

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Socioeconomic Impact Assessment For Proposed Amended Rule 1401 – New Source Review of Toxic Air Contaminants

July 2026

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EXECUTIVE SUMMARY

On March 17, 1989, the South Coast Air Quality Management District (South Coast AQMD) Governing Board adopted a resolution which requires an analysis of the economic impacts associated with adopting and amending rules and regulations. In addition, Health and Safety Code Section 40440.8 requires a socioeconomic impact assessment for any proposed rule, rule amendment, or rule repeal which “will significantly affect air quality or emissions limitations.” Health and Safety Code Section 40728.5 requires the South Coast AQMD Governing Board to actively consider the socioeconomic impacts of regulations, make a good faith effort to minimize adverse socioeconomic impacts and include small business impacts. Lastly, Health and Safety Code Section 40920.6 requires an incremental cost-effectiveness analysis for a proposed rule or amendment which imposes Best Available Retrofit Control Technology (BARCT) or “all feasible measures” requirements relating to emissions of ozone, carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOC), and their precursors. However, Health and Safety Code Section 40920.6 is not applicable to new or amended rules that seek to control toxic air contaminants (TACs) because they are not classified as criteria pollutants or ozone precursors.

Proposed Amended Rule 1401 (PAR 1401) – New Source Review of Toxic Air Contaminants has been developed to update the listing of TACs to reflect the new compounds identified by the California Office of Environmental Health Hazard Assessment (OEHHA) and update existing compounds with new risk thresholds. A socioeconomic impact assessment has been conducted to assess the impacts from implementing PAR 1401 and the following presents a summary of the analysis and findings.

Key Elements of PAR 1401

PAR 1401 seeks to update the listing of TACs to reflect new chemical compounds identified by OEHHA or update existing compounds with new risk thresholds.¹ However, implementation of PAR 1401 will only impact facilities with new, modified, or relocated equipment or sources that emit some of the newly added TACs during the permit application process. PAR 1401 will not be applied retroactively to existing equipment or sources.

Affected Facilities and Industries

Of the new TACs being added to PAR 1401, only facilities seeking to install new equipment, or modify/relocate existing equipment that will emit polymeric hexamethylene diisocyanate (HDI), parachlorobenzotrifluoride (PCBTF), and/or tert-butyl acetate (t-BAc) will require the installation of enhanced air pollution control technology.

The potential number of applications that may be submitted in accordance with HDI, PCBTF and/or t-BAc emissions is assumed to directly correlate to the number of existing South Coast AQMD air permits issued from 2016 to 2023 for facilities with equipment and/or processes that use HDI (e.g., 535 facilities), PCBTF or t-BAc (e.g., eight facilities). By including HDI in PAR 1401, the majority of facilities that may be required to submit

¹ South Coast AQMD, Proposed Amended Rule 1401 – New Source of Toxic Air Contaminants, <https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1401>, accessed June 2026.

permit applications are projected to belong to the Repair and Maintenance Industry sector under the North American Industry Classification System (NAICS 811). Similarly, by including PCBTF and t-BAC in PAR 1401, the potential facilities that may need to submit permit applications are expected to belong to the sectors of State and Local Government (NAICS 92), Retail trade (NAICS 44-45), Motion picture industries (NAICS 512), Paper manufacturing (NAICS 322), Chemical manufacturing (NAICS 325), Computer and electronic product manufacturing (NAICS 334), or Support activities for transportation (NAICS 487-488).

A small business analysis was also conducted using permit data for facilities with existing equipment or processes that currently use HDI, PCBTF and/or t-BAC. The analysis assumed that the distribution of existing facilities which currently qualify as a small business will correlate to the number of small businesses within the total number of future facilities that will be subject to PAR 1401. The following table presents the projected proportions of facilities subject to PAR 1401 that may qualify as a small business based on varying small business definitions.

Small Business Definition	Percentage Share of Facilities Based on HDI Permits	Percentage share of Facilities Based on PCBTF or t-BAC Permits
South Coast AQMD Rule 102	55%	0%
South Coast AQMD Small Business Assistance Office	82%	50%
U.S. Small Business Administration	79%	67%
1990 CAAA	14%	33%

Analytical Assumptions

PAR 1401 will only apply to new, relocated, or modified sources of certain TACs and will not be applied retroactively to existing equipment or sources. This analysis assumes that the industry and small business distributions of facilities with South Coast AQMD permits for equipment that use compounds added by PAR 1401 will be similar to the corresponding distribution of facilities that may be impacted in the future. In addition, the type of enhanced control equipment that will likely be needed to comply with PAR 1401 is expected to be similar to what existing facilities are currently using to control emissions of HDI, PCBTF and t-BAC, e.g., spray booths equipped with either high efficiency particulate arrestor (HEPA) filters or carbon adsorbers. While estimating the future number of actual permit applications that will be submitted by

facilities in response to PAR 1401 cannot be predicted with any degree of certainty, historical permit data from the 2016-2023 period combined with the typical 10-year lifespan of HEPA filtration technology has been used as a surrogate to estimate the potential future socioeconomic impacts for the 2026 to 2035 period. Compliance costs were estimated by assuming that the annual number of anticipated new permit applications equals the average annual number of permit applications received in prior years. The analysis indicated that PAR 1401 would result in approximately 89 new permit applications for HDI and two new permit applications per year for PCBTF and t-BAC. The compliance costs of implementing PAR 1401 are associated with: 1) purchasing spray booths equipped with HEPA filters; 2) purchasing spray booths equipped with carbon adsorbers; 3) replacing HEPA filters; 4) replacing activated carbon; 5) electricity usage; and 6) permit fees.

Compliance Costs Over the forecast period from 2026 to 2035, the total present value of the compliance costs ranges from \$45,798,191 to \$38,564,784 at a 1% and 4% discount rate, respectively. The average annual compliance cost over the same period ranges from \$4,673,204 to \$4,861,145 at a 1% and 4% real interest rate, respectively. The following table presents a summary of the average annual compliance costs of PAR 1401 by cost category.

