

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Socioeconomic Impact Assessment For Proposed Amended Rule 1178 – Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities

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EXECUTIVE SUMMARY

A socioeconomic impact assessment has been conducted to assess the impacts of Proposed Amended Rule 1178 (PAR 1178). A summary of the analysis and findings is presented below.

<p>Key Elements of the Proposed Amendments</p>	<p>PAR 1178 will address volatile organic compound (VOC) emissions from storage tanks located at petroleum facilities and would require doming, vapor recovery units, secondary seals, and optical gas imaging (OGI) inspections. PAR 1178 is estimated to reduce VOC emissions by 0.82 tons per day (tpd).</p>
<p>Affected Facilities and Industries</p>	<p>PAR 1178 would affect 27 facilities in the four-county area. These facilities belong to sectors of petroleum refineries, petroleum bulk stations and terminals, crude oil production, and asphalt manufacturing.</p> <p>Of these 27 affected facilities, 24 facilities are located in Los Angeles County, 3 in San Bernardino County. There are no affected facilities located in Orange and Riverside counties. Regarding specific sectors, 8 out of the 27 facilities refine petroleum, 16 facilities store petroleum in bulk terminals, 2 facilities produce or extract crude oil, and 1 facility manufactures asphalt mixtures and blocks.</p>
<p>Assumptions for the Analysis</p>	<p>The main requirements of the proposed amended rule that have cost impacts for affected facilities would include doming of storage tanks, installation of secondary seals, and OGI inspections.</p> <p>PAR 1178 requires the installation of a dome on all external floating roof tanks containing organic liquid with a total vapor pressure greater than or equal to 3 psia and containing more than 97% by volume crude oil. Staff identified 54 such tanks that will require a dome to be installed.</p> <p>The impacted facilities are already required, per Title 49 of the Code of Federal Regulations, to conduct an internal periodic inspection of each storage tank according to the American Petroleum Institute 653 (API 653) standard. Specific years by which domes must be installed were chosen to balance operational impacts and timely emission reductions.</p> <p>For tanks with a doming installation year before the year in which an API 653 inspection is required, additional costs are included with the doming installation. These costs include cleaning and degassing costs. Additionally, storage leasing costs were included for tanks located at facilities without excess tank storage capacity on-site, requiring the use of off-site third-party storage leasing.</p> <p>Permitting costs are included for both dome installations and secondary seal installations. OGI inspection costs include individual tank scans and overview scans that encompass the entire tank farm at a facility.</p>

	<p>The cost analysis uses a forecast period from 2024 to 2087 in order to annualize all the dome installation and material costs in equipment lifetime.</p>																																																
<p>Compliance Costs</p>	<p>The total present worth of compliance cost of PAR 1178 is estimated at \$328.26 million and \$152.91 million with 1% and 4% discount rate, respectively. The average annual compliance costs of PAR 1178 are estimated to range from \$5.86 million to \$7.04 million, for a 1% and 4% interest rate, respectively. The table below presents the summary of the average annual cost of PAR 1178 by cost category.</p> <table border="1" data-bbox="469 522 1429 1207"> <thead> <tr> <th data-bbox="469 522 1015 564"></th> <th colspan="2" data-bbox="1015 522 1429 564">Annual Average (2024-2087)</th> </tr> <tr> <th data-bbox="469 564 1015 630">Cost Categories</th> <th data-bbox="1015 564 1226 630">1% Interest Rate</th> <th data-bbox="1226 564 1429 630">4% Interest Rate</th> </tr> </thead> <tbody> <tr> <td colspan="3" data-bbox="469 630 1429 669">Capital Costs</td> </tr> <tr> <td data-bbox="469 669 1015 714">Domed Roof – Materials</td> <td data-bbox="1015 669 1226 714">\$554,835</td> <td data-bbox="1226 669 1429 714">\$983,143</td> </tr> <tr> <td data-bbox="469 714 1015 756">Domed Roof – Installation</td> <td data-bbox="1015 714 1226 756">\$533,077</td> <td data-bbox="1226 714 1429 756">\$944,588</td> </tr> <tr> <td data-bbox="469 756 1015 798">Domed Roof – Permitting</td> <td data-bbox="1015 756 1226 798">\$6,870</td> <td data-bbox="1226 756 1429 798">\$6,870</td> </tr> <tr> <td data-bbox="469 798 1015 840">Domed Roof - Fire Suppression</td> <td data-bbox="1015 798 1226 840">\$111,894</td> <td data-bbox="1226 798 1429 840">\$198,272</td> </tr> <tr> <td data-bbox="469 840 1015 882">Domed Roof - Cleaning and Degassing</td> <td data-bbox="1015 840 1226 882">\$272,254</td> <td data-bbox="1226 840 1429 882">\$482,421</td> </tr> <tr> <td data-bbox="469 882 1015 924">Domed Roof - Storage Leasing</td> <td data-bbox="1015 882 1226 924">\$44,214</td> <td data-bbox="1226 882 1429 924">\$78,344</td> </tr> <tr> <td data-bbox="469 924 1015 966">Secondary Seal – Installation</td> <td data-bbox="1015 924 1226 966">\$14,139</td> <td data-bbox="1226 924 1429 966">\$18,232</td> </tr> <tr> <td data-bbox="469 966 1015 1008">Secondary Seal - Replace Rubber</td> <td data-bbox="1015 966 1226 1008">\$2,442</td> <td data-bbox="1226 966 1429 1008">\$2,770</td> </tr> <tr> <td data-bbox="469 1008 1015 1050">Secondary Seal – Permitting</td> <td data-bbox="1015 1008 1226 1050">\$1,032</td> <td data-bbox="1226 1008 1429 1050">\$1,032</td> </tr> <tr> <td colspan="3" data-bbox="469 1050 1429 1089">Recurring Costs</td> </tr> <tr> <td data-bbox="469 1089 1015 1131">Weekly OGI Inspection</td> <td data-bbox="1015 1089 1226 1131">\$4,212,000</td> <td data-bbox="1226 1089 1429 1131">\$4,212,000</td> </tr> <tr> <td data-bbox="469 1131 1015 1173">Domed Roof - Operating & Maintenance</td> <td data-bbox="1015 1131 1226 1173">\$107,388</td> <td data-bbox="1226 1131 1429 1173">\$107,388</td> </tr> <tr> <td data-bbox="469 1173 1015 1207">Total</td> <td data-bbox="1015 1173 1226 1207">\$5,860,145</td> <td data-bbox="1226 1173 1429 1207">\$7,035,061</td> </tr> </tbody> </table> <p>It is estimated that Weekly OGI Inspections and Domed Roofs will comprise approximately 60% and 38% of the total annual cost of PAR 1178, respectively. The petroleum and coal products manufacturing industry (NAICS 324) is expected to incur about 54% of total average annual cost.</p> <p>The small business analysis shows that out of the 27 affected facilities, none meet the definition of a small business under South Coast AQMD’s Rule 102. One company was identified that is designated as a small business according to the South Coast AQMD’s Small Business Assistance Office (SBAO) definition. Lastly, under the 1990 Clean Air Act Amendments (CAAA) definition, none of the affected facilities will meet the criteria of a small business.</p>		Annual Average (2024-2087)		Cost Categories	1% Interest Rate	4% Interest Rate	Capital Costs			Domed Roof – Materials	\$554,835	\$983,143	Domed Roof – Installation	\$533,077	\$944,588	Domed Roof – Permitting	\$6,870	\$6,870	Domed Roof - Fire Suppression	\$111,894	\$198,272	Domed Roof - Cleaning and Degassing	\$272,254	\$482,421	Domed Roof - Storage Leasing	\$44,214	\$78,344	Secondary Seal – Installation	\$14,139	\$18,232	Secondary Seal - Replace Rubber	\$2,442	\$2,770	Secondary Seal – Permitting	\$1,032	\$1,032	Recurring Costs			Weekly OGI Inspection	\$4,212,000	\$4,212,000	Domed Roof - Operating & Maintenance	\$107,388	\$107,388	Total	\$5,860,145	\$7,035,061
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<p>Job Impacts</p>	<p>Direct costs and corresponding revenues of the proposed project are used as inputs to the 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 2080. The forecast period used in the REMI analysis is the period 2024-2080, as 2080 is the latest forecast year allowed by the model.</p>																																																

