

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Socioeconomic Report

Proposed Amended Rule 307.1 – Alternative Fees for Air Toxics Emissions Inventory;

Proposed Amended Rule 1401 – New Source Review of Toxic Air Contaminants;

Proposed Amended Rule 1402 – Control of Toxic Air Contaminants from Existing Sources;

SCAQMD Public Notification Procedures for Facilities under the Air Toxics “Hot Spots” Information and Assessment Act (AB 2588) and Rule 1402; and

SCAQMD Guidelines for Participating in the Rule 1402 Voluntary Risk Reduction Program

September 2016

Acting Executive Officer

Wayne Nastri

Deputy Executive Officer

Planning, Rule Development, and Area Sources

Philip M. Fine, Ph.D.

Acting Assistant Deputy Executive Officer

Planning, Rule Development, and Area Sources

Susan Nakamura

Author: Shah Dabirian, Ph.D., Program Supervisor

Technical Assistance: Michael Morris, Program Supervisor
Uyen-Uyen Vo, Air Quality Specialist

Reviewed By: Elaine Shen, Ph.D., Program Supervisor
Jillian Wong, Ph.D., Planning & Rules Manager
William Wong, Principal Deputy District Counsel

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

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

Vice Chairman: **BEN BENOIT**
Councilmember, Wildomar
Cities of Riverside County

MEMBERS:

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

JOHN J. BENOIT
Supervisor, Fourth District
County of Riverside

JOE BUSCAINO
Councilmember, 15th District
City of Los Angeles Representative

MICHAEL A. CACCIOTTI
Councilmember, South Pasadena
Cities of Los Angeles County/Eastern Region

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

LARRY MCCALLON
Mayor, Highland
Cities of San Bernardino County

JUDY MITCHELL
Councilmember, Rolling Hills Estates
Cities of Los Angeles County/Western Region

SHAWN NELSON
Supervisor, Fourth District
County of Orange

DR. CLARK E. PARKER, SR.
Senate Rules Appointee

DWIGHT ROBINSON
Councilmember, Lake Forest
Cities of Orange County

JANICE RUTHERFORD
Supervisor, Second District
County of San Bernardino

ACTING EXECUTIVE OFFICER:

WAYNE NASTRI

EXECUTIVE SUMMARY

A socioeconomic analysis was conducted to assess the impacts of the Proposed Amended Rules (PARs) 1401, 307.1, 1402, and associated PAR 1402 Guidance Documents. A summary of the analysis and findings is presented below.

Elements of Proposed Amendments	<p>At its June 2015 meeting, the SCAQMD Governing Board adopted amendments to Rule 1402 – Control of Toxic Air Contaminants from Existing Sources (Rule 1402) incorporating the Revised OEHHA Guidelines. The Governing Board directed staff to work with stakeholders to incentivize early risk reductions beyond those required under Rule 1402, to assess public notification procedures, and explore alternatives for such facilities. In addition, the Governing Board also directed staff to streamline implementation of Rule 1402, if necessary.</p> <p>Amendments to Rule 1402 are being proposed to streamline implementation and include a voluntary program to allow facilities to implement early risk reduction measures that go beyond the Action Risk level threshold in Rule 1402 with an alternative public notification approach. SCAQMD’s “Guidelines for Participating in the Rule 1402 Voluntary Risk Reduction Program” establishes procedures for the Rule 1402 Voluntary Risk Reduction program. SCAQMD’s “Public Notification Procedures for Facilities Under Air Toxics ‘Hot Spots’ Information and Assessment Act (AB 2588) and Rule 1402” clarifies Rule 1402 notification requirements.</p> <p>Amendments to Rule 307.1 are being proposed to add a fee category for facilities that elect to participate in the voluntary risk reduction program, which is an alternative to the traditional Rule 1402 provisions. PAR 307.1 also includes a provision to require facility owners or operators to either directly pay the vendors or reimburse the SCAQMD for costs associated with public meetings.</p> <p>PARs 1401 and 1402 remove the staff requirement to report OEHHA changes to risk values to the Governing Board and will instead consolidate reporting changes and their potential impacts in the SCAQMD AB 2588 Annual Report.</p>
Affected Facilities and Industries	<p>Under PAR 1402, it is estimated that 32 facilities would likely participate in the Voluntary Risk Reduction Program and 24 would potentially need to install additional controls beyond those controls identified in the June 2015 rule amendments. These identified facilities belong to various sectors of the economy, including manufacturing (NAICS 31-33) such as aerospace, glass manufacturing, metal melting, metal plating and finishing, petroleum refining and non-manufacturing sectors such as hospitals (NAICS 622), support activities for transportation (NAICS 488),</p>