Cost Categories	Annual Average of PAR 1401 (2026-2035)	
	1% Real Interest Rate	4% Real Interest Rate
Capital Costs		
<u>Equipment Costs:</u> Spray Booths with HEPA Filters	\$1,164,134	\$1,320,176
<u>Permit Fee Costs:</u> Spray Booths with HEPA Filters	\$121,574	\$137,870
<u>Equipment Costs:</u> Spray Booths with Carbon Adsorbers	\$113,906	\$129,174
<u>Permit Fee Costs:</u> Spray Booths with Carbon Adsorbers	\$2,490	\$2,824
Recurring Costs		
<u>Equipment Costs:</u> Replacement of HEPA Filters	\$1,251,162	\$1,251,162
<u>Utility Costs:</u> Electricity for Spray Booths with HEPA Filters	\$737,686	\$737,686

<u>Permit Renewal Fee Costs:</u> Spray Booths with HEPA Filters	\$1,037,787	\$1,037,787
<u>Equipment Costs:</u> Replacement of Activated Carbon	\$206,604	\$206,604
<u>Utility Costs:</u> Electricity for Spray Booths with Carbon Adsorbers	\$22,755	\$22,755
<u>Permit Renewal Fee Costs:</u> Spray Booths with Carbon Adsorbers	\$15,107	\$15,107
Total	\$4,673,204	\$4,861,145

Using a 4% real interest rate, the analysis indicates that the majority (92.3%) of the total annual average compliance cost of PAR 1401 would be attributable to the installation of spray booths with HEPA filters, replacements of spent HEPA filters, electricity costs, and permit renewals. Meanwhile, the costs relating to spray booths equipped with carbon adsorbers, replacements of spent carbon filter media, electricity costs, and permit renewals make up only 7.7% of the total annual average costs.

Job Impacts

Direct costs and corresponding revenues of PAR 1401 were used as inputs to the Regional Economic Models, Inc (REMI PI+) model to assess job impacts and secondary/induced impacts for all affected industries in the four-county economy on an annual basis from 2026 to 2035.

With compliance costs annualized using a 4% real interest rate, the REMI analysis forecasted 37 net jobs per year foregone which represents approximately 0.0003% of total annual jobs in the four-county area.

Competitiveness and Prices Impacts

The REMI analysis indicated that implementing PAR 1401 will not result in a substantial increase in production costs and delivered prices in the region. Specifically, the implementation of PAR 1401 is projected to increase the relative cost of production by 0.0004% and increase the relative delivered price of goods by 0.0003% for all the industries in the four-county region.

INTRODUCTION

Rule 1401 defines limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard index (HI) values from new permit units or relocations, or modifications to existing permit units which emit TACs.² The proposed amendments to Rule 1401 will add 1-Bromopropane, Cobalt, monomeric HDI, polymeric HDI, Isoprene, PCBTF, t-BAc, Trimethylbenzene, and Trivalent Chromium to the list of TACs required to be evaluated during health risk assessments. The proposed amendments will also add new acute and 8-hour reference exposure levels (RELs) for 1,4-Dichlorobenzene, in addition to revising its chronic REL. Implementation of PAR 1401 for 1-Bromopropane, Cobalt, 1,4-Dichlorobenzene, Isoprene, Trimethylbenzene, and Trivalent Chromium is expected to incur minimal socioeconomic impacts due to existing requirements in other regulations, readily available non-toxic substitutes, or facilities having documented TAC usage at levels less than the screening limits when conducting a Tier I health risk assessment. As such, this socioeconomic impact assessment focuses on only three of the new compounds proposed to be added to Table I in Rule 1401: HDI, PCBTF, and t-BAc.

LEGISLATIVE MANDATES

The legal mandates directly related to the socioeconomic impact assessment of PAR 1401 include a South Coast AQMD Governing Board resolution and various sections of the Health and Safety Code.

South Coast AQMD Governing Board Resolution

On March 17, 1989, the South Coast AQMD Governing Board adopted a resolution that calls for an economic analysis associated with adopting and amending rules and regulations that consider all of the following elements:

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

The economic elements outlined in the March 17, 1989 resolution are also required by various Health and Safety Code sections which are discussed in the following section.

Health and Safety Code Requirements

The state legislature adopted legislation which reinforces and expands the South Coast AQMD Governing Board resolution requiring socioeconomic impact assessments for rule development projects. Health and Safety Code Section 40440.8, which went into effect on January 1, 1991, requires a socioeconomic impact assessment for any proposed rule, rule amendment, or rule repeal which “will significantly affect air quality or emissions limitations.”

To satisfy the requirements in Health and Safety Code Section 40440.8, which includes requirements defined in Health and Safety Code 40922, the scope of the socioeconomic impact assessment should include all of the following information, as applicable:

² Please refer to Table 1: Toxic Air Contaminants in Rule 1401, pp. 12-26, <https://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1401.pdf>.

- Type of affected industries;
- Impact on employment and the regional economy;
- Range of probable costs, including those to industry;
- Availability and cost-effectiveness of alternatives to the rule;
- Emission reduction potential; and
- Necessity of adopting, amending, or repealing the rule in order to attain state and federal ambient air quality standards.

Health and Safety Code Section 40728.5, which went into effect on January 1, 1992, requires the South Coast AQMD Governing Board to: 1) actively consider the socioeconomic impacts of regulations; 2) make a good faith effort to minimize adverse socioeconomic impacts; and 3) include small business impacts. To satisfy the requirements in Health and Safety Code Section 40728.5, the socioeconomic impact assessment typically includes the following information:

- Type of industries or business affected, including small businesses; and
- Range of probable costs, including costs to industry or business, including small business.

Finally, Health and Safety Code Section 40920.6, which went into effect on January 1, 1996, requires a cost-effectiveness and incremental cost-effectiveness analysis for a proposed rule or amendment which imposes BARCT or “all feasible measures” requirements relating to emissions of ozone, CO, SO_x, NO_x, VOC, and their precursors.

However, Health and Safety Code Section 40920.6 is not applicable to new or amended rules that seek to control TACs such as PAR 1401, because TACs are not classified as criteria pollutants or ozone precursors. Thus, an analysis of the cost-effectiveness and incremental cost-effectiveness of PAR 1401 is not required and has not been included.

Public Health

PAR 1401 does not have quantifiable emission reductions; therefore, a health impacts assessment with quantified avoided health incidences cannot be performed. However, by controlling emissions of HDI, PCBTF, and t-BAC, PAR 1401 will provide public health benefits by minimizing: 1) acute exposure to HDI which can affect the respiratory system and lead to asthma and bronchitis; and 2) exposure to PCBTF and t-BAC which are known carcinogens and inhalation of these TACs can affect the nervous system and cause irritation to eyes and nose.

Cost-Effectiveness of Control Alternatives

Health and Safety Code Section 40440.8(b)(4) requires an assessment of the availability and cost-effectiveness of alternatives to the proposed rule or regulation per the definition of “Socioeconomic Impact” as set forth in Health and Safety Code Section 40922. However, Health and Safety Code Section 40922 is only applicable to rules and regulations pertaining to achieving the state ambient air quality standards for ozone, CO, SO_x, and NO_x. Since PAR 1401 regulates emissions of TACs, an analysis of the cost-effectiveness of control alternatives is not required and thus, was not conducted.

