



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

FINAL STAFF REPORT

**Proposed Amendments to Regulation 2, Rule 1
(Permits – General Requirements)**

**Proposed Amendments to Regulation 2, Rule 5
(Permits – New Source Review of Toxic Air Contaminants)**

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I. TABLE OF CONTENTS

- I. TABLE OF CONTENTS i
- II. ACKNOWLEDGEMENTS 1
- I. EXECUTIVE SUMMARY 2
- II. BACKGROUND 4
 - A. *Concerns from Community Stakeholders* 5
 - B. *Industry and Source Description* 5
 - 1. Pollutants and Emission Sources 5
 - C. *Regulatory History*..... 7
 - 1. Air District Rules/Regulations 7
 - 2. Federal and State Regulations 9
 - 3. Existing Regulations in Other Districts 10
- III. TECHNICAL REVIEW OF THE PROPOSED AMENDMENTS..... 11
 - A. *Differences in Pollution and Health Vulnerability at the Local Level* 12
 - 1. AB 617 Screening Tools that Highlight Disparities in Exposure to Air Pollution and Health Vulnerability 13
 - 2. Ongoing Air District modeling and monitoring results 14
 - 3. CalEnviroScreen..... 16
- IV. PROPOSED AMENDMENTS 23
 - A. *Proposed Amendments to Rule 2-1: General Requirements*..... 23
 - 1. Purpose 24
 - 2. Applicability..... 24
 - 3. Exemptions 24
 - 4. Definitions 25
 - 5. Standards 27
 - 6. Administrative Requirements..... 27
 - 7. Monitoring and Records 30
 - 8. Manual of Procedures 30
 - B. *Proposed Amendments to Rule 2-5: Toxic New Source Review of Toxic Air Contaminants*..... 30
 - 1. Purpose 31
 - 2. Applicability..... 31
 - 3. Exemptions 31
 - 4. Definitions 31
 - 5. Standards 32
 - 6. Administrative Requirements..... 34
 - 7. Monitoring and Records 34

8.	Manual of Procedures	34
V.	ADDITIONAL REVISIONS CONSIDERED DURING THE RULE DEVELOPMENT PROCESS.....	37
	<i>A. Draft Amendments to Rule 2-5, Section 2-5-111: Limited Exemption, Emergency Standby Engines</i>	<i>38</i>
	<i>B. New Section 2-5-116: Exemption, Small Gas-Fired Boilers and Similar Combustion Equipment.....</i>	<i>38</i>
	<i>C. New Section 2-5-231: Acute Receptor.....</i>	<i>39</i>
VI.	POTENTIAL IMPACTS OF THE PROPOSED AMENDMENTS	39
	<i>A. Estimates of Potential Impacts from Amendments to Rule 2-5.....</i>	<i>39</i>
	1. Lookback Analysis.....	40
	2. Emissions or Exposure Reductions.....	41
	3. Overall Impacts of Updates to Rule 2-5 Table 2-5-1: Toxic Air Contaminant Trigger Levels	44
	<i>B. Estimates of Potential Impacts from Proposed Changes to Rule 2-1</i>	<i>45</i>
	1. Public Notifications of Permit Applications	45
	2. Extension of Time for Action on Applications	45
VII.	ECONOMIC IMPACTS	46
	<i>A. Cost of Compliance.....</i>	<i>47</i>
	<i>B. Socioeconomic Impacts</i>	<i>47</i>
	1. Businesses Affected	47
	2. Impact on Employment and the Economy.....	49
	3. Range of Probable Costs of Regulation	50
	4. Availability of Cost-Effective Alternatives	50
	5. Emission Reductions	50
	6. Necessity	51
	<i>C. Air District Impacts</i>	<i>51</i>
	<i>D. Air District Cost Recovery</i>	<i>52</i>
VIII.	REGULATORY IMPACTS	52
IX.	ENVIRONMENTAL IMPACTS	53
X.	RULE DEVELOPMENT / PUBLIC PARTICIPATION PROCESS	53
XI.	CONCLUSION / RECOMMENDATIONS.....	56
	<i>A. Necessity.....</i>	<i>56</i>
	<i>B. Authority.....</i>	<i>56</i>
	<i>C. Clarity.....</i>	<i>57</i>
	<i>D. Consistency.....</i>	<i>57</i>
	<i>E. Non-Duplication.....</i>	<i>57</i>

<i>F. Reference</i>	57
<i>G. Recommendations</i>	57
XII. REFERENCES.....	59

- APPENDIX A:** Proposed Amendments to Rule 2-1
- APPENDIX B:** Proposed Amendments to Rule 2-5
- APPENDIX C:** Proposed Amendments to the Air District Health Risk Assessment Guidelines
- APPENDIX D:** Maps of Overburdened Communities
- APPENDIX E:** CEQA Initial Study and Draft Negative Declaration
- APPENDIX F:** Socioeconomic Impact Analysis – Proposed Amendments to Rules 2-1 and 2-5
- APPENDIX G:** Overburdened Community Census Tracts
- APPENDIX H:** Response to Comments

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I. EXECUTIVE SUMMARY

The Bay Area Air Quality Management District (Air District) staff is proposing amendments to two rules within the Permitting Regulation (Regulation 2: Permits) to make those rules more health protective, with a particular emphasis on improving air quality at the local level. Regulation 2 includes the Air District's rules that govern New Source Review, which is a comprehensive permitting program that applies to entities within the San Francisco Bay Area when they install new equipment or make modifications to existing equipment that will increase air pollution emissions. When someone wants to install a new source of air pollution or modify an existing source that will increase emissions above the Air District's applicability thresholds, they must obtain a permit from the Air District. To obtain a permit from the Air District, the permit applicant must control emissions or exposure to people nearby if emissions or exposures exceed established thresholds. The Air District cannot issue permits for projects that will exceed health risk limits, or that do not comply with regulatory standards.

This current effort to amend the Air District's Permitting Regulation is in response to the immediate need to improve ambient air quality in areas that are disproportionately impacted by environmental and health burdens. The Air District is already implementing a variety of programs to correct well-documented disparities in air quality and community health vulnerabilities. These changes to the permitting process—which are collectively referred to as the Proposed Amendments—would complement ongoing regulatory and nonregulatory efforts that the Air District is currently planning or implementing. Ambient air quality varies from place to place in the Bay Area for many reasons, such as high concentrations of stationary sources of air pollution, proximity to high traffic roadways, or natural topography, to name a few. Other environmental and social factors can exacerbate community sensitivity to air pollution. Regulatory measures are an essential tool to reduce emissions and exposure in overburdened communities. The proposed regulatory updates to the permitting rules improve the Air District's tools for addressing environmental and public health disparities.

The Proposed Amendments fall into three broad categories. First, they will make health risk limits for new and modified projects more stringent if the project will be located in an Overburdened Community—a change that recognizes the fact that air quality, health burdens, and exposures to other environmental contaminants are concentrated in certain parts of the Bay Area—particularly in communities with the highest concentrations of Black and Brown residents. They will also require enhanced notification of nearby residents and businesses of proposed projects in Overburdened Communities to better inform the public of projects that are proposed in their communities. The Proposed Amendments would incorporate the findings of the California Communities Environmental Health Screening Tool (CalEnviroScreen) to identify Overburdened Communities. Second, the Proposed Amendments will update health risk evaluation procedures so that the Air District is using the most accurate and up to date information when it assesses health risk from proposed projects. Third, the Proposed Amendments will update and clarify internal processing procedures to ensure that the first two changes can be implemented effectively.

This regulatory amendment effort began in 2018, when Air District leadership committed to thoroughly reviewing the ways in which the permitting process could be updated to protect communities that face disproportionate environmental or health impacts. Community and public health advocacy organizations had been telling the Air District to revise its permitting program in the wake of several high-profile projects for which the Air District either issued or evaluated issuing air permits. Some advocates urged the Air District to incorporate cumulative impacts considerations into its permitting program, while others urged it to stop issuing air permits in

certain parts of the Bay Area altogether. Advocates wanted the Air District to consider community members' concerns about new sources of air pollution in their communities when it evaluates permit applications. Community advocates also demanded the Air District make the permit evaluation process more transparent. Finally, advocates requested that the Air District include them in the rule amendment process to ensure that the proposed changes are more health protective and responsive to their concerns.

As discussed in Section X of this Final Staff Report, staff met with community advocates in various meeting settings to better understand their specific concerns about the Air District's permitting regulations. In these meetings, staff presented information on the Air District's permitting process and listened to advocates' and community members concerns about nearby facilities, as well as their recommendations on how to make the Permitting Regulation more health protective.

Based on evaluation of the permitting process and feedback received during meetings with community advocates and organizations, members of the public, and public feedback received from two public workshops that were held in May and August of 2021, staff proposes changes to the following two permitting rules: (1) Regulation 2: Permits, Rule 1: General Requirements (Rule 2-1); and (2) Regulation 2: Permits, Rule 5: New Source Review of Toxic Air Contaminants (Rule 2-5). The Proposed Amendments are described below.

Rule 2-1: General Requirements

The proposed changes to Rule 2-1 include a new definition to identify areas that experience relatively high levels of cumulative impacts (areas that experience relatively high levels of environmental and health burdens). As mentioned above, areas that experience high levels of cumulative impacts are defined as Overburdened Communities in the proposed changes to Rule 2-1. Overburdened Communities are census tracts that score at or above the 70th percentile in CalEnviroScreen, Version 4.0, as well as areas that are within 1,000 feet of the boundaries of those census tracts. There are two additional significant proposed changes to Rule 2-1. First, the proposed changes expand the public notice requirement to require notification of nearby addresses if a project will require a health risk assessment because of toxic air contaminant (TAC) emissions and the project will be located within an Overburdened Community. Second, the proposed changes extend the Air District's permit application action times. The completeness review period will be increased from 15 working days (21 calendar days) to 30 calendar days. The final action period (from date of completeness to the date of the Air Pollution Control Officer's decision) is currently 35 working days (49 calendar days) for all permit applications, except those subject to California Environmental Quality Act (CEQA) review, major facility review, or public notice requirements. The Proposed Amendments replace this time period with two possible final action periods: 90 days, which will apply to most applications, and 180 days for more complex applications, unless the application is subject to CEQA review. Applications subject to CEQA review will continue to require approval of CEQA certification documents before the Air District may make a decision on the application. The Proposed Amendments will also increase the time period allowed for responding to public comments on applications from 30 days to 60 days.

Rule 2-5: New Source Review of Toxic Air Contaminants

There are three major categories of proposed changes to the Air District's Air Toxics New Source Review Rule, Rule 2-5. First, the cancer risk limit in Rule 2-5 will be more stringent in Overburdened Communities, as defined in the proposed changes to Rule 2-1. In Overburdened Communities, the risk limit will be reduced from ten in one million to six in one million. Second, proposed revisions to the Air District's Health Risk Assessment Guidelines incorporate updates to the health risk assessment procedures for gasoline dispensing facilities, to be consistent with existing procedures used to evaluate health risk from other sources of toxic air contaminants.

Third, the proposed changes update Table 2-5-1, the Toxic Air Contaminant Trigger Levels table, by adding and revising trigger levels based on new and revised health effects values developed and approved by the California Office of Environmental Health Hazard Assessment (OEHHA). In addition, proposed acute trigger levels are updated based on an acute target hazard index of 0.20 to make them consistent with the acute hazard indices used to implement the Air District's Rule 11-18. Previous acute trigger levels were based on a target hazard index of 1.0. In addition to the proposed changes discussed above, Air District staff is proposing several changes to Rule 2-5 that are intended to prevent circumvention of Rule 2-5's health risk requirements and to enable the Air District to more effectively manage staff resources.

An analysis of the potential socioeconomic impacts found that there probably would not have been any significant economic impacts on the Bay Area region overall had the Proposed Amendments been implemented during the four-year lookback period discussed in Section IV of this Final Staff Report. However, the analysis showed that several industry and small business types might have had significant impacts if they installed the most expensive emissions or exposure reduction controls to comply with the more stringent limits. As discussed in Section VII of this Final Staff Report, the costs and economic impacts staff analyzed are not costs associated with the compliance with a retrofit control requirement but are instead the potential cost of installing new equipment that is not already in place or modifying existing equipment. From this perspective, a substantial portion of the costs due to the Proposed Amendments could be considered optional where the project applicant may have other means of accomplishing its intended goal. The socioeconomic impacts analysis is included in Appendix E to this Final Staff Report. An analysis of the potential environmental impacts of the Proposed Amendments concluded that there is no substantial evidence suggesting that the Proposed Amendments will have any significant adverse environmental impacts. Accordingly, Air District staff prepared a proposed Negative Declaration under CEQA for consideration by the Board of Directors, which is included in Appendix F to this Final Staff Report.

As described in Section VII of this Final Staff Report, the Proposed Amendments will require additional staff resources: eight full-time equivalents (FTEs) for the Air District's Engineering Division, three FTEs for the Meteorology and Measurement Division, and one FTE for the Compliance and Enforcement Division. Staff also proposes that the amendments, if adopted, will not take effect until July 1, 2022, to reflect necessary upcoming proposed amendments to Regulation 3: Fees.

The Air District's Board of Directors will consider adoption of the Proposed Amendments at a public hearing scheduled for December 15, 2021. Air District staff published this Final Staff Report in advance of the public hearing to provide the Board of Directors and interested members of the public with a detailed explanation of what the Proposed Amendments will entail and why it is important for the Air District to adopt them. Air District staff encourages interested members of the public to review this Final Staff Report and to submit any comments they may have. Further information on public comment opportunities is provided in Section X of this Final Staff Report.

II. BACKGROUND

The effort to amend the Air District's Permitting Regulation began with community advocates and concerned members of the public urging the Air District to address air quality impacts from permitting activities in communities overburdened by pollution and health vulnerabilities. This section describes the history of the regulatory amendment effort, the industries and sources that might be affected by the Proposed Amendments, and other applicable regulations.

A. Concerns from Community Stakeholders

At the 2018 Assembly Bill 617 (AB 617) Community Health Protection Program Regional Kick-Off meeting, community advocates and members of the public stated that the Air District needed to make significant changes to its permitting regulation.¹ Meeting participants referenced recent high-profile projects for which the Air District issued permits, stating that the Air District, by issuing permits for the projects, was allowing areas already overburdened by air pollution and the combined effects of cumulative impacts (such as those from land and water pollution, poverty, and economic and social injustices) to be exposed to more pollution. Meeting participants called on the Air District to update its permitting regulation to consider the impacts of sources of air pollution in areas that disproportionately impact minority communities and communities that experience relatively high levels of cumulative impacts. Community advocates called on the Air District to consider cumulative impacts in the permitting process.

In response to the concerns that community advocates expressed during the meeting, Air District staff leadership committed to conducting a thorough evaluation of its permitting processes to assess how to reduce air pollution emissions and exposure in impacted communities. Air District leadership stated that it would collaborate with community advocates and stakeholders to develop solutions to address concerns about air permitting. Further information on the rule development and public participation process is provided in Section X of this Final Staff Report.

B. Industry and Source Description

The Air District is responsible for issuing air quality permits for stationary equipment in the Bay Area and ensuring that resulting air pollutant emissions comply with Air District regulations and permit conditions. Nearly all stationary equipment that emits to the atmosphere requires an Air District permit. There are ten rules within the Permitting Regulation. The individual rules state the permitting requirements for various sources, facility types, and air pollutants. The Proposed Amendments recommend changes to two rules: Rule 2-1, which describes the general requirement of the Air District's permitting process, and Rule 2-5, which states the requirements for projects that will emit toxic air contaminants.

1. Pollutants and Emission Sources

The Proposed Amendments primarily address new and modified sources of toxic air contaminant emissions. The California Health and Safety Code defines a toxic air contaminant as “an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.”² Additionally, toxic air contaminants include substances that are listed as federal hazardous air pollutants (HAPs) under section 7412 of the United States Code.³ The California Air Resources Board lists over 200 substances as toxic air contaminants.⁴ The Air District regulates toxic air contaminant emissions from new and modified sources of air pollution through Rule 2-5, which incorporates the

¹ BAAQMD, 2018. AB 617: Community Health Protection Program Regional Kick-off.

² California Health and Safety Code Section 39655.

³ California Health and Safety Code Section 39657, subd. (b).

⁴ California Code of Regulations, Title 17, Sections 93000 and 93001.

requirements of the Air Toxics New Source Review program. The Air Toxics New Source Review program is discussed below in Section II.C of this Final Staff Report.

Toxic air contaminants are emitted by a variety of different sources and in a variety of different operations. They are emitted as combustion byproducts (for example, diesel fuel combustion emits diesel particulate matter), as fugitive emissions (for example, from equipment leaks at gas stations), and through off-gassing of materials. Some toxic air contaminants are also released from natural sources, such as forest fires.⁵ In terms of facilities that hold Air District permits, Figure 1 below shows the largest emitters of toxic air contaminants, by standard industrial classification (SIC) category.⁶

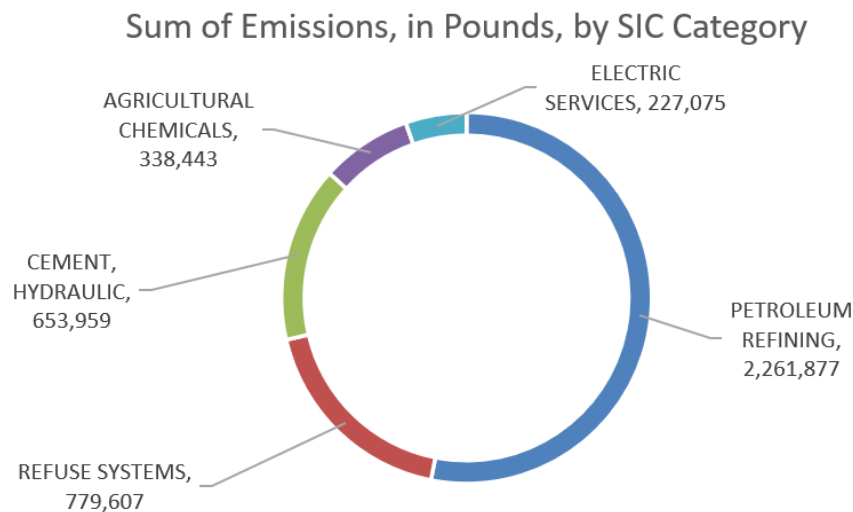


Figure 1 – 2018 Toxic Air Contaminant Emissions, Largest Source Categories, Air District-Permitted Facilities

Previous research by the Air District found that the following toxic air contaminants account for more than 90 percent of all toxicity-weighted toxic air contaminant emissions in the Bay Area:⁷

⁵ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 4.

⁶ BAAQMD, 2018 Toxic Air Contaminant Inventory.

⁷ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 2.

- Acetaldehyde
- Acrolein
- Benzene
- 1,3-Butadiene
- Diesel particulate matter
- Formaldehyde

Section III of this Final Staff Report provides additional information on toxic air contaminants and potential health effects associated with exposure to them.

C. *Regulatory History*

1. *Air District Rules/Regulations*

The Air District's permit requirements are contained in Regulation 2: Permits. As mentioned above, Regulation 2 consists of ten rules that govern various aspects of the Air District's permitting programs, of which two are the subject of the Proposed Amendments:

- Regulation 2, Rule 1 (Rule 2-1), which establishes the general requirements that govern all of the permitting provisions in Regulation 2; and
- Regulation 2, Rule 5 (Rule 2-5), which establishes the requirements for new and modified sources subject to Air Toxics New Source Review.

This section provides a background summary of the permitting programs that would be affected by the Proposed Amendments.

a) *General Permitting Requirements*

The first rule within the Air District's Permitting Regulation, Rule 2-1, states the general requirements that apply to all the permitting provisions within the regulation. Rule 2-1 describes equipment and operations that are exempted from some or all permitting requirements provided they do not trigger permitting requirements under the backstop provisions that are included in sections 2-1-316 through 2-1-319. For sources that require Air District permits, permit applicants must obtain authorization from the Air District to construct the equipment as well as the authorization to operate the equipment. Authorization to construct equipment is called "authority to construct," and authorization to operate equipment is called the "permit to operate," and it must be renewed annually.⁸ Renewals of permits to operate do not trigger a requirement to re-assess existing pollution controls or health impacts. A renewal also does not require that the applicant reapply for a permit. Rather, the permit holders are required to pay fees and submit any other information required to remain in compliance with existing permit conditions or other Air District rules. Rule 2-1 also states the requirements for compliance with the California Environmental Quality Act (CEQA), distinguishing between different project types and their respective requirements under CEQA.