	<p>colleges and universities (NAICS 611), and sewage treatment (NAICS 221). Out the 24 affected facilities, 15 are located in Los Angeles County, six in Orange County, and three in San Bernardino County.</p>
Major Assumptions and Limitation of Analysis	<p>The analysis herein was performed for a 13 year period (2017-2030). For example, the typical pollution controls that would likely be utilized under PAR 1402 are High Efficiency Particulate Arrestors (HEPA) filters for nickel plating tanks, small thermal oxidizers, oxidation catalysts for control of acrolein and benzene, scrubbers for metal particulates, carbon adsorbers for vinyl chloride and hydrochloric acid in sewage treatment and refineries. These controls are assumed to have an equipment life of six to ten years, depending on the particular type of control.</p> <p>All the costs discussed in this section are expressed in 2016 dollars. For the purpose of projecting compliance costs in the near future, it is assumed that these costs would remain the same within the analysis time frame and may increase only with inflation. The capital costs include installation and permitting fees. The analysis for risk determination would not increase SCAQMD staff time and result in additional costs as long as all currently requested information is provided with the application. Moreover, in order to compile the annual compliance costs for the additional controls assumed to be needed, it is assumed that facilities would finance the capital costs of control equipment at a real interest rate of four percent over its equipment life; as a sensitivity test, a real interest rate of one percent was also applied which is closer to the prevailing real interest rate.</p>
Compliance Costs	<p>The proposed amendments to Rule 1401 are intended to provide additional clarity and are administrative in nature, and therefore, will not have any adverse socioeconomic impacts. The proposed amendments to Rule 307.1, which add a fee category for the Voluntary Risk Reduction Program are not an additional cost. If facilities elect not to participate in this proposed program, they would be required to participate in the traditional pathway which would require submittal of an Air Toxics Inventory Report, and possibly a Health Risk Assessment and Risk Reduction Plan where the fees are higher than those proposed under PAR 307.1 for the Voluntary Risk Reduction Program. In addition, PAR 307.1 specifies that facilities that are required to conduct public meetings will be required to either pay the vendors directly or reimburse the SCAQMD for the meeting venue, audio visual equipment and personnel, security, parking, and any other logistics for holding the public notification meeting. Public notification meetings are not a new requirement. Revisions to the Public Notification Guidelines establish that the SCAQMD staff will be scheduling the logistics for</p>

Compliance Costs (cont.)	<p>these public notification meetings instead of the affected facility. The cost for these public notification meetings are not expected to change, because the affected facilities would otherwise set up the meetings and incur the costs. As a result, these amendments will not have any additional cost impacts.</p> <p>The associated cost of PAR 1402 is estimated based on the types of pollution controls that could potentially reduce the impact of total facility risk below the Voluntary Risk Threshold. The cost impacts presented herein should be viewed with the caveat that all additional costs are voluntary. Facilities that do not wish to participate may follow the traditional risk assessment and reduction pathway for which all costs were already analyzed in the June 2015 rule amendments. The associated total annual compliance cost of PAR 1402 is estimated to range from \$1.07 million to \$1.17 million, depending on the real interest rate assumed (1%-4%). The total cost mainly consists of the cost of installing and operating control equipment. The compliance costs estimated in the analysis are associated with additional pollution control equipment costs only and do not take into account other potential costs, such as some permitting and administrative costs, as these cost would have occurred independent of the proposed amendments.</p> <p>There are no expected cost impacts from PAR 1402 associated guidance documents because these guidance documents are administrative in nature and do not impose any additional costs to the affected facilities.</p>
Regional Job Impacts	<p>The proposed amendments are expected to result in approximately 10 annual jobs forgone between 2017 and 2030 when it is assumed that facilities would finance capital costs of control equipment at a 4-percent real interest rate and that all equipment and services would be purchased from businesses located within the region. When a 1-percent real interest rate is assumed instead, the job impact would be less, with approximately 8 annual jobs forgone over the same period. However, if all equipment and services would be imported from outside the region, the number of jobs foregone would increase to approximately 15 annual jobs forgone between 2017 and 2030.</p> <p>In any of the scenarios analyzed above, the projected job impacts represent less than 0.001 percent of the total employment in the four-county region.</p>

INTRODUCTION

The California Office of Environmental Health Hazard Assessment (OEHHA) establishes guidance for performing risk assessments for toxic air contaminants (TACs). On March 6, 2015, OEHHA adopted the Air Toxics Hot Spots Program Guidance Manual for Preparation of Risk Assessments (Revised OEHHA Guidelines), based on new scientific information that early-life exposures to air toxics contribute to an increased lifetime risk of developing cancer and other adverse health effects, compared to exposures that occur in adulthood. At its June 2015 meeting, the SCAQMD Governing Board adopted amendments to Rule 1402 – Control of Toxic Air Contaminants from Existing Sources incorporating the Revised OEHHA Guidelines. The Governing Board directed staff to work with stakeholders to incentivize early risk reductions beyond those required under Rule 1402, to assess public notification procedures, and explore alternatives for such facilities. In addition, the Governing Board also directed staff to streamline implementation of Rule 1402, if necessary.

As a follow up to the 2015 Rule 1402 amendment process, Proposed Amended Rule 1402 is designed to streamline implementation and to incorporate a Voluntary Risk Reduction Program. Staff has conducted an analysis to evaluate the potential number of facilities that could be eligible to participate in the Voluntary Risk Reduction Program. It was found that 32 facilities will be eligible to participate in the Voluntary Risk Reduction program.

Amendments to the following rules are being proposed to incorporate requirements for Voluntary Risk Reduction Program.

- *Rule 307.1 – Alternative Fees for Air Toxic Emission Inventory*, which establishes fees to recover the cost of implementing and administering the Air Toxics “Hot Spots” Information and Assessment Act.
- *Rule 1401 – New Source Review of Toxic Air Contaminants*, which establishes cancer and non-cancer health risk requirements for new, relocated, or modified permitted sources of toxic air pollutants.
- *Rule 1402 – Control of Toxic Air Contaminants from Existing Sources*, which establishes facility-wide risk requirements for existing facilities that emit TACs and implements the state AB2588 Air Toxics “Hot Spots” program.

