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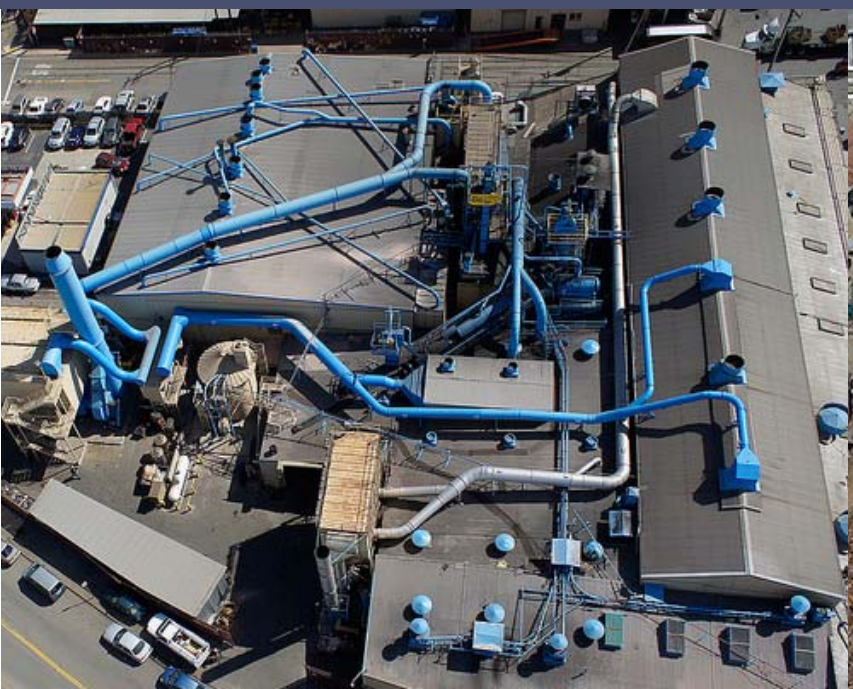
Socio-Economic Impact Study of the Proposed Bay Area 2012 Clean Air Plan, Control Measure SSM-1, Regulation 12: Miscellaneous Standards of Performance, Rule 13: Foundry and Forging Operations and Regulation 6: Particulate Matter, Rule 4: Metal Recycling and Shredding Operations

Submitted to: Bay Area Air Quality Management District

February, 2013



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EXECUTIVE SUMMARY

Description of Proposed Rule

The Bay Area Air Quality Management District (BAAQMD) proposes to enact Regulation 12, Rule 13 (Rule 12-13) to limit fugitive emissions from foundries and forging operations, and Regulation 6, Rule 4 (Rule 6-4) to limit particulate emissions from facilities engaging in metal recycling and shredding.

Foundries, forging operations, and metal recycling and shredding operations are sources of emissions of particulate matter ("PM," including toxic metals that are toxic air contaminants), VOC (including toxic and odorous substances), and other pollutants. While many of these facilities comply with current District rules and regulations and some facilities must comply also with federal rules that set emission limits for toxic compounds, the District has received public complaints of odors from some facilities. Some of these facilities also raise concern with respect to PM emissions (including toxic metal particulates), particularly when in close proximity to residential areas (with most being located within or near Community Air Risk Evaluation (CARE) program designated areas). BAAQMD staff has evaluated these industrial sectors and concluded that PM (including toxic metals) and odorous substance emissions may be further reduced through the implementation of procedures specific to each facility aimed at reducing fugitive emissions of these pollutants.

Both of these proposed rules would rely on the implementation of management procedures through the development of Emissions Minimization Plans (EMP) to minimize emissions. The reliance on the development of an EMP allows each facility to tailor its approach to reducing or minimizing emissions to the unique conditions and configuration of its affected operations. Development of an EMP also encourages innovation and challenges the industry to look for more efficient, cost-effective methods of emissions control, minimization, and prevention. Further, requiring the development of and compliance with an EMP also allows an exchange of information via the District's review and recommendations on the procedures received and through discussions with the affected industries.

Each of these facilities is distinct from the others in its operations, configuration, and location. As a result, BAAQMD is not attempting to describe the exact emissions minimization measures that might be put in place for each establishment. Instead, the operator of each facility will be required to evaluate its own operations and conditions to determine what is best to reduce fugitive emissions from an operational and cost perspective.

As a result, BAAQMD has developed case studies describing a range of potential measures which do not necessarily represent the costs each facility would incur, but they are analyzed here to provide a general idea of the order of magnitude of the costs relative to the estimated revenues and profit levels for these facilities. The case study examples of emissions minimization measures that might be employed are as follows:

1. Minimization of Air Drafts for Metal Finishing Operations
2. Upgrading PM10 Emissions Capture and Control Systems at a Foundry
3. Shakers to Reduce Trackout onto Public Roadways
4. Reducing Fugitive PM10 Emissions from Transfer Operations at a Metal Recycling Facility
5. Dust Control for Open Spaces and Stockpiles Using Industrial Misters
6. Erecting Screened Fences as Wind Barriers
7. Switching to Lower VOC Binder Formulation

The first two measures and measure seven would be applicable for the foundries and forging businesses; measures three through five would apply to the scrap recycling facilities, and measure six could be applicable for either category of facility.