Rule 2-1 establishes the basis for denials of permit applications, as well as the basis for suspension and revocation of a permit from an existing permit holder. The Air District would deny a permit application that exceeded emissions limitations or did not comply with CEQA requirements. Permit applicants whose applications are denied may appeal the Air District decision to the Air District's Hearing Board, which can reverse or modify permitting determinations

⁸ The length of time of an Air District Permit to Operate is stated in Regulation 3: Fees. See section 3-408: Permit to Operate Valid for 12 Months.

it finds are erroneous. The Air District may also suspend issued permits if the permit holder refuses or willfully fails to submit requested information regarding emissions information for the air pollution source for which the permit was issued. Suspensions may also be appealed to the Air District's Hearing Board. Finally, the Air District may request the Hearing Board to hold a hearing to determine whether the Air District should revoke a permit if it is found that the holder of a permit is in violation of permit conditions, or any Air District rules or applicable orders.

b) Air Toxics New Source Review Program

The Air Toxics New Source Review Program was established in 1987 at the direction of the Air District's Board of Directors and was initially implemented based on policies and procedures established by the Air District Air Pollution Control Officer (APCO). In 2005, the Air District updated the Air Toxics New Source Review Program and codified the Air Toxics New Source Review policies and procedures in Rule 2-5; in the Manual of Procedures, Volume II, Part 4: New and Modified Sources of Toxic Air Contaminants; and in the Bay Area Air Quality Management District Health Risk Assessment (HRA) Guidelines. When evaluating health impacts from new and modified sources, the Air District follows its Health Risk Assessment Guidelines, which generally conform to State Air Toxics Hot Spots Health Risk Assessment guidelines. The California Office of Environmental Health Hazard Assessment (OEHHA) periodically revises the State Health Risk Assessment guidelines and has made some changes since the Air District Health Risk Assessment Guidelines were updated in 2015. The last time Rule 2-5 was amended, at the end of 2016, the Air District updated the rule to include the most current OEHHA health risk assessment procedures for estimating health risk from new and modified sources of toxic air contaminants, which resulted in a 40 percent increase in estimated cancer risk for the same emission levels of most toxic air contaminants. For a dozen toxic air contaminants, the estimated cancer risk increased by up to a factor of five, solely based on the revised health risk assessment calculation methodology.⁹

The goal of the Air Toxics New Source Review Program is to evaluate and mitigate potential increases in public health risks resulting from new and modified sources of toxic air contaminants based on preconstruction permit review. The program is also intended to reduce existing health risks by requiring updated control requirements when older, more highly polluting sources are modified or replaced. Rule 2-5 applies to a wide range of industries and sources of air pollution, although most permit applications at a region-wide level are for diesel engines, with another large share of applications for projects at gas stations. Other projects that emit toxic air contaminants include, but are not limited to, projects at or involving crematories, concrete batch plants, and soil vapor extraction operations.

Rule 2-5 contains health risk-based thresholds at which a new or modified source must employ Best Available Control Technology for Toxics (TBACT) and health risk limits that each project cannot exceed. The rule also describes the procedures to be used for calculating toxic air contaminant emission increases from sources and projects and for evaluating the health impacts that result from these emission increases.

The stringency of the program is affected by both the established methodology and the action levels. Stringency can be increased either by changes in methodology that result in a higher calculated risk or by reductions in the risk action levels. The recommended changes to Rule 2-5 presented in this document include increased stringency through a reduction in risk action level in communities overburdened by higher levels of pollution or health vulnerability, as well as

⁹ BAAQMD, 2016. Staff Report, Proposed Amendments to BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. September.

changes in the methodologies for assessing health risks from gas stations, which will result in higher calculated risks for projects involving gas stations.

c) General Findings of the Advisory Council

In 2019 and 2020, the Air District and the Air District's Advisory Council convened a series of meetings and symposia on particulate matter and its health effects. The Advisory Council prepared a report on its findings and recommendations on ways to address particulate matter pollution and exposure (including diesel particulate matter), which it shared with the Air District Board of Directors during a special joint meeting with the Advisory Council on December 16, 2020. In its *Particulate Matter Reduction Strategy Report*, the Advisory Council concluded that current ambient air quality standards for particulate matter are not adequately health protective and that further particulate matter reductions would realize additional health benefits.¹⁰ Furthermore, the Advisory Council report states that the projected increased particulate matter exposure from wildfire smoke related to climate change justifies greater efforts to reduce controllable sources of particulate matter to reduce overall health risks. The report also states that particulate matter is the most important health risk driver in Bay Area air quality, and that there is no known threshold for harmful health effects from particulate matter in the form of PM_{2.5}. The Advisory Council also found that while some species of particulate matter may be more impactful than others, no particulate matter species can be exonerated from being considered dangerous to human health. The Advisory Council recommended that the Air District develop strategies to consider cumulative community particulate matter impacts in permitting processes and modify Air District permitting regulations to address hyper-localized hot-spot and cumulative particulate matter health risks.¹¹ Air District staff is continuing to evaluate potential changes to the permitting program to address undifferentiated particulate matter emissions and exposure, but the Proposed Amendments will address diesel particulate matter emissions through updates to Rule 2-5.

d) 2017 Clean Air Plan

In 2017, the Air District adopted its current Clean Air Plan: Spare the Air, Cool the Climate (2017 Clean Air Plan or 2017 Plan). The 2017 Plan describes the Air District's approach to reducing emissions of air pollutants. One of the 2017 Clean Air Plan's goals is to "[e]liminate disparities among Bay Area communities in cancer health risk from toxic air contaminants."¹² The 2017 Plan includes Stationary Source Control Measure SS21: "New Source Review of Toxic Air Contaminants," which proposes to update the toxic New Source Review program by incorporating the 2015 Health Risk assessment guideline revisions by OEHHA.¹³ In 2016, the Air District Board of Directors adopted revisions to Rule 2-5 to implement SS21 for all types of facilities except gas stations. The Proposed Amendments will update the Air District's Health Risk Assessment Guidelines such that the 2015 OEHHA Health Risk Assessment guideline revisions apply to gas station permitting projects.

2. Federal and State Regulations

The Air District's New Source Review program, which applies to sources of criteria pollutants and sources of toxic air contaminants, is based upon federal and state New Source Review programs.

¹⁰ BAAQMD Advisory Council, 2020. Advisory Council Particulate Matter Reduction Strategy Report. December.

¹¹ BAAQMD Advisory Council, 2020. Advisory Council Particulate Matter Reduction Strategy Report. December. Page 9.

¹² BAAQMD, 2017. 2017 Clean Air Plan: Spare the Air, Cool the Climate. April. Page 1/2.

¹³ BAAQMD, 2017. 2017 Clean Air Plan, Volume 2. April. Page SS-71.

Federal and state New Source Review programs establish requirements for criteria pollutant emissions. Criteria pollutants are regional air pollutants for which health-based regional ambient air quality standards are established. The Air District's New Source Review program operates within the overlay of these state and federal requirements. The Air District has some latitude to adopt a New Source Review Program that is most suited to the specific circumstances facing the San Francisco Bay Area. But it must at a minimum satisfy the state and federal program requirements, and it is subject to review and approval by the California Air Resources Board and the United States Environmental Protection Agency to ensure that it does.

New and modified sources must comply with federal and state regulations for emissions of hazardous air pollutants and toxic air contaminants, respectively. The U.S. Environmental Protection Agency has promulgated regulations to implement Section 112 of the Federal Clean Air Act, which addresses emissions of hazardous air pollutants (also referred to as HAPs). These regulations establish technology- and risk-based standards for sources that emit hazardous air pollutants. Like criteria pollutant New Source Review, the U.S. Environmental Protection Agency can delegate authority to regulate hazardous air pollutant emissions to states and local agencies such as air districts. As discussed in section II.B above, California categorizes hazardous air pollutants as toxic air contaminants, along with other substances that the state identifies as "toxic air contaminants" as it is defined in the California Health and Safety Code. The California Air Resources Board adopts regulations, called Airborne Toxic Control Measures, that are codified in the California Code of Regulations. These Airborne Toxic Control Measures regulate toxic air contaminant emissions from certain types of stationary sources, as described in the California Code of Regulations.

3. Existing Regulations in Other Districts

Other California air districts also oversee programs that regulate emissions and exposure from new and modified sources of air pollution. A comparison of several of the largest air districts in California—South Coast Air Quality Management District, San Diego Air Pollution Control District, and San Joaquin Valley Air Pollution Control District—shows that these three air districts have similar requirements to the Bay Area Air District's permitting program, although some requirements vary by district.

a) South Coast Air Quality Management District

The air toxics New Source Review program in the South Coast Air Quality Management District (South Coast) uses risk thresholds that, if exceeded, will require permit applicants to install pollution abatement controls. If modeled risks exceed risk limits, permit applicants will not be allowed to install or operate the proposed equipment. As in the Bay Area, air toxics permitting requirements are uniform throughout South Coast's jurisdiction; subregional requirements do not exist. Also like the Bay Area's permitting program, South Coast's inclusion of risk thresholds and limits enables the permitting process to take into account local impacts, in terms of risk posed by a proposed project to a nearby resident or worker. South Coast will not issue permits to proposed projects that will exceed cancer risk, acute hazard index, or chronic hazard index limits. The risk limits in South Coast's air toxics New Source Review rule are the same as the current limits in the Bay Area, although they are less stringent than the Proposed Amendments.¹⁴ In addition to the requirements just described, South Coast also includes a cancer burden limit.¹⁵ South Coast defines cancer burden to mean "the estimated increase in the occurrence of cancer cases in a population subject to a [maximum individual cancer risk] of greater than or equal to one in one

¹⁴ See SCAQMD Rule 1401(d)(1)-(3). Compare with BAAQMD proposed amendments to Rule 2-5.

¹⁵ SCAQMD Rule 1401(d)(1)(C).

million resulting from exposure to toxic air contaminants.”¹⁶ South Coast’s procedures explain how to calculate cancer burden.¹⁷

b) San Diego Air Pollution Control District

San Diego Air Pollution Control District (San Diego) oversees a similar air toxic permitting process to that of the Bay Area Air District. Permitting rules apply throughout San Diego’s permitting jurisdiction; differing subregional standards do not exist. Like South Coast, San Diego includes a cancer burden requirement in its New Source Review rule for sources that emit toxic air contaminants.¹⁸ For the purpose of reviewing new or modified sources, however, San Diego only requires an analysis of cancer burden if the cancer risk to the maximally exposed individual exceeds the limit with best available control technology for toxics applied and the permit applicant can demonstrate, among other things, that the cancer burden falls below the limit.¹⁹ Thus, compliance with the cancer burden limit is only required in exceptional circumstances.

c) San Joaquin Valley Air Pollution Control District

San Joaquin Valley Air Pollution Control District’s (San Joaquin) air toxics permitting program differs from the other large air districts mentioned above in that it does not have air toxics permitting requirements stated in its New Source Review rule. Instead, San Joaquin’s requirements are stated in a policy document.²⁰ San Joaquin’s risk assessment methodology also differs from that utilized by the Bay Area Air District and other air districts in that it uses different exposure periods to assess health risk, and it in turn uses a different maximum cancer risk limit than what is used in the Bay Area.²¹

III. TECHNICAL REVIEW OF THE PROPOSED AMENDMENTS

The Proposed Amendments complement the Air District’s ongoing efforts to reduce emissions and exposure to air pollution in areas that are overburdened by poor air quality, with additional consideration of impacts from other environmental and public health stressors. The Proposed Amendments focus on addressing toxic air contaminant emissions because of their localized impacts, as discussed below. The Air District conducts health risk assessments for projects that exceed established trigger levels in Rule 2-5, which involve modeling the health risks of proposed projects. While toxic air contaminants are not the only types of air pollutants the Air District can regulate to reduce localized impacts, they negatively impact public health and therefore must be controlled. To evaluate localized impacts from projects that require Air District permits, the Proposed Amendments utilize CalEnviroScreen. CalEnviroScreen is a cumulative impacts screening tool that has undergone refinements for over ten years, and it is a tool that members of the public and environmental justice organizations have highlighted in their communications with Air District staff as being the preferred screening method to identify cumulative impacts.

¹⁶ SCAQMD Rule 1401(c)(3).

¹⁷ SCAQMD, 2017. Risk Assessment Procedures for Rules 1401, 1401.1 and 212. Version 8.1. September.

¹⁸ San Diego Air Pollution Control District, Rule 1200: Toxic Air Contaminants – New Source Review.

¹⁹ San Diego Rule 1200(d)(1)(iii)(B)(9).

²⁰ See San Joaquin Valley APCD, 2015. APR – 1905: Risk Management Policy for Permitting New and Modified Sources. May. (The policy references Rule 2201, which is San Joaquin’s New Source Review rule.)

²¹ See San Joaquin Valley APCD, 2015. APR – 1905: Risk Management Policy for Permitting New and Modified Sources. May. See also San Joaquin Valley APCD, 2015. Final Draft Staff Report: Update to District’s Risk Management Policy to Address OEHHA’s Revised Risk Assessment Guidance Document. March.

A. Differences in Pollution and Health Vulnerability at the Local Level

Due to a variety of factors, air quality in the Bay Area often varies between different locations. As described below, Air District staff focused on reducing disparities in access to clean air for decades and developed programs that are specifically targeted to achieve reductions in air pollution in the Bay Area's communities that are overburdened by poor air quality, the effects of which may be compounded by exposure to other forms of environmental pollution and health vulnerabilities.²² Efforts by the Air District in conjunction with actions undertaken by other regulatory agencies and industries contributed to an overall decline of the average background cancer risk in the Bay Area, as Figure 2 shows below. Air District modeling and monitoring data show that cancer-risk weighted air toxics trends are declining throughout the Bay Area, and that the most significant driver of air toxics emissions in the region comes from mobile source emissions. Since 1990, the estimated lifetime cancer risk for Bay Area residents over a 70-year lifespan from all toxic air contaminant emissions combined declined from 4,100 chances per million to around 600 chances per million today.²³ Diesel particulate matter still accounts for the majority of toxic air contaminant emissions and toxic risk in the Bay Area and the majority of toxic emissions still result from mobile source emissions.²⁴

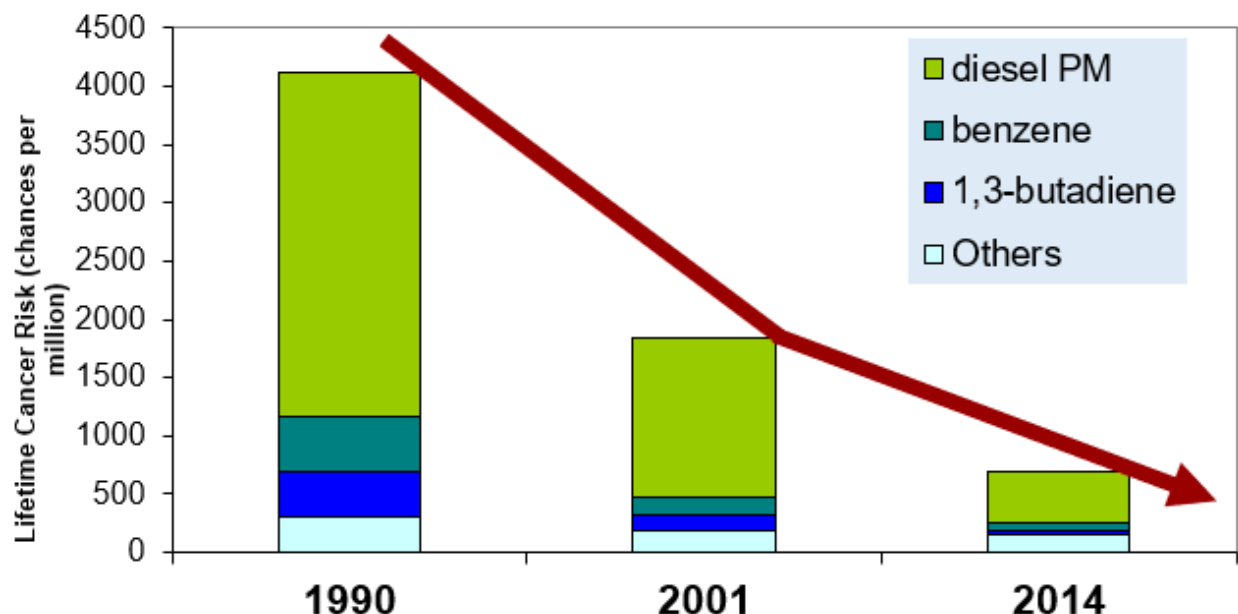


Figure 2 – Bay Area Lifetime Residential Cancer Risk* from TAC Exposure

* Cancer risk is based on average ambient air monitoring data and the population wide risk assessment methodology presented in OEHHA's 2015 HRA Guidelines.

²² BAAQMD, 2021. Workshop Report: Draft Amendments to Regulation 2: Permits, Rule 1: General Requirements; Draft Amendments to Regulation 2: Permits, Rule 5: New Source Review of Toxic Air Contaminants. July. Page 8.

²³ BAAQMD, 2017. Final 2017 Clean Air Plan: Spare the Air – Cool the Climate. April. See page 2/25.

²⁴ BAAQMD, 2017. Final 2017 Clean Air Plan: Spare the Air – Cool the Climate. April. See pages 2/22 and 2/25.

Despite the positive overall trend shown in Figure 2 above, information obtained through the Air District's implementation of AB 617 demonstrates the persistent differences in exposure and vulnerability to air pollution, as discussed further below. Even though carcinogenic toxic air contaminant emissions are declining, they still contribute to cancer risk in the region, and in some communities, cancer risk remains higher than elsewhere because of the existence of nearby roadways or stationary sources of air pollution permitted by the Air District. As discussed further in Section IV.B of this Final Staff Report on proposed amendments to Rule 2-5, Sections 2-5-302 and 303, staff proposes a more stringent cancer risk limit of six in one million in Overburdened Communities that is based on the regionwide average background cancer risk in the Bay Area. Staff proposes the six in one million cancer risk limit in Rule 2-5 that will apply to proposed projects in Overburdened Communities because it would be about one percent of the regionwide background cancer risk from toxic air contaminant emissions. The report subsections below describe recent reports by the Air District on the locations of communities that experience relatively high levels of air pollution.

As mentioned above in Section II of this Final Staff Report, the following toxic air contaminants account for more than 90 percent of all toxic air contaminant emissions in the Bay Area:²⁵

- Acetaldehyde
- Acrolein
- Benzene
- 1,3-Butadiene
- Diesel particulate matter
- Formaldehyde

Each of the toxic air contaminants listed above, except acrolein, are known to be carcinogenic when inhaled, while acrolein has noncarcinogenic toxic impacts. Also, each of the above listed toxic air contaminants may be emitted during fuel combustion, although they can be emitted through other applications or operations as well. Acetaldehyde is emitted from a variety of uses, including from its use as a solvent, including from some types of fuel combustion from stationary sources. Acrolein is formed from the combustion of fossil fuels as well as from photochemical reactions in the atmosphere. Benzene is present in fugitive emissions from gasoline operations and from fuel combustion. 1,3-Butadiene is another byproduct of fuel combustion, often associated with mobile source emissions. Diesel particulate matter is emitted from sources that burn diesel fuel. It can consist of many different types of toxic air contaminants, including each of those listed above. In the Bay Area, diesel particulate matter is the largest source of cancer risk from ambient air pollution.²⁶ Finally, formaldehyde is also emitted from fuel combustion operations.

1. [AB 617 Screening Tools that Highlight Disparities in Exposure to Air Pollution and Health Vulnerability](#)

The Air District has overseen studies and research that demonstrate differences in air quality and exposure to air pollution at the local level. The Air District's current efforts to address air pollution in communities identified through the AB 617 community emissions reductions processes utilized several tools to screen environmental impacts—including air quality impacts—and community health vulnerabilities that may contribute to increased sensitivity to air pollution. To identify

²⁵ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 2.

²⁶ BAAQMD, 2020. Diesel Free by '33: Why Replacing Diesel is a Public Health Priority. September.

communities for AB 617 monitoring or emissions reductions projects, staff relied primarily upon the following screening tools:²⁷

- Air District Community Air Risk Evaluation (CARE) program;
- CalEnviroScreen;
- Environmental Justice Screening Method; and
- Healthy Places Index

Staff also used life expectancy as a public health indicator and identified the locations of large sources of air pollution, including industrial sources, airports, and seaports. The overlay of the screening tools identified areas that experience high levels of pollution exposure and health vulnerabilities. Also, many communities that experience relatively high levels of pollution also experience relatively high levels of health vulnerability.²⁸

The ongoing work by the Air District to implement AB 617 builds upon the Air District's CARE program, which was a collaborative program between Air District staff, community stakeholders, and industrial stakeholders that the Air District initiated in 2004 to identify and track areas with high concentrations of air pollution and populations most vulnerable to air pollution's health impacts. The CARE program supporting data were last updated around 2014, although it continues to provide a framework for assessing community exposure to air pollution and identifying areas that experience air pollution and health vulnerability.

2. Ongoing Air District modeling and monitoring results

Additionally, Air District reports of data gathered through other programs and projects also demonstrate that air quality varies geographically. A 2019 report on regional modeling efforts to support AB 617 implementation simulated 11 air toxic compounds emissions throughout the Bay Area. The simulation showed that six of the modeled air pollutants account for more than 90 percent of toxic air contaminant emissions in the Bay Area.²⁹ One of the major human health outcomes resulting from air toxics exposure is cancer risk. In the context of air permitting, cancer risk is an estimate of the chance that an individual may develop cancer as a result of exposure to emitted carcinogens at a given receptor location, and considering, where appropriate, age sensitivity factors to account for inherent increased susceptibility to carcinogens during infancy and childhood.³⁰ To assess cancer risk from all facilities other than gas stations, the Air District follows the procedures described in the Health Risk Assessment Guidelines for the Air Toxics Hot Spots Program adopted by OEHHA on March 6, 2015.³¹ The Air District uses the recommended breathing rates described in the Risk Management Guidance for Stationary Sources of Air Toxics adopted by the California Air Resources Board on July 23, 2015.³²

²⁷ BAAQMD, 2018. San Francisco Bay Area Community Health Protection Program: Improving Neighborhood Air Quality. August.

²⁸ BAAQMD, 2018. San Francisco Bay Area Community Health Protection Program: Improving Neighborhood Air Quality. August.

²⁹ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 2.

³⁰ Age sensitivity factors are cancer risk adjustment factors that account for children's heightened sensitivity to air toxics. See California Office of Environmental Health Hazard Assessment, 2015. Air Toxics Hot Spots Program—Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments. February. Pages 8/4-8/5.

³¹ BAAQMD, 2016. Air Toxics NSR Program Health Risk Assessment Guidelines. December. See page 2.

³² BAAQMD, 2016. Air Toxics NSR Program Health Risk Assessment Guidelines. December. See page 2.

