

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

**Socioeconomic Assessment for
PROPOSED RULE 1155—PARTICULATE MATTER (PM) CONTROL
DEVICES**

November 2009

**Deputy Executive Officer
Planning, Rule Development & Area Sources**
Elaine Chang, DrPH

**Assistant Deputy Executive Officer
Planning, Rule Development & Area Sources**
Laki Tisopulos, Ph.D., P.E.

**Director of Strategic Initiatives
Planning, Rule Development & Area Sources**
Jill Whynot

Author: Greg Hunter, Ph.D., Air Quality Specialist

Reviewed By: Sue Lieu, Program Supervisor
Tracy A. Goss, P.E., Program Supervisor
Ruby Fernandez, Deputy District Counsel
Jong Hoon Lee, Ph.D., Air Quality Specialist

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

Chairman: WILLIAM A. BURKE, Ed.D.
Speaker of the Assembly Appointee

Vice Chairman: DENNIS YATES
Mayor, City of Chino
Cities of San Bernardino County Representative

MEMBERS:

MICHAEL D. ANTONOVICH
Supervisor, Fifth District
Los Angeles County Representative

MARION ASHLEY
Supervisor, Fifth District
Riverside County Representative

MICHAEL A. CACCIOTTI
Mayor, City of South Pasadena
Cities of Los Angeles County, Eastern Region

BILL CAMPBELL
Supervisor, Third District
Orange County Representative

JANE W. CARNEY
Senate Rules Committee Appointee

JOSIE GONZALES
Supervisor, Fifth District
San Bernardino County Representative

RONALD O. LOVERIDGE
Mayor, City of Riverside
Cities Representative, Riverside County

JOSEPH K. LYOU, Ph.D.
Governor's Appointee

JAN PERRY
Councilmember, Ninth District
City of Los Angeles

MIGUEL PULIDO
Mayor, City of Santa Ana
Cities Representative, Orange County

TONIA REYES URANGA
Councilmember, City of Long Beach
Cities Representative, Los Angeles County, Western Region

EXECUTIVE OFFICER:

BARRY R. WALLERSTEIN, D.Env.

Preface

The final socioeconomic report for PR 1155 has been changed from the version released on October 6, 2009 to reflect the following modifications:

- 1) The number of baghouses assumed to require bag replacement has been changed from 32 to 16.
- 2) Source testing for 32 Tier 3 baghouses at Title V facilities have been included along with an assumption that two additional baghouses per year will require source testing due to industry growth at Title V facilities.

These changes reduced the annualized costs of PR1155 by approximately \$0.12 million and increased the number of jobs forgone by one.

EXECUTIVE SUMMARY

A socioeconomic analysis was conducted to assess the impacts of Proposed Rule (PR) 1155—Particulate Matter (PM) Control Devices. A summary of the analysis and findings is presented below.

<p>Elements of Proposed Rule</p>	<p>Proposed Rule 1155 establishes a no visible emissions requirement for any permitted PM control device and a PM emission limit for baghouses with a filter area greater than 7500 square feet. The proposed rule includes requirements to reduce dust discharged from a baghouse, ventilation requirements for new equipment, some baghouse upgrades, source testing, weekly or daily monitoring, and recordkeeping for visible emissions, and corrective and preventive actions to be taken to eliminate visible emissions. Additionally, the proposed rule requires that baghouses with a filter area larger than 7,500 square feet install a bag leak detection system (BLDS) by 2011 and that existing manual shaker baghouses install, at a minimum, an automated shaker unit by 2012.</p>
<p>Affected Facilities and Industries</p>	<p>PR 1155 would affect facilities in nearly all sectors of the South Coast’s regional economy. Of the 1,477 affected facilities, approximately two-thirds are in the manufacturing sector. Affected facilities are concentrated in the following manufacturing industries: nonmetallic mineral product manufacturing (North American Industry Classification System [NAICS] 332), fabricated metal product manufacturing (NAICS 327), food manufacturing (NAICS 311), and chemical manufacturing (NAICS 325).</p>
<p>Description of Data and Assumptions Analyzed</p>	<p>Provisions of PR 1155 requiring proper PM control device maintenance, adherence to guidelines for ventilation system installations, and the controlled transfer of material discharged from a PM control device for disposal or reprocessing to prevent fugitive dust have negligible costs due to compliance requirements of existing rules and exemptions within the proposed rule. Table 1 summarizes the major elements of PR 1155, the cost of each element, and the number of affected devices. The majority of affected facilities—approximately 83 percent—will only have costs associated with visible emissions monitoring of \$325 per unit per year.</p> <p>Based on a review of AQMD permit records, up to 16 facilities in the asphalt industry may need to replace their existing bags with more efficient bags to meet the 0.01 grains per dry standard cubic foot limit requirement of PR</p>