Socio-Economic Impacts

In order to estimate the economic impacts of enacting Rule 12-13 and Rule 6-4 on the affected industries, this report compares the annualized compliance costs for these industries with their 10-year average profit ratio. The analysis uses data from the BAAQMD, Dun & Bradstreet, InfoUSA, company annual reports and SEC filings, the Internal Revenue Service (IRS), and BAAQMD.

Economic Profile of Affected Industries

According to BAAQMD, the following establishments would be affected by proposed Rule 12-13:

Name	City	NAICS
Custom Alloy Scrap Sales, Inc. (CASS)	Oakland	331314
AB&I Foundry	Oakland	331511
US Pipe and Foundry Co.	Union City	331511
Pacific Steel Casting	Berkeley	331513
USS-POSCO Industries	Pittsburg	331221

These establishments are all in NAICS 331, Primary Metal Manufacturing. Three of them are in NAICS 3315, Foundries. By six-digit NAICS, two of these are NAICS 331511, Iron foundries,

and one is in NAICS 331513, Steel foundries (except investment). One of the others is in NAICS 331314, Secondary smelting and alloying of aluminum, and the remaining establishment is in NAICS 331221, Rolled steel shape manufacturing.

The following establishments would be affected by proposed Rule 6-4:

Name	City	NAICS
SIMS Metals	Redwood City	423930
SIMS Metals	Richmond	423930
Schnitzer Steel	Oakland	423930

These establishments are all in NAICS 423930, Recyclable Material Merchant Wholesalers.

Economic Impacts on Affected Industries

Available data indicate that the annualized compliance costs for each of the following measures are below the threshold of 10 percent of profits for all locations considered for each of the following measures:

- Minimization of Air Drafts for Metal Finishing Operations
- Shakers to Reduce Trackout onto Public Roadways
- Reducing Fugitive PM10 Emissions from Transfer Operations at a Metal Recycling Facility
- Switching to Lower VOC Binder Formulation

Annualized compliance costs for the following measure is above the 10 percent burden threshold for all locations considered:

- Dust Control for Open Spaces and Stockpiles Using Industrial Misters

For each of the following measures, the results relative to the cost threshold were mixed, with some locations above and some below the threshold:

- Upgrading PM10 Emissions Capture and Control Systems at a Foundry
- Erecting Screened Fences as Wind Barriers

For Case Study 2, Upgrading PM10 Emissions Capture and Control Systems at a Foundry, four of the five facilities showed costs above the 10 percent threshold; only the larger USS-POSCO facility was below the threshold. For Case Study 6, Erecting 22' Screened Fences as Wind Barriers, three of the eight establishments were below the 10 percent threshold.

It should be noted that as case studies, costs in some cases are based on certain assumptions about sizing, but in reality the costs might vary based on the needs of a particular facility, e.g., the size of a fenced yard might vary from that assumed here.

Regional Employment, Indirect, and Induced Impacts

While some of the case study solutions appear to have compliance costs that are greater than 10 percent of annual profits, the structure of these rules is driven by the EMP, which would be developed by each business and as such, would exclude solutions that are not considered financially feasible by the business itself or determined to be financially feasible by the District. As a result, no employment impacts are anticipated due to implementation of these rules, either direct, indirect, or induced.

Impacts on Small Businesses

Using the California Government Code 14835's definition of a small business, most of these establishments are not independently owned, or are too large to quality as small businesses under these criteria. The one exception might be Custom Alloy Scrap Sales; the Oakland site is their primary location and based on available data, it would qualify as a small business if this were their only site, but the company has smaller branch locations that appear to put it over the employment and gross receipts thresholds.

DESCRIPTION OF PROPOSED RULE

The Bay Area Air Quality Management District (BAAQMD) proposes to enact Regulation 12, Rule 13 (Rule 12-13) to limit fugitive emissions from foundries and forging operations, and Regulation 6, Rule 4 (Rule 6-4) to limit particulate emissions from industries engaging in metal recycling and shredding. These rules would take effect twelve months following adoption.

Foundry and forging operations and metal recycling and shredding operations are sources of emissions of particulate matter ("PM," including toxic metals that are toxic air contaminants), VOC (including toxic and odorous substances), and other pollutants. While many of these facilities comply with current District rules and regulations and some facilities must comply also with federal rules that set emission limits for toxic compounds, the District has received public complaints of odors from some facilities. Some of these facilities also raise concern with respect to PM emissions (including toxic metal particulates), particularly when in close proximity to residential areas (with most being located within or near Community Air Risk Evaluation (CARE) program designated areas). BAAQMD staff has evaluated these industrial sectors and concluded that PM (including toxic metals) and odorous substance emissions may be further reduced through the implementation of procedures specific to each facility aimed at reducing fugitive emissions of these pollutants.