Modeling results show that the highest cancer risk locations in the Bay Area tend to be where diesel particulate matter concentrations are high.³³ Figure 3 below shows cancer risk in the Bay Area from toxic air contaminant exposure, expressed in chances per million. Figure 4 shows the simulated annual average diesel PM concentrations for 2016.

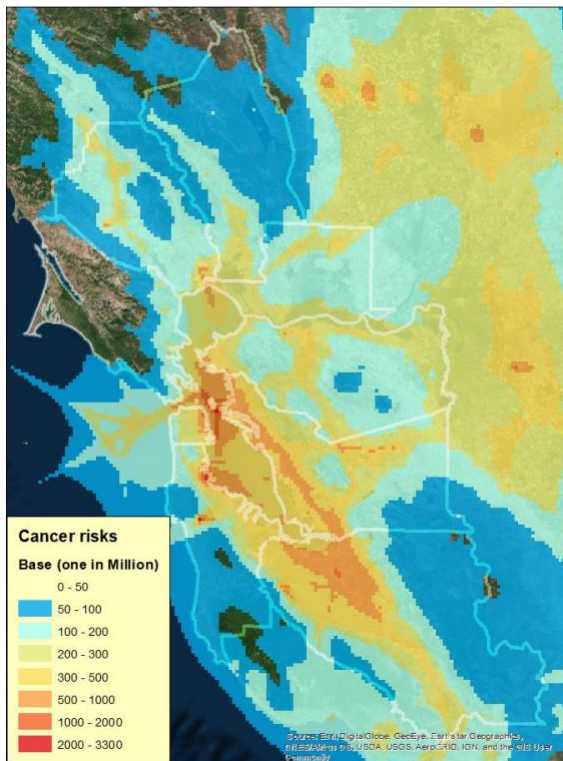


Figure 3 – Cancer risk from air pollution (chances per million)³⁴

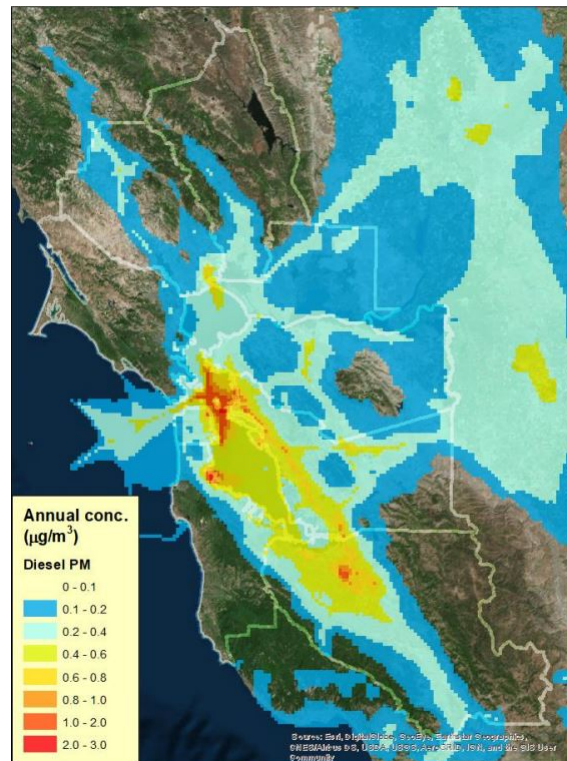


Figure 4 – Simulated annual average diesel PM concentrations for 2016³⁵

In addition to modeling data, the Air District also maintains an ambient air quality monitoring network with over thirty air monitoring stations located throughout the region.³⁶ The Air District's air quality monitoring network monitors a variety of air pollutants, including:

- Ozone
- Oxides of nitrogen
- Black carbon
- Sulfur dioxide

³³ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 33.

³⁴ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 34.

³⁵ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 25.

³⁶ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 11.

- Particulate matter (including PM₁₀, PM_{2.5}, and PM_{0.1} (ultrafine particles))
- Lead
- Hydrogen sulfide
- Air toxics (which consist of 22 gaseous toxic compounds that are monitored at 23 toxics monitoring sites located throughout the Bay Area)³⁷

Air District staff utilized air monitoring data to evaluate the simulated air toxics data described above in Figures 3 and 4.³⁸

3. CalEnviroScreen

As mentioned previously, CalEnviroScreen is a mapping tool developed and maintained by OEHHA that uses 21 indicators to identify communities impacted by environmental and health burdens. CalEnviroScreen was first developed in 2010 as the product of a statewide effort to assess cumulative impacts,³⁹ and was subsequently refined several times with new and improved supporting data.⁴⁰ On October 13, 2021, OEHHA released the final version of CalEnviroScreen 4.0, the latest iteration of the tool.⁴¹ CalEnviroScreen 4.0 includes the most recent available supporting data and methodologies. It also adds one new indicator: lead risk to children from housing.⁴²

Like the previous version of CalEnviroScreen (3.0), version 4.0 multiplies pollution burden by population characteristics within a census tract to determine an overall score for the tract.⁴³ CalEnviroScreen bases scores upon indicators, which fall into four different components—two that cover pollution burden, and two covering population characteristics. Pollution burden indicator categories are exposures and environmental effects, while population characteristics indicator categories are sensitive populations and socioeconomic factors. The indicators within each category are shown in Table 1 below.

³⁷ BAAQMD, 2021. 2020 Air Monitoring Network Plan. July. See page 63.

³⁸ BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. See page 27.

³⁹ Defined by CalEPA to mean “exposures, public health or environmental effects from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account sensitive populations and socioeconomic factors, where applicable and to the extent data are available.” OEHHA, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Report. October. Page 12.

⁴⁰ OEHHA, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Report. October. Page 8.

⁴¹ OEHHA, 2021. CalEnviroScreen 4.0 webpage.

⁴² OEHHA, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Report. October. Page 66.

⁴³ OEHHA, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Report. October. Page 13.

Table 1: CalEnviroScreen 4.0 Indicators⁴⁴

Pollution Burden		Population Characteristics	
Exposures	Environmental Effects	Sensitive Populations	Socioeconomic Factors
<ul style="list-style-type: none"> • Ozone Concentrations • PM2.5 Concentrations • Diesel PM Emissions • Drinking Water Contaminants • Children’s Lead Risk from Housing • Pesticide Use • Toxic Releases from Facilities • Traffic Impacts 	<ul style="list-style-type: none"> • Cleanup Sites • Groundwater Threats • Hazardous Waste • Impaired Water Bodies • Solid Waste Sites and Facilities 	<ul style="list-style-type: none"> • Asthma Emergency Department Visits • Cardiovascular Disease (emergency department visits for heart attacks) • Low Birth-Weight Infants 	<ul style="list-style-type: none"> • Educational Attainment • Housing-Burdened Low-Income Households • Linguistic Isolation • Poverty • Unemployment

a) CalEnviroScreen 4.0 Scores in the Bay Area

Air District staff evaluated CalEnviroScreen 4.0 scores in the Bay Area to determine the areas where permitting requirements could be made more stringent due to relatively high cumulative impacts. Staff examined census tracts with scores at or above the 75th percentile as well as tracts within the range of 70th through the 75th percentile.

The California Environmental Protection Agency (CalEPA) designated the highest scoring 25 percent of census tracts in CalEnviroScreen as “disadvantaged communities,” as defined in Senate Bill 535 (De León, Chapter 830, Statutes of 2012).⁴⁵ Staff further evaluated the inclusion of the 70th through 75th percentile census tracts and found communities previously identified as disadvantaged under CalEnviroScreen 3.0 no longer score in the top 25 percent of impacted census tracts but continue to face many of the same pollution burdens or health vulnerabilities as before.

Using the categorization described above, staff found that, out of 1,552 total census tracts within the Air District’s jurisdiction, 159 census tracts, or about ten percent of all census tracts, would be considered disadvantaged or overburdened based on CalEnviroScreen 4.0 scoring. Table 2 below shows the breakdown of census tracts by county and score type, and Figures 5 through 9 show the census tracts and one-thousand-foot buffer areas. Please see Appendix D: Maps of Overburdened Communities, for higher quality maps of areas identified as “Overburdened Communities” for the purposes of the permitting rules.

Additionally, since 2004, the Air District administered the CARE Program “to identify areas with high concentrations of air pollution and populations most vulnerable to air pollution’s health

⁴⁴ OEHHA, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Report. October. Page 21.

⁴⁵ CalEPA, 2017. Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (DE LEÓN). Page 1. April.

impacts”.⁴⁶ The Air District also implemented the Assembly Bill 617 (C. Garcia, Chapter 136, Statutes of 2017) Community Health Protection Program, which seeks to reduce exposure in communities most impacted by air pollution. Collectively, the CARE Program and AB617 Community Health Protection Program informed the identification of Bay Area communities and populations disproportionately impacted by air pollution and associate health impacts. Because of this, the Air District previously advocated for consideration of the 70th percentile and above in CalEPA’s designation of “disadvantaged communities” for CalEnviroScreen 3.0 and recommends inclusion of the top 70th percentiles of CalEnviroScreen 4.0 census tracts for the purpose of these proposed amendments described in this Final Staff Report.⁴⁷

Table 2: ≥70th Percentile CalEnviroScreen 4.0 Census Tracts by County⁴⁸

County	Census Tracts ≥70th Percentile Overall
Alameda	47
Contra Costa	44
Marin	1
Napa	0
San Francisco	17
San Mateo	10
Santa Clara	20
Solano	17
Sonoma	3
TOTAL	159

⁴⁶ BAAQMD, 2014. Improving Air Quality & Health in Bay Area Communities. Community Air Risk Evaluation Program Retrospective & Path Forward (2004 – 2013). Page 1. April 2014.

⁴⁷ BAAQMD, 2016. Bay Area Air Quality Management District CalEnviroScreen 3.0 Comments. October. Page 7; BAAQMD, 2021. Comment Letter on OEHHA’s Draft Version 4.0 of CalEnviroScreen. May. Page 3.

⁴⁸ Using 2010 census tracts, consistent with CalEnviroScreen 4.0. OEHHA, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Report. October. Page 15.

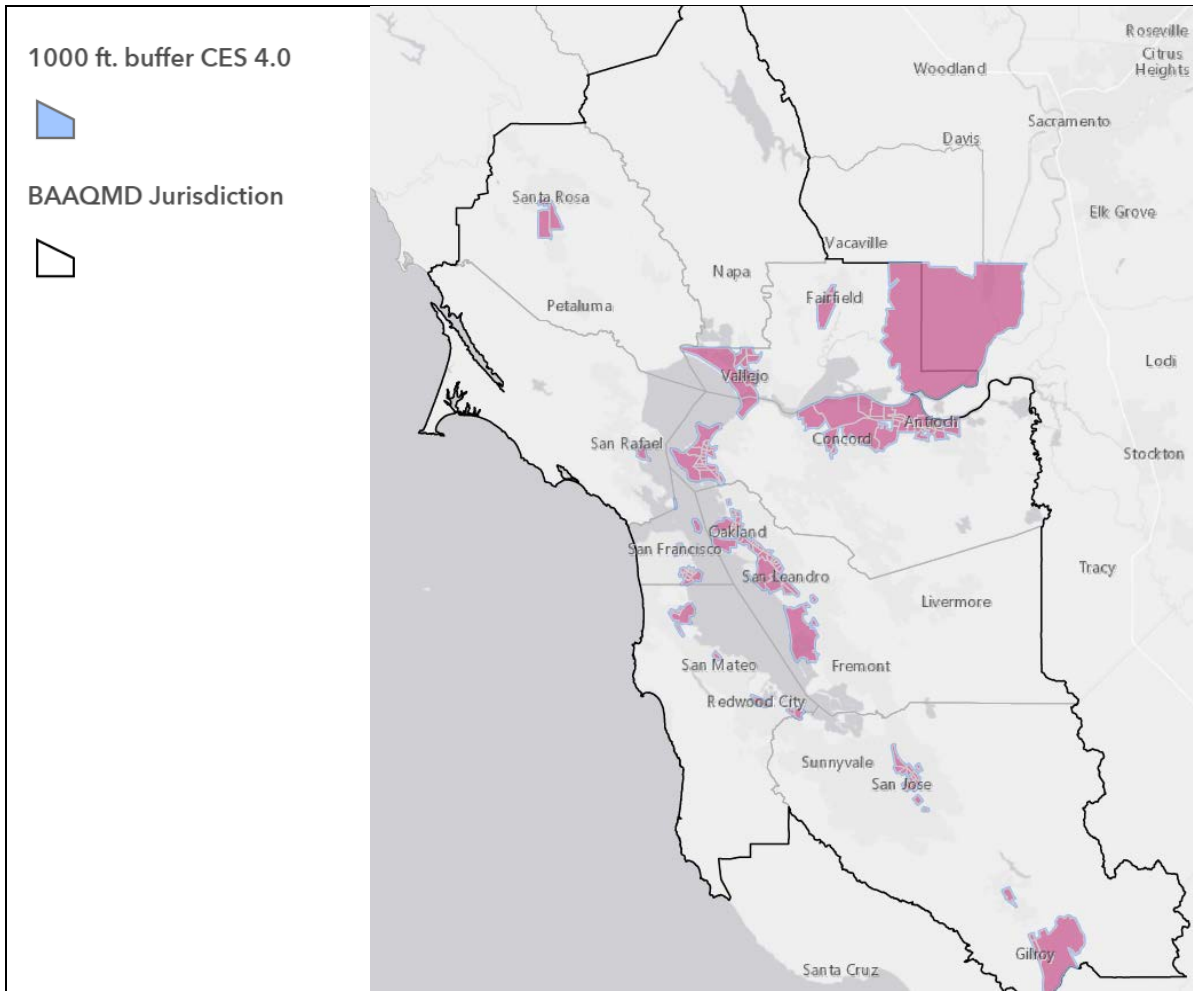


Figure 5 – Bay Area Top 30% CalEnviroScreen 4.0 Census Tract Scores

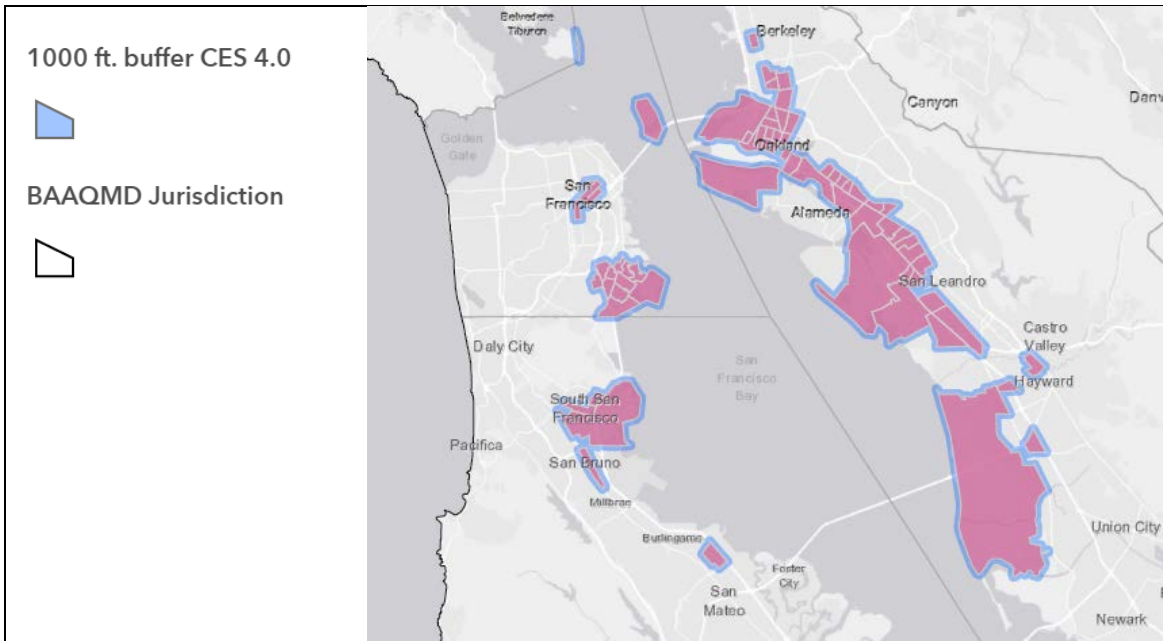


Figure 6 – San Francisco Bay Region Top 30% CalEnviroScreen 4.0 Census Tract Scores

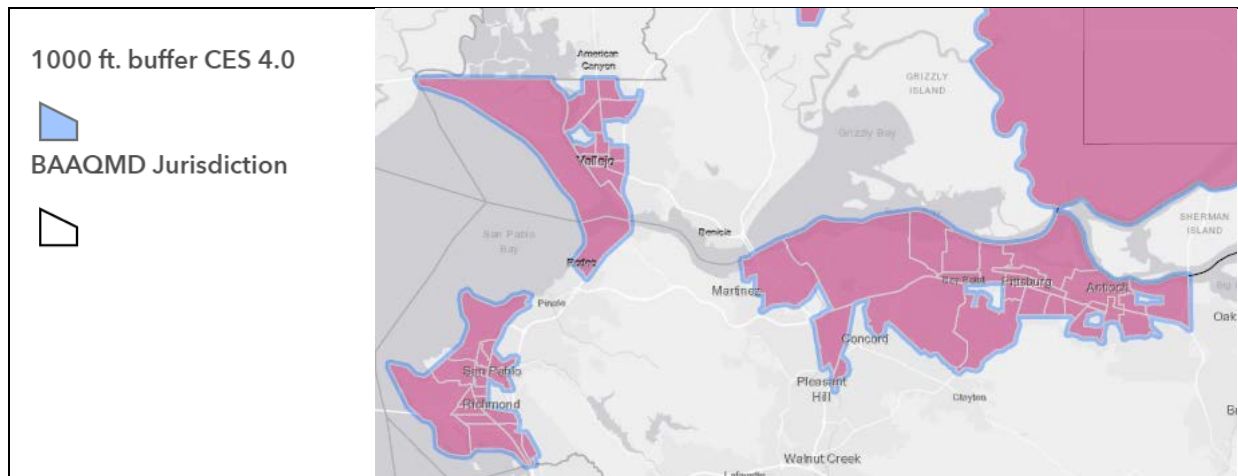


Figure 7 – San Pablo/Carquinez/Suisun Top 30% CalEnviroScreen 4.0 Census Tract Scores

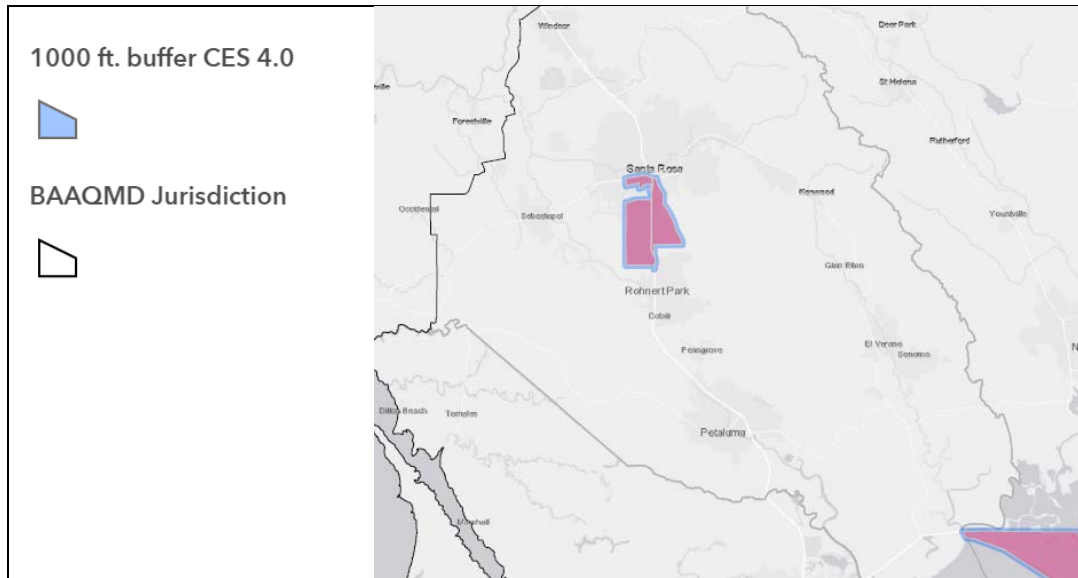


Figure 8 – North Bay Top 30% CalEnviroScreen 4.0 Census Tract Scores

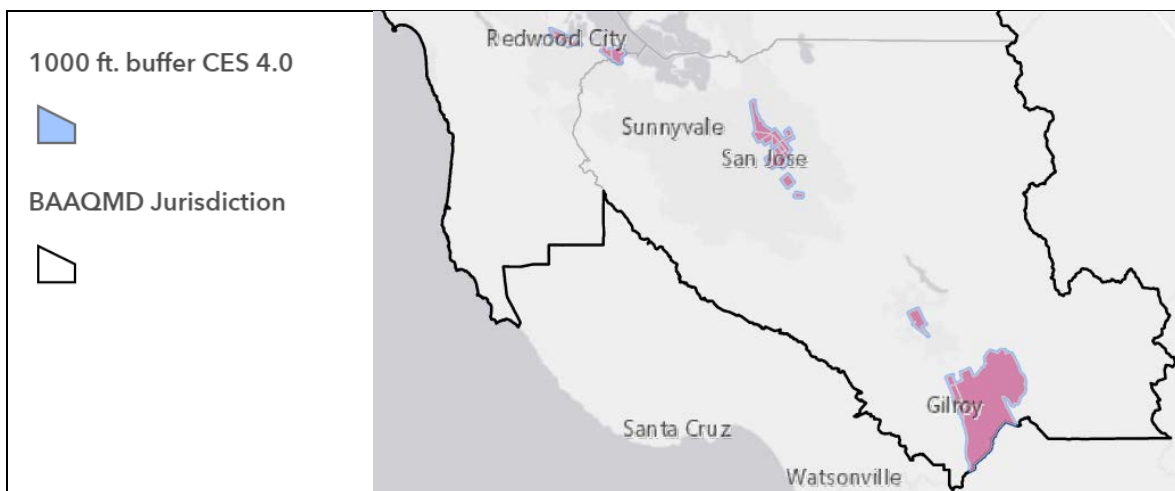


Figure 9 – South Bay Top 30% CalEnviroScreen 4.0 Census Tract Scores

OEHHA also published a preliminary analysis on the relationship between the Draft CalEnviroScreen 4.0 results and race and ethnicity.⁴⁹ OEHHA has also published an analysis between Final CalEnviroScreen 4.0 results and race and ethnicity, which indicate similar results to the preliminary analysis of Draft CalEnviroScreen 4.0. The analysis that is currently available takes a statewide perspective, but Figures 10 and 11 below, developed by OEHHA from preliminary Draft CalEnviroScreen 4.0, show the most densely populated regions of the Bay Area in terms of the most prevalent racial group and the highest ten percent scoring census tracts statewide tend to be largely nonwhite and predominantly Black or Latino.