Description of Data and Assumptions Analyzed (continued)

1155. The analysis assumes that half of the replacements take place in 2012 and that the other half will occur in 2013 in order to meet the January 1, 2014 compliance date. The incremental cost of the higher efficiency bags of \$26,500 includes installation costs. Bags are assumed to have a useful life of five years. Affected facilities are assumed to incur a one-time change of permit condition fee of \$670.50. In addition, it is assumed that facilities replacing bags in 2012 will incur an additional cost associated with two years of useful bag-life forgone on existing bags.

Staff estimates that 66 existing baghouses will be required to install automated shaker units due to the adoption of PR 1155. The cost of automated shaker units is assumed to be \$8,500 per unit. An automated shaker unit is assumed to require \$1,200 in annual operating and maintenance costs and to have an equipment life of 10 years.

PR 1155 requires BLDS to be installed on all baghouses with a filter area larger than 7,500 square feet. Staff estimates that 240 BLDS would be installed at a cost of \$9,000 per BLDS. Affected facilities are assumed to incur a one-time change of permit condition fee of \$670.50. Projected growth based on permit history for PM control devices implies that an average of 12 BLDS per year would be installed after the adoption of PR 1155. BLDS units are assumed to have an equipment life of 10 years and to have no operating and maintenance cost.

PR 1155 requires facilities operating baghouses with a filter area of 7,500 square feet or less and those facilities operating non-fabric filtration PM control devices to conduct weekly visible emissions monitoring. Visible emissions monitoring is assumed to require 15 minutes of labor per week at a wage rate of \$25 per hour, which implies an annual cost of \$325 per affected unit. It is estimated that 4,474 existing PM control device units would be required to have visible emissions monitoring. Each affected facility is also assumed to have a one-time cost for weekly visible emissions monitoring training of \$75. Projected growth based on permit history for PM control devices implies that an average of 206 PM control devices per year will require weekly visible emissions monitoring and an average of 50 new facilities will undergo visible emission monitoring training per year.

<p>Description of Data and Assumptions Analyzed (continued)</p>	<p>Under PR 1155 asphalt production facilities operating baghouses are assumed to conduct daily emissions monitoring for one year before installing BLDS. Asphalt facilities are assumed to incur no training costs associated with daily visible emissions monitoring due to compliance with other rules.</p> <p>Tier 3 baghouses at Title V facilities will undergo source testing once every five years beginning in 2010 to comply with PR 1155. Source tests are assumed to cost \$5,000 per unit. Staff estimates that 32 existing baghouses would be subject to source testing and two additional baghouses would be added each year that would also require source tests.</p>
<p>Compliance Costs</p>	<p>The average annual total cost of Proposed Rule (PR) 1155 is projected to be \$2.39 million from 2010 to 2025. Of the \$2.39 million annual average cost to implement the proposed rule, the cost of source testing, bag replacements, automated shakers, BLDS, and weekly and daily emissions monitoring are, respectively, \$0.055 million (2.3%), \$0.087 million (3.6 percent), \$0.122 million (5.1 percent), \$0.314 million (13.2 percent), and \$1.80 million (75.4 percent).</p> <p>The \$2.39 million compliance cost is spread to nearly every sector of the four-county region, but is concentrated in manufacturing sectors. The share of the total cost of PR 1155 for the most affected industries within the manufacturing sector are nonmetallic mineral product manufacturing (14.4%), fabricated metal product manufacturing (12.9%), chemical manufacturing (14.3%), and petroleum and coal products manufacturing (7.4%).</p>
<p>Employment Impacts</p>	<p>Overall, 27 jobs, 0.00025% of total jobs in the four county region, could be forgone annually, on average, between 2010 and 2025. Job impacts in the local economy at the sector level relative to total industry employment are very modest.</p>
<p>Competitiveness</p>	<p>Adoption of the proposed rule is expected to cause very few changes in the relative costs of production and prices of goods in the local economy.</p>

