

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Socioeconomic Impact Assessment For: Proposed Amended Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations

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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.” 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.

Proposed Amended Rule (PAR 1151) has been developed to address two exempt compounds that were determined to have toxic end points, including potential carcinogenicity, by the Office of Environmental Health Hazard Assessment (OEHHA): 1) tert-Butyl Acetate (t-BAC), which is exempt from the definition of a VOC for certain categories of products in a few source-specific rules, including Rule 1151; and 2) para-chlorobenzotrifluoride (pCBtF), which is considered exempt from the definition of a VOC for all uses within the South Coast AQMD, including Rule 1151 products. These exempt compounds are utilized by automotive coating manufacturers to formulate coatings and coating components that comply with Rule 1151 VOC content limits. PAR 1151 has two primary goals: 1) to propose a timeline to phase-out pCBtF and t-BAC; and 2) to assess the feasibility of VOC emission reductions through a technology assessment and stakeholder engagement and impose the lowest limits feasible without use of the phased-out toxic compounds. A socioeconomic impact assessment has been conducted accordingly, and the following presents a summary of the analysis and findings.

Key Elements of PAR 1151

The implementation of PAR 1151 would lead to the: 1) phase-out of automotive coatings and coating components that utilize pCBtF or t-BAC; and 2) reformulation of automotive coatings and coating components that do not contain pCBtF or t-BAC and are compliant with the future VOC emission limits. It is important to note that currently available coatings which contain pCBtF and t-BAC are more expensive than higher-VOC coatings which meet the National U.S. Environmental Protection Agency VOC content limits (U.S. National Rule Limits). As a result, facilities will temporarily experience cost savings relative to the pre-adoption time period, followed by a period of higher coating prices after reformulated coatings are required.

Affected Facility and Industry

PAR 1151 is applicable to approximately 2,880 facilities located in South Coast AQMD’s jurisdiction, with 1,864 facilities in Los Angeles County, 444 facilities in Orange County, 304 facilities in San Bernardino County, and 268 facilities in Riverside County. According to the North American Industrial Classification System (NAICS), 2,760 out of the 2,880 facilities are classified under the Repair and Maintenance industry (NAICS 811); 85 facilities are under the Retail Trade industry (NAICS 44-45); 31 facilities are under the Transportation Equipment Manufacturing industry (NAICS

336); two facilities are under the Machinery Manufacturing industry (NAICS 333); one facility is under the Air Transportation industry (NAICS 481); and one facility is under the State and Local Government industry (NAICS 92).

A small-business analysis was conducted for the facilities affected by PAR 1151. The following table presents the number of affected facilities that qualify as a small business based on varying small-business definitions:

Definition	Number of Facilities
South Coast AQMD Rule 102	1,702
South Coast AQMD's Small Business Assistance Office	2,236
U.S. Small Business Administration	2,238

Assumptions for the Analysis

PAR 1151 contains a multi-phased implementation schedule. During Phase I, affected facilities will be allowed to use coatings formulated to meet the less stringent U.S. National Rule Limits, which do not utilize pCBtF or t-BAc in their formulations and are, therefore, less expensive. This will lead to the phase-out of pCBtF and t-BAc containing coatings, while resulting in a temporary increase in VOC emissions. During this phase, affected facilities will experience cost savings. During Phase II, affected facilities will begin to transition from the Phase I higher-VOC coatings to reformulated, low-VOC coatings that do not contain pCBtF or t-BAc. In Phase II, reformulation costs and any higher material costs are expected to be passed on to the affected facilities through higher costs per gallon of the reformulated coating. While Phase II coatings are expected to be more expensive than Phase I coatings, it is unclear whether Phase II coatings will continue to be more expensive than the currently used coatings in the long run.

This analysis also considers a Phase 0 period, referring to the pre-adoption time when the coatings used must meet the existing Rule 1151 limits and generally contain t-BAc or pCBtF. Based on feedback from automotive coating manufacturers, the coatings currently used in Phase 0 are about 10 percent more expensive than the coatings that will be allowed to be used during Phase I. For the reformulated coatings that will meet the proposed Phase II limits, the expected cost is assumed to be approximately the same as the present-day cost. Put simply, since pre-adoption prices are already higher in than coatings that meet the U.S. National Rule Limits, affected facilities are expected to experience a period of cost savings followed by a period of higher costs as VOC coatings are reformulated as required by PAR 1151. The analysis assumes a baseline case where reformulated coatings in Phase II are the same price as pre-adoption coatings. Given the uncertainty

of future prices, two alternative scenarios have been considered, with prices either: 1) five percent higher than pre-adoption; or 2) five percent lower than pre-adoption. In any scenario coatings in Phase I will be less expensive than pre-adoption.