Both of these proposed rules would rely on the implementation of management procedures through the development of Emissions Minimization Plans (EMP) to minimize emissions. The reliance on the development of an EMP allows each facility to tailor its approach to reducing or minimizing emissions to the unique conditions and configuration of its affected operations. Development of an EMP also encourages innovation and challenges the industry to look for more efficient, cost-effective methods of emissions control, minimization, and prevention. Further, requiring the development of and compliance with an EMP also allows an exchange of information via the District's review and recommendations on the procedures received and through discussions with the affected industries.

Proposed Rule 12-13

At foundries and forging facilities, the casting of molten metals is the primary emission source of PM and odorous substances, defined as phenols and phenolic compounds. Rule 12-13 would address fugitive emissions from several general processes of metal melting and casting and associated operations. These emissions occur when the hot molten metals contact the molds and cores that are often formulated with binders that contain organic compounds, phenols and phenolic compounds that are detectable at concentrations of less than one part

per million. Emissions also occur from associated operations such as scrap handling, mold and core making, shakeout and recycling and cast metal part blasting and finishing.

Rule 12-13 would affect the facilities that either melt metals (foundries) or heat treat metals (forges). The rule would apply to metal melting and processing operations that require a District permit. Facilities with an annual metal throughput (metal charged to a furnace or heated in an oven) of 1,000 tons or more would be subject to all of the requirements of the rule; those facilities with a throughput between than one and 1,000 tons would only be required to keep records on their annual metal throughput. This applicability would address those facilities with the greatest potential for emissions of PM and odorous substances.

Rule 12-13 would contain no emissions limits. The District would rely upon the emissions limits already contained in Regulation 11: Hazardous Pollutants, Rule 15: Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting and applicable federal rules (NESHAPs) that affect metal melting operations. Rule 12-13 would require affected facilities to develop and submit to the District for approval an Emissions Minimization Plan (EMP) that would detail the practices that have been or will be implemented to minimize fugitive emissions.

Proposed Rule 6-4

Operations at metal recycling facilities result in the emissions of PM and visible emissions from metal management and shredding operations, including handling of resultant shredder residue.

Rule 6-4 would focus on reducing fugitive emissions from metal recycling facilities that compile, shred, and sort scrap metal for resale, including metal management and shredding operations, including minimization of automotive shredder residue (ASR) or "fluff." Rule 6-4 would apply to scrap metal recycling facilities that receive at least 1,000 tons of scrap metal per year. Metal recycling facilities with an annual metal throughput of 50,000 tons of more would be subject to the general requirements of the rule; those recycling facilities with an annual metal throughput between 1,000 and 50,000 tons would only be required to keep records of their annual metal throughput.

Like Rule 12-13, Rule 6-4 does not contain emission limits. There are no federal NESHAPs that apply to this industry, with the exception of the Subpart T—National Emission Standards for Halogenated Solvent Cleaning and the Subpart B—Servicing of Motor Vehicle Air Conditioners for refrigerants which are currently addressed in District Regulation 8, Rule 16: Solvent Cleaning Operations and Regulation 12, Rule 7: Motor Vehicle Air Conditioner

Refrigerant, respectively. These rules would only apply to these facilities if they operate solvent cleaning apparatus using one of the six regulated chemicals, or if they remove air conditioning refrigerant from automobiles. However, the shredding operations are subject to California state regulations under the Department of Resources Recycling and Recovery (CalRecycle), the Department of Toxics Substances Control and the Water Resources Control Board, often enforced through Certified Unified Program Agencies (CUPA). The facilities are also subject to District Regulation 6, Rule 1: Particulate Matter, General Requirements, and have permit limits that address process PM emissions from these operations.

Rule 6-4 would require affected facilities to develop and implement an EMP that would detail the practices and equipment that have been or will be implemented to minimize fugitive emissions involving a variety of operations, areas, and materials:

1. Roadways and other trafficked areas;
2. Metal Management, including:
    a. Receipt of scrap from providers,
    b. Handling and storage operations,
    c. Crushing operations,
    d. Sorting operations,
    e. Shredding / hammermill operations;
3. Auto shredder residue;
4. Depollution Activities, the removal of materials such as
    a. Lead batteries;
    b. Polychlorinated Biphenyl capacitors;
    c. Mercury switches; and
    d. Sodium Azide canisters.

REGIONAL TRENDS

This section provides background information on the demographic and economic trends for the San Francisco Bay Area, which represents the BAAQMD's District. The San Francisco Bay Area includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties. Regional trends are compared to statewide demographic and economic patterns since 2000, in order to show the region's unique characteristics relative to the State.

Regional Demographic Trends

Table 1 shows the population and household trends for the nine county Bay Area and California between 2000 and 2012. During this time, the Bay Area's population increased by 6.9 percent, compared to 11.2 percent for California statewide. Likewise, the number of Bay Area households grew by 6.2 percent, compared to a 9.8 percent statewide increase.

Table 1: Population and Household Trends, 2000-2012

Bay Area (a)	**2000**	**2012**	**Total Change 2000-2012**	**% Change 2000-2012**
Population	6,784,348	7,249,563	465,215	6.9%
Households	2,466,020	2,620,012	153,992	6.2%
Average Household Size	2.69	2.71		
California				
Population	33,873,086	37,678,563	3,805,477	11.2%
Households	11,502,871	12,633,403	1,130,532	9.8%
Average Household Size	2.87	2.92		

Notes:
(a) Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties.

