SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Socioeconomic Impact Assessment For:
Proposed Amended Rule 1180 – Fenceline and Community Air Monitoring For Petroleum Refineries and Related Operations, and
Proposed Rule 1180.1 – Fenceline and Community Air Monitoring For Other Refineries

December 2023

Deputy Executive Officer
Planning, Rule Development, and Implementation
Sarah L. Rees, Ph.D.

Assistant Deputy Executive Officer
Planning, Rule Development, and Implementation
Michael Krause

Planning and Rules Manager
Planning, Rule Development, and Implementation
Barbara Radlein

Authors:	Daniel Penoyer – Air Quality Specialist Valerie Rivera – Assistant Air Quality Specialist Chris Yu – Assistant Air Quality Specialist
Technical Assistance:	Yanrong Zhu – Program Supervisor Mojtaba Moghani, Ph.D. – Air Quality Specialist Jennifer Vinh – Air Quality Specialist
Reviewed By:	Xian-Liang (Tony) Tian, Ph.D. – Program Supervisor Shah Dabirian, Ph.D. – Consultant Daphne Hsu – Principal Deputy District Counsel

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT GOVERNING BOARD

Chair: VANESSA DELGADO
Senator (Ret.)
Senate Rules Committee Appointee

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

MEMBERS:

ANDREW DO
Supervisor, First District
County of Orange

CURT HAGMAN
Supervisor, Fourth District
County of San Bernardino

GIDEON KRACOV
Governor's Appointee

PATRICIA LOCK DAWSON
Mayor, Riverside
Cities of Riverside County Representative

LARRY MCCALLON
Mayor, Highland
Cities of San Bernardino County

HOLLY J. MITCHELL
Supervisor, Second District
County of Los Angeles

VERONICA PADILLA-CAMPOS
Speaker of the Assembly Appointee

V. MANUEL PEREZ
Supervisor, Fourth District
County of Riverside

NITHYA RAMAN
Councilmember, Fourth District
City of Los Angeles Representative

CARLOS RODRIGUEZ
Councilmember, Yorba Linda
Cities of Orange County

JOSE LUIS SOLACHE
Councilmember, Lynwood
Cities of Los Angeles County/Western Region

EXECUTIVE OFFICER:

WAYNE NASTRI

TABLE OF CONTENTS

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 (SOx), nitrogen oxides (NOx), volatile organic compounds (VOC), and their precursors.

Proposed Amended Rule 1180 (PAR 1180) and Proposed Rule 1180.1 (PR 1180.1) have been developed to enhance air quality monitoring and provide public access to information about pollutants in the vicinity of refineries and a socioeconomic impact assessment has been conducted accordingly. The following presents a summary of the analysis and findings of the socioeconomic impact assessment:

Key Elements of PAR 1180 and PR 1180.1

PAR 1180 would require real-time fenceline air monitoring at or near the property boundaries of petroleum refineries and related facilities and establish a fee schedule to fund installation and operation of refinery-related community air monitoring systems in nearby communities. PR 1180.1 would establish similar requirements for other refineries which were previously exempt from Rule 1180. The socioeconomic impacts of PAR 1180 and PR 1180.1 are assessed jointly in this report.

Affected Facilities and Industries

PAR 1180 and PR 1180.1 would affect 15 facilities which are all located in Los Angeles County within South Coast AQMD's jurisdiction. PAR 1180 would affect 12 out of the 15 facilities, seven of which were originally regulated by Rule 1180, and five facilities that qualify as related operations which will be newly subject to PAR 1180. The three remaining facilities would be subject to PR 1180.1. The following summarizes the operations of the 15 affected facilities:

PAR 1180 Facilities:

- Seven facilities refine petroleum;
- Two facilities operate as petroleum bulk stations and terminals;
- One facility manufactures chemicals;
- Two facilities manufacture industrial gases.

PR 1180.1 Facilities

- Two facilities refine petroleum; and
- One facility refines alternative feedstocks.

Assumptions for the Analysis

The key requirements of PAR 1180 and PR 1180.1 that will have cost impacts for the affected facilities include: 1) construction of new community

and fenceline monitoring sites for newly affected facilities; 2) investment in new air quality monitoring equipment at existing fenceline and community sites and newly constructed monitoring sites; 3) additional labor for equipment installation and operation; 4) ongoing calibration and maintenance; and 5) independent system audits by third parties.

Specifically, PAR 1180 would require the installation of additional monitoring devices for existing fenceline air monitoring systems and the payment to fund additional monitoring devices for existing community stations. Newly installed monitors would analyze a larger set of pollutants than those currently in operation in accordance with existing rule 1180. PAR 1180 would also expand the applicability provision to include refinery-related operations occurring at contiguous or adjacent properties and will require the installation of new fenceline air monitoring systems and payment to fund new community stations to monitor those air pollutants.

PR 1180.1 would require facilities that were previously exempt from Rule 1180 to install new fenceline monitoring systems. PR 1180.1 also establishes a fee schedule to cover the cost of conducting community air monitoring in nearby communities.

The analysis assumes that the required investments and fees to implement these provisions would start to occur in: 1) 2025 for facilities that were previously subject to Rule 1180 requirements; and 2) 2026 for facilities newly subject to PAR 1180 and PR 1180.1 requirements due to later compliance deadlines. The actual timing of spending and fee payment may differ slightly from the schedule presented in this analysis depending on the time required to submit and review the FAMP, install the monitoring systems, and submit community air monitoring fees. Any difference in job impacts caused by differences in timing of fee payments or investment are expected to be minimal. Compliance costs are forecasted over the period from 2025 to 2045, reflecting an assumed 20-year useful life of the monitoring equipment and that installations of monitoring equipment at the facilities newly subject to PAR 1180 and PR 1180.1 will be installed one year later than the installations occurring at facilities that were previously subject to Rule 1180 requirements. The one-time and capital costs were amortized over the useful lifetime of the monitoring equipment while the recurring compliance costs are modeled in the year in which they occur.

Compliance Costs

The total present value of the compliance costs of the proposed project is estimated at $165.71 million and $122.05 million with a 1% and 4% discount rate, respectively. The average annual compliance costs of PAR 1180 and PR 1180.1 are estimated to range from $8.88 million to $9.27 million, for a 1% and 4% interest rate, respectively. The following table presents a summary of the average annual cost of the proposed project by cost category.