	<p>When the compliance cost is annualized using a 4% interest rate, it is projected that no net jobs will be added or forgone from the economy on average over the period from 2024 to 2080. This finding is mainly attributable to the capital-intensive nature of the affected businesses, characterized by a substantial proportion of equipment/machinery relative to labor.</p> <p>Under PAR 1178, the affected facilities are expected to allocate doming compliance expenditures into three expense tranches. This additional spending would result in annual gains of approximately 220, 111, and 306 jobs for the years 2031, 2033, and 2038, respectively, when doming is required for specific tanks. The job impacts are minor for other years. The most negative job impacts are expected to occur in 2039 with 46 net jobs forgone.</p>
<p>Competitiveness and Price Impacts</p>	<p>The overall impacts of PAR 1178 on the production costs and delivered prices in the region are not expected to be significant. According to the REMI Model, PAR 1178 is projected to have a maximum single-year increase in the cost of production for the petroleum and coal products manufacturing industry in the South Coast region by less than 0.01%, and a maximum increase in delivered prices of less than 0.01%. The single-year maximum cost and price increases are expected to take place in 2039. Based on the staff analysis, PAR 1178 would potentially result in an estimated gas price increase of 0.00063 cents per gallon.</p>

INTRODUCTION

PAR 1178 will address volatile organic compound (VOC) emissions from storage tanks at petroleum facilities that have emitted more than 20 tons of VOC in any reporting year since the rule's adoption in 2001. PAR 1178 would require doming of external floating roof tanks storing liquid which is more than 97% by volume crude oil, raise the VOC removal efficiency requirement for vapor recovery units, require secondary seals on all internal floating roof tanks, increase stringency of gap requirements for secondary seals, and require optical gas imaging (OGI) inspections for all tanks. PAR 1178 is estimated to reduce VOC emissions by approximately 0.82 tons per day.

PAR 1178 requires the installation of a dome on all external floating roof tanks containing organic liquid with a total vapor pressure greater than or equal to 3 psia and containing more than 97% by volume crude oil. Staff identified 54 such tanks that will be required to have a dome installed.

Each storage tank is already required, per Title 49 of the Code of Federal Regulations, to conduct an internal periodic inspection according to the American Petroleum Institute 653 (API 653) standard every 10-30 years depending on the tank's condition, service, location, and previous records. This inspection requires an extensive preparation process that involves removing the tank from service and draining, cleaning, and degassing the vapors inside the tank. Given the costs and operational impacts of this inspection process, the specific years by which domes must be installed (2031, 2033, and 2038) were chosen to balance operational impacts with timely emission reductions. For one facility, the facility has the option to complete doming by 2041 to avoid having multiple tanks unavailable at the same time. Staff's objective was to overlap API 653 inspections with dome installations as much as possible.

For tanks with a doming installation year before the year in which an API 653 inspection is required, additional costs are included with the doming installation. These costs include cleaning and degassing costs. Additionally, storage leasing costs were included for tanks located at facilities without excess tank storage capacity on-site, requiring the use of off-site third-party storage leasing.

LEGISLATIVE MANDATES

The legal mandates directly related to the assessment of the proposed rule include South Coast AQMD Governing Board resolutions and various sections of the California Health & Safety Code.

South Coast AQMD Governing Board Resolutions

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

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

Health and Safety Code Requirements

The state legislature adopted legislation which reinforces and expands the Governing Board resolutions for socioeconomic impact assessments. California Health and Safety Code section 40440.8, which became effective on January 1, 1991, requires a socioeconomic impact assessment be performed for any proposed rule, rule amendment, or rule repeal which "will significantly affect air quality or emissions limitations."

Specifically, the scope of the socioeconomic impact assessment should include the following:

- 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 became effective on January 1, 1992, requires the South Coast AQMD Governing Board to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts. It also expands socioeconomic impact assessments to include small business impacts. Specifically, it includes the following:

- 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 became effective on January 1, 1996, requires incremental cost-effectiveness be performed for a proposed rule or amendment which imposes Best Available Retrofit Control Technology or "all feasible measures" requirements relating to ozone, CO, SO_x, NO_x, VOCs, and their precursors.

AFFECTED FACILITIES

PAR 1178 would affect 27 facilities in the four-county area. Of these 27 affected facilities, 24 facilities are located in Los Angeles County and 3 facilities are located in San Bernardino County. There are no affected facilities located in Orange and Riverside counties. In terms of specific industrial sectors, 8 out of the 27 facilities refine petroleum, 16 facilities store petroleum in bulk terminals, 2 facilities produce or extract crude oil, and 1 facility manufactures asphalt mixtures and blocks. Accordingly, 16 out of the 27 affected facilities are classified under North American Industrial Classification System (NAICS) 424710 – Petroleum Bulk Stations and Terminals, 8 are classified under NAICS 324110 – Petroleum Refineries, 2 are classified under NAICS 211111 – Crude Petroleum and Natural Gas Extraction, and the remaining one facility is classified under NAICS 324121 – Asphalt Paving Mixture and Block Manufacturing.

Table 1 presents the PAR 1178 affected facilities with their NAICS codes and corresponding industrial sectors.

