BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Liz Kniss and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/Air Pollution Control Officer

Date: November 3, 2017

Re: Public Hearing for proposed Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities and the associated Recirculated Environmental Impact Report (EIR)

RECOMMENDED ACTION

Consider adoption of proposed Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities (Rule 11-18) and the associated recirculated EIR.

BACKGROUND

The Air District implements several programs that are designed to identify and reduce community exposure to Toxic Air Contaminants (TACs). Staff is proposing Rule 11- 18 to address the public's exposure of health risks associated with the emissions of TACs at existing facilities by reducing those risks to the lowest feasible levels.

DISCUSSION

Proposed Rule 11-18 is a groundbreaking, air quality measure that further protects the health of Bay Area residents and communities. If adopted, this new regulation will impose some of the most stringent limits on toxic air contaminant emissions from stationary sources in the state and nation. This regulation proposes to incorporate the newest health protective standards published by the Office of Environmental Health Hazard Assessment (OEHHA) and would directly limit the risk from stationary sources in communities by requiring these facilities to meet new, lower health risk management standards: a cancer risk of 10 per million (10/M) and a chronic/acute hazard index of 1.0.

The Air District will screen and prioritize facilities based on the quantity and potency of their emissions, as well as, their proximity to residents and offsite workers. The Air District will conduct Health Risk Assessments (HRAs) to determine if these facilities are above the health risk action threshold. Facilities above this health risk action threshold would be required to reduce their risk by either process modification or the installation of emissions controls, which will be validated and tracked by the Air District through the filing of a Risk Reduction Plan (RRP). If a facility cannot devise a means to fully reduce its risk below the threshold, it would still be required to

install best available retrofit control technology for toxic pollutants (TBARCT) on significant sources of risk at the facility.

Staff has been working extensively with impacted industry and other stakeholders since September 2016. Every source that may be impacted by this rule has been contacted directly by the Air District multiple times through various methods. A total of 12 workshops and open houses were held all over the Bay Area as well as numerous meetings with industry groups at their request. Significant changes have been made to the proposed rule to address industry concerns. In addition, the implementation of the rule provides many check-points with industry to ensure the best data is being used and that the impact of the rule is not economically unreasonable.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Staff anticipate the need to perform approximately 400 additional facility-wide HRAs and review several hundred RRPs over the next 5 years. Four new full-time staff in the Engineering Division will be required to maintain current permitting operations, while existing staff are redirected towards this effort.

The Board of Directors (Board) adopted new fees in the June 2017 amendments of Regulation 3, to cover the costs associated with conducting HRAs and reviewing the RRPs. In addition, the Board approved the allocation of $1.2 million in the Fiscal Year End 2018 (FYE 2018) budget to hire consultants to aid in accelerating the execution of the HRA work.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Greg Nudd
Reviewed by: Jean Roggenkamp

Attachment A: Final Regulatory Language for Rule 11-18
Attachment B: Final Staff Report for Rule 11-18
Attachment C: Comments and Responses on Staff Report and Rule
Attachment D: Final Socioeconomic Report for Rule 11-18
Attachment E: Final Recirculated Environmental Impact Report for Rule 11-18

REGULATION 11
HAZARDOUS POLLUTANTS
RULE 18
REDUCTION OF RISK FROM AIR TOXIC EMISSIONS AT EXISTING FACILITIES

INDEX

REGULATION 11
HAZARDOUS POLLUTANTS
RULE 18
REDUCTION OF RISK FROM AIR TOXIC EMISSIONS AT EXISTING FACILITIES
(ADOPTED [DATE])

11-18-100 GENERAL

11-18-101 Description: The purpose of this rule is to ensure that facilities that emit toxic air contaminants do not pose an unacceptable health risk to nearby residents, workers, or students.

11-18-102 Applicability: This rule applies to any toxic risk facility that is required to report the toxic air contaminant emissions inventory of the facility to the Air District pursuant to the Air Toxics "Hot Spots" Information and Assessment Act of 1987, California Health and Safety Code, Section 44300 *et seq*.

11-18-103 Exemption, Emergency-Use, Stationary Diesel Engines: This rule shall not apply to facilities for which the only source of toxic air contaminant emissions is one or more stationary diesel-fueled, compression-ignited engines operated only for emergency-use, as defined in Regulation 9, Rule 8, Section 231, and reliability-related activities, and the facility prioritization score is less than 250.

11-18-104 Exemption, Retail Gasoline Dispensing Facilities: This rule shall not apply to retail gasoline dispensing facilities with a prioritization score less than 250.

11-18-200 DEFINITIONS

11-18-201 Acute Hazard Index, or Acute HI: Acute hazard index is the sum of the individual acute hazard quotients for toxic air contaminants identified as affecting the same target organ or organ system.

11-18-202 Acute Hazard Quotient, or Acute HQ: Acute hazard quotient is the ratio of the estimated short-term average concentration of the toxic air contaminant to its acute reference exposure level (estimated for inhalation exposure).

11-18-203 Airborne Toxic Control Measure, or ATCM: A recommended method and, where appropriate, a range of methods, established by the California Air Resources Board (CARB) pursuant to the Tanner Act, California Health and Safety Code Section 39650 *et seq.*, that reduces, avoids, or eliminates the emissions of a toxic air contaminant.

11-18-204 Best Available Retrofit Control Technology for Toxics, or TBARCT: For any existing source of toxic air contaminants, except cargo carriers, the most stringent of the following retrofit emission controls; considering the cost of achieving health risk reductions, any non-air quality health and environmental impacts, and energy requirements; provided that under no circumstances shall the controls be less stringent than the emission control required by any applicable provision of federal, State or District laws, rules, regulations or requirements:

204.1 The most effective retrofit emission control device or technique that has been successfully utilized for the type of equipment comprising such a source; or

204.2 The most stringent emission limitation achieved by a retrofit emission control device or technique for the type of equipment comprising such a source; or

204.3 Any retrofit control device or technique or any emission limitation that the APCO has determined to be technologically feasible for the type of equipment comprising such a source; or

204.4 The most stringent retrofit emission control for a source type or category specified as MACT by U.S. EPA, or specified in an ATCM by CARB.

11-18-205 Cancer Risk: An estimate of the chance that an individual may develop cancer as a result of exposure to emitted carcinogens at a given exposed individual location, and considering, where appropriate, Age Sensitivity Factors to account for inherent increased susceptibility to

carcinogens during infancy and childhood.

11-18-206 **Chronic Hazard Index, or Chronic HI:** Chronic hazard index is the sum of the individual chronic hazard quotients for toxic air contaminants identified as affecting the same target organ or organ system.

11-18-207 **Chronic Hazard Quotient, or Chronic HQ:** Chronic hazard quotient is the ratio of the estimated annual average exposure of the toxic air contaminant to its chronic reference exposure level (estimated for inhalation and non-inhalation exposures).

11-18-208 **Exposed Individual (EI):** A person who is exposed to TACs emitted from a toxic risk facility. Exposed individual includes a resident, student, or worker who is not an employee of or a contractor for the toxic risk facility.

11-18-209 **Facility:** Any property, real or personal, which may incorporate one or more plants all being operated or maintained by a person as part of an identifiable business on contiguous or adjacent property, and shall include, but not be limited to manufacturing plants, refineries, power generating plants, ore processing plants, construction material processing plants, automobile assembly plants, foundries and waste processing sites.

11-18-210 **Gasoline Dispensing Facility (GDF):** Any stationary operation that dispenses gasoline directly into the fuel tanks of motor vehicles. This facility shall be treated as a single source which includes all necessary equipment for the exclusive use of the facility, such as nozzles, dispensers, pumps, vapor return lines, plumbing and storage tanks.

11-18-211 **Health Risk:** The potential for adverse human health effects resulting from exposure to emissions of toxic air contaminants and ranging from relatively mild temporary conditions, such as eye or throat irritation, shortness of breath, or headaches, to permanent and serious conditions, such as birth defects, cancer or damage to lungs, nerves, liver, heart, or other organs. Measures of health risk include cancer risk, chronic hazard index, and acute hazard index.

11-18-212 **Health Risk Assessment, or HRA:** An analysis that estimates the potential for increased likelihood of health risk for individuals in the affected population that may be exposed to emissions of one or more toxic air contaminants, determined in accordance with Rule 2-5, Section 2-5-603.

11-18-213 **Maximally Exposed Individual (MEI):** A person that may be located at the exposed individual location where the highest exposure to toxic air contaminants emitted from a given source or project is predicted, as shown by an APCO-approved HRA. MEI locations are typically determined for maximum cancer risk, chronic hazard index and acute hazard index based on exposure to residents, workers, and students.

11-18-214 **Maximum Achievable Control Technology, or MACT:** An emission standard promulgated by U.S. EPA pursuant to Section 112(d) of the Clean Air Act.

11-18-215 **Owner/Operator:** Any person who owns, leases, operates, controls, or supervises a facility, building, structure, installation, or source which directly or indirectly results or may result in emissions of any air pollutant.

11-18-216 **Prioritization Score:** The relative potential for health impacts from a facility based on the amount of TACs emitted from the facility, the relative toxicity of the TACs emitted, the proximity of the facility to exposed individuals and exposure factors for different types of exposed individuals. The methodology for determining a facility's prioritization score is located in Appendix A to this rule.

11-18-217 **Priority Community:** A geographic area where levels of toxic air contaminants are higher than other areas and where people may be particularly vulnerable and may bear disproportionately higher adverse health effects.

11-18-218 **Risk Action Level**

218.1 Before January 1, 2020, any of the following health risk levels:

1.1 A cancer risk of 25 per million (25/M); or

1.2 A chronic hazard index of 2.5; or

1.3 An acute hazard index of 2.5.

218.2 Effective January 1, 2020, except as provided in Section 11-18-402, any of the following health risk levels:

2.1 A cancer risk of 10 per million (10/M); or
2.2 A chronic hazard index of 1.0; or
2.3 An acute hazard index of 1.0.

11-18-219 Risk Reduction Plan or Plan: A document meeting the requirements of Section 11-18-404 that identifies, among other things, sources, quantities, and causes of emissions responsible for exceedance of any of the risk action levels set forth in Section 11-18-221 and details risk reduction measures that will be implemented to reduce risk.

11-18-220 Risk Reduction Measures: Practices that reduce toxic air contaminant emissions or that reduce health risks at the facility being evaluated, including changes to production processes, feedstocks, product formulations, emission point locations, emissions capture and dispersion mechanisms, and the installation of TBARCT or other control devices.

11-18-221 Significant Risk Threshold: Any of the following toxic health risk levels:
221.1 A cancer risk of 1.0 per million (1.0/M); or
221.2 A chronic hazard index of 0.20; or
221.3 An acute hazard index of 0.20.

11-18-222 Significant Source: A source of toxic air contaminants or health risk that poses a risk equal to or greater than a significant risk threshold at any MEI location at which all sources at the facility, taken together, pose a health risk equal to or greater than a risk action level.

11-18-223 Source: Any article, machine, equipment, operation, contrivance or related groupings of such that may produce and/or emit air pollutants.

11-18-224 Stationary Diesel-Fueled, Compression-Ignited Engine: An internal combustion engine with operating characteristics significantly similar to the theoretical diesel combustion cycle that is operated, or intended to be operated, at a specific site for more than one year or is attached to a foundation at that site.

11-18-225 Toxic Air Contaminant or TAC: An air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health. For the purposes of this rule, TACs consist of the substances listed in Table 2-5-1 Toxic Air Contaminant Trigger Levels in Regulation 2, Rule 5.

11-18-226 Toxic Risk Facility: Any facility that manufactures, formulates, uses, or releases any toxic air contaminant or any other substance that reacts to form a TAC.

11-18-227 Unreasonable Economic Burden: When the annualized cost of compliance (the sum of the annual operating cost and annualized capital costs) exceeds ten percent of the annual profits of a facility or one percent of the annual operational budget of a non-profit facility.

11-18-300 STANDARDS

11-18-301 Compliance with Risk Reduction Plan: The owner/operator of a toxic risk facility that poses a health risk, as determined by an APCO-approved HRA, equal to or greater than one or more of the risk action levels in effect pursuant to Section 11-18-218 shall:
301.1 Submit a proposed Risk Reduction Plan to the APCO in accordance with Section 11-18-403;
301.2 Obtain and maintain APCO approval of a Risk Reduction Plan in accordance with Sections 11-18-403, 404, and 405; and
301.3 Implement the risk reduction measures and comply with all other requirements in the approved Risk Reduction Plan.

11-18-400 ADMINISTRATIVE REQUIREMENTS

11-18-401 Health Risk Assessment Information Requirement: Within 60 days of a request from the APCO, a facility owner/operator shall submit to the APCO any information necessary to complete an HRA of the facility. The facility owner/operator may request additional time to submit the requested information (up to an additional 60 days) provided that the facility owner/operator can demonstrate that additional time is necessary.

11-18-402 Early Application of Risk Action Levels: The APCO may conduct an HRA for or apply the risk action levels specified in Section 11-18-218.2 to any toxic risk facility located within a Priority Community at any time after the adoption of this Rule.

11-18-403 Notification of HRA Results and Submission of Plan: The APCO shall provide the facility owner/operator with a copy of the preliminary HRA. The facility owner/operator shall be given 90 days to review and comment on the preliminary HRA. After taking into account any comments from a facility on preliminary HRA results and correcting factual errors, the APCO shall notify a facility owner/operator when a final APCO-approved HRA indicates a facility health risk equals or exceeds one or more of the risk action levels set forth in Section 11-18-218 and provide the facility owner/operator with a copy of the final APCO-approved HRA. Within 180 days of notification, the facility owner/operator shall submit a draft Risk Reduction Plan to the APCO that complies with Section 11-18-404. The APCO may allow additional time for the Plan submission to ensure the Plan is compatible with any applicable safety regulations.

11-18-404 Risk Reduction Plan Content Requirements: A Risk Reduction Plan shall include the following:

404.1 The name and address of the facility.

404.2 The North American Industry Classification System (NAICS) code for the facility.

404.3 A description of risk from the facility including:

3.1 Summary data from the applicable APCO-approved air toxic emission inventory.

3.2 Summary data from the health risk assessment.

3.3 Identification of the processes and emission points that are significant sources contributing to the facility health risks and a characterization of the risk from each.

404.4 A list of sources at which risk reduction measures will be implemented and a description of each risk reduction measure to be implemented at each source, including:

4.1 A description of the source and any existing controls that reduce risk,

4.2 A description of each risk reduction measure,

4.3 Anticipated emission reductions from the risk reduction measure,

4.4 Anticipated health risk reduction from the risk reduction measure

404.5 A schedule for implementing each risk reduction measure, including:

5.1 Dates for filing applications for permits to construct.

5.2 Dates equipment will be installed (if applicable).

5.3 Dates process changes will be completed (if applicable).

5.4 Dates for demonstrating the effectiveness of risk reduction measures.

404.6 A demonstration that:

6.1 The health risk from the facility will be reduced to a level below the risk action levels set forth in Section 11-18-218.2 at any MEI by no later than five years after Plan approval through implementation of the risk reduction measures pursuant to the proposed schedule; or

6.2 The health risk from the facility will be reduced to a level below the risk action levels set forth in Section 11-18-218.2 at any MEI by no later than five years after Plan approval plus such time, not to exceed five additional years, as is necessary to address a technical feasibility issue or to avoid placing an unreasonable economic burden on the facility operator; or

6.3 The facility will comply through application of TBARCT and can show that:

3.1 The health risk from the facility cannot be reduced to a level below the risk

action level because it is not feasible, and

3.2 TBARCT has been installed on all significant sources of risk, or will be installed no later than five years after Plan approval plus such time, not to exceed five additional years, as is necessary to address a technical feasibility issue or to avoid placing an unreasonable economic burden on the facility operator.

404.7 An estimate of residual health risk following implementation of the risk reduction measures specified in the Plan.

404.8 A certification that the Plan meets all requirements. The person who makes this certification shall be one of the following:

8.1 An engineer who is registered as a professional engineer pursuant to Section 6762 of the Business and Professions Code;

8.2 An individual who is responsible for the operations of the source; or

8.3 An environmental assessor registered pursuant to Section 25570.3 of the Health and Safety Code.

11-18-405 Review and Approval of Risk Reduction Plans: The procedure for determining whether a draft Plan submitted pursuant to Section 11-18-403 meets the applicable requirements of this rule is as follows:

405.1 Review: Within 20 business days of receipt of the draft Plan, the APCO will conduct a completeness review of the draft Plan. The APCO will notify the facility owner/operator in writing if the submitted Plan is lacking information necessary to make an approval determination. The facility owner/operator shall submit a complete draft Plan within 45 days of receipt of this notification. If the APCO determines that the resubmitted draft Plan is still incomplete, the APCO may disapprove the Plan or may notify the facility owner/operator that the draft Plan continues to lack necessary information and provide another opportunity to submit a complete draft Plan in 45 or fewer days.

405.2 Public Comment: The draft Plan, including any revisions made to correct deficiencies, will be made available to the public for 45 days (with exception of confidential information). The APCO will consider any written comments received during this period prior to approving or disapproving the final draft Plan.

405.3 Final Action:

3.1 The APCO will approve the draft Plan if the APCO determines that the draft Plan meets the requirements of Section 11-18-404 and will provide written notification to the facility owner/operator.

3.2 If the APCO determines that the draft Plan does not meet the requirements of Section 11-18-404, the APCO will notify the facility owner/operator in writing and will specify the basis for this determination. Upon receipt of such notification, the facility owner/operator shall correct the identified deficiencies and resubmit the draft Plan within 45 days.

3.3 If the APCO determines that the facility owner/operator failed to correct any deficiency identified in the notification, the APCO will determine that the facility owner/operator has failed to meet the requirements of Section 11-18-404, and will disapprove the draft Plan.

405.4 Public Inspection: Within 30 days of the approval of a Plan under Subsection 11-18-405.3, the APCO shall post the Plan on the Air District's website, and shall notify any member of the public, who submitted comments under Subsection 11-18-405.2, or who otherwise requested such notification of this action in writing. In making information available for public inspection, the confidentiality of trade secrets, as designated by the refinery owner/operator, shall be handled in accordance with Section 6254.7 of the Government Code.

11-18-406 Updated Risk Reduction Plan: For a Plan meeting the requirements of Section 11-18-404.6.3, if information becomes available after the initial APCO approval regarding emissions reduction technologies that may be used by a facility that would significantly reduce health risks to exposed persons or the feasibility of a Plan, the APCO may require or, upon request by a

facility owner/operator and approval by the APCO, allow the facility owner/operator to update the Plan to reflect the information and resubmit the Plan to the APCO for approval pursuant to Section 11-18-403.

11-18-500 MONITORING AND RECORDS

11-18-501 Progress Reports: The facility owner/operator shall report annually to the APCO progress on the emission reductions achieved by the Plan until the Plan is fully implemented or the facility owner/operator can demonstrate to the APCO compliance with Subsection 11-18-301.2. Reports shall be made no later than each anniversary of the date on which the Plan was approved pursuant to Subsection 11-18-405.3 and shall be consistent with a format developed by the APCO.