The cost analysis uses a forecast period from 2025 to 2044 and estimates the costs of complying with PAR 1151 by considering two main factors:

1. **Cost Savings from Phase 0 to Phase I:** During Phase I, affected facilities will be allowed to use coatings that are less expensive than the coatings used in Phase 0. This change will result in cost savings.
2. **Transition from Phase I to Phase II:** Depending on the automotive coating category, affected facilities will be required to transition from Phase I coatings to reformulated Phase II coatings in 2028, 2029, or 2030. This would result in an increase in costs relative to Phase I, and parity in costs relative to Phase 0.

Compliance Costs and Scenario Analysis

Based on the assumption that the coatings in Phase 0 and Phase II have approximately the same price, implementation of PAR 1151 is expected to result in an overall cost savings. Specifically, the total present value of the cost savings over the forecast period is estimated at \$260.45 million and \$239.70 million with a 1 percent and 4 percent discount rate, respectively. The average annual cost savings due to the implementation of PAR 1151 is estimated to be \$13.40 million, regardless of the assumed interest rate. While there are estimated annual average savings, this reflects both the savings from less expensive coatings that meet the U.S. National Rule Limits partially offset by the reformulation cost and higher material cost in Phase II coatings.

Since Phase II coatings are still being reformulated and not yet available, a scenario analysis was conducted which assesses the uncertainty in future costs associated with reformulated coatings. Specifically, two alternative price scenarios were considered. For the “more expensive” scenario, Phase II coatings are five percent more expensive than Phase 0 coatings, resulting in incremental compliance costs for the affected facilities. For the “less expensive” scenario, where Phase II coatings are five percent less expensive than the Phase 0 coatings, the facilities are expected to achieve greater cost savings compared to the baseline scenario. The following table presents the average annual costs or cost savings of implementing PAR 1151 for the 10 automotive coating categories with a lower Phase II VOC limit proposed for the baseline analysis and two alternative scenarios.

	Annual Average Costs Under Various Price Scenarios (2025 – 2044)		
Automotive Coating Categories	Less Expensive Scenario	Baseline Analysis	More Expensive Scenario
Adhesion Promoter	(\$147,982)	(\$38,604)	\$70,774
Gloss Clear Coating	(\$24,941,312)	(\$9,976,525)	\$4,988,262
Color Coating	(\$2,544,909)	(\$299,401)	\$1,946,107
Metallic Color Coating	(\$4,578,494)	(\$218,024)	\$4,142,447
Pretreatment Wash Primer	(\$189,462)	(\$49,425)	\$90,612.31
Epoxy Primer	(\$39,491)	(\$10,302)	\$18,887
Primer Sealer	(\$275,776)	(\$91,925)	\$91,925
Primer Surfacer	(\$7,738,365)	(\$2,579,455)	\$2,579,455
Single-Stage Coating	(\$504,485)	(\$131,605)	\$241,276
Tinted Mid-Coat	(\$12,806)	(\$5,123)	\$2,561
Total	(\$40,973,082)	(\$13,400,388)	\$14,172,306

Job Impacts

The direct cost savings of PAR 1151 are used as inputs to the Regional Economic Models, Inc (REMI PI+) model to assess job impacts and secondary/induced impacts for all the industries in the four-county economy on an annual basis from 2025 to 2044.

Staff conducted a REMI analysis using cost estimates from the baseline analysis and the aforementioned two alternative price scenarios. The following table presents the job impacts in the four-county economy annually (on average) over the forecast period, relative to the REMI baseline forecast.

Scenario	Job Impacts
Baseline Analysis	167 Jobs Gained
More Expensive Scenario	110 Jobs Foregone
Less Expensive Scenario	445 Jobs Gained

**Competitiveness
and Price
Impacts**

The overall impact of implementing PAR 1151 on production cost and delivered prices in the region is not expected to be substantial. According to the REMI Model, the implementation of PAR 1151 is projected to decrease the relative delivered price of products in the Repair and Maintenance (NAICS 811) sector by a maximum of 0.342 percent in 2025, relative to the baseline scenario. The relative cost of production in the Repair and Maintenance sector is forecasted to decrease by a maximum of 0.338 percent relative to the baseline scenario, which is expected to occur in 2025.

INTRODUCTION

Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations, limits Volatile Organic Compound (VOC) emissions, toxic air contaminants, stratospheric ozone-depleting compounds, and global-warming compound emissions from automotive coating operations performed on motor vehicles, mobile equipment, and associated parts or components for motor vehicles and mobile equipment. This rule applies to any person who supplies, sells, offers for sale, markets, manufactures, blends, repackages, possesses, or distributes any automotive coating or associated solvent for use within the South Coast AQMD jurisdiction, as well as any person who uses, applies, or solicits the use or application of any automotive coating or associated solvent within the South Coast AQMD jurisdiction.¹ Rule 1151 was adopted in July 1988 and last amended in 2014.