Sources: California, Department of Finance, 2012; US Census, 2000; BAE 2012.

The slower growth in the Bay Area is tied to its relatively built out environment, compared to the state overall. While Central Valley locations, such as the Sacramento region, experienced large increases in the number of housing units, the Bay Area only experienced moderate increases in housing units.

Regional Economic Trends

In the five-year period between 2006 and 2011, the Bay Area's employment base shrank by 4.8 percent, decreasing from 3.29 million jobs to 3.12 million jobs (see Table 2). This represented slightly smaller percentage job loss than the State, where the number of jobs shrank by over six percent.

The largest non-government sectors in the Bay Area economy are Manufacturing; Professional, Scientific, & Technical Services; and Healthcare & Social Assistance. Each of these sectors constituted 10 percent or more of the region's total jobs in 2011. Over the five-year period the Manufacturing sector lost 9.5 percent of its jobs, but the Professional, Scientific, & Technical Services sector grew by 8.0 percent, and the Healthcare & Social Assistance sector grew by 9.8 percent. Statewide, Manufacturing declined by 16.3 percent, while the Professional, Scientific, & Technical Services and Healthcare & Social Assistance sectors grew by 2.4 and 12.2 percent, respectively. Overall, the Bay Area's economic base largely reflects the state's base, sharing a similar distribution of employment across sectors. Table 2 shows the jobs by sector in 2006 and 2011.

The industries affected by Rule 12-13 fall in the Manufacturing sector, which makes up ten percent of the region's job base. This sector contracted over the five-year period, with its percentage share of overall employment declining very slightly (less than one percent). Those industries affected by Rule 6-4 fall in the Wholesale Trade sector, which accounts for 3.6 percent of the region's job base. This sector's share of employment also fell negligibly over the 2006 to 2011 period (less than half a percent). The decrease in overall jobs in these sectors follows the recent national trends of the Great Recession, while decreases in the share of local manufacturing jobs also mirrors long-term national trends reflecting manufacturing's reduced presence in the economy.

Table 2: Jobs by Sector, 2006-2011 (a)

Industry Sector	Bay Area 2006 (b) Jobs	Bay Area 2006 (b) % Total	Bay Area 2011 (c) Jobs	Bay Area 2011 (c) % Total	Bay Area % Change 2006-2011	California 2006 (b) Jobs	California 2006 (b) % Total	California 2011 (c) Jobs	California 2011 (c) % Total	California % Change 2006-2011
Agriculture	20,200	0.6%	18,800	0.6%	-6.9%	375,200	2.4%	385,300	2.7%	2.7%
Mining and Logging	2,200	0.1%	2,100	0.1%	-4.5%	25,100	0.2%	28,500	0.2%	13.5%
Construction	188,600	5.7%	125,800	4.0%	-33.3%	933,700	6.0%	553,700	3.8%	-40.7%
Manufacturing	344,100	10.5%	311,400	10.0%	-9.5%	1,488,000	9.6%	1,245,800	8.6%	-16.3%
Wholesale Trade	126,500	3.8%	113,200	3.6%	-10.5%	702,500	4.6%	659,000	4.6%	-6.2%
Retail Trade	339,500	10.3%	310,100	9.9%	-8.7%	1,680,100	10.9%	1,532,000	10.6%	-8.8%
Transportation, Warehousing, and Utilities	100,100	3.0%	89,700	2.9%	-10.4%	496,100	3.2%	471,900	3.3%	-4.9%
Information	112,000	3.4%	116,600	3.7%	4.1%	466,000	3.0%	432,400	3.0%	-7.2%
Finance and Insurance	145,200	4.4%	117,500	3.8%	-19.1%	639,300	4.1%	516,000	3.6%	-19.3%
Real Estate and Rental and Leasing	54,300	1.7%	46,500	1.5%	-14.4%	288,500	1.9%	245,500	1.7%	-14.9%
Professional, Scientific, and Technical Services	308,300	9.4%	332,900	10.6%	8.0%	1,026,500	6.7%	1,051,600	7.3%	2.4%
Management of Companies and Enterprises	52,800	1.6%	57,400	1.8%	8.7%	212,600	1.4%	199,200	1.4%	-6.3%
Administrative and Waste Services	187,100	5.7%	161,700	5.2%	-13.6%	1,003,300	6.5%	875,600	6.1%	-12.7%
Educational Services	73,400	2.2%	85,600	2.7%	16.6%	277,600	1.8%	326,300	2.3%	17.5%
Health Care and Social Assistance	295,300	9.0%	324,300	10.4%	9.8%	1,343,800	8.7%	1,507,300	10.4%	12.2%
Arts, Entertainment, and Recreation	33,800	1.0%	34,500	1.1%	2.1%	245,200	1.6%	244,100	1.7%	-0.4%
Accommodation and Food Services	207,700	6.3%	217,000	6.9%	4.5%	1,273,800	8.3%	1,286,200	8.9%	1.0%
Other Services, except Public Administration	109,600	3.3%	110,400	3.5%	0.7%	507,100	3.3%	486,900	3.4%	-4.0%
Government (d)	477,700	14.5%	449,600	14.4%	-5.9%	2,452,300	15.9%	2,398,700	16.6%	-2.2%
Subtotal (e)	**3,178,300**	**96.7%**	**3,024,700**	**96.7%**	**-4.8%**	**15,435,500**	**100.0%**	**14,445,700**	**100.0%**	**-6.4%**
Additional Suppressed Employment (f)	107,900	3.3%	103,600	3.3%	-4.0%	n/a	n/a	n/a	n/a	
Total, All Employment (e)	**3,286,200**	**100.0%**	**3,128,300**	**100.0%**	**-4.8%**	**15,435,500**	**100.0%**	**14,445,700**	**100.0%**	**-6.4%**