Table 1
Affected Facilities by NAICS Codes

Facility Name	NAICS	Industry
Equilon Enterprises LLC DBA Shell Oil Products US	424710	Petroleum and petroleum products bulk stations and terminals
Equilon Enterprises LLC Shell Oil Products	424710	Petroleum and petroleum products bulk stations and terminals
Phillips 66 Co/LA Refinery Wilmington Pl	324110	Crude petroleum refineries
Phillips 66 Los Angeles Refinery Carson Plant	324110	Crude petroleum refineries
Phillips 66 Pipeline LLC - bulk loading	424710	Petroleum and petroleum products bulk stations and terminals
Phillips 66 Pipeline LLC	424710	Petroleum and petroleum products bulk stations and terminals
Tesoro Refining & Marketing Company LLC	324110	Crude petroleum refineries
Tesoro Logistics East Hynes Terminal	424710	Petroleum and petroleum products bulk stations and terminals
Tesoro Logistics Vinvale Terminal	424710	Petroleum and petroleum products bulk stations and terminals
Tesoro Logistics, Marine Terminal 2	424710	Petroleum and petroleum products bulk stations and terminals
Torrance Refining Company LLC	324110	Crude petroleum refineries
Torrance Logistics Company LLC	424710	Petroleum and petroleum products bulk stations and terminals
Altair Paramount, LLC	324110	Crude petroleum refineries
Calnev Pipe Line LLC	424710	Petroleum and petroleum products bulk stations and terminals
Ultramar Inc Wilmington Refinery	324110	Crude petroleum refineries
Chevron Products Company	324110	Crude petroleum refineries
Kinder Morgan Liquids Terminal	424710	Petroleum and petroleum products bulk stations and terminals
Petro Diamond Terminal Company	424710	Petroleum and petroleum products bulk stations and terminals
SFPP LP Colton Terminal	424710	Petroleum and petroleum products bulk stations and terminals
Ultramar Inc Wilmington Marine Terminal	424710	Petroleum and petroleum products bulk stations and terminals
SFPP LP Watson Station	424710	Petroleum and petroleum products bulk stations and terminals
Equilon Enter. LLC, Shell Oil Prod. U.S.	424710	Petroleum and petroleum products bulk stations and terminals
Equilon Enterprises LLC	424710	Petroleum and petroleum products bulk stations and terminals
Valero Energy Corporation	324121	Asphalt Paving Mixture and Block Manufacturing
Tesoro Refining and Marketing Company LLC	324110	Crude petroleum refineries
Signal Hill Petroleum	211111	Crude Oil Production
Thums Long Beach	211111	Crude Oil Production

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 definitions of a small business, the federal Small Business Administration (SBA) and the federal 1990 Clean Air Act Amendments (1990 CAAA) also provide definitions 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 SBA. Based on firm revenue and employee count, the SBA definitions of small businesses vary by six-digit NAICS codes.¹ For example, according to SBA definition, a business with less than 1,500 employees in the sector of Petroleum Refineries is classified as small business, while the employee threshold for a small business in Wholesale Trade (NAICS 424710) is only 225.

Staff mainly relies on the Dun & Bradstreet data to conduct small business analyses. Since subsidiaries under the same parent company are interest-dependent, staff uses revenue and employee count of each facility's parent company to determine its status of small business. Data for publicly traded companies are derived from the Security Exchange Commission (SEC) filings. In certain cases that the revenue/employee data are unreliable, other external data sources such as Manta, Hoover, and LinkedIn are used. Staff determines data reliability via use of a data quality confidence code in the Dun & Bradstreet data as well as via staff's discretion. The small business analysis shows that out of the 27 affected facilities, none meets the definition of a small business under South Coast AQMD's Rule 102. One company was designated as a small business according to the SBAO definition. Lastly, under the 1990 CAAA definition, none of the affected facilities meet the criteria of a small business.²

Table 2 displays the estimated average annual compliance cost of each facility, the annual revenue of each facility's parent company, and the annual compliance cost as a percent of the revenue of each parent. The ratio of annual compliance costs to the gross annual revenues are expected to be less than one-tenth of one percent for all but two of the affected companies. The two affected companies with a higher annual compliance cost as a percentage of annual revenue are relatively small independent companies, with a maximum annual compliance cost of 1.38% of annual revenue.

¹ https://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf

² Based on facility-level data on NO_x and VOC emissions for calendar years 2022.

Table 2
Projected Ratio of 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	\$815,218	\$ 169,990	0.00%
Facility D	\$156,000	-	
Facility E	\$322,650		
Facility F	\$156,000		
Facility G	\$180,568		
Parent Company 2	\$1,083,453	\$ 178,240	0.00%
Facility H	\$254,377	-	
Facility I	\$243,078		
Facility J	\$156,000		
Facility K	\$273,998		
Facility AC	\$156,000		
Parent Company 3	\$462,589	\$ 46,830	0.00%
Facility L	\$306,589	-	
Facility N	\$156,000		
Parent Company 4	\$645,814	\$ 171,190	0.00%
Facility Q	\$324,252	-	
Facility AA	\$165,562		
Facility V	\$156,000		
Parent Company 5*	\$660,381	\$ 237,110	0.00%
Parent Company 6*	\$158,257	\$ 11	1.38%
Parent Company 7	\$625,327	\$ 19,200	0.00%
Facility P	\$156,000	-	
Facility S	\$156,000		
Facility U	\$157,327		
Facility X	\$156,000		
Parent Company 8	\$624,000	\$ 381,310	0.00%
Facility A	\$156,000	-	
Facility B	\$156,000		
Facility Y	\$156,000		
Facility Z	\$156,000		
Parent Company 9*	\$156,000	\$ 154,129	0.00%
Parent Company 10*	\$156,000	\$ 66	0.26%
Parent Company 11*	\$156,000	\$ 3,220	0.01%

* Parent company has only one affected facility

COMPLIANCE COST

PAR 1178 will address VOC emissions from storage tanks located at petroleum facilities storing organic liquid and would require doming, OGI monitoring, and stricter requirements for secondary tank seals, emission control systems, and reporting and recordkeeping.

The main requirements of the proposed amended rule that have the highest cost impacts for affected facilities include doming and OGI inspections. All the costs discussed in this section are expressed in 2023 dollars. Additionally, while this analysis assumes all direct compliance costs are borne by affected facilities, it is possible that some costs will be passed through to end consumers of refined products. A separate assessment of the potential impacts of PAR 1178 on regional gasoline prices is included in the later part of this report.

Many of the costs estimated in this analysis are dependent on site-specific factors and on business decisions made by facilities subject to PAR 1178. Staff strove to represent costs as realistically as possible, given that many factors would ultimately dictate what price a business will pay to implement a control. The estimated cost for each line item was either represented by an industry average, quotes obtained by staff, or a reasonable range of costs, based on the information and data available. The procedure and assumptions for each cost estimate are discussed below.

The total cost includes all compliance costs over a 64-year period, from 2024 to 2087. As presented in Table 3, the total present worth value of compliance cost of PAR 1178 is estimated at \$328.26 million and \$152.91 million, depending on the assumed discount rate (1% or 4%, respectively).³ The average annual compliance costs of PAR 1178 are estimated to range from \$5.86 million to \$7.04 million, depending on the interest rate (1% or 4%, respectively). Table 3 below presents total and average annual compliance cost of PAR 1178 by requirement categories.