To reduce the VOC emissions from automotive coatings, many coatings manufacturers have relied on the use of solvents that are exempt from the definition of a VOC because they have low reactivity and therefore do not significantly contribute to the formation of ground-level ozone. OEHHA has determined that two exempt compounds used in automotive coatings, pCBtF and t-BAc, have toxic endpoints, including potential carcinogenicity. Therefore, the current rule development has two primary goals: 1) to propose a phase-out timeline for pCBtF and t-BAc, and 2) to assess the feasibility of emission reductions through a technology assessment and stakeholder engagement and impose the lowest limits feasible without use of the phased-out toxic compounds.

The socioeconomic impact assessment of PAR 1151 will involve several phases. This analysis will consider a Phase 0 period, referring to the period before the implementation of PAR 1151 when the coatings used must meet the existing Rule 1151 limits, which generally contain pCBtF or t-BAc and are therefore more expensive. The Phase I period will span from the date of rule adoption to the effective date of Phase II for each coating category. During this period, coatings formulated to meet the U.S. National Rule limits will be allowed to be used. Note that the U.S. National Rule limits are less stringent than that in Phase 0, and therefore coating manufacturers will not need to utilize pCBtF or t-BAc in their formulations to comply with these limits. During this period affected facilities are anticipated to experience cost savings resulting from the use of less expensive U.S. National Rule Limit compliant coatings. The transition to using the non-pCBtF- and t-BAc containing coatings will result in a temporary increase in VOC emissions during Phase I.

The Phase II period begins either in 2028, 2029, or 2030, dependent on the applicable automotive coating category. During this period, the affected facilities will begin to transition away from the Phase I higher-VOC coatings to reformulated, low-VOC coatings that do not contain pCBtF or t-BAc. During this period affected facilities are anticipated to experience higher costs as the reformulated coatings are expected to be more expensive. This transition will result in a decrease in VOC emissions that resulted from the temporary emissions increase during the Phase I period.

PAR 1151 would affect approximately 2,880 facilities in the South Coat AQMD jurisdiction that apply automotive coatings to motor vehicles. These facilities fall into six broad categories: 1)

¹ Per Health and Safety Code Section 19, a “Person” means any person, firm, association, organization, partnership, business trust, corporation, limited liability company, or company.
https://leginfo.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&heading2=GENERAL%20PROVISIONS, accessed September 2024.

motor vehicle assembly lines; 2) autobody repair and paint shops; 3) production autobody paint shops; 4) new car dealer repair and paint shops; 5) fleet operator repair and paint shops; and 6) truck body builders.²

LEGISLATIVE MANDATES

The legal mandates directly related to the socioeconomic impact assessment of PAR 1151 include South Coast AQMD Governing Board resolutions 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 requires an analysis of the economic impacts associated with adopting and amending rules and regulations that considers all of the following elements:

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

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, the scope of the socioeconomic impact assessment should include all of the following information:

- 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 should include 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.

² For a brief description of each of the six facility categories, please see Chapter 1 Background Section of Draft Staff Report for PAR 1151, <https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1151>.

Finally, Health and Safety Code Section 40920.6, which went into effect on January 1, 1996, 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, CO, SO_x, NO_x, VOC, and their precursors. A cost-effectiveness analysis was conducted for PAR 1151 and can be found in Chapter 2 of the PAR 1151 Draft Staff Report.³

AFFECTED FACILITIES

The implementation of PAR 1151 would affect approximately 2,880 facilities in the South Coast AQMD jurisdiction, with 1,864 facilities in Los Angeles County, 444 facilities in Orange County, 304 facilities in San Bernardino County, and 268 facilities in Riverside County. Most of the affected facilities are classified under the Repair and Maintenance sector (96 percent), followed by the Retail Trade sector (three percent), and the Transportation Equipment Manufacturing sector (one percent), as presented in Table 1.

Table 1
Affected Facilities by Industry

NAICS	Industry Name	Number of Facilities	Percentage
811	Repair and Maintenance	2,760	95.83%
44-45	Retail Trade	85	2.95%
336	Transportation Equipment Manufacturing	31	1.08%
333	Machinery Manufacturing	2	0.07%
481	Air Transportation	1	0.03%
92	State and Local Government	1	0.03%
Total		2,880	100%

SMALL BUSINESS

The South Coast AQMD 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 South Coast AQMD also defines “small business” for the purpose of qualifying for access to services from the South Coast AQMD’s Small Business Assistance Office as a business with an annual receipt of \$5 million or less, or with 100 or fewer employees. In addition to the South Coast AQMD’s definition of a small business, 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 it: 1) employs 100 or fewer employees; 2) does not emit more than 10 tons per year of either VOC or NO_x; and 3) is a small business as defined by the U.S. Small Business Administration. Based on firm revenue and employee count, the U.S. Small Business Administration definition of a small business varies by

³ South Coast AQMD, Draft Staff Report for Proposed Amended Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations, <https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1151>, accessed August 2024.

six-digit NAICS code.⁴ For example, according to the U.S. Small Business Administration definition, a business that makes less than \$9 million in firm revenue in the sector of Automotive Body, Paint, and Interior Repair and Maintenance (NAICS 811121) is classified as a small business, while a business in the New Car Dealers (NAICS 441110) sector is considered a small business with less than 200 employees.