Notes:
(a) Includes all wage and salary employment.
(b) Represents annual average employment for calendar year 2006.
(c) Represents annual average employment for calendar year 2011.
(d) Government employment includes workers in all local, state and Federal workers, not just those in public administration. For example, all public school staff are in the Government category.
(e) Totals may not add due to independent rounding.
(f) County employment for some industries in some counties was suppressed by EDD due to the small number of firms reporting in the industry for a given county.

Sources: California Employment Development Department, 2011; BAE, 2012.

Affected Industries

Rule 12-13

According to BAAQMD, the following establishments would be affected by proposed Rule 12-13:

Name	City	NAICS
Custom Alloy Scrap Sales, Inc. (CASS)	Oakland	331314
AB&I Foundry	Oakland	331511
US Pipe and Foundry Co.	Union City	331511
Pacific Steel Casting	Berkeley	331513
USS-POSCO Industries	Pittsburg	331221

These establishments are all in NAICS 331, Primary Metal Manufacturing. Three of them are in NAICS 3315, Foundries. By six-digit NAICS, two of these are NAICS 331511, Iron foundries, and one is in NAICS 331513, Steel foundries (except investment). One of the others is in NAICS 331314, Secondary smelting and alloying of aluminum, and the remaining establishment is in NAICS 331221, Rolled steel shape manufacturing.

According to the estimates derived from the US Census, in 2010, the Bay Area had 70 primary metal manufacturing establishments that accounted for 2,553 jobs (see Table 3). Dividing the total jobs by the number of establishments shows that on average, each establishment employed 36 workers. Within the specific six-digit NAICS codes, there were only a limited number of establishments; two establishments in NAICS 331221, two establishments in NAICS 331314, seven establishments in NAICS 331511, and six in NAICS 331513. However, BAAQMD staff indicated that only the five listed establishments will be impacted by the plan requirements of proposed Rule 12-13. It appears that some of specific businesses listed above are classified under other NAICS codes in County Business Patterns; for instance, County Business Patterns lists no establishments in Contra Costa County for NAICS 331221, so USS POSCO must be tabulated elsewhere.

Table 3: Profile of Affected Industry for Rule 12-13

Industry	Primary Metal Manufacturing (NAICS 331)	Rolled Steel Shape Manu-facturing (NAICS 331221)	Secondary Smelting and Alloying of Aluminum (NAICS 331314)	Iron Foundries (NAICS 331511)	Steel Foundries (except investment) (NAICS 331513)
Employment (a)	2,553	77	37	371	583
Average Employment per Establishment	36	39	19	53	97
Number of Establishments (by workforce size)					
1-4	27	1	1	3	2
5-9	10	0	0	2	0
10-19	10	0	0	0	2
20-49	13	0	1	0	0
50-99	5	1	0	0	0
100+	5	0	0	2	2
Total	70 (b)	2	2	7	6

Notes:
(a) For counties where the actual employment number is not disclosed for confidentiality purposes, the analysis uses the midpoint employment number for each size cohort.
(b) BAAQMD estimates that the Bay Area has five establishments in this sector that will be affected by the proposed Rule.

Sources: U.S. Census County Business Patterns, 2010; BAE, 2012.

Rule 6-4

According to BAAQMD, the following establishments would be affected by the plan requirements of proposed Rule 6-4:

Name	City	NAICS
SIMS Metals	Redwood City	423930
SIMS Metals	Richmond	423930
Schnitzer Steel	Oakland	423930

These three establishments are all in NAICS 423, Durable Goods Merchant Wholesalers, more specifically in NAICS 4239, Miscellaneous Durable Goods Merchant Wholesalers, and even more specifically in NAICS 423930, Recyclable Material Merchant Wholesalers. These are all broader sectors than those specifically covered by Rule 12-13, with more employment and establishments encompassing a variety of unrelated miscellaneous types of wholesalers. For the Bay Area, the NAICS 423 sector covers nearly 6,000 establishments, employing almost 134,000 workers (see Table 4). NAICS 4239 covers 780 establishments with slight less than 11,000 estimated workers, and more specifically, NAICS 423930 covers 155 establishments with approximately 2,600 workers. Clearly, even at the level of six-digit NAICS specificity, most establishments in these sectors appear not to be engaged in activities covered by the proposed Rule.