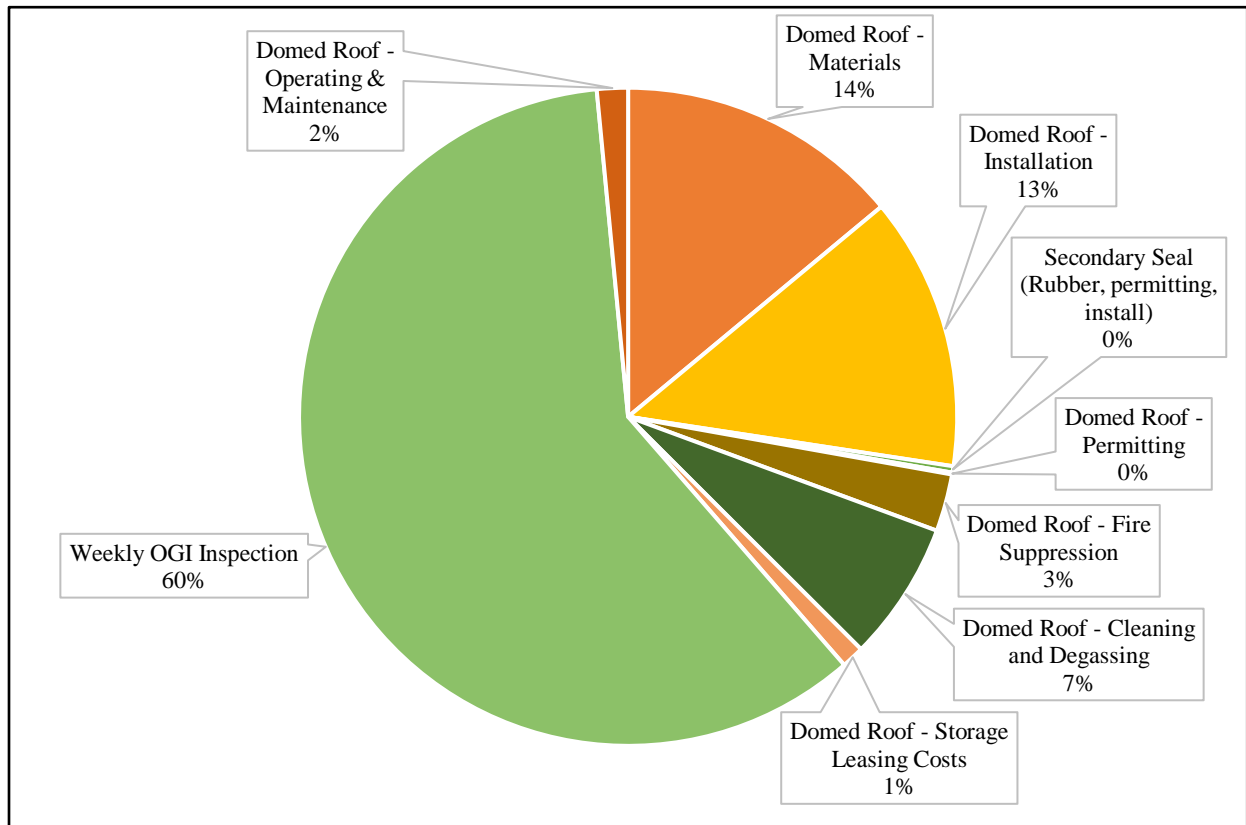
³ In 1987, South Coast AQMD staff began to calculate cost-effectiveness of control measures and rules using the Discounted Cash Flow method with a discount rate of 4 percent. Although not formally documented, the discount rate is based on the 1987 real interest rate on 10-year Treasury Notes and Bonds, which was 3.8 percent. The maturity of 10 years was chosen because a typical control 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 4 percent discount rate has been used by South Coast AQMD staff for all cost-effectiveness calculations, including BACT analysis, for the purpose of consistency. The incremental cost reported in this assessment was thus 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 3
Total Present Worth and Average Annual Estimated Costs of the PAR 1178

Cost Categories	Present Worth Value (Discounted to Year 2024)		Annual Average (2024-2087)	
	1% Discount Rate	4% Discount Rate	1% Interest Rate	4% Interest Rate
Capital Costs				
Domed Roof - Materials	\$44,778,470	\$18,578,144	\$554,835	\$983,143
Domed Roof - Installation	\$43,022,451	\$17,849,589	\$533,077	\$944,588
Domed Roof - Permitting	\$395,926	\$292,571	\$6,870	\$6,870
Domed Roof - Fire Suppression	\$9,040,074	\$3,762,507	\$111,894	\$198,272
Domed Roof - Cleaning and Degassing	\$21,741,546	\$8,733,582	\$272,254	\$482,421
Domed Roof - Storage Leasing	\$3,554,146	\$1,458,606	\$44,214	\$78,344
Secondary Seal - Installation	\$825,758	\$342,728	\$14,139	\$18,232
Secondary Seal - Replace Rubber	\$121,473	\$44,588	\$2,442	\$2,770
Secondary Seal - Permitting	\$60,377	\$46,394	\$1,032	\$1,032
Recurring Costs				
Weekly OGI Inspection	\$200,381,278	\$100,613,271	\$4,212,000	\$4,212,000
Domed Roof - Operating & Maintenance	\$4,339,670	\$1,186,676	\$107,388	\$107,388
Total	\$328,261,170	\$152,908,656	\$5,860,145	\$7,035,061

Figure 1 presents the estimated annual compliance costs of PAR 1178 by the requirement categories. Weekly OGI Inspection recurring costs and doming-related capital costs account for roughly 60% and 38%, respectively, of the total annual cost of PAR 1178.

Figure 1
Annual Estimated Costs of the PAR 1178 by Expense Categories



For the purpose of presenting the annual cost by industry, six-digit NAICS codes are aggregated to more general two-to-three-digit NAICS codes. For example, six-digit NAICS codes 324110 (Petroleum Refineries) and 324121 (Asphalt Paving Mixture and Block Manufacturing) are accounted for in the three-digit NAICS code 324 (Petroleum and Coal Products Manufacturing). Table 4 presents annual and average annual costs of PAR 1178 by the affected industry. As presented in Table 4, the petroleum and coal products manufacturing sector (NAICS 324) is expected to incur about 54% of total annual cost.