South Coast AQMD mostly relies on Dun and Bradstreet data to conduct small business analyses for private companies. 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 will be used. The determination of data reliability is based on data quality confidence codes in the Dun and Bradstreet data as well as staff’s discretion. Revenue and employee data for publicly owned companies are gathered from Securities and Exchange Commission (SEC) filings. Since subsidiaries under the same parent company are interest-dependent, the revenue and employee data of a facility’s parent company will be used for the determination of its small business status. Staff excluded one government owned facility from the small business analysis, leaving 2,879 remaining commercially owned facilities. Employment and revenue estimates from 2024 Dun and Bradstreet data as well as other external sources are available for only 2,490 facilities. Note that although the employment and revenue data for some facilities are unknown or missing, the current data used for this small business analysis represents the most thorough and accurate information obtainable as of the date of this draft report. The large number of affected facilities that are small businesses is likely the result of many facilities being small autobody repair and paint shops. The number of affected facilities that are small businesses based on each of the three definitions is presented in Table 2. Staff was unable to conduct a small business analysis for the 1990 CAAA definition of a small business as most of the facilities are not required to submit annual emission reports pursuant to South Coast AQMD Rule 222 or have failed to submit.⁵

Table 2
Number of Affected Small Business Facilities Based on Various Definitions

Definition	Number of Facilities
South Coast AQMD Rule 102	1,702
South Coast AQMD's Small Business Assistance Office	2,236
U.S. Small Business Administration	2,238

⁴ U.S. Small Business Administration, 2023 Small Business Size Standards, <https://www.sba.gov/document/support-table-size-standards>, accessed September 3, 2024.

⁵ South Coast AQMD, Rule 222 – Filling Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II, <https://www.aqmd.gov/docs/default-source/rule-book/reg-ii/Rule-222.pdf>, accessed September 06, 2024.

COMPLIANCE COST

This analysis of compliance costs of PAR 1151 involves three phases:

- Phase 0: This pre-adoption phase before the implementation of PAR 1151, requires automotive coatings to meet the existing Rule 1151 limits. According to manufacturers these coatings are more expensive than the U.S. National Rule Limit compliant coatings.
- Phase 1: This phase will span from the date of rule adoption to the effective date of Phase II for each coating category. In this phase, the facilities will be permitted to use less expensive coatings that comply with the less stringent U.S. National Rule Limits. These coatings will not contain pCBtF or t-BAc, leading to the phase-out of these coatings. However, this will result in a temporary increase in VOC emissions.
- Phase II: During this phase more stringent limits were deemed feasible for most coating categories, therefore most facilities will switch from the higher-VOC coatings used in Phase I to newly reformulated, low-VOC coatings that also do not contain pCBtF or t-BAc. These reformulated coatings are anticipated to be more expensive than the U.S. National Rule Limit compliant coatings.

The key requirements of PAR 1151 that would have cost impacts for the affected facilities include: 1) allowing the affected facilities to use the coatings that meet the less stringent U.S. National rule limit in Phase I, enabling facilities to use less expensive coatings compared to those in Phase 0; and 2) the transition from Phase I coatings to more expensive reformulated Phase II coatings. The analysis assumes that the manufacturers' reformulation costs are passed on to affected facilities in the form of higher prices in Phase II.

Affected facilities will experience incremental recurring costs or cost savings associated with the transition to: 1) Phase I coatings starting in 2025; and 2) Phase II coatings beginning in either 2028, 2029, or 2030, depending on the specific automotive coating category. The estimates of compliance costs under PAR 1151 covers a 20-year period, from 2025 to 2044.

Cost assumptions for PAR 1151 were obtained from a variety of different sources including coating manufacturers, vendors, distributors, and stakeholders. All the costs discussed in this Socioeconomic Impact Assessment are presented in 2023 dollars. No capital or one-time costs are incurred by the affected facilities. The estimation procedure and assumptions for each cost category are discussed in the following sections.