Amendments to Rule 307.1 are being proposed to add a fee category for the new provisions established in Rule 1402 and other amendments to improve clarity. PAR 307.1 will be amended to include a fee category for Voluntary Risk Reduction facilities and a provision to require facility owner or operators to either directly pay or reimburse the SCAQMD for costs associated with public meetings. The fee for Voluntary Risk Reduction facilities is identical to the fee that the facilities would have had to pay with traditional risk reduction requirements under Rule 1402. This would specifically apply to the category of facilities with Priority Scores of more than ten which have not prepared Health Risk Assessments. This is not a new fee, and facilities that do not elect to participate in the Voluntary Risk Reduction Program would be required to pay a similar fee or possibly higher if a Health Risk Assessment and/or Risk Reduction Plan is required. The fee for public meetings is identical to the cost of the facility conducting their own public meeting. Therefore, the

proposed requirements for Rule 307.1 are intended to provide additional clarity and are administrative and informational in nature, and will not have any additional costs or adverse socioeconomic impacts.

Proposed amendments to Rule 1401 will remove the requirement that staff report to the Governing Board regarding OEHHA changes to risk values and will instead report these changes and their potential impacts in the SCAQMD AB 2588 Annual Report. The proposed amendments for Rule 1401 are administrative in nature, and therefore, will not have any adverse socioeconomic impacts.

Amendments to Rule 1402 are being proposed to include a voluntary program to allow facilities to implement early risk reduction measures that go beyond the Action Risk Level threshold in Rule 1402 with an alternative public notification approach. “Draft SCAQMD Public Notification Procedures for Facilities Under Air Toxics ‘Hot Spots’ Information and Assessment Act (AB 2588) and Rule 1402” (Notification Procedures) is being revised to clarify Rule 1402 notification requirements. “Draft SCAQMD Guidelines for Participating in the PAR 1402 Voluntary Risk Reduction Program” (Voluntary Risk Reduction Guidelines) is being developed to establish PAR 1402 Voluntary Risk Reduction procedures. In addition, PAR 1402 includes additional requirements for facilities that are designated as a Potentially High Risk Level Facility, streamlines implementation, and includes other amendments to improve clarity. This report focuses on the PAR 1402 socioeconomic impacts.

There are no expected cost impacts from PAR 1402 associated guidance documents because changes to the guidance documents are administrative in nature and do not impose any additional costs to the affected facilities.

LEGISLATIVE MANDATES

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

SCAQMD Governing Board Resolutions

On March 17, 1989 the SCAQMD Governing Board adopted a resolution that calls for an economic analysis of regulatory impacts that includes the following elements:

- Affected industries
- Range of control costs
- Cost effectiveness
- Public health benefits

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 most 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." While the present amendments do not have such effects, they will have costs, thus staff prepared this socioeconomic impact assessment. 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

Additionally, the SCAQMD 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 SCAQMD to:

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

Finally, 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 that imposes Best Available Retrofit Control Technology or "all feasible measures" requirements relating to ozone, carbon monoxide (CO), oxides of sulfur (SO_x), oxides of nitrogen (NO_x), and their precursors. This statute does not apply to the proposed rules; moreover, cost effectiveness in terms of dollars per ton is not meaningful for risk-based regulations, since many other factors besides the amount of pollution affect the risk such as the cancer potency and the location of receptors.

AFFECTED FACILITIES

From the Staff Report for the June 2015 amendments to Rule 1402 (June 2015 Staff Report), the SCAQMD staff estimated that 22 facilities could potentially have a cancer risk greater than the Action Risk Level and 42 facilities could potentially have a cancer risk greater than the Public Notification Risk Level when using the Revised OEHHA Guidelines. Of these 64 facilities, staff identified 32 facilities that have a previously approved HRA below the Action Risk Level and are not likely to be a Potentially High Risk Level Facility, and thus will be eligible to participate in the Voluntary Risk Reduction Program. Under PAR 1402, facilities participating in the Voluntary Risk Reduction Program are required to implement risk reduction measures specified in a Voluntary Risk Reduction Plan to reduce the impact of total facility emissions below the Voluntary Risk Threshold by no later than two and a half years. Participating Voluntary Risk Reduction facilities will be required to make facility-wide risk reductions beyond Rule 1402

requirements. There are a variety of options that can be implemented such as process changes, material changes, additional air pollution control, or reduced throughput.

For the 22 facilities that could potentially be greater than the Action Risk Level, the June 2015 Staff Report estimated the types of controls that would bring the impact of total facility emissions below the Action Risk Level. Upon further analysis, two facilities were removed because their Priority Scores were estimated to be less than ten, and nine facilities were removed because the facilities are currently either in risk reduction implementation, subject to a different rule that will result in risk reduction, or have installed pollution controls. For the remaining 11 facilities, staff estimated that for eight facilities, the controls that SCAQMD staff identified in the June 2015 Staff Report would be sufficient to reduce the impact of total facility emissions below the Voluntary Risk Threshold and three facilities would require additional controls than those assumed in the June 2015 Staff Report in order to reduce the impact of total facility emissions below the Voluntary Risk Threshold.

According to the June 2015 amendments to Rule 1402, 42 facilities were identified to potentially have a cancer risk between the Public Notification Risk Level and Action Risk Level when using the Revised OEHHA Guidelines. Since then, staff has identified three additional facilities for this category, bringing the total to 45 facilities. Of these 45 facilities, 20 facilities are in the process of shutting down, currently in risk reduction implementation, subject to a different rule that will result in risk reduction, have installed pollution controls, or Priority Scores were estimated to be less than ten. It is expected that the remaining 25 facilities could potentially reduce the risk from total facility emissions below the Voluntary Risk Threshold by implementing risk reduction measures. Staff is conservatively anticipating that facilities will install pollution control equipment as their risk reduction measures. Due to the cost of the pollution control required to bring facility emissions below Voluntary Risk Threshold, staff assumed that four of these 25 facilities would not participate in Voluntary Risk Reduction.