Appendix A: Equations for Calculating Standard Prioritization Score and Alternative Prioritization Score for Specific Facility Types:

The standard prioritization score (PS) calculation equations are shown below:

$PS_{CANCER} = \Sigma [(E_i) \times (U_i)] \times (PAF) \times (NF_{CANCER})$

$PS_{NON\text{-}CANCER} = \Sigma [(E_i)/(REL_i)/(8760)] \times (PAF) \times (NF_{NON\text{-}CANCER})$

Where the variables for the standard prioritization score equations are:

E_i = Toxic air contaminant emissions from the facility (lbs/year) of each TAC (i)

OEHHA approved toxicity factors for each toxic air contaminant:

U_i = Unit Risk Value for each carcinogenic TAC (i), $(\mu g/m^3)^{-1}$

REL_i = Chronic Reference Exposure Level (REL) for each TAC (i), $\mu g/m^3$

PAF = Proximity Adjustment Factors (PAF) for nearest exposed individual

NF = Normalization Factors (NF) for each type of health effect (NF_{CANCER} and $NF_{NON\text{-}CANCER}$)

The alternative prioritization score (PS) calculation equations are shown below:

$PS_{CANCER} = \Sigma [(E_i) \times (U_i)] \times (PAF_{EI}) \times (EF_{EI}) \times (NF_{CANCER})$

$PS_{NON\text{-}CANCER} = \Sigma\{(E_i)/(REL_i)/(8760)\} \times (PAF_{EI}) \times (EF_{EI}) \times (NF_{NON\text{-}CANCER})$

Where the variables for the alternative prioritization score equations are:

E_i = Toxic air contaminant emissions from the facility (pounds/year) of each TAC (i)

OEHHA approved toxicity factors for each toxic air contaminant:

U_i = Unit Risk Value for each carcinogenic TAC (i), $(\mu g/m^3)^{-1}$

REL_i = Chronic Reference Exposure Level (REL) for each TAC (i), $\mu g/m^3$

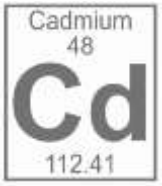
PAF_{EI} = Proximity Adjustment Factor (PAF) for each type of exposed individual ($PAF_{RESIDENT}$ or PAF_{WORKER})

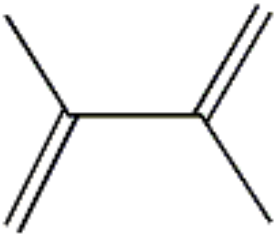
EF_{EI} = Exposure Factor (EF) for each type of exposed individual ($EF_{RESIDENT}$ or EF_{WORKER})

NF = Normalization Factors (NF) for each type of health effect (NF_{CANCER} and $NF_{NON\text{-}CANCER}$)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Proposed Regulation 11: Hazardous Pollutants, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities





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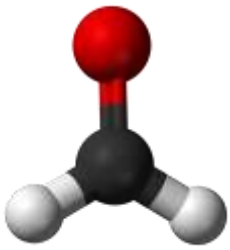
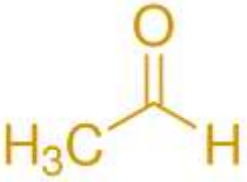


Formaldehyde



Acetaldehyde

STAFF REPORT

LEAD

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October 2017

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I. EXECUTIVE SUMMARY

Ambient toxic risk in the Bay Area has declined significantly in the last quarter century from about 4200 per million to less than 700 per million today. However, there are still many areas in the Air District that are impacted by elevated risk levels from both stationary and mobile sources. Many of these areas are considered Community Air Risk Evaluation (CARE) communities.

New proposed Regulation 11: Hazardous Pollutants, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities (Rule 11-18 or "Toxic Risk Reduction Rule") would apply to all facilities whose emissions of toxic air contaminants may result in a significant risk to nearby residents and workers. The purpose of Rule 11-18 is to focus on those facilities causing the highest health impacts across the Bay Area and to require these facilities to reduce that health risk.

Proposed Rule 11-18 is the next step in the Air District's efforts to protect public health from toxic air pollution. The rule is expected to substantially reduce health risks posed by various facilities by requiring the implementation of all technically and economically feasible risk reduction measures to significant sources of toxic air contaminants (TACs). The proposed rule would affect hundreds of facilities, from large facilities like petroleum refineries to much smaller businesses like some dry cleaners and crematoria. These facilities emit a variety of TACs that can adversely impact public health. These pollutants include compounds such as diesel particulate matter (DPM), benzene, polycyclic aromatic hydrocarbons (PAHs), and 1,3-butadiene.

Many of the facilities likely to be affected are in Bay Area communities that face a variety of public health challenges. Risk reductions from existing facilities achieved by this rule are expected to provide greater benefit to these communities. In addition, Rule 11-18 would help to address some of the Air District's potential obligations under Assembly Bill 617 Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants, which was signed by the Governor in July 2017. The intent of AB 617 is "…to reduce emissions of toxic air contaminants and criteria pollutants in communities affected by a high cumulative exposure burden."[1] One requirement under AB 617 is for the Air Resources Board to select communities with high exposure burdens, with the air districts where the communities are located then obligated to prepare community emissions reduction programs for toxics and criteria pollutants.

Under Rule 11-18, Air District staff would do the work in identifying and assessing facilities. The Air District would identify sources of TAC emissions whose risk may exceed the risk action levels and conduct HRAs for those sources.

These health evaluations would use the latest science available and, because they would be performed by the Air District, would use a process that is both consistent and transparent. During the risk evaluation process, the public would be allowed to review and provide input on the HRAs before they are finalized.

Any facility shown by a final HRA to pose a health risk at or above the risk action level in the rule would be required to take further steps to reduce risk. The risk action levels are tiered, starting at 25 per million upon rule adoption and dropping to 10 per million in 2020, to ensure that high risk facilities are addressed first and can begin risk reduction efforts as soon as possible.

Facilities with risk at or above the action level would be required to develop a risk reduction plan to reduce risk below the risk action level of 10 per million within five years, if that timeline is feasible. If a facility can get below the risk action level, but technical or financial considerations make more time necessary, the Air District would be able to approve additional time, but no more than is needed, up to an additional five years. If it is not feasible for a facility to reduce its risk below the required levels, the rule provides a third option that would require the facility to install the best available retrofit control technology for toxics (TBARCT) on all significant sources of toxic emissions, thereby reducing risk to the lowest level feasible.

If a facility elects the second plan option (additional time) or the third plan option (installation of TBARCT), it would only be with the approval of the Air District based on a demonstration that the option is necessary to address a technical feasibility issue or to avoid imposing an unreasonable economic burden. Before final Air District review and approval of a plan, it would be made available for public review and comment.

After plan approval, the facility would be required to implement the risk reduction measures and comply with all other requirements in the plan. Facilities would be required to report annually on progress. If new information becomes available about risk or about the feasibility of a plan, the rule provides a mechanism for updating the plan.

If adopted, the proposed rule would help to reduce the health risk experienced by thousands of Bay Area residents and ensure the affected facilities continue to reduce their risk as new methods and technologies for risk reduction become available.

This staff report is a summary and explanation of the proposed rule, how the Air District staff would expect to implement this rule, and staff’s initial assessment of the effect of the proposed rule as required under California Health and Safety Code, Section 40725.

II. BACKGROUND

A. Introduction

Proposed Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities (Rule 11-18) would be the next step in the Air District's efforts to protect public health from toxic air pollution. Rule 11-18 is expected to substantially reduce health risks posed by various facilities through requiring the implementation of all technically and economically feasible risk reduction measures by significant sources of toxic air contaminants (TACs). The proposed rule would affect hundreds of facilities, including data centers, petroleum refineries, a cement kiln, etc. These facilities emit a variety of TACs that can adversely impact public health. These pollutants include compounds such as diesel particulate matter (DPM), benzene, polycyclic aromatic hydrocarbons (PAHs), and 1,3-butadiene.

Rule 11-18 is the next step to protect the public from toxic air contaminants (TACs). A pollutant is considered toxic if it has the potential to cause adverse health effects such as cancer, birth defects, respiratory ailments, or other serious illness.

Table 1 list the six top TAC that contribute the ambient risk levels in the Bay Area along with each compounds contribution to risk, cancer potency value, acute and chronic reference exposure levels (RELs), sources, and health effects based on information developed by the CalEPA Office of Environmental Health Hazard Assessment (OEHHA).

Table 1
Top TACs Contributing to Ambient Risk in the Bay Area Based on Monitoring Data and 2015 OEHHA Guidelines

Compound	Contribution to Ambient Risk[2]	2015 Annual Emissions (Stationary Sources)[3] (lbs)	Inhalation Cancer Unit Risk Factor ($(mg/kg\text{-}day)^{-1}$)	Acute | Chronic RELs ($\mu g/m^3$)	Primary Sources	Health Effect Summary
Diesel Particulate Matter	64%	17,661	1.1	n/a | 5.0	Ships, trains, and trucks that operate in and around ports, rail yards, and heavily traveled roadways, and buses, construction equipment, diesel generators.[4]	Acute: Eyes, nose, throat and lungs, some neurological effects such as lightheadedness, coughing or nausea, asthma;[5] Chronic: Heart and lung disease, asthma, increased respiratory symptoms, and decreased lung function in children, and possibly new allergies. Carcinogen: Probable – lung cancer.[6]
Carbon Tetrachloride	11%	4,571	0.15	190 | 40	Landfill disposal, building materials, cleaning agents, contaminated ground water.	Acute: and central nervous system resulting in headache, weakness, lethargy, nausea, and vomiting; Chronic: Impacts liver, kidneys; Carcinogen: Probable.[7]

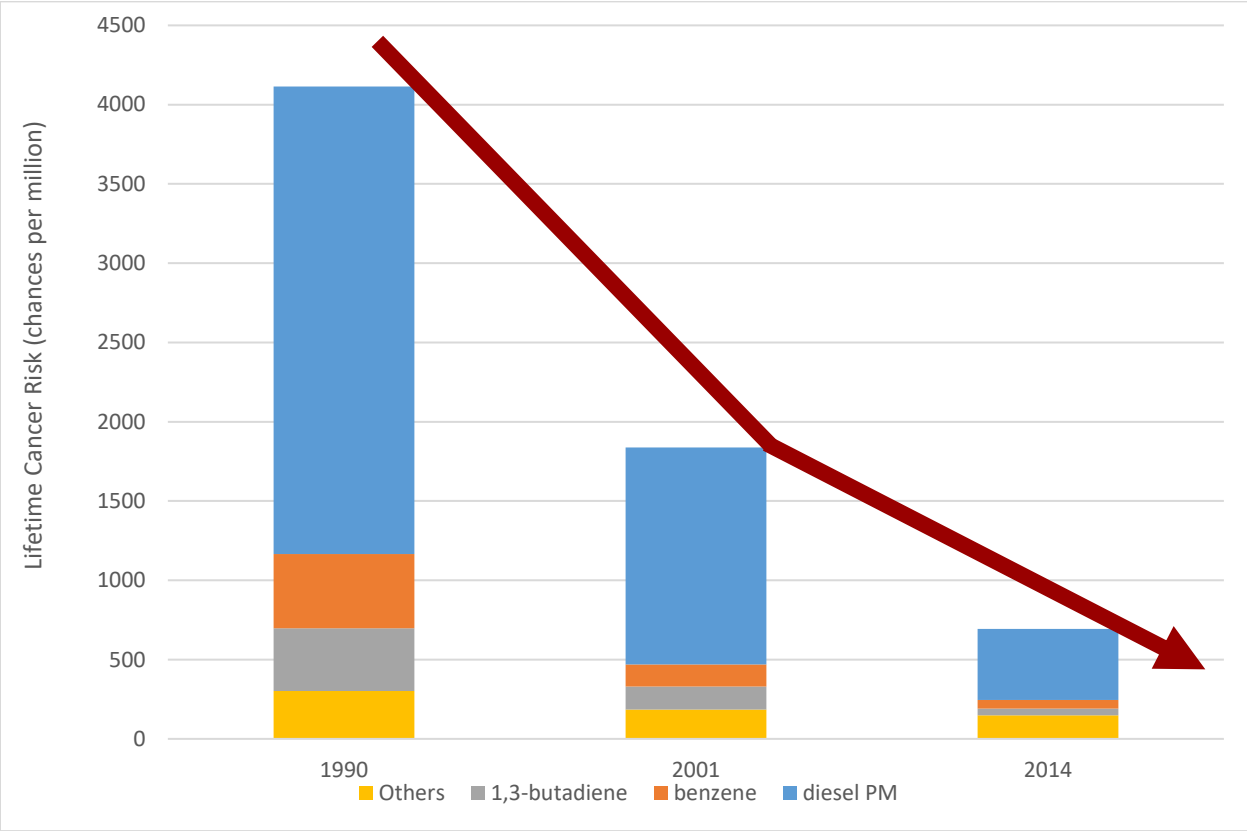
Compound	Contribution to Ambient Risk[2]	2015 Annual Emissions (Stationary Sources)[3] (lbs)	Inhalation Cancer Unit Risk Factor (mg/kg-day)$^{-1}$)	Acute | Chronic RELs (µg/m^3)	Primary Sources	Health Effect Summary
Benzene	8%	29,920	0.10	27 | 3.0	Crude oil, gasoline, and combustion sources such as automobile engines, refineries, power plants, boilers, heaters; and cigarette smoke, volcanoes and forest fires.	Acute: Drowsiness, dizziness, rapid or irregular heartbeat, headaches, tremors, confusion, unconsciousness, death (at very high levels), Chronic: Harmful effects on the bone marrow and can cause a decrease in red blood cells, leading to anemia;[8] Carcinogen: Known – leukemia.[9]
1,3-Butadiene	6%	1,494	0.60	660 | 2.0	Petroleum refining, gasoline, motor vehicle exhaust, manufacturing and processing facilities, forest fires or other combustion, and cigarette smoke.[10]	Acute: Irritation of the eyes, nasal passages, throat, and lungs, blurred vision, fatigue, headache, and vertigo; Chronic: cardiovascular diseases; Carcinogen: Known – leukemia, and tumors.

Compound	Contribution to Ambient Risk[2]	2015 Annual Emissions (Stationary Sources)[3] (lbs)	Inhalation Cancer Unit Risk Factor (mg/kg-day)$^{-1}$)	Acute | Chronic RELs (µg/m^3)	Primary Sources	Health Effect Summary
Hexavalent Chromium	5%	8.8	510	n/a | 0.20	Electroplating, stainless steel production, cement manufacturing, welding, pigments and dyes, surface coatings, and leather tanning.[11]	Acute: Asthma, eye irritation, damage, perforated eardrums, respiratory irritation, upper abdominal pain, allergic skin reaction, called allergic contact dermatitis. Chronic: Kidney damage, liver damage, pulmonary congestion and edema, nose irritation and damage, skin irritation, dermatitis and skin ulcers, and erosion and discoloration of the teeth.[12] Carcinogen: Known – respiratory cancer.[13]

Compound	Contribution to Ambient Risk[2]	2015 Annual Emissions (Stationary Sources)[3] (lbs)	Inhalation Cancer Unit Risk Factor (mg/kg-day)$^{-1}$)	Acute | Chronic RELs (µg/m^3)	Primary Sources	Health Effect Summary
Formaldehyde	4%	107,686	0.021	55 | 9.0	Resins used in composite wood products, building materials and insulation, household products, permanent press fabrics, paints and coatings, paper products, preservatives, cosmetics, dishwashing liquids and fabric softeners, fertilizers, and pesticides, emissions from power plants, fuel burning appliances, and cigarette smoke.[14]	Acute: Watery eyes; burning sensations in the eyes, nose, and throat; coughing; wheezing, chest pains, and bronchitis; nausea; and skin irritation;[15] Chronic: Respiratory symptoms and eye, nose, and throat irritation, repeated contact with liquid solutions of formaldehyde has resulted in skin irritation and allergic contact dermatitis;[16] Carcinogen: Probable – potentially leukemia and brain cancer.[17,18]

For almost 30 years, the Air District has implemented programs that are designed to identify and reduce the public's exposure to TACs. As shown in Figure 1, Air District and state programs have reduced the average Bay Area cancer risk resulting from exposure to TACs in our air by 83 percent over the last two decades.

Figure 1
Bay Area Lifetime Residential Cancer Risk[1] from TAC Exposure

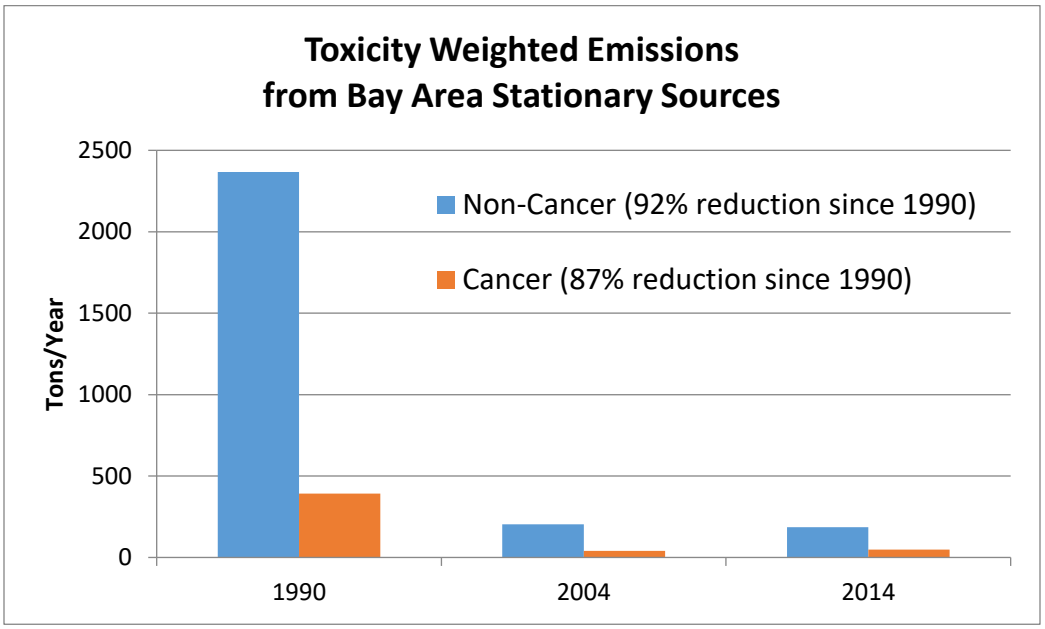


* Cancer risk is based on average ambient air monitoring data and the risk assessment methodology presented in the OEHHA's 2015 HRA Guidelines.

The Air District's long-standing Air Toxics Program is directed at reducing TAC emissions from stationary sources. Based on the Air District's TAC emissions inventories, toxicity weighted TAC emissions from Bay Area stationary sources have decreased by at least 87 percent since 1990 (see Figure 2).

[1] Cancer risk is based on average ambient air monitoring data and the risk assessment methodology presented in the OEHHA's 2015 HRA Guidelines.

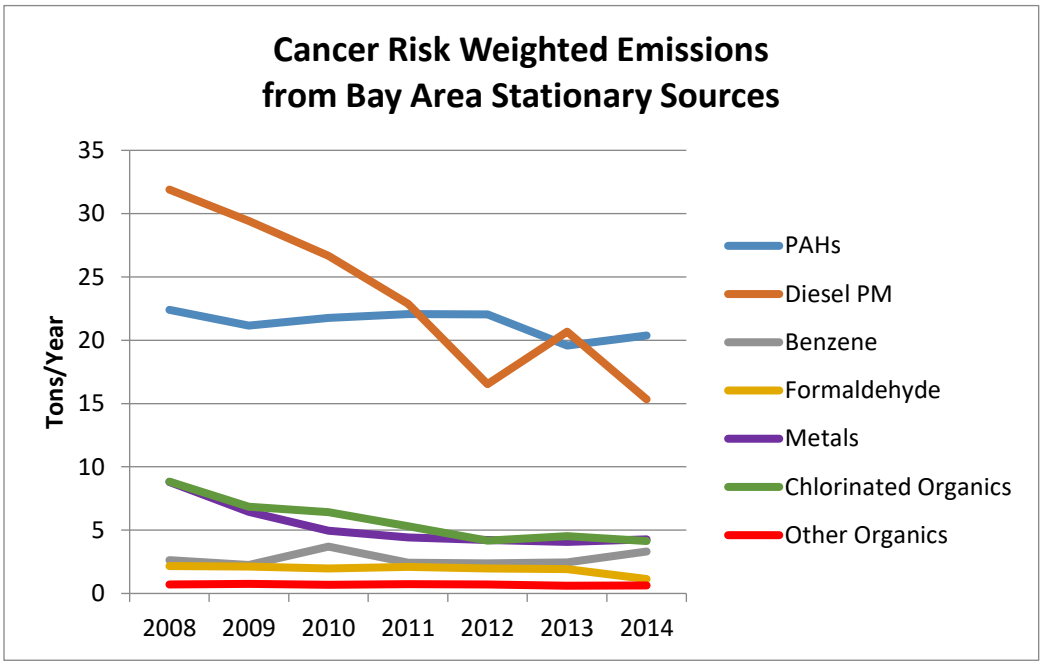
Figure 2:
Toxicity Weighted Emissions from Bay Area Stationary Sources



* The emission rates for several common TACs (diesel engine exhaust particulate matter, ethyl benzene, and isopropyl alcohol) were not available for the 1990 emission inventory.