	Annual Average Cost of PAR 1180 and PR 1180.1 (2025 – 2045)	
Cost Categories	**1% Interest Rate**	**4% Interest Rate**
Capital Costs		
Community - Air Monitoring Station Container	$10,451	$13,477
Community - Site Preparation and Construction	$26,127	$33,691
Community - Monitoring Equipment	$345,791	$445,904
Community - Data System	$7,838	$10,107
Community - Technical Labor	$39,504	$50,941
Community - South Coast AQMD Staff Labor	$133,694	$172,401
Fenceline - Air Monitoring Station Container	$25,082	$32,344
Fenceline - Site Preparation and Construction	$62,705	$80,859
Fenceline - Monitoring Equipment	$497,719	$641,819
Fenceline - Data System	$18,811	$24,258
Fenceline - Third-Party Technical Labor	$54,344	$70,078
Fenceline - Plan Development and Review	$121,111	$156,175
Recurring Costs		
Community - Electricity	$157,000	$157,000
Community - Site Lease	$95,238	$95,238
Community - Lavatory Rental	$34,286	$34,286
Community - Calibration and Maintenance Parts	$458,810	$458,810
Community - Communications and Information Technology (IT) Services	$214,286	$214,286
Community - Technical Labor	$722,857	$722,857
Community - South Coast AQMD Staff Labor	$2,504,762	$2,504,762
Fenceline - Electricity	$625,429	$625,429
Fenceline - Calibration and Maintenance Parts	$709,667	$709,667
Fenceline - Communications and IT Services	$342,857	$342,857
Fenceline - Third-Party Technical Labor	$1,216,571	$1,216,571
Fenceline - Independent Audit	$453,333	$453,333
Total	**$8,878,272**	**$9,267,149**

The analysis indicates that South Coast AQMD Staff Labor and Third-party Technical Labor will comprise approximately 29% and 22% of the total annual cost of the proposed project, respectively. The petroleum and coal products manufacturing industry (NAICS 324) is expected to incur about 72% of total average annual cost.

The analysis also indicates that out of the 15 affected facilities, none meet the definition of a small business pursuant to either South Coast AQMD Rule 102 – Definition of Terms, South Coast AQMD's Small Business Assistance Office (SBAO), or the federal 1990 Clean Air Act Amendments (CAAA).

Job Impacts

Direct costs and corresponding revenues of the proposed project 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 through 2045. The forecasted time horizon used in the REMI model is the period from 2025 to 2045.

When the compliance cost is annualized using a 4% interest rate, seven net jobs are projected to be added to the regional economy on average over the period between 2025 and 2045 relative to the baseline forecast. This increase in jobs is mainly attributable to the capital-intensive nature of the affected businesses, while industries which benefit from the proposed project are relatively labor intensive. Thus, businesses in those industries are likely to hire more workers in response to an increase in demand for their services.

The largest job impacts occur in 2025 and 2026, when equipment suppliers will benefit from the capital expenditures. The REMI model forecasts 104 additional jobs in the regional economy in 2025 and 2026, relative to the baseline scenario. Job impacts are minor throughout the rest of the forecast period.

Competitiveness and Price Impacts

The overall impacts of the proposed project on production cost and delivered prices in the region are not expected to be substantial because the results of the analysis conducted using the REMI Model indicate that implementation of the proposed project will have a maximum single-year increase of 0.013% in the cost of production for the Petroleum and Coal Products Manufacturing industry in the four-county region, and a maximum increase of 0.012% in the delivered price. The single-year maximum cost and price increases are expected to take place in 2027.

INTRODUCTION

In 2017, the South Coast AQMD Governing Board adopted Rule 1180 which required: 1) real-time fenceline air monitoring for certain air pollutants at the property boundary of major petroleum refineries; 2) air quality data to be disseminated to the public; and 3) established a fee schedule to fund air quality monitoring in nearby communities. Petroleum refineries with a maximum process capacity of less than 40,000 barrels of crude oil per day and facilities which refine alternative feedstocks were exempt from Rule 1180.

PAR 1180 and PR 1180.1 have been developed to enhance air quality monitoring and provide public access to information about pollutants in the vicinity of refineries. Specifically, PAR 1180 seeks to: 1) expand the list of pollutants that affected facilities are required to monitor; 2) broaden the applicability provision to include several facilities with operations related to petroleum refineries; and 3) eliminate the exemption for petroleum refineries with a maximum capacity to process less than 40,000 barrels per day of crude oil or alternative feedstocks.

Specifically, PAR 1180 will require real-time fenceline air monitoring systems and establish a fee schedule to fund refinery-related community air monitoring systems that provide the public with air quality information about various pollutants including particulate matter (PM), naphthalene, toluene, and other VOCs, and certain metals at or near the property boundaries of petroleum refineries and in nearby communities. Requirements for monitoring additional pollutants and the expansion of the rule's applicability to include refinery-related operations that occur on contiguous properties including, but not limited to, sulfur recovery plants and terminals are also included in PAR 1180.

PR 1180.1 would establish similar requirements as PAR 1180 for facilities which are currently exempt from Rule 1180. Specifically, PR 1180.1 would establish a fee structure to fund community monitoring systems and would require owners and operators to monitor and publish air quality data at the fenceline of affected facilities. Owners and operators of facilities subject to PR 1180.1 would be required to monitor the same pollutants as those listed in PAR 1180 with the exception of certain pollutants including black carbon and metals.

Seven petroleum refineries are currently subject to Rule 1180 and have been operating fenceline monitoring systems since the second quarter of 2020. These facilities also currently pay the annual operating and maintenance fees to South Coast AQMD for the existing community monitoring stations required by Rule 301 – Permitting and Associated Fees. PAR 1180 will broaden the applicability of the rule to include five additional facilities with operations related to petroleum refineries including sulfur recovery plants, terminals, and hydrogen production plants. These five additional facilities would be required to install fenceline monitoring systems and pay fees associated with the construction and operation of additional community monitoring stations. PR 1180.1 would require three facilities, two refineries which process asphalt oil and one refinery that processes alternative feedstocks, to install fenceline monitoring systems and includes a fee schedule to cover South Coast AQMD's cost to design, develop, install, operate, and maintain refinery-related community air monitoring systems in nearby areas.

Costs associated with fenceline monitoring requirements in PAR 1180 and PR 1180.1 are paid directly by affected facilities to equipment suppliers and service providers, and these monitoring sites are maintained by the affected facilities. Community air monitoring sites are administered by South Coast AQMD. The capital investments and ongoing operating and maintenance will be conducted by South Coast AQMD, the expenses of which will be covered by the fees levied on affected facilities as defined in in PAR 1180 and PR 1180.1. For the purpose of the socioeconomic impact assessment and in the REMI model, fees paid by facilities for community monitoring are treated as if they are paid directly to equipment and service providers. For certain labor expenses, South Coast AQMD is assumed to be the supplier modeled in REMI.

Some of the cost estimates in this socioeconomic impact assessment may be slightly larger than those presented in the Draft Staff Report. The costs presented in this document reflect a conservative approach by applying upper bound estimates to account for uncertainty in certain costs.

Capital and other one-time costs at newly constructed monitoring facilities include a container to house the monitoring equipment, site preparation and construction expenses, monitoring equipment, data systems and IT infrastructure, and technical labor. Recurring costs include electricity, land leases, regular maintenance and calibration of monitoring devices, data storage and visualization, and labor.

In addition to the community and fenceline monitoring systems, all affected facilities would be required to: 1) develop and submit a Fenceline Air Monitoring Plan (FAMP) to the South Coast AQMD for review and approval; and 2) conduct periodic independent audits of the fenceline system. The FAMP is a compliance plan which details the instrumentation, maintenance, quality control, backup systems, auditing, and data reporting methods. Audits are required to be conducted by an independent third party every three years. Audits are intended to identify any deficiencies in the monitoring system and quality assurance procedures.

LEGISLATIVE MANDATES

The legal mandates directly related to the socioeconomic impact assessment of PAR 1180 and PR 1180.1 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.