INTRODUCTION

Proposed Rule 1155 establishes a no visible emissions requirement for any permitted PM control device and a PM emission limit for baghouses with a filter area greater than 7,500 square feet. The proposed rule includes requirements for dust discharged from a baghouse, ventilation requirements for new equipment, some baghouse upgrades, weekly monitoring and recordkeeping of visible emissions, corrective and preventive actions to be taken to eliminate visible emissions, and continuous monitoring of the performance of any baghouse using a bag leak detection system. Additionally, the proposed rule requires that baghouses with a filter area larger than 7,500 square feet install a bag leak detection system by 2011 and that existing manual shaker baghouses install, at a minimum, an automated shaker unit by 2012.

The socioeconomic assessment herein analyzes the impacts of the proposed rule on affected facilities and the entire economy in the four-county region.

LEGISLATIVE MANDATES

The socioeconomic assessments at the AQMD have evolved over time to reflect the benefits and costs of regulations. The legal mandates directly related to the assessment of the proposed rule include the AQMD Governing Board resolutions and various sections of the California Health & Safety Code (H&SC).

AQMD Governing Board Resolutions

On March 17, 1989 the AQMD Governing Board adopted a resolution that calls for preparing an economic analysis of each proposed rule for the following elements:

- Affected Industries
- Range of Control Costs
- Cost Effectiveness
- Public Health Benefits (see staff report)

On October 14, 1994, the Board passed a resolution which directed staff to address whether the rules or amendments brought to the Board for adoption are in the order of cost effectiveness as defined in the AQMP. The intent was to bring forth those rules that are cost effective first.

Health & Safety Code Requirements

The state legislature adopted legislation that reinforces and expands the Governing Board resolutions for socioeconomic assessments. H&SC Sections 40440.8(a) and (b), which became effective on January 1, 1991, require that a socioeconomic analysis be prepared for any proposed rule or rule amendment that *"will significantly affect air quality or emissions limitations."* Specifically, the scope of the analysis should include:

- Type of Affected Industries
- Impact on Employment and the Economy of the District
- Range of Probable Costs, Including Those to Industries

- Emission Reduction Potential
- Necessity of Adopting, Amending or Repealing the Rule in Order to Attain State and Federal Ambient Air Quality Standards
- Availability and Cost Effectiveness of Alternatives to the Rule

For emission reduction potential, necessity of rule adoption and cost effectiveness of alternatives to the proposed rule, please refer to the Staff Report for PR 1155. Additionally, the AQMD is required to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts. H&SC Section 40728.5, which became effective on January 1, 1992, requires the AQMD to:

- Examine the type of industries affected, including small businesses; and
- Consider socioeconomic impacts in rule adoption

H&SC Section 40920.6, which became effective on January 1, 1996, requires that incremental cost effectiveness be performed for a proposed rule or amendment setting a Best Available Retrofit Control Technology (BARCT) requirement or a “feasible measure” relating to ozone, carbon monoxide (CO), oxides of sulfur (SO_x), oxides of nitrogen (NO_x), and their precursors. Incremental cost effectiveness is defined as the difference in costs divided by the difference in emission reductions between one level of control and the next more stringent control. Incremental cost effectiveness for this proposed rule is addressed in the Staff Report for PR 1155.