AFFECTED FACILITIES

PAR 1401 will apply to new, relocated, or modified equipment or sources of HDI, PCBTF, t-BAc, as well as other compounds, and will not be applied retroactively to existing equipment or sources. As noted earlier in the Introduction, while several new compounds are proposed to be added to Table I in Rule 1401, only HDI, PCBTF, and t-BAc are expected to result in socioeconomic impacts. As such, the analysis of facilities that may be potentially affected by PAR 1401 focus on HDI, PCBTF, and t-BAc. Nonetheless, the number of facilities that may be potentially affected by PAR 1401 in the future is not available and cannot be predicted with any degree of certainty. In absence of this information, the number of existing facilities with South Coast AQMD permits issued from 2016 to 2023 for equipment and/or processes that use HDI, PCBTF, or t-BAc has been used as a surrogate to estimate the potential number of facilities that may need to submit permit applications in the future in accordance with PAR 1401. Between 2016 and 2023, 535 facilities were identified as having South Coast AQMD permits which specifically indicate the use of products that contain HDI. Between 2018 and 2023, eight facilities were identified as having South Coast AQMD permits which specifically indicate the use of products which contain PCBTF or t-BAc. The details of this analysis are provided in the following discussion.

1. HDI

Of the 535 facilities identified, 506 facilities had NAICS data. Table 1 presents the industrial sector distribution of these 506 facilities, with the majority (65.4%) in the Repair and maintenance sector (NAICS 811) followed by the Retail trade (NAICS 44-45) (9.3%), Wholesale trade (NAICS 42) (4.3%), and Construction sectors (NAICS 23) (3%). Of these 506 facilities, 58.2% are located in Los Angeles County, 19.7% are located in Orange County, 11.5% are located in Riverside County, and 10.6% are located in San Bernardino County. For the purpose of projecting the number of facilities that will be subject to PAR 1401, the analysis assumes that these distributions will be carried over to future facilities with new, modified or relocated equipment or sources using products containing HDI.

Table 1
Estimated Industrial Sector Distribution of Potential Facilities Subject to PAR 1401

NAICS Code	Industry Sector Name	Percentage Share of Facilities
811	Repair and maintenance	65.39%
44-45	Retail trade	9.26%
42	Wholesale trade	4.27%
23	Construction	2.97%
332	Fabricated metal product manufacturing	2.89%
54	Professional, scientific, and technical services	2.73%
3361-3363	Motor vehicles, bodies and trailers, and parts manufacturing	1.82%
561	Administrative and support services	1.62%
333	Machinery manufacturing	0.99%

NAICS Code	Industry Sector Name	Percentage Share of Facilities
3364-3369	Other transportation equipment manufacturing	0.91%
487-488	Scenic and sightseeing transportation; Support activities for transportation	0.87%
512	Motion picture and sound recording industries	0.79%
339	Miscellaneous manufacturing	0.63%
337	Furniture and related product manufacturing	0.63%
532-533	Rental and leasing services; Lessors of nonfinancial intangible assets	0.44%
321	Wood product manufacturing	0.40%
484	Truck transportation	0.40%
334	Computer and electronic product manufacturing	0.36%
331	Primary metal manufacturing	0.32%
326	Plastics and rubber product manufacturing	0.28%
325	Chemical manufacturing	0.24%
315-316	Apparel manufacturing; Leather and allied product manufacturing	0.24%
327	Nonmetallic mineral product manufacturing	0.24%
335	Electrical equipment and appliance manufacturing	0.20%
531	Real estate	0.20%
313-314	Textile mills; Textile product mills	0.20%
517	Telecommunications	0.20%
485	Transit and ground passenger transportation	0.20%
562	Waste management and remediation services	0.12%
713	Amusement, gambling, and recreation	0.08%
61	Educational services	0.08%
92	State and Local Government	0.04%
323	Printing and related support activities	0.04%
Total		100%

2. PCBTF and t-BAC

Of the eight facilities identified, two belong to the industrial sector of State and Local Government (NAICS 92), while one of each of the six remaining facilities belong to the industrial sectors of Retail trade (NAICS 44-45), Motion picture industries (NAICS 512), Paper manufacturing (NAICS 332), Chemical manufacturing (NAICS 325), Computer and electronic product

manufacturing (NAICS 334), and Support activities for transportation industries (NAICS 487-488). Five facilities are located in Los Angeles County, two facilities are located in San Bernardino County, and one facility is located in Orange County. For the purpose of projecting the number of facilities that will be subject to PAR 1401 due to new, modified or relocated equipment or sources using products containing PCBTF or t-BAC, the analysis assumes that the same distributions for existing facilities will apply to future facilities.

Small Business Analysis

For the purpose of assessing fees, the South Coast AQMD defines a small business in Rule 102 as one which employs 10 or fewer persons and which earns less than \$500,000 in gross annual receipts. For the purpose of qualifying for access to services from the South Coast AQMD's Small Business Assistance Office, a small business has annual receipts of \$5 million or less, or has 100 or fewer employees. In addition to the South Coast AQMD's criteria for small businesses, the United States (U.S.) Small Business Administration and the federal 1990 Clean Air Act Amendments (1990 CAAA) each have their own definition of a small business.

The 1990 CAAA classifies a business as a "small business stationary source," if among other conditions, 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 the U.S. Small Business Administration.^{3,4} Based on firm revenue and employee count, the U.S. Small Business Administration definition of a small business varies by six-digit NAICS codes.⁵ The majority of facilities potentially affected by PAR 1401 are within the Repair and Maintenance industry (NAICS 811121). According to the U.S. Small Business Administration, businesses in this industrial sector receiving less than \$9 million in annual firm revenue are classified as small businesses.

The small business analysis of facilities potentially affected by PAR 1401 relied mostly on Dun and Bradstreet data. In cases where the Dun and Bradstreet data are unavailable or unreliable, other external data sources such as Manta, Hoover, LinkedIn, and company website data were used. The determination of data reliability is based on data quality confidence codes in the Dun and Bradstreet data as well as South Coast AQMD staff's discretion. Revenue and employee data for publicly owned companies was retrieved from filings with the Securities and Exchange Commission (SEC). Since subsidiaries have shared business interests with their parent company, the revenue and employee data of each facility's parent company, as applicable, was used for determining their small business status.

³ Office of the Law Revision Control: United States Code, Title 42 – The Public Health and Welfare, Chapter 83 – Energy Extension Service, Subchapter V-Permits, §7661f. Small business stationary source technical and environmental compliance assistance program, (c) Eligibility, <https://uscode.house.gov/view.xhtml?req=code+of+federal+regulations&f=treesort&num=2110>, accessed June 2026.

⁴ For the threshold of 10 tons per year of VOC/NOx emission for extreme nonattainment areas, please refer to National Archives and Records Administration, Title 40 – Protection of Environment, Chapter 1 – Environmental Protection Agency, Subchapter C – Air Programs, §51.165(a)(1)(iv)(A)(1)-(2), <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-51/subpart-I>, accessed June 2026.

⁵ U.S. Small Business Administration, 2023 Small Business Size Standards, <https://www.sba.gov/document/support-table-size-standards>, accessed June 2026.