⁴⁹ See OEHHA, 2021. Preliminary Analysis of Race/Ethnicity and Draft CalEnviroScreen 4.0 Scores. February. See also OEHHA, 2021. CalEnviroScreen 4.0 and Race/Ethnicity Analysis. October.



Figure 10 – Highest scoring Draft CalEnviroScreen 4.0 Census Tracts and Most Prevalent Racial Groups, Central Bay Area

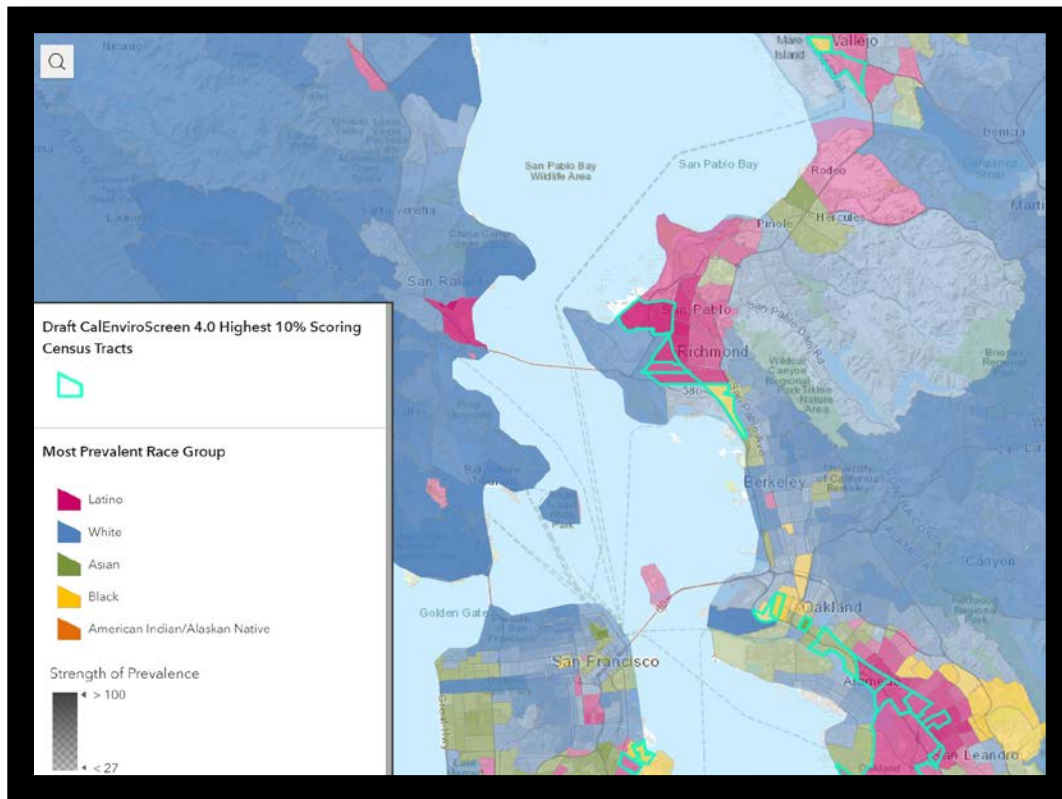


Figure 11 – Highest scoring Draft CalEnviroScreen 4.0 Census Tracts and Most Prevalent Racial Groups, Central Bay Area (Zoomed)

Furthermore, Table 3 below provides a demographic breakdown of the Bay Area by race/ethnicity in the highest-scoring census tracts in Final CalEnviroScreen 4.0.

Table 3: Demographics Comparison, Bay Area⁵⁰

Race/Ethnicity	BAAQMD Jurisdiction	90th + CES Percentile	80th + CES Percentile	70th + CES Percentile
Black	6.2%	25.9%	18.7%	12.6%
Asian	25.5%	12.5%	18.0%	19.4%
American Indian/Alaska Native	0.2%	0.3%	0.3%	0.4%
Latino	22.6%	47.1%	41.7%	41.4%
Pacific Islander	0.5%	0.6%	1.1%	0.7%
White	40.4%	10.4%	16.1%	21.4%
Other	4.5%	3.2%	4.1%	4.1%
TOTAL POPULATION	7,521,536	97,923	230,959	464,323

IV. PROPOSED AMENDMENTS

The purpose of the Proposed Amendments is to reduce exposure to toxic air contaminants from new and modified sources of air pollution in communities that are overburdened by pollution or face health vulnerabilities at the community level that could contribute to residents being more susceptible to the detrimental health effects from air pollution. Staff utilized data from CalEnviroScreen 4.0 to identify census tracts in the Bay Area where more stringent cancer risk limits and enhanced notifications could be justified based on a cumulative impacts analysis. Additionally, staff intends to update the air toxic New Source Review rule (Rule 2-5) to ensure it reflects the latest advances in the science of air pollution health risk assessments.

The proposed amendments to Rule 2-1: General Requirements and Rule 2-5: Toxic New Source Review will require more health protective risk requirements due to cumulative impacts analyses completed using CalEnviroScreen 4.0 and will require enhanced notification in high-scoring CalEnviroScreen 4.0 communities.

A. Proposed Amendments to Rule 2-1: General Requirements

Proposed changes to Rule 2-1: General Requirements work in tandem with the proposed changes to Rule 2-5: New Source Review of Toxic Air Contaminants. Rule 2-1 provides the framework for and overarching requirements of the Air District’s permitting regulation, whereas other rules within the regulation (such as Rule 2-5) focus on specific elements of the permitting process. For example, Rule 2-5 references the term Overburdened Community that is defined in the Proposed Amendments to Rule 2-1.

⁵⁰ See OEHHA, 2021. CalEnviroScreen 4.0 Results.

Also, community stakeholders have called on the Air District to increase the transparency of the permitting process, particularly with respect to permits for projects in communities that experience relatively high levels of pollution or where residents face relatively high health vulnerabilities that may make them more susceptible to the detrimental effects of air pollution. The Proposed Amendments to Rule 2-1 to include a new notification requirement for projects that are proposed to be located in communities that are overburdened by environmental or health burdens. Although the proposed changes to the notification requirements will not increase the stringency of emissions limitations on their own, they are intended to provide greater transparency to the public.

The proposed changes to Rule 2-1 and Rule 2-5 will require additional staff processing time to analyze projects and abatement systems, refine health risk assessments, and respond to public comments. Therefore, staff is also proposing to extend the action times for permit applications.

1. Purpose

The purpose of the proposed amendments to Rule 2-1 is to define what constitutes an overburdened community and provide more information to the public on active permit applications in communities that face environmental and health burdens. The Air District would provide more awareness of permit applications and the proposed projects by making information available by mailing information to residents and posting notifications on the Air District website. Additionally, this change will include a written public comment period, which will enable members of the public to provide additional information for the Air District to consider in evaluating permit applications. The Air District APCO will be required to reply to public comments received on projects subject to the amended provision in Rule 2-1.

The purpose of the proposed amendments to the permit application review times is to establish appropriate review time periods that are commensurate with the level of staff work expected for high-quality evaluations of proposed projects. Amending these review times will enable industry to better plan for the necessary permit application processing time. The proposed two-tiered approach (90 days for certain routine applications and 180 days for all other applications) will enable the Air District to improve allocation of staff resources and provide more assurance that permit applications will be completed within the allotted action times.

2. Applicability

Proposed amendments to Rule 2-1 that pertain to the new notification requirement for projects that require health risk assessments and are in areas that have high CalEnviroScreen scores will be limited to a relatively small number of applications per year compared to the overall volume of applications that the Air District receives. However, to account for the proposed changes to Rule 2-5, the proposed changes to the notification procedures, and increasing constraints on staff due to implementation of multiple new programs over the recent past, staff proposes to increase the amount of time by which the Air District must notify the permit applicant of an approval, approval with conditions, or denial of the application. This proposed change would apply to all permit applications. It is explained in the “Administrative Requirements” section on the proposed amendments to Rule 2-1 below.

3. Exemptions

Rule 2-1, Section 2-1-114 describes the permit exemption criteria for combustion equipment. The equipment is not exempt from permit requirements if emissions exceed any of the thresholds or other criteria in Rule 2-1, Sections 2-1-316, 317, 318, or 319. A health risk assessment is

necessary to verify permit exemption applicability under Section 2-1-316 if toxic compound emissions exceed a Rule 2-5, Table 2-5-1 trigger level. The diesel particulate emissions from small (less than 50 brake horsepower) diesel-fired internal combustion engines may exceed a Table 2-5-1 trigger level, even for an emergency back-up engine with limited operating time. In 2016, the Air District added Section 2-5-113 to Rule 2-5, which exempted these small engines from the requirement to conduct a health risk assessment in order to verify that the small engine qualifies for a permit exemption. Staff determined that this permit exemption criteria is more appropriately stated in Rule 2-1, Section 2-1-114 rather than Rule 2-5, Section 2-5-113. Therefore, staff is explaining in Rule 2-1, Section 2-1-114 that sources described by Section 2-1-114.2.1 are not subject to Rule 2-1, Section 2-1-316, and staff is proposing to delete Regulation 2-5, Section 2-5-113. Furthermore, Rule 2-1, Section 2-1-114 will be amended to clarify that sources described by Sections 2-1-114.1.2 and 114.2.3 are not subject to Section 2-1-316. As with small engines, small natural gas fired boilers and heaters (Section 114.1.2) and portable engines that are on site less than 72 hours (Section 2-1-114.2.3) may result in toxic emissions that exceed a Rule 2-5, Table 2-5-1 trigger level, but these small boilers, heaters and temporary portable engines are not expected to present any significant health risk. Therefore, these sources will not need to undergo a health risk assessment and will not be subject to Rule 2-1, Section 2-1-316.

These proposed amendments to Rule 2-1, Section 2-1-114 are intended to clarify and streamline the existing exemptions between Rule 2-1 and Rule 2-5. The proposed amendments do not expand existing permitting exemptions for these small engines, small natural gas fired boilers and heaters, and portable engines that are on site less than 72 hours

4. Definitions

Section 2-1-243 – Overburdened Community: The Proposed Amendments will add a definition for Overburdened Community. The Air District's Permitting Regulation does not currently differentiate permitting requirements based on where in the Bay Area an applicant wishes to install or modify equipment or operations. The California Health and Safety Code recognizes that more stringent regulations are warranted in some areas. The proposed changes to the Permitting Regulation will require proposed projects in areas that experience relatively high environmental or health burdens to meet more stringent health risk requirements. As discussed in Section VI of this Final Staff Report, staff analyzed the number and types of potentially affected facilities in Overburdened Communities and prepared maps that show their locations (see Figures 5, 6, 7, 8, and 9 above and Appendix D). These changes, along with those described in detail in this Final Staff Report and available for review in the proposed regulatory text in Appendices A and B, will make the Permitting Regulation more health protective throughout the Bay Area.

The definition refers to CalEnviroScreen 4.0 scoring percentiles to determine whether an area constitutes an Overburdened Community. It also includes a 1,000-foot buffer zone around any census tract identified by the CalEnviroScreen criteria to ensure that projects that may influence the air quality in overburdened communities would also be subject to a more stringent risk limit.⁵¹ The permit applications for projects that would be located within the high-scoring census tracts or in the 1,000-foot area from the census tract boundary would be required to comply with the more stringent cancer risk requirement in proposed amended Rule 2-5, Section 2-5-302.

⁵¹ See CAPCOA, 2009. Health Risk Assessments for Proposed Land Use Projects. July. Page 9. See also CARB, 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April.

Staff evaluated health risk assessments for several common project types to identify the distance the point of maximum impact (PMI) is from the source and to determine the percent reduction in concentration from this point of maximum impact to a 1,000-foot distance from a source. For the project types evaluated (diesel engines, gas stations, a concrete batch plant, and a landfill flare), the points of maximum impact were mainly located 300 feet or less from the source. At 1,000 feet from the source, the maximum concentration decreased by at least 56 percent, although most example projects showed more than an 80 percent reduction, and the average reduction was 85 percent. Table 4 below provides a description of the permitted source type, location, distance from the permitted source to the point of maximum impact, and the impact reduction 1,000 feet downwind of the permitted source.

Thus, if a project were located just outside of the buffer zone (where ten in one million is the applicable limit), the point of maximum impact could be somewhere in the buffer zone, but by the time the pollutants get to the Overburdened Community (more than 1,000 feet from the source), the risk would be reduced by at least 56 percent to 4.4 in one million within the Overburdened Community. This analysis demonstrates that a 1,000-foot buffer zone is necessary and is adequately protective of the overburdened community.

Table 4: Point of Maximum Impact Locations in the Bay Area

Permitted Source(s)	Location	Distance from Permitted Source(s) to PMI* (feet)	Impact Reduction 1,000 Feet Downwind of Permitted Source(s)
Data Center (diesel engines) 1	Santa Clara	300	75%
Data Center (diesel engines) 2	San Jose	300	65%
Data Center (diesel engines) 3	San Jose	300	56%
Prime Diesel Engine	San Jose	220	84%
Standby Diesel Engine 1	San Carlos	180	83%
Standby Diesel Engine 2	San Jose	400**	81%
Standby Diesel Engine 3	Oakley	40**	98%
Standby Diesel Engine 4	Daly City	55	97%
Standby Diesel Engine 5	Pleasanton	170	95%
Standby Diesel Engine 6	Pleasanton	100**	77%
Standby Diesel Engine 7	St. Helena	250	76%
Standby Diesel Engine 8	Orinda	350	77%
Standby Diesel Engine 9	San Francisco	80	85%
Standby Diesel Engine 10	San Francisco	100	77%
Gasoline Dispensing Facility 1	Daly City	60**	96%
Gasoline Dispensing Facility 2	American Canyon	120**	93%
Gasoline Dispensing Facility 3	Novato	100**	93%
Gasoline Dispensing Facility 4	Brentwood	100**	94%
Gasoline Dispensing Facility 5	Petaluma	100**	94%

Permitted Source(s)	Location	Distance from Permitted Source(s) to PMI* (feet)	Impact Reduction 1,000 Feet Downwind of Permitted Source(s)
Gasoline Dispensing Facility 6	Oakland	60**	98%
Concrete Batch Plant	Windsor	200**	80%
Landfill Flare	Pittsburg	160	85%

*PMI = Point of Maximum Impact

**Distance to property boundary

5. Standards

The Proposed Amendments do not include any changes to the Standards section of Rule 2-1.

6. Administrative Requirements

Section 2-1-403 – Permit Conditions: The Air District is making an editorial correction to this section to replace the pronoun “he” with “the APCO.”

Section 2-1-408 – Final Action on Applications: This section identifies the Air District’s standard permit application review period, which is the period of time beginning on the date an application is deemed complete until the date the Air District should make the final decision on the application and notify the applicant whether the permit application will be approved, approved with conditions, or denied. This section also identifies the types of applications that are not subject to this standard review period, which include applications subject to public noticing requirements or to the provisions of Rule 2-6: Major Facility Review.

This current action time (35 working days, which is 49 calendar days) for routine applications was established in 1995 when most routine permit applications were not subject to health risk assessments, state airborne toxic control measures (ATCMs), or federal regulations. In 2001, diesel particulate matter was declared a toxic air contaminant and a permit exemption for emergency engines was eliminated. These 2001 regulatory changes had a profound impact on both the number of applications that the Air District processes as well as the time required to process these applications, because most applications for diesel-fired emergency engines require a health risk assessment. In addition, after 1995, California adopted several air toxic control measures and the U.S. Environmental Protection Agency adopted many new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAPs) for many common source categories that increased the complexity of the evaluation required for these routine source categories. As a result of these earlier regulatory changes, the more complex health risk assessment procedures adopted with Rule 2-5 in 2016, and the current proposed revisions to Rule 2-5 that are expected to require more refinement of health risk assessments and additional engineering evaluation time, the Air District has determined that the current application review time (49 days) is not feasible for current routine permit applications. In addition, the current regulation does not provide a clear application review period for non-routine permit applications that require public noticing or that are located at major facilities or synthetic minor facilities that are subject to Rule 2-6: Major Facility Review requirements.

The Proposed Amendments will resolve these issues by establishing new review time periods for permit applications that are reasonable, realistic, and consistent with review time periods for other

air districts. The proposal includes two potential action periods: 90 days, which will apply to most routine permit applications, and 180 days for more complex or non-routine permit applications.

For most applications, the proposed review time will increase by 41 days (from 49 days to 90 days). As is currently the case, this time period will apply to applications that are not subject to public noticing, that are not located at a site that is subject to Rule 2-6 (Major Facility Review), and that are exempt from CEQA. As discussed above, this increase in review time is necessary due to past regulatory changes that have resulted in more complex review procedures including the need to conduct health risk assessments for many routine applications. As shown in Table 5 below, several other districts have 90-day review periods for small to medium sources with restrictions on the types of applications that trigger public noticing, Federal Clean Air Act Title V requirements, and CEQA. One notable difference is that staff is proposing to include applications subject to health risk assessments under this 90-day period, while Ventura and Santa Barbara exclude applications that require air toxic New Source Review and health risk assessments from the 90-day review period and allow the longer 180-day review period for such applications.

For all other applications, the proposed review period will be 180 days. As noted above, there is no clear review period now for applications subject to public noticing or Rule 2-6. Under this proposal, applications at sites that are not subject to Rule 2-6 or CEQA review but that are subject to public noticing requirements will have a total review period of 180 days. This 180-day period will include approximately 90 days to reach a preliminary decision and another 90 days to complete the final decision. This latter 90-day period is necessary to prepare the required notices, provide a minimum of 30 days for public comment, review and respond to comments (which may take longer for applications in overburdened communities), and prepare the final decision materials. Applications for projects located at a facility that is required to have either a Title V permit or Synthetic Minor Operating Permit often involve more complex review due to the level of existing emissions and high public interest in these facilities. For example, such projects often trigger Best Available Control Technology (BACT) and offset requirements, include multiple related applications that must be included in the health risk assessment, have applicable New Source Performance Standard and National Emission Standards for Hazardous Air Pollutants requirements, require more detailed permit conditions to assure compliance, and require filing of a CEQA Notice of Exemption (NOE) or Notice of Determination (NOD). Therefore, a 180-day review period is reasonable for permit applications located at facilities that are subject to Rule 2-6. As shown in Table 5 below, a 180-day review period is consistent with the review period for similar types of applications at other air districts.

Table 5: Comparison of Application Review Periods in California Air Districts

Agency	Agency Regulation	Completeness Review Period (days)	Application Review Period (days) ⁽¹⁾	Notes
<i>Bay Area (current)⁽²⁾</i>	2-1-408, 432	21	49	Excludes public noticing, Title V, and CEQA
<i>Bay Area (proposed)</i>	2-1-408, 432	30	90 180	Excludes public noticing, Title V, and CEQA all other applications
<i>South Coast</i>	Rule 210 (b), (d)	30 ⁽³⁾	60 180	Excludes Title V and CEQA ⁽⁴⁾ Excludes CEQA
<i>San Joaquin</i>	Rule 2201, Section 5.1, 5.3	30	180	Excludes CEQA
<i>San Diego</i>	Rule 18 (a), (b)	30	90 180	If possible

Agency	Agency Regulation	Completeness Review Period (days)	Application Review Period (days) ⁽¹⁾	Notes
<i>Ventura</i>	Rule 13 (B), (C)	30	90 180	Excludes toxic NSR, public noticing, NSPS, NESHAP, Title V, and CEQA ⁽⁶⁾
<i>Santa Barbara</i>	Rule 208 D2, E	30	90 180	Excludes toxic NSR, public noticing, NSPS, NESHAP, Title V, and CEQA ⁽⁶⁾
<i>Monterey Bay</i>	Rule 207, Part 6.2, 6.11	30	180	

- (1) The Application Review Period is the number of days from the date the application is declared complete until the APCO issues a decision, usually to approve or deny an Authority to Construct.
- (2) The Bay Area's time periods are currently expressed as working days (15 working days for completeness review and 35 working days for application review). These periods were converted to calendar days in this table for easier comparison.
- (3) At South Coast, if insufficient information to deem the application complete has not been submitted within 120 days of filing, the application is denied, unless the APCO grants an extension.
- (4) This 60-day period applies if South Coast is the Lead Agency for the project, and it excludes the time required for South Coast to approve a Negative Declaration or a Determination of Exemption from CEQA.
- (5) Ventura and Santa Barbara also have 30-day review periods for applications with additional restrictions. These restrictions are similar to the Bay Area's accelerated permit requirements in 2-1-302.2.