AFFECTED FACILITIES

PR 1155 will affect facilities in nearly all sectors of the South Coast’s regional economy. PR 1155 applies to 1,477 facilities with nearly 5,000 currently active permits for PM control devices. Based on AQMD permit records, approximately two-thirds of the 1,477 affected facilities are in manufacturing sectors. Affected facilities are concentrated in the following manufacturing industries: primary metal manufacturing [North American Industry Classification System (NAICS) code 331], nonmetallic mineral product manufacturing (NAICS 332), fabricated metal product manufacturing (NAICS 327), food manufacturing (NAICS 311), and chemical manufacturing (NAICS 325). The remaining one-third of affected facilities belong to the non-manufacturing sectors and governments. Approximately, 59 percent of affected facilities are in Los Angeles County, 18 percent are in Orange Country, 11 percent are in Riverside County, and 12 percent are in San Bernardino County.

Small Businesses

The AQMD defines a "small business" in Rule 102 as one which employs 10 or fewer persons and that earns less than \$500,000 in gross annual receipts. In addition to the AQMD's definition of a small business, the federal Small Business Administration (SBA), the federal Clean Air Act Amendments (CAAA) of 1990, and the California Department of Health Services (DHS) also provide definitions of a small business.

The SBA's definition of a small business uses the criteria of gross annual receipts (ranging from \$0.75 million to \$35.5 million), number of employees (ranging from 50 to 1,500), megawatt

hours generated (4 million), or assets (\$175 million), depending on industry type (US SBA, 2008). The SBA definitions of small businesses vary by 6-digit NAICS code. For example, in the Asphalt Paving Mixture and Block Manufacturing (NAICS 324121) and Paint and Coating Manufacturing (NAICS 325510) sectors, a business with 500 or fewer employees is considered “small.”

The CAAA classifies a facility as a "small business stationary source" if it: (1) employs 100 or fewer employees, (2) does not emit more than 10 tons per year of either VOC or NOx, and (3) is a small business as defined by SBA.

The 1,477 facilities affected by PR 1155 were examined to estimate the number of small businesses that would be covered by PR 1155. The criteria used for small business classification require examination of gross annual receipts, number of employees, and facility emission, as described above. Of the 1,477 facilities examined, data on gross annual receipts and employees were available for 786 facilities. Data on emissions of VOC and NOx were available for 240 of the 786 facilities. Applying the small business criteria to the facilities with adequate data for evaluation revealed that 633 facilities meet the SBA criteria for small business designation. Under the AQMD criterion for small businesses, 80 affected facilities would be categorized as small businesses. When using the CAAA definition, 91 facilities are designated as small businesses.

COMPLIANCE COST

Compliance for PR 1155 would begin in 2010 and reach full implementation by 2014. Based on the District’s permit to operate database, fabric filtration control devices, such as baghouses and bin vents, account for the majority (76 percent) of the control devices subject to the proposed rule. Devices such as cyclones, ESPs, and wet scrubbers account for the remaining 24 percent of the devices. Table 1, below, summarizes the number of affected devices and costs for PR 1155. The following text provides details of this analysis.

Table 1
PR 1155 Data Summary

Cost Components	One-time Cost	Annual Cost	Unit Count [^]
Visible Emissions Monitoring*		\$325	4,474
Change of Permit Condition	\$670.50		256
BLDS Capital	\$9,000		240
Automated Shaker	\$8,500	\$1,200	66
Source Test	\$5,000**		32
Bag-filter Replacement^^	\$26,500		16
^Estimated from examination of AQMD permit records from 1977-2007.			
^^Incremental Cost.			
* Exclusive of a one-time \$75 training cost for most affected facilities.			
** Source tests are conducted once every five years.			

Provisions of PR 1155 requiring proper PM control device maintenance, new process ventilation system installation, and the controlled transfer of material discharged from a PM control device for disposal or reprocessing to prevent fugitive dust emissions are assumed to have a negligible cost due to compliance requirements of existing rules, exemptions within the proposed rule, or minimal cost to implement.