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, carbon monoxide (CO), sulfur oxides (SOx), nitrogen oxides (NOx), VOC, and their precursors. However, since PAR 1180 and PR 1180.1 do not include new BARCT requirements, Health and Safety Code Section 40920.6does not apply to the proposed project.

AFFECTED FACILITIES

PAR 1180 and PR 1180.1 would affect 15 facilities which are all located in Los Angeles County within South Coast AQMD's jurisdiction. PAR 1180 would affect 12 out of the 15 facilities, seven of which were originally regulated by Rule 1180 and five facilities that qualify as related operations which will be newly subject to PAR 1180. The three remaining facilities would be affected by PR 1180.1. The following summarizes the affected facilities by their North American Industry Classification System (NAICS) code:

- Ten facilities refine petroleum (NAICS 324110);
- Two facilities operate as petroleum bulk stations and terminals (NAICS 424710);
- One facility manufactures chemicals (NAICS 325180);
- Two facilities manufacture industrial gases (NAICS 325120);

Table 1 presents the facilities, NAICS codes, sectors, and applicable rule for the facilities affected by the proposed project.

Table 1
Affected Facilities by NAICS Codes

Facility Name	NAICS	Industry	Applicable Rule
Tesoro Carson	324110	Petroleum Refineries	Facilities Currently Subject to Rule 1180
Tesoro Wilmington	324110	Petroleum Refineries	
Chevron U.S.A, Inc. (El Segundo)	324110	Petroleum Refineries	
Phillips 66 Company (Carson)	324110	Petroleum Refineries	
Phillips 66 Company (Wilmington)	324110	Petroleum Refineries	
PBF Energy, Torrance Refining Company (Torrance)	324110	Petroleum Refineries	
Valero Energy (Wilmington)	324110	Petroleum Refineries	
Tesoro Sulfur Recovery Plant (SRP)	325180	Other Basic Inorganic Chemical Manufacturing	Facilities Newly Subject to PAR 1180
Tesoro Logistics, Carson Crude Terminal	424710	Petroleum Bulk Stations and Terminals	
Air Products Carson	325120	Industrial Gas Manufacturing	
Air Products Wilmington	325120	Industrial Gas Manufacturing	
Kinder Morgan Liquids Terminals LLC	424710	Petroleum Bulk Stations and Terminals	
AltAir Paramount	324110	Petroleum Refineries	Facilities Newly Subject to PR 1180.1
Lunday-Thagard (World Oil Refining)	324110	Petroleum Refineries	
Valero Wilmington Asphalt Plant	324110	Petroleum Refineries	

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 (SBAO) 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 federal Small Business Administration (SBA) 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 NOx; and 3) is a small business as defined by the SBA. Based on firm revenue and employee count, the SBA

definition of a small business varies by six-digit NAICS codes.[1] For example, according to the SBA definition, a business with less than 1,500 employees in the sector of Petroleum Refineries is classified as a small business, while a business in the Petroleum Bulk Stations and Terminals (NAICS 424710) sector is considered a small business with only 225 employees.

South Coast AQMD generally relies on Dun & Bradstreet data to conduct small business analyses on private companies. In cases where the Dun & Bradstreet revenue and/or employee data are unreliable, other external data sources such as Manta, Hoover, and LinkedIn are used. The determination of data reliability is based on data quality confidence codes in the Dun & Bradstreet data as well as staff's discretion. Revenue and employee data for publicly owned companies is gathered from Securities and Exchange Commission (SEC) filings. Since subsidiaries under the same parent company are interest-dependent, the revenue and employee count of each facility's parent company is used for determining its small business status. Staff obtained reliable revenue and employee data for 14 of the 15 affected facilities. For the facility for which reliable revenue data was not available, the revenue of the facility was estimated based on publicly available information on throughput and the commodity prices of the facility's final products. None of the affected facilities or their parent companies meet the definition of a small business under South Coast AQMD's Rule 102, the SBAO definition, or the 1990 CAAA definition.[2]

Table 2 presents the estimated average annual compliance cost of each facility, the annual revenue of each facility's parent company, and the average annual compliance cost as a percent of revenue of each parent. The ratio of average annual compliance costs to the gross annual revenues are expected to be less than one percent for all affected facilities.

[1] U.S. Small Business Administration, Table of Small Business Size Standards, March 17, 2023. https://www.sba.gov/sites/sbagov/files/2023-06/Table%20of%20Size%20Standards_Effective%20March%2017%2C%202023%20%282%29.pdf, accessed November 16, 2023.

[2] Based on facility-level data on NOx and VOC emissions for calendar year 2022.

Table 2
Projected Ratio of Average Annual Compliance Costs to the Gross Annual Revenues of Parent Companies

Parent Company Designation	Total Annual Compliance Cost	Total Annual Revenue ($MM)	% of Revenue
Parent Company 1	**$1,882,658**	**$178,240**	**0.00%**
Facility A	$505,815	-	
Facility B	$322,845		
Facility H	$590,054		
Facility I	$463,943		
Parent Company 2	**$608,073**	**$235,920**	**0.00%**
Facility C	$608,073	-	
Parent Company 3	**$635,561**	**$169,990**	**0.00%**
Facility D	$317,780	-	
Facility E	$317,780		
Parent Company 4	**$540,670**	**$46,860**	**0.00%**
Facility F	$540,670	-	
Parent Company 5	**$1,514,895**	**$171,190**	**0.00%**
Facility G	$370,176	-	
Facility O	$1,144,719		
Parent Company 6	**$1,180,109**	**$12,700**	**0.01%**
Facility J	$590,054		
Facility K	$590,054		
Parent Company 7	**$463,943**	**$19,200**	**0.00%**
Facility L	$463,943	-	
Parent Company 8	**$1,295,981**	**N/A***	**N/A***
Facility M	$1,295,981	-	
Parent Company 9	**$1,145,259**	**$128**	**0.89%**
Facility N	$1,145,259	-	
Total	**$9,267,149**	**$834,228**	

*Reliable revenue data was not available for this facility and its parent company. Based on permitted throughput and market prices for the products this facility produces, staff estimates that total annual compliance costs would be less than 1% of revenue.

COMPLIANCE COST

The proposed project would require one-time investments in air monitoring devices, site

preparation, labor, information technology (IT) infrastructure, FAMP development and review, and recurring costs for periodic recalibration, maintenance, utilities, technical labor, site leases, lavatory rental, and independent audits. Direct costs of the proposed project vary between existing Rule 1180 facilities, facilities newly subject to PAR 1180, and PR 1180.1 facilities.

The list of monitored air pollutants in Rule 1180 is based on the September 2017 Office of Environmental Health Hazard Assessment (OEHHA) draft report "Analysis of Refinery Chemical Emissions and Health Effects." In 2019, after the adoption of Rule 1180, OEHHA finalized the report and expanded the list of chemicals.[3] The list of the monitored pollutants can be found in the PAR 1180 and PR 1180.1 Draft Staff Report. For the seven facilities previously covered by Rule 1180, PAR 1180 requires investment in new monitoring equipment at pre-existing fenceline and community stations to monitor the expanded list of pollutants in the finalized 2019 OEHHA report. These seven facilities (petroleum refineries) will not need to construct any new fenceline monitoring stations or pay for the construction of any additional community monitoring stations for the petroleum refineries. For the related facilities with common ownership with a petroleum refinery, the petroleum refinery understands they will pay for the construction and operating fees associated with those related facilities.