Therefore, under PAR 1402, it is estimated that 32 existing facilities would likely participate in the Voluntary Risk Reduction Program and 24 facilities would potentially need to install additional controls (Table 1) beyond those controls identified in the June 2015 rule amendments. These 24 identified facilities belong to various sectors of the economy, including manufacturing such as aerospace, glass manufacturing, metal melting, metal plating and finishing, petroleum refining and non-manufacturing sectors such as hospitals, support activities for transportation, colleges and universities, and waste management. Out of the 24 affected facilities that are expected to install additional controls, 15 are located in Los Angeles County, six in Orange County, and three in San Bernardino County.

Table 1 presents the potentially affected facilities, their industry types and sizes of the affected businesses. A detailed discussion of the assumptions and basis for the number of facilities that could potentially require additional pollution controls can be found in the Staff Report for the proposed amended rules. For the purpose of this analysis, the SCAQMD staff is assuming that the selected compliance path will be installation of pollution controls. There are other options available that many facilities may select including product replacement such as using materials with less or no toxic emissions, use

of different fuels that are less toxic such as natural gas instead of diesel, locating the equipment at a distance to create a larger buffer between the equipment and the residential and sensitive receptors, and reduction of throughput. The availability of these alternative options depends on the specific situation at each facility.

Table 1
Facilities that Potentially Would Need
Additional Pollution Controls by the Proposed Voluntary Risk Reduction Program

Type of Facility	Key Toxic Driver (s)	Typical Control Device	Industry Classification (6-Digit NAICS Code)	Number of Affected Facilities
Hospital	Ethylene oxide, PAHs and formaldehyde	Scrubber, Oxidation catalyst	General Medical and Surgical Hospitals (622110)	2
University	PAHs and acrolein	Oxidation catalyst	Colleges and Universities (611310)	1
Roofing Supplies	Hydrogen sulfide	Scrubber	Asphalt Shingle and Coating Materials Manufacturing (324122)	1
Gasoline Pipeline	Benzene and gasoline vapor	Small thermal oxidizer	All other Support Activities for Transportation (488999)	2
Utilities (Electricity)	PAHs	Oxidation catalyst	Electric Power Generation (221122)	1
Ski Facility	Acrolein	Oxidation catalyst	Skiing Facilities (713920)	1
Waste Management	Formaldehyde, tetrachloroethylene, hexavalent chromium, benzene, PAHs, chloroform, vinyl chloride and hydrochloric acid	HEPA, Carbon Adsorber and Scrubber	Sanitation Sewage Treatment Facilities (221320)	6
Aerospace	Hexavalent chromium	HEPA and Scrubber	Aircraft Manufacturing (336411)	2
Metal Plating	Hexavalent chromium	HEPA	Electroplating, Plating, Polishing, Anodizing, and Coloring (332813)	1
Metal Melting	Hexavalent chromium, PAHs, benzene, and nickel	HEPA and Scrubber	Industrial Valve Manufacturing (332911), and Steel Foundries (331513)	2
Glass Manufacturer	Nickel	HEPA	Flat Glass Manufacturing (327211)	1
Petroleum Refining	Benzene, acrolein, hexavalent chromium and carbon tetrachloride, nickel	Scrubber, Small Thermal Oxidizer, Oxidation catalyst, Carbon Adsorber	Petroleum Refineries (324110)	4
Total				24

Small Businesses

The SCAQMD defines a "small business" in Rule 102 for purposes of fees as one which employs 10 or fewer persons and which earns less than \$500,000 in gross annual receipts. The SCAQMD also defines "small business" for the purpose of qualifying for access to services from the SCAQMD's Small Business Assistance Office (SBAO) as a business with an annual receipt of \$5 million or less, or with 100 or fewer employees. In addition to the SCAQMD's definition of a small business, the federal Clean Air Act Amendments (CAA) of 1990 and the federal Small Business Administration (SBA) also provide definitions of a small business.

The CAAA classifies a business 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 SBA definitions of small businesses vary by six-digit North American Industrial Classification System (NAICS) codes. In general terms, a small businesses must have no more than 500 employees for most manufacturing and mining industries, and no more than \$7 million in average annual receipts for most nonmanufacturing industries.¹

According to the Dun and Bradstreet database acquired in January 2016, three out of the 24 existing AB2588 facilities that could potentially need additional controls would be classified as small businesses under the SBA definition. They are a metal plating facility, an asphalt shingle and coating facility, and a small aerospace facility with an estimated total annual compliance cost of under \$30,000 (see next section for detailed discussion of compliance costs). Based on SCAQMD permit data, however, none of the 24 facilities were reported as a small business as defined under Rule 102.

COMPLIANCE COSTS

PAR 307.1

Amendments to Rule 307.1 are being proposed to add fees for the new provisions established in PAR 1402 and other amendments to improved clarity. PAR 307.1 will be amended to include a fee for Voluntary Risk Reduction facilities and a provision to either directly pay the vendors or reimburse the SCAQMD for costs associated with public meetings. The fee for Voluntary Risk Reduction facilities is identical to the fee the facilities would have had to pay with traditional risk reduction, and in some cases less if the facility is required to submit a Health Risk Assessment and/or Risk Reduction Plan. The fee for public meetings is identical to the cost of the facility conducting its own public meeting. The proposed requirements for Rule 307.1 are intended to provide additional clarity and are administrative and informational in nature, and will not have any adverse socioeconomic impacts.