The Air District's Air Toxics Program is successfully continuing this downward trend in cancer risks posed by stationary sources of TAC emissions. As shown in Figure 3, emissions are declining for many of the major contributors to stationary source cancer risks.

Figure 3
Cancer Risk Weighted Emissions from Bay Area Stationary Sources



B. Regulatory History

The Air District's existing Air Toxics Program currently includes three primary components.

1) The assessment and reduction of health risks from existing facilities (the Air Toxics "Hot Spots" program),
2) The preconstruction review of new and modified sources of TAC emissions (the Air Toxics New Source Review program or "Toxics NSR") and
3) The implementation of stationary source control measures, such as AB 1807 – state-developed airborne toxic control measures (ATCM) for specific categories of TAC sources.

Additional programs include the air monitoring networks and Community Air Risk Evaluation (CARE) Program.

AB 2588 Air Toxics "Hot Spots" Program

Proposed Rule 11-18 would enhance the Air District's current program, known as the Toxics "Hot Spots" program, to address risk from existing facilities. The program implemented California's Air Toxics "Hot Spots" Information and Assessment Act of 1987. The program is often called the "AB 2588 Program" after the enacted bill. The Hot Spots Act focused on addressing risk from sources of TACs that existed in the late 1980's. The Act required a round of toxic emissions inventory development, assessment of risk, and,

in the case of facilities that exceeded risk levels established by local air districts, notification of exposed individuals and risk reduction plans. The Act also required, and continues to require, toxics inventory updates every four years and the payment of fees by facilities to support district and ARB inventory efforts.

The air toxics emissions inventory is a database that contains information concerning emissions of TACs from permitted stationary sources in the Bay Area. The inventory includes routine or predictable releases, and is not intended to describe the potential for acute hazards from accidental and emergency releases. Information submitted by industry is reviewed for accuracy by Air District staff prior to inclusion in the inventory. This inventory, and a similar inventory for mobile and area sources compiled by CARB, is used to plan strategies to reduce public exposure to TACs.

Under the Hot Spots Act, the Air District established public notification risk levels at 10 per million (10/M) for cancer risk and 1.0 for chronic and acute hazard indices. For mandatory risk reduction, Air District policy set the risk action levels at 100/M for cancer risk and 10 for hazard indices. Subsequent legislation amending the Act provided several "off-ramps" for facilities that went through the initial round of review. Currently, there are no sources that pose a risk in excess of the risk reduction levels and, therefore, none that must comply with the program's risk reduction requirements.

Air District Regulation 2, Rule 5: Air Toxics New Source Review Program

The Air District adopted its Air Toxics New Source Review program at about the same time it started its activities to assess existing facilities under the Hot Spots Act. As a result, sources that existed in the late 1980's have been reviewed under the Hot Sports program and sources that were constructed or modified after the late 1980s have been reviewed under the Toxics NSR program. The Toxics NSR program achieves net health risk benefits by improving the level of control when existing sources are modified or replaced.

Control Measures for Toxics Air Contaminants

Under the California AB 1807 Air Toxics Identification and Control program, the ARB is responsible for developing and adopting airborne toxic control measures (ATCM) to reduce emissions for TACs from specific industrial sources and sectors, such as stationary diesel engines or perchloroethylene dry cleaning operations.

National Emission Standards for Hazardous Air Pollutants (NESHAPs), developed by U.S. EPA in accordance with Title III of the 1990 federal Clean Air Act Amendments, are also considered ATCMs in California. These rules generally focus on larger "major source" facilities, and require that emissions be reduced using the Maximum Achievable Control Technology (MACT). The focus of recent NESHAP development has shifted to rules that apply to smaller "area source" facilities. Under State law, the BAAQMD must implement and enforce all MACT Standards, or rules that are at least as stringent. The following table lists the ATCMs adopted for stationary sources.

Table 2
ATCMs Enforced by the Air District

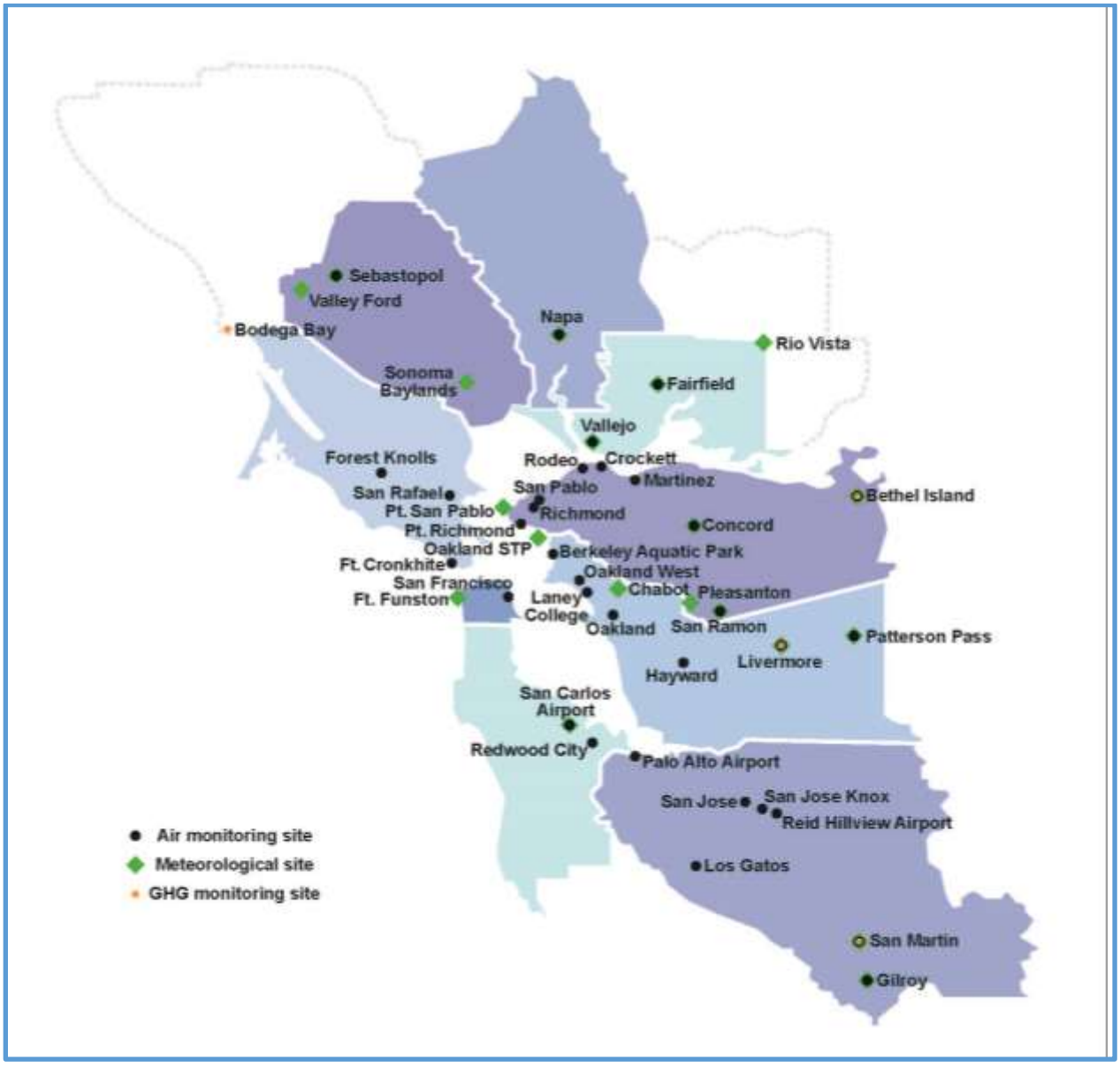
CCR Reference Number	ATCM Title	Adoption / Amended Date
17 CCR §93101	Benzene ATCM for Retail Service Stations	Adopted May 13, 1988
17 CCR §§93102-93102.16	Hexavalent Chromium ATCM for Decorative and Hard Chrome Plating and Chromic Acid Anodizing Facilities	*Adopted*: February 18, 1988 *Amended*: December 7, 2006
17 CCR §93101.5	ATCM for Thermal Spraying	*Adopted:* September 30, 2005
17 CCR §93103	Chromate Treated Cooling Towers	*Adopted*: March 9, 1989
17 CCR §93104	Dioxins ATCM for Medical Waste Incinerators	*Adopted*: July 13, 1990
17 CCR §93105	Asbestos ATCM for Construction, Grading, Quarrying and Surface Mining Operations	*Adopted*: July 26, 2001
17 CCR §93106	Asbestos ATCM for Surfacing Applications	*Adopted*: July 20, 1990 *Amended:* July 20, 2000
17 CCR §93107	ATCM for Emissions of Toxic Metals from Non-Ferrous Metal Melting	*Adopted*: January 14, 1993
17 CCR §§93108 & 93108.5	Ethylene Oxide ATCM for Sterilizers and Aerators - Parts 1 and 2	*Adopted*: May 21, 1998
17 CCR §93109	ATCM for Emissions of Perchloroethylene from Dry Cleaning Operations	*Adopted*: October 14, 1993 *Amended*: January 25, 2007
17 CCR §93110	Environmental Training Program Regulation for Perchloroethylene Dry Cleaning Operations	*Adopted*: October 14, 1993
17 CCR §93111	ATCM for Emissions of Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Activities	*Adopted:* April 27, 2000
17 CCR §93112	ATCM for Emissions of Hexavalent Chromium and Cadmium from Motor Vehicle and Mobile Equipment Coatings	*Adopted:* September 20, 2001
17 CCR §93113	ATCM to Reduce Emissions of Toxic Air Contaminants from Outdoor Residential Waste Burning	*Adopted:* February 3, 2003
17 CCR §93114	ATCM to Reduce Particulate Emissions from Diesel-Fueled Engines -- Standards for Nonvehicular Diesel Fuel	*Adopted:* July 24, 2003
17 CCR §93115	ATCM for Stationary Compression Ignition Engines	*Adopted:* February 26, 2004
17 CCR §93116	ATCM for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater	*Adopted:* February 26, 2004 *Amended*: February 19, 2011
17 CCR §93120	ATCM to Reduce Formaldehyde Emissions from Composite Wood Products	*Adopted:* April 18, 2008

California's air districts are required to either implement and enforce each ATCM as adopted by the ARB or adopt a control measure that is at least as stringent as the one adopted by the ARB. Under Regulation 11: Hazardous Pollutants, the Air District has adopted 17 ATCMs, either by reference or adopted rules more stringent than those adopted by the ARB. For example, the Air District adopted a more stringent local dry-cleaning rule (Regulation 11, Rule 16) to address concerns about high cancer risk from dry cleaners that operate in apartment buildings (co-residential facilities) in 1994 and Regulation 9, Rule 13: Nitrogen Oxides, Particulate Matter, and Toxic Air Contaminants from Portland Cement Manufacturing.

Ambient Monitoring Network

The toxic air monitoring network is operated by the BAAQMD, collecting samples over 24-hour periods, generally on a 12-day sampling frequency; however, several sites use a 6-day sampling frequency. The District's air monitoring network began in 1986 with six sites, and has gradually been expanded to its present size of 30 sites. Currently 18 sites are used to collect toxic samples. One of the air monitoring stations is portable and was temporarily located in Cupertino near Lehigh Southwest Cement Company to help assess the impact from this facility on the surrounding area. The California Air Resources Board (CARB) has collocated samplers at three BAAQMD sites to help determine precision and accuracy of the program. Figure 4 illustrates the locations of the Bay Area air monitoring sites and meteorological stations.

Figure 4.
Map of Bay Area State or Local Air Monitoring Stations, Special Purpose Monitoring Sites, GHG Monitoring Sites and Meteorological Stations in 2015



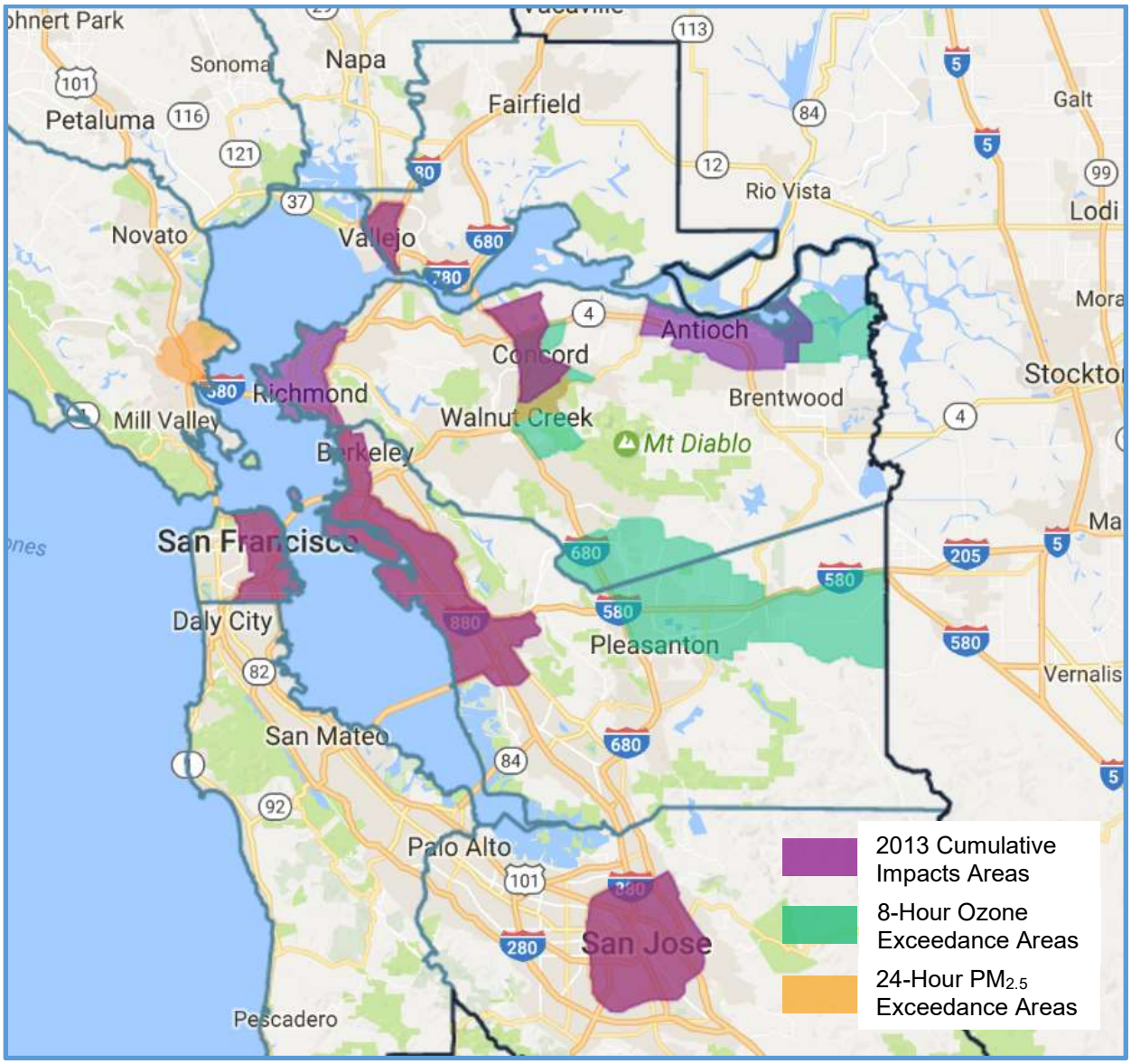
Annual summaries of the ambient toxics monitoring network data are available at: http://www.baaqmd.gov/research-and-data/air-toxics/annual-report.

Community Air Risk Evaluation (CARE)

The Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor toxic air contaminants (TACs) in the Bay Area. The program modeled TAC emissions from stationary point and area sources, and on-road and off-road mobile sources, to identify areas where

vulnerable population would be exposed. The program then assisted in developing appropriate mitigation strategies for these areas. The map contained in Figure 5 shows areas where toxic air contaminants, fine particulate matter, and ozone are estimated to have the greatest impacts on health.

Figure 5
CARE Areas



Health Risk Assessments and Proposed Rule 11-18

In preparation for proposed Rule 11-18, the Air District would reevaluate over 6,000 existing facilities using current knowledge and procedures. This effort would rely on estimates of health risk using the latest science. To ensure the use of the best available understanding of health risk, the Air District follows updated state-wide guidance

regarding health risk assessment methodologies to evaluate public exposures to toxic air contaminants and to calculate and manage the resulting health risks. Proposed Rule 11-18 would rely on the same state-wide health risk assessment guidance (Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) Health Risk Assessment Guidelines) that is used in the current Toxics NSR program.

OEHHA periodically updates its Health Risk Assessment (HRA) Guidelines to reflect advances in science. OEHHA recently adopted a major update to the HRA Guidelines that focused on children's health protection: OEHHA's 2015 HRA Guideline Revisions. Both Rule 11-18 and the Air District's Air Toxic NSR programs will use these 2015 Guideline Revisions. More details on these revisions can be found in the Staff Report for the Air District's revisions to the Air Toxic NSR program.[2]

C. Industry Description

Currently, there are over 6,000 facilities that report their air toxic emissions to the Air District. Of these facilities, staff anticipates proposed Rule 11-18 would affect a wide range of commercial, industrial and municipal facilities including data centers, petroleum refineries, chemical plants, waste water treatment facilities, foundries, forges, landfill operations, hospitals, crematoria, power plants, colleges and universities, military facilities and installations, and airline operations. These facilities operate a wide variety of sources of toxic emissions, including diesel-fueled internal combustion engines, waste water treatment, combustion sources, evaporative and fugitive emissions, etc. The Air District estimates that hundreds of facilities could potentially be impacted by this proposed rule. Table 3 provides a general summary of the types of facilities that may be affected by this proposed rule and the major sources of toxic emissions.

Table 3
Summary of Toxic Air Contaminant Emitting Facilities and Sources

Facility	Sources	Primary Risk Driver(s)	Estimated Range of Health Risks (in a million)
Refineries	Fugitive Emissions Stack Emissions Diesel Engines Cooling Towers Waste Water Treatment Operations	Benzene Diesel PM Formaldehyde 1,3-Butadiene Chromium VI Nickel	13 – 56
Data Centers	Stationary Diesel Engines	Diesel PM	3 – 24
Cement Manufacturing	Stack Emissions Fugitive Emissions	Chromium VI	9 – 40
Chemical Plants	Stack Emissions Fugitive Emissions	Formaldehyde Carbon Tetrachloride	12

[2] See the Staff Report for Amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants, September 2016.