For the five facilities newly subject to PAR 1180 that operate on contiguous or adjacent properties, at least one new open path fenceline monitoring station will need to be installed per facility. South Coast AQMD would also construct two new community air monitoring sites, the costs of which will be shared amongst these five facilities newly subject to PAR 1180. The types of pollutants monitored at each of these two new community sites would vary based on the operations conducted at these five facilities. Specifically, one new community station would only monitor VOC and hydrogen sulfide (H2S) emissions. The costs associated with the VOC + H2S-only station would be split evenly between two petroleum terminal facilities. A separate new community station capable of monitoring the full list of pollutants in PAR 1180 (except for black carbon and metals) would be constructed and costs shared by the remaining three facilities newly subject to PAR 1180.

PR 1180.1 would require the construction of three new community air monitoring sites, one for each of the three facilities that will be subject to the rule. Each facility would be responsible for paying fees associated with the construction and recurring costs for a single community monitoring station according to the fee schedule in PR 1180.1. These facilities would also be required to install fenceline monitoring systems. The largest facility that would be subject to PR 1180.1 is expected to install three open path fenceline monitoring stations and the remaining two facilities are expected to install two open path fenceline monitoring stations at each facility. The analysis for PR 1180.1 facilities overestimates the cost because it included black carbon and metals monitoring, which is not required by PR 1180.1.

The deadline to complete the installation and begin operation of the fenceline monitoring systems for Rule 1180 facilities (current and newly applicable facilities), and PR 1180.1 facilities is 15

[3] OEHHA, Analysis of Refinery Chemical Emissions and Health Effects, Table 1, pp. 2-5, March 20, 2019, https://oehha.ca.gov/media/downloads/faqs/refinerychemicalsreport032019.pdf, accessed November 22, 2023.

months and two years after the approval of the FAMP, respectively. Facilities which already have an approved FAMP are required to submit a revised FAMP within nine calendar months of rule adoption. Facilities which are newly subject to PAR 1180 and PR 1180.1 facilities are required to submit a FAMP within one year of rule adoption. For the purposes of this socioeconomic impact assessment, compliance spending is assumed to occur in 2025 for facilities previously subject to Rule 1180 and in 2026 for facilities newly subject to PAR 1180 and PR 1180.1.

South Coast AQMD's Monitoring and Analysis Division (MAD) maintains the South Coast AQMD's community monitoring network. The cost estimates provided in this report for both fenceline and community monitoring stations are based on data from South Coast AQMD's existing community monitoring sites, as well as from recent quotes provided by device manufacturers. The actual realized costs will largely depend on site-specific factors and business decisions made by the facilities subject to PAR 1180 and PR 1180.1. This socioeconomic impact analysis represents the costs as realistically as possible and takes into consideration many factors that would ultimately determine what price a business would pay to implement a monitoring plan. The procedure and assumptions for each cost estimate are discussed in the next section. All the estimated costs are in 2023 U.S. dollars.

Capital and One-Time Costs

Monitoring Equipment

PAR 1180 requires additional monitoring equipment at existing fenceline and community sites to monitor the additional pollutants that were incorporated into OEHHA's 2019 updated list of chemicals. Analyzer cost estimates for these facilities are based on the number of existing monitoring stations and the unit cost of new analyzers that will be installed at these sites. This analysis assumes that upgrades to existing monitoring stations will include a PM2.5 and PM10 analyzer, a Speciated Metals analyzer, and a Zero Air Generator and Dilution System, totaling $305,000 per station.

Facilities newly subject to PAR 1180 and PR 1180.1 would be required to purchase analyzers capable of monitoring all the air pollutants required by the rules. One community monitoring site will not need to monitor the entire list of air pollutants since the facilities located in its community do not emit certain pollutants. Specifically, one community station would only need to monitor VOC and H2S and as such, will not be equipped with monitors for PM2.5, PM10, black carbon (BC), or metals. Table 3 summarizes the cost per analyzer that was relied upon to estimate the facilities' analyzer costs. Total analyzer costs were calculated by multiplying the cost per analyzer by the estimated number of analyzers required for each fenceline or community system. The number of new analyzers required at each facility ranges from eight to 20, depending on facility size, complexity, and line of site at the fenceline. The one-time total analyzer costs across community and fenceline monitoring stations are estimated to be $16.1 million.

Table 3
Monitoring Equipment Unit Costs

Analyzer	Full Monitoring Station	VOC and H2S Only Monitoring Station
H2S Analyzer	$20,000	$20,000
PM2.5 and PM10 Analyzer	$60,000	N/A*
BC Analyzer	$30,000	N/A*
Speciated Metal Analyzer	$220,000	N/A*
Optical Multi-Pollutant Analyzers	$250,000	$250,000
Open Path Monitor	$250,000	$250,000
Auto-Gas Chromatograph (Auto-GC)	$80,000	$80,000
Met Station	$20,000	$20,000
Zero Air Generator and Dilution System	$25,000	$25,000

*Not required for a station that only monitors VOC and H2S

Data Systems

Each community and fenceline monitoring station would require computer hardware to log, store, and transmit air quality data. The facilities subject to existing Rule 1180 already have the required data systems installed at fenceline and community monitoring stations and thus, will not incur additional costs for these systems. Contiguous facilities not previously subject to Rule 1180 and facilities that would be newly subject to PR 1180.1 would need to pay for the installation of data systems at each fenceline and community monitoring site. Based on costs incurred at existing community sites, the data system cost per monitoring station is estimated to be $30,000 and the total cost of data systems will be $510,000 for the 17 prospective new monitoring stations.

Technical Labor

New analyzers need to be installed, calibrated, and tested by trained employees from the equipment manufacturer. The facilities previously subject to Rule 1180 would have lower installation costs, as most of the monitoring hardware has already been installed and calibrated.

For facilities previously subject to Rule 1180, this analysis assumed a technical labor cost of $25,000 per monitoring station based on the average installation cost per monitor at existing community monitoring sites. For new stations that require the full set of monitoring hardware to be installed, this analysis assumed a labor cost of $50,000 per station. Technical labor for maintaining a station which only monitors VOC and H2S is assumed to be $31,000 per station. The total installation-related technical labor costs were estimated to be $1.8 million.

Monitoring Station Containers

The proposed project requires the construction of new fenceline and community monitoring

stations for facilities subject to PR 1180.1 and facilities operating at contiguous properties which are newly subject to PAR 1180. According to cost data from the existing community monitoring network, these monitoring sites are housed in metal containers which cost approximately $40,000 per container. The total cost for monitoring station containers across the 17 new monitoring stations is estimated to be $680,000.

Site Prep and Construction

The proposed project requires the construction of new fenceline and community monitoring stations for facilities subject to PR 1180.1 and facilities operating at contiguous properties which are newly subject to PAR 1180. Site preparation for each of these monitoring stations involves installing electricity connections, pouring a concrete foundation, and surrounding the monitoring station container with fencing. According to cost data from existing community monitoring sites, the cost is estimated to be $100,000 per station. Total site preparation and construction costs of the proposed project are estimated to be $1.7 million for the 17 new monitoring stations.