In addition to revisions to the action time periods for permit applications, staff is proposing to move a statement about substantial changes to applications from Rule 2-1, Section 2-1-408.1 to Section 2-1-408.5. In addition, staff is proposing to revise the consequences of substantive changes to an application from resetting of the application completeness date and applicable time periods to a requirement to submit a new application. This latter requirement is intended to support Air District permit streamlining initiatives.

Section 2-1-408.2 now describes alternative time periods for applications that are not exempt from CEQA requirements. Staff is also proposing to extend the time period required to take action after CEQA documents have been certified from 30 days to 60 days, because significant comments and required mitigation measures can impact the engineering review and require more than 30 days to complete all the necessary changes to a draft permit.

Section 2-1-412 – Public Notice, Schools & Overburdened Communities: The Air District publishes information on permit applications on its website and provides public notifications and opportunities for public comment on permit applications that meet certain criteria, such as permit applications for projects that will result in an increase in toxic air contaminants near K-12 schools. Rule 2-1: General Requirements states that the Air District must notify the parents and guardians of children enrolled in a school or schools near to where a proposed source or group of sources will be located, as well as each address near the source.⁵² The Air District is required to review and consider all comments received during the application period. The permit applicant is required

⁵² See Section 2-1-412 and Regulation 3, Section 318 for specific requirements regarding the schools notification process.

to cover the cost of the public notice process. Since 2009, the Air District has carried out an annual average of 72 public notifications per year for projects triggering the schools notification requirement under Section 2-1-412 at a cost of over \$160,000 per year in total.

Proposed amendments to Rule 2-1 include revising Section 2-1-412 to add a new notification requirement for proposed projects that would be located in Overburdened Communities, defined under Rule 2-1, Section 2-1-243. (See Figures 5, 6, 7, 8 and 9 above and Appendix D.) The Proposed Amendments will require the same type of notification that is currently required for projects that will result in an increase in toxic air contaminant emissions that are proposed to be located near K-12 schools—but the applicability would extend to all projects within Overburdened Communities for which a health risk assessment is prepared. Under the Proposed Amendments, projects that will require a Health Risk Assessment will be required to distribute the notice to surrounding addresses located within 1,000 feet of the proposed source, if the source will be located within an Overburdened Community as defined in Proposed Amendments Section 2-1-243. As with existing Public Noticing requirements, Air District staff will administer the Public Noticing program, including drafting notices, distribution lists and distribution of the Public Notices in accordance to proposed Rule 2-1, Section 2-1-243.

In Section 2-1-412.2, the requirement to distribute a notice 30 days prior to the date that final action is to be taken on that application is being removed because it is confusing and is not necessary given the clarifications and additional time periods added to Section 2-1-408.

Section 2-1-432 – Determination of Complete Application: This section identifies the time periods allowed for the Air District to review an initial application submittal and determine all information and fees that are necessary before the application may be deemed complete. Currently, these completeness review periods are 15 working days (21 calendar day) for most applications and 30 days for applications that involve new major facilities, major modifications, or other types of large projects subject to Regulations 2-2-404 or 2-10-402. Staff is proposing to extend the completeness review periods by 9 days (from 21 days to 30 days) for most applications and by 30 days (from 30 days to 60 days) for applications involving new major facilities, major modifications, and other very large projects. As shown in Table 5 above, 30 days is a standard completeness review period for other districts. Due to the substantial requirements for new major facilities and major modifications, a 60-day completeness review period is warranted.

7. Monitoring and Records

The Proposed Amendments do not include any changes to the Monitoring and Records section of Rule 2-1.

8. Manual of Procedures

The Proposed Amendments do not include any changes to the Manual of Procedures section of Rule 2-1.

B. Proposed Amendments to Rule 2-5: Toxic New Source Review of Toxic Air Contaminants

As mentioned previously in this Final Staff Report, the purpose of Rule 2-5: New Source Review of Toxic Air Contaminants is to provide for the review of new and modified sources of toxic air contaminant emissions to evaluate potential public exposure and health risk, mitigate potentially significant health risks resulting from these exposures, and provide net health risk benefits by

improving the level of control when existing sources are modified or replaced. Rule 2-5's current requirements (including cancer risk limits) are the same throughout the Bay Area, regardless of a proposed project's location.

The Proposed Amendments will make the cancer risk limit more stringent in the census tracts that score highly on CalEnviroScreen and the buffer zones surrounding them. Instead of having one standard that applies throughout the Bay Area, Rule 2-5 will have two standards for cancer risk limits: one that applies in areas that do not score highly on CalEnviroScreen, and another, more stringent standard, for areas the Air District determines to be Overburdened Communities based on quantified cumulative impacts.

1. Purpose

The Proposed Amendments are intended to reduce exposure to carcinogenic toxic air contaminant emissions by increasing the level of stringency for new or modified equipment subject to Air Toxics New Source Review. The Proposed Amendments also include updates to the Air District's Health Risk Assessment Guidelines, which describe the procedures for assessing health risk from sources that emit air toxics. The Proposed Amendments include updates to the list of toxic air contaminants and trigger levels that the Air District uses to determine whether a site-specific health risk assessment is necessary. Finally, the Proposed Amendments include revisions to exemptions, definitions, and procedures that are necessary to clarify applicability and enable efficient use of staff resources.

2. Applicability

The Proposed Amendments to Rule 2-5 will apply to sources that are subject to the Air Toxics New Source Review requirements, although not all proposed changes will apply to every future proposed project. Projects located in areas that receive higher CalEnviroScreen scores will be subject to a more stringent cancer risk limit, but projects located outside of the high-scoring census tracts and surrounding buffer zones would be subject to the existing cancer risk limit of ten in one million. Updates to the Air District's Health Risk Assessment Guidelines that specifically pertain to gasoline dispensing facilities will only apply to those facilities. Lastly, updates to the Toxic Air Contaminant Trigger Level table (Table 2-5-1) will apply to sources emitting those chemicals that have been added or updated.

3. Exemptions

Section 2-5-113 – Exemption, Small Internal Combustion Engines and Gas Turbines: As discussed above for Regulation 2-1-114, this exemption from a health risk assessment requirement to validate a permit exemption is being moved to Regulation 2-1-114, and Section 2-5-113 will be deleted.

4. Definitions

Section 2-5-216 – Project: The Proposed Amendments will modify the definition of Project to include new and modified sources of toxic air contaminants at a facility that have been permitted within the five-year period immediately preceding the date a complete application is received and any project at a facility for which the Authority to Construct has been issued and has not expired. This revision is intended to ensure that all potentially related projects are included in the health risk assessment to further prevent circumvention of the requirements of Rule 2-5. This revision

will also ensure that the cumulative impacts of multiple projects at a facility are fully considered in the health risk assessment.

Section 2-5-227 – Priority Community: Section 2-5-227 is proposed to be deleted because the definition is no longer necessary. The proposed definition for Overburdened Community is located in Rule 2-1, Section 2-1-243.

Section 2-5-230 – Essential Public Service: The Proposed Amendments include a new definition for essential public service, which is defined to mean: a police or firefighting facility, a hospital or other medical emergency facility, or a building designated as an emergency shelter location. The language in this proposed definition is based upon Air District and South Coast Air District rules that exempt some operations from specific standards based upon their categorization as essential public services.⁵³ Essential public services will not be subject to the more stringent limit in areas that score highly on CalEnviroScreen; they will instead be subject to the existing project cancer risk limit of ten in one million. In reviewing recent permit applications since the last time Rule 2-5 was amended, this limited exemption probably would not be used often.

Air District staff understands there may be many different potentially affected operations and industries that will need to comply with a more stringent cancer risk limit when installing new equipment or modifying existing equipment in Overburdened Communities. The lookback analysis, which included a review of permit applications over a recent four-year period for projects in Overburdened Communities with a cancer risk greater than six in one million, indicates that most projects would not fit neatly into any conventionally used definition for essential services. Staff prepared the lookback analysis to understand the number and types of projects that might have been impacted by the proposed cancer risk limit of six in one million in Overburdened Communities had the limit been in place during the review period. The findings of the lookback analysis are discussed in section VI of this Final Staff Report. To ensure regulatory clarity, staff proposes to keep the Essential Public Service definition in Rule 2-5 narrow and applicable only to project types that clearly fit the description of an essential public service. This definition of Essential Public Service only impacts the applicable cancer risk for the project and will not affect requirements in other rules such as Regulation 9, Rule 8.

5. Standards

Section 2-5-302 – Project Risk Requirement: The Proposed Amendments to Rule 2-5 modify the text of the project risk requirement to clarify that there are two project risk requirement standards. These two standards apply based on the geographic location of a proposed project; the more stringent cancer risk limit applies in areas that score highly (70th percentile) on CalEnviroScreen and the surrounding 1,000-foot buffer zones, while the existing cancer risk limit applies in areas outside of high-scoring CalEnviroScreen locations. (See Figures 5, 6, 7, 8 and 9 above and Appendix D.) Proposed amendments to Section 2-5-302 would clarify that in Overburdened Communities, as they are defined in proposed Rule 2-1, Section 2-1-243, the cancer risk limit is six in one million. In areas that are not located within Overburdened Communities, the current

⁵³ See, e.g., Bay Area Air Quality Management District Rule 9-8: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines, Section 331, which allows additional hours of operation for reliability-related testing for essential public services, which are defined in Section 9-8-233 and include similar facility types and operations as those included in proposed amended Rule 2-5. See also South Coast Air Quality Management District Regulation XII: New Source Review, Rule 1304: Exemptions and Rule 1309.1: Emission Reduction Credits and Short-Term Credits, Priority Reserve, which are permitting rules governing offsets and emission reduction credits, respectively, and which enable additional flexibility for essential public services as defined in Rule 1302: Definitions, Section (m).

project cancer risk limit of ten-in-one million would remain unchanged. Also, the project chronic and acute hazard index limits would remain unchanged from the current version of Section 2-5-302.

Staff proposes the cancer risk limit of six in one million in high-scoring CalEnviroScreen communities based upon an understanding of the relative contribution of the proposed project to the overall regionwide-average cancer risk. The six in one million cancer risk limit means that a proposed project in an Overburdened Community would need to have a cancer risk that is less than one percent of the overall background cancer risk from carcinogenic toxic air contaminant emissions in the Bay Area. Staff also considered the number of applications per year, as the intention of the rule amendment is to increase the health protectiveness of the Permitting Regulation without unduly restricting new operations in the Bay Area. Staff conducted a lookback analysis and reviewed health risk assessments prepared for permit applications over a four-year window between February 2017 and February 2021.⁵⁴ The lookback analysis is discussed in Section VI of this Final Staff Report.

A breakdown of the number of health risk assessments per year prepared for project applications and the corresponding cancer risk is shown in Figure 12 below, which shows that the number of projects tends to decrease with higher project cancer risk. The analysis showed that about one third of health risk assessments prepared over this period would exceed the cancer risk limit of six in one million. Section VI of this Final Staff Report provides additional information on the lookback analysis.

Staff also analyzed two more stringent cancer risk limits in overburdened communities—a risk limit of three in one million, and a risk limit of five in one million. After analyzing potential project impacts that would be associated with these risk limits, staff recommends the six in one million cancer risk limit for the reasons described above.

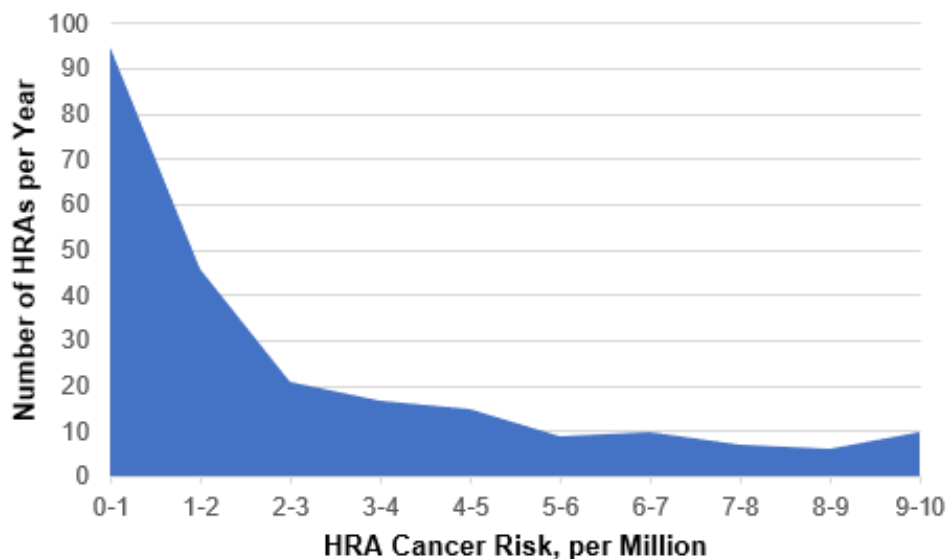


Figure 12: Number of Projects per Year, Projects with Health Risk Assessments between 2017 and 2021

⁵⁴ The Board of Directors adopted amendments to Rule 2-5 in December 2016. Amendments included updates to health risk assessment procedures, which enable comparison of project risk levels between projects within the lookback window.

Section 2-5-303 – Net Project Risk Requirement: Section 2-5-303 was added to Rule 2-5 in 2016 to allow consideration of contemporaneous risk reductions for a small number of projects that involve pre-1987 modified sources.⁵⁵ To be subject to Section 2-5-303, projects need to meet the applicability and procedural criteria in Section 2-5-406. To date, no permit applicants have requested to comply with Section 2-5-303.

As with Section 2-5-302 above, the Proposed Amendments to Rule 2-5 will modify the text of the net project risk requirement to clarify that there are two net project risk requirement standards.

6. Administrative Requirements

Section 2-5-404 – Designation of Priority Community: The Proposed Amendments delete Section 2-5-404. The procedures for identifying overburdened communities are proposed to be moved to Rule 2-1, Section 2-1-433 because Rule 2-1 will contain the public notification procedures for applications located in overburdened communities and is a more general requirement that applies to all permit activities.

Section 2-5-405 – Cumulative Impact Summary for Priority Communities: The Proposed Amendments will also delete Section 2-5-405 because the procedures it describes are no longer necessary. The Air District will address cumulative impacts through other efforts, such as the Community Health Protection Program.

7. Monitoring and Records

The Proposed Amendments do not include any changes to the Monitoring and Records section of Rule 2-5.

8. Manual of Procedures

Section 2-5-602 – Baseline Emission Calculation Procedures: The proposed changes to Section 602.2.2 will clarify that baseline throughput is the lowest of the actual, authorized, or functional capacity of the source. Functional capacity describes the procedures for calculating baseline throughput when a source's throughput rate is limited by a bottleneck at a related source. Functional capacity is described in the definition of a modified source but was not clearly included in the baseline emission calculation procedure. These proposed changes are intended to ensure consistency with the Section 2-5-214.3 definition of a modified source of toxic air contaminants for a source that does not have conditions limiting daily or annual toxic emissions.

Section 2-5-603 – Health Risk Assessment Procedures: The Proposed Amendments will not change the text of Section 2-5-603: Health Risk Assessment Procedures, however, they will revise the Air District's Health Risk Assessment Guidelines, which are included in Appendix C. Updates to the Air District's Health Risk Assessment Guidelines will revise the health risk assessment procedure for gas stations so that it is consistent with the health risk assessment procedures for all other source types subject to Air Toxics New Source Review.

⁵⁵ See BAAQMD, 2016. Staff Report: Proposed Amendments to Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants. September. Page 24.

Gas stations account for more than 20 percent of Air District-permitted facilities.⁵⁶ Bay Area-wide, gas stations and other gasoline dispensing facilities (collectively referred to in this Final Staff Report as gas stations) make up anywhere from five to 15 percent of permitting health risk screening analyses.⁵⁷ Gas station emissions include toxic air contaminants such as benzene that can pose health risks to nearby residents and workers. Under Rule 2-5, new gas stations and existing gas stations that propose modifications are required to apply for a permit from the Air District. During the review and evaluation of the permit application, the Air District performs a health risk assessment, which models cancer and non-cancer health risks based on various factors including the proposed project location, the proximity of nearby residents and workers, weather patterns, terrain, and emissions data.

The Proposed Amendments will revise the Air District's Health Risk Assessment Guidelines by updating the health risk assessment procedures for gasoline dispensing facilities to be consistent with health risk assessments that are currently used for other permitted sources and facilities. In 2015, OEHHA approved and adopted updated Health Risk Assessment Guidelines (2015 Guidelines) that are referenced in the Air District's Health Risk Assessment Guidelines. Under the Proposed Amendments, the Air District will update and incorporate the 2015 Guidelines to its evaluation of new and modified gasoline dispensing facility projects. The 2015 Guidelines adjusted multiple factors used to prepare health risk assessments, including breathing rate assumptions, exposure frequency and exposure duration, that in combination will result in higher calculated risks. Fully incorporating all the 2015 OEHHA health risk calculation procedures will result in cancer risk estimates for residents that are about 40 percent higher than the current procedures based on the same level of emissions and will add a new limit on acute impacts. While these changes would not prevent gas stations from renewing permits, they may prevent some existing gas stations from being able to increase throughput or reduce the amount of gasoline throughput that might otherwise be allowed for a new station. The inclusion of acute health impacts in gas station risk assessment procedures may limit the number of dispensers or the maximum hourly pumping rate for new stations.

Furthermore, Air District staff continues to monitor the California Air Resources Board and the California Air Pollution Control Officer's Association as the two entities work to update standardized technical guidance for evaluating health risk from gas station facilities.⁵⁸ Although there is no publicly available information at this time on the next steps in these processes, Air District staff is following the update process closely.

Table 2-5-1 Toxic Air Contaminant Trigger Levels: The Proposed Amendments will update Table 2-5-1 with new toxic air contaminants, new and updated health effects values, and new and updated trigger levels. New toxic air contaminants include: carbonyl sulfide, cobalt, 1,6-hexamethylene diisocyanate, and tertiary butyl acetate. Also, zinc chromate will be added as a hexavalent chromium compound. Chronic inhalation reference exposure levels (RELs) or the associated chronic trigger level will be updated for: arsine, mercuric chloride, methylene diphenyl isocyanate, selenium sulfide, toluene, and toluene diisocyanates. Updated chronic trigger levels for methylene diphenyl isocyanate, toluene, and toluene diisocyanates are based on updated chronic RELs developed by OEHHA. OEHHA also developed a new chronic REL for ethylene glycol butyl ether (EGBE). Therefore, this new chronic trigger level will be added to Table 2-5-1.

⁵⁶ BAAQMD, 2021. 2020 Annual Report. Page 13.

⁵⁷ BAAQMD, 2017-2021 Annual Reports. Gas station health risk analyses vary year to year.

⁵⁸ CARB, 2021. Gasoline Service Station Industrywide Risk Assessment Guidance. Accessed September 2021.

Chronic trigger levels for arsine, mercuric chloride, and selenium sulfide will be updated based on updated molecular weight adjustment factors provided by OEHHA.

In addition, staff is proposing to revise the procedures by which acute trigger levels are determined. Currently, the acute trigger level is determined based on a target acute hazard index of 1.0. The proposed acute trigger levels will instead be based on a target acute hazard index of 0.2, which is consistent with the significant source thresholds in Rule 11-18. This change will impact all compounds in Table 2-5-1 that have an acute reference exposure level. Also, OEHHA revised acute inhalation RELs for ethylene glycol butyl ether (EGBE) and toluene. The updated acute trigger levels for EGBE and toluene will reflect their revised acute RELs. Previously, the acute trigger level for nickel was inadvertently calculated based on its chronic REL. The proposed acute trigger level for nickel reflects the corrected use of the acute REL in the trigger level calculation.

The Air District uses toxic air contaminant emission rate trigger levels to determine the need for health risk assessments for projects involving new and modified sources. The toxic air contaminant trigger levels are considered reasonable de minimis emission rates (acute and chronic) for use at a project-level. Projects with emissions below the toxic air contaminant trigger levels are unlikely to cause, or contribute significantly to, adverse health risks. These toxic air contaminant trigger levels are also used: (1) to establish permit requirements for certain sources that may otherwise qualify for permit exemptions, (2) as part of the applicability of the accelerated permit program, and (3) in determining permit fees.

The proposed toxic air contaminant trigger levels are calculated using: (1) target health risk levels that are considered de minimis for project-level risks; (2) OEHHA health effect values; (3) generally conservative modeling procedures that establish the extent to which a toxic air contaminant is transported and dispersed in the atmosphere after it is emitted from the source; and (4) health-protective assumptions regarding the extent of an individual's exposure to an emitted toxic air contaminant. The current toxic air contaminant trigger levels and the OEHHA health effects data on which these trigger levels were based are identified in Table 2-5-1 Toxic Air Contaminant Trigger Levels in Rule 2-5. Table 2-5-1 was last updated in March 2016.

Since 2016, OEHHA has updated or added non-cancer health effects values for the following four toxic air contaminants:

- ethylene glycol butyl ether (EGBE);
- methylene diphenyl diisocyanate;
- toluene; and
- toluene diisocyanates

In addition, OEHHA has developed health effects values for the following four new toxic air contaminants:

- carbonyl sulfide;
- cobalt;
- 1,6-hexamethylene diisocyanate (HDI) (monomer); and
- tertiary butyl acetate (TBAc)

Carbonyl sulfide is a chemical intermediate and a byproduct of oil refining. Inhalation of carbonyl sulfide results in adverse health effects mainly affecting the central nervous system.