Compliance with PR 1155 would require bag replacements, installation of automated shakers and BLDS, and weekly or daily visible emissions monitoring. Of the \$2.39 million annual average cost to implement the proposed rule, the cost of source testing, bag replacements, automated shakers, BLDS, weekly and daily visible emissions monitoring are, respectively, \$0.055 million (2.3 percent), \$0.087 million (3.6 percent), \$0.122 million (5.1 percent), \$0.314 million (13.2 percent) and \$1.80 million (75.4 percent). Approximately, 83 percent of facilities affected by PR 1155 would conduct visible emissions monitoring, which is estimated to cost \$325 per unit.

Compliance costs estimates used by staff to analyze the effects of PR 1155 are likely greater than the actual compliance costs that would result from rule adoption. For example, the exemption for baghouses with less than 100 square feet of filter area in PR 1155 was only applied to 48 units when estimating the cost of visible emissions monitoring. Based on data reviewed in the process of developing PR 1155, staff estimates 254 units would qualify for this exemption and incur no compliance cost from the proposed rule. The lower number was used in this analysis because data limitations prevented specific identification of exempt facilities. The analysis of PR 1155 also does not exclude portable equipment units with a capacity of less than 3,000 cubic feet per minute that would be exempt under the proposed rule. Based on data collected, staff estimates that approximately 100 units would qualify for this exemption and incur no costs.

Bags and Automated Shakers

Based on AQMD permit records, staff estimates that up to 16 facilities in the asphalt industry may need to replace their existing bags with more efficient bags to meet the 0.01 grains per dry standard cubic foot outlet concentration requirement of PR 1155. The analysis assumes that half of the replacements take place in 2012 and that the other half will occur in 2013, in order to meet the January 1, 2014 compliance date. The higher efficiency bags are assumed to cost \$57,500, inclusive of installation costs; and lower efficiency bags are assumed to cost \$31,000, based on staff interviews with facility operators, bag suppliers, and data from the U.S. EPA. The incremental cost of newly installed higher efficiency bags is \$26,500. Bags are assumed to have a useful life of five years. Affected facilities are assumed to incur a one-time change of permit condition fee of \$670.50. In addition, it is assumed that facilities replacing bags in 2012 will incur an additional cost associated with two years of useful bag-life forgone on existing bags.

Based on a summary of all active AQMD permits for PM control devices, staff estimates that 66 existing baghouses will be required to install automated shaker units upon the adoption of PR 1155. The cost of automated shaker units is assumed to be \$8,500 per unit. An automated shaker unit is assumed to require \$1,200 in annual operating and maintenance costs and to have an equipment life of 10 years.

Emissions Monitoring and Source Testing

PR 1155 requires BLDS to be installed on all baghouses with a filter area larger than 7,500 square feet. Based on a detailed review of permit applications for 89 existing facilities, staff estimates that 240 BLDS would be installed at a cost of \$9,000 per BLDS. Affected facilities are assumed to incur a one-time change of permit condition fee of \$670.50. Based on a summary of AQMD permit applications from 2003-2008, an annual average of 12 BLDS would be installed after the adoption of PR 1155. BLDS units are assumed to have an equipment life of 10 years and to have a negligible operating and maintenance cost.

PR 1155 requires affected facilities operating baghouses with a filter area of 7,500 square feet or less and those facilities operating non-fabric filtration PM control devices to conduct weekly visible emissions monitoring. Visible emissions monitoring is assumed to require 15 minutes of labor per week at a wage rate of \$25 per hour, which implies an annual cost of \$325 per affected unit. It is estimated that 4,474 existing PM control device units would be required to have visible emissions monitoring. Each affected facility is also assumed to have a one-time cost associated with weekly visible emissions monitoring training of \$75. Based on a summary of AQMD permit applications from 2003-2008, an annual average of 206 PM control devices will require weekly visible emission monitoring and an annual average of 50 new facilities will undergo visible emission monitoring training. The proposed rule allows facility operators to monitor visible emissions simultaneously from more than one piece of equipment when equipment is positioned in a manner that would enable one observation point to view multiple pieces of equipment. This analysis did not consider savings associated with the simultaneous observation of many pieces of equipment due to the lack of data.