Table 4: Profile of Affected Industry for Rule 6-4

Industry	Durable goods merchant wholesalers (NAICS 423)	Miscellaneous durable goods merchant wholesalers (NAICS 4239)	Recyclable material merchant wholesalers (NAICS 423930)
Employment (a)	133,905	10,906	2,582
Average Employment per Establishment	23	14	17
Number of Establishments (by workforce size)			
1-4	2,917	442	61
5-9	1,177	152	27
10-19	863	94	27
20-49	590	66	27
50-99	193	17	11
100+	172	9	2
Total	5,912 (b)	780	155

Notes:
(a) For counties where the actual employment number is not disclosed for confidentiality purposes, the analysis uses the midpoint employment number for each size cohort.
(b) BAAQMD estimates that the Bay Area has three establishments in this sector that will be affected by the proposed Rule.

Sources: U.S. Census County Business Patterns, 2010; BAE, 2012.

SOCIO-ECONOMIC IMPACTS

This section discusses the analysis' methodology, as well as the economic profile of the affected industry, and annualized rule compliance costs associated with adopting Rules 12-13 and 6-4. It then determines whether the annualized compliance costs would significantly burden the affected industries, and estimates adoption of the rule's regional economic impacts.

Methodology

In order to estimate the economic impacts of adopting Rules 12-13 and 6-4 on the relevant industries, this report compares annualized compliance costs for the affected industries with their profit ratios. The analysis uses data from the BAAQMD, Dun & Bradstreet, InfoUSA, company annual reports and SEC filings, the Internal Revenue Service (IRS), and BAAQMD.

Economic Profile of Affected Industries

In total, there are five establishments assumed to be impacted by the plan requirements of Rule 12-13 and three by Rule 6-4. The affected businesses are so few, and are not necessarily representative of their entire NAICS sector as discussed above. Based on information from company annual reports, published news articles, and from InfoUSA and Hoover's/Dun & Bradstreet (two private vendors offering company information including corporate structure and estimates of employment and earnings), the affected establishments have estimated annual sales ranging from $7.5 million to over $100 million, and employment ranging from 25 to over 700 employees.

Estimated Rate of Return

The IRS provides data on total sales and net income for three industry groups that cover the establishments impacted by these proposed rules. According to IRS data, the 10 year average rates of return range from 3.6 percent to 5.6 percent for the affected industries, as shown in Table 5. Schnitzer Steel in Oakland (NAICS 423930), one of the recycling establishments, is a public corporation, and while the rate of return for this particular location is not public information, Schnitzer's overall return for their metal recycling business is 5.3 percent, based on income and gross revenues from their 2011 Annual Report. SIMS Metals is also a publicly listed, global corporation headquartered in Australia. SIMS reported a net loss from all operations in their 2012 annual report. It should be noted that the IRS category that most closely matches the recycling establishments businesses affected by Rule 6-4 is a catch-all category that includes a number of other miscellaneous wholesalers.

Table 5: Profit Ratios for Impacted Industries

NAICS 331221

Iron, steel mills and steel product

Total Receipts	$1,062,501,214
Net Income	$59,667,028
Profit Ratio	5.6%

NAICS 331314

Nonferrous metal production and processing

Total Receipts	$783,370,143
Net Income	$40,302,371
Profit Ratio	5.1%

NAICS 331511 and 331513

Foundries

Total Receipts	$200,882,789
Net Income	$10,982,400
Profit Ratio	5.5%

NAICS 423930 and 423940

Furniture, sports, toys, recycle, jewelry, and other durable goods

Total Receipts	$2,293,791,368
Net Income	$82,972,361
Profit Ratio	3.6%

Note: Uses industry classifications from IRS Table that most closely match the affected establishments.
Sources: IRS 1999-2008 Returns of Active Corporations Table; BAE, 2012.

Description of Compliance Costs

Each of these facilities is distinct from the others in its operations, configuration, and location. As a result, BAAQMD is not attempting to describe the exact emissions minimization measures that might be put in place for each establishment. Instead, the operator of each facility will be required to evaluate its own operations and conditions to determine what is best to reduce fugitive emissions from an operational and cost perspective.

As a result, BAAQMD has developed case studies describing a range of potential measures which do not necessarily represent the costs each facility would incur, but they are analyzed here to provide a general idea of the order of magnitude of the costs relative to the estimated revenues and profit levels for these facilities. The case study examples of emissions minimization measures that might be employed are as follows:

1. Minimization of Air Drafts for Metal Finishing Operations
2. Upgrading PM10 Emissions Capture and Control Systems at a Foundry
3. Shakers to Reduce Trackout onto Public Roadways
4. Reducing Fugitive PM10 Emissions from Transfer Operations at a Metal Recycling Facility
5. Dust Control for Open Spaces and Stockpiles Using Industrial Misters
6. Erecting Screened Fences as Wind Barriers in a 10 Acre Facility
7. Switching to Lower VOC Binder Formulation

The first two measures and measure seven would be applicable for the foundries and forging operations; measures three through five would apply to the scrap recycling facilities, and measure six could be applicable for either type of facility.

