the state. It should be noted that official statistics from the California Employment Development Department (EDD) show that in all of California there are approximately 861 cattle farms and, in the eight-county region, 235. However, the USDA Agricultural Census 2002 indicated that there were 17,380 and 5,860 cattle farms in the state and region respectively in the year 2002. Projecting to 2004 based on California EDD growth patterns between 2002 and 2004, we estimate that there are 16,212 cattle farms in the state and 5,290 in the region. The discrepancy between the EDD and Agricultural Census data sets is important as it bears on the number of workers employed in the cattle industry. The discrepancy is largely attributable to the fact that the California EDD organizes its data by the primary activity an establishment is engaged in. So, if cattle farming is a secondary activity of a farm establishment that is primarily engaged in, say, wheat farming, the California EDD will place this company in wheat farming industry

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<sup>2</sup> The California Employment Development Department (EDD) show that in all of California there are approximately 1,600 dairy farms and, in the eight-county region, 1,141 dairy farms. However, the USDA field office in California, which annually publishes a report called, "California Agricultural Statistics," indicates that there are 1,500 dairy farms operating in the region, and 2,104 in the state as a whole. The discrepancy is largely attributable to the fact that the California EDD organizes its data by the primary activity establishment is engaged in. So, if dairy production is a secondary activity of an establishment that is primarily engaged, say, wheat farming, the California EDD will place this company in wheat farming industry cluster. On the other hand, both the USDA and the US Agricultural Census will place this establishment in both dairy and wheat industry groups.

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group. On the other hand, US Agricultural Census will place this establishment in both dairy and wheat industry groups. In estimating the number of workers based on both the California EDD and US Agricultural Census data sets, we do not simply apply the ratio of cattle workers to cattle farms in the EDD dataset to the number of farms in the Agricultural Census data set, as this would overestimate the number of workers because approximately twenty of the farms engaged in cattle activity actually hire workers. Thus, we estimate that there are approximately 10,474 workers employed in beef cattle and other cattle operations in the region, not 2,623 as indicated by the California EDD. In addition to employment, Table 20 includes revenue and net profit estimates for operators in the region and state.

Table 20 shows trends in the swine industry in the region and state. There are approximately 313 farms operating in the region and 1,485 in the state as a whole, suggesting that swine farm operations occurs largely outside of the eight-county region.

**TABLE 19**  
**Dairy Industry Profile: San Joaquin Valley Region and the State, 2004**

	Dairies	Emp (est)	Aggregate Wages	Dairy Cows (est)	Production (Cwt)	Value	Value/Cwt	Est. Net Profit
California	2,104	21,228	\$532,980,310	1,735,800	358,445,714	\$5,304,938,310	\$14.73	\$326,480,174
Region	1,500	16,805	\$417,710,983	1,406,106	292,249,472	\$4,321,127,613	\$14.72	\$265,933,817

Source: USDA, NASS Field Office, "California Agricultural Statistics 2004", California Agricultural Commissioners, and USDA ERS

**TABLE 20**  
**Cattle Industry Profile: San Joaquin Valley Region and the State, 2004**

	Cattle Operations	Employment	Aggregate Wages	Nos. of heads	Value	Value per head	Est. Net Profit
California	16,212	18,144	\$462,496,692	5,400,000	\$2,461,336,892	\$456	\$121,022,378
Region	5,290	10,474	\$271,741,535	2,414,167	\$1,461,529,000	\$605	\$61,384,218

Source: California Agricultural Commissioners (number of cattle [head] and value), US Ag Census 2002 (cattle farms), Ca EDD (establishments, employment and wages) and DnB (net profit)

**TABLE 21**  
**Swine Industry Profile: San Joaquin Valley Region and the State, 2004**

	Swine Farms	Employment	Aggregate Wages	Hogs sold	Aggregate Value	Value per head	Est. Net Profit
California	1,485	4,137	\$106,844,324	352,000	\$39,293,974	\$112	\$1,139,525
Region	313	872	\$22,526,459	337,983	\$32,140,630	\$95	\$932,078

Source: California Agricultural Commissioners (number of hogs [head] and value), US Ag Census 2002 (hog farms), Ca EDD (establishments, employment and wages), DnB (net profit) and USDA ERS (net profits)

## **6. SOCIOECONOMIC IMPACTS**

This section of the report compares the economic characteristics of affected industries against the compliance costs. The first part of this section discusses annual compliance costs. Section 6.2 discusses general business responses to compliance costs. Section 6.3 analyzes the socioeconomic impacts of Draft Rule 4750.