¹ See the SBA website (<http://www.sba.gov/community/blogs/community-blogs/small-business-matters/what-small-business-what-you-need-know-and-wh>). The latest SBA definition of small businesses by industry can be found at <http://www.sba.gov/content/table-small-business-size-standards>.

PAR 1401

Amendments to Rule 1401 removes the staff requirement to report separately OEHHA changes to risk values to the Governing Board and instead will report these changes and their potential impacts in the SCAQMD AB 2588 Annual Report. The proposed amendments for Rule 1401 are administrative in nature, and therefore, will not have any adverse socioeconomic impacts.

PAR 1402

The cost impacts analyzed herein should be viewed with the caveat that all additional costs are voluntary. Facilities that do not wish to participate may follow the traditional risk assessment and reduction pathway for which all costs were already analyzed in the June 2015 amendments to Rule 1402. In addition, this analysis does not take into account the cost savings associated with the modified public notification that a facility participating in the Voluntary Risk Reduction Program would experience. Facilities that elect to participate in the Voluntary Risk Reduction Program will not be required to conduct written public notification or a public meeting.

Under PAR 1402, facilities participating in Voluntary Risk Reduction are required to implement risk reduction measures specified in a Voluntary Risk Reduction Plan to reduce the impact of total facility risk below the Voluntary Risk Threshold by no later than two and a half years. Therefore, participating Voluntary Risk Reduction facilities are conservatively anticipated to add additional pollution controls beyond Rule 1402 requirements. SCAQMD staff evaluated the primary and secondary toxic drivers for the AB 2588 facilities that could potentially participate in Voluntary Risk Reduction. Based on this evaluation, SCAQMD staff estimated the types of pollution controls that could potentially reduce the impact of total facility risk below the Voluntary Risk Threshold.

While the analysis below focuses on the costs to install and operate add-on air pollution control equipment, other options are available to facilities to decrease risk. Where applicable, facilities may decide to use different materials that have less or no toxic emissions, use different fuels, move their equipment to create a larger distance between sensitive populations, or possibly limit throughput. Modifying operations to decrease or eliminate the emissions of air toxics is often a more cost-effective option. For example, the use of clean burning fuels, reformulated coatings, alternative solvents or trivalent chromium plating, where applicable, may reduce risks, allow increased throughput and lower operating costs. When determining which option to implement, facilities will ultimately choose the most cost-effective option for their particular situation. In many cases, the option chosen will not be to install add-on air pollution control equipment. However, to conservatively estimate the cost impacts of the proposed rule, this analysis will assume that impacted facilities will utilize add-on control equipment.

While the types and sizes of control equipment will vary as determined by the applicant, staff is analyzing the annual costs based on previous control strategies utilized in similar situations.

- Metal Melting – Based on current information in the AB 2588 program, it is expected that two metal melting shops may choose to install controls. One shop is expected to

install a high efficiency particulate arrestors (HEPA) and a scrubber to control nickel emissions. The capital cost of a HEPA system is estimated at \$134,700 with a projected equipment life of ten years. On an annual basis, the electricity cost is \$22,515 and the filter replacement cost is \$1,185. The scrubber has an estimated cost of \$54,700 with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$5,500. The other metal melting shop is expected to install a scrubber and one an oxidation catalyst to control hexavalent chromium, PAHs, and benzene emissions. The scrubber has an estimated cost of \$54,700 with a projected equipment life of ten years. The oxidation catalyst has an estimated one-time cost of \$467,600 with a projected equipment life of 6 years with no additional operating and maintenance. On an annual basis, the electricity cost is estimated at \$5,500.

- Metal Plating – It is expected that one metal plating shop may choose to install HEPA to control hexavalent chromium emissions. The capital cost of a HEPA system is \$80,000 with a projected equipment life of ten years. On an annual basis, the electricity cost is \$17,290 and the filter replacement cost is \$910.
- Aerospace – It is expected that two aerospace facilities may choose to install controls. One facility could install HEPA and a scrubber to control hexavalent chromium emissions. The capital cost of a HEPA system is at \$134,700 with a projected equipment life of ten years. On an annual basis, the electricity cost is \$22,515 and the filter replacement cost is \$1,185. The scrubber has an estimated cost of \$54,700 with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$5,500. The other facility could install a scrubber to control hexavalent chromium emissions. The scrubber has an estimated cost of \$54,700 with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$5,500.
- Waste Treatment Facilities – It is expected that six sewage treatment facilities may choose to install controls. Three out of six facilities could install a carbon adsorber to control formaldehyde or tetrachloroethylene emissions. The estimated cost of a carbon adsorber is \$176,000 each with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$13,160 and the filter replacement cost is \$5,640 for each unit, respectively. Two facilities could install scrubbers and carbon adsorbers to control vinyl chloride, hydrochloric acid, and/or chloroform emissions. Scrubbers have an estimated cost of \$230,700 each with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$24,300 for each unit, respectively. The estimated cost of a carbon adsorber is \$176,000 each with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$13,160 and the filter replacement cost is \$5,640 for each unit, respectively. One facility could install HEPA to control hexavalent chromium, benzene, and PAHs. The HEPA system has an estimated cost of \$80,000 with a projected equipment life of ten years. On an annual basis, the electricity cost is \$17,290 and the filter replacement cost is \$910.
- Hospitals – It is expected that two medical care facilities may choose to install controls. One facility may install a scrubber to control ethylene oxide and formaldehyde emissions. The estimated cost is \$54,700 with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$5,500. The other facility may install an oxidation catalyst to control formaldehyde and PAH emissions. The

oxidation catalyst has an estimated one-time cost of \$467,600 with a projected equipment life of 6 years with no additional operating and maintenance.