Costs for each of these measures have been estimated by BAAQMD staff as shown in Table 6.

Table 6: Compliance Costs

Case Study 1: Minimization of Air Drafts for Metal Finishing Operations

	Total Costs	Annualized Costs
Construction - Enclosure 20' x 10' 10'		
Capital Costs	$25,000	$3,238
Annual Operating Costs	$0	$0
Total Costs	*$25,000*	*$3,238*

Case Study 2: Upgrading PM10 Emissions Capture and Control Systems at a Foundry

	Total Costs	Annualized Costs
Upgrade existing emissions control system		
Capital Costs	$1,100,000	$193,000
Annual Operating Costs	$267,000	$267,000
Total Costs	*$1,367,000*	*$460,000*

Case Study 3: Shakers to Reduce Trackout onto Public Roadways

	Total Costs	Annualized Costs
Install shakers for outgoing vehicles at scrap facilities		
Capital Costs	$5,000	$5,000 (a)
Annual Operating Costs	$0	$0
Total Annualized Costs	*$5,000*	*$5,000*

Case Study 4: Reducing Fugitive PM10 Emissions from Transfer Operations at a Metal Recycling Facility

	Total Costs	Annualized Costs
Conveyor System		
Total Annualized Costs	*$206,500*	*$41,672*

Case Study 5: Dust Control for Open Spaces and Stockpiles Using Industrial Misters

	Total Costs	Annualized Costs
Dust Control with Industrial Misters		
Capital Costs (for a 5-acre facility)	$126,300	$16,236
Annual Operating Costs	$539,050	$539,050
Total Annualized Costs	*$665,350*	*$555,286*

Case Study 6: Erecting Screened Fences as Wind Barriers (10-Acre Parcel)

	Total Costs	Annualized Costs
Erect Fences to Reduce Wind - 22 foot high fence		
Capital Costs	$940,000	$120,000
Annual Operating Costs	$0	$0
Total Annualized Costs	*$940,000*	*$120,000*

Case Study 7: Switching to Lower VOC Binder Formulation

	Total Costs	Annualized Costs
Switch from Pepset to Techniset two-part binder system		
Total Annualized Costs	*$0*	*$0*

Notes:

Capital costs have been annualized based on a capital cost factor of 0.1295, based on a 5% interest rate applied over 10 years. In some cases, the costs are presented in an annualized form by BAAQMD directly.

(a) Because of the small cost here, this is presented as a one time expenditure. Thus, any impact would be minimal and only in the year of purchase.

Sources: BAAQMD, 2012; BAE, 2012.

Economic Impacts Analysis for Affected Industries

In order to determine the impacts of these measures on the eight locations, this analysis compares annualized compliance costs (as shown in Table 6 above) to annual profits.

For each applicable measure separately, the analysis then calculates the compliance costs as a percentage of profits to determine the level of impact. BAAQMD uses the ARB's 10 percent threshold as a proxy for burden. Annualized compliance costs resulting in profit losses of 10 percent or more indicate that the proposed compliance measure has the potential for significant adverse economic impacts. Table 7 shows the estimated annualized compliance costs as a share of total profits for each measure for each establishment. To preserve confidentiality, the businesses are not referred to directly by name, but as "Facility A," Facility B," and so on through "Facility H."

As Table 7 shows, annualized compliance costs for each of the following measures are below the 10 percent burden threshold for all locations considered for each of the following measures:

- Case Study 1: Minimization of Air Drafts for Metal Finishing Operations
- Case Study 3: Shakers to Reduce Trackout onto Public Roadways
- Case Study 4: Reducing Fugitive PM10 Emissions from Transfer Operations at a Metal Recycling Facility
- Case Study 7: Switching to Lower VOC Binder Formulation

Annualized compliance costs for each of the following measures are above the 10 percent burden threshold for all locations considered for the following measures:

- Case Study 5: Dust Control for Open Spaces and Stockpiles Using Industrial Misters

For each of the following measures, the results relative to the cost threshold were mixed, with some facilities above and some below the threshold:

- Case Study 2: Upgrading PM10 Emissions Capture and Control Systems at a Foundry
- Case Study 6: Erecting Screened Fences as Wind Barriers

For Case Study 2, Upgrading PM10 Emissions Capture and Control Systems at a Foundry, four of the five facilities showed costs above the 10 percent threshold. For Case Study 6, Erecting 22' Screened Fences as Wind Barriers, three of the eight facilities were below the 10 percent threshold.

It should be noted that as case studies, costs in some cases are based on certain assumptions about sizing, but in reality the costs might vary based on the needs of a particular facility, e.g., the size of a fenced yard might vary from that assumed here.