1. HDI

Employment and revenue estimates from 2025 Dun and Bradstreet data as well as other external sources are available for 479 of the 535 identified facilities. For the purpose of estimating how future small businesses would be impacted by PAR 1401, this analysis assumes that the proportions of these 479 facilities that may qualify as small businesses will carry over to future years. Table 2 presents the number of affected facilities that qualify as small businesses, based on each of the four small business definitions. For the 479 facilities with available employment and revenue data, up to 394 (82%) may qualify as small businesses.

Table 2
Distribution of Existing and Potential Facilities Qualifying
as Small Businesses Based on Various Definitions

Small Business Definition	Number of Facilities	Percentage of Facilities Qualifying as Small Businesses
South Coast AQMD Rule 102	265	55%
South Coast AQMD Small Business Assistance Office	394	82%
U.S. Small Business Administration	379	79%
1990 CAAA	67	14%

2. PCBTF and t-BAC

Employment and revenue estimates from 2025 Dun and Bradstreet data as well as other external sources are available for seven out of the eight identified facilities. Of these seven facilities, one facility is classified under the State and Local Government industry and thus does not qualify as small business. For the remaining six facilities, none meet South Coast AQMD's Rule 102 standard for small businesses; three (50%) meet South Coast AQMD's Small Business Assistance Office's standard; four (67%) meet the U.S. Small Business Administration's standard; and two (33%) facilities qualify as small businesses according to the 1990 CAAA definition. For the purpose of estimating how future small businesses would be impacted by PAR 1401, this analysis assumes that the same proportions of these seven existing facilities that may qualify as small businesses will carry over to future years.

COMPLIANCE COSTS

As explained previously in this report, the number of facilities that will be affected by PAR 1401 amendments are unknown. The same is true for the associated compliance costs. In the absence of this information, the compliance costs have been estimated by assuming the number of new permit applications each year in the future equal the average annual number of permit applications in prior years (e.g., between 2016 and 2023). For facilities with potentially new, modified or relocated equipment or sources using HDI, the analysis assumed that approximately 89 new permit applications per year will be submitted. Similarly, for facilities with potentially new, modified or relocated equipment or sources using PCBTF and/or t-BAC, the analysis assumed two new permit applications per year will be submitted. Compliance costs are based on a combination of manufacturer feedback plus the most recent cost data available for the same control equipment that

was previously analyzed in April 2026 Socioeconomic Impact Assessment for Rule 1124.⁶ All dollar amounts are reported in 2025 dollars, and analysis period is assumed to be 10 years from 2026 to 2035.

By assuming a 10-year useful life for spray booths with HEPA filters, only 89 HDI related permits anticipated for the first year of implementing PAR 1401 will reach their full cost within the analysis period.⁷ Permits issued in later years extend beyond the 10-year horizon and therefore, their full costs are not incurred and are not reflected in this analysis. The same assumption applies to spray booths equipped with carbon adsorbers to control PCBTF and t-BAC emissions since those permits will also span multiple years and extend beyond the analysis period. Extending the analysis period would continually add new permits each year, resulting in indefinite cost accumulation that would not produce meaningful or realistic estimates.

1. Use of Products Containing HDI

One-Time/Capital Costs

Permit Application Fees

According to Table IA and Table Fee Rate-A of Rule 301, the permit application fee for a new spray booth with standard filtration under Schedule B is \$4,084.24, while the permit application fee for a new spray booth with HEPA filters under Schedule C is \$6,460.09.⁸ The permit application fee for each of these schedules also varies depending on whether the facility qualifies as a major source of emissions as defined in Regulation XXX – Title V permits. However, historical data indicates that between 2016 and 2023, only three applications for spray booths were submitted by Title V facilities. Because the proportion of future permit applications that would be from Title V facilities is unknown, this analysis assumes that all new permit applications for spray booths are from non-Title V facilities.

Consequently, the compliance cost associated with one spray booth permit application due to PAR 1401 is the difference between Schedule C and Schedule B permit application fees for a non-Title V facility or \$2,375.85. If South Coast AQMD receives 89 permit applications for new spray booths each year, the sum of annualized costs over the 10-year analysis period associated with permit application fees for PAR 1401 is approximately \$1,162,979.

Purchase and Installation of Spray Booths with HEPA Filters

Prior to the adoption of PAR 1401, permit applications for new, modified or relocated spray booths for controlling emissions containing HDI would be equipped with standard filters with appropriately sized blowers and typical ducting. After PAR 1401 is adopted, permit applications for new spray booths used for coatings containing HDI would require HEPA filters with larger-

⁶ South Coast AQMD, April 2026, Governing Board Meeting Agenda No. 29, Rule 1124 – Aerospace Assembly and Component Manufacturing Operations, Final Socioeconomic Assessment within the Final Staff Report, Attachment G, <https://www.aqmd.gov/docs/default-source/agendas/governing-board/2026/2026-apr3-029.pdf>, accessed June 2026.

⁷ For the discussion on the 10-year useful life of spray booths with HEPA filters, please refer to: South Coast AQMD, March 2005, Governing Board Meeting Agenda No. 31, Rule 1469.1 - Spraying Operations Using Coatings Containing Chromium, Final Socioeconomic Report, Attachment 050331I, pp. 6 – 7, <https://xapp.aqmd.gov/hb/attachments/2005/050331.zip>, accessed June 2026.

⁸ South Coast AQMD, May 1, 2026, Rule 301 – Permitting and Associated Fees, <https://www.aqmd.gov/docs/default-source/rule-book/reg-iii/rule-301.pdf>, accessed June 2026.

sized blowers and additional ducting capable of achieving the required face velocity through the HEPA filters which are more dense than traditional filters. Consequently, the compliance cost for spray booth installations after PAR 1401 is adopted is the difference between spray booths equipped with HEPA filters, larger blowers, and additional ducting and spray booths equipped with standard filters, standard blowers, and ducting. According to cost data provided by spray booth manufacturers, the average difference in costs is \$22,750 per spray booth. Thus, if 89 spray booths are installed, each year after PAR 1401 is passed, the sum of annualized costs over the 10-year analysis period for installations of spray booths equipped with HEPA filters is approximately \$11,136,125 over the period.

Operations and Maintenance (O&M)/Recurring Costs

HEPA Filter Replacements

The rate at which HEPA filters must be replaced varies depending on usage, size, and effectiveness of the pre-filter. Manufacturers suggest replacing HEPA filters once or twice annually but indicate that high usage may necessitate more frequent replacement. To allow for a worst-case analysis, HEPA filters are assumed to be replaced at a rate of four filters per year per spray booth. An industrial size HEPA filter costs \$639. For 89 new spray booths per year, the estimated total cost to replace HEPA filters is approximately \$12,511,620 over the next 10 years.