### **6.1 COMPLIANCE COST ESTIMATES**

Table 21 below identifies annual costs associated with Draft Rule 4570. The table summarizes costs estimates based on data provided by the San Joaquin Valley Unified Air Pollution Control District. For detailed discussion on the cost estimates, we direct your attention to a report issued by the District called "Appendix C: Cost Effectiveness Analysis for Rule 4570."

<b>TABLE 22 Socioeconomic Impact Analysis: Annual Cost of Compliance</b>		
		<b>Total Annual Compliance Costs</b>
Swine CAF		\$540
Dairy CAF		\$18,324,074
Beef CAF		\$590,112
Other Cattle CAF		\$7,147,266
Source: Applied Development Economics, based on San Joaquin Valley Unified Air Pollution Control District and Industry		

By far, the largest cost involved with Rule 4570 will be borne by dairy operators. This section of the report discusses the methodology employed in calculating costs borne by affected dairy farms. The same methodology was used for beef feedlots, other cattle facilities, and swine facilities.

First, we need to consider how many dairies farms and milk and other cows will be subject to the rule. There are approximately 1,500 dairy farms in the region and, of these, 430 are subject to the rule. And, of the 430 dairy farms, 233 are out of compliance and will have to implement measures in Rule 4570. Since 54 percent ( $233 \div 430 = 54\%$ ) of the large dairy CAFs are out of compliance,



District staff assumed that 54 percent of the animals at the large dairy CAFs are at facilities that will need to implement additional mitigation measures. This means that 494,177 milk cows; 79,068 dry cows; and 444,759 other support cows, for a total of 1,018,004 animals cows of varying sizes and ages are housed at facilities that will be affected by the rule requirements. The District estimates the overall cost of the Dairy CAF at \$18.00 per head of cow. In calculating this figure, the District included some cost activities that are attributable only to milk cows and not to support cows. This was taken into account when we determine that the average cost per head of cows on the facility was \$18.00. The \$18.00 per head was multiplied by the total dairy cows at facilities that are not in compliance (1,018,004 cows). Thus, we arrive at the annual cost of compliance figure of \$18,324,000 for the Dairy CAF portion of Rule 4570.

## **6.2 BUSINESS RESPONSES TO COMPLIANCE COSTS**

Industries impacted by the draft 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 affected business operation altogether and, where practical, shift from lower-value to higher-value product and or crop. Affected sources may also seek to renew efforts to increase productivity and reduce costs elsewhere in their operation in order to recoup the regulatory costs and maintain profit levels. It is important to note that agriculture in general, and livestock products in particular, are “price takers”, meaning that they have little ability to set price of their goods, and little ability to pass on costs to the consumer. As prices of basic goods like beef increase, consumers may switch to other products, such as poultry. Alternatively, consumers might continue to buy beef, but they may switch to products from other regions or states that could be less expensive.

## **6.3 IMPACTS ON AFFECTED INDUSTRIES**

This section of the report analyzes estimated after tax net profits of affected industries against anticipated costs associated with implementation of the draft rule. The net profit of affected sources was calculated by multiplying the total net profit of the industry in the San Joaquin Valley (from Table 18, 19, and 20) by the percent of animals at facilities subject to the rule. The results of these calculations are shown in Table 22.

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	<b>Percent of Animals at Facilities Subject to Rule 4570</b>	<b>Total Profits from the Industry</b>	<b>Estimated Net Profit of Affected Sources</b>
Dairy	72%	\$265,933,817	\$191,472,348
Cattle	95%	\$60,653,454	\$57,620,781
Beef	95%	\$4,790,808	\$4,551,268
Other Cattle	95%	\$55,862,645	\$53,069,513
Swine	57%	\$932,078	\$531,284

The estimated annual compliance costs used in this analysis were provided to ADE by District staff and stakeholders. Table 23 below compares the total annual compliance costs discussed above against estimated net profits of stakeholders that will be subject to the rule shown in Table 22.

	<b>All AFOs</b>	<b>Affected AFOs</b>	<b>Est. Net Profit of Affected Sources</b>	<b>Annual Cost</b>	<b>Annual Cost As % Net profits</b>
Dairies	1,500	233	\$191,472,348	\$18,324,074	9.6%
Cattle	5,290	11	\$57,620,781	\$8,327,490	14.5%
Beef		6	\$4,551,268	\$590,112	13.0%
Other Cattle		5	\$53,069,513	\$7,147,266	13.5%
Swine\Hogs	313	3	\$531,284	\$540	0.1%
Poultry	NA	NA	NA	NA	NA

Sources: Applied Development Economics, based on California Agricultural Commissioners, US Ag Census 2002, Ca EDD, DnB and ESDA ERS

Both beef cattle operators and other cattle operators are impacted by the rule, as their annual costs of \$590,112 and \$7.1 million amounts to 13 percent and 13.5 percent of net profits, or three to four percentage points above the significance threshold. Table 23 shows that the rule can result in a loss of 9.6 percent of net profits of affected dairy operators, \$18 million in annual compliance costs out of \$191 million in estimated annual profits. This impact is below the ten percent threshold of significance employed for the purposes of evaluating the impact of air quality rules. Swine and poultry producers are also not impacted by the rule in any significant manner.