South Coast AQMD Staff Labor

South Coast AQMD staff labor is required for the installation and setup of new community monitoring sites and the addition of new analyzers at pre-existing community sites. The labor requirements estimated by the South Coast AQMD's Monitoring and Analysis Division for full stations and stations which only monitor VOC and H2S are summarized in Table 4. Based on fully burdened salary rates from FY 2023 – 2024[4], the cost will be $170,000 per full station and $105,000 for the station that only monitors VOC and H2S. The fully burdened rates for Air Quality Instrument Specialists, Senior Air Quality Instrument Specialists, Air Quality Specialists, and Program Supervisors are $100.18, $106.14, $116.03, and $132.68 per hour, respectively. Total one-time South Coast AQMD staff labor costs are estimated to be $2.6 million.

[4] South Coast AQMD, Draft Staff Report for Proposed Amended Regulation III – Fees; and Proposed Amended Rule 1480 – Ambient Monitoring and Sampling of Metal Toxic Air Contaminants, Table B-1, p. 55, April 2022, http://www.aqmd.gov/docs/default-source/planning/reg-iii/regiii-dsr-2022-040122-final-clean.pdf, accessed November 28, 2023.

Table 4
One-Time South Cost AQMD Staff Labor Demands

Position	Installation Responsibilities	Labor Requirements (months)	
		Full Station	VOC and H2S-Only Station
Air Quality Instrument Specialist	1. Monitoring equipment installation; 2. Data system installation/integration; and 3. Testing	4	2
Senior Air Quality Instrument Specialist		2	2
Air Quality Specialist	1. Review, analyze, validate monitoring data ; and 2. Prepare monitoring plans and reports	2	0.5
Program Supervisor	1. Manage technical and professional staff; and 2. Draft and review reports	1	1

Plan Development and Review

All facilities subject to either PAR 1180 or PR 1180.1 are required to submit a Fenceline Air Monitoring Plan (FAMP) to South Coast AQMD. The FAMP is intended to provide detailed information on: 1) the type of monitoring equipment each facility plans to install; 2) the location where the equipment will be sited; 3) the pollutants to be monitored; and 4) the maintenance schedules and quality control measures to be implemented, etc. These plans are expected to be developed in cooperation with equipment installers and third-party consultants and the related costs will range between $13,000 and $547,000 depending on facility size and complexity. During rule development for the existing Rule 1180 in 2017, the FAMP development and review would cost, on average, $0.28 per barrel of throughput according to quotes from service providers. To estimate FAMP development and review costs for the currently proposed project, this rate was adjusted for inflation to $0.39 per barrel of annual throughput. Inflation adjustments are made based on Marshall and Swift cost indexes from Corelogic.[5] Facilities which are newly subject to PAR 1180 have shorter fencelines and less complicated operations than facilities currently subject to Rule 1180, and thus are expected to install relatively simple monitoring systems that should not require substantial cost for plan development. For this reason, FAMP development and review is estimated to cost $13,000 per facility based on costs for systems of similar size and complexity.

[5] July 2023 Quarterly Cost Indexes, Equipment – National average, Marshall Valuation Service cost manual, section 98, p. 7. https://www.corelogic.com/

Total FAMP development and review costs are estimated at $2.3 million.

Recurring Costs

Electricity

Based on data from existing community monitoring stations, electricity costs and power pole rental are expected to total $12,600 per monitoring station per year. For facilities previously subject to Rule 1180, an incremental electricity cost of $1,260 per additional analyzer is assumed based on the average electricity cost per analyzer of existing monitoring stations. Electricity costs are expected to total $16.4 million over the forecast period.

Site Lease

Site leasing expenses only apply to community monitoring sites, as fenceline sites are contained within each affected facility's perimeter. Annual leasing costs are estimated to be $20,000 per community monitoring station, based on average lease rates of existing sites. For facilities previously subject to Rule 1180, there are no incremental land lease costs since these leasing costs are already paid in accordance with Rule 1180. The total incremental land lease costs from the proposed project will be $2.0 million for the five additional community monitoring stations over the forecast period.

Lavatory Rental

Community monitoring stations are required to have a lavatory on site. Based on rental rates at existing community sites, the annual cost of lavatory rental is estimated to be $7,200 per monitoring station. For facilities previously subject to Rule 1180, there are no incremental lavatory rental costs since these leasing costs are already paid in accordance with Rule 1180. The total cost of lavatory rental over the forecast period is expected to be $720,000.

Calibration Gases and Maintenance Parts

Monitoring devices periodically need to be recalibrated which requires the use of various consumable gases and parts. Based on data from existing community monitoring sites, these annual recalibration and maintenance costs are estimated to be $35,000 per new monitoring station. For sites previously subject to Rule 1180, The total calibration and maintenance expenses are expected to be $24.5 million over the forecast period.

Technical Labor

Technical labor is periodically required for the calibration and repairs of analyzers which involves specialized support from instrument manufacturers for maintenance, troubleshooting, technical support, regular calibration checks, sensor replacements, warranty services, and other ongoing needs. Based on costs from existing community sites, technical labor will cost $60,000 annually

for full community and fenceline monitoring stations and $48,000 annually for the station which only monitors VOC and H2S. Based on average labor costs per analyzer at existing monitoring stations for facilities previously subject to Rule 1180, the incremental labor costs are estimated to be $6,000 per analyzer. The total technical labor costs will be $40.7 million over the forecast period.

South Coast AQMD Staff Labor

South Coast AQMD staff from the Monitoring and Analysis Division will incur total labor expenses of $530,000 to operate a station with the full set of monitoring equipment and $245,000 to operate a station that only monitors VOC and H2S. These estimates are based on the labor demands for existing community sites administered by South Coast AQMD's Monitoring and Analysis Division. The estimated labor demands for each type of monitoring station are summarized in Table 5. The total cost of South Coast AQMD staff labor is expected to be $52.6 million over the forecast period.

Table 5
Recurring South Coast AQMD Staff Labor Demands

Position	Duties	Labor Requirements (months)	
		Full Monitoring Station	VOC and H2S Only Monitoring Station
Air Quality Instrument Specialist	1. Maintenance and repair; 2. Recordkeeping and data backups; and 3. Operate monitoring and meteorological equipment	12	6
Senior Air Quality Instrument Specialist		3	3
Air Quality Specialist	1. Review, analyze, validate monitoring data; and 2. Prepare monitoring plans and reports	12	3
Program Supervisor	1. Manage technical and professional staff; and 2. Draft and review reports	1	1

Communications and IT Services

Both community and fenceline monitoring stations require services to transmit, store, and visualize air quality data, as well as web services to make it available to the public. Facilities previously impacted by Rule 1180 have minimal incremental communications or IT expenses as the web-based fenceline data display and notification program has already been established and these costs were accounted for in the original Rule 1180. New facilities impacted by PAR 1180 and PR 1180.1 are expected to incur $45,000 for IT and communication expenses annually per facility. The total

cost for communications and IT services is estimated to be $11.7 million over the forecast period.