Table 4
Average Annual Estimated Costs of the PAR 1178 by Two-to-Three-Digit NAICS

Industry (NAICS)	2024	2030	2035	2040	2060	Average Over All Years (2024-2087)
Wholesale trade (42)	\$2,496,000	\$2,496,000	\$2,821,030	\$3,070,381	\$3,123,282	\$2,974,935
Petroleum and coal products manufacturing (324)	\$1,404,000	\$1,404,000	\$2,752,328	\$4,289,899	\$4,443,446	\$3,748,126
Oil and gas extraction (211)	\$312,000	\$312,000	\$312,000	\$312,000	\$312,000	\$312,000
Total	\$4,212,000	\$4,212,000	\$5,885,358	\$7,672,280	\$7,878,728	\$7,035,061

Table 5 presents average annual cost of the PAR 1178 by the affected facilities. It shows that the estimated annual compliance costs for 19 out of the 27 affected facilities are less than \$200,000, while only one affected facility is expected to incur an annual cost of more than one million dollars.

Table 5
Projected Annual Compliance Costs by Affected Facilities (2023 Dollars)
Average Annual (2024-2087)

Facility Designation	Average Annual Cost
Facility A	\$156,000
Facility B	\$156,000
Facility D	\$156,000
Facility E	\$509,016
Facility F	\$156,000
Facility G	\$206,642
Facility H	\$361,655
Facility I	\$335,420
Facility J	\$156,000
Facility K	\$403,125
Facility L	\$474,503
Facility N	\$156,000
Facility O	\$159,044
Facility P	\$156,000
Facility Q	\$519,990
Facility R	\$1,242,507
Facility S	\$156,000
Facility T	\$156,000
Facility U	\$157,758
Facility V	\$156,000
Facility X	\$156,000
Facility Y	\$156,000
Facility Z	\$156,000
Facility AA	\$168,984
Facility AC	\$156,000
Facility AE	\$156,000
Facility AF	\$156,000
Total Facilities	\$7,034,643

COMPLIANCE COSTS

Dome Installations

A dome is defined in PAR 1178 as an installed roof on external floating roof tanks, designed to reduce emissions from tanks by eliminating wind moving over the external floating roof.

Prior to PAR 1178, companies operating external floating roof tanks containing organic liquid with a total vapor pressure greater than or equal to 3 psia were required to install a dome on the tank. If such a tank was permitted to contain more than 97% by volume crude oil, that tank was exempt from doming. PAR 1178 removes this exemption and requires the installation of a dome on all external floating roof tanks containing organic liquid with a total vapor pressure greater than or equal to 3 psia and containing more than 97% by volume crude oil. Fifty-four such tanks were identified by staff that will be required a dome to be installed.

One-Time and Capital Costs

Stakeholders noted that doming would require draining, cleaning, and degassing the tank prior to the installation of a dome for construction and safety considerations. Tanks are also drained, cleaned, and degassed as part of the tank's API 653 internal inspection, which takes place every 10-30 years independently of PAR 1178, depending on the specifications of the tank. To reduce incurred costs, PAR 1178 aligned the doming schedule of 36 of the 54 tanks to coincide with the specific tank's API 653 internal inspection, when the tank is already drained, cleaned, and degassed. For all facilities but one, this schedule alignment will require doming installations to take place as early as 2031 and no later than 2038. Of the 54 tanks, 18 are not scheduled for API 653 internal inspection prior to the expected full compliance date and are the only tanks which incur costs associated with draining, cleaning, and degassing accounted for in the rule costs. According to conversations with stakeholders, draining, cleaning, and degassing costs are expected to range from \$378,448 to \$1,377,575 per tank, and the total unamortized capital cost is estimated to be \$13,795,836.

According to quotes obtained from suppliers, the costs for the installation of a dome itself vary significantly depending on the diameter of the tank. Also, the installation cost would increase dramatically with increasing tank diameter as the dome diameter must match the diameter of the tank being domed. These costs range from \$100,000 to \$1,750,000 for each tank ranging in size from 30 to 275 feet in diameter. The total unamortized capital cost across all affected facilities and attributed to doming materials and installation is estimated to be \$55,127,494.

Staff assumed that all tanks with a dome installation will require a fire suppression system. Fire suppression is expected to cost an estimated \$105,000 per tank according to quotes obtained by staff. The total unamortized capital cost across all affected facilities and attributed to fire suppression systems for 54 tanks is estimated to be \$5,670,000.

One of the 27 affected facilities will not have excess capacity to divert inflows of crude oil to other tanks due to product type constraints. Staff assumed that this facility would incur storage leasing costs during the period of dome construction and assumed a cost of \$0.50 per barrel, based on staff's conversations with stakeholders. The total unamortized capital cost for this specific facility and attributed to storage leasing is estimated to be \$2,240,422.

PAR 1178 would require each facility to submit a permit application for each doming installation. According to the fee schedules specified in Rule 301, one permit for each tank would cost \$7,002.

Facilities will also need to revise their Title V facility permit, their RECLAIM facility permit, or both depending on the facility. These costs include \$1,482 for RECLAIM facility permit revisions, \$1,857 for Title V facility permit revisions, or \$3,339 for RECLAIM and Title V facility permit revisions. Facilities with multiple tank installations in a single year will only need to submit one facility permit revision application for all tanks. For example, if a facility is both a RECLAIM and Title V facility and has three tanks to be domed in 2031, the total permit fees would be \$7,002 for each of the three tanks (\$21,006 total) plus a RECLAIM and Title V facility permit revision fee of \$3,339, for a grand total of \$24,345. Separately, if a different facility is a RECLAIM facility and not also a Title V facility and has only one tank to be domed in 2033, the total fee would be \$7,002 for the tank plus a RECLAIM facility permit revision fee of \$1,482, for a grand total of \$8,484. The total one-time cost attributed to permitting of dome installations is estimated to be \$439,710 across all affected facilities.

Capital and one-time costs for doming include the doming installation, cleaning and degassing, fire suppression, storage leasing, and permitting.

Recurring Costs

According to feedback from industry stakeholders, domes require minor and infrequent maintenance activities, such as resealing of seams. Lifetime cost estimates obtained by staff range from \$100,000 for a 74-foot diameter tank to \$250,000 for a 260-foot diameter tank. The total cost of these recurring expenses for all affected tanks is \$6,872,830 over a lifetime of 50 years. The maintenance activities are not expected to take place immediately. The timing of O&M cost depends on weather conditions and other variables. On average, these costs would not be incurred until 20 years into each tank's useful life. Taking that into account, staff annualized the total costs of these recurring expenses over the remaining 30-year useful life of the tank to account for uncertainty in the actual timing.

Secondary Seals

Secondary seals are required to be installed along an internal floating roof's circumference to prevent VOC leaks. These seals are complementary to primary seals, which are installed on floating roofs. PAR 1178 requires the installation of secondary seals on internal floating roof tanks storing material with a total vapor pressure of greater than 0.1 psia. Staff identified eight such tanks currently without secondary seals.

Capital Costs

Capital costs for secondary seals include the secondary seal equipment and installation, rubber component replacement, and permitting. No recurring expenses were assumed for secondary seals. Secondary seal costs are based on the linear footage of the internal floating roof's circumference. Installing each secondary seal will involve the following costs: equipment and installation, rubber component replacement, and permit application submittal for secondary seal installation. No breakdown of equipment versus installation costs was provided by the vendors of these

components; only an aggregate cost was provided for each secondary seal. There are no permitting costs associated with rubber component replacements.