Facility	Sources	Primary Risk Driver(s)	Estimated Range of Health Risks (in a million)
		Sulfuric Acid Mist Diesel PM	
Crematoria	Stack Emissions	Chromium VI Mercury	10 – 14
Landfills	Fugitive Emissions Diesel Engines	Vinyl Chloride Hydrogen Sulfide Benzene Diesel PM Acrylonitrile	11 – 23
Foundries / Metal Melting	Fugitive Emissions	Dioxins Manganese Lead Chromium VI Mercury Cadmium Nickel Arsenic PAHs Copper	17 – 40
Sewage Treatment Facilities	Fugitive Emission Stack Emissions	Diesel PM Hydrogen Sulfide Cadmium Mercury	9 – 40
Power Plants	Stack Emissions	Formaldehyde Ammonia Benzene Diesel PM	5 – 17
Gasoline Stations	Fugitive Emissions	Benzene Ethyl Benzene 1,3-Butadiene	10 – 31
Military Facilities	Diesel Engines	Diesel PM	n/a
Manufacturing	Diesel Engines	Diesel PM	7 – 14
Hospitals / Medical Facilities	Diesel Engines EtO Sterilizers Stack Emissions	Diesel PM EtO Formaldehyde	2 – 23

1. Diesel Engines

Diesel engines are compression-ignited (CI) engines. CI engines run lean (excess air) using diesel fuel or other longer-chained hydrocarbons, including fuel oil, distillate oil, or jet fuel. CI engines operate differently than spark-ignited engines in that they operate by compressing an air and fuel mixture, which increases the temperature of the mixture. (When a gas is compressed, its temperature increases with the increase in pressure.) A diesel engine uses this property to ignite the air-fuel mixture and power the engine. The exhaust from these engines contain both gaseous compounds and particulate matter. The particulate matter portion of the diesel exhaust was identified as a toxic air contaminant by the ARB in 1998. As shown in Figure 3, diesel particulate matter is one of the largest sources of risk from stationary sources. Diesel internal combustion engines are operated at a wide variety of facilities, including refineries; landfills; sewage treatment

facilities; chemical plants; hospitals; residential, commercial, governmental, educational, and industrial buildings; and is often the sole source of toxic emissions and health risk at many of these facilities. Table 4 provides a list of potential risk reduction measures for stationary diesel engines.

Table 4
Risk Reduction Measures for Stationary Diesel Engines

Pollutant / Emission Source	Risk Reduction Measure
DPM / IC Engine	Reduce Operating Hours
	Relocate Engine
	Adjust Stack Height
	Diesel Particulate Filter
	Active Diesel Particulate Filter
	Oxidation Catalyst

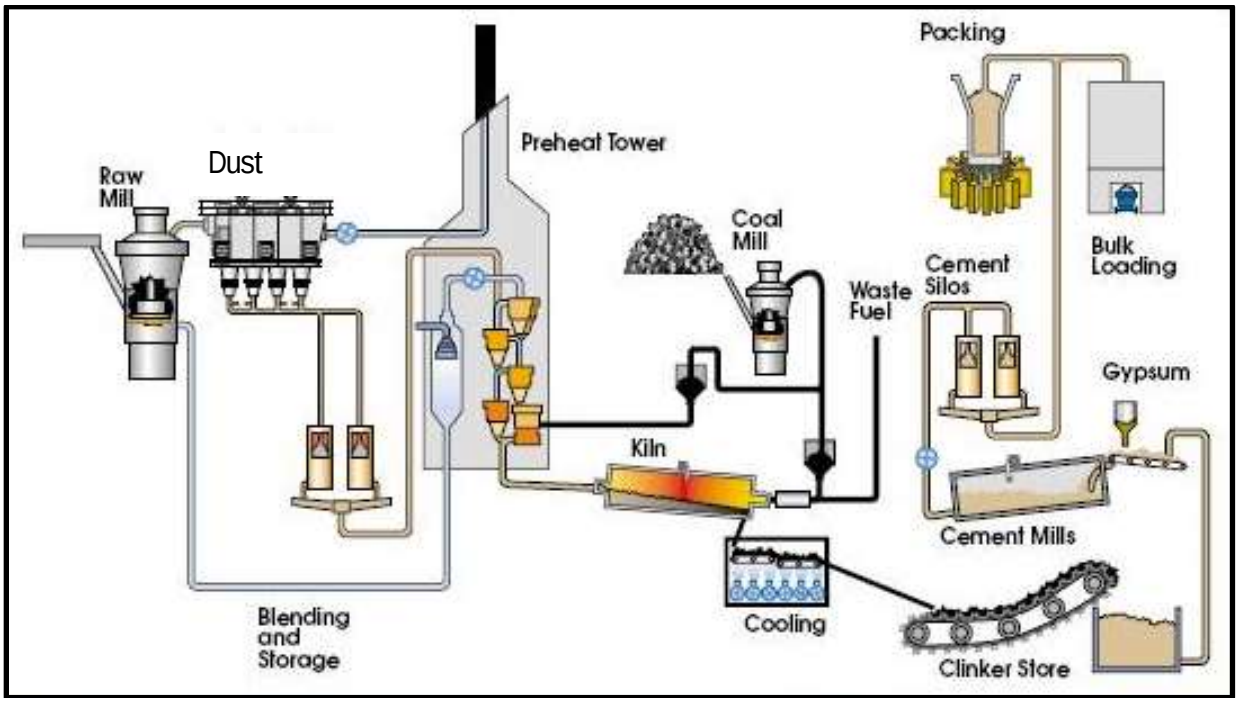
2. Portland Cement Manufacturing

Portland Cement Kiln Overview

Portland cement is a fundamental ingredient of concrete, consisting of calcium, silicon, aluminum, and iron. These materials are combined in several steps requiring careful control to ensure that the final product meets specific chemical and physical specifications required for building and construction needs. Figure 6 shows a schematic diagram of Portland cement manufacturing.

Figure 6

Schematic of Cement Manufacturing Process



Manufacturing Steps

Portland cement manufacturing is a series of steps which take place at a large industrial facility usually located adjacent to a source of raw materials. Raw materials consist of limestone, shells or chalk, clay, sand, alumina and iron ore. The bulk of these are mined at a quarry, blended, and ground to a powder. This blended material is subjected to intense heat in a kiln to cause a series of chemical reactions, transforming the powdered raw materials into something called cement clinker. Cement clinker consists of grayish-black pellets the size of marbles or golf balls, which is cooled, ground and mixed with gypsum and other additives to form powdered Portland cement.

Emissions from Portland Cement Manufacturing

The manufacturing of cement requires the movement and processing of many tons of material as well as the combustion of large amounts of fuel in order to heat that material to extremely high temperatures. Emissions of pollutants are directly attributable to both the fuel combustion and materials processing. The formation of NOx during the manufacture of cement is due to the high temperature, oxidizing atmosphere necessary for clinker formation. Emissions of TACs arise from the presence of these compounds predominantly in the raw materials and to a lesser extent the fuel to fire the kiln. Predominant TACs emitted include mercury, hydrochloric acid (HCl), benzene, dioxins and furans, and dependent on the raw materials used, metals such as lead and hexavalent chrome. Particulate emissions arise from crushing, mixing and storage of raw

materials, clinker production and cooling, finish grinding, packaging, and from vehicle traffic.

For the most part, emissions of metallic TACs are limited at Lehigh, a Portland cement manufacturing plant located in Cupertino, California, due to low TAC levels in raw materials and fuel used at the plant, combined with the high level of control from fabric filtration systems in use at the plant. Mercury emissions are more significant than other metallic TACs due to relatively high mercury levels in the limestone quarried at the facility and because the metal is volatilized by the high temperatures of the kiln. Other TACs emitted from the kiln include hydrochloric acid (HCL), dioxins, furans, and benzene. Table 5 lists risk reduction measures available to reduce risk from Portland cement manufacturing operations.

Table 5
Risk Reduction Measures for Portland Cement Manufacturing

Pollutant / Emission Source	Risk Reduction Measure
Chromium VI / Kiln	1. Baghouse, Filterable PM<0.006 gr/sdcf for T>150F[xix] 2. Wet Scrubber for condensable $PM_{2.5}$
Chromium VI / Silos, bins, mills	Baghouse, Filterable PM<0.0013 gr/sdcf for T>150F[xx]

3. Petroleum Refineries

Petroleum refineries convert crude oil into a wide variety of refined products, including gasoline, aviation fuel, diesel and other fuel oils, lubricating oils, and feed stocks for the petrochemical industry. Petroleum refineries are very large industrial complexes that involve many different processing units and auxiliary facilities such as utility units and storage tanks. Each refinery has its own unique arrangement and combination of refining processes largely determined by the refinery location, desired products and economic considerations.

Health risks associated with petroleum refining are due primarily to the emissions of benzene, 1,3-butadiene, formaldehyde, and diesel particulate matter exhaust. Benzene and 1,3-butadiene, and other toxic compounds are emitted from storage tanks, waste water treatment operations, reformers, cooling towers, and from leaks from pumps, valves, and flanges. Benzene, along with PAHs, can also be emitted from the steam vent of the delayed coker. Diesel particulate matter is emitted from diesel generators and backup engines. Benzene and formaldehyde are emitted from refinery combustion operations.

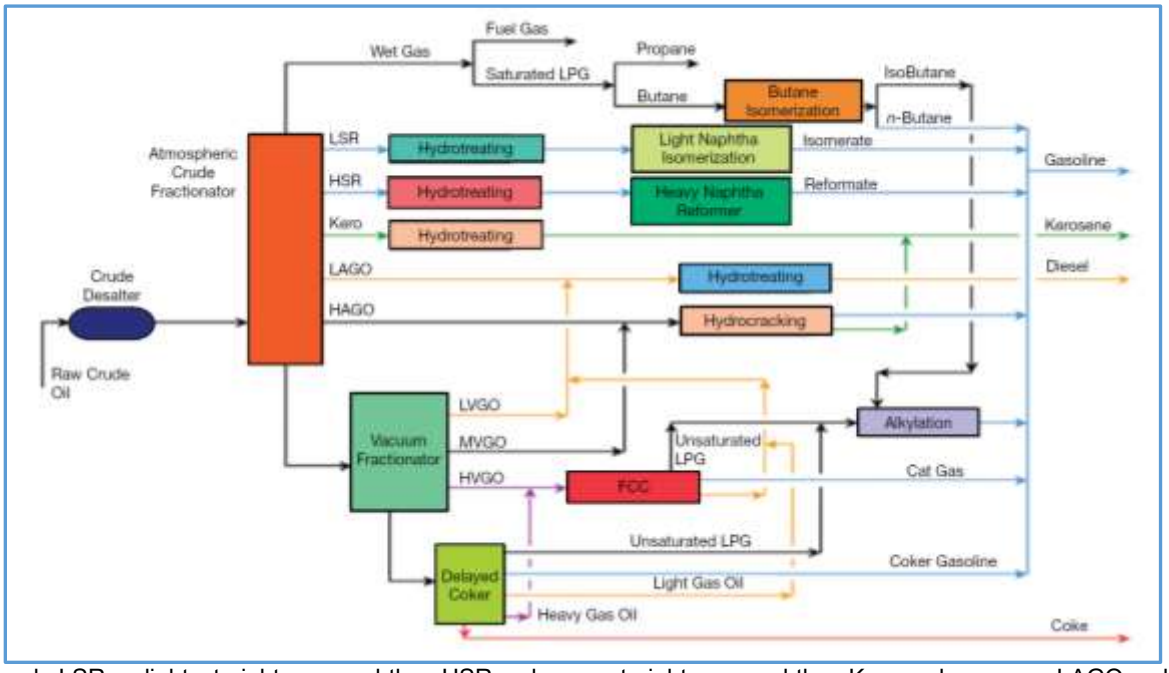
Currently, the five petroleum refineries located in the Bay Area within the jurisdiction of the Air District that would be affected by the rule are:

1. Chevron Products Company, Richmond (BAAQMD Plant #10)
2. Phillips 66 Company—San Francisco Refinery, Rodeo (BAAQMD Plant #21359)
3. Shell Martinez Refinery, Martinez (BAAQMD Plant #11)

4. Tesoro Refining and Marketing Company, Martinez (BAAQMD Plant #14628)
5. Valero Refining Company—California, Benicia (BAAQMD Plant #12626) and associated Asphalt Plant (BAAQMD Plant #13193)

These facilities process crude oil into a variety of products such as gasoline, aviation fuel, diesel and other fuel oils, lubricating oils, and feedstocks for the petrochemical industry. The diagram in Figure 7 illustrates how various process units at petroleum refineries convert raw crude oil (petroleum) into fuels and other products.

Figure 7
Refinery Flow Diagram



Legend: LSR = light straight-run naphtha; HSR = heavy straight-run naphtha; Kero = kerosene; LAGO = light atmospheric gas oil; HAGO = heavy atmospheric gas oil; LVGO = light vacuum gas oil; MVGO = medium vacuum gas oil; HVGO = heavy vacuum gas oil.

The processing of crude oil occurs in various process units or plants; some of the primary process units include:

- Crude Desalter: Crude oil is mixed with water to separate the salt and sediments from the crude.
- Crude Unit: The incoming desalted crude oil is heated and distilled into various fractions for further processing in other units.
- Gas Concentration Unit: Light hydrocarbons from the top of the crude unit are separated and distributed in the refinery fuel gas (RFG) system for use as fuel for heaters and boilers.
- Vacuum Distillation Unit: The residue oil from the bottom of the crude oil distillation unit is further distilled under heavy vacuum.
- Hydrotreater: Naphtha, kerosene, and gas oil are desulfurized from the crude unit by using hydrogen and converting the organically bound sulfur into hydrogen sulfide (a toxic compound).

- Fluidized Catalytic Cracker Unit: Longer chain, higher boiling hydrocarbons such as heavy oils are broken (or “cracked”) into lighter, shorter molecules at high temperatures and moderate pressure in the presence of a catalyst. This process is so named because the catalyst is so fine that it behaves like a fluid.
- Butane Isomerization Unit: Polymers of butane are reformed into isobutane for use in the alkylation process. Alkylates are used in blending gasoline to boost the octane rating. Alkylates are considered one of the highest quality refinery products.
- Light Naphtha Isomerization Unit: Benzene is saturated and short, straight-chain hydrocarbons are isomerized into branched-chain hydrocarbons.
- Heavy Naphtha Reformer and Hydrotreater: Low-octane linear hydrocarbons (paraffins) are converted into aromatics using a catalyst. The process also forms hydrogen - used in the refinery’s hydrocracking and hydrotreating units - and benzene, toluene, and xylene (BTX) feedstocks, used in other process units.
- Hydrocracker Unit: Hydrogen is used to upgrade heavier fractions into lighter, more valuable products, such as diesel and jet fuel, in a high-pressure system.
- Alkylation Unit: Butene and propene are reacted with isobutane into alkylate, a high-octane gasoline component.
- Delayed Coker: Very heavy residual oils are converted into end-product petroleum coke as well as naphtha and diesel oil byproducts.
- Claus Sulfur Plant: A two-step (thermal and catalytic) process for recovering sulfur from gaseous hydrogen sulfide (H_2S) derived from refining crude oil. In the thermal step, H_2S laden gas is combusted to form elemental sulfur and sulfur dioxide (SO_2). In the catalytic step, a catalyst is used to boost the sulfur yield. In this step, H_2S reacts with SO_2 to form elemental sulfur.

Separation Processes

Crude oil consists of a complex mixture of hydrocarbon compounds with small amounts of impurities such as sulfur, nitrogen, and metals. The first phase in petroleum refining is the separation of crude oil into its major constituents using distillation and "light ends" recovery (i.e., gas processing) that splits crude oil constituents into component parts known as "boiling-point fractions."

Conversion Processes

Crude oil components such as residual oils, fuel oils, and other light fractions are converted to high-octane gasoline, jet fuel, and diesel fuel, gasoline by various processes. These processes, such as cracking, coking, and visbreaking (a form of thermal cracking that breaks the viscosity), are used to break large petroleum molecules into smaller ones. Polymerization and alkylation processes are used to combine small petroleum molecules into larger ones. Isomerization and reforming processes are applied to rearrange the structure of petroleum molecules to produce higher-value molecules using the same atoms.

Treating Processes

Petroleum treating processes stabilize and upgrade petroleum products by separating them from less desirable products, and by removing other elements. Treating processes, employed primarily for the separation of petroleum products, include processes such as de-asphalting. Elements such as sulfur, nitrogen, and oxygen are removed by hydrodesulfurization, hydrotreating, chemical sweetening, and acid gas removal.

Feedstock and Product Handling

Refinery feedstock and product handling operations consist of unloading, storage, blending, and loading activities.

Auxiliary Facilities

A wide assortment of processes and equipment not directly involved in the processing of crude oil are used in functions vital to the operation of the refinery. Examples include steam boilers, wastewater treatment facilities, hydrogen plants, cooling towers, and sulfur recovery units. Products from auxiliary facilities (e.g., clean water, steam, and process heat) are required by most process units throughout a refinery.

Emissions from Refinery Processing

These primary process units, minor process units, auxiliary equipment (boilers, turbines, heat exchangers, etc.), and other refinery activities (such as truck and loader traffic) emit a variety of criteria pollutants, toxic pollutants (toxic air contaminants), and climate pollutants (greenhouse gases). Other sources of emissions include waste water treatment, tanks, leaking equipment, pressure release devices, flares, marine terminals, and product loading, which are collectively subject to at least ten different Air District regulations. Table 6 lists risk reduction measures available for many petroleum refining operations.

Table 6
Risk Reduction Measures for Petroleum Refining Operations

Pollutant / Emission Source	Risk Reduction Measure
Benzene & PAHs / Delayed Coker	Rule based: Depressurize each coke drum to a closed blowdown system until the coke drum vessel pressure or temperature measured at the top of the coke drum or in the overhead line of the coke drum as near as practical to the coke drum meets applicable coke drum vessel pressure or coke drum vessel temperature requirements for existing and new delayed coking units in MACT CC (63.657) prior to venting to the atmosphere, draining, or deheading the coke drum at the end of the cooling cycle. No proven technology for further reductions.