Recurring Costs

Transition to Phase I Coatings

PAR 1151 will require the phase-out of automotive coatings that contain pCBtF or t-BAc. To estimate the cost impact on facilities, staff compared the prices of Phase I coatings with the current Phase 0 coatings. Based on manufacturer feedback, Phase 0 coatings are approximately 10 percent more expensive than Phase I coatings. The California population growth rates were applied to the 2002 California Air Resources Board (CARB) Auto Refinishing Survey to estimate current

automotive coating usage in California.⁶ Given that South Coast AQMD represents about 46 percent of California's population, the estimated coating volume for the region is approximately 2.1 million gallons. The usage per automotive coating category was estimated by applying the percent sales for each category reported in the South Coast AQMD Coating Manufacturer Survey to the total volume of coatings used in the South Coast AQMD from which the total costs for both Phase 0 and Phase I coatings were calculated. The cost difference between these two phases is the estimated recurring cost or cost savings for affected facilities, beginning in 2025. An example of this calculation is shown in the following equation:

$$\text{Cost Impact} = (\text{Phase I price per gallon} * \text{Usage}) - (\text{Phase 0 price per gallon} * \text{Usage})$$

Since Phase I coatings are estimated to be 10 percent less expensive than Phase 0 coatings, an overall cost savings is anticipated for the affected facilities during the transition. The duration of these cost savings will depend on the effective date of the Phase II limits, which could be either 2028, 2029, or 2030, depending on the automotive coating category.

Transition to Phase II Coatings

During Phase II, affected facilities will be required to transition from Phase I coatings to reformulated, low-VOC coatings that do not contain pCBtF or t-BAc (Phase II coatings). Based on manufacturer feedback, Phase II coatings are expected to cost approximately the same as the Phase 0 coatings (10 percent more expensive than Phase I). Therefore, in this analysis, the prices for coatings in Phase 0 and Phase II are considered the same, both being 10 percent higher than those that will be allowed in Phase I. The cost impact of the transition to Phase II was estimated by calculating the cost difference between Phase II and Phase 0 total costs, beginning on the Phase II limit effective date (2028, 2029, or 2030). An example of this calculation is shown in the following equation:

$$\text{Cost Impact} = (\text{Phase II price per gallon} * \text{Usage}) - (\text{Phase 0 price per gallon} * \text{Usage})$$

Assuming that Phase II and Phase 0 coatings are priced similarly per gallon, the transition to Phase II coatings will not result in additional costs for affected facilities relative to the present day. However, relative to Phase I the transition to Phase II coatings will result in additional costs. Table 3 outlines each automotive coating category, including the prices for each phase, usage estimates, and the effective date for the Phase II limits. The prices for automotive coatings shown in Table 3 reflect the average costs of coatings currently available on the market. However, it is important to note that there are both high-end and more budget-friendly options; therefore, actual prices can vary.

⁶ California Air Resources Board (CARB), March 2005, Draft Report: 2002 Survey of Automotive Refinish Coatings, <https://ww2.arb.ca.gov/sites/default/files/2020-12/2002report.pdf>, accessed September 10, 2024; United States Census Bureau, August 2003, California: 2000 Population and Housing Unit Counts, <https://www2.census.gov/library/publications/2003/dec/phc-3-6.pdf>, accessed September 10, 2024; United States Census Bureau, August 2021, California: 2020 Census, <https://www.census.gov/library/stories/state-by-state/california-population-change-between-census-decade.html>, accessed September 10, 2024.

Table 3
Automotive Coating Categories by Price, Usage, and Phase II Limit Effective Date

Automotive Coating Categories	Phase 0	Phase I	Phase II	Usage (gals/year)	Phase II Limit Effective Date
Adhesion Promoter	\$200	\$180	\$200	12,868	1/1/2028
Gloss Clear Coating	\$500	\$450	\$500	798,122	1/1/2030
Color Coating*	\$250	\$245	\$250	239,521	1/1/2030
Metallic Color Coating*	\$400	\$397	\$400	290,698	1/1/2030
Pretreatment Wash Primer	\$130	\$117	\$130	25,346	1/1/2028
Epoxy Primer	\$200	\$180	\$200	3,434	1/1/2028
Primer Sealer	\$450	\$405	\$450	10,214	1/1/2029
Primer Surfacer	\$450	\$405	\$450	286,606	1/1/2029
Single-Stage Coating	\$250	\$225	\$250	35,095	1/1/2028
Tinted Mid-Coat	\$100	\$90	\$100	2,049	1/1/2030

* Note that for Color Coating and Metallic Color Coating, low VOC products that do not contain pCBtF or t-BAc are currently available. Therefore, the cost difference between phases is based on actual costs rather than estimates.

Total Compliance Cost

The compliance cost analysis covers the period from 2025 to 2044, beginning with Phase 0. Based on the assumption that Phase 0 and Phase II coatings are approximately the same price, the implementation of PAR 1151 is expected to result in overall cost savings. The total present value of cost savings over the forecast period is estimated at \$260.45 million and \$239.70 million with a 1 percent and 4 percent discount rate, respectively. The average annual cost savings due to the implementation of PAR 1151 is estimated to be \$13.40 million, regardless of interest rate assumed. While there are estimated annual average savings, this reflects both the savings from less expensive coatings that meet the U.S. National Rule Limits partially offset by the reformulation cost and higher material cost in Phase II coatings. Table 4 presents the estimated total present value and average annual cost savings of PAR 1151 for the 10 automotive coating categories with a lower Phase II VOC limit proposed.