Electricity

When compared to spray booths with traditional filters, spray booths with HEPA filters require a larger blower capacity and larger electric motor resulting in increased electricity usage. To save on electricity costs, the blower/electric motor may be connected to a variable frequency drive (VFD) which regulates the speed and the pressure drop of the air flowing through the HEPA filters in the spray booth. By regulating airflow speed to match demand, VFD technology can reduce energy consumption and therefore lead to cost savings. However, since not all spray booths are designed with VFD technology, this analysis does not reflect any potential cost savings from potential utilization of this technology.

The electricity rate in 2024 dollars of \$0.249 per kilowatt-hour (kWh) was calculated from the published annual average of projected electricity rates between 2026 and 2035 in the California Energy Commission (CEC) 2025 Integrated Energy Policy Report (IEPR).⁹ By applying the same methodology as conducted in the Final Socioeconomic Report for Proposed Rule 1469.1¹⁰ to PAR 1401, operation of a larger blower and larger electric motor for a spray booth with HEPA filters is estimated to result in an additional electricity cost of \$2,120.10 per unit per year after the passage of PAR 1401. Thus, if 89 permit applications for new, modified or relocated spray booths are submitted each year, the estimated total additional electrical cost for operating spray booths equipped with HEPA filters is approximately \$10,377,871 over the next 10 years.

⁹ California Energy Commission, 2025 IEPR Electricity Rate Forecast, <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?doctetnumber=25-IEPR-03>, accessed June 2026.

¹⁰ South Coast AQMD, March 2005, Governing Board Meeting Agenda No. 31, Rule 1469.1 – Spraying Operations Using Coatings Containing Chromium, <https://xappp.aqmd.gov/hb/2005/March/050331a.html>, accessed June 2026.

Permit Renewal Fees

After permits are issued, facilities will be required to pay annual permit renewal fees. The cost of a permit renewal due to PAR 1401 is the difference between the fee in Schedule C (\$2,090.75) for a spray booth equipped with HEPA filters and the fee in Schedule B (\$583.73) for a spray booth equipped with traditional filters. Consistent with the earlier analysis of costs associated with permit application fees for equipment to be installed at non-Title V facilities, the analysis of permit renewal fees also assumes that all future permits will be for equipment operating at non-Title V facilities. The difference between permit renewal fees for a non-Title V facility for Schedule C and Schedule B is \$1,507.02. Thus, if 89 new, modified, or relocated spray booths are equipped with HEPA filters each year, the total cost of permit renewal fees is approximately \$7,376,863 over the next 10 years.

2. Use of Products Containing PCBTF and/or t-BAC

One-Time/Capital Costs

Permit Application Fees

According to Table I-A and Table Fee Rate-A of Rule 301, the permit application fee for one new spray booth with standard filtration under Schedule B is \$5,117.92, while the permit application fee under Schedule C is \$8,095.12 for one spray booth with carbon adsorber (non-regenerative); Schedule D is \$11,172.66 for multiple spray booths (multiple) with carbon adsorber (non-regenerative); and Schedule E is \$12,845.15 for one or more spray booths with carbon adsorber (regenerative).

Since the permit application fees in Schedules D and E are for multiple equipment units and, in the case of Schedule E, for a more complex type of control technology which involves the on-site regeneration of the activated carbon used in the adsorber, this analysis assumes that each permit application will be for one new spray booth with a non-regenerative carbon adsorber in accordance with the permit fee under Schedule C. This assumption is consistent with the analysis of spray booths with carbon adsorbers in the April 2026 Final Socioeconomic Impact Assessment, which was included in the Final Staff Report for Proposed Amended Rule 1124 - Aerospace Assembly and Component Manufacturing Operations.¹¹

The permit application fee for each of these schedules also varies depending on whether the facility qualifies as a major source of emissions as defined in Regulation XXX – Title V permits. Historical data indicates that between 2018 and 2023, five out of the eight PCBTF/t-BAC facilities were Title V. While the number permit applications that may be submitted by Title V facilities in the future is unknown, this analysis assumes that all new permit applications for spray booths equipped with carbon adsorbers will be from Title V facilities.

Consequently, the compliance cost associated with a permit application for one spray booth equipped with a carbon adsorber due to PAR 1401 is the difference between Schedule C (\$8,095.12) and Schedule B (\$5,117.92) permit application fees for a Title V facility or \$2,977.20.

¹¹ South Coast AQMD, April 2026, Governing Board Meeting Agenda No. 29, Rule 1124 – Aerospace Assembly and Component Manufacturing Operations, Final Socioeconomic Assessment within the Final Staff Report, Attachment G, <https://www.aqmd.gov/docs/default-source/agendas/governing-board/2026/2026-apr3-029.pdf>, accessed June 2026.

If South Coast AQMD receives two new permit applications each year until 2030, the sum of annualized costs over the 10-year analysis period is approximately \$23,818.

Purchase and Installation of Spray Booths with Carbon Adsorbers

Prior to the adoption of PAR 1401, permit applications for new, modified or relocated spray booths for controlling emissions containing PCBTF and/or t-BAC would be equipped with standard filters. After PAR 1401 is adopted, permit applications for new spray booths for controlling emissions containing either PCBTF or t-BAC would require carbon adsorber technology to control the TAC emissions. Consequently, the compliance cost of spray booth installations as a result of PAR 1401 is the difference between the costs of a spray booth equipped with a carbon adsorber and a spray booth equipped with standard filters. According to cost data provided by spray booth manufacturers, the average difference in costs is \$136,202.83. Thus, if there are two new spray booths equipped with carbon adsorbers each year, the sum of annualized costs over the 10-year analysis period is approximately \$1,089,623. When reformulated coatings that contain less than .01% of PCBTF or t-BAC become available, facilities seeking to install new spray booths would no longer need to purchase carbon adsorbers if reformulated coatings are utilized since there would be no TAC emissions requiring controls. Instead, spray booths equipped with standard filters could be used. Therefore, this analysis assumes that no new permit applications for spray booths equipped with carbon adsorbers will be submitted after 2030.

O&M/Recurring Costs

Carbon Replacement

The recurring O&M costs of operating a spray booth with a carbon adsorber include costs associated with periodically replacing the spent carbon with fresh activated carbon which typically occurs every six years. The cost to replace spent carbon with fresh activated carbon is approximately \$206,604 per changeout per carbon adsorption system per facility, based on manufacturers' feedback. For two new spray booths with carbon adsorbers each year until 2030, the estimated total cost of replacing carbon is approximately \$2,066,038 over the next 10 years.

Electricity

Similar to a spray booth with HEPA filters for controlling HDI emissions, a spray booth with a carbon adsorber for controlling PCBTF and t-BAC emissions requires a larger blower and a larger electric motor resulting in increased electricity usage when compared to operating a spray booth with standard filters. The estimated additional electricity usage from operating a spray booth with a carbon adsorber is based on the United States Environmental Protection Agency (U.S. EPA) Air Pollution Control Cost Manual Carbon Absorbers Calculation Spreadsheet.¹² The additional electricity cost associated with operating one new spray booth with a carbon adsorber is estimated to be \$2,844.35 per unit per year. If two new spray booths with carbon adsorbers are installed and operated each year until 2030, the estimated total cost of electricity is approximately \$227,548 over the next 10 years.