Pollutant / Emission Source	Risk Reduction Measure
Benzene & Naphthalene / Waste water treatment operations	Leak Monitoring: 1. Lower leak limit (e.g. from 500 ppm to 100 ppm) 2. Increased leak monitoring frequency (e.g. from semi-annual to quarterly or monthly) Technology: 1. Install water seals or equivalent technology on vents and drains open to atmosphere. 2. Collect and vent emissions to a control device (e.g. carbon adsorption or thermal oxidizer). 3. Enclose open weirs and lines with direct piping.
Benzene and 1,3 Butadiene / Catalytic Reforming Units	Rule based: For new and existing CRUs meet the emission limit in Table 15 of MACT UUU (63.1566) during the initial catalyst depressurizing and catalyst purging operations by routing vent emissions to a flare (option 1), or meet the less stringent of a total organic compound (TOC) or non-methane TOC percent reduction standard (98% by weight) or concentration limit (20 ppmv dry basis as hexane corrected to 3% O_2). No proven technology for further reductions.
Benzene & Naphthalene / Fugitives (pumps, valves, flanges)	Component Leak Monitoring (All Component Types): 1) Lower leak limit (e.g. from 100 ppm to 50 ppm or 25 ppm) 2) Increased leak monitoring frequency (e.g. from quarterly to monthly or weekly **Valves**: 1) welded bonnet flanges, 2) zero-emission seals and packing (manufacturer guarantee leaks < 10 ppm) **Pumps**: 1) rotating shaft shrouded and vented to a thermal oxidizer or furnace 2) double-mechanical seals, 3) zero emission seal packing **Pressure-Relief Valves**: 1) vented to recovery (process, fuel gas, etc.) or to abatement (thermal oxidizer, furnace, etc.) 2) equip with monitoring device (e.g. rupture disk indicator, magnetic sensor, motion detector on PRD valve stem, flow monitor, or pressure monitor) **Connectors**: 1) welded connections 2) shrouded and vented to abatement (e.g. oxidizer or furnace) 3) zero emission seals"
Benzene and 1,3 Butadiene / Cooling Towers	Rule based: Compliance with the leak detection, repair, and monitoring requirements in Reg. 11-10 and MACT CC (Section 63.654: Heat Exchange Systems) No proven technology for further reductions.
Benzene, 1,3-Butadiene, Naphthalene / Storage Tanks	Fixed Roof Tanks: 1) Internal floating roof and seals (60 to 99 percent control) 2) Vapor balancing (90 to 98 percent control) 3) Vapor recovery to process, oxidizer and/or scrubber (90 to 98 percent control) 4) Maintain the insulation of heavy fuel storage tanks in good condition

Pollutant / Emission Source	Risk Reduction Measure
	(reduces storage loss) 5) Reduce generation of dissolved gases by eliminating pressure drop in tank fill line 6) Reduce number of roof fittings 7) Re-paint tank <u>Floating Roof Tanks:</u> 1) Vapor recovery to an oxidizer and/or scrubber 2) Dome external floating roof tanks 3) Reduce number of roof fittings (e.g. remove rim vents, etc.) 4) Re-paint tank 5) Increased gap seal monitoring frequency 6) Decreased seal gap allowance (e.g. from 1/8" to 1/16", etc.) 7) Reduce number of roof fittings <u>Pressurized Tanks:</u> 1) Lower maximum allowable leak limit (e.g from 500 ppm to 100 ppm) for pressure vacuum valves 2) Increase leak monitoring frequency

4. <u>Metal Melting (Foundries and Furnaces)</u>

Foundries are metal melting operations that cast molten metals into a wide array of products, such as pipes, connectors, valves, engine parts, pump housings, ski lift and cable car castings. Foundries melt metal in furnaces using coke, electricity, or natural gas. Once the molten metal has the right properties, it is poured or "tapped" and transferred to molds in which the metal casting is formed into the shape of the final product. Foundries may operate one or more type(s) of furnaces, which include cupola, electric arc, reverberatory, sweat, and crucible.

Cupola Furnace

The cupola furnace is one of the oldest methods of making cast iron and is the most common furnace operating at iron and steel foundries for secondary steel production (steel made from scrap or ingots – not iron ore) in the District. A cupola is a cylindrical, water-cooled furnace that is lined with refractory brick made from heat resistant material such as aluminum oxide, magnesium oxide, silicon, or silicon carbide and is similar in appearance to a squat smoke stack. In the metal melting process, operators deposit layers of scrap iron or steel, coke and lime (used as flux) into the cupola near the top; this combination of materials is called the "charge." Air, often preheated, is blown in to the bottom of the furnace through tuyeres (nozzles though which air blasts are routed into the furnace to provide oxygen) to improve the combustion and heating of the furnace.

Electric Arc Furnace

The electric arc furnace (EAF) is also used in secondary steel production. This furnace relies on electricity to heat and melt metal rather than a fuel such as coke or natural gas. The furnace is lined with refractory material and is usually water-cooled. The vessel is covered with a retractable roof through which typically three cylindrical, graphite

electrodes descend into the furnace. When powered with a very strong electrical current, an electric arc forms between the charged metal and the electrode; the electrical arc that forms heats the metal to its melting point. Once the metal is molten and of the proper metallurgical properties, the electrodes are raised. The furnace is built on a tilting platform so that the liquid steel can be easily tapped. One facility in the Bay Area operates three EAFs.

Reverberatory Furnaces

The reverberatory furnace differs from a cupola furnace in that in a reverberatory furnace, the metal is isolated from contact with the fuel. Reverberatory furnaces rely on radiant and convective heating to melt the metal. These furnaces are not considered as energy-efficient as the cupola or electric arc furnaces. Reverberatory furnaces have historically been used for melting bronze, brass, and pig iron (an intermediate product of smelting iron ore with a high carbon content). In the Bay Area, these furnaces are used primarily for melting secondary aluminum, often from scrap.[21, 22]

The basic design of an aluminum reverberatory furnace is a simple steel box lined with refractory bricks with a flue at one end and a vertically-lifting door at the other. The temperature in the furnace allows the aluminum to melt while leaving solid other metals that have a higher melting point, such as iron. The floor of the furnace slopes slightly to separate the molten aluminum from the solid metals.[21]

Sweat Furnace

Sweat furnaces provides an effective and cost-effective means to separate non-ferrous metals, such as aluminum, from iron and/or steel. These units are also commonly known as dry hearth furnaces. Sweat furnaces heat, typically using natural gas, commingled recyclable metals to a temperature that causes the non-ferrous metals, such as aluminum, to melt and run off (i.e., “sweat”) leaving behind steel and other materials that have a higher melting point.[23] The floor of the furnace is slightly inclined to allow the melted metal to flow and be directed to either a holding furnace or into molds.

Emissions from Foundry Operations

Metal melting and processing operations emit particulate matter, including metals; volatile organic compounds (VOC) (which include odorous compounds such as phenols); and/or toxics compounds.

The casting of molten metals is the primary source of PM and odorous substances, such as phenolic compounds, at foundries. These emissions occur when the hot molten metals contact the molds and cores formulated with binders that contain phenols, urethane, furans or other organic compounds. Metal forges emit PM and may emit odors from heat and pressure applied to lubricating oils on the metals. Table 7 lists the most common stages of production at foundries and forges and the types of emissions associated with those stages.

Table 7
Metal Production and Recycling Stages, Description and Emissions

Process*	Description	Emissions
Metal Management	Compilation, collection, storage and sorting of metals for metal management and the handling of byproduct and wastes.	PM, VE
Charging	Preheating the furnace and adding metal, flux, fuel and other compounds to furnace	PM
Furnace / Oven Operations: Metal Melting	Heating until the metal mixture is molten and reaches the proper temperature and metallurgic properties.	PM, VOC, carbon monoxide, oxides of nitrogen, toxics
Tapping	Molten metal is poured from furnace into a ladle for transfer to the casting area.	PM, toxics
Casting / Pouring	The tapped metal is transferred to the casting area and poured into the molds to form castings.	PM, VOC, toxics
Cooling	The cast metal is allowed to cool to close to ambient temperatures. While cooling, the metal cast shrinks often pulling away from the mold.	PM, VOC, toxics
Shakeout	Removing the casting from the mold – which can often involve destruction of mold.	PM, VOC, toxics
Grinding / Finishing	Once the casting is removed from the mold, it may have to be finished by grinding excesses of metal.	PM
Mold / Core Making	Making the mold / core from sand and binders and other substances such as clay, starch, charcoal.	PM, VOC, toxics

* The listed metal melting processes – metal management through grinding / finishing – are sequential steps in the production of cast metal parts. Mold / core making, however, is an essential parallel process that is not specifically a sequential step in the production of cast metal parts.

Table 8 lists risk reduction measures for foundry and forging operations.

Table 8
Risk Reduction Measures for Foundry and Forging Operations

Pollutant / Emission Source	Risk Reduction Measure
Chromium IV / Secondary Metal Process (Chrome Plating).	ESP and High Efficiency Wet Scrubber Install plating bath covers and meshpad mist eliminators
Chromium IV / Secondary Metal Furnace	Baghouse, Filterable PM<0.0013 gr/sdcf for T>150F
Chromium IV / Fugitive Emissions	Total furnace enclosure & high efficiency cartridge filtration/baghouse Direct evacuation control (DEC), hood, and baghouse (99.00 percent control efficiency) Direct-shell evacuation control system with adjustable air gap and water-cooled elbow and duct to baghouse Baghouse followed by wet scrubber Baghouses equipped with broken bag detectors

5. Crematoria

A crematory (also known as a crematorium, cremator or retort) is a machine in which people's bodies or remains are burned down to the bones, eliminating all soft tissue. Crematories are usually found in funeral homes, chapels, cemeteries, or in stand-alone facilities. A facility which houses the actual crematory units is referred to as a crematorium.

Emissions from Crematories

The flue gases from the crematory chamber are usually vented to the atmosphere through a refractory-lined flue. Hexavalent chromium and mercury (from dental amalgam) are the major sources of risk from crematories. Filtration systems, such as baghouses, are used to control PM (which can contain both chromium and mercury) from the flue stack emissions at crematories. Activated carbon adsorption can also be used for mercury abatement. Table 9 lists various measures that could reduce risks from crematoria.

Table 9
Risk Reduction Measures for Crematoria

Pollutant / Emission Source	Risk Reduction Measure
Chromium IV and Mercury / Crematory Retort.	1) Increase stack height and prohibit two retorts from operating concurrently. 2) Require the following: minimum exhaust temperature of 400^{o}C, a stack diameter of 0.46 meters, a minimum exit velocity of 15meters/second, and a minimum stack height of 10 meters. 3) Require one or more of the following control technologies: co-flow filter, gas scrubber, honeycomb catalytic adsorber, sodium bicarbonate and activated carbon control systems, and solid-bed filters using absorbants such as cokes or zeolites.

6. Waste Water Treatment Facilities

Waste water treatment is the process of removing contaminants from wastewater, primarily from household sewage. Its basis function is to speed up the natural processes by which water is purified. It includes physical, chemical, and biological processes to remove these contaminants and produce environmentally safe treated wastewater (or treated effluent). A by-product of sewage treatment is usually a semi-solid waste or slurry, called sewage sludge, that must undergo further treatment before being suitable for disposal or land application.[24]

Emissions from Waste Water Treatment Facilities

Toxic air contaminant emissions from waste water treatment operations include hexavalent chromium, mercury, and cadmium from incineration; hydrogen sulfide from anaerobic digestion of organic matter; and formaldehyde from natural gas engines and

diesel particulate matter from diesel generators. Table 10 lists various measures to reduce risk from waste water treatment operations.

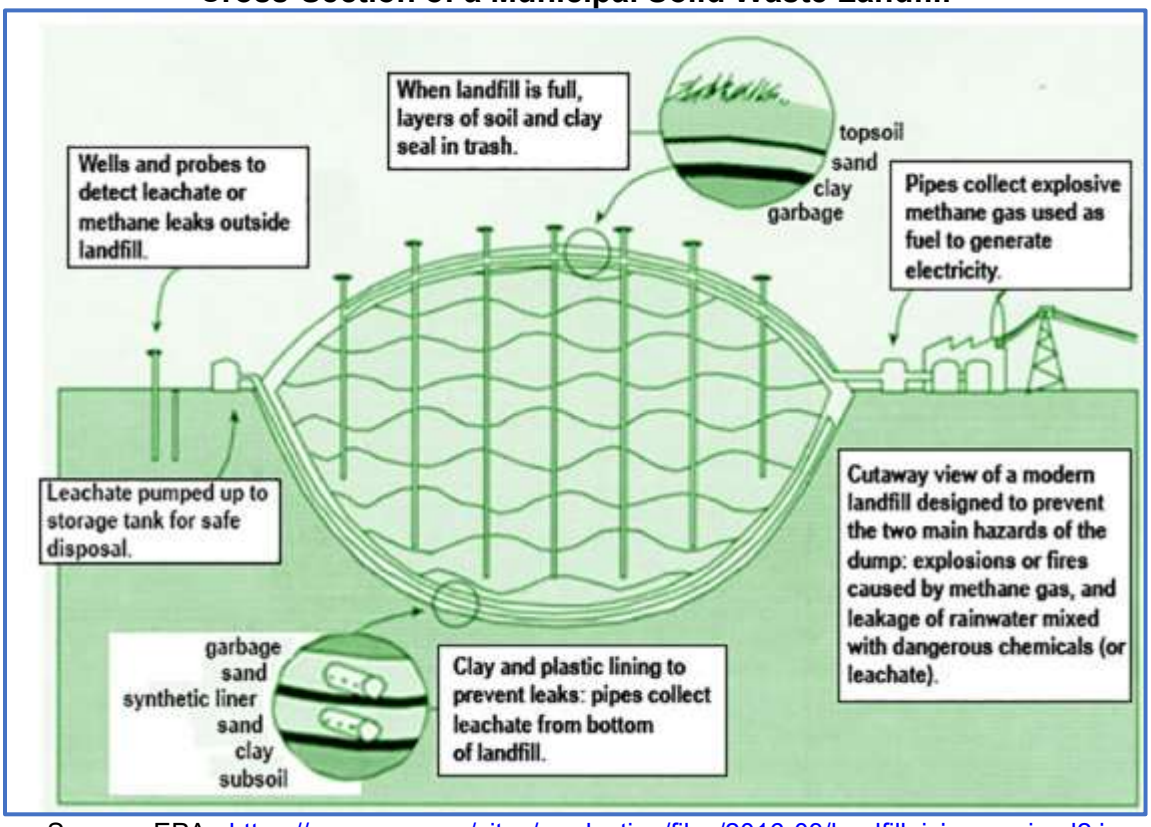
Table 10
Risk Reduction Measures for Waste Water Treatment Facilities

Pollutant / Emission Source	Risk Reduction Measure
Chromium IV, Mercury, Cadmium / Incinerator	1. Increase stack height 2. Oxidation catalyst
Hydrogen Sulfide, / headworks	1. Covering the headworks 2. Injecting ferric chloride 3. Injecting peroxide
Formaldehyde / Natural Gas Engine	1. Oxidation Catalyst

7. Landfills

A solid waste disposal site, or landfill, is an area of land or excavation that receives household waste. A landfill may also receive other types of nonhazardous wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial nonhazardous solid waste.[25] Figure 8 illustrates the basic configuration of a solid waste landfill.

Figure 8
Cross-Section of a Municipal Solid Waste Landfill



Source: EPA: https://www.epa.gov/sites/production/files/2016-03/landfillpicjpg_revised2.jpg

Emissions

Solid waste disposal sites, or landfills, are sources of organic compound emissions. As solid waste decomposes, it produces landfill gas via a naturally occurring anaerobic bacterial process. Landfill gas contains mainly methane and carbon dioxide plus small amounts of nitrogen, non-methane organic compounds (NMOCs) including ethylbenzene, and hydrogen sulfide (H_2S). Most of the NMOCs are precursor organic compounds (POC) and many are toxic air contaminants, such as ethylbenzene and H_2S. If left uncontrolled, landfill gas may seep through the landfill surface and cause significant emissions of POC and toxic compounds. Uncontrolled landfill gas also poses fire, health, and safety hazards. Table 11 provides a listing of potential risk reductions measures for landfills.

Table 11
Risk Reduction Measures for Landfills

Pollutant / Emission Source	Risk Reduction Measure
Ethylbenzene / Active Landfill – LFG Combustion	Compliance with Rules (8-34 and state landfill methane control rule). All active landfills are currently subject to the enhanced monitoring in the state rule. Possible additional measures: add synthetic covers to improve capture, faster collection system installation in new fill areas, enhanced monitoring.

III. PROPOSED RULE REQUIREMENTS

A. Exemptions:

Proposed Rule 11-18 contains two exemptions:

Emergency-Use, Stationary Diesel Engines: Proposed Rule 11-18 would not apply to facilities for which the only source of toxic emissions is one or more stationary diesel engines only if the facility prioritization score is less than 250.

Retail Gasoline Dispensing Facilities: The proposed rule would also exempt retail gasoline stations with a prioritization score less than 250.

These exemptions are included because the ARB and CAPCOA are in the process of developing industry-wide risk management guidelines for these industrial sectors, in which the Air District is participating.[26]

B. Major Definitions:

Best Available Retrofit Control Technology (TBARCT): This definition is modeled after the definition of “Best Available Control Technology” contained in Air District Rule 2-5: New Source Review of Toxic Air Contaminants.

Exposed Individual (EI): This is a person - a resident, student, or worker who is not an employee of or a contractor for the affected facility - who is exposed to toxic air

contaminant emissions from a facility. This terminology is used in discussing the results of a a health risk assessment. Health risk assessments use air dispersion models to determine how toxic air contaminants emitted from a facility will move into the surrounding community. The air dispersion model results in concentrations of air pollutants at many locations around the facility. An exposed individual is someone who lives, works, or attends school at one of these locations of toxic air contaminant concentrations.

Maximally Exposed Individual (MEI): This is the person who is located at the highest point of exposure toxic emissions from a source or facility.

Priority Community: A priority community where the levels of toxic compounds are higher than other areas and where people may be particularly vulnerable and may bear disproportionately higher adverse health effects. This can include Community Air Risk Evaluation communities. The Air District is interested in ensuring these communities benefit most from this Rule.

Risk Action Level: This definition sets the cancer and non-cancer risk action levels as shown in the following table.

Table 12
Proposed Rule 11-18 Risk Action Levels

	Tier I Before January 1, 2020	**Tier II Beginning January 1, 2020**
Cancer Health Risk:	25 per million	10 per million
Chronic hazard index:	2.5	1.0
Acute hazard index:	2.5	1.0

Facilities with health impacts equal to or greater than one or more of the initial tier risk actions levels must reduce the facility risk below all of the final Tier II values within the time prescribed in the Risk Reduction Plan. The Tier II health risk levels were chosen because they reflect the most health protective levels achievable.

Risk Reduction Plan: This is a detailed plan developed by the affected facility that identifies how the facility will reduce its risk below the risk action levels or demonstrate compliance with TBARCT through the implementation of various risk reduction measures such as the installation of control technology or changes in operation. The plan includes a schedule for implementation. Once a plan is approved by the Air District, all of its elements (control measures, schedules, etc.) become enforceable.

Significant Risk Threshold: This definition sets the cancer and non-cancer risk action levels for individual sources of toxic emissions as follows:

Cancer: 1.0 per million (1.0/M)
Chronic hazard index: 0.2
Acute hazard index: 0.2.

Source: This definition clarifies what is a source, which can include a grouping of like or related sources, such as a grouping of diesel engines at a facility or sources whose exhaust may be manifold and, together, mitigated by a single control unit.

Toxic Risk Facility: This definition indicates what types of facilities would be affected by this proposed rule – any facility that has the potential to emit or release TACs.

Unreasonable Economic Burden: This definition provides an indication of the criteria Air District staff would consider when evaluating the cost of compliance and technical feasibility in determining whether to provide an extension beyond five years for reducing a facility's health risk below the risk action level as discussed in Subsection 404.6.

C. Major Provisions:

Section 11-18-301 – Compliance with Risk Reduction Plan: Once a facility is notified by the Air District that the facility poses a health risk greater than the risk action level the facility must:

1. Submit to the Air District for approval, a risk reduction plan that details how the facility would reduce its health risk below the risk action level in the specified timeframe, or if the facility risk cannot reduce its risk below the risk action level, demonstrate to the Air District that all significant sources of risk are controlled with TBARCT;
2. Obtain and maintain approval of the risk reduction plan; and
3. Implement an Air District-approved risk reduction plan.

Once a Plan is approved by the Air District it becomes fully enforceable and the facility is required to implement its elements and maintain approval. Reasons for the Air District to withdraw approval include non-compliance with Plan elements or the Plan's inability to adequately reduce risk levels.

Section 11-18-401 – Health Risk Assessment Information Requirement: The Air District may need additional information from the facility to conduct an HRA. If so, the facility would have up to 60 days to provide that information. That Air District would allow additional time to provide the information if necessary.

Section 11-18-402 – Early Application of Risk Action Levels: This provision allows the Air District to take expeditious action in areas that are highly impacted by toxic emissions, such as priority communities and CARE Areas to reduce health risks from stationary sources. Under the provision, the Air District can conduct an HRA for or apply the risk action levels to any toxic risk facility located in a Priority Community to ensure the facility reduces its risk as quickly as possible in these areas.