Secondary seals include a stainless steel component with a useful life of 20 years. The cost for a secondary seal installation varies depending on the circumference of the tank, with circumferences ranging from 33.5 feet to 64 feet for the eight identified tanks, and installation costs ranging from \$20,680 to \$45,760 per tank, according to quotes from vendors. Thus, the total unamortized capital cost across all affected tanks and due to secondary seal installation is estimated at \$899,580.

Secondary seals also include a rubber component with a useful life of 10 years. According to conversations with vendors, the cost for a rubber component replacement also varies depending on the circumference of the tank, ranging from \$3,948 to \$8,736. The total unamortized capital cost across all affected tanks and attributed to rubber component replacement is estimated to be \$179,423.

Permitting Cost

Permitting costs are based on Rule 301's fee schedule, at a cost of \$7,002 per installation. Facilities will also need to revise their Title V facility permit, their RECLAIM facility permit, or both depending on the facility. These costs include \$1,482 for RECLAIM facility permit revisions, \$1,857 for Title V facility permit revisions, or \$3,339 for RECLAIM and Title V facility permit revisions. Facilities with multiple secondary seal installations in a single year will only need to submit one facility permit revision application for all tanks. For example, if a facility is a Title V facility and not also a RECLAIM facility and has three secondary seal installations in 2033, the total permit fees would be \$7,002 for each of the three seals (\$21,006 total) plus a Title V facility permit revision fee of \$1,857, for a grand total of \$22,863. Separately, if a different facility is both a RECLAIM and Title V facility and has only one secondary seal to be installed in 2033, the total fee would be \$7,002 for the seal and \$3,339 for the RECLAIM and Title V facility permit revision, for a grand total of \$10,341. Staff also accounted for facilities that may have both domes and secondary seal installations and for those facilities and years, only one facility permit revision fee was included. The total one-time cost across all affected facilities and attributed to permitting of secondary seal installations is estimated at \$66,033.

OGI Monitoring

PAR 1178 will require weekly scans using a handheld OGI camera in order to survey all the tanks at a facility. Additionally, the affected facilities will be required to conduct semi-annual component inspections using a handheld OGI camera, specifically for tanks with a floating roof. Handheld OGI cameras are widely used by both leak detection service providers and facilities as a screening device to detect VOC leaks from the equipment.

Since the proportion of the tanks subject to PAR 1178 is small, staff assumed that both semi-annual component inspections and tank farm scans can simultaneously take place during the weekly inspections. Leak detection service providers charge their inspections on a per-day basis. The cost

for each inspection day is \$3,000, which is modeled as a recurring cost in the cost analysis. Staff expects this cost will be incurred every week for all 27 facilities subject to PAR 1178. Thus, the total cost of those recurring expenses is estimated at \$269,568,000 over the period of 2024-2087.

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.^{4,5} 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.⁶

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 Amendments

The assessment herein is performed relative to a baseline (“business as usual”) forecast where the proposed amendments would not be implemented. It is assumed that the 27 affected facilities would finance the capital and installation costs of control equipment at a 4% interest rate, and that these one-time costs are amortized and incurred over the equipment life. In the PAR 1178 policy scenario, affected facilities would incur an average annual compliance cost of approximately \$5.86 million when costs are annualized using a 1% interest rate, or \$7.04 million when evaluated using a 4% interest rate.

Direct costs of the proposed project are used as inputs to the REMI model. REMI uses this input to assess secondary and induced impacts for all the industries in the four-county economy on an annual basis over the 2024-2080 period. For this time period, 2024 is the first year that the amended rule will incur compliance costs to the affected facilities, while 2080 is the last year that REMI can

⁴ Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70-sector model). Version 3. 2023.

⁵ 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).

⁶ 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>.)

implement in the analysis. Job impacts are minor and relatively stable after the year 2045 through the end of the REMI forecast in 2080 and staff does not expect any substantial deviations from this trend up to the year 2087. Direct effects of the proposed amendments include (1) additional costs that the facilities would incur by installing domes, secondary seals control equipment, and conducting OGI inspections, (2) additional sales by local vendors of equipment or services which are needed to meet the proposed requirements, and (3) increased regulatory activities by South Coast AQMD from the granting/renewal of permits.

While the compliance expenditures that are incurred by affected facilities would increase their cost of doing business, the purchase of equipment and services would increase the sales and subsequent spending of businesses in various sectors, some of which may be located in the South Coast AQMD region. Table 6 lists the industry sectors modeled in REMI that would incur either direct cost or direct benefit from the compliance expenditures.

Table 6
Industries Incurring vs. Benefitting from Compliance Costs/Spending

Source of Compliance Costs	REMI Industries Incurring Compliance Costs	REMI Industries Benefitting from Compliance Spending
Doming of Tanks	Petroleum and coal products Manufacturing (NAICS 324); Wholesale trade (NAICS 42)	<i>Capital:</i> Construction (NAICS 23); Fabricated metal product manufacturing (NAICS 332); Waste management and remediation services (NAICS 562); Wholesale trade (NAICS 42); <i>Recurring:</i> Construction (NAICS 23)
Secondary Seals	Petroleum and coal products manufacturing (NAICS 324); Wholesale trade (NAICS 42)	<i>Capital:</i> Construction (NAICS 23) <i>Recurring:</i> None
OGI Inspection	Petroleum and coal products manufacturing (NAICS 324); Wholesale trade (NAICS 42); Crude Petroleum and Natural Gas Extraction (NAICS 211)	<i>Capital:</i> None <i>Recurring:</i> Professional, scientific, and technical services (NAICS 54)
Permitting	Petroleum and coal products Manufacturing (NAICS 324); Wholesale trade (NAICS 42)	<i>Capital:</i> State and Local Government (NAICS 92)

Regional Job Impacts

When the compliance cost is annualized using a 4% real interest rate, REMI projects that on average, no net forgone jobs would occur from 2024 to 2080, relative to the baseline scenario.

While most years are forecasted to have a small number of forgone jobs, substantial job increases are expected in the years 2031, 2033, and 2038, when most capital spending is earned by suppliers. These increases in jobs are primarily attributed to two factors: the timing of capital and recurring costs, and the different industries that benefit from compliance spending.

Timing of Capital and Recurring Costs

Although Weekly OGI Inspection recurring costs represent 60% of total annual average compliance costs, these costs are incurred evenly throughout the period from 2024 through 2087 (approximately \$4.2 million per year). The service providers of Weekly OGI Inspections realize these compliance costs as revenue evenly throughout the forecast period.