Independent Audits

Facilities newly subject to PAR 1180 and those subject to PR 1180.1 would be required to contract an independent third party to audit the fenceline air monitoring system within one year after installation and every three years thereafter. Existing Rule 1180 facilities (petroleum refineries) would be required to contract an independent third party to audit the fenceline air monitoring system by January 1, 2029, and every three years thereafter. The initial audits to systems of petroleum refineries are expected to be initiated in 2024 by National Physical Laboratory (NPL) contracted by the South Coast AQMD. The audits are intended to identify potential deficiencies in the monitoring system and quality controls. Based on average auditing costs at existing Rule 1180 facilities, the cost is estimated at $170,000 per audit. Existing Rule 1180 facilities operate substantially more complicated fenceline monitoring systems than facilities newly subject to PAR 1180, implying that $170,000 per audit is likely a conservative estimate of these costs. The total auditing cost is estimated to be $9.5 million over the forecast period.

Total Compliance Cost

All estimates of the compliance costs are presented in 2023 dollars. The average cost includes the estimated amortized capital expenses and recurring compliance expenses averaged over the period from 2025 to 2045 reflecting the 20-year assumed useful life of new assets and the staggered first year of spending between facilities newly subject to PAR 1180 and PR 1180.1 and facilities currently subject to Rule 1180. The present value of total compliance costs are discounted to 2024, the anticipated year of rule adoption.

The total present value of compliance cost is estimated at $165.71 million and $122.05 million for a 1% and 4% discount rate, respectively.[6] The average annual compliance costs of PAR 1180 and PR 1180.1 are estimated to range from $8.88 million to $9.27 million for a 1% and 4% interest rate, respectively. Table 6 presents the estimated present value of compliance and the average annual compliance cost of the proposed project by expense categories.

[6] In 1987, South Coast AQMD staff began to calculate cost-effectiveness of control measures and rules using the Discounted Cash Flow method with a discount rate of four percent. Although not formally documented, the discount rate is based on the 1987 real interest rate on 10-year Treasury Notes and Bonds, which was 3.8 percent. The maturity of 10 years was chosen because typical equipment life is 10 years; however, a longer equipment life would not have corresponded to a much higher rate -- the 1987 real interest rate on 30-year Treasury Notes and Bonds was 4.4 percent. Since 1987, the four percent discount rate has been used by South Coast AQMD staff for all cost-effectiveness calculations, including BACT analysis, for the purpose of consistency. Thus, the incremental cost reported in this assessment was annualized using a real interest rate of four percent as the discount rate. As a sensitivity test, a real interest rate of one percent will also be used, which is closer to the prevailing real interest rate.

Table 6
Total Present Value and Average Annual Estimated Costs of PAR 1180 and PR 1180.1

	Present Value (2024)		Annual Average (2025 – 2045)	
Cost Categories	**1% Discount Rate**	**4% Discount Rate**	**1% Interest Rate**	**4% Interest Rate**
Capital Costs				
Community - Air Monitoring Station Container	$252,822	$184,911	$10,451	$13,477
Community - Site Preparation and Construction	$632,056	$462,278	$26,127	$33,691
Community - Monitoring Equipment	$8,403,817	$6,231,047	$345,791	$445,904
Community - Data System	$189,617	$138,683	$7,838	$10,107
Community - Technical Labor	$961,989	$717,456	$39,504	$50,941
Community - AQMD Staff Labor	$3,255,666	$2,428,082	$133,694	$172,401
Fenceline - Air Monitoring Station Container	$606,774	$443,787	$25,082	$32,344
Fenceline - Site Preparation and Construction	$1,516,935	$1,109,467	$62,705	$80,859
Fenceline - Monitoring Equipment	$12,092,433	$8,957,840	$497,719	$641,819
Fenceline - Data System	$455,080	$332,840	$18,811	$24,258
Fenceline - Technical Labor	$1,320,871	$979,660	$54,344	$70,078
Fenceline - Plan Development and Review	$2,956,898	$2,221,905	$121,111	$156,175
Recurring Costs				
Community - Electricity	$2,954,161	$2,182,240	$157,000	$157,000
Community - Site Lease	$1,786,688	$1,306,762	$95,238	$95,238
Community - Lavatory Rental	$643,208	$470,434	$34,286	$34,286
Community - Calibration and Maintenance Parts	$8,631,076	$6,370,825	$458,810	$458,810
Community - Communications and IT Services	$4,020,049	$2,940,215	$214,286	$214,286
Community - Technical Labor	$13,601,602	$10,047,751	$722,857	$722,857
Community - AQMD Staff Labor	$46,989,905	$34,367,845	$2,504,762	$2,504,762
Fenceline - Electricity	$11,780,593	$8,732,504	$625,429	$625,429
Fenceline - Calibration and Maintenance Parts	$13,346,696	$9,843,036	$709,667	$709,667
Fenceline - Communications and IT Services	$6,432,078	$4,704,344	$342,857	$342,857
Fenceline - Technical Labor	$22,880,050	$16,873,776	$1,216,571	$1,216,571
Fenceline - Independent Audit	$8,463,581	$6,112,140	$453,333	$453,333
Total	**$165,711,064**	**$122,047,689**	**$8,878,272**	**$9,267,149**

Figure 1 presents the estimated average annual compliance costs of the proposed project by expense category. South Coast AQMD staff labor, Technical Labor, Calibration and Maintenance Parts, and Monitoring Equipment account for the largest portions of the annual compliance cost at 29%, 22%, 13%, and 12%, respectively.