Table 4
Total Present Value and Average Annual Estimated Cost Savings of PAR 1151

Recurring Costs	Present Value Worth (2024)		Annual Average (2025-2044)
	1% Discount Rate	4% Discount Rate	
Automotive Coating Categories			
Adhesion Promoter	(\$756,895)	(\$714,200)	(\$38,604)
Gloss Clear Coating	(\$193,681,508)	(\$177,654,863)	(\$9,976,525)
Color Coating	(\$5,812,489)	(\$5,331,521)	(\$299,401)
Metallic Color Coating	(\$4,232,648)	(\$3,882,408)	(\$218,024)
Pretreatment Wash Primer	(\$969,055)	(\$914,392)	(\$49,425)
Epoxy Primer	(\$201,987)	(\$190,593)	(\$10,302)
Primer Sealer	(\$1,793,445)	(\$1,668,394)	(\$91,925)
Primer Surfacer	(\$50,324,723)	(\$46,815,757)	(\$2,579,455)
Single-Stage Coating	(\$2,580,320)	(\$2,434,771)	(\$131,605)
Tinted Mid-Coat	(\$99,447)	(\$91,218)	(\$5,123)
Total	(\$260,452,516)	(\$239,698,116)	(\$13,400,388)

Scenario Analysis

The primary analysis, referred to as the “baseline,” assumes that the prices of Phase 0 and Phase II coatings are the same, resulting in cost savings. However, since Phase II coatings are not yet available for purchase and are still being reformulated, a scenario analysis was performed for two alternative price scenarios to assess the uncertainty in future costs associated with these coatings: a “more expensive” scenario, where Phase II coatings are 5 percent more expensive than Phase 0 coatings, and a “less expensive” scenario, where Phase II coatings are 5 percent less expensive than Phase 0 coatings.

More Expensive

In this scenario, Phase II coatings are assumed to be 5 percent more expensive than Phase 0 coatings. The total present value of compliance costs based on these assumptions are \$225.14 million and \$98.04 million for a 1 percent and 4 percent discount rate, respectively. The average annual compliance costs for this scenario are estimated to be \$14.17 million, regardless of interest rate assumed. Table 5 presents the estimated total present value and average annual costs for the more expensive scenario.

**Table 5 – More Expensive Scenario
Total Present Value and Average Annual Estimated Costs of PAR 1151**

Recurring Costs	Present Worth Value (2024)		Annual Average (2025-2044)
	1% Discount Rate	4% Discount Rate	
Automotive Coating Categories			
Adhesion Promoter	\$1,186,765	\$677,508	\$70,774
Gloss Clear Coating	\$69,541,552	\$4,686,161	\$4,988,262
Color Coating	\$33,684,859	\$22,029,255	\$1,946,107
Metallic Color Coating	\$72,465,820	\$49,248,489	\$4,142,447
Pretreatment Wash Primer	\$1,519,419.47	\$867,415.06	\$90,612.31
Epoxy Primer	\$316,704	\$180,802	\$18,887
Primer Sealer	\$1,456,935	\$620,642	\$91,925
Primer Surfacer	\$40,882,154	\$17,415,460	\$2,579,455
Single-Stage Coating	\$4,045,794	\$2,309,687	\$241,276
Tinted Mid-Coat	\$35,706	\$2,406	\$2,561
Total	\$225,135,709	\$98,037,826	\$14,172,306

Less Expensive

In this scenario, Phase II coatings are 5 percent less expensive than Phase 0 coatings. The total present value of cost savings under these assumptions are \$746.04 million and \$577.43 million for a 1 percent and 4 percent discount rate, respectively. The average annual cost savings for the less expensive scenario are estimated to be \$40.97 million, regardless of interest rate assumed. Table 6 presents the estimated total present value and average annual cost savings for the less expensive scenario.

**Table 6 – Less Expensive Scenario
Total Present Value and Average Annual Estimated Cost Savings of PAR 1151**

Recurring Costs	Present Worth Value (2024)		Annual Average (2025-2044)
	1% Discount Rate	4% Discount Rate	
Automotive Coating Categories			
Adhesion Promoter	(\$2,700,555)	(\$2,105,908)	(\$147,982)
Gloss Clear Coating	(\$456,904,567)	(\$359,995,887)	(\$24,941,312)
Color Coating	(\$45,309,837)	(\$32,692,295)	(\$2,544,909)
Metallic Color Coating	(\$80,931,116)	(\$57,013,304)	(\$4,578,494)
Pretreatment Wash Primer	(\$3,457,529)	(\$2,696,200)	(\$189,462)
Epoxy Primer	(\$720,678)	(\$561,988)	(\$39,491)
Primer Sealer	(\$5,043,825)	(\$3,957,431)	(\$275,776)
Primer Surfacer	(\$141,531,584)	(\$111,046,960)	(\$7,738,365)
Single-Stage Coating	(\$9,206,435)	(\$7,179,228)	(\$504,485)
Tinted Mid-Coat	(\$234,600)	(\$184,842)	(\$12,806)
Total	(\$746,040,725)	(\$577,434,043)	(\$40,973,082)

MACROECONOMIC IMPACTS ON THE REGIONAL ECONOMY

The Regional Economic Models, Inc (REMI) PI+ v3 model was used to assess the socioeconomic impacts of PAR 1151.⁷ The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and 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.⁸

It should be noted that the REMI model is not designed to assess impacts on individual operations. The model was used to assess the impacts of PAR 1151 on various industries that make up the local economy. Cost impacts on individual operations were assessed outside of the REMI model and were aggregated to the 70-sector NAICS code level to be used as inputs into the REMI model.