Section 11-18-403 – Notification of HRA Results and Submission of Plan: Within 180 days of the Air District notifying a facility that the results of a final HRA indicates that the facility poses a health risk equal to or greater than any of the risk actions levels (until January 2020: 25 per million or a hazard index of 2.5; starting January 2020: 10 per million

or a hazard index greater than 1), the facility must submit a draft risk reduction plan to the Air District for approval. The requirements for the plan are found in Section 11-18-404.

Section 11-18-404 – Risk Reduction Plan Content Requirement: The Risk Reduction Plan must contain certain elements, such as:

- A characterization of each source of toxic emissions, including information from the toxic emissions inventory and the health risk assessment, and identification of the emissions points that contribute to the risk;
- An evaluation of risk reduction measures to be implemented, including a description of the measure, the anticipated toxic emissions reductions, and anticipated risk reductions associated with the measure;
- A schedule for implementing the risk reduction measures as expeditiously as feasible, including dates for filing permit applications, installation dates, completion of process changes, demonstrating the effectiveness of the risk reduction measures;
- An estimate of the remaining risk following the implementation of the risk reduction measures; and
- If the Plan cannot reduce the risk below the action level, a demonstration that either all sources of risk do not pose a health risk in excess of the significant risk level or that they are controlled with TBARCT; a demonstration of the technical infeasibility or unreasonable economic burden associated with reducing the facility risk below the risk action level or the installation of TBARCT within five years (if applicable).

Section 11-18-405 – Review and Approval of Risk Reduction Plans: The section details the process the Air District would use to review and approve the submitted Risk Reduction Plans, including:

- Conducting a completeness review to ensure the Plan contained all the elements required by the rule;
- Posting the Plans (without confidential information) for a 45-day public comment period;
- Approval or disapproval of the plans. If a plan is disapproved, the Air District would identify its deficiencies and the facility would have 45 days to revise and resubmit the plan. If the deficiencies are not corrected, the Air District would disapprove the Plan.

Section 11-18-406 – Updated Risk Reduction Plan: The section allows the Air District to require facilities to update the facility Risk Reduction Plan if the plan would not get the facility below the risk action levels and information becomes available following approval of the Plan regarding risk reduction technology that may be used to significantly reduce the health risk to exposed people.

Section 11-18-501 – Progress Reports: The Rule requires the facility to report annually to the Air District progress on the emissions reductions achieved by the Plan until it is fully implemented. This allows the Air District to monitor and analyze the facility's risk reduction progress and make changes if the progress is determined to be insufficient in meeting the risk reduction goals. If it is determined that a Plan is not meeting its intended

goals or if the implementation timeline proves infeasible, the facility could petition the Air District to revise the Plan to ensure that the risk reduction goals are achieved.

D. Proposed Rule Implementation

The proposed Toxic Risk Reduction Rule would use the annual toxic emissions inventories reported to the Air District by sources that emit toxic compounds. From the toxic emissions inventory data, the Air District would calculate a site-specific prioritization score (PS). In establishing the priority level for a facility, the Air District would consider:

(1) The amount of toxic pollutants emitted from the facility;
(2) The toxicity of these materials;
(3) The proximity of the facility to potential receptors; and
(4) Any other factors that the Air District deems to be important.

The Air District will consult with facility operators prior to finalizing a prioritization score to ensure that the data used by the Air District is accurate and up-to-date.

The Air District would conduct[3] HRAs for all facilities with a cancer PS of ten or greater or a non-cancer PS of one or greater. The Air District would conduct HRAs for facilities in accordance with the OEHHA HRA Guidelines and the CARB/CAPCOA Risk Management Guidelines that were updated in 2015. These Guidelines were updated pursuant to the Children's Environmental Health Protection Act (Senate Bill 25), which required that OEHHA develop health risk assessment procedures that ensure infants and children are protected from the harmful effects of air pollution. The Air District would create a model that incorporated the latest health risk values and protocols. Once the model is created, the Air District would validate the model using site specific parameters, including but not limited to meteorological data, receptor type and location, toxic emission rates and stack location and heights, and topography. The facility owner or operator will be consulted in this validation step. Once the model is validated, the Air District would conduct HRAs to obtain preliminary results that would be shared with the interested public for review and comment before finalization.

Using the results of the HRAs, the Air District would determine whether a facility would be affected by Rule 11-18. The rule would affect facilities with a health risk impact that equaled or exceeded any of the risk action level thresholds – 25 per million (25/M) or a chronic or acute hazard index of 2.5 until January 1, 2020, and ten per million (10/M) cancer risk or a chronic or acute hazard index of 1.0 beginning January 1, 2020. The Air District would notify facilities of their health risk score. Facilities that pose a health risk that exceeds the risk action level threshold would be required to reduce that risk below the threshold or demonstrate that all significant sources of toxic emissions are controlled by TBARCT through the implementation of a Risk Reduction Plan approved by the Air District within five years of approval of the plan or demonstrate that all significant sources of toxic emissions are controlled by TBARCT.

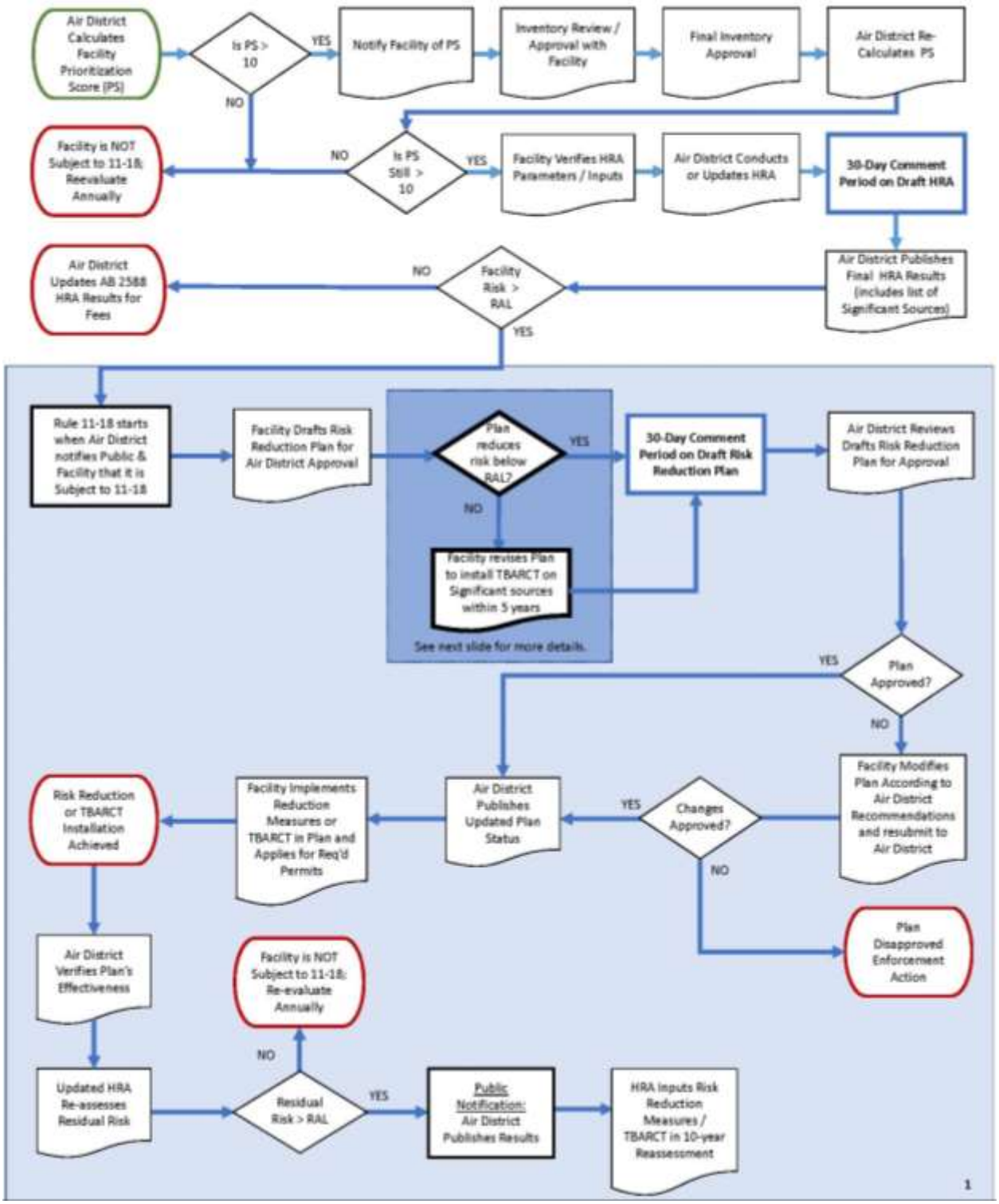
[3] In order to complete the analyses in a timely manner. Some of the work may be completed by independent contractors working for the Air District under direction of Air District staff.

The rule would be implemented so that the highest priority facilities are addressed first; this prioritization would consider a facility's PS; the facility health risk; the facility burden (the number of individuals impacted by the facility); whether the facility is located within a priority community, such as a CARE Area; the facility's proximity to locations with sensitive populations; such as schools, day care centers, hospitals, nursing homes; etc.

A flowchart summarizing the process of developing the health risk assessments and implementation of proposed Rule 11-18 is shown in Figure 13.

Figure 13

Rule 11-18 Process Flowchart



E. Determining Best Available Retrofit Control Technology for Toxics (TBARCT)

In making any case-by-case TBARCT determination, Air District staff would ensure any technology or measure met the definition in the proposed Rule:

11-18-204 **Best Available Retrofit Control Technology for Toxics, or TBARCT:** For any existing source of toxic air contaminants, except cargo carriers, the most stringent of the following retrofit emission controls; considering the cost of achieving health risk reductions, any non-air quality health and environmental impacts, and energy requirements; provided that under no circumstances shall the controls be less stringent than the emission control required by any applicable provision of federal, State or District laws, rules, regulations or requirements:

- **204.1** The most effective retrofit emission control device or technique that has been successfully utilized for the type of equipment comprising such a source; or
- **204.2** The most stringent emission limitation achieved by a retrofit emission control device or technique for the type of equipment comprising such a source; or
- **204.3** Any retrofit control device or technique or any emission limitation that the APCO has determined to be technologically feasible for the type of equipment comprising such a source; or
- **204.4** The most stringent emission control for a source type or category specified as MACT by U.S. EPA, or specified in an ATCM by CARB.

In general, the two major criteria that apply to both best available control technology (BACT) and best available control technology for toxics (TBACT) would also apply to TBARCT determinations, 1) technologically feasible, and 2) achieved in practice. The first category is a more stringent level of control and is technology forcing; it generally refers to advanced control devices or techniques. The second requires that control equipment or technology must be commercially available and demonstrated to be effective and reliable on a full-scale unit. Air District staff in reviewing TBARCT performance information must make the engineering determination that the control would be reasonably expected to perform for a sufficient duration to make the option viable as technologically feasible. Often, considered control techniques are technology transfers from successful application on similar types of equipment or emissions streams. In this case, the control has been "achieved in practice" on a similar source or equipment category, but has not been used for the particular source or equipment in question. In this case, a feasibility analysis would then be necessary.

In most cases, the application of TBARCT on all significant sources of toxic emissions will result in residual health risks that are within acceptable levels. In some cases, however, the residual risk may exceed the risk action levels. The need for risk reduction measures is generally related to a source's proximity to residential receptors or other areas where the public exposure may occur. The need for, and extent of, additional risk reduction measures is determined on a case-by-case basis through site-specific health risk assessment. While TBARCT is driven by risk reduction and there are no specific cost effectiveness triggers, the economic impact and non-air quality environmental impact of achieving the toxic emission reductions must be considered. Similarly, the criteria of commercial availability, reliability, and demonstrated full scale operation and performance

apply to TBARCT and TBACT as well as BACT. The Air District would consider sources such as the EPA's MACT Database and CARB's Air Toxic Control Measures (ATCMS) guidance documents.

There is a large variety of control technologies and measures that could be used to reduce the health risk posed by a facility. Table 13 provides a general listing of these control measures that could be considered by the Air District in determining TBARCT for various sources of toxic emissions. This is not intended to be an exhaustive list.

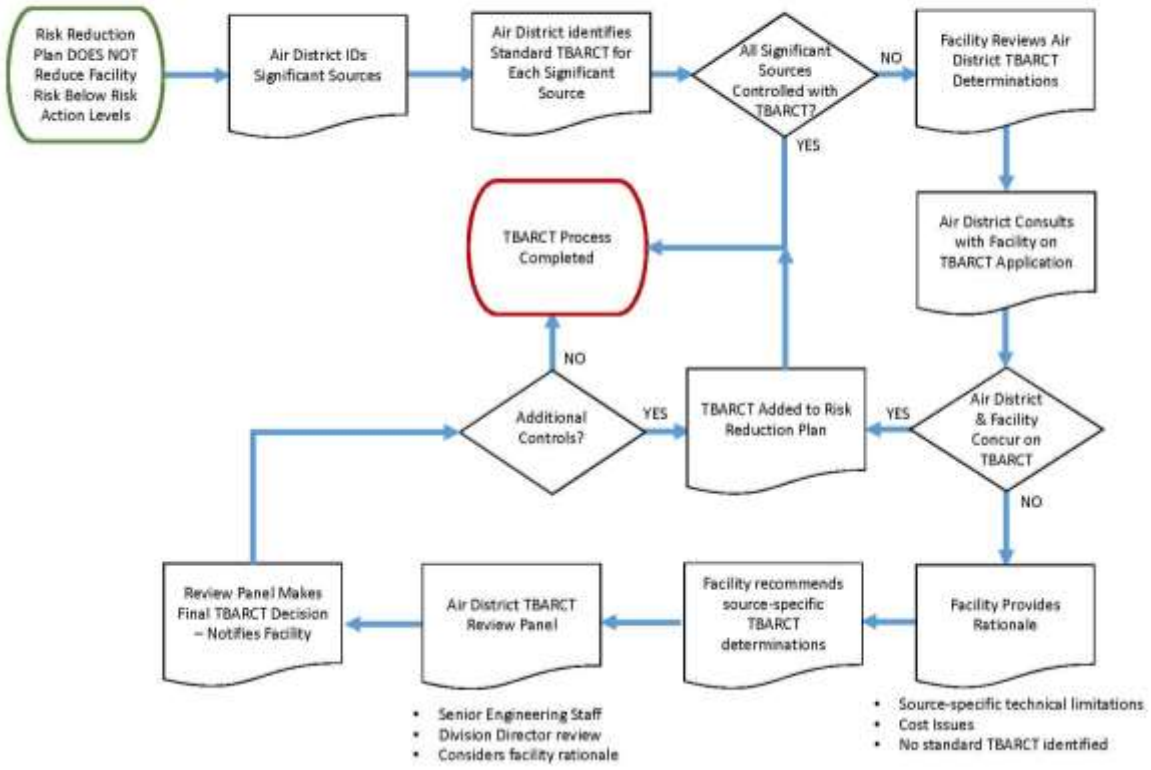
Table 13
Example Risk Reduction Measures and Target Substances

Risk Reduction Measure	Substance Group	Control Efficiency
Enclosures	Particulates	Varied
Capture and Collection Systems	VOCs and Particulates	Varied
Diesel Particulate Filter	Particulates	85%
Baghouse	Particulates	99-99.9%
HEPA filter and pre-filter	Particulates	99.9-99.99%
Carbon Adsorption	VOCs	90-99%
Thermal and Catalytic Oxidizers	VOCs and Inorganic Gases	98-99.9%
Reduced Throughput or Operating Time	VOCS and Particulates	Varied
Alternative Technologies	Particulates	Up to 100%
Product Substitution	VOCs	Up to 100%
Relocate Source or Stack	All TAC Types	Not Applicable
Stack Modifications	All TAC Types	Not Applicable

In reviewing and approving risk reduction measures contained in required Risk Reduction Plans, the Air District would consider on a case-by-case basis the economic impacts of any recommendation the Air District makes for the plans. This consideration would include the overall impacts on the profitability of the facility and the potential for job loss because of implementation of the plan. Figure 14 provides a flowchart that summarized the TBARCT process.

Figure 14

Air District TBARCT Process Flowchart



F. Informing the Public

The Air District will use several methods to keep the public informed about risks from toxic facilities in their neighborhoods and on how and when those risks are being reduced. These methods include email notices, social media outreach, posting on the Air District website, opt in mailing via the U.S. Postal Service, and community meetings. The Air District will develop and maintain a list of emails of individuals and organizations who have indicated they are interested in being notified of events and updates regarding facilities that pose a toxic risk. Notices received via email would direct the recipient on how to access updated information on the Air District website. Similar notices would be sent via social media sources such as Facebook or Twitter. Individuals who prefer to receive notices via letters sent through the U.S. Postal Service would have the opportunity to sign up for a mailing list. The Air District would provide all public information on toxic risk facilities on the Air District website, including facility names and locations; draft health risk assessments; facility health risks levels; draft risk reduction plans; risk reduction plan approvals and final plans; plan updates, such as risk reduction measure implementation and potential changes to plans; and completion of plan implementation and final facility health risk. The Air District is also planning community meetings to update people on the status of Rule 11-18 implementation in their area.

G. Changes to the Proposed Rule

Since the proposed rule was made available for public review, Air District staff has received numerous suggestions for improvement of the proposal. Staff has revised the proposed rule based on comments received and internal deliberations; these revisions are listed as follows.

Definition 11-18-204 – Best Available Retrofit Control Technology for Toxics, or TBARCT: This definition has been modified to clarify that all TBARCT determinations would consider the cost of achieving health risk reductions, any non-air quality health and environmental impacts, and energy requirements. In the published version, this consideration only applied to retrofit control devices, techniques, and emissions limitations.

Definition 11-18-225 – Toxic Air Contaminant or TAC: The definition of a TAC has been revised to be more consistent with the TAC definition in Rule 2-5 to ensure consistency.

Definition 11-18-226 – Toxic Risk Facility: The phrase "or has the potential to release total organic gases, particulates, or oxides of nitrogen or sulfur in amounts of 10 tons per year or greater" has been deleted to ensure the definition does not conflict with the Air District's Toxic New Source Review Program.

Section 11-18-403 – Notification of HRA Results and Submission of Plan:

1. This provision has been modified to clarify that the Air District would provide the facility operator a copy of the preliminary HRA for a 90-day review period and that the Air District would correct any factual errors found in the HRA.
2. The term "equal or" was included in the following phrase to ensure internal consistency of the rule: "…the APCO shall notify a facility owner/operator when a final APCO-approved HRA indicates a facility health risk equals or exceeds one or more of the risk action levels…."
3. The following was phrase was modified as follows to provide greater clarity: "…the APCO shall notify a facility owner/operator when a final APCO-approved HRA indicates a facility health risk equals or exceeds one or more of the risk action levels." And
4. The following sentence was added to address concern about the rule potentially conflicting with various safety regulations: "The APCO may allow additional time for the Plan submission to ensure the Plan is compatible with any applicable safety regulations."

Section 11-18-404.6.1 and 6.2 – Risk Reduction Plan Content Requirements: These sections were modified to clarify that they reference the final risk action levels in Section 11-18-2018.2.

Section 11-18-406 – Updated Risk Reduction Plan: This section was modified to clarify that requirements to update plans only apply to facilities that complied with the rule through the implementation of TBARCT.