Figure 1
Total Estimated Costs of the PAR 1180 and PR 1180.1 by Expense Category

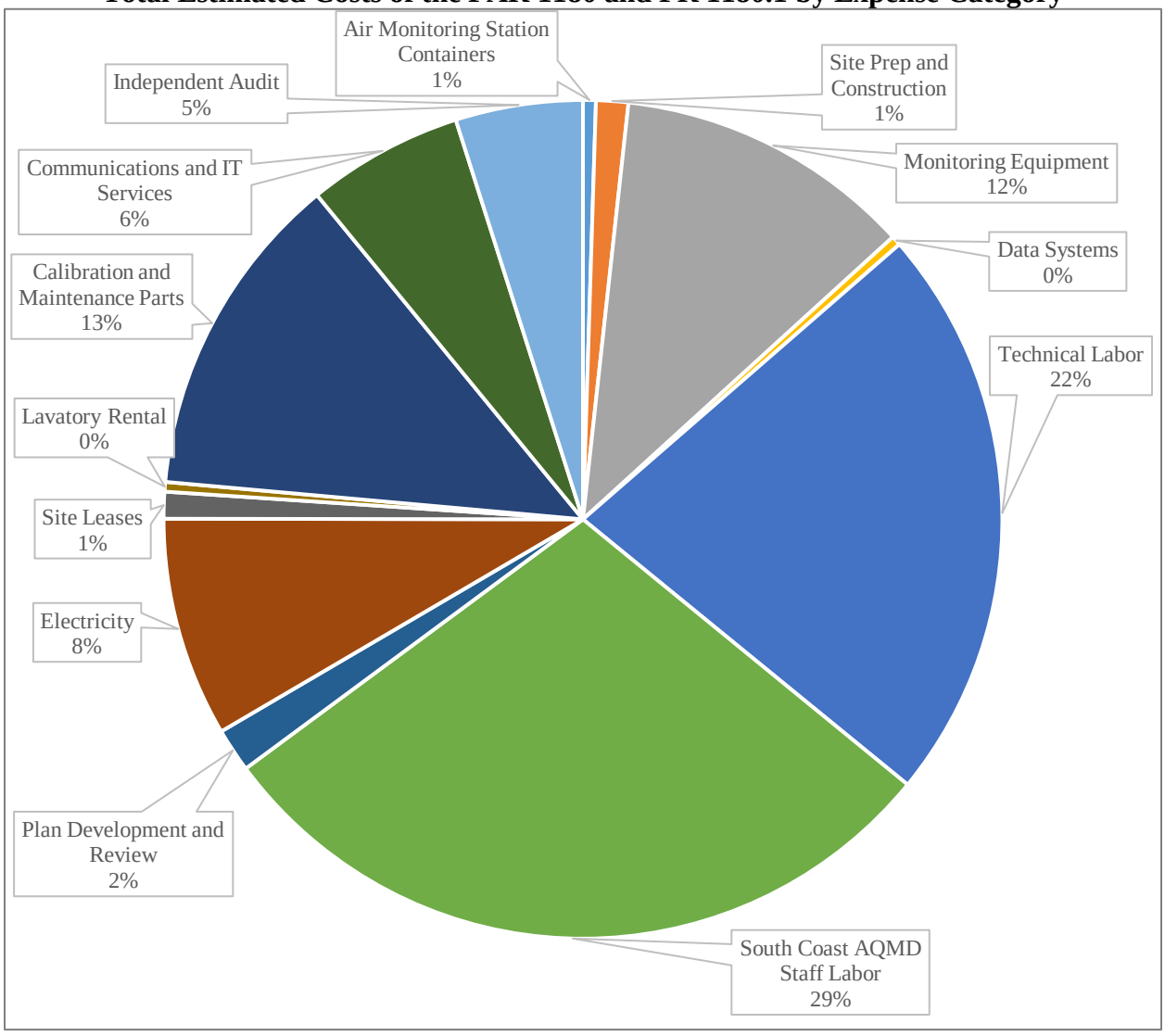


Table 7 presents the total fenceline, community, and average annual compliance costs for PAR 1180 and PR 1180.1 by facility over the 2025 – 2045 period. Community monitoring costs account for roughly 53% of total average annual cost. The estimated average annual compliance cost for 12 out of the 15 affected facilities is less than $600,000, while the remaining three facilities are expected to incur an estimated average annual compliance cost ranging from $1.1 million to $1.3 million.

Table 7
Projected Total and Average Annual Compliance Costs by Affected Facilities
(2025 – 2045)

Facility Designation	Total Fenceline Cost	Total Community Cost	Total Fenceline and Community Cost	Average Annual Cost (2025 - 2045)
A	$5,963,968	$4,658,155	$10,622,123	$505,815
B	$4,450,001	$2,329,750	$6,779,751	$322,845
C	$8,111,387	$4,658,155	$12,769,542	$608,073
D	$4,343,636	$2,329,750	$6,673,386	$317,780
E	$4,343,636	$2,329,750	$6,673,386	$317,780
F	$6,695,921	$4,658,155	$11,354,076	$540,670
G	$5,443,943	$2,329,750	$7,773,693	$370,176
H	$4,799,543	$7,591,600	$12,391,143	$590,054
I	$4,799,543	$4,943,262	$9,742,805	$463,943
J	$4,799,543	$7,591,600	$12,391,143	$590,054
K	$4,799,543	$7,591,600	$12,391,143	$590,054
L	$4,799,543	$4,943,262	$9,742,805	$463,943
M	$11,470,875	$15,744,719	$27,215,594	$1,295,981
N	$8,305,710	$15,744,719	$24,050,429	$1,145,259
O	$8,294,390	$15,744,719	$24,039,109	$1,144,719
Total	**$91,421,184**	**$103,188,946**	**$194,610,130**	**$9,267,149**

MACROECONOMIC IMPACTS ON THE REGIONAL ECONOMY

The Regional Economic Models, Inc (REMI) PI+ v3 model was used to assess the socioeconomic impacts of the proposed rule.[7,8] 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.[9]

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

[8] REMI v3 has been updated based on The U.S. Economic Outlook for 2021-2023 from the University of Michigan's Research Seminar in Quantitative Economics (RSQE) release on May 21, 2021, The Long-Term Economic Projections from CBO (supplementing CBO's March 2021 report, The 2021 Long-Term Budget Outlook), and updated BEA data for 2020 (revised on May 27, 2021).

[9] 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.).

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 the proposed project 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.

Impact of Proposed Project

This assessment is performed relative to a baseline ("business as usual") forecast where the proposed project would not be implemented. The analysis assumed that the 15 affected facilities would finance the capital and installation costs of monitoring equipment at a 4% interest rate, and that these one-time costs are amortized and incurred over the 20-year useful life of the monitoring equipment.

Direct costs of the proposed project 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 2025-2045 period. Direct effects of the proposed project include the site construction, equipment, communications, labor, and other costs discussed in the compliance cost section above.

While the compliance expenditures that are incurred by affected facilities would increase their cost of doing business, the purchase of 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 8 lists the 70-sector NAICS codes modeled in REMI that would incur either direct cost or direct benefit from compliance spending.

Table 8
Industries Incurring and Benefitting from Compliance Costs/Spending

Source of Compliance Cost	REMI Industries Incurring Compliance Costs (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
Air Monitoring Station Container	Petroleum and Coal Products Manufacturing (324) Chemical Manufacturing (325) Wholesale Trade (42)	*Capital:* Fabricated Metal Product Manufacturing (332)
Site Preparation and Construction		*Capital:* Construction (23)
Monitoring Equipment		*Capital:* Computer and Electronic Product Manufacturing (334)
Data System		*Capital:* Wholesale Trade (42)
Technical Labor		*Capital and Recurring:* Professional, Scientific and Technical services (54)
South Coast AQMD Staff Labor		*Capital and Recurring:* State and Local Government (92)
Electricity		*Recurring:* Utilities (22)
Site Lease		*Recurring:* Varies, not modeled
Lavatory Rental		*Recurring:* Waste Management and Remediation Services (562)
Calibration and Maintenance		*Recurring:* Wholesale Trade (42)
Communications and IT		*Recurring:* Internet Publishing and Broadcasting; ISPs, Search Portals and Data Processing; Other Information Services (518-519)
Independent Audit		*Recurring:* Professional, Scientific and Technical Services (54)

Regional Job Impacts

When the compliance cost is annualized using a 4% real interest rate, the REMI model projects that there will be seven additional jobs on average over the 2025 – 2045 period relative to the baseline forecast. The State and Local Government, Professional, Scientific and Technical Services, and Computer and Electronic Product Manufacturing industries are expected to gain seven, seven, and one job, respectively on average relative to the baseline forecast. The anticipated job gains reflect the capital-intensive nature of the affected facilities, characterized by a substantial proportion of equipment/machinery relative to labor, and the relatively small compliance costs as

a percentage of revenue. In contrast, the Professional, Scientific, and Technical Services industry that will benefit from the proposed project is relatively labor-intensive, implying labor demand would respond more strongly to the resulting increase in demand for these services. In 2025 and 2026, the years when the Computer and Electronic Product Manufacturing, Construction, and Professional Scientific and Technical Services industries earn the most revenue, the REMI model projects that the regional economy would gain 104 jobs in each year relative to the baseline forecast. The REMI model also predicts a small gain of 16 jobs in the year 2027, followed by small net job changes, ranging from four job gains to nine foregone jobs, over the remainder of the forecast period. Table 9 presents the expected foregone or additional jobs at different years in the forecast period for the 10 industries with the greatest average annual job impacts. The "All Industries" row includes the full set of 70 industrial sectors modeled in the REMI software including the 10 selected industries presented in the table.