Impacts of PAR 1151

This assessment is performed relative to the REMI baseline (“business as usual”) forecast where PAR 1151 would not be implemented. The direct cost savings of PAR 1151 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 2025-2044 period. Direct effects of PAR 1151 are generated in the process of transitioning from Phase 0 coatings to Phase I coatings, and the transition to Phase I to Phase II coatings. While the compliance cost savings of

⁷ Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70-sector model). Version 3. 2023.

⁸ Within each county, producers 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.>)

affected facilities in Phase I would decrease their cost of doing business, the manufacturer of these coatings would experience a decrease in revenue as a result, holding the volume of coatings constant. Staff is not aware of any automotive coating manufacturers (NAICS 325510) located within the South Coast AQMD region and found that the local market for these coatings is primarily served by companies based in other states. Consequently, staff determined that the possible revenue loss to this industry due to the potential cost savings from PAR 1151 would not be considered in the four-county area in the REMI analysis. This does not imply that there will not be negative impacts to these manufacturers, but rather that any impacts will primarily be felt outside the South Coast AQMD jurisdiction. Table 7 lists the 70-sector NAICS codes modeled in REMI that would incur direct cost savings.

**Table 7
Industries Incurring Cost Savings**

Source of Compliance Cost	REMI Industries Incurring Compliance Cost (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
Phase 0 to Phase I Coating Transition	Repair and Maintenance (811) Retail Trade (44-45) Motor Vehicles, Bodies and Trailers, and Parts Manufacturing (3361-3363)	N/A*
Phase I to Phase II Coating Transition	Other Transportation Equipment Manufacturing (3364-3369) Machinery Manufacturing (333) Air Transportation (481) State and Local Government (92)	

*Note: Staff is unaware of any automotive coating manufacturers (NAICS 325510) located within the South Coast AQMD region, therefore the potential revenue loss to this industry is not considered in the REMI analysis for PAR 1151.

Regional Job Impacts

The REMI analysis was conducted by using cost estimates from the baseline analysis and the two alternative price scenarios outlined in the Compliance Cost section of this report.

Baseline Analysis

The REMI model projects that there will be 167 jobs gained annually on average over the 2025 – 2044 period, relative to the REMI baseline forecast. The net job gains are likely due to the cost savings incurred by PAR 1151 affected facilities during the transition from Phase 0 coatings to Phase I coatings. These savings may also result in lower prices for consumers, which in turn has positive spillovers into other sectors of the economy. The Retail Trade (NAICS 44-45), Repair and Maintenance (NAICS 811), and State and Local Government (NAICS 92) industries are forecasted

to gain 19, 17, and 13 jobs, respectively, annually on average over the forecast period. Table 8 presents the forecasted jobs forgone or added for selected years in the industries with the largest magnitude of average annual job impacts. The “All Other Industries” row in Table 8 shows the sum of job impacts for all other industries excluding the 10 selected industries presented in the table.

Table 8
Projected Job Impacts of PAR 1151 for Selected Industries and Years – Baseline

Industry (NAICS)	2025	2030	2035	2044	Annual Average	Baseline Number of Jobs	% of Baseline Jobs
Retail trade (44-45)	75	8	0	2	19	923,250	0.002%
Repair and maintenance (811)	58	13	4	1	17	132,850	0.013%
State and local government (92)	24	27	1	2	13	954,442	0.001%
Construction (23)	112	-5	-48	-1	11	555,242	0.002%
Real estate (531)	40	6	-1	2	11	747,794	0.001%
Food services and drinking places (722)	31	10	3	1	11	744,951	0.001%
Administrative and support services (561)	39	4	0	1	10	841,663	0.001%
Professional, scientific, and technical services (54)	32	6	-1	2	9	1,008,886	0.001%
Personal and laundry services (812)	43	-3	0	1	9	405,558	0.002%
Ambulatory health care services (621)	36	-8	-1	3	7	688,181	0.001%
All Other Industries	186	22	4	10	51	5,330,430	0.001%
All Industries	677	81	-39	23	167	12,333,247	0.001%

More Expensive Scenario

The more expensive scenario assumes Phase II coatings are 5 percent more expensive than Phase 0 coatings. In this scenario the affected facilities incur cost savings during Phase I and compliance costs during Phase II. The REMI model projects that in this scenario there will be 110 jobs forgone annually on average over the 2025 – 2044 period, relative to the REMI baseline forecast. The Construction (NAICS 23), Repair and Maintenance, and Retail Trade industries are forecasted to forgo 20, 11, and 9 jobs, respectively, on average over the forecast period. Table 9 presents the forecasted jobs foregone or added for selected years in the industries with the largest magnitude of average annual job impacts. The “All Other Industries” row in Table 9 shows the sum of job impacts for all other industries excluding the 10 selected industries presented in the table.