¹² U.S. EPA, Air Pollution Control Cost Manual, Section 3 – VOC Controls; Section 3.1 – VOC Recapture Controls, Chapter 1 – Carbon Adsorbers Calculation Spreadsheet, version published on November 12, 2020, <https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution>, accessed June 2026.

Permit Renewal Fees

After permits are issued, facilities will be required to pay annual permit renewal fees. The cost of a permit renewal due to PAR 1401 is the difference between fees in Schedule C (\$2,619.89) for a spray booth with carbon adsorber (non-regenerative) and Schedule B (\$731.48) for a spray booth equipped with standard filters. Consistent with the earlier analysis of costs associated with permit application fees for equipment to be installed at Title V facilities, the analysis of permit renewal fees also assumes that all future permits will be for equipment operating at Title V facilities. The difference between the permit renewal fees for a Title V facility in Schedule C and Schedule B is \$1,888.41. As explained earlier, this analysis assumes that no new permit applications for spray booths equipped with carbon adsorbers will be submitted after 2030 but for the equipment that is permitted between 2026 and 2030, permit renewal fees will occur annually. For applications of two new spray booths with carbon adsorbers issued permits per year until 2030, the total cost of the permit renewal fees for this equipment will be approximately \$151,073 over the next 10 years.

Total Compliance Cost of PAR 1401

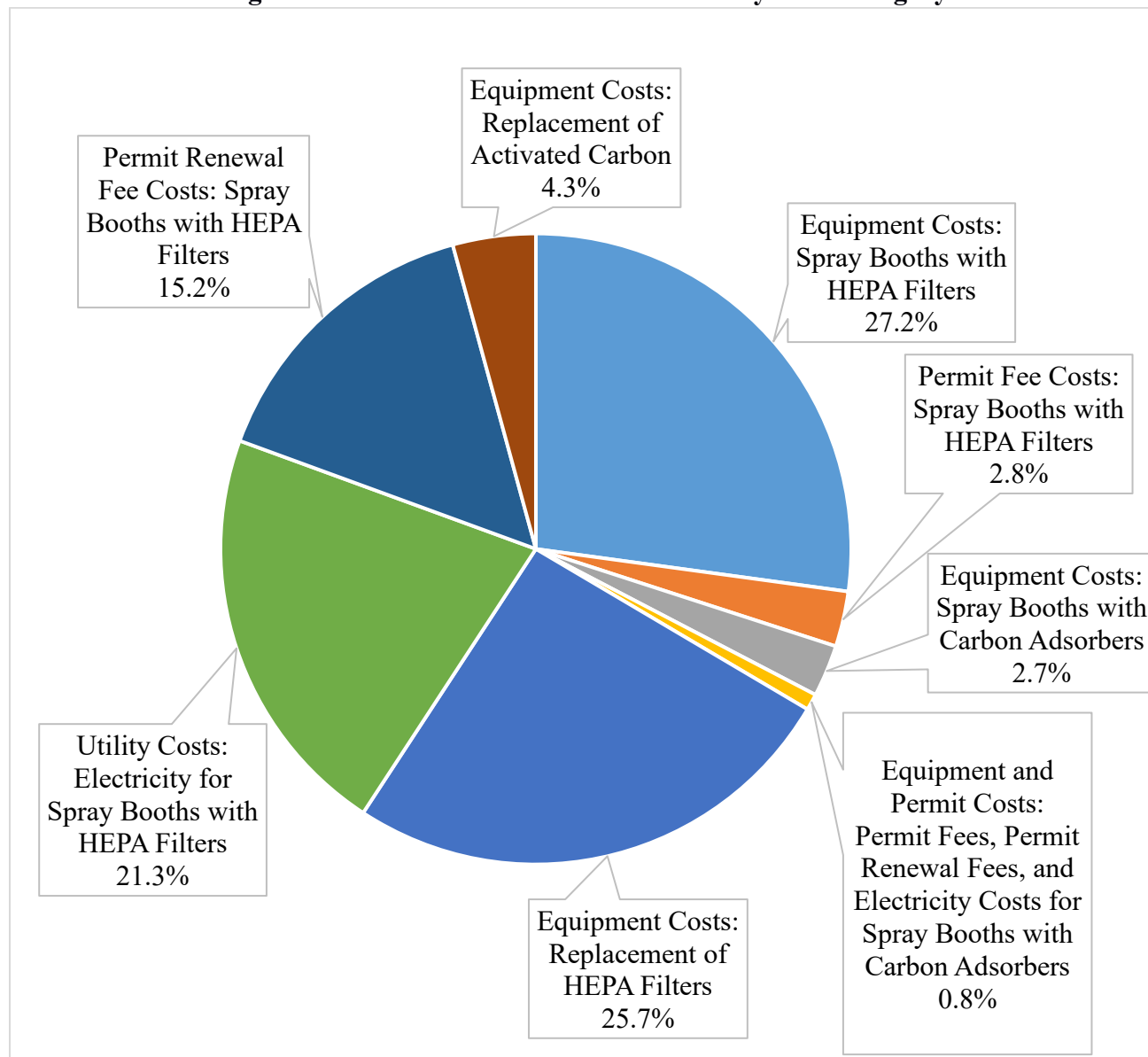
The total estimated compliance costs of PAR 1401 cover a 10-year forecast period, from 2026 to 2035. To calculate the present value of the total compliance costs, all amortized/annualized compliance costs have been discounted to year 2026. Table 3 summarizes the present value as well as the annual average of the amortized compliance costs from 2026 to 2035 associated with the implementation of PAR 1401. The total present value of the amortized compliance costs of PAR 1401 are estimated to be \$45,798,191 and \$38,564,784 at 1% and 4% discount rates, respectively. The average annual compliance cost over the period from 2026 to 2035 is estimated to range from \$4,673,204 to \$4,861,145 at a 1% to 4% real interest rate, respectively. Note that for the annual average estimates, only capital cost categories are affected by the interest rate, as interest applies to upfront capital investments, while recurring costs are not subject to financing and therefore remain unaffected.