OEHHA has identified cobalt as a carcinogen via inhalation exposure. Most cobalt is used industrially in the form of cobalt metal powder as an alloying component and in the preparation of cobalt salts. Cobalt salts and oxides are used as pigments in the glass and ceramics industries, as catalysts in the oil and chemical industries, as paint and printing ink driers, and as trace metal additives in agriculture and medicine. In the Bay Area, the petroleum industry is one of the main stationary sources that use and/or emit cobalt.

HDI-based polyisocyanates are primarily used as hardeners for automobile and airplane polyurethane spray paints, including primers, sealers, and clear coats. HDI polyisocyanates may also be used in some adhesives. Exposure to HDI monomer vapor and HDI-based polyisocyanate aerosols has been shown to cause adverse effects on the respiratory system.

OEHHA has identified tertiary butyl acetate (TBAC) as a carcinogen via inhalation, dermal and oral exposure. TBAC is commonly used as a solvent in a variety of products including industrial coatings, inks, adhesives, industrial cleaners and degreasers.

The Air District is proposing to incorporate OEHHA's new and updated health effects values into the trigger level calculation procedures. The changes to health effect values will impact acute and chronic trigger levels for eight toxic air contaminants. In addition, acute trigger levels for all toxic air contaminants will be lowered by 80 percent based on the proposal to lower the target health risk level for non-cancer acute hazard index from 1.0 to 0.2. Appendix C contains a detailed description of the procedures that the Air District is using to calculate the acute and chronic trigger levels. The revised trigger levels, health effects data, and toxicity weighting factors will be reflected in Table 2-5-1. The proposed revisions to Table 2-5-1 are identified in Appendix B.

Target Health Risk Levels

For the proposed toxic air contaminant acute trigger levels, the Air District is proposing to lower the target health risk level for non-cancer acute hazard index from 1.0 to 0.2 for all toxic air contaminants; this is an impact equal to 20 percent of the acute reference exposure level. This will lower the acute trigger levels by 80 percent. A target acute hazard index of 0.2 is consistent with the significant risk threshold for facilities, as defined in Regulation 11-18-221.3, and at which a source is required to use best available controls if facility risks exceed Rule 11-18 risk action levels. It is also 20 percent of the project risk limit required under Rule 2-5. For compounds with acute reference exposure levels, the proposed acute trigger levels will generally be 20 percent of the previous value unless the acute reference exposure level was also revised. This revision is necessary for consistency with Rule 11-18 requirements to ensure potentially significant sources of acute health risks are not overlooked in project level health risk assessments.

For the proposed toxic air contaminant chronic trigger levels, the Air District is proposing to maintain the target health risk levels for cancer risk and non-cancer chronic hazard index. For chronic health risk, the Air District uses a cancer risk of one in one million and a non-cancer chronic hazard index of 0.2 as the target health risk levels; these are the risk thresholds at which TBACT is required, as stated in Section 2-5-301.

V. ADDITIONAL REVISIONS CONSIDERED DURING THE RULE DEVELOPMENT PROCESS

In addition to the revisions that will be made by the Proposed Amendments, Air District staff also initially developed three other substantive changes to Rule 2-5 at the public workshop stage. Staff included these draft changes in the workshop draft that was circulated for public review and

comment in July of 2021 and discussed them with interested members of the public at the virtual workshop that was held on August 24, 2021. Staff does not propose action on these three provisions at this time for the reasons discussed below.

A. Draft Amendments to Rule 2-5, Section 2-5-111: Limited Exemption, Emergency Standby Engines

Air District staff sought public feedback during the public workshop stage on a draft amendment that would include toxic air contaminant emissions from emergency operations of emergency standby engines in the permit application health risk evaluation. Staff received comments in numerous forums requesting that the Air District do more to reduce diesel engine emissions. This change would result in a decrease in diesel engine emissions. Air District staff is not proposing action on this provision at this time because staff needs additional time to research how this provision would be structured.

The draft amendments to Rule 2-5 that were circulated for public review in July 2021 proposed to modify Section 2-5-111, which states the requirements for a limited exemption in the rule's applicability to emergency standby engines. Currently, Section 2-5-111 does not apply to toxic air contaminant emissions occurring from emergency operation of standby engines, from initial start-up testing, or from emission testing of emergency standby engines required by the APCO. The draft amendments to Rule 2-5 would modify Section 2-5-111 by proposing to include some number of hours per year of emergency operating time per engine in the health risk assessment rather than exempting all emergency operating time from the health risk assessment.

The draft amendments that were circulated in July did not recommend a number of emergency hours to use for the health risk evaluation. Instead, staff sought feedback on what this number should be. If the Air District considered the health risk from emergency operations in health risk assessments, projected engine health risks would increase due to this change to more accurately account for anticipated emergency use. This proposed change would result in both toxic air contaminant and particulate matter emission reductions, because many more standby engines would be required to install diesel particulate filters to meet either the existing TBACT requirements or the project risk limits in Rule 2-5. It may have also encouraged applicants to explore cleaner back-up power technologies, especially in overburdened communities where the project cancer risk is proposed to be reduced as well.

Staff received multiple comment letters and heard many comments during the public workshop that the Air District should not consider emergency operations during Air Toxics New Source Review. Staff received some suggestions from the public on how the provision could be structured and how to accurately forecast the probable number of emergency hours for an emergency backup engine, but staff will need additional time to collect information before proposing an amendment to Section 2-5-111. In the meantime, there are multiple ongoing efforts at the Air District, including these Proposed Amendments, that will improve the health protectiveness of the rule by requiring increased stringency of the sources that emit toxic air contaminants.

B. New Section 2-5-116: Exemption, Small Gas-Fired Boilers and Similar Combustion Equipment

Staff also introduced draft Section 2-5-116 for public review and comment when the workshop package released in July 2021. Draft Section 2-5-116 would exempt small boilers (less than 10 million British thermal units (MM BTU) per hour capacity if fired on natural gas or other clean fuels or less than 1 MM BTU per hour capacity fired on any gaseous fuels) from the requirement to

undergo a health risk assessment to verify that these small boilers will continue to meet all permit exemption criteria. Staff proposed this change because it does not expect these sources to present any significant health risks, based on modeling experience with these sources, even though toxic air contaminant emissions from these sources may exceed health risk assessment trigger levels. This draft exemption was intended to enable the Air District to focus staff resources on projects that are more likely to have significant health risks.

As discussed in Section IV.A of this Final Staff Report, staff determined these sources, as well as the sources exempted from Rule 2-5 by existing Section 2-5-113, are more appropriately exempted under Regulation 2-1-114.

C. New Section 2-5-231: Acute Receptor

Lastly, staff introduced draft Section 2-5-231 in the July workshop package release as well. Draft Section 2-5-231 would define “acute receptor” to mean “receptors for each offsite location within the modeling domain where an individual person or group of people may reasonably be expected to be exposed to toxic air contaminants for durations as short as one hour.” Staff included this definition in the draft rule language in an attempt clarify the applicability of the acute hazard index limit, under the assumption that it would be useful for gas stations that will be subject to acute limits for the first time. However, staff determined that the addition of this definition in the absence of updating other definitions in Rule 2-5 on receptor types could lead to confusion, which the public comments staff received on the draft rule also suggested. Staff therefore will not propose this new definition in Rule 2-5.

VI. POTENTIAL IMPACTS OF THE PROPOSED AMENDMENTS

This section presents estimates of potential impacts associated with the Proposed Amendments. The Proposed Amendments will update the Air Toxics New Source Review Program via Rule 2-5 and update noticing and processing time requirements in the Permitting General Requirements rule (Rule 2-1). Changes to Rule 2-5 will increase the stringency of the program and the number of permit applications requiring a site-specific health risk assessment.

The Air District conducts about 300 health risk assessments per year for a wide variety of new and modified sources of air pollution. Common source types that require health risk assessments include diesel-fired internal combustion engines, other types of combustion operations, and gasoline stations. The Air District also conducts Air Toxics New Source Review health risk assessments for remediation operations, cement plants, concrete batch plants, asphalt plants, petroleum refineries, coating and solvent operations, tanks and loading operations, landfills, wastewater treatment plants, metal melting plants, coffee roasters, and projects at many other types of industrial facilities.

A. Estimates of Potential Impacts from Amendments to Rule 2-5

The Proposed Amendments to Rules 2-1 and 2-5 will increase the stringency of the Air District’s Air Toxics New Source Review Program and will increase the transparency of permit evaluations. Staff reviewed information from past permitting projects to contextualize how the Proposed Amendments might impact applications had they been in place at that time. The lookback analysis is not a prediction of the types of projects that will be affected in the future; it is included to provide a perspective on how past projects might have been affected by the more stringent cancer risk

limit of six in one million in Overburdened Communities. The sections below discuss staff's analysis using permitting information from the recent past.

1. Lookback Analysis

This section of the Final Staff Report discusses a lookback analysis that examined the types of projects that would have likely been affected if the proposed changes to Rule 2-5 were in place during the review period. In the lookback review analysis, staff examined the types of permit applications for projects that would emit toxic air contaminants between February 2017 and February 2021, which is the same period that was used for analyses presented in the Concept Paper and Workshop Reports in this rule amendment process and goes back to the last time Rule 2-5 was amended. The analysis examined projects in Bay Area census tracts that scored at or above the 70th percentile in Draft CalEnviroScreen 4.0. Final CalEnviroScreen 4.0 was subsequently released by OEHHA in October 2021. Air District staff reviewed the updates and changes included in the Final CalEnviroScreen 4.0 version and determined that these updates do not result in substantial changes to the lookback analysis, nor do they result in additional affected projects or project types. As stated previously, the lookback analysis is not a prediction of the exact types of projects that will be affected in the future but is included to provide a perspective on how past projects might have been affected by the proposed amendments.

There were about 40 total applications with a cancer risk between six in one million and ten in one million during this period, which translates to about ten projects per year that may need to modify operations, install additional abatement equipment, or consider other options such as moving the proposed source location to comply with the more stringent risk limit in the high-scoring areas.

Table 6: Cancer Risk Assessments for Projects with Cancer Risk of 6-10 in One Million, in High-Scoring Draft CalEnviroScreen 4.0 Communities, Feb. 2017 – Feb. 2021

Project Type	Number of Applications	Approximate Percent of Total
Metal Casting Facility Project	1	<3%
Conveyors/Stockpiles at Waste Facility	1	<3%
Crematory Project	2	5%
Prime Diesel Engines	2	5%
Standby Diesel Engines	19	49%
Gas Station Project	11	28%
Soil Vapor Extraction Project	2	5%
Concrete Manufacturing Facility Project	1	<3%
TOTAL	39	100

As Table 6 shows, about 80 percent of applications in areas that score highly in CalEnviroScreen are for standby diesel engines or gas stations, with standby diesel engines making up about half of the total projects. These numbers are generally consistent with the breakdown by project type in areas identified through the Air District's Community Health Protection Program and its CARE Program—as well as air permitting trends throughout the Bay Area.⁵⁹

Staff also evaluated the types of facilities that would be subject to the more stringent cancer risk limit in areas that have high scores in CalEnviroScreen. In areas within or near census tracts scoring at or above the 70th percentile in CalEnviroScreen 4.0, there is a wide range of facility

⁵⁹ See BAAQMD, 2021. Concept Paper, pages 13-17.

types whose carcinogenic toxic air contaminant emissions would be subject to a more stringent cancer risk limit. Many facilities with applications that have undergone Air Toxic New Source Review permitting have been required to do so because they operate a diesel engine, which emits toxic air contaminants when it operates. Other facilities or operations, such as gas stations, crematories, and soil vapor extraction systems may release toxic air contaminants during operations. Most of the Proposed Amendments to both Rule 2-5 (on Air Toxics New Source Review requirements) and Rule 2-1 (on notifications) would only apply to sources undergoing Air Toxics New Source Review. However, the Proposed Amendments to Rule 2-1 regarding permit application completeness review periods and application processing time will impact all permit applications.

2. Emissions or Exposure Reductions

When a health risk assessment exceeds the maximum risk level, there are several options available to the permit applicant to reduce health risk from the proposed source.⁶⁰ The applicant could reduce operating hours or throughput rates, which is the most common and least expensive toxic emission reduction method available.⁶¹ Reducing operating hours or throughput rates may be feasible, but below a certain point these changes may not be cost effective to install the source, or the source may not be able to operate below a baseline number of hours or throughput level. Alternatively, or in conjunction with the option above, the applicant could reduce the emission rate to comply with the health risk limits. Reducing emission rates may require a permit applicant to install an abatement device or an enclosure to control emissions. Diesel particulate filters can be used to reduce diesel particulate matter emissions. Carbon adsorbers reduce organic toxic air contaminant emissions such as benzene and perchloroethylene. Oxidation catalysts may be used on combustion devices to reduce formaldehyde emissions. Enclosures and baghouses may be used to capture and control particulate matter that contains toxic metals.

Additionally, a permit applicant could change project plans to reduce exposure to individuals. An applicant may also be able to increase the height of the stack from which emissions are exhausted or relocate the source farther away from where people could be exposed to the emissions. Enclosing a fugitive emission source and venting it through a stack or changing stack orientations to encourage dispersion of contaminants in the atmosphere. Changing the time of day that a source is operating to avoid exposing people nearby (for example, prohibiting diesel operations near schools during the times that children are there) is another way to reduce exposure.

Finally, the permit applicant may decide to completely change the project (for example, use an alternative type of back-up power to a standby diesel engine) or cancel the permit application if the applicant decides that it would be too costly to meet the cancer risk limit. The applicant could re-apply to install the project elsewhere, or the applicant may cancel the project altogether or construct the project outside of the Bay Area.

The subsections below briefly discuss the two most common types of projects that are expected to be affected by the more stringent risk limit based upon permitting trends: diesel engines and gas stations.

⁶⁰ As explained in BAAQMD, 2016. Regulation 2, Rule 5 Staff Report. September. Page 29.

⁶¹ Throughput generally means the amount of something that passes through something else, such as the amount of diesel fuel that passes through a diesel engine to power it.

a) Diesel Engines

As discussed in the Workshop Report, diesel engines make up the largest share of applications that have cancer risk.⁶² Diesel engines are used for many purposes, such as providing prime and backup power for facilities such as data centers, fire stations, hospitals, hotels, residential housing operations, and airport operations, to name just a few. The sections below state the potential impacts of the Proposed Amendments on diesel engine projects.

(1) Potential Impacts of Changes to the Cancer Risk Limit in High-Scoring CalEnviroScreen Census Tracts

Historical information on health risk assessments prepared for emergency engine projects showed that of the 19 applications in Overburdened Communities with a cancer risk exceeding six in one million between February 2017 and February 2021, the average cancer risk value was 7.9 in one million, with a median value of 7.6 in one million. Nineteen applications per year over four years means that about five projects per year would have needed to be revised to meet the more stringent cancer risk limit in Overburdened Communities had the proposed risk limit discussed in this Final Staff Report been in place at that time.

As described above, cancer risk from diesel engine operations can be reduced by limiting throughput or operating hours or installing diesel particulate filters to catch particles before they enter the ambient air. Exposure can be lessened by increasing stack height.⁶³ In 2016, staff compiled a list of types of controls and typical control costs for reducing toxic air contaminant emissions or exposures. Staff assessed the price of diesel particulate filter controls to be within the range of \$3,500 and \$11,400 per year, in 2016 dollars.⁶⁴ After adjusting for inflation, typical annualized compliance costs for diesel particulate filters are estimated to range from \$4,000 to \$13,000 per engine, with maximum annualized control costs of up to \$72,000 per engine for facilities needing to retrofit older model engines or larger engines.⁶⁵

In 2020, the Air District updated the BACT Guideline for emergency backup engines greater than or equal to 1,000 brake horsepower to U.S. Environmental Protection Agency Tier 4 emissions standards, which is the U.S. EPA's most stringent emission standard.⁶⁶ For engines of this size, the Best Available Control Technology is the same as the Best Available Control Technology for Toxics.⁶⁷ At present, there are over 2,000 diesel emergency backup engines that are 1,000 brake horsepower or larger in the Bay Area, out of a total of nearly 8,000 diesel emergency backup engines in the region.⁶⁸ This means that permit applicants that wish to install a new engine of this size or modify an existing engine that does not meet this requirement will need to meet the more stringent Tier 4 emissions standard. There are several ways to comply with the Tier 4 emission standard, including: purchasing an EPA-certified Tier 4 engine, purchasing a Tier 4-compliant

⁶² BAAQMD, 2021. Workshop Report: Draft Amendments to Rules 2-1 and 2-5. July. Page 31.

⁶³ See BAAQMD, 2016. Regulation 2, Rule 5 Staff Report. September. Page 31.

⁶⁴ See BAAQMD, 2016. Regulation 2, Rule 5 Staff Report. September. Page 31.

⁶⁵ See Appendix E, Socioeconomic Impacts Analysis.

⁶⁶ BAAQMD, 2020. BACT/TBACT Workbook: I.C. Engine – Compression Ignition, Emergency \geq 1000 hp. December.

⁶⁷ BAAQMD, 2020. BACT/TBACT Workbook: I.C. Engine – Compression Ignition, Emergency \geq 1000 hp. December.

⁶⁸ BAAQMD, 2021. Presentation on Best Available Control Technology for Large Standby Diesel Engines. March. Slide 6.

engine that is packaged by the engine manufacturer with abatement equipment, or retrofitting a Tier 2 engine with aftermarket abatement equipment from a third-party vendor.⁶⁹

b) Gas Stations

Gas stations undergoing Air Toxics New Source Review will be affected by the proposed updates to the Air District’s Health Risk Assessment Guidelines. As mentioned above, incorporation of the 2015 OEHHA health risk calculation procedures for gas stations as recommended in the Proposed Amendments will show that cancer risk increases by about 40 percent for projects where the maximally exposed individual is a residential receptor and will add a new limit on acute impacts.⁷⁰ In addition, gas stations that are located in areas that score highly on CalEnviroScreen will also need to comply with a more stringent cancer risk limit. As Table 6 above indicates, applicants seeking permits for gas station projects made up about 30 percent of overall applications in high scoring areas, or about three projects per year in these areas.

In high-scoring CalEnviroScreen locations, the average cancer risk value for the 11 projects since February 2017 that had a cancer risk value exceeding six in one million was 9.1 in one million. Also, because the proposed changes to the Health Risk Assessment Guidelines would increase cancer risk where the maximally exposed individual is a residential receptor, it is likely that some gas station projects that were below six in one million would have exceeded the limit due to the updated risk calculation guidelines. Given this information, staff expects that there would have been about three projects per year based on the lookback analysis that may have needed to undergo revisions to meet the more stringent risk limits in Overburdened Communities. Staff’s estimate does not include gas station projects that might exceed the new limit on acute impacts, because current risk assessment procedures do not take this into account.

Staff also analyzed the number of gas station projects within and outside of Overburdened Communities that might be impacted by a more stringent cancer risk assessment. A 40 percent increase in cancer risk for residential receptors likely means that many projects would still be below the cancer risk limit of ten in one million outside of Overburdened Communities, but the analysis indicates that about six gas station projects per year might have exceeded the ten in one million risk limit and required changes to comply with the limit. Table 7 below provides a summary of the number of health risk assessments that would have exceeded the proposed limits if they had been in place during the lookback analysis period.

Table 7: Cancer Risk Exceedances from Gas Station Projects During Historical Lookback Period, Assuming HRA Procedure Changes and More Stringent Risk Limit in Overburdened Communities

Location	Number of Health Risk Assessments Exceeding Limit Per Year*
Overburdened Communities	3
Outside Overburdened Communities	6

⁶⁹ BAAQMD, 2021. Presentation on Best Available Control Technology for Large Standby Diesel Engines. March. Slide 14.

⁷⁰ Health risk assessments consider the type of individual (for example, resident, worker, student, etc.) when assessing health risk. Rule 2-5 defines the receptor types that are considered in health risk assessments. A “residential receptor” is defined in Section 2-5-220 to mean any receptor location where an individual may reside for a period of six months or more out of a year.

*Assumes the limit in Overburdened Communities of 6 in a million and the limit elsewhere remains 10 in a million.

Controls available to address toxic air contaminant emissions from gas stations include limiting the throughput rate, or in the case of new proposed gas stations, possibly revising source locations so that emissions sources are located farther from where people are likely to be exposed.⁷¹ Costs borne by the applicant to reduce risk include the potential for reduced profitability as a result of limited throughput. Revisions to source locations could have consequences for overall construction planning and costs.

3. Overall Impacts of Updates to Rule 2-5 Table 2-5-1: Toxic Air Contaminant Trigger Levels

Proposed changes to Table 2-5-1 within Rule 2-5 include updates to toxic air contaminant trigger levels, including updates to the list of toxic air contaminants that are regulated under Rule 2-5. Updates to Table 2-5-1, which are shown in Appendix B, also reflect new and revised health effects values adopted by OEHHA as of June 30, 2021. In addition, proposed acute trigger levels are updated based on an acute target hazard index of 0.20, which is consistent with the Air District's Rule 11-18 significant source threshold of an acute hazard index of 0.20. Previous acute trigger levels were based on a target hazard index of 1.0.