Under PR 1155, asphalt production facilities operating baghouses are assumed to conduct daily emissions monitoring for one year before installing BLDS. Daily monitoring is assumed to require fifteen minutes of labor each day per unit at a wage of \$25 per hour, which results in an annual compliance cost of \$2,282. Because of prior compliance requirements for asphalt facilities associated with Rule 1157, asphalt facilities are assumed to incur no additional training costs associated with daily visible emissions monitoring.

Tier 3 baghouses located at Title V facilities would be required to source test once every five years beginning in 2010. Source tests are assumed to cost \$5,000 per baghouse. Based on a thorough review of permit applications from 2003-2008, staff estimates that 32 baghouses would be subject to source testing upon the adoption of PR 1155 and two additional baghouses per year would require source testing thereafter, due to growth at Title V facilities.

Cost by Industry

The average annual cost of the proposed rule is estimated to be \$2.39 million from 2010 to 2025. The distribution of these costs across industries is shown in Table 2. The majority of the cost is incurred in the manufacturing sector. Within the manufacturing sector, the costs of PR 1155 are concentrated in Nonmetallic mineral product manufacturing (NAICS 327), Fabricated metal product manufacturing (NAICS 332), Chemical manufacturing (NAICS 325), and Petroleum and coal products manufacturing (NAICS 324).

Table 2
Cost of Proposed Rule (in millions of dollars)

Sector/Industry	NAICS	2010	2011	2012	2018	2025	Average Annual (2010-2025)
Forestry, fishing, related activities, and other	113-115	\$0.005	\$0.007	\$0.007	\$0.009	\$0.011	\$0.008
Mining	21	\$0.030	\$0.041	\$0.040	\$0.049	\$0.060	\$0.048
Utilities	22	\$0.019	\$0.023	\$0.023	\$0.028	\$0.034	\$0.028
Construction	23	\$0.038	\$0.050	\$0.049	\$0.060	\$0.074	\$0.059
Nonmetallic mineral product manufacturing	327	\$0.205	\$0.299	\$0.285	\$0.351	\$0.427	\$0.343
Primary metal manufacturing	331	\$0.118	\$0.153	\$0.148	\$0.180	\$0.216	\$0.176
Fabricated metal product manufacturing	332	\$0.206	\$0.261	\$0.255	\$0.315	\$0.385	\$0.309
Food manufacturing	311	\$0.100	\$0.127	\$0.125	\$0.155	\$0.189	\$0.152
Petroleum and coal products manufacturing	324	\$0.050	\$0.087	\$0.245	\$0.187	\$0.203	\$0.178
Chemical manufacturing	325	\$0.212	\$0.293	\$0.282	\$0.348	\$0.424	\$0.340
Other Manufacturing*	31-33	\$0.307	\$0.392	\$0.383	\$0.473	\$0.578	\$0.464
Wholesale trade	42	\$0.063	\$0.085	\$0.082	\$0.101	\$0.124	\$0.099
Retail trade	44-45	\$0.025	\$0.031	\$0.031	\$0.037	\$0.045	\$0.037
Transportation and warehousing	48-49	\$0.019	\$0.026	\$0.025	\$0.031	\$0.038	\$0.030
Information	51	\$0.003	\$0.003	\$0.003	\$0.004	\$0.005	\$0.004
Finance and insurance	52	\$0.002	\$0.002	\$0.002	\$0.003	\$0.004	\$0.003
Real estate and rental and leasing	53	\$0.010	\$0.012	\$0.012	\$0.015	\$0.018	\$0.014
Professional and technical services	54	\$0.015	\$0.016	\$0.016	\$0.021	\$0.025	\$0.020
Management of companies and enterprises	55	\$0.001	\$0.002	\$0.002	\$0.002	\$0.003	\$0.002
Administrative and waste services	56	\$0.014	\$0.018	\$0.017	\$0.021	\$0.025	\$0.021
Educational services	61	\$0.002	\$0.003	\$0.003	\$0.003	\$0.004	\$0.003
Health care and social assistance	62	\$0.002	\$0.002	\$0.002	\$0.002	\$0.003	\$0.002
Arts, entertainment, and recreation	71	\$0.002	\$0.002	\$0.002	\$0.002	\$0.003	\$0.002
Accommodation and food services	72	\$0.005	\$0.005	\$0.005	\$0.006	\$0.007	\$0.006
Other services, except public administration	81	\$0.020	\$0.025	\$0.024	\$0.030	\$0.037	\$0.030
Government	92	\$0.001	\$0.012	\$0.011	\$0.011	\$0.012	\$0.011
Total	113-92	\$1.473	\$1.979	\$2.078	\$2.443	\$2.953	\$2.390