Table 3
Total Present Value and Average Annual Estimated Costs of PAR 1401

	Present Value Worth 2026		Annual Average (2026-2035)	
Cost Categories	1% Discount Rate	4% Discount Rate	1% Real Interest Rate	4% Real Interest Rate
Capital/One-Time Costs				
<u>Equipment Costs:</u> Spray Booths with HEPA Filters	\$12,440,370	\$10,482,665	\$1,164,134	\$1,320,176
<u>Permit Fee Costs:</u> Spray Booths with HEPA Filters	\$1,299,185	\$1,094,736	\$121,574	\$137,870
<u>Equipment Costs:</u> Spray Booths with Carbon Adsorbers	\$1,224,844	\$1,051,278	\$113,906	\$129,174
<u>Permit Fee Costs:</u> Spray Booths with Carbon Adsorbers	\$26,773	\$22,979	\$2,490	\$2,824
Recurring Costs				
<u>Equipment Costs:</u> Replacement of HEPA Filters	\$11,790,030	\$9,934,667	\$1,251,162	\$1,251,162
<u>Utility Costs:</u> Electricity for Spray Booths with HEPA Filters	\$6,951,413	\$5,857,489	\$737,686	\$737,686
<u>Permit Renewal Fee Costs:</u> Spray Booths with HEPA Filters	\$9,779,342	\$8,240,395	\$1,037,787	\$1,037,787
<u>Equipment Costs:</u> Replacement of Activated Carbon	\$1,927,221	\$1,572,435	\$206,604	\$206,604
<u>Utility Costs:</u> Electricity for Spray Booths with Carbon Adsorbers	\$215,764	\$185,189	\$22,755	\$22,755
Total	\$45,798,191	\$38,564,784	\$4,673,204	\$4,861,145

Figure 1 presents the estimated average annual compliance costs of PAR 1401 by cost categories. The costs relating to spray booths with HEPA filters constitute the majority of the total average annual compliance costs of PAR 1401. Specifically, for facilities with HDI emissions, spray booths with HEPA filters, replacement of HEPA filters, and utility costs for operating spray booths with HEPA filters comprise 27.2%, 25.7% and 21.3% of total average annual compliance costs of PAR 1401, respectively. For facilities with PCBTF and/or t-BAC emissions, costs for spray booths with carbon adsorbers represent 7.7% of the total average annual costs of PAR 1401.

Figure 1
Average Annual Estimated Costs of PAR 1401 by Cost Category



MACROECONOMIC IMPACTS ON THE REGIONAL ECONOMY

The Regional Economic Modeling Inc. (REMI, PI+ v3) model was used to assess the total socioeconomic impacts of implementing PAR 1401.^{13, 14} The model, which is comprised of analytical modules with embedded datasets and econometric features, links the economic activities occurring in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and considers 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.¹⁵ It should be noted that the REMI model is not designed to assess impacts on individual facility operations. The model was used to assess the impacts of PAR 1401 on various industries that make up the local economy.

Macroeconomic Impacts of PAR 1401

The analysis of macroeconomic impacts is performed relative to the REMI baseline (“business as usual”) forecast where PAR 1401 would not be implemented. Since PAR 1401 will only apply to new, relocated, or modified equipment or sources of HDI, PCBTF, or t-BAC and will not be applied retroactively to existing equipment or sources, the number of facilities that may be potentially affected by PAR 1401 (e.g., be required to install HEPA filters to control emissions of HDI or carbon adsorbers to control emissions of PCBTF and/or t-BAC) is not available and cannot be predicted with any degree of certainty.

The REMI analysis follows the same general approach used in the affected facilities analysis and the small business analysis by assuming that future affected facilities will resemble the industry distribution of facilities that use (1) HDI or (2) PCBTF or t-BAC with permit applications between 2016 and 2023 or between 2018 to 2023, respectively. Accordingly, the costs are allocated across the affected industries presented in Table 1 for HDI-related compliance costs based on each industry’s percentage share of facilities. For example, because the Repair and Maintenance industry represents the largest share of facilities in Table 1 (65.4%), the REMI analysis assumes this industry will incur 65.4% of total HDI-related compliance costs. Similarly, these costs at the industry level are further allocated across four counties within South Coast AQMD region based on the location of these facilities. A similar approach was followed when estimating the industry distribution of PCBTF/t-BAC-related compliance costs. The analysis assumes that the affected facilities would finance the capital and one-time costs described above at a 4% real interest rate, and that these one-time costs are amortized over the 10-year analysis period from 2026 to 2035.

Direct costs of PAR 1401 are used as inputs to the REMI model which uses this information to assess secondary and induced impacts for all the industries in the four-county economy on an annual basis over the 2026-2035 period. Direct effects of PAR 1401 include the purchase of spray booths with HEPA filters, spray booths with carbon adsorbers, replacements of HEPA filters and carbon, electricity costs, permit application fees and permit renewal fees as discussed earlier in this document.

¹³ Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70-sector model). Version 3. 2023.

¹⁴ REMI v3 has been updated based on The U.S. Economic Outlook for 2022-2024 from the University of Michigan's Research Seminar in Quantitative Economics (RSQE) release on May 19, 2023, The Long-Term Economic Projections from CBO (supplementing CBO's March 2023 report, The 2023 Long-Term Budget Outlook).

¹⁵ Within each county, the industrial sectors are made up of 156 private non-farm industries and sectors, 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>.

While compliance expenditures incurred by the potentially affected facilities would increase their cost of doing business, the purchase of the required equipment and services would increase the sales and subsequent spending of businesses in various sectors, some of which may be located in South Coast AQMD's jurisdiction. Table 4 lists the 70-sector NAICS codes used in REMI model that would either incur a direct cost or directly benefit from the compliance spending.

Table 4
Industries Affected by PAR 1401

Source of Compliance Cost	Industry Sector Incurring Compliance Cost	Industry Sector Gaining Revenue
<u>Equipment Costs</u> : Spray Booths with HEPA Filters	Multiple Industries Based on South Coast AQMD Permit Data from 2016 - 2023*	Machinery Manufacturing (NAICS 333)
<u>Equipment Costs</u> : Spray Booths with Carbon Adsorbers		
<u>Equipment Costs</u> : Replacement of HEPA Filters		Wholesale Trade (NAICS 42)
<u>Equipment Costs</u> : Replacement of Activated Carbon		
<u>Permit Fee Costs</u> : Spray Booths with HEPA Filters		State and Local Government (NAICS 92)
<u>Permit Fee Costs</u> : Spray Booths with Carbon Adsorbers		
<u>Permit Renewal Fee Costs</u> : Spray Booths with HEPA Filters		
<u>Permit Renewal Fee Costs</u> : Spray Booths with Carbon Adsorbers		
<u>Utility Costs</u> : Electricity for Spray Booths with HEPA Filters		Utilities (NAICS 22)
<u>Utility Costs</u> : Electricity for Spray Booths with Carbon Adsorbers		

* The industry sectors assumed to incur HDI-related compliance costs are detailed in Table 1 on pp. 3 -4. The industry sectors assumed to incur PCBTF/t-BAC-related compliance costs include State and Local Government (NAICS 92), Retail trade (NAICS 44-45), Motion picture industries (NAICS 512), Paper manufacturing (NAICS 332), Chemical manufacturing (NAICS 325), Computer and electronic product manufacturing (NAICS 334), and Support activities for transportation industries (NAICS 487-488).