- University – It is expected that one university may choose to install an oxidation catalyst to control PAH and acrolein emissions. The oxidation catalyst has an estimated one-time cost of \$467,600 with a projected equipment life of 6 years with no additional operating and maintenance.
- Roofing Supplies – It is expected that one roofing supply facility may choose to install a scrubber to control hydrogen sulfide emissions. A scrubber has an estimated cost of \$54,700 each with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$5,500.
- Skiing Facility – It is expected that one facility may choose to install an oxidation catalyst to control acrolein emissions at an estimated one-time cost of \$467,600 with a projected equipment life of 6 years with no additional operating and maintenance.
- Glass Manufacturing – It is expected one facility may choose to install HEPA to control nickel emissions. The capital cost of a HEPA system is \$80,000 with a projected equipment life of ten years. On an annual basis, the electricity cost is \$17,290 and the filter replacement cost is \$910.
- Refineries – It is expected that four refineries may choose to install controls. One out of four facilities could install a carbon adsorber to control for carbon tetrachloride and nickel emissions. The estimated cost for a carbon adsorber is \$176,000 with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$13,160 and the filter replacement cost is estimated at \$5,640. One facility could install an oxidation catalyst to control for benzene emissions. The estimated one-time cost for an oxidation catalyst is \$467,600 with a projected equipment life of 6 years. No operating and maintenance cost associated with the oxidation catalyst. One facility could install a scrubber to control for hexavalent chromium emissions which has an estimated cost of \$54,700 with a projected equipment life of ten years. On an annual basis, the electricity cost is estimated at \$5,500. The fourth facility could install a small thermal oxidizer to control for benzene and acrolein emissions. The estimated cost of a small thermal oxidizer is \$106,000 with a projected equipment life of ten years. On an annual basis, the additional cost of electricity and natural gas is estimated at \$11,250, respectively.
- Gasoline Pipeline – It is expected that two facilities may choose to install controls. Both facilities could install a small thermal oxidizer to control gasoline vapor and/or benzene. The estimated cost of a small thermal oxidizer is \$106,000 with a projected equipment life of ten years. On an annual basis, the additional cost of electricity and natural gas is estimated at \$11,250, respectively.
- Electricity (Utilities) – It is expected that one facility may choose to install an oxidation catalyst to control PAHs. The oxidation catalyst has an estimated one-time cost of \$467,600 with a projected equipment life of 6 years with no additional operating and maintenance.

Table 2 reports the projected compliance costs due to the potential additional controls for the expected 24 facilities. Each year, the compliance costs due to the PAR 1402 Voluntary Risk Reduction Program are estimated to increase by an amount ranging from \$1.07 to \$1.17 million, depending on the real interest rate assumed (1%-4%). The sewage treatment facilities (NAICS 221320) would bear the largest share of compliance costs (26%)

followed by petroleum refineries (NAICS 324110, 14 %) when compared to other potentially affected industries. Other affected sectors would account for one to 12 percent of the projected annual compliance costs. All the costs discussed in this section are expressed in 2016 dollars. For the purpose of projecting future compliance costs in the near future, it is assumed that these costs would remain the same within the analysis time frame and may increase only with inflation. The capital costs include installation and permitting fees. The analysis for risk determination would not increase SCAQMD staff time and result in additional costs as long as all currently requested information is provided with the application.

Table 2
Projected Compliance Costs by Industry Due to Additional Pollution Controls
(2016 Dollars)

Industry Classification (6-Digit NAICS Code)	Projected Increase in Compliance Costs Per Year of Installing Additional Controls*		
	4% Real Interest Rate	1% Real Interest Rate	Percent Distribution
General Medical and Surgical Hospitals (622110)	\$101,444.28	\$91,958.96	9%
Colleges and Universities (611310)	\$89,200.27	\$80,683.62	8%
Asphalt Shingle and Materials Coating Manufacturing (324122)	\$12,244.01	\$11,275.34	1%
All other Support Activities for Transportation (488999)	\$70,137.68	\$66,383.40	6%
Electric Power Generation (221122)	\$89,200.27	\$80,683.62	8%
Skiing Facilities (713920)	\$89,200.27	\$80,683.62	8%
Sanitation Sewage Treatment Facilities (221320)	\$303,748.40	\$279,410.64	26%
Aircraft Manufacturing (336411)	\$52,551.30	\$49,197.25	4%
Electroplating, Plating, Polishing, Anodizing, and Coloring (332813)	\$28,063.28	\$26,646.57	2%
Industrial Valve Manufacturing (332911), and Steel Foundries (331513)	\$141,751.57	\$129,880.86	12%
Flat Glass Manufacturing (327211)	\$28,063.28	\$26,646.57	2%
Petroleum Refineries (324110)	\$164,768.31	\$151,257.76	14%
All Industries	\$1,170,3731	\$1,074,708	100%

* Numbers may not sum up due to rounding.

Moreover, in order to compile the annual compliance costs for the additional controls assumed, it is assumed that facilities would finance the capital costs of control equipment at a real interest rate of four percent over its equipment life; as a sensitivity test, real interest rate of one percent was also applied which is closer to the prevailing real interest rate.²

The cost impacts analyzed above should be viewed with a qualification that all additional costs are voluntary. Facilities that do not wish to participate may follow the traditional risk assessment and reduction pathway for which all costs were already analyzed in the June 2015 rule amendments.