For non-carcinogenic compounds and compounds with non-cancer impacts, the acute and chronic trigger levels will change in proportion to the change in the OEHHA reference exposure levels (RELs) for that compound. In addition, based on lowering the target acute hazard index from 1.0 to 0.2, the proposed toxic air contaminant acute trigger levels will decrease by 80 percent. The proposed acute trigger levels will generally be 20 percent of the previous value unless the acute reference exposure level was also revised. These lower trigger levels will result in more proposed projects requiring health risk assessments; however, staff expects that number to be small. Staff review of permit evaluations over the past five years showed that there were no projects during that period in which acute impacts were the sole driver of the trigger level exceedance. In over 90 percent of situations where a health risk assessment is required, carcinogenic emissions are the health risk driver; fewer than ten percent of health risk assessments are required because of a non-cancer trigger level exceedance. In those cases where the risk driver for the health risk assessment requirement is a noncancer toxic air contaminant emission, there was no large group of project types that were primarily responsible for exceeding the risk trigger. Staff found that hydrogen sulfide emissions from some projects at wastewater treatment plants considerably exceeded the existing acute trigger level. Staff found that some fumigation projects with noncancer toxic air contaminant emissions exceeded chronic emissions trigger levels (but not acute trigger levels). Finally, staff found that one wave solder machine project exceeded risk trigger levels. In summary, staff found that only about five projects per year required health risk assessments because of noncancer toxic air contaminant trigger level emissions exceedances. Of those projects, acute impacts were either not the risk driver or greatly exceeded the current acute trigger level, such that lowering the acute trigger level is expected to result in, at most, a small change in the overall number of health risk assessments.

The following four compounds were added to Table 2-5-1: carbonyl sulfide; cobalt; 1,6-hexamethylene diisocyanate (monomer); and tertiary butyl acetate (TBAc). With the addition of these compounds, more proposed projects will require health risk assessments, although staff

⁷¹ See BAAQMD, 2016. Regulation 2, Rule 5 Staff Report. September. Page 31.

does not have sufficient information to know how many health risk assessments will be required because of this change.

B. Estimates of Potential Impacts from Proposed Changes to Rule 2-1

Proposed changes to Rule 2-1 include a new definition for Overburdened Community, a new notice requirement for projects that require health risk assessments and an extension of the completeness review time for permit applications and the time to notify a permit applicant on the determination of whether the Air District will approve or deny the application.

1. Public Notifications of Permit Applications

A requirement to notify residents who live within 1,000 feet of a proposed project that would require a health risk assessment due to toxic air contaminant emissions in the highest-scoring CalEnviroScreen 4.0 census tracts would probably require Air District staff to oversee about 66 additional notifications and response to comment periods per year. As described above, to arrive at this estimate, staff reviewed projects for which health risk assessments had been prepared since the last time Rule 2-5 had been updated. A diverse array of projects would have been included, such as projects at concrete batch plants, backup diesel engine projects, soil vapor extraction projects, projects involving gas stations, and paint repair booth projects, to name several representative project types.

To recover costs, staff would attach a public notice fee for any notification that is required under the proposed notification section in Rule 2-1. Staff anticipates that the fee structure, including the fee amount, would be similar to the fee that is assessed for school notifications under Section 2-1-412. Under the school notification process, an applicant whose project requires a public notification is required to pay a fee to the Air District to carry out the notification process. The fee that is paid by the applicant covers the cost of preparing and delivering physical mail copies of the notice to the intended addresses.⁷² The Air District would refund the applicant for the portion of the fee that the applicant pays to the Air District but is not necessary for preparation and distribution of the notice. To include the fee portion of the enhanced notification requirement in Overburdened Communities, the Air District will need to update Regulation 3: Fees. At this point in time, the fee applicants must pay to comply with Regulation 2-1-412 is \$2,272 per application, however, that amount may be different based upon staff's continued analysis of administrative impacts of the proposed amendment to the notification section.⁷³ Finally, public notices add about two to three months (more time if there are many public comments) to the overall processing time for permit applications that trigger a noticing requirement.

2. Extension of Time for Action on Applications

As mentioned earlier in this document, to account for past regulatory changes that have resulted in significantly more complex engineering evaluations, many of which include health risk assessments, the proposed changes to Rule 2-5, the changes to the notification procedures, and increasing constraints on staff due to implementation of multiple new programs over the recent past, staff proposes increasing permit application review times. The proposed changes include increasing the completeness review time for most permit applications from 21 days to 30 days and increasing the completeness review time for new or modified major facility applications from 30 days to 60 days. The proposed changes also include extending the application review period

⁷² See Regulation 2-1-412, see also Regulation 3-318.

⁷³ Regulation 3-318.

from 49 days to 90 days for routine applications that are exempt from CEQA review, do not trigger public noticing, and are not located at facilities required to have Title V or Synthetic Minor operating permits. A default review time of 180-days is being added for all other types of applications. These extensions will realign the Permitting Regulation with timelines that are more conducive to fulfilling the goal of high-quality evaluations of permit applications that are more realistic in terms of its time expectations and that are consistent with review periods for other air districts.

Despite Engineering Division staff resource challenges during the last three years, staff maintained an average completeness review time of 23 days for applications that are not located at Title V facilities and that are not subject to public noticing. Also, 86 percent of these applications (out of a total of 1730 applications) were reviewed for completeness within a 30-day time period. Similar completeness review period results were found for applications at Title V facilities.

For New Source Review applications not subject to Title V or public noticing requirements, the average application review period (from date of completeness to date of issuance) was 51 days, with 85 percent of applications reviewed within 90 days and 95 percent of applications reviewed within 180 days. Statistics for applications at Title V facilities were more variable and reflect the increased complexity of the review for these facilities. The average review period for Title V facilities has been 145 days over the last five years with 81 percent of the applications reviewed within the proposed 180-day review period.

Additional Engineering Division staff resources that previously approved combined with the additional staff resources requested for implementation of these rule changes are expected to ensure that all applications can be reviewed within the proposed time periods.

Over the short term, applicants may need to update their estimates of project timelines. However, over the long term, these timeline changes will improve transparency and allow applicants to better estimate permit processing timelines. Therefore, these timeline changes are not expected to have adverse impacts to applicants.

VII. ECONOMIC IMPACTS

The California Health and Safety Code generally requires two different economic analyses for proposed regulations by an air district. The first (Health and Safety Code Section 40728.5) is a socioeconomic analysis of the adverse impacts of compliance with the proposed regulation on affected industries and business. Table 8 in Section VII.A of this report lists the estimated costs of compliance with each element of the proposed amendments to Rules 2-1 and 2-5 that have a significant cost. Section VII.B of this report discusses the required socioeconomic analysis that is based on the costs in Section VII.A. Section VII.C of this report discusses the incremental cost analysis. Section VII.D of this report discusses the anticipated impacts to Air District staff resources, and Section VII.E discusses the Air District's Cost Recovery Policy.

The Proposed Amendments apply to projects that are subject to Air Toxics New Source Review. The Proposed Amendments will not require facilities to retrofit existing equipment unless that equipment is subject to Air Toxics New Source Review. The cost information presented in the sections below uses historical Air District information from February 2017 through February 2021 on projects subject to Rules 2-1 and 2-5.

A. Cost of Compliance

Table 8 below presents the estimated compliance costs based upon Air District information from past projects. The information is based on staff estimates of control costs based on previously permitted projects, information from vendors, or information from permitted facilities.

Table 8 – Compliance Costs for Proposed Revisions to Rule 2-5

Type of Control	Typical Control Costs (\$ per year)	Maximum Control Cost (\$ per year)
Limiting Throughput or Operating Hours	\$0/year	Potential for Reduced Profitability
Diesel Particulate Filters	\$4,000 - \$13,000	\$72,000
Thermal Oxidizer	\$35,000 - \$361,000	\$688,000
Increase Stack Height	\$1,700	Not Available
Baghouse	\$76,000 - \$1,184,000	\$2,292,000
Stockpile Water Spray System and/or Mobile Water Spray System	\$31,000 - \$130,000	Not Available

Projects subject to Air Toxics New Source Review may also be subject to the proposed changes to Rule 2-1, Section 2-1-412, which will require public noticing of projects in Overburdened Communities that would result in an increase in toxic air contaminant emissions. As discussed in Section IV.A of this Final Staff Report, the requirement would only apply to projects that require health risk assessments and would require the same type of notification that is currently required for projects that will result in an increase in toxic air contaminant emissions that are proposed to be located near K-12 schools. Applicants that propose projects that will require a health risk assessment will need to distribute the notice to surrounding addresses located within 1,000 feet of the proposed source. Compliance costs for the enhanced notification requirement would be one-time costs and average annualized compliance costs would be minimal.

B. Socioeconomic Impacts

Section 40728.5 of the California Health and Safety Code requires an air district to assess the socioeconomic impacts of the adoption, amendment, or repeal of a rule if the rule is one that “will significantly affect air quality or emissions limitations.” BAE Urban Economics of Berkeley, California prepared a socioeconomic impacts analysis of the proposed revisions to Rules 2-1 and 2-5. This analysis is based on the costs of compliance with the proposed rule amendments discussed in Sections IV.A and IV.B of this Final Staff Report. The analysis is attached to this Final Staff Report as Appendix E.

1. Businesses Affected

The socioeconomic analysis concludes that, on average, the Proposed Amendments would not result in significant economic impacts. However, they could potentially result in significant economic impacts for several individual industries, as discussed below. Economic impacts are deemed significant if the compliance costs exceed ten percent of the profits for a specific industry type.⁷⁴ For this analysis, the socioeconomic analysis assumed that projects would use the most

⁷⁴ Berck, P. Development of a Methodology to Assess the Economic Impact Required by SB 513/AB 969. August.

expensive compliance option, except for diesel particulate filters for diesel engines, which use the typical high cost rather than the maximum control cost. For each of the industries listed below, less expensive compliance options are available. The impacts discussion is split into two parts. One part focuses on potential impacts to businesses other than gas stations that might be affected by the more stringent cancer risk in Overburdened Communities, and a second part that focuses on impacts to gas stations, which will be impacted by the more stringent cancer risk limit in Overburdened Communities in addition to the updated health risk assessment procedure.

a) Projects in Overburdened Communities Other Than Gas Station Projects

According to the socioeconomic analysis, a variety of industry types may need to install diesel particulate filters on emergency standby engines to meet the more stringent cancer risk requirement in Overburdened Communities. The socioeconomic analysis shows typical low costs of installation of a diesel particulate filter, typical high cost, and the maximum control cost. There are no compliance costs exceeding ten percent under the typical low-cost scenario. Under the typical high-cost scenario, the Nursing and Residential Care Services industry would exceed the ten percent compliance cost threshold. Finally, under the maximum control cost scenario, lessors of residential buildings and dwellings, wired and wireless telecommunications carriers, and nursing and residential care services industries would each encounter costs above the ten percent threshold.

Next, projects that involve soil vapor extraction systems may require controls to reduce toxic air contaminant emissions. Possible controls for soil vapor extraction projects include limiting the throughput rate or operating time, installing carbon adsorbers, installing thermal or catalytic oxidizers, increasing the stack height, or revising the source location. The socioeconomic analysis analyzed the cost of compliance of a thermal oxidizer, which is likely the highest-cost solution. For this control technology, the average lessor of commercial buildings would exceed the ten percent compliance cost threshold under the average cost scenario. Additionally, for remediation services businesses, impacts would be significant. However, these businesses are typically larger full-service firms that are hired to complete remediation projects for other parties that would absorb the increased costs of the Proposed Amendments. Thus, businesses in this industry would not be negatively impacted under the analysis.

Foundry facilities may be impacted by the Proposed Amendments, based on the project lookback analysis and the socioeconomic analysis of potentially impacted projects. If a facility installed baghouses with high-efficiency particulate absorbing (HEPA) filters and carbon adsorbers, the impacts on profits would be slightly above the threshold of significance for the average metal casting establishment under the low-cost scenario, at just over ten percent of profits. If a facility chooses to install equipment at the average- or high-cost levels, the impacts on profits would be significant, ranging from 162.2 percent of profits under the average-cost scenario to 313.9 percent of profits under the high-cost scenario. However, it is important to note that some facilities might be able to undertake no- or lower-cost alternatives such as increased stack height or reduced operating hours to meet the revised rule. Thus, the impacts described in the socioeconomic analysis likely reflect the worst-case compliance cost impacts on these businesses.

At waste facilities, compliance costs for a stockpile spray system are below the level of significance, on average. However, for the higher cost mobile truck system option, compliance costs would be above the level of significance for the average business in this industry, at 23.0 percent.

Finally, projects at concrete batching facilities may include limiting throughput rate or operating time, installing enclosures and baghouses, water spray systems, increasing stack height, or revising source location. The socioeconomic analysis assumes the use of an additional water spray system, which is consistent with past permitting trends. Like the analysis for waste facilities, low- and high-cost estimates are assessed to show the full range of potential impacts. The resulting analysis shows profit impacts that are above the significance threshold under the high-cost scenario, with an estimated impact at 38.7 percent.

b) Projects at Gas Stations Within and Outside of Overburdened Communities

Since the control measure for gasoline stations is limited to reducing throughput, there are no compliance costs to estimate as a share of profits for these facilities, however, the lookback analysis indicates that a small number of projects would have been impacted by the proposed changes to cancer risk in Overburdened Communities and risk assessment procedures. As discussed in Section VI.A of this Final Staff Report, the lookback analysis showed that 11 gas station projects in Overburdened Communities would have been impacted by the more stringent cancer risk limit. For those 11 projects, the socioeconomic analysis found that two projects would have been adversely impacted by the more stringent cancer risk limit and health risk assessment procedures. One of those projects would have had to reduce its actual throughput by about 25 percent, assuming no alternatives existed to reduce cancer risk. For that facility, the socioeconomic analysis estimated a net impact on profits of about \$183,000.

The lookback analysis indicated that about 20 gas station projects would have exceeded the ten in one million cancer risk limit outside of Overburdened Communities because of the proposed revisions to the health risk assessment procedures. Of those 20 facilities, one facility would have needed to reduce its actual throughput by about 13 percent to meet the cancer risk limit of ten in one million, in the absence of other risk-reducing alternatives. For that facility, the socioeconomic analysis estimated a net impact on profits of about \$16,000 per year.

2. Impact on Employment and the Economy

Assuming the businesses would close rather than implement the above controls or modify the project to use less expensive controls, the annual lost sales from these industries would be \$1.3 million plus a loss of five jobs. Including potential indirect and induced impacts on the region results in a total regional impact of \$2.1 million in annual sales losses and just over eight job losses. The IMPLAN model estimates that the gross regional product from the nine counties in the Bay Area is approximately \$1.028 trillion annually. The total direct, indirect, and induced impacts from these potentially affected industries is equal to about .0002 percent of the Bay Area region's gross regional product.

Although it is not possible to predict how many future affected projects would be classified as small businesses based on the permits that were issued between February 2017 and February 2021, small businesses in the following industries would have been affected by the reduced cancer risk limit in high scoring areas:

- NAICS 623, Nursing and Residential Care Facilities
- NAICS 4471, Gasoline Stations
- NAICS 325314, Fertilizer (Mixing Only)
- NAICS 562910, Remediation Services
- NAICS 812220, Cemeteries and Crematories

While staff does not expect the Proposed Amendments to have any significant economic impacts on the Bay Area region overall, staff anticipates that economic impacts may be significant for several industry types and five small business types based on the Air District's lookback analysis. This analysis was based on worst-case assumptions, such as use of the most expensive control technology and closure of the business in response to rule requirements. The Air District notes that less expensive control options are available, and that business will typically choose project modification rather than business closure. While significant socioeconomic impacts are possible for the industry types and small business noted above, significant socioeconomic impacts are not a likely outcome. It should be noted that the costs and economic impacts analyzed in this section are not costs associated with the compliance with a retrofit control requirement but are instead the potential cost of installing new equipment that is not already in place or modifying existing equipment. From this perspective, a substantial portion of the costs due to the Proposed Amendments could be considered optional where the project applicant may have other means of accomplishing its intended goal. Several of these options were mentioned above in this Final Staff Report.

3. Range of Probable Costs of Regulation

The socioeconomic impacts analysis report in Appendix E provides ranges of probable costs to comply with the Proposed Amendments. The range of probable costs is specified by the potential control option, which may vary depending upon the type of equipment or operation for which the applicant seeks a permit from the Air District.

4. Availability of Cost-Effective Alternatives

There are no alternatives that will satisfy the goals and objectives of the Proposed Amendments with less cost. The Air District lacks regulatory authority over other sources of pollution that may contribute to exposures to airborne toxic air contaminant emissions, such as mobile sources. Mandated reductions by the Air District are necessary to ensure that future sources subject to Air District permitting authority will have reduced health risks.

5. Emission Reductions

The Proposed Amendments will mean that some projects will be subject to more stringent health risk limits with the intention of reducing air pollution exposure and associated health impacts. The discussion on the Proposed Amendments in Section IV.B of this Final Staff Report describes the more stringent health risk limits for projects that are subject to Rule 2-5. The Proposed Amendments would make the cancer risk limit 40 percent more stringent for projects subject to Rule 2-5 that would be located in Overburdened Communities. The Proposed Amendments would also update the Air District's Health Risk Guidelines such that gas station projects would be evaluated using a more stringent risk evaluation methodology, which would likely result in fewer toxic air contaminant emissions from gas station projects than under the status quo. Updates to the Health Effects Values in Table 2-5-1 would mean that health risk assessments would be required more often for projects that exceed the revised trigger levels or may emit newly added toxic air contaminants. The net effect of these changes, from an air quality perspective, is that project applicants would need to comply with more stringent risk limits in Overburdened Communities, and health risk from proposed projects would be more health protective regionwide. In Overburdened Communities, projects that would have been permitted with a cancer risk above six in one million would no longer be permitted; the permit applicant would need to reduce cancer risk from the project to be issued a permit. As described in the lookback analysis in Section VI of this Final Staff Report, about forty projects would have needed to reduce cancer risk from the

more stringent cancer risk limit proposed in Overburdened Communities under these Proposed Amendments.

6. Necessity

As discussed in Section XI of this Final Staff Report, the Proposed Amendments are necessary to reduce health risks from toxic air contaminants both in areas that experience high levels of cumulative impacts and throughout the Bay Area, ensure conformance with statewide health risk assessment and risk management guidance, and improve transparency of the Air District's permit application and review process. The reasons why the Proposed Amendments are necessary are discussed in detail in Section XI of this Final Staff Report.

C. Air District Impacts

Staff anticipates that the Proposed Amendments will require additional staff time and resources in a number of areas. Additional Air District Engineering Division resources will be necessary due to more extensive engineering and health risk assessment reviews for permit applications for projects located in overburdened communities due to the potential need to refine projects to meet the proposed lower cancer risk limit for overburdened facilities. Engineering and possibly Community Engagement Division resources will also be necessary to implement the additional public noticing requirements for overburdened facilities. Additional Engineering Division resources will be required to incorporate the updated Health Risk Assessment Guidelines into the gasoline dispensing facility program and to handle the more extensive health risk assessments that will be required for gas stations. Adding additional toxic air contaminants and updating health effects values are expected to result in a small number of additional health risk assessments per year. Air District Engineering Division resources may also be required for the processing and evaluation of permit applications for installations of new air pollution control equipment and abatement devices. And finally, Engineering Division resources will be needed to reduce overall application review times to ensure that the proposed review times are achieved for all permit applications. Overall, staff expects that eight (8) Engineering Division full-time equivalents (FTEs) will be needed to fully and properly implement the proposed amendments to Rule 2-1 and Rule 2-5.

Staff also anticipates additional staff resources will be necessary in the Air District Meteorology and Measurement Division. These resources will be needed to review monitoring and testing reports submitted, and to verify compliance with testing and monitoring procedures. Additional resources would be required to coordinate and conduct testing at the affected facilities. This may involve the procurement of additional equipment, instrumentation, and testing infrastructure, and ongoing costs for additional staffing to conduct testing. Staff will need at least three (3) FTEs for the Source Test group to properly implement the Proposed Amendments.

Furthermore, at least one (1) additional FTE will be necessary for the Air District's Compliance and Enforcement Division to oversee additional compliance activities associated with implementing the Proposed Amendments. Compliance and Enforcement Division resources may be required for review and documentation of any rule requirements that are not met and may also be required for assistance in the evaluation of permit applications for any air pollution control equipment installations.

As mentioned below in Section VII.E of this Final Staff Report, Air District staff will propose updated fee requirements in Regulation 3: Fees for the Air District Board of Directors' consideration for adoption in 2022, which will likely take effect on July 1, 2022. The forthcoming

proposed amendments to Regulation 3: Fees will update fee requirements for the proposed additional public notification processing requirements and health risk assessment requirements that this Final Staff Report describes. Therefore, staff recommends that the Proposed Amendments not take effect until the 2022 amendments to Regulation 3 take effect, on July 1, 2022.

D. Air District Cost Recovery

The Air District has the authority to assess fees to regulated entities for the purpose of recovering the reasonable costs of implementing and enforcing applicable regulatory requirements. In 2012, the Air District's Board of Directors adopted a Cost Recovery Policy which specifies that newly adopted regulatory measures should include fees that are designed to recover increased regulatory program activity costs associated with the measure, unless the Board of Directors determines that a portion of those costs should be covered by tax revenue.

In accordance with the adopted Cost Recovery Policy, the Air District assesses risk screening fees for new and modified sources that are required to undergo health risk assessments under Rule 2-5. The risk screening fees in Regulation 3: Fees will need to be updated to incorporate the increased administrative time that will be necessary to process applications to comply with the revised, more stringent rule. Regulation 3 will also need to be updated to reflect the proposed change in Rule 2-1 to require notifications for projects that require health risk assessments in Overburdened Communities. As discussed in Final Staff Report Section VII.D above, staff recommends incorporating a future effective date of July 1, 2022, for the Proposed Amendments to ensure consistency and cost recovery.

VIII. REGULATORY IMPACTS

Section 40727.2 of the California Health and Safety Code requires an air district, in adopting, amending, or repealing an air district regulation, to identify existing federal and air district air pollution control requirements for the equipment or source type affected by a proposed change in air district rules. The air district must then note any differences between these existing requirements and the requirements imposed by the proposed changes.