Regional Job Impacts

When the compliance cost is annualized using a 4% real interest rate, the REMI model projects that there would be 37 jobs foregone annually on average over the 2026 – 2035 period, relative to the baseline forecast. The sectors of Repair and Maintenance, Retail Trade, and Construction are expected to forego four, five, and seven jobs annually, respectively, on average relative to the

baseline forecast. These job losses are attributed to the sectors incurring the largest share of PAR 1401 compliance costs and are therefore the most affected sectors. On the other hand, the sectors of State and Local Government (NAICS 92), Wholesale Trade (NAICS 42) and Machinery Manufacturing (NAICS 333) will gain jobs overall during the forecast period, mainly due to the beneficial induced demand from implementing PAR 1401. Table 5 presents the forecasted job impacts for selected years in the sectors with the largest magnitude of average annual job impacts. The “All Other Industries” row in Table 5 presents the sum of the job impacts for all other industries not shown in the table.

Table 5
Projected Job Impacts of PAR 1401 for Selected Industry Sectors and Years

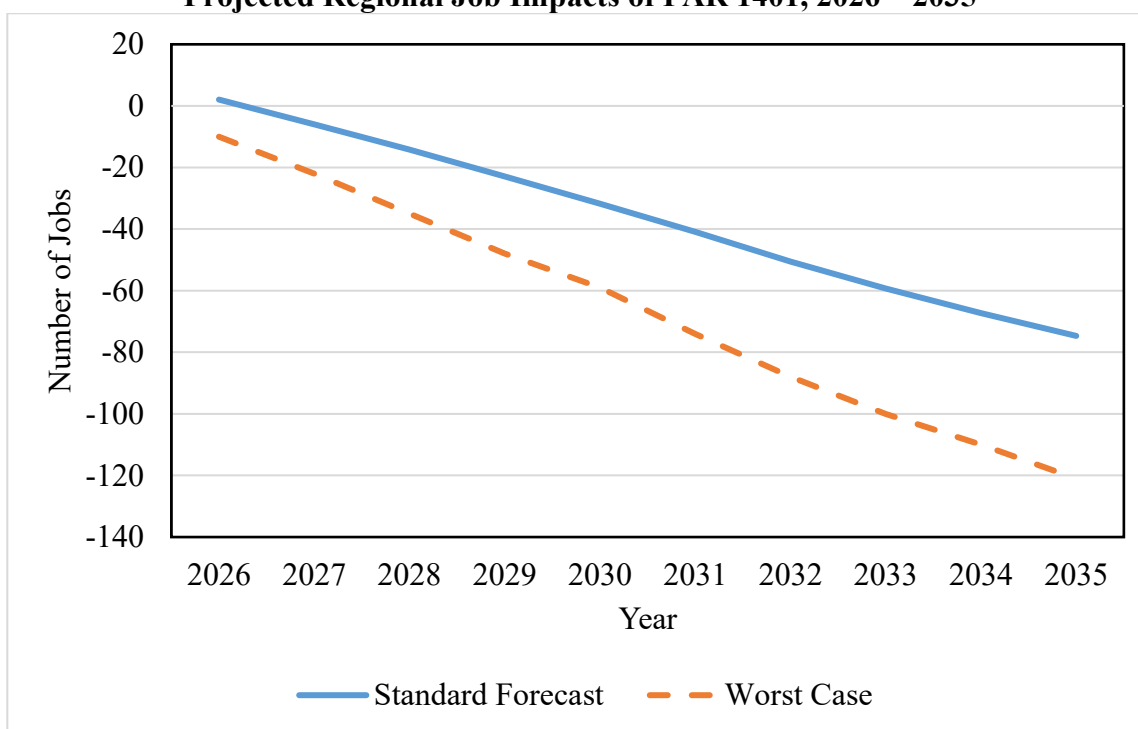
Industry Sector (NAICS Code)	2026	2030	2035	Annual Average	Baseline Number of Jobs	% of Baseline Jobs
State and Local Government (92)	2	2	1	2	920,213	0.0002049%
Wholesale Trade (42)	1	1	2	1	429,866	0.0003129%
Machinery Manufacturing (333)	2	1	1	1	26,075	0.0051021%
Utilities (22)	0	1	1	1	22,828	0.0024575%
Pipeline Transportation (486)	0	0	0	0	1,087	0.0000859%
Personal and laundry services (812)	0	-2	-4	-2	416,369	-0.0005336%
Real estate (531)	0	-2	-4	-2	668,028	-0.0003465%
Repair and maintenance (811)	-1	-4	-9	-4	146,462	-0.0030707%
Retail trade (44-45)	-1	-5	-10	-5	879,755	-0.0006141%
Construction (23)	0	-7	-11	-7	509,796	-0.0013534%
All Other Industries	0	-17	-42	-20	7,842,882	-0.0002593%
All Industries	2	-32	-75	-37	11,863,362	-0.0003081%

Note: Totals may not sum due to rounding.

In addition, in 2013, South Coast AQMD contracted with Abt Associates Inc. to review the South Coast AQMD socioeconomic assessments for Air Quality Management Plans and individual rules with the goal of providing recommendations that could enhance South Coast AQMD's socioeconomic analyses. In 2014, Abt Associates Inc. published a report which included a recommendation for South Coast AQMD to enhance socioeconomic analyses by testing major assumptions through conducting a scenario analysis. As such, South Coast AQMD generally includes an alternative worst-case scenario in Socioeconomic Impact Assessments which analyzes a scenario that assumes the affected facilities would purchase all feasible monitoring equipment

and services from providers located outside of the South Coast AQMD's jurisdiction.¹⁶ In simple terms, this alternative worst-case scenario only models the impacts of the costs of compliance with PAR 1401 while excluding the revenues which would benefit equipment and service providers. This hypothetical scenario is designed to test the sensitivity of the embedded assumptions in the REMI model about how compliance costs and revenues would be distributed inside and outside of South Coast AQMD's jurisdiction. This worst-case scenario would result in an annual average of approximately 67 jobs foregone compared to the baseline scenario. The 67 jobs foregone represent a small portion of the average forecasted baseline jobs in the regional economy at an estimated 0.0006%. Figure 2 presents the projected regional job impacts over the 2026 – 2035 period for both the standard and the worst-case forecasts.

Figure 2
Projected Regional Job Impacts of PAR 1401, 2026 – 2035



Competitiveness and Prices

The overall impact of PAR 1401 on production costs and delivered prices in the region is not expected to be substantial. Based on the REMI analysis, the implementation of PAR 1401 is projected to increase the relative cost of production by 0.0004% and increase the relative delivered price of goods by 0.0003% for all the industries in four county region.

¹⁶ Abt Associates Inc., August 2014, Review of the SCAQMD Socioeconomic Assessments, Chapter 6, Section 3, <https://www.aqmd.gov/docs/default-source/agendas/aqmp/scaqmd-report---review-socioeconomic-assessments.pdf>, accessed June 2026

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