Domed Roof capital costs, though representing a smaller 38% of total annual average compliance costs, are incurred in three distinct tranches in 2031, 2033, and 2038 (\$24.49 million, \$13.02 million, and \$40.13 million, respectively). On the other hand, dome installers and manufacturers realize this revenue in the same three years generating corresponding job gains.

Different Industries that Benefit from Compliance Spending

The Domed Roof capital costs benefit the construction (NAICS 23), fabricated metal products manufacturing (NAICS 332), Waste management and remediation services (NAICS 562), and Wholesale trade (NAICS 42) industries. The recurring weekly OGI inspection costs benefit the professional, scientific, and technical services (NAICS 54) industry and the ongoing O&M costs benefit the construction industry (NAICS 23). Each of these industries have differing baseline transactional volumes and revenue multipliers as well as differing interrelationships with other industries in the connected regional economy.

Job Impacts

Over the course of the forecast period, the compliance expenditures made by affected facilities for doming and OGI inspections are on average expected to have negligible job impacts. Most years are forecasted to have small number of forgone jobs, ranging from one to five per year. The few forgone jobs are mainly attributable to the capital-intensive nature of the affected businesses, characterized by a substantial proportion of equipment/machinery relative to labor. In 2031, 2033, and 2038, the three years where the construction and metal fabrication industries earn substantial doming-related revenues, the model projects 220, 111, and 306 jobs, respectively, would be added to the regional economy. These higher, but less frequent positive job impacts generally offset the smaller, but more frequent occurrences of negative job impacts resulting in no net jobs being added or lost on average to the regional economy over the forecast period from 2024 to 2080.

The model predicts small numbers of forgone jobs in the years following dome construction. As such, any spillover effects from these forgone jobs into industries such as manufacturing, retail, and food and beverage hospitality should be quite small. As presented in Table 7, job impacts vary by sector, but are minor relative to the overall regional economy. It is important to note that “All Industries”, as presented in Table 7, includes remaining industries not detailed in Table 7.

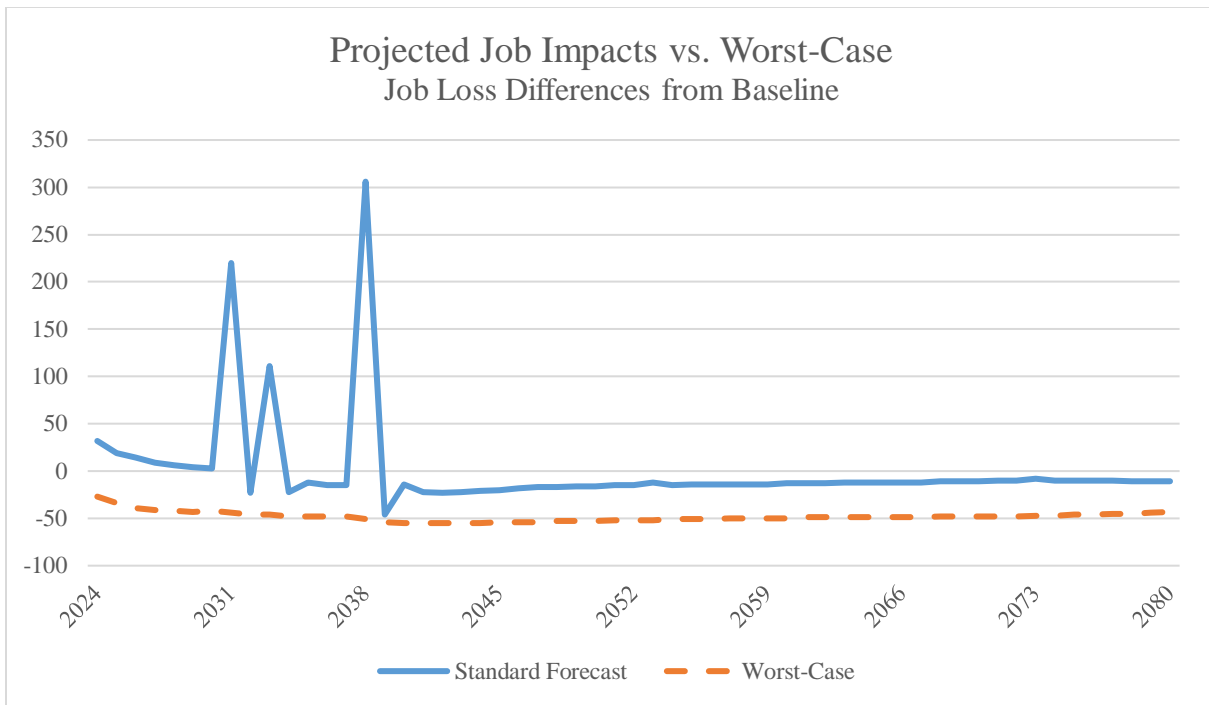
Table 7
Projected Job Impacts of PAR 1178 for Select Industries by Year

Industry (NAICS)	2024	2031	2038	2045	2050	Annual Average (2024-2080)	Baseline Number of Jobs (Average, 2024-2080)	Percent Relative to Baseline
Wholesale trade (42)	-1	2	3	-5	-4	-3	420,362	0.00%
Retail Trade (44-45)	-1	7	10	-3	-3	-2	847,727	0.00%
Petroleum and coal products manufacturing (324)	0	0	-1	-1	-1	-1	5,772	-0.01%
Administrative and Support Services (561)	2	10	14	-2	-2	-1	929,571	0.00%
Crude Petroleum and Natural Gas Extraction (211)	0	0	0	0	0	0	2,362	0.00%
State and Local Government (92)	0	0	0	0	0	0	988,223	0.00%
Construction (23)	0	73	97	-5	-3	1	568,213	0.00%
Fabricated metal product manufacturing (332)	0	25	32	0	0	1	102,875	0.00%
Waste management and remediation services (562)	0	8	29	0	0	1	27,840	0.00%
Professional, scientific, and technical services (54)	23	28	29	13	13	14	1,115,012	0.00%
All Industries	32	220	306	-20	-16	0	12,406,540	0.00%

Figure 2 presents a projected time series of job impacts over the 2024–2080 forecast period. Based on Abt Associate’s 2014 recommendation to enhance socioeconomic analysis by conducting

scenario analysis on major assumptions, staff has analyzed an alternative worst-case scenario where the affected facilities would not purchase any control equipment or services from providers within the South Coast AQMD four-county region and instead purchase control equipment and services from outside the region. In short, this scenario models the impacts of only the costs of compliance with PAR 1178, and none of the revenues realized by associated service providers. This is a hypothetical scenario designed to test the sensitivity of REMI’s embedded assumptions about how compliance costs and revenues would be distributed inside and outside the region. In practice, OGI inspections are likely to be conducted by local companies due to the quantity of tanks and the ongoing requirement of OGI inspections. Moreover, doming construction jobs are likely to be performed by local construction companies. This worst-case scenario would result in an annual average of approximately 47 jobs forgone. The 47 jobs forgone represent 0.0004% of the average baseline jobs in the regional economy.