IV. RISK AND RISK REDUCTION

A. Benefits of Setting the Risk Action Level at 10 per Million

Proposed Rule 11-18 has the potential to significantly reduce the toxic risk posed by affected facilities. An Air District staff review of the toxic emissions from the potentially affected facilities indicates that these risk levels range from approximately 56/M to 10/M at the maximally exposed individual (MEI) and that approximately 400 facilities would be impacted under the proposed rule. This rule would require that these facilities either reduce the facility health impacts below the risk action level, or install the best available retrofit control technology for toxics on all significant sources of risk. This would have the result of reducing health risk from the affected facilities to lowest levels achievable. Preliminary analyses indicate that the 400 potentially affected facilities may pose risks of 10/M or more that impact tens of thousands of Bay Area residents. This rule would require that those risk levels be reduced to the lowest levels achievable.

B. Comparison of Ten per Million and 25 per Million RALs

Stakeholders have suggested the risk action level be set at 25/M instead of 10/M. Staff does not believe that 25/M would be as health protective as 10/M, especially because 10/M is achievable and has been and continues to be demonstrated in practice in at least ten air pollution control districts, including Sacramento Metropolitan Air Quality Management District, Santa Barbara County and San Luis Obispo County Air Pollution Control Districts. Under the 25/M scenario, only about 50 facilities would be affected throughout the Air District and most of these facilities would have to conduct minimal effort to reduce their facility risk below the this RAL and result in an inadequate reduction in localized risk. However, under the 10/M scenario represented by the Rule, up to 400 facilities would have to conduct risk reduction efforts resulting in widespread localized risk reduction in many communities. Further, Air District staff estimated the numbers of residents that would be included under each risk action level scenario and determined that the 10/M action level would serve to reduce risk to about 10 to 15 times as many people as the 25/M action level.

V. ECONOMIC IMPACTS

A. Introduction

This section discusses the estimated costs associated with the proposed rule. The purpose of Rule 11-18 is to reduce the health risk of stationary sources to the lowest levels achievable. This involves several areas of potential costs:

- Risk Reduction Plan development costs;
- Risk Reduction Plan implementation and TBARCT costs;
- Air District Impacts:
    - Updating Emissions Inventories and Prioritization Scores for facilities,
    - One-time cost of conducting the HRAs, and
    - Review of Risk Reduction Plans.

The total costs of the rule are uncertain, because actions taken by affected facilities will depend on the HRA results and on what the facilities decide to do in their Risk Reduction Plans. Because of the lack of certainty in the number of facilities that may be affected and their choices for reducing risk, this cost analysis performed for this rule looks at the general cost ranges in each associated industry category. The Air District believes that the cost range analysis is conservative, in that it tends to overestimate the overall economic impacts of the proposed rule. The anticipated costs and their impacts are discussed in greater detail:

B. Development of a Risk Reduction Plan

The cost of developing a Risk Reduction Plan (Plan) is dependent on the number of processes and operations that an affected facility must address. For each of the applicable subject areas, a facility must conduct an evaluation to determine whether the practices and equipment currently in place are adequate to ensure reduction. Staff estimates that an evaluation of each affected toxic emission source would require two to four man-hours. This estimation includes:

- Identifying which sources and operations would be best suited for risk reduction measures;
- Determining the risk reduction measures and technologies that could be applied to these sources and operations;
- Analyzing those risk reduction measures and technologies to determine their efficacy in reducing emissions and risks; and
- Identifying and incorporating best risk reduction measures and technologies for those sources and operations that would be best suited for risk reduction.

The number of potentially affected toxic emission sources range between one and 525 for each potentially affected facility and the evaluation of each toxic source would require up to three hours. Using a value of $100 per hour for the cost (wages and benefits) of an environmental engineer,[27] the cost of developing a risk reduction plan would range between $500 and $158,000 if done by facility personnel. These values could double if the risk reduction plan development were contract out to a professional engineering service.

C. Risk Reduction Plan Implementation and TBARCT Costs

To illustrate the potential cost impacts of proposed Rule 11-18 on potentially affected facility, the Air District staff has identified a range of compliance measures for potential impacted projects. These include the following:

- Limiting Throughput or Operating Hours
- Baghouses
- Carbon Absorption
- Oxidation Catalysts
- Diesel Particular Filters
- New Diesel Internal Combustion Engines
- Thermal Oxidizers
- Wet Gas Scrubbers

- Electrostatic Precipitators
- Improved Equipment/Enhanced Monitoring/Other Process Improvements
- Increasing Stack Height

Given the large number of locations that may be impacted and limited knowledge regarding the actual compliance measures and associated costs that may be chosen at particular sites, it was not feasible to generate precise estimates of the costs for each potentially affected facility. Instead, staff has provided general estimates of the compliance measures and associated costs by major facility type/activity presented in Table 14 below. Low and high costs estimates are provided for applicable measures, to show the range of potential cost impacts.

As indicated in Table 14, the Air District believes that not all facilities will perform substantial equipment upgrades or expenditures to achieve the risk reductions required by the proposed Rule. Instead, staff expects that many sites will meet the Rule risk reduction requirements through operating time restrictions, stack height increase or other no- or low-cost measures.

Table 14
Air Pollution Control Equipment Expected to Be Installed under Rule 11-18

Industrial Sector	Number of Facilities	Diesel Particulate Filter	New Diesel ICEs	Baghouse with HEPA Filters	Carbon Adsorption	Oxidation Catalyst	Thermal Oxidizer	Wet Gas Scrubber	Electrostatic Precipitators
Annualized Control Costs per Source:		$14k – 168k	$500k – $1 MM	$70k – $2.1 MM	$42k – 480k	$120k – $230k	$32k – $630k	$1MM – $3MM	$500k – $5.6MM
Cement Mfr.	1			1					1
Chemical Plants	4				2			4	
Chrome Plating	1			1					
Coating Ops	1								
Concrete Batch Ops	1								
Crematoria	12			5					
Data Centers	3	10	10						
Emergency Engines	37	18	20						
Engines & Other Sources	50	42	42						
Hospitals	40	10	4						
Landfills	27					4	4		
Loading / Tank Ops	1				1				
Metal Melting	5			1	2				1
Metal Recycling	1								
Misc. Mfr.	15	6	8						
Power Plants	18			2					
Refineries	5	4		2				3	3
Research	1		1						
Sewage Treatment	31				1	3	4	3	
Other	130	10	15			3	2		
Total	**384**	**100**	**100**	**12**	**6**	**10**	**10**	**10**	**5**

1. Impacts on Affected Industries

Given the large number of potentially affected facilities, the broad range of industries, the wide variability in costs for various risk reduction measures, and the lack of information available on the potential choices facility operators may make to reduce the facility risk, the analysis here does not "drill down" to the level of individual facilities. Instead, it provides a measure of the number of facilities that might be *potentially* impacted, with the understanding that many of these potentially impacted facilities would not necessarily need to engage in the expenditures as shown above in Table 14.

Air District staff estimated the annualized costs for various risk reduction measures, as shown above in Table 14, in the form of a minimum and maximum cost for each measure. This table also provides an estimate by major industry sector of the number of point sources requiring the listed risk reduction measures. These values were used to generate low, median, and high cost estimates by major industry sector, which were then applied to each private-sector facility listed in the database.

Finally, the potential impacts of these costs on rate of return as estimated per publicly available data to determine whether the cost impacts met the criterion of a greater than 10 percent impact on the rate of return.

2. Affected Industries and Regional Impacts

Table 15 below shows the proportion of facilities in each major industrial sector with potential significant impacts due to an over 10 percent impact on the estimated rate of return. The proportion is calculated for low cost, median cost, and high cost scenarios as discussed above.

There is considerable variability by sector and cost level in the proportion of potentially impacted facilities; for example, cement manufacturing and chemical plants show no significantly impacted facilities for the low-cost scenario, but all facilities could be significantly impacted under the median and high cost scenarios. Other sectors, such as chrome plating, crematories, and power plants show a high proportion of potentially impacted facilities even under the low-cost scenario.

For a particular business establishment, though, these factors may vary considerably from the assumptions here. In particular, to the extent that mitigation costs are fixed, larger firms would be better able to absorb these costs. It is also likely that larger facilities would face higher costs due to more point sources requiring abatement.

Table 15
Percent of Potentially Impacted Facilities by Major Industrial Sector

	Low Cost		Median Cost		High Cost	
Industry Sector	Total Facilities	Percent Impacted	Total Facilities	Percent Impacted	Total Facilities	Percent Impacted
Cement Manufacturing	1	0%	1	100%	1	100%
Chemical Plants	4	0%	4	100%	4	100%
Chrome Plating	1	100%	na	na	na	na
Coating	1	0%	1	0%	1	0%
Concrete Batch Operations	1	0%	1	0%	1	0%
Crematories	10	90%	7	100%	7	100%
Data Centers	1	0%	na	na	na	na
Emergency Engines	12	33%	na	na	na	na
Engines and Other Sources	26	19%	21	81%	21	95%
Hospital / Medical	26	0%	22	45%	22	91%
Landfills	14	50%	14	100%	14	100%
Loading/Tanks	1	0%	1	100%	1	100%
Metal Melting	5	20%	3	67%	3	67%
Metal Recycling	2	0%	na	na	na	na
Miscellaneous Manufacturing	16	0%	15	80%	15	93%
Power Plants	9	89%	8	100%	8	100%
Refineries	3	0%	3	0%	3	67%
Research	1	100%	na	na	na	na
Other	53	28%	44	61%	44	84%
Total	**187**	**27%**	**145**	**71%**	**145**	**90%**

Notes:
The percent impact represents the percent of total facilities that might be impacted if they had to install control equipment at the cost level estimated. Thus the percent impacted provides an upper threshold indicator of potential impacts. Not all such facilities will need to implement these control measures, as they might be able to undertake no- or low-cost alternatives such as increased stack height or reduced operating hours. The actual number and proportion of impacted facilities thus might be less than indicated here. See text for explanation of cost definitions. A facility is considered impacted if the costs are greater than 10 percent of estimated profit. Excludes public sector facilities. See text for explanation. Includes only facilities for which data on employment, total revenues, and profit margins were available.

Sources: BAAQMD; Dun & Bradstreet; Internal Revenue Service; U.S. Census Bureau Economic Census; BAE, 2017.

It is important to note that given the available data, it is not possible to predict precisely which of the potentially affected facilities will actually be significantly impacted, since some facilities will be able to forgo the improvements and meet the requirements of the Rule through no- or low-cost solutions. The above table should be used as an indicator of the highest potential impacts which represent the worst cast scenarios; for example, given the estimates here, no more than 27 percent of the privately-operated facilities should have their profits significantly impacted by Rule 11-18; the proportion goes up substantially under the median and high cost scenarios. The Air District strongly believes that actual proportion impacted under each scenario will likely be lower, especially to the extent smaller facilities with lower revenues are able to implement no- or low-cost solutions and the flexibility in compliance (the lead time for conducting the HRAs and the Air District notifying each facility whether Rule 11-18 applies, risk reduction plan development, risk reduction measures chosen, timeline for implementation, and conditions for the implementation of TBARCT) that is allowed under Rule 11-18.

D. Air District Impacts

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. On March 7, 2012, the Air District's Board of Directors adopted a Cost Recovery Policy that 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 would assess fees for facilities for which the Air District would conduct HRAs pursuant to proposed Rule 11-18. The risk screening fees in Regulation 3: Fees, Schedules B, C, D, E, F, H, I or K have recently been updated (effective July 1, 2016) to address Facility-Wide Health Risk Assessment required under Rule 11-18.[iv] Section 3-341: The Fee for Risk Reduction Plan would cover the cost of Air District staff review of the risk reduction plans required by proposed Rule 11-18.[v] The Air District does not anticipate a need to make any additional adjustments to risk screening fees at this time.

VI. REGULATORY IMPACTS

Section 40727.2 of the Health and Safety Code requires an air district, in adopting, amending, or repealing an air district regulation, to identify existing federal and District air pollution control requirements for the equipment or source type affected by the 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 change. Table 16 provides the Air District's regulatory impacts analysis of proposed Rule 11-18.

[iv] **3-342** **Fee for Facility-Wide Health Risk Assessment:** Any person required to submit a health risk assessment (HRA) pursuant to Regulation 11, Rule 18 shall pay a risk assessment fee for each source pursuant to Regulation 3-329 and Schedules B, C, D, E, F, H, I or K. The maximum fee required for any single HRA of a facility conducted pursuant to Regulation 11, Rule 18 shall not exceed a total of $150,000.

[v] **3-341** **Fee for Risk Reduction Plan:** Any person required to submit a Risk Reduction Plan in accordance with Regulation 11, Rule 18 shall pay the applicable fees set forth below:

- 341.1 $1,500 for facilities with one source subject to risk reduction pursuant to Regulation 11, Rule 18, including gasoline dispensing facilities;
- 341.2 $3,000 for facilities with 2 to 5 sources subject to risk reduction pursuant to Regulation 11, Rule 18;
- 341.3 $6,000 for facilities with 6 to 10 sources subject to risk reduction pursuant to Regulation 11, Rule 18;
- 341.4 $12,000 for facilities with 11 to 15 sources subject to risk reduction pursuant to Regulation 11, Rule 18;
- 341.5 $24,000 for facilities with 16 to 20 sources subject to risk reduction pursuant to Regulation 11, Rule 18;
- 341.6 $32,000 for facilities with more than 20 sources subject to risk reduction pursuant to Regulation 11, Rule 18.

Table 16
Regulatory Impacts Analysis Pursuant to H&SC Section 40727.2

Section 11-18-	Description	Comparable State / Air District Rule or Program	Discussion
101	Description: The purpose of the proposed rule is to ensure facilities the emit TACs do not pose an unacceptable health risk to nearby people.	AB 2588: The goals of the Air Toxics "Hot Spots" Act (AB 2855) are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.	The stated goals of both Rule 11-18 and the AB 2588 programs are similar; however, the levels of acceptable risks differ. Under Rule 11-18, the risk action level for risk reduction would be set at 10/M for cancer risk and 1.0 for acute and chronic hazard indices (HI), whereas under the Air District AB 2588 program, the risk action level was set at 100/M for cancer risk and 10 for acute and chronic hazard indices.
102	Applicability: The rule would apply to facilities that report their toxic emissions to the Air District as required by the AB 2588, H&SC Section 44340 et seq.	AB 2588: This is the same as the Air District AB 2588 Program.	No actionable requirements
103	Stationary Diesel Engines Exemption: Diesel engines which have a health screening prioritization score less than 250.	N/A	While the AB 2588 program has no similar exemption, at its current action levels, these facilities would not be included under its risk reduction program (SB 1731). Further, the ARB intends to address back-up diesel generators in collaboration with CAPCOA: "develop Industrywide Guidelines for sources that support essential goods and essential public services where their emissions may result in cancer risk estimates above District thresholds (e.g., gasoline dispensing facilities, emergency standby diesel engines)."[28]
104	Retail Gasoline Dispensing Facilities Exemption: All retail gasoline stations would be exempted from the requirements of the Rule.	N/A	The rule would not apply to retail gas stations because these facilities already are controlled with technology that would be considered TBARCT and they will also be addressed by industrywide guidelines that would be developed by the ARB and CAPCOA.
201-220	Definitions	N/A	No actionable requirements
301	Compliance with Risk Reduction Plan: • Obtain Air District approval of a Risk Reduction Plan, and	SB 1731 – H&SC §44392: Implementation of plan. This is essentially the same as Section 301 with the exception that Rule 11-18 allows the	Rule 11-18 establishes risk action levels that are significantly more stringent that those of the Air District AB 2588. The risk level at which triggers the plan requirements differ – Under Rule 11-18, the risk action level for risk reduction would be set at 10/M for cancer risk and 10 for hazard indices, whereas under

Section 11-18-	Description	Comparable State / Air District Rule or Program	Discussion
	• Implement the Plan to ensure either: o Reduce facility-wide risk below 10/M or Control significant sources with TBARCT	installation of TBARCT if a facility cannot reduce its risk below the risk action levels.	AB 2588, the risk action level is set at 100/M and 1.0. The affected facility would have the option of reducing its risk below the risk action level for risk reduction or installing TBARCT on all significant sources (1.0/M or 0.2 HI) of risk. Further, the rule require incorporation of the OEHHA's new health risk values and protocols into the HRA process that would be used to evaluate all toxic sources of risk, which would not be required under the current AB 2588 program.
401	Health Risk Assessment Information Requirement: Affected facilities must provide requested information necessary to complete an HRA within 60 days or Air District request.	N/A	The AB 2588 process lacks a similar requirement because under AB 2588, the affected facilities are responsible for conducting the HRAs, whereas, under Rule 11-18, the Air District is responsible for conducting the HRAs for all affected facilities and therefore, may need additional information from the affected facilities to complete the HRAs.
402	Early Application of Risk Action Levels: This provision would allow the Air District to expedite action on risk reduction for facilities located in highly impacted areas such as Priority Communities.	N/A	The AB 2588 Hot Spot Program has no equivalent provision and treats all facilities equally despite the risk posed or the background risk level in which they operate.
403	Notification of HRA Results and Submission of Plan: The Air District would notify facilities if they are subject to Rule 11-18.	N/A	The AB 2588 Hot Spots Program has no equivalent provisions because the affected facilities are responsible for conducting their HRAs and notifying the public, if applicable.
404	Risk Reduction Plan Content Requirement: Any facility required to develop and have approved a risk reduction plan must implement the approved plan elements as specified in the plan. Including basic identifying information on the facility and its processes and emissions sources and risk reduction measures, including emissions and risk reduction	SB 1731 – H&SC §§44391(a) & 44392: Implementation of Risk Reduction Plan: The facility must implement measures set forth in the plan as specified by H&SC §44391(a).	These requirements are essentially equivalent, except for the risk level at which they are triggered: 10/M or 1.0 HI for Rule 11-18 and 100/M or 10 HI for AB 2588 / SB 1731.

Section 11-18-	Description	Comparable State / Air District Rule or Program	Discussion
	potentials, implementation schedule, TBARCT implementation, residual risk.		
405	Risk Reduction Plan Submission Requirements: - Plans must be submitted within six month of notification from the Air District, - Plan implementation within five years of plan submission, - Plan implementation period may be extended up to an additional five years because of technical or economic issues, or Plan implementation period may be reduced if technically or economically feasible.	SB 1731: H&SC §44391 (a)-(c) & (f), (g): - Plan submission: six months, Plan implementation: within five yrs. - Plan implementation period may be reduced, - Plan implementation period may be extended up to an additional five years, - Plan implementation period may be reduced if technically and economically feasible.	Equivalent requirements.
406	Update of Risk Reduction Plans: The rule would require updates to the risk reduction plans if information becomes available that indicates health risk at the affected is greater or if technologies become available that could be used to further reduce the facility risk.	N/A	AB 2588 / SB 1731 contain no update requirements.
501	Progress Report: Affected facilities must report annually to the Air District progress made on risk reductions achieved by the RRP until the plan is fully implemented or all significant sources of emission are controlled with TBARCT.	SB 1731: H&SC §44391 (h): Progress on the emission reductions achieved by the plan shall be reported to the district in emissions inventory updates. Emissions inventory updates must be prepared as required by the audit and plan.	The provision in Rule 11-18 is more specific about the reporting schedule, whereas the one under SB 1731 relies on a schedule outlined in the approved plan, which may be more or less stringent than that of Rule 11-18.

VII. ENVIRONMENTAL IMPACTS

The California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., requires that the potential environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified.

A. Notice of Preparation / Initial Study

The Air District prepared a Notice of Preparation and an Initial Study (NOP/IS) for the Draft EIR for Rule 11-18, the Toxics Risk Reduction Rule, and Rule 12-16, the Refinery Caps Rule (included as Appendix A of the draft EIR). The NOP/IS was distributed to responsible agencies and interested parties for a 30-day review on October 16, 2016. A notice of the availability of this document was distributed to other agencies and organizations and was placed on the Air District's web site, and was also published in newspapers throughout the area of the Air District's jurisdiction. Six public comment letters were submitted on the NOP/IS to the Air District and are included in Appendix A of the draft EIR.