There are no expected cost impacts from PAR 1402 associated guidance documents because changes to the guidance documents are administrative in nature and do not impose any additional costs to the affected facilities.

MACROECONOMIC IMPACTS ON REGIONAL ECONOMY

The REMI model (PI+ v1.7.2, 2016) was used to assess the total socioeconomic impacts of a policy change (i.e., the proposed amendments). The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and for each county, it is comprised of five interrelated blocks: (1) output and demand, (2) labor and capital, (3) population and labor force, (4) wages, prices and costs, and (5) market shares.³

The assessment herein is performed relative to a baseline (“business as usual”) where the proposed amendments would not be implemented. The proposed amendments would create a policy scenario that can be summarized as such:

- Under PAR 1402, 24 existing AB2588 facilities would incur an annual compliance costs totaling \$1.07 million to \$1.17 million to install and operate additional control equipment. Consistent with the existing AB2588 program implementation schedule, the annual compliance costs are assumed to start in 2017.

Direct effects of the proposed amendments 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

² The SCAQMD has since 1987 adopted a real interest rate of four percent for the purpose of cost-effectiveness analysis. In comparison, the federal Office of Management and Budget annually updates the discount rates that are to be used for cost-effectiveness analysis of federal programs and policies. These discount rates are based on Treasury borrowing rates on marketable securities of comparable maturity to the period of analysis. For calendar year 2015, the real interest rate is 0.9 percent for a ten-year project. See <https://www.federalregister.gov/articles/2015/01/29/2015-01616/discount-rates-for-cost-effectiveness-analysis-of-federal-programs> (accessed March 28, 2015).

³ Within each county, producers are made up of 66 private non-farm industries, three government sectors, and a farm sector. Trade flows are captured between sectors as well as across the four 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. (For details, please refer to REMI online documentation at <http://www.remi.com/products/pi>.)

(2017 to 2030). Direct effects of the proposed amendments include additional costs to the affected entities and additional sales, by local vendors, of equipment, devices, or services that would meet the proposed requirements.⁴ Whereas all the compliance expenditures that are incurred by the affected facilities will increase their cost of doing business, the purchase of additional pollution control equipment will increase the sales of various sectors. Moreover, installation and maintenance of the control equipment would result in an increase in sales of many sectors as well. For example, the utility sector (NAICS 22) will benefit from the sales of additional electricity for the operation for most of the controls.

Table 3 lists the industry sectors modeled in REMI that would either incur or benefit from the compliance expenditures.⁵ It should be noted that, although staff was able to make assumptions about the geographical location of directly affected facilities based on the review of SCAQMD permits, the same could not be assumed for the businesses from whom the affected facilities would purchase control equipment and services. As a result, staff adopted the ad-hoc assumption that the affected facilities would purchase controls and other services from providers within the same county.

⁴ To compile the REMI inputs, all amounts expressed in 2016 dollars are converted to 2009 dollars using CoreLogic's Marshall & Swift Equipment Indexes: 2016 dollar amount x (2009 annual index ÷ 2016Q2 index).

⁵ It is worth mentioning that improved public health due to reduced air pollution emissions may also assert a positive effect on worker productivity and other economic factors; however, public health benefit assessment requires the modeling of air quality improvements. Therefore, it is conducted for Air Quality Management Plans and not for individual rules or rule amendments.

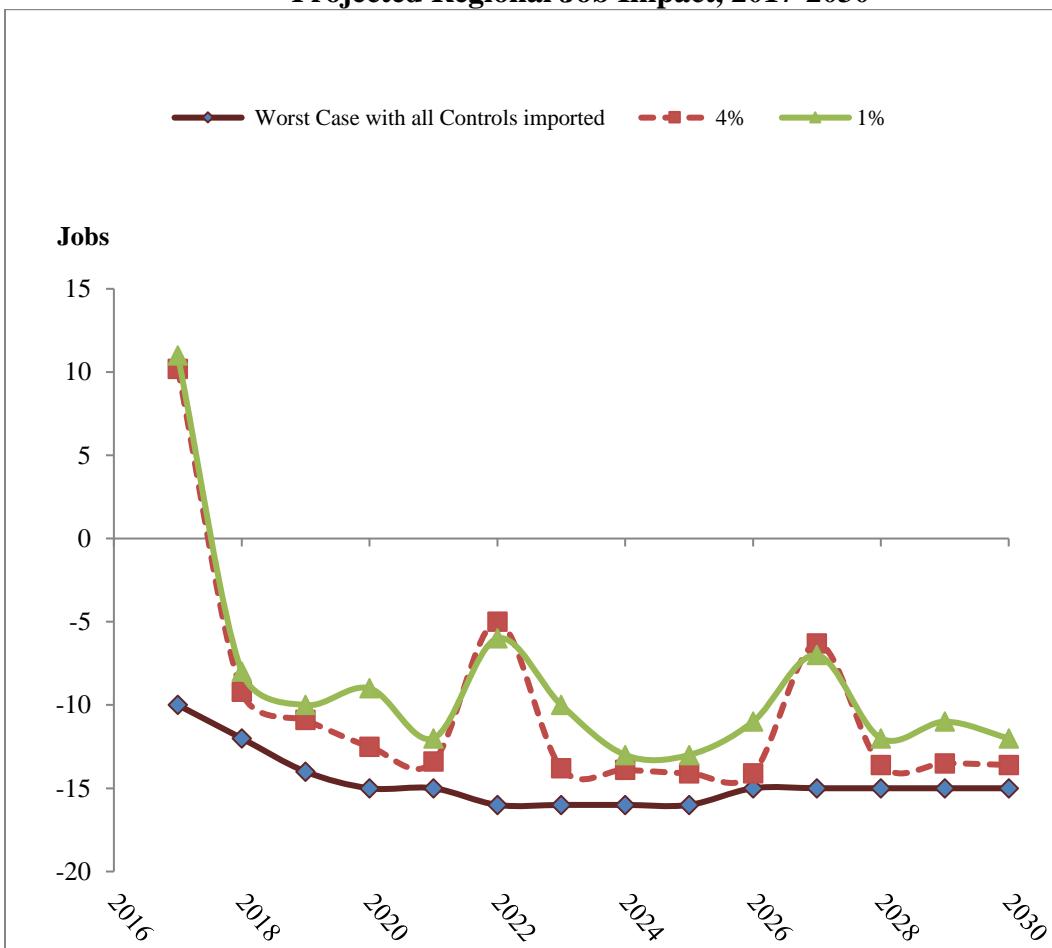
Table 3
Industries Incurring vs. Benefitting from Compliance Costs/Spending