There are currently no federal or state New Source Review regulations specific to toxic air contaminants. State Air Toxic Control Measures and National Emission Standards for Hazardous Air Pollutants regulate some of the same types of stationary sources (e.g., diesel engines, gasoline stations) as the types of stationary sources that are commonly subject to Air District Air Toxics New Source Review. However, the Air District would apply these state and federal standards during the permit evaluation. Rule 2-5, Section 2-5-301 requires TBACT at certain risk levels; TBACT would be at least as stringent as state and federal requirements. In fact, the California Air Resources Board has often stated that Air Toxic Control Measure standards are Best Available Control Technology for Toxics and the Air District generally agrees but occasionally establishes Best Available Control Technology levels for particular sources that are more stringent than Air Toxic Control Measure standards. Rule 2-5, Sections 2-5-302 and 2-5-303 establish health risk-based limits for New Source Review projects. There are no federal or state health risk-based limits that apply on a project level basis. The Air District has established public notification levels and mandatory risk reduction levels through the California Air Toxics "Hot Spots" Act of 1987, but the risk reduction levels in this program apply on a facility wide basis. In cases where a project represents the entire facility's toxic emissions, the Rule 2-5 project risk limits are at least as stringent as the "Hot Spots" requirements.

IX. ENVIRONMENTAL IMPACTS

The Proposed Amendments improve the health protectiveness of the Air District's Air Toxics New Source Review Program and increase transparency of the permit application evaluation process. Therefore, the Proposed Amendments will help support positive environmental benefits. The Air District is still required to evaluate the potential for the Proposed Amendments to have ancillary negative environmental impacts, however, notwithstanding these air quality benefits. This requirement is imposed by the California Environmental Quality Act (CEQA), Public Resources Code Section 21800 *et seq.*, as well as the CEQA Guidelines that have been adopted by the Air District to help implement the statutory provisions of CEQA.

To address these requirements under CEQA, the Air District contracted with Environmental Audit, Inc., of Placentia, California, an environmental consultant, to prepare a CEQA Initial Study to evaluate the potential for significant adverse environmental impacts as a result of the implementation of the Proposed Amendments. This Initial Study has been published in conjunction with this Final Staff Report and the Proposed Amendments. The Initial Study found that there is no substantial evidence suggesting that the Proposed Amendments will have any significant adverse environmental impacts. Accordingly, Air District staff prepared a proposed Negative Declaration under CEQA for consideration by the Board of Directors, which is included in Appendix F to this Final Staff Report.

Air District staff will present the proposed Negative Declaration for consideration by the Board of Directors, along with the Initial Study, all the supporting information in the record, and any comments from interested members of the public. After considering this information, if the Board determines in its own independent judgment there is no substantial evidence that the project will have a significant effect on the environment, it may adopt the Negative Declaration to support its approval of the Proposed Amendments. Interested members of the public are encouraged to review and comment on the Initial Study and proposed Negative Declaration, and to provide any comments to Air District staff and to the Board of Directors.

X. RULE DEVELOPMENT / PUBLIC PARTICIPATION PROCESS

The Proposed Amendments are the product of several years of work by Air District staff with input from a large number of interested stakeholders, including representatives from environmental and community public health advocacy organizations, representatives from the regulated community and industry groups, and interested members of the public. Engagement and participation by these stakeholders resulted in significant improvements to the Proposed Amendments as they have evolved during this process.

Air District staff began this regulatory amendment effort in 2018 after Air District leadership committed to evaluating the Air District's permitting process to try to reduce disproportionate air pollution impacts in communities that already experience relatively high levels of environmental burdens and public health vulnerability. To receive initial input on considerations for evaluating potential amendments to the permitting rules, staff met with community organizations that actively advocate for public health and air quality measures at the regional and local levels. Air District staff met with representatives from the organizations listed in Table 9 below to receive feedback on the Air District's permitting process and how the process could be improved to further protect public health.

Table 9 – Community Outreach Organizations

Geographic Region	Community Organization/Neighborhood Name
Carquinez Corridor	All Positives Possible
	Fresh Air Vallejo
	Bayo Vista (neighborhood residents)
Suisun Bay	La Clínica
Eastern San Francisco	Bayview Hunters Point Community Advocates
East Oakland	Communities for a Better Environment (East Oakland and Richmond)
	Rose Foundation/New Voices Are Rising
	Regional Asthma Management & Prevention
Tri-Valley	Tri-Valley Air Quality Alliance
South Bay	Breathe California
North Bay	Daily Acts

Air District staff noted the following overall suggestions from community advocates:

- Incorporate into the Permitting Regulation a way to assess the impacts on the surrounding community from a proposed project;
- Make the requirements for permitting more stringent, paying particular attention to communities that experience high levels of pollution burden and health vulnerabilities; and
- Consider that some communities already experience unacceptably high levels of background air pollution, which leads to elevated health risk in the community.

Community representatives urged the Air District to introduce potential concepts for public review and discussion prior to drafting amendments to regulatory text. On April 21, 2021, staff published on the Air District website a Concept Paper and accompanying appendices that further explain the Air District's Permitting Regulation, permitting regulatory processes at several other large California air districts, and a Frequently Asked Questions document. Air District staff also sent notification by email to all contacts on the Air District's lists of potentially interested parties.

Air District staff then held a virtual public workshop on May 12, 2021, to discuss the proposed concepts to amend the Permitting Regulation. The public workshop included a presentation by Air District staff explaining the reasons for the proposed concepts; a description of the concepts; and what the concepts might mean for Bay Area air quality, potentially affected facilities, and for the public at large. Staff requested feedback from workshop participants and included time after the presentation to hear feedback and respond to questions. Over 100 participants attended the workshop on the proposed concepts.

Air District staff also solicited written comments on the drafts published for the concepts workshop stage of the regulatory amendment process. Staff scheduled the close of the comment period to be over two weeks after the concepts workshop to allow interested members of the public to be able to attend the workshop and engage in an initial discussion on the proposed concepts and still have time to go back and finalize their input in the form of written comments. Staff was also available throughout the process to meet to answer questions, explain issues, and receive input from the public. Staff met with several interested stakeholders following the public concepts workshop. In addition to the public workshop process, staff presented concepts to the Air District Stationary Source and Climate Impacts Committee on May 17, 2021. Staff later gave a similar presentation to the Air District Community Equity, Health and Justice Committee on July 1, 2021, to receive feedback from that committee.

After considering comments on the proposed concepts to amend the Permitting Rules and meeting with interested stakeholders, the Air District released draft rule amendment language and a Workshop Report on July 22, 2021. On August 24, 2021, the Air District held a virtual public workshop to present draft rule amendments to Rules 2-1 and 2-5, receive public comments, and answer questions from the public. The public workshop included a presentation by Air District staff explaining the reasons for the draft changes to the rules; a description of the rule changes; and what the rule changes might mean for Bay Area air quality, potentially affected facilities, and for the public at large. The staff presentation was then followed by an open question-and-answer and discussion forum, which allowed staff to engage in a discussion with the attendees to provide additional information and get public input and feedback. Over 60 participants attended the August 24 public workshop (including Air District staff). As with the concepts workshop, staff made an archived webcast available on the Air District's website for later viewing by any interested members of the public who were not able to attend at the time of the live presentation.

The Air District also invited the public to submit written public comments on the draft rule amendments. The close of the public comment period was over a week after the public workshop to enable interested members of the public and stakeholders the opportunity to consider information presented at the workshop prior to submitting written public comments. As with the proposed comments release, Air District staff was available before and after the workshop to answer questions, explain issues, and receive input from members of the public. On September 27, 2021, staff presented to the Stationary Source and Climate Impacts Committee on the feedback received on the draft language and provided the Committee with an overview of the proposed amendments that are described in this Final Staff Report.

Air District staff received important public feedback from both workshops, and staff wishes to thank all who took the time to provide input. Based on the comments received on the proposed concepts and on the draft rule amendments, staff made further revisions to the initial drafts, which are reflected in the final version of the Proposed Amendments that staff proposed for adoption by the Board of Directors.

On October 19, 2021, staff published the CEQA Initial Study and proposed Negative Declaration, text of the proposed regulations and amendments, Final Staff Report and other supporting documents. The public comment period also opened on October 19, 2021, and closed on November 18, 2021. A total of four written comment letter and emails were received that covered many topics including:

- Cancer Risk Limits
- CEQA
- Enhanced Notifications
- Essential Public Services
- Exemptions
- Overburdened Community
- Permit Review Timeline

Air District staff has addressed the submitted comments and prepared a Response to Comments document, which is included as Appendix F in this Final Staff Report.

Air District staff plans to propose that the Air District's Board of Directors consider the Proposed Amendments at the public hearing scheduled for December 15, 2021. Interested members of the public may submit comments at the public hearing.

XI. CONCLUSION / RECOMMENDATIONS

Before adopting or amending any regulations, the Board of Directors must make certain findings required by the California Health and Safety Code, Section 40727. These include findings of necessity, authority, clarity, consistency, non-duplication, and reference. Air District staff conducted an analysis of the Proposed Amendments and concluded that there is substantial evidence on which the Board of Directors can make these required findings. The basis for this conclusion is as follows.

A. *Necessity*

As stated in California Health and Safety Code Section 40727(b)(1), "'Necessity' means that a need exists for the regulation, or for its amendment or repeal, as demonstrated by the record of the rulemaking authority."

There are several reasons why the Proposed Amendments to Rules 2-1 and 2-5 are necessary. As described in Sections III and IV of this Final Staff Report, there are differences in exposure to air pollution, including exposure to carcinogenic toxic air contaminants, depending on upon the location of a receptor in the Bay Area. Impacts from differential exposures can be compounded by exposures to other forms of environmental pollution and community health vulnerability. It is therefore necessary for the Air District, as an entity whose mission is to protect and improve public health, to utilize its regulatory authority to reduce potential exposures of toxic air contaminants in areas that experience relatively high cumulative impacts from environmental pollution burdens and population characteristics. It is also necessary for the Air District, as an entity that operates in the public trust, to ensure transparency in its permitting evaluations and provide opportunities for members of the public to be notified and participate in the permit evaluation process, with particular attention to permit applications and evaluations in communities that experience relatively high levels of cumulative impacts from environmental pollution and community health vulnerabilities. Furthermore, the Proposed Amendments are necessary to eliminate opportunities for circumvention of regulatory provisions that are designed to protect public health. Additionally, the Proposed Amendments are necessary for the Air District to ensure conformance with statewide health risk assessment and risk management guidance, as well as conformance with the Air District's own risk assessment methodology for air toxics health evaluations for existing facility-wide health risk assessment evaluations. Finally, the Proposed Amendments would extend the Air District's permit application action times, which is necessary to establish appropriate review time periods that are commensurate with the level of staff work expected for high-quality evaluations of proposed projects.

B. *Authority*

The California Health and Safety Code Section 40727(b)(2) states that "'Authority' means that a provision of law or of a state or federal regulation permits or requires the regional agency to adopt, amend, or repeal the regulation."

The Air District has the authority to adopt these rule amendments under Sections 40000, 40001, 40230, 40702, and 40725 through 40728.5 of the California Health and Safety Code.

C. Clarity

The California Health and Safety Code Section 40727(b)(3) states that “‘Clarity’ means that the regulation is written or displayed so that its meaning can be easily understood by the persons directly affected by it.”

As explained in this Final Staff Report, Air District staff reviewed all relevant provisions of the regulatory language contained in the Proposed Amendments to ensure that it presents the requirements of the Air Toxics New Source Review program and the General Permitting Requirements in the clearest possible manner. Further details in the Final Staff Report clarify the Proposed Amendments, delineate potentially affected industries, compliance options, and administrative requirements for the industries subject to this rule.

D. Consistency

The California Health and Safety Code Section 40727(b)(4) states that “‘Consistency’ means that the regulation is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.”

The Proposed Amendments are consistent with other Air District rules and are not in conflict with state or federal law.

E. Non-Duplication

The California Health and Safety Code Section 40727(b)(5) states that “‘Nonduplication’ means that a regulation does not impose the same requirements as an existing state or federal regulation unless a district finds that the requirements are necessary or proper to execute the powers and duties granted to, and imposed upon, a district.”

The Proposed Amendments are non-duplicative of other statutes, rules or regulations. To the extent duplication exists, it is appropriate for the execution of powers and duties granted to, and imposed upon, the Air District.

F. Reference

The California Health and Safety Code Section 40727(b)(6) states that “‘Reference’ means the statute, court decision, or other provision of law that the district implements, interprets, or makes specific by adopting, amending, or repealing a regulation.”

By adopting the Proposed Amendments, the Air District Board of Directors will be implementing, interpreting or making specific the provisions of California Health and Safety Code Sections 40000, 40001, 40702, and 40727.

The Proposed Amendments have met all legal noticing requirements, have been discussed with the regulated community and other interested parties, and reflect consideration of the input and comments of many affected and interested stakeholders.

G. Recommendations

For the reasons discussed in the foregoing Final Staff Report, Air District staff recommends that the Board of Directors adopt the Proposed Amendments. The Proposed Amendments have met

all applicable legal requirements for adopting amendments to Air District regulations, including both substantive and procedural requirements. The Proposed Amendments will strengthen the health protectiveness of the Air District's Air Toxics New Source Review permitting program and provide increased transparency in the overall permitting evaluation process. Staff also reiterates that adequate staff resources, as discussed in Section VII.D of this Final Staff Report, are critical to ensuring the Proposed Amendments can be implemented.

Air District staff respectfully submits that the Board of Directors should exercise the legal authority granted to it by the legislature of the State of California under the Health and Safety Code and adopt the Proposed Amendments as the policy and regulations of the Bay Area Air Quality Management District. To do so, staff recommends that the Board of Directors approve the following two actions:

- Adoption and Approval of a "Negative Declaration" under the California Environmental Quality Act finding and declaring that, in the independent judgment and analysis of the Board, and based on the entire record including the CEQA Initial Study prepared for the Proposed Amendments and any and all public comments received, there is no substantial evidence that the Proposed Amendments will have a significant adverse effect on the environment.
- Adoption of the Proposed Amendments, as set forth in Appendices A, B, and C hereto.

XII. REFERENCES

- BAAQMD, 2021. 2020 Air Monitoring Network Plan. July. Available: <https://www.baaqmd.gov/~media/files/technical-services/2020-network-plan-draft-202100526-pdf.pdf?la=en>
- BAAQMD, 2021. Workshop Report: Draft Amendments to Regulation 2: Permits, Rule 1: General Requirements; Draft Amendments to Regulation 2: Permits, Rule 5: New Source Review of Toxic Air Contaminants. July. Available: https://www.baaqmd.gov/~media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_05_wsr_rules0201and0205-pdf.pdf?la=en
- BAAQMD, 2021. 2020 Annual Report. May. Available: https://www.baaqmd.gov/~media/files/communications-and-outreach/publications/annual-report/2020annualreport_finalweb-pdf.pdf?la=en
- BAAQMD, 2021. Comment Letter on OEHHA's Draft Version 4.0 of CalEnviroScreen. May. Available: https://oehha.ca.gov/media/dockets/20006/20380-bay_area_air_quality_management_district/baaqmd_calenviroscreenv4_jpb.pdf
- BAAQMD, 2021. Concept Paper: Concepts to Amend the Air District's Permitting Rules in Response to Localized Differences in Air Quality and Permitting in Overburdened Communities. April. Available: https://www.baaqmd.gov/~media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210416_concept-paper_reg0200-pdf.pdf?la=en
- BAAQMD, 2021. Presentation on Best Available Control Technology for Large Standby Diesel Engines. March. Available: <https://www.baaqmd.gov/~media/files/engineering/backup-diesel-generators/bact-webinar-presentation-pdf.pdf?la=en>
- BAAQMD, 2020. BACT/TBACT Workbook: I.C. Engine – Compression Ignition, Emergency >1000 hp. December. Available: <https://www.baaqmd.gov/~media/files/engineering/bact-tbact-workshop/combustion/96-1-5.pdf?la=en>
- BAAQMD, 2020. Diesel Free by '33: Why Replacing Diesel is a Public Health Priority. September. Available: https://www.baaqmd.gov/~media/dieselfree/workshops/090920/diesel_health_impacts_overview-pdf.pdf?la=en
- BAAQMD, 2020. 2019 Annual Report. June. Available: https://www.baaqmd.gov/~media/files/communications-and-outreach/publications/annual-report/bay_report_2019-pdf.pdf?la=en
- BAAQMD, 2019. 2018 Annual Report. June. Available: https://www.baaqmd.gov/~media/files/communications-and-outreach/publications/annual-report/2018_baaqmd_annual_report-pdf.pdf?la=en

- BAAQMD, 2019. Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. Available: https://www.baaqmd.gov/~media/files/ab617-community-health/west-oakland/baaqmd_2016_toxics_modeling_report-pdf.pdf?la=en
- BAAQMD, 2018 Toxic Air Contaminant Inventory. December. Available: <https://www.baaqmd.gov/about-air-quality/research-and-data/emission-inventory/toxic-air-contaminants>
- BAAQMD, 2018. San Francisco Bay Area Community Health Protection Program: Improving Neighborhood Air Quality. August. Available: https://www.baaqmd.gov/~media/files/ab617-community-health/2018_0704_draft-submittal_master-pdf.pdf?la=en
- BAAQMD, 2018. 2017 Annual Report. June Available: https://www.baaqmd.gov/~media/files/communications-and-outreach/publications/annual-report/baaqmd_2017_annual_report-pdf.pdf?la=en
- BAAQMD, 2018. AB 617: Community Health Protection Program Regional Kick-off. January. Available: http://baha.granicus.com/MediaPlayer.php?clip_id=3613
- BAAQMD, 2017. Spare the Air, Cool the Climate: Final 2017 Clean Air Plan. April. Available: https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_proposed-final-cap-vol-1-pdf.pdf?la=en
- BAAQMD, 2017. Spare the Air, Cool the Climate: Final 2017 Clean Air Plan, Volume 2. April. Available: https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_proposed-final-cap-volume-2-pdf.pdf?la=en
- BAAQMD, 2016. Air Toxics NSR Program Health Risk Assessment Guidelines. December. Available: https://www.baaqmd.gov/~media/files/planning-and-research/permit-modeling/hra_guidelines_12_7_2016_clean-pdf.pdf?la=en
- BAAQMD, 2016. Bay Area Air Quality Management District CalEnviroScreen 3.0 Comments. October. Available: <https://oehha.ca.gov/media/downloads/calenviroscreen/comments/bayareaairqualitymanagementdistrictces30.pdf>
- BAAQMD, 2016. Staff Report, BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. September. Available: https://www.baaqmd.gov/~media/files/planning-and-research/public-hearings/2016/reg-2-rule-5/0205_sr_102516-pdf.pdf?la=en
- BAAQMD Advisory Council, 2020. Advisory Council Particulate Matter Reduction Strategy Report. December. Available: https://www.baaqmd.gov/~media/files/board-of-directors/advisory-council/2020/ac_particulate_matter_reduction_strategy_report.pdf?la=en&rev=570867c8b25e4ca0b2f93f80c4c1ef02
- Berck, Peter. Development of a Methodology to Assess the Economic Impact Required by SB 513/AB 969. August. Available: <https://ww2.arb.ca.gov/sites/default/files/classic/research/apr/past/93-314.pdf>

- California Air Pollution Control Officers Association, 2009. Health Risk Assessments for Proposed Land Use Projects. July. Available: http://www.capcoa.org/wp-content/uploads/2020/12/with-stamp_CAPCOA_HRA_LU_Guidelines_8-6-09-min.pdf
- California Air Resources Board, 2021. Gasoline Service Station Industrywide Risk Assessment Guidance. Accessed September 2021. Available: <http://ww2.arb.ca.gov/resources/documents/gasoline-service-station-industrywide-risk-assessment-guidance>
- California Air Resources Board, 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April. Available: <https://ww3.arb.ca.gov/ch/handbook.pdf>
- California Environmental Protection Agency, 2017. Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De León). April. Available: <https://calepa.ca.gov/wp-content/uploads/sites/6/2017/04/SB-535-Designation-Final.pdf>
- California Office of Environmental Health Hazard Assessment, 2021. CalEnviroScreen 4.0 and Race/Ethnicity Analysis. October. Available: <https://storymaps.arcgis.com/stories/f555670d30a942e4b46b18293e2795a7>
- California Office of Environmental Health Hazard Assessment, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Report. October. Available: <https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf>
- California Office of Environmental Health Hazard Assessment, 2021. Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 Public Review Draft. February. Available: <https://oehha.ca.gov/media/downloads/calenviroscreen/document/calenviroscreen40reportd12021.pdf>
- California Office of Environmental Health Hazard Assessment, 2021. Preliminary Analysis of Race/Ethnicity and Draft CalEnviroScreen 4.0 Scores. February. Available: <https://oehha.ca.gov/media/downloads/calenviroscreen/document/calenviroscreen40preliminaryraceanalysisd12021.pdf>
- California Office of Environmental Health Hazard Assessment, 2015. Air Toxics Hot Spots Program—Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments. February. Available: <https://oehha.ca.gov/media/downloads/crn/2015guidancemanual.pdf>
- South Coast Air Quality Management District, 2017. Risk Assessment Procedures for Rules 1401, 1401.1 and 212. Version 8.1. September. Available: <http://www.aqmd.gov/docs/default-source/permitting/rule-1401-risk-assessment/riskassessproc-v8-1.pdf?sfvrsn=12>
- San Joaquin Valley Air Pollution Control District, 2015. APR – 1905: Risk Management Policy for Permitting New and Modified Sources. May. Available: https://www.valleyair.org/policies_per/Policies/apr-1905.pdf

San Joaquin Valley Air Pollution Control District, 2015. Final Draft Staff Report: Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document. March. Available: http://www.valleyair.org/notices/Docs/2015/3-18-15_risk/final-draft-risk-policy-sr.pdf