Table 7: Compliance Costs as Share of Profit

Case Study 1: Minimization of Air Drafts for Metal Finishing Operations

	Estimated Annual Sales	Estimated Return on Sales	Estimated Annual Profits	Compliance Cost	Share of Annual Profit
Facility A	$7,500,000	5.1%	$385,900	$3,238	0.8%
Facility B	$25,000,000	5.5%	$1,366,800	$3,238	0.2%
Facility C	$20,000,000	5.5%	$1,093,400	$3,238	0.3%
Facility D	$30,000,000	5.5%	$1,640,100	$3,238	0.2%
Facility E	$100,000,000	5.6%	$5,615,700	$3,238	0.1%

Case Study 2: Upgrading PM10 Emissions Capture and Control Systems at a Foundry

	Estimated Annual Sales	Estimated Return on Sales	Estimated Annual Profits	Compliance Cost	Share of Annual Profit
Facility A	$7,500,000	5.1%	$385,900	$460,000	119.2%
Facility B	$25,000,000	5.5%	$1,366,800	$460,000	33.7%
Facility C	$20,000,000	5.5%	$1,093,400	$460,000	42.1%
Facility D	$30,000,000	5.5%	$1,640,100	$460,000	28.0%
Facility E	$100,000,000	5.6%	$5,615,700	$460,000	8.2%

Case Study 3: Shakers to Reduce Trackout onto Public Roadways

	Estimated Annual Sales	Estimated Return on Sales	Estimated Annual Profits	Compliance Cost	Share of Annual Profit
Facility F	$20,000,000	3.6%	$723,500	$5,000	0.7%
Facility G	$30,000,000	3.6%	$1,085,200	$5,000	0.5%
Facility H	$20,000,000	3.6%	$723,500	$5,000	0.7%

Case Study 4: Reducing Fugitive PM10 Emissions from Transfer Operations at a Metal Recycling Facility

	Estimated Annual Sales	Estimated Return on Sales	Estimated Annual Profits	Compliance Cost	Share of Annual Profit
Facility F	$20,000,000	3.6%	$723,500	$41,672	5.8%
Facility G	$30,000,000	3.6%	$1,085,200	$41,672	3.8%
Facility H	$20,000,000	3.6%	$723,500	$41,672	5.8%

Case Study 5: Dust Control for Open Spaces and Stockpiles Using Industrial Misters

	Estimated Annual Sales	Estimated Return on Sales	Estimated Annual Profits	Compliance Cost	Share of Annual Profit
Facility F	$20,000,000	3.6%	$723,500	$555,286	76.7%
Facility G	$30,000,000	3.6%	$1,085,200	$555,286	51.2%
Facility H	$20,000,000	3.6%	$723,500	$555,286	76.7%

Case Study 6: Erecting 22' Screened Fences as Wind Barriers

	Estimated Annual Sales	Estimated Return on Sales	Estimated Annual Profits	Compliance Cost	Share of Annual Profit
Facility A	$7,500,000	5.1%	$385,900	$120,000	31.1%
Facility B	$25,000,000	5.5%	$1,366,800	$120,000	8.8%
Facility C	$20,000,000	5.5%	$1,093,400	$120,000	11.0%
Facility D	$30,000,000	5.5%	$1,640,100	$120,000	7.3%
Facility E	$100,000,000	5.6%	$5,615,700	$120,000	2.1%
Facility F	$20,000,000	3.6%	$723,500	$120,000	16.6%
Facility G	$30,000,000	3.6%	$1,085,200	$120,000	11.1%
Facility H	$20,000,000	3.6%	$723,500	$120,000	16.6%

Case Study 7: Switching to Lower VOC Binder Formulation – no cost

Sources: Company SEC Filings; Dun & Bradstreet; InfoUSA; IRS; BAAQMD, 2012; BAE, 2012.

Affected Industries and Regional Employment Impacts

While some of the case study solutions appear to have compliance costs that are greater than 10 percent of annual profits, the structure of these rules is driven by the EMP, which would be developed by each business and as such, would exclude solutions that are not considered financially feasible by the business and District. As a result, no employment impacts are anticipated due to implementation of these rules.

Regional Indirect and Induced Impacts

Indirect and induced impacts refer to regional multiplier effects of increasing or decreasing regional economic activity. If the proposed Rules were to significantly impact local businesses, any closures would result in direct regional economic losses. Firms would no longer buy goods from local suppliers, thereby resulting in reduced indirect impacts, or business-to-business expenditures. In addition, businesses would no longer employ regional residents, resulting in reduced induced impacts in the form of household spending.

While some of the proposed solutions would appear to result in significant direct impacts, the approach to this rule is to allow the affected businesses to suggest and utilize solutions that would be financially feasible, i.e., they would not be required to implement solutions that might result in closure and significant direct impacts. As a result, the rule adoption would not result in any foreseeable indirect or induced impacts either.

IMPACT ON SMALL BUSINESSES

According to California Government Code 14835, a small business is any business that meets the following requirements:

- 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 annual gross receipts of $10 million or less over the previous three tax years, or
    - A manufacturer with 100 or fewer employees.

Most of these establishments are not independently owned, or are too large to quality as small businesses under these criteria. There is one possible exception among the establishments under consideration here, but it appears that the company has smaller branch locations that put it over the employment and gross receipts thresholds.