*Other manufacturing includes NAICS 31-32 except NAICS 311, 324-325, 327, and 331-332.

TOTAL IMPACTS

The REMI PI+ model (version 1.0.116) is used to assess the total socioeconomic impacts of a policy change. The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino. The REMI model for each county is comprised of a five block structure that includes (1) output and demand, (2) labor and capital, (3) population and labor force, (4) wages, prices and costs, and (5) market shares. These five blocks are interrelated. Within each county, producers are made up of 165 private non-farm industries, three government sectors, and a farm sector. Trade flows are captured between sectors and borders as well as across counties and the rest of U.S. Market shares of industries are dependent upon their product prices, access to production inputs, and local infrastructure. The demographic/migration component has 160 ages/gender/race/ethnicity cohorts and captures population changes in births, deaths, and migration.

The assessment herein is performed relative to a baseline without the implementation of PR 1155. Direct effects of the policy change (the proposed rule) have to be estimated and used as inputs to the REMI model in order for the model to assess secondary and induced impacts for all the actors in the four-county economy on an annual basis and across a user-defined horizon (2010 to 2025). Direct effects of PR 1155 include additional costs to the affected industries and additional sales of control devices by local vendors at the county (or finer) level and by industry.

The proposed rule would create an additional demand for automated baghouse shakers supplied by the fabricated metal product manufacturing industry (NAICS 332). PR 1155 would also create an additional demand for BLDS and bags, which are supplied by the professional and technical services industry (NAICS 541). Therefore, an increase in sales in both of these industries is expected. There would be a slight increase in spending by the AQMD due to the one-time change in permit condition fees.

The additional costs of doing business to affected facilities include the annualized costs for BLDS, automated shakers, and new filtration bags, and the one-time cost of AQMD permit revisions. Facilities installing automated shakers will experience an increase in annual operating and maintenance cost associated with shaker maintenance. Affected government entities would have to reduce spending elsewhere to comply with the requirements of PR 1155.

The majority of affected facilities—83 percent—will only have costs associated with visible emissions monitoring. See Table 1 for a breakdown of affected equipment by proposed requirement. Facilities that are affected by visible emissions monitoring would experience a small reduction in labor productivity as additional person hours are devoted to the task.

Employment Impact by Industry

Overall, 27 jobs could be forgone annually, on average, between 2010 and 2025 in the local economy. Under the baseline forecast, the four county region will average 10 million jobs annually from 2010-2025. The forecasted decline of 27 jobs represents 0.00025% of total jobs in the four county region.

Table 3 presents the estimated job impacts by industry for the proposed rule. Additional jobs would be created in 2011 in the professional and technical services sector as demand for this sector rises due to purchases of BLDS, the installation of more efficient filtration bags, and source testing. In 2011, there would also be an average of five jobs created in the manufacturing sector due to an increase in demand for automated shakers. In 2011, job creation in other industries is due to secondary and induced impacts associated with expenditures on PM control and emissions monitoring devices.