Table 24 includes direct employment impacts associated with the amount of impacts on profits above the threshold of significance.

Because of the way in which one business in one industry interacts through buyer and supplier relations with businesses in the same or other industries, we also need to understand the indirect and what are called induced impacts associated with the draft rule. Using the IMPLAN Impro Professional input-output model, the consultant estimated the multiplier impacts associated with the cost of compliance above the threshold of significance, looking particularly at two measures – employment and industry output. These measures are defined as follows:

- **Employment** indicates the number of jobs lost given the level of compliance cost. This employment total includes self-employment.
- **Industry output** represents the sum of all economic activity lost by affected industries and ancillary activities. This activity includes all commodity inputs, labor income, property income, and other value added components.

The multiplier impacts for these measures come from the Type II multipliers. These multipliers include the direct, indirect, and induced impacts. These multiplier descriptions are summarized below.

- **Direct impacts** represent the jobs losses and other economic impacts that are directly related to costs associated by affected industries as a result of implementation of the draft rule.
- **Indirect impacts** represent the jobs and other economic effects that will potentially be lost elsewhere in the eight-county region as a result of the direct impacts on affected industries resulting from the draft rule. These indirect impacts result from supplier purchases.
- **Induced impacts** represent the economic losses associated with reductions in household purchases tied to direct and indirect employment losses in the region. These induced impacts most typically occur in retail and other local-serving industry categories such as personal services, education, and health care.

Table 24 shows the direct, indirect and induced employment impacts associated with annual cost of compliance resulting from Draft Rule 4570. In addition to the direct loss of 17 workers in the other cattle industry, there will be an indirect loss of 17 additional workers in businesses with whom affected cattle producers engage in buyer-

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supplier relations. The direct loss of 17 and the indirect loss of another 17 workers, in turn, will induce the loss of another 6.4 workers, mainly those who are employed in retail and services. Thus, the total number of jobs lost as a result of the costs associated with Draft Rule 4570 amounts to 40.4 workers, or less than 0.1 percent of the number of people employed by the cattle industry in the region.

**TABLE 25**  
**Socioeconomic Impact Analysis: Rule 4570**

Scenario		Direct Impacts	Indirect Impacts	Induced Impacts	Total Impacts
Dairy	Industry Output Impacts	-- below sig. --	-- below sig. --	-- below sig. --	-- below sig. --
	Employment Impacts	-- below sig. --	-- below sig. --	-- below sig. --	-- below sig. --
Cattle	Industry Output Impacts	\$1,975,300	\$1,806,328	\$415,641	\$4,197,269
	Employment Impacts	17	17	6.4	40.4
Beef	Industry Output Impacts	\$134,985	\$123,438	\$28,403	\$286,827
	Employment Impacts	1	1	0.4	2.4
Other Cattle	Industry Output Impacts	\$1,840,315	\$1,682,890	\$387,238	\$3,910,442
	Employment Impacts	16	16	5	38
Swine	Industry Output Impacts	-- below sig. --	-- below sig. --	-- below sig. --	-- below sig. --
	Employment Impacts	-- below sig. --	-- below sig. --	-- below sig. --	-- below sig. --
Poultry	Industry Output Impacts	NA	NA	NA	NA
	Employment Impacts	NA	NA	NA	NA

Source: Applied Development Economics, based on San Joaquin Valley Unified Air Pollution Control District and Industry

## 6.4 IMPACT ON SMALL BUSINESSES

In addition to analyzing the employment impacts of Draft Rule 4570, state legislation requires that the socioeconomic analysis assess whether small businesses are disproportionately affected by air quality rules. This section begins by briefly summarizing how the state government defines small businesses for the purposes of qualifying certain businesses for various programs. This section concludes with a discussion as to whether the affected industries include small businesses and assesses whether those small businesses are disproportionately impacted by the new rules.

### DEFINITION OF A SMALL BUSINESS

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

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small businesses in the following manner<sup>3</sup>. 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.

Based on conversation with District staff, who know the dairy and cattle companies impacted by the rule, we conclude that Rule 4570 does not disproportionately impact small business sources.