Table 9
Projected Job Impacts of PAR 1151 for Selected Industries and Years - More Expensive Scenario

Industry (NAICS)	2025	2030	2035	2044	Annual Average	Baseline Number of Jobs	% of Baseline Jobs
Construction (23)	112	-70	-102	-16	-20	555,242	-0.004%
Repair and maintenance (811)	58	-21	-36	-37	-11	132,850	-0.008%
Retail trade (44-45)	75	-34	-41	-32	-9	923,250	-0.001%
Personal and laundry services (812)	43	-29	-23	-21	-7	405,558	-0.002%
Real estate (531)	40	-17	-25	-21	-6	747,794	-0.001%
State and local government (92)	24	12	-29	-25	-6	954,442	-0.001%
Administrative and support services (561)	39	-18	-23	-20	-6	841,663	-0.001%
Professional, scientific, and technical services (54)	32	-12	-23	-18	-6	1,008,886	-0.001%
Food services and drinking places (722)	31	-8	-20	-22	-6	744,951	-0.001%
Ambulatory health care services (621)	36	-29	-15	-11	-4	688,181	-0.001%
All Other Industries	186	-85	-108	-100	-29	5,330,430	-0.001%
All Industries	677	-310	-443	-324	-110	12,333,247	-0.001%

Less Expensive Scenario

The less expensive scenario assumes Phase II coatings are five percent less expensive than Phase 0 coatings. In this scenario the affected facilities incur greater cost savings relative to the baseline analysis. The REMI model projects that for this scenario there will be 445 jobs gained annually on average over the 2025 – 2044 period, relative to the REMI baseline forecast. The Retail Trade, Repair and Maintenance, and Construction industries are forecasted to gain 47, 46, and 42 jobs, respectively, on average over the forecast period. Table 10 presents the forecasted jobs foregone or added for selected years in the industries with the largest magnitude of average annual job impacts. The “All Other Industries” row in Table 10 shows the sum of job impacts for all other industries excluding the 10 selected industries presented in the table.

Table 10
Projected Job Impacts of PAR 1151 for Selected Industries and Years - Less Expensive Scenario

Industry (NAICS)	2025	2030	2035	2044	Annual Average	Baseline Number of Jobs	% of Baseline Jobs
Retail trade (44-45)	75	50	41	35	47	923,250	0.005%
Repair and maintenance (811)	58	48	44	38	46	132,850	0.034%
Construction (23)	112	60	5	14	42	555,242	0.008%
State and local government (92)	24	42	30	28	32	954,442	0.003%
Real estate (531)	40	28	24	25	28	747,794	0.004%
Food services and drinking places (722)	31	28	26	25	27	744,951	0.004%
Administrative and support services (561)	39	27	23	22	26	841,663	0.003%
Personal and laundry services (812)	43	23	22	23	25	405,558	0.006%
Professional, scientific, and technical services (54)	32	25	20	22	24	1,008,886	0.002%
Ambulatory health care services (621)	36	13	14	17	17	688,181	0.003%
All Other Industries	186	129	116	121	131	5,330,430	0.002%
All Industries	677	473	366	370	445	12,333,247	0.004%

Worst-Case Scenario Analysis

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 emission control equipment and services from providers outside the South Coast AQMD region, based on the recommendations made by Abt Associates Inc.⁹ However, staff is unaware of any automotive coating manufacturers located within the South Coast AQMD region and has instead conducted a REMI analysis for each of the alternative price scenarios (e.g., more expensive and less expensive) in lieu of a worst-case scenario analysis.

Price Impact and Competitiveness

The impact of implementing PAR 1151 on production costs and delivered prices in the region is not expected to be substantial. In the Repair and Maintenance industry, which incurs most of the cost savings associated with PAR 1151, the REMI model projects an average decrease in relative delivered prices of 0.075 percent over the forecast period, with a maximum decrease of 0.342 percent forecasted in the year 2025. The relative cost of production for the Repair and Maintenance

⁹ 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 April 2, 2024.

industry is forecasted to decrease by 0.074 percent on average relative to the REMI baseline scenario, with a maximum decrease of 0.338 percent expected to occur in 2025. Given the potential decrease in delivered prices and cost of production, the implementation PAR 1151 is expected to improve the ability of local firms to compete with producers located outside South Coast AQMD's jurisdiction.

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