Table 9

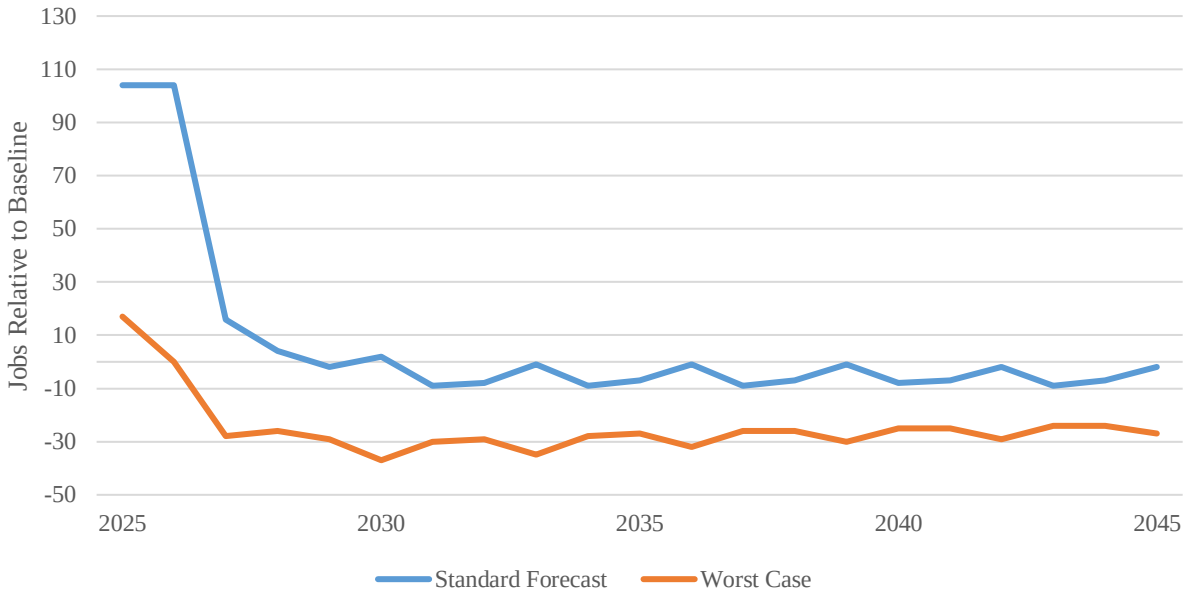
Projected Job Impacts of PAR 1180 and PR 1180.1 for Select Industries by Year

Industry (NAICS)	2025	2030	2035	2040	2045	Annual Average (2025-2045)	Baseline Number of Jobs (Average, 2025-2045)	Percent Relative to Baseline
State and Local Government (92)	11	8	5	4	4	7	947,530	0.00%
Professional, Scientific and Technical Services (54)	22	11	3	3	6	7	966,231	0.00%
Computer and Electronic Product Manufacturing (334)	11	0	0	0	0	1	118,754	0.00%
Wholesale Trade (42)	5	1	1	0	0	1	415,153	0.00%
Warehousing and Storage (493)	1	-1	-1	-1	-1	-1	145,796	0.00%
Truck Transportation (484)	0	-1	-1	-1	-1	-1	107,084	0.00%
Petroleum and Coal Products Manufacturing (324)	0	-1	-1	-1	-1	-1	5,791	-0.02%
Chemical Manufacturing (325)	9	-6	-3	-2	-1	-2	42,806	0.00%
Construction (23)	0	-2	-2	-2	-2	-2	514,941	0.00%
Retail trade (44-45)	5	-4	-3	-2	-2	-2	802,514	0.00%
All Industries	**104**	**2**	**-7**	**-8**	**-2**	**7**	**11,436,960**	**0.00%**

Based on Abt Associate's 2014 recommendation to enhance socioeconomic analysis by testing major assumptions through conducting scenario analysis, this document contains an analysis of an alternative worst-case scenario where the affected facilities would purchase all feasible monitoring

equipment and services from providers located outside of the South Coast AQMD's jurisdiction. Electricity and South Coast AQMD staff labor revenues were included in this scenario, as these costs cannot reasonably be purchased from other suppliers located outside of South Coast AQMD's jurisdiction. In short, this alternative worst-case scenario only models the impacts of the costs of compliance with the proposed project with a small subset of the revenue realized by associated 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. In practice, construction and technical labor are likely to be provided by local companies. This worst-case scenario would result in an annual average of approximately 25 jobs foregone relative to the baseline scenario. The 25 jobs foregone represent 0.0002% of the average forecasted baseline jobs in the regional economy. Figure 2 presents the projected regional job impacts over the 2025–2045 period for both the standard and the worst-case forecasts.

Figure 2
Projected Regional Job Impact, 2025 – 2045



Price Impact and Competitiveness

The impact of the proposed project on production costs and delivered prices in the region is not expected to be significant. According to the REMI Model, the proposed project is projected to increase the relative delivered price of products produced by the Petroleum and Coal Products Manufacturing industry by 0.009% on average over the forecast period, and a maximum of 0.012% in 2027. The relative cost of production for the Petroleum and Coal Products Manufacturing industry is forecasted to increase by 0.0010% on average relative to the baseline scenario, with a maximum increase of 0.013% occurring in 2027.

Given the small potential increase in delivered prices the proposed project is not expected to affect the ability of firms to compete with producers located outside of South Coast AQMD's jurisdiction. Further, the proposed project is also not expected to substantially affect the competitive positioning between firms within South Coast AQMD's jurisdiction, as the proposed project will affect all local producers similarly.

REFERENCES

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

SBA Small Business and Standard Size. https://www.sba.gov/sites/sbagov/files/2023-06/Table%20of%20Size%20Standards_Effective%20March%2017%2C%202023%20%282%29.pdf

2019 OEHHA Analysis of Refinery Chemical Emissions and Health Effects https://oehha.ca.gov/air/analysis-refinery-chemical-emissions-and-health-effects

South Coast AQMD Regulation III – Fees; and Proposed Amended Rule 1480 – Ambient Monitoring and Sampling of Meal Toxic Air Contaminants http://www.aqmd.gov/docs/default-source/planning/reg-iii/regiii-dsr-2022-040122-final-clean.pdf

July 2023 Quarterly Cost Indexes, Equipment – National average, Marshall Valuation Service cost manual, section 98, p. 7 https://www.corelogic.com