Table 3
Job Impact of Proposed Rule by Sector by Selected Year

Sector	2011	2018	2025	Average Annual (2010-2025)
Forestry, Fishing, Related Activities, and Other	0	0	0	0
Mining	0	0	0	0
Utilities	0	0	0	0
Construction	1	-3	-3	-2
Manufacturing	5	-3	-4	-1
Wholesale Trade	0	-2	-2	-2
Retail Trade	0	-5	-5	-4
Transportation and Warehousing	0	-1	-2	-1
Information	0	-1	-1	-1
Finance and Insurance	1	-2	-2	-2
Real Estate and Rental and Leasing	0	-2	-3	-2
Professional and Technical Services	16	-3	-3	0
Management of Companies and Enterprises	0	-1	-1	-1
Administrative and Waste Services	2	-3	-3	-2
Educational Services	0	-1	-1	-1
Health Care and Social Assistance	1	-3	-4	-3
Arts, Entertainment, and Recreation	0	0	-1	0
Accommodation and Food Services	1	-2	-3	-2
Government	3	-4	-5	-3
Other Services, except Public Administration	1	-2	-2	-2
Total	31	-38	-45	-27

The sum of individual numbers may not be the same as the total due to rounding.

As the annualized cost of doing business reaches its full effect and the positive impact of spending diminishes, jobs forgone are expected to begin in 2012. Due to the capital intensive nature of the manufacturing industries directly affected by PR 1155, jobs forgone from the proposed rule spread across industries throughout the regional economy. From 2010 to 2025, on average, four jobs would be forgone in the retail trade sector and three jobs would be forgone in the health care and social assistance sector, for example. Jobs forgone in the non-manufacturing sectors, such as retail trade, are due mainly to reduction in personal income.

Competitiveness

The additional cost brought on by proposed rules may increase the cost of production of the affected industries relative to their national counterparts. Changes in relative production costs

would thus be a good indicator of changes in relative competitiveness. The magnitude of the impact depends on the size, diversification, and infrastructure in a local economy, as well as interactions among industries. A large, diversified, and resourceful economy would absorb the impact with relative ease. Implementation of the proposed amendments increases the cost of doing business for affected industries. The relative cost of production in the forestry, fishing, related activities and other sector is estimated to rise by 0.001% in 2011 and by 0.002% from 2012 to 2025. For the mining sector, which includes manufacturers of aggregate materials affected by the rule, the cost of production is estimated to rise by 0.001% from 2011 to 2025. The manufacturing sector also is projected to experience an increase of 0.001% in the cost of production from 2011 to 2025. All other sectors would experience an increase in the cost of production of less than 0.001%. Overall, the projected increases in the cost of production indicate that the impact on the regional economy's competitiveness relative to their national counterparts would be very small.

Changes in production costs can also affect prices of goods produced locally. The relative delivered price of a good is based on its production cost and the transportation cost of delivering the good to where it is consumed or used. The average price of a good at the place of use reflects prices of the good produced locally and imported elsewhere. The proposed rule is projected to result in delivered prices in all sectors of less than 0.001%, which is very modest compared to other economic factors influencing the price of delivered goods.

RULE ADOPTION RELATIVE TO THE COST EFFECTIVENESS SCHEDULE

On October 14, 1994, the Governing Board adopted a resolution that requires staff to address whether rules being proposed for adoption are considered in the order of cost-effectiveness. The 2007 Air Quality Management Plan (AQMP) ranked, in the order of cost-effectiveness, all of the proposed control measures for which costs were quantified. It is generally recommended that the most cost-effective actions be taken first.

Proposed Rule 1155 implements control measure BCM-01—PM Control Devices. BCM-01 is not ranked for overall cost-effectiveness among competing stationary source control measures listed in the 2007 AQMP. The estimated cost effectiveness of PR 1155 has not been determined because emissions reductions are difficult to estimate.

REFERENCES

EPA. Air Pollution Control Cost Manual - Sixth Edition. September 22, 2009 from <http://www.epa.gov/ttn/catc/products.html#cccinfo> .

Regional Economic Modeling Inc. (REMI). PI+® for the South Coast Region (169 sector model). Version 10.0.116.

South Coast Air Quality Management District (SCAQMD). Proposed Rule 1155— Particulate Matter (PM) Control Devices. October 2009.

SCAQMD. Draft Staff Report for Proposed Rule 1155—Particulate Matter (PM) Control Devices. October 2009.

SCAQMD. 2007 Air Quality Management Plan (AQMP). June 2007.

U.S. Small Business Administration (US SBA). “Small Business Size Standards.” August 2008.