Source of Compliance Costs	REMI Industries Incurring Compliance Costs (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
HEPA Filters	Electroplating, Plating, Polishing, Anodizing, and Coloring (332813); Flat Glass Manufacturing (327211); Sanitation Sewage Treatment Facilities (221320)	<i>Capital:</i> Machinery manufacturing (333) <i>O&M:</i> Utilities (22); Textile mills & textile product mills (313-314)
Oxidation Catalysts	Petroleum and coal products manufacturing (324); Skiing Facilities (713920); Colleges and Universities (611); Hospitals (622)	<i>Capital:</i> Machinery manufacturing (333)
Carbon Absorbers	Petroleum and coal products manufacturing (324); Sanitation Sewage Treatment Facilities (221320)	<i>Capital:</i> Machinery manufacturing (333) <i>O&M:</i> Utilities (22); Chemical manufacturing (325)
Scrubbers	Petroleum and coal products manufacturing (324); Hospitals (622110), Asphalt Shingle and Materials Coating Manufacturing (324122); Sanitation Sewage Treatment Facilities (221320); Industrial Valve Manufacturing (332911), and Steel Foundries (331513)	<i>Capital:</i> Machinery manufacturing (333) <i>O&M:</i> Utilities (22)
Small Thermal Oxidizers	Petroleum and coal products manufacturing (324); All other Support Activities for Transportation (488999)	<i>Capital:</i> Machinery manufacturing (333) <i>O&M:</i> Utilities (22)

The proposed amendments to Rule 1402 are expected to result in approximately 10 jobs forgone between 2017 and 2030 when a 4-percent real interest rate is assumed (approximately 8 jobs with a 1-percent real interest rate). The projected job impacts represent about 0.001 percent of the total employment in the four-county region.

Figure 1 presents a trend of job gain and losses over the 2017-2030 time period. In addition, staff has analyzed an alternative scenario (worst case) where the affected facilities would not purchase any controls or services from providers within the Basin. At a 4-percent interest rate, the job impact becomes more negative. The number of jobs foregone increases to approximately 15 annual jobs foregone between 2017 and 2030.

Figure 1
Projected Regional Job Impact, 2017-2030



In earlier years, positive job impacts from the expenditures made by the affected facilities would more than offset the jobs forgone from the additional cost of doing business. In 2017, 10 additional jobs could be created in the overall economy. Positive job impacts in the sector of manufacturing (NAICS 31-33) are due to purchase of various types of control equipment by the affected facilities (as presented in Table 3). The manufacturing sector (NAICS 31-33), which is projected to bear the majority of estimated total compliance costs, would not lose more jobs than the other industry sectors. This is because other businesses in the manufacturing sector, specifically in the machinery manufacturing industry, are expected to benefit from the increased sale of various types of control equipment, thus offsetting the direct effect of compliance costs incurred by other manufacturing facilities.

EMISSION REDUCTION POTENTIAL

The proposed amendments are expected to result in additional TAC emission reductions by establishing a Voluntary Risk Reduction Threshold that goes beyond the Action Risk Level, an additional 60 percent reduction based on the cancer risk. In addition, emission reductions are expected to occur more quickly as the time to comply with risk reduction

requirements has been reduced from five to three years. The proposed amendments may encourage additional voluntary emission reductions due to the proposed modified public notification.

PAR 1402 will reduce localized toxic emissions near facilities. Reductions from individual facilities that are required to implement risk reduction plans are not expected to result in significant regional emission reductions.

NECESSITY OF RULE ADOPTION

Please refer to the Staff Report.

RULE ADOPTION RELATIVE TO COST-EFFECTIVENESS

Please refer to the Staff Report.

INCREMENTAL COST-EFFECTIVENESS

Please refer to the Staff Report.

REFERENCES

Dun & Bradstreet Enterprise Database. 2016.

Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70 sector model). Version (PI+ v1.7.2, 2016).

South Coast Air Quality Management District. Draft Staff Report Proposed Amended Rule 307.1 – Alternative Fees for Air Toxic Emission Inventories, Proposed Amended Rule 1401 – New Source Review of Toxic Air Contaminants; Proposed Amended Rule 1402 Control of Toxic Substances from Existing Sources; Draft “SCAQMD Public Notification Procedures for Facilities Under the Air Toxics ‘Hot Spots’ Information and Assessment Act (AB 2588) and Rule 1402”; and Draft “SCAQMD Guidelines for Participating in the Rule 1402 Voluntary Risk Reduction Program”, September 2016.