Figure 2: Projected Regional Job Impact, 2024-2080



Impact on Regional Fuel Prices

The Final Socioeconomic Impact Assessment for Rule 1109.1 adopted in November 2021 assessed the potential socioeconomic impacts of rule compliance by the affected refineries⁷. This report included a study by a third-party subject matter expert who estimated that about 30% of variable costs (i.e., annual operational costs) incurred by the refineries within the South Coast AQMD jurisdiction could be passed on to consumers and local industries through increased regional

⁷ <http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-Nov5-034.pdf>, PDF page 846.

gasoline prices. Rule 1109.1 was estimated to result in an average annual increase in regional gasoline price by 0.0042⁸ cents per gallon, assuming 30% of all O&M costs, net of annual cost-savings, would be pass-through. Based on the same method and using the ratio of PAR 1178 total annual O&M costs to Rule 1109.1 total annual O&M costs in 2023 dollars (\$4.3MM / \$29.1MM = 0.15), the impact of PAR 1178 on regional gasoline prices would be 0.00063 cents per gallon (= 0.0042 cents * 0.15 = 0.00063 cents).

To reach full compliance by 2041, firms would need to install domes on 4 tanks per year on average. According to construction quotes obtained by staff, dome installation should not take longer than 4 months. Given the long-dated compliance deadlines, alignment with existing API inspection schedules, and reasonably short downtime required for dome installation, the impacts to local refining capacity should be minor. In addition, any supply shortfalls into the local market can be rapidly filled by increases in the supply of refined products from other markets outside of Southern California, as well as reductions in exports to markets outside of California.

As a specific illustration of this point, it is instructive to consider the response of the market to the Torrance refinery fire in February 2015. Immediately after the refinery fire, prices rose substantially, and inventories were drawn down.⁹ But, after several weeks, refineries outside the region adjusted their production, began to produce refined products compliant with California standards, and began to deliver these products through the San Pedro Bay Ports. This lag, between the event and the response by firms in the market, reflects the time required by firms to adjust in response to unexpected market conditions and is one of the reasons why unexpected events (like a refinery fire) might have a large impact on prices. However, if the outage has been scheduled and anticipated by the industry as would be the case for PAR 1178, it's reasonable to expect that the firms would adjust production in advance resulting in greater price stability.

Staff also reviewed the impact to total facility production caused by doming. While a dome is being installed on a tank, the tank would not be in use and there would be a period of approximately 42 days where total facility throughput would be impacted from the tank's inability to process product. Staff reviewed Annual Emissions Reporting (AER) data on the average and maximum throughputs for all PAR 1178 affected tanks for years 2015, 2016, 2017, 2019, 2021, and 2022 and calculated the facility-wide average and maximum throughputs for each tank. The maximum throughput for a given tank across all years was assumed to be a conservative estimate of the operational maximum throughput capacity of that tank.

Staff then aggregated each tank's maximum and average throughput to the facility level. To estimate each facility's average capacity utilization, average throughput was divided by maximum throughput. As an example, if an affected facility has a maximum facility AER throughput of 10,000,000 barrels per year, and an average facility AER throughput of 7,000,000 barrels per year, the capacity utilization is 70%.

⁸ Adjusted to 2023 dollars (0.0035 cents in 2021 dollars).

⁹ <http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/1109-1-draft-socioeconomic-impact-assessment-090721-merged.pdf?sfvrsn=10> (page 67).

Capacity utilization figures for affected facilities ranged from 17% to 86%. All capacity utilization values were less than 100%, implying that these facilities have excess capacity based on AER data and can distribute the lost throughput from dome construction amongst other existing tanks that are not offline.

Staff calculated the total facility level throughput that cannot be processed as a result of doming in the years of 2031, 2033, and 2038. These lost capacity values were then compared to the available excess capacity for each facility to calculate whether there was remaining excess capacity, even after accounting for the lost capacity from doming downtime. For all doming years, this remaining excess capacity is a positive value, indicating that the available excess capacity is more than sufficient to distribute lost capacity from doming tanks amongst other on-site tanks.

Please refer to the Table 8 below for a summary of this analysis and the lost capacity analysis in the first year of doming.

Table 8
Excess Capacity Analysis

(a)	(b)	(c)	(d)	(e)	(f)	Year 1 (2023)		
						(g)	(h)	(i)
Facility	# of Total Tanks	Average Annual Throughput (bbls/yr)	Estimated Maximum Capacity (bbls/yr)	Capacity Utilization (c/d=e)	Available Excess Capacity (bbls/yr) (d-c=f)	# of Tanks Domed	Total Lost Capacity from Doming (bbls/yr)	Remaining Excess Capacity (bbls/yr) (f-h=i)
A	8	22,557,853	35,901,972	63%	13,344,119	3	973,387	12,370,732
B	12	1,653,040,233	9,498,855,855	17%	7,845,815,622	4	63,404,283	7,782,411,339
C	2	6,493,559	17,404,499	37%	10,910,940	1	373,602	10,537,338
D	6	50,808,258	58,837,652	86%	8,029,394	2	1,948,810	6,080,584
E	7	3,736,756	6,123,826	61%	2,387,070	3	184,278	2,202,791
F	7	17,080,368	22,844,105	75%	5,763,737	3	842,319	4,921,418
G	8	13,661,029	21,575,141	63%	7,914,112	3	589,483	7,324,630
H**	4	22,284,060	29,639,216	75%	7,355,156	2	1,282,097	6,073,060

* It is assumed that the facility average annual throughput and estimated maximum capacity would remain unchanged through 2031 for the purpose of this analysis

** Facility H is expected to be the only facility leasing storage off-site due to product type constraints preventing the use of excess capacity associated with its four on-site tanks

Competitiveness

The Final Socioeconomic Impact Assessment for Rule 1109.1 also discussed the competitive dynamics in the petroleum refining industry in Southern California. According to the report, most regional fuel demand is supplied by local producers which are covered under PAR 1178. Since the rule impacts all affected facilities similarly, there should be no impact to the relative competitive standing of affected facilities.

The overall impacts of the PAR 1178 on the production costs and delivered prices in the region is not expected to be significant. According to the REMI Model, PAR 1178 is projected to increase the cost of production of the petroleum and coal products manufacturing industry in the South Coast region of 0.0097%, and a maximum increase in delivered prices of 0.0089% in 2039 when all the requirements are satisfied. Based on the staff analysis, PAR 1178 would only result in an estimated gas price increase of 0.00063 cents per gallon. Therefore, implementation of the PAR 1178 is not expected to have a significant impact on the competitiveness of the refinery industry and the local economy of the South Coast region.

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SBA Small Business and Standard Size

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South Coast AQMD. Final Socioeconomic Assessment of PAR 1109.1

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South Coast AQMD. Proposed Amended Rule 1178 Preliminary Draft Staff Report, August 2023.