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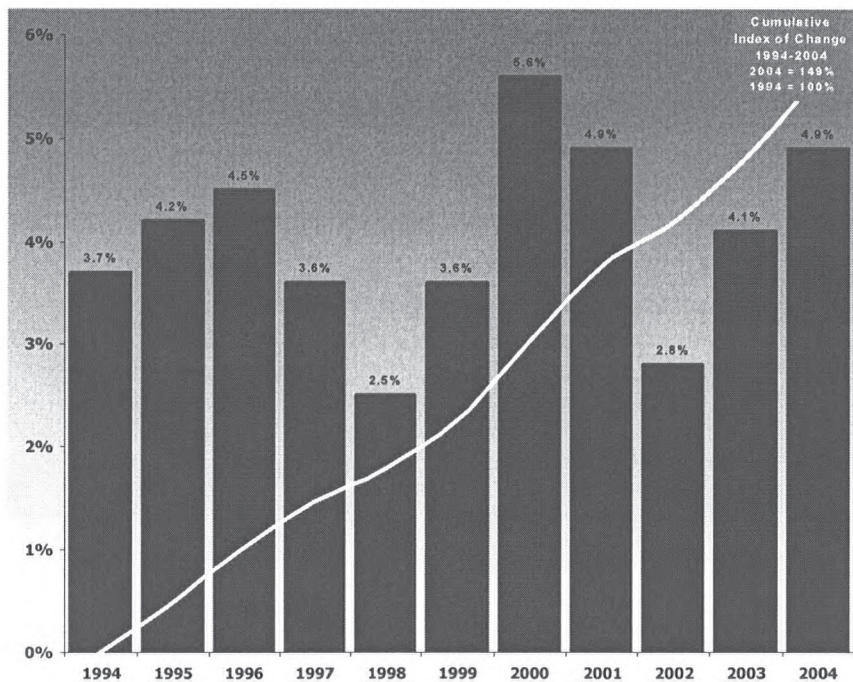
<sup>3</sup> State of California. Department of General Services. "California Small Business Certification" (<http://www.pd.dgs.ca.gov/smbus/sbcert.htm>)



**ATTACHMENT A**

Figure A below shows the rate at which the nominal price of a good should change from one year to the next, if it is to hold its value in inflation-adjusted terms. Most importantly, this chart allows us to compare revenue data that was issued in 2004 against data that was issued in previous years, particularly 1994 and 1999.

**FIGURE A**  
**United States Bureau of Labor Statistics:**  
**Consumer Price Index (US Urban Wages), 1994-2004**



To maintain its inflation-adjusted value between 1994 and 1995, the price-tag of the \$1.00 good in 1994 should read \$1.042 one year later, due to 1994 to 1995 inflation of 4.2%. Over the course of a longer period, such as 1994 to 2004, the price-tag value of something that was \$1.00 in 1994 should read \$1.49, when converting 1994 data in 1994 dollars into 2004 dollars.



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In short, if 1994 data indicating the value of something is \$1.00 is compared against 2004 data that indicates the value of the same good is, say, \$1.55, the correct comparison is not between \$1.00 (1994) and \$1.55 (2004). Rather, the correct comparison is between \$1.49 (1994 in 2004 dollars) and \$1.55 (2004), for a difference of \$.06 as opposed to \$.55. Analyses that do not account for inflation run the risk of conveying less than accurate descriptions of economic trends, oftentimes resulting in an overstatement of the magnitude of change that occurred between two points in time.

While accounting for inflation for analytical purposes is fairly straightforward, there are a number of other worthy considerations. It should be noted that businesses can not simply raise prices (change price tags as it were) to keep up with inflation. Upward shifts in prices from one year to the next could result in disproportionate reduction in sales. Many mass produced consumer goods compete primarily on price. Central Valley wine, for example, competes largely on price -- while Wine Country wines compete on quality and price, meaning that consumers are more willing to spend more for quality wines from Napa, Marin, and Sonoma Counties. The same is not true for low-cost wine. As prices of these goods increase, consumers look to other low-cost substitutes, perhaps imports from Australia, in the case of low-cost wines. In the case of meats, unit increases in red meat may trigger shifts in consumption away from meat toward poultry, which typically costs less.<sup>4</sup>

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<sup>4</sup> While many businesses cannot adjust their prices to account for inflation for reasons related to market share and profitability, this is not entirely the case for all businesses and industries. While businesses prefer higher prices that do not trigger losses in sales, many businesses are happy to sell goods at their previous year's price if productivity gains allow these companies to still generate a profit. Companies that sell at prices similar to the previous year can mitigate inflation risks and generate profit through improved supply chain management, or other innovations, such as adoption of better technologies or marketing strategies. Labor costs and other material input costs can also be held low to gain efficiencies in production

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