The NOP/IS initially identified the following environmental resources as being potentially significant, requiring further analysis in the draft EIR:

- air quality,
- greenhouse gases,
- hazards and hazardous materials,
- hydrology and water quality, and
- utilities and service systems.

Public comments received on the NOP/IS indicated that wet gas scrubbers could be used to control TAC emissions from some sources, such as large refinery equipment. Thus, water demand impacts were also evaluated in the draft EIR.

The following environmental resources were considered to be less than significant in the NOP/IS:

- aesthetics,
- agriculture and forestry resources,
- biological resources,
- cultural resources,
- geology/soils,
- land use/planning,
- mineral resources,
- noise,
- population/housing,
- public services,
- recreation, and
- transportation/traffic.

B. March 2017 Draft Environmental Impact Report (DEIR)

Pursuant to CEQA, the Air District prepared a draft Environmental Impact Report (DEIR) to address the potential environmental impacts associated with proposed Rules 11-18 and 12-16. The DEIR was structured to address the impacts of adopting either or both proposed rules. This March 2017 DEIR was circulated for public review during the period from March 24, 2017, to May 8, 2017. The Air District is now proposing to adopt Rule 11-18 alone. To address this change in the project description and to address minor changes in proposed Rule 11-18 language, the Air District prepared a Recirculated Draft Environmental Impact Report ("recirculated DEIR or RDEIR") addressing only Rule 11-18 and its potential impacts.

A. Recirculated Draft Environmental Impact Report and Conclusion

Although proposed Rule 11-18 language has been revised, the revisions do not result in new or different impacts and do not alter the conclusions of the original DEIR. The RDEIR was recirculated to avoid any confusion that might arise from reliance on the original DEIR, to provide an additional opportunity for public comment on the project, and to create a more readable document for use by the Board of Directors in considering adoption of Rule 11-18. The RDEIR was circulated during the period from September 1, 2017 to October 16, 2017, and comments on the RDEIR were received during this period. The final EIR for Rule 11-18 consists of the RDEIR, with minor modifications in response to comments, and the comments received on the RDEIR along with responses. Prior to making a decision on the adoption of the proposed Toxic Risk Reduction Rule, the Air District's Board of Directors must review and certify the final EIR as providing adequate information on the potential adverse environmental impacts of implementing the proposed new Rule 11-18. The final EIR concludes that there could be potential adverse environmental impacts in the areas of air quality, greenhouse gas emissions, hazards and hazardous materials, and hydrology and water quality. Table 17 summarizes these impacts, mitigation measures, and the residual impacts.

Table 17
Summary of Environmental Impacts, Mitigation Measures and Residual Impacts

Impact	Mitigation Measures	Residual Impacts
Air Quality		
The construction activities that may be required to implement Rule 11-18 may result in ROG, NOx, PM10, and PM2.5 emissions that would exceed the significance thresholds resulting in potentially significant air quality impacts.	Develop a Construction Emission Management Plan; to minimize emissions from vehicles and trucks; limit truck idling; maintain construction equipment to manufacturer's recommendations; identify construction areas served by electricity; Use cranes rate 200 hp or greater with Tier 4 engines or equivalent (if available); and use off-road equipment rated 50 to 200 hp with Tier 4 or equivalent engines (if available).	ROG, NOx, PM10, and PM2.5 emissions during construction activities are potentially significant under Rule 11-18 following mitigation, but would cease when construction activities are complete.
Operational activities that may be required to implement Rule 11-18 are expected to result in	None Required	Operational emissions of ROG, NOx, PM10 and PM2.5 would be less than significant.

Impact	Mitigation Measures	Residual Impacts
emissions of ROG, NOx, PM10 and PM2.5 that would be less than significant.		
TAC emissions associated with implementation of Rule 11-18 are expected to be less than significant.	None Required	Potential TAC emissions under Rule 11-18 are less than significant.
Greenhouse Gas Emissions		
Air pollution control technologies that would most likely be implemented under Rule 11-18 could generate GHG emission impacts that would be considered significant.	None identified but some GHG emissions may be offset under the AB32 Cap and Trade Program.	GHG emissions are expected to remain significant under Rule 11-18.
Hazards and Hazardous Materials		
Fire or explosion impacts from the use of baghouses under Rule 11-18 are potentially significant.	Mitigation measures include a comprehensive dust control program; ground filter elements; install explosion rupture panels; remove dusts from filters prior to replacing filters; perform hot work away from collectors; do not use power tools in areas with high dust concentrations; and ensure adherence to applicable NFPA standards.	Hazards impacts from the use of baghouses are expected to be less than significant following mitigation.
Fire or explosion impacts from the use of dry ESPs under Rule 11-18 are potentially significant.	Mitigation measures include using CO sensors; digital electronic controls; covering wires with shrouds; and conduct routine inspections.	Hazards associated with the use of dry ESPs are expected to be less than significant following mitigation.
Transportation and use of hazardous materials in WGSs are expected to remain less than significant under Rule 11-18.	None Required	Transportation and use of hazardous materials would remain less than significant.
Hydrology and Water Quality		
The potential water demand created by the need for new air pollution control equipment, particularly refinery wet gas scrubbers, would result in a significant impact on water demand associated with Rule 11-18.	Mitigation measures include the requirement to use recycled water, if available.	Water demand impacts are expected to remain significant as the use of reclaimed water cannot be assured under Rule 11-18.
Wastewater generated from the installation of air pollution control equipment to comply with Rule 11-18 is not expected to exceed any applicable water quality significance thresholds. Therefore, no wastewater impacts are expected.	None required.	Wastewater impacts are expected to remain less than significant.

VIII. RULE DEVELOPMENT | PUBLIC PARTICIPATION PROCESS

The publication of this document is intended to support the initial public comment portion of the development of these two rules. Key milestones dates for the rest of the process are as follows:

November 9, 2016	Open House in Richmond
November 10, 2016	Open House in Oakland
November 14, 2016	Open House/Scoping Meeting in San Francisco
November 15, 2016	Open House in San Jose
November 16, 2016	Open House/Scoping Meeting in Martinez
November 17, 2016	Open House in Fremont
December 2, 2016	Comment deadline for draft rules and NOP/IS
February 21, 2017	Foundries and Forges Workgroup Meeting
March 9, 2017	Bay Area Clean Water Agencies (BACWA) Workgroup Meeting
March 2017	Final rules, staff report, draft EIR published for comment
March 27, 2017	Workshop in Cupertino
March 28, 2017	Workshop in Benicia
March 29, 2017	Workshop in Hayward
March 30, 2017	Workshop in Richmond
April 17, 2017	California Council for Environmental and Economic Balance (CCEEB) Meeting
April 2017	Comment deadline for final rules
May 22, 2017	Hospitals Workgroup Meeting
May 2017	Board consideration of final rules
June 8, 2017	Foundries and Forges Workgroup Meeting
June 21, 2017	BACWA Workgroup Meeting
August 17, 2017	BACWA Workgroup Meeting
August 23, 2017	Foundries and Forges Workgroup Meeting
August 28, 20	CCEEB and Bay Area Refiners Meeting
August 30, 2017	Hospitals Workgroup Meeting
August 31, 2017	Proposed rule language and draft EIR released
September 5, 2017	CCEEB and Bay Area Refiners Meeting

IX. CONCLUSIONS AND RECOMMENDATIONS

Pursuant to the California Health and Safety Code Section 40727, before adopting, amending, or repealing a rule the Board of Directors must make findings of necessity, authority, clarity, consistency, non-duplication and reference. The Air District staff believes Rule 11-18 as proposed meets the requirements of this statue for the reasons listed below.

A. Necessity

The proposed rule is necessary to ensure that health risks from facilities that emit toxic air contaminants are reduced to the lowest feasible levels. Air District and state programs have reduced the average Bay Area lifetime cancer risk resulting from exposure to TACs in Bay Area air by 83 percent over the last two decades. These reductions have come

from efforts to reduce emissions from both mobile sources, for which the Air District cannot set emission standards, and stationary sources, over which the Air District has broad regulatory authority. To reduce risk from stationary sources, the Air District has, for three decades, implemented an Air Toxics Program that (1) assessed and reduced risks under the Toxics "Hot Spots" program for facilities that existed in the late 1980's, (2) required sources built or modified since that time to install controls on toxics, and (3) implemented toxic control measure adopted by the State of California.

Despite significant reductions, risks from air toxics vary significantly within the region. The Bay Area average lifetime cancer risk from TACs is 690 in a million, but some areas have risks below 300 in a million, while others have risks approximately 10 times higher. Risk in areas with higher levels typically comes from both mobile sources and stationary sources. In order to reduce the inequitable distribution of risk, reductions in both mobile and stationary source emissions will be required.

Though the science of risk assessment has developed significantly since the 1980's, and California's Office of Environmental Health Hazard Assessment has adopted major improvements to its guidelines for assessing health risks since that time, many existing Bay Area facilities have not been comprehensively reviewed for risk using more modern techniques. In addition, older facilities have sources not modified since the 1980's and not reviewed since they were reviewed under the Hot Spots program in the late 1980's. As a result, there may be significant opportunities to reduce stationary source risk using new tools and from sources for which risk has not been addressed in decades.

Under California Air Resources Board programs, mobile sources are held to progressively stricter standards for emissions that have also had the effect of significantly reducing risk. Though the Air District has also adopted progressively more stringent standards for criteria pollutants that have also reduced risk, it is appropriate for the the Air District to match the reductions in mobile source risk with reductions in stationary source risk and for stationary sources to bear their fair share of risk reductions.

Though this particular rule may be seen as not "necessary" in the same way that food or water are necessary, this cannot be the meaning intended by the Legislature, as few regulations would meet that test. As Health and Safety Code section 40727 helpfully explains, "[n]ecessity means that a need exists for the regulation ... as demonstrated by the record of the rulemaking authority." It would appear that the finding of necessity relates to the agency's authority and goals for the rule. If the goals of the agency include reducing risk from stationary sources and spreading the benefits of risk reduction more widely and evenly, then a finding of necessity can be made.

The risk action levels established under Rule 11-18 have been demonstrated in practice and have benefitted Californians in many parts of the state. There are currently 10 air districts through the state that have set these risk levels under their AB 2588 “Hot Spots” Program, including Sacramento Metropolitan Air Quality Management District, Santa Barbara County and San Luis Obispo County Air Pollution Control Districts. And, as noted, the risk reduction goals of Rule 11-18 would provide benefits to those within the Bay Area that have not seen the same reductions in risk experienced by other Bay Area residents.

B. Authority

California law gives the Air District “primary responsibility” for control of “air pollution” from stationary sources within its jurisdiction (Health & Safety Code § 40000), and the California Supreme Court explained in *Western Oil and Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408 that this is a broad grant of regulatory authority extending to control of toxic air contaminants separate and apart from regulation by the State of California. That this stationary source authority is broad is further supported by the definition of “air pollutant,” which is broadly includes, among other things, “particulate matter” and “gases” (H&S Code § 39013). The Air District is also expressly allowed to set standards more stringent than those in State law (H&S Code § 39002). Pursuant to Health and Safety Code section 40702, the Air District is directed to adopt rules and regulations necessary to execute its powers and duties, with sections 40725 through 40728.5 prescribing procedures for doing so.

C. Clarity

Proposed Rule 11-18 is written or displayed so that its meaning can be easily understood by the persons directly affected by the rule. Air District staff have conducted extensive outreach to all sectors of Bay Area industry that would be affected by the rule. They have discussed the meaning of the rule, taken comments and suggestions on rule language, and attempted to make all clarifying changes that are consistent with the goals of the rule.

D. Consistency

The proposed rule is consistent with other Air District rules, and not in conflict with state or federal law. The rule is structured for consistency with the Air District's Air Toxics Program. It uses the same methodologies used under the Air Toxic New Source Review rule and relies on similar rule language. It is integrated with the Air Toxics "Hot Spots" program, which supplies emission inventory data that would be used in implementing the rule.

E. Non-Duplication

Rule 11-18 is non-duplicative of other statutes, rules or regulations. There is no similar federal, state, or Air District rule or regulation imposing risk reduction requirements on existing stationary sources. The closest similar program is the Air Toxics "Hot Spot" program, which focused on addressing risk from sources of TACs that existed in the late 1980's. The Hot Spots Act required a round of toxic emissions inventory development, assessment of risk, and, in the case of facilities that exceeded risk levels, risk reduction plans. With amendments to the Act, most requirements ended after the initial round of facility review. However, the Act continues to require toxics inventory updates every four years, and the proposed rule does not duplicate those requirements and, instead, relies on this inventory data for risk assessment.

F. Reference

The finding regarding "reference" means that the provisions of law that are implemented, interpreted, or made specific through the rule must be specified. Proposed Rule 11-18 is authorized under Health and Safety Code sections 39002, 39013, 40000, and 40702, and the rule implements and makes specific the powers and duties specified in those provisions.

G. Recommendations

The proposed rule has met all legal noticing requirements, has been discussed with the regulated community, and reflects consideration of the input and comments of affected and interested parties. Air District staff recommends:

1. Adoption of proposed Regulation 11: Hazardous Pollutants, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities, and
2. Certification of the Final Recirculated Environmental Impact Report.

REFERENCES

[1] AB-617 Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants; California Health and Safety Code, Sections 39607.1, 40920.6, 40920.8, 42400, and 42402, 42411, 42705.5, and 44391.2.

[2] Toxic Risk Trend Chart, Dr. David Farley, BAAQMD, 2014

[3] Toxic Air Contaminant Inventory for 2015 – Sorted by County, by City, and by Facility Name, http://www.baaqmd.gov/research-and-data/air-toxics/annual-report

[4] https://www.arb.ca.gov/research/diesel/diesel-health.htm

[5] https://www3.epa.gov/region1/eco/airtox/diesel.html

[6] http://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Evaluation-Of-Carcinogenic-Risks-To-Humans/Diesel-Exhaust-2012

[7] https://www.epa.gov/sites/production/files/2016-09/documents/carbon-tetrachloride.pdf

[8] https://emergency.cdc.gov/agent/benzene/basics/facts.asp

[9] https://www.epa.gov/sites/production/files/2016-09/documents/benzene.pdf

[10] https://www.epa.gov/sites/production/files/2016-08/documents/13-butadiene.pdf

[11] https://oehha.ca.gov/air/health-effects-hexavalent-chromium

[12] https://www.osha.gov/SLTC/hexavalentchromium/healtheffects.html

[13] https://cfpub.epa.gov/ncea/iris2/chemicallanding.cfm?substance_nmbr=144

[14] https://www.epa.gov/formaldehyde/facts-about-formaldehyde

[15] https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/formaldehyde/formaldehyde-fact-sheet#q3

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[17] https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=419

[18] https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/formaldehyde/formaldehyde-fact-sheet

[xix] Vendor quote in 2008, GE Pulse-Jet.

[xx] EPA Cost Manual Procedure, Chapter 6.1, Pulse-Jet.

[21] "Reverberatory Furnace," Industrial Furnace, B2B Market Place: http://www.furnacesuppliers.com/reverberatory-furnace.html.

[22] AP 42, US Environmental Protection Agency, October, 1996: http://www.epa.gov/ttn/chief/ap42/ch12/bgdocs/b12s08.pdf.

[23] Equipment Spot Light, Mark Henricks, American Recycler: http://www.americanrecycler.com/1009/spotlight.shtml.

[24] Wikipedia: https://en.wikipedia.org/wiki/Sewage_treatment

[25] "Municipal Solid Waste Landfills," US Environmental Protection Agency,

https://www.epa.gov/landfills/municipal-solid-waste-landfills#whatis

[26] https://www.arb.ca.gov/toxics/rma/rmaworkshoppres20151606.pdf

[27] Occupational Employment Statistics Employment and Wages by Occupation, Employment Development Department, State of California, http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=152.

[28] ABR and CAPCOA: ARB and CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics, Page 26 (July 23, 2015) https://www.arb.ca.gov/toxics/rma/rma.htm also available from CAPCOA: http://www.capcoa.org/.

Summary of Comments and Response on the Regulatory Package for Proposed Rule 11-18

List of Commenters

Abbreviation	Commenter / Reference
Air Liquide	Eric Kleinschmidt, Senior Environmental Specialist, Air Liquide, Letter, October 16, 2017
BACWA	David R. Williams, Executive Director, Bay Area Clean Water Association, Letter, October 25, 2017
CCEEB	Bill Quinn, Chief Operating Officer, California Council for Environmental and Economic Balance, Letter October 16, 2017
CCEEB2	Bill Quinn, Chief Operating Officer, California Council for Environmental and Economic Balance, Letter October 25, 2017
CMC	James Simonelli, Executive Director, California Metals Coalition, Letter, October 16, 2017
EBLC	Kristin Connelly, President & CEO East Bay Leadership Council, Letter, October 25, 2017
Gary Latshaw	Gary Latshaw, Ph. D., Letter, October 9, 2017
Hospital Council	Rebecca Rozen, Regional Vice President, Hospital Council of Northern and Central California, Letter, October 16, 2017
Lockeed Martin	Kraig Kurucz, SSC Operational Safety and Environmental Engineering Lockheed Martin Space Systems Company, Email, October 13, 2017
MFANC	Ray Lucas, President, Metal Finishing Association of Northern California, Letter, October 15, 2017
SVLG	Mike Mielke, Senior Vice President, Environment & Energy, Silicon Valley Leadership Group, Letter, October 16, 2017
Tesoro	Matthew Buell, Environmental Manager, Tesoro Refining & Marketing Company LLC, Letter, October 16, 2017
Tesoro 2	Matthew Buell, Environmental Manager, Tesoro Refining & Marketing Company LLC, Letter, October 25, 2017
US Pipe	Scott Aler, AVP Environmental Services, US Pipe and Foundry Company, LLC, Letter, October 16, 2017
WSPA	Bob Brown, Director, Bay Area Region, Western States Petroleum Association, Letter, October 16, 2017

1. General Comments

Misc. Comment: A rapid adaptation and a comprehensive enforcement of this Regulation as provided by Assembly Bill 617 is strongly encouraged. Implementation of this Regulation will provide better health to the community in the vicinity of the Lehigh Cement Plant. There is obvious dust, odors, and pollutants that are released from the plant into the surrounding community. A full implementation of the Rule will provide the

necessary legal mechanisms to improve and prevent any further degradation to community health. While the Regulation 11-18 stipulates more stringent requirements on assessing health risk than the previous rule, this improvement in public health will be meaningless without scientifically accurate and comprehensive enforcement.

Gary Latshaw

Response: Air District staff acknowledges and agrees with this comment.

Comment 1.1: Under the Hospital Facilities Seismic Safety Act, California hospitals must build new facilities or retrofit their buildings in order to meet the state's stricter building standards for earthquake safety. As a result, we are fortunate to have many new hospitals in the Bay Area with updated diesel generators and boilers that will greatly reduce their toxic air emissions. However, for those hospitals who have not yet begun their seismic construction projects or are in the planning process, it will be important to align implementation of this regulation with hospital timelines in order to minimize additional costs and delays.

Hospital Council

Comment 1.2: The Air District should be aware that all hospital construction projects require approval from the Office of Statewide Health Planning and Development Facilities Development Division (OSHPD). OSHPD is the state building official for hospitals and they must approve any replacement or modifications to hospital diesel generators or boilers. While the timelines in the proposed regulation appear to provide sufficient time for OSHPD review and approval, there is no way to be certain. Therefore, the Air District will need to be flexible in their implementation of this rule to accommodate this process.

Hospital Council

Response 1.1-2: The Rule is crafted to allow ample time for facilities to properly prepare for the development and implementation of the risk reduction plans. First, the rule will affect the highest risk facilities, first—those with health risk in excess of 25/M for cancer and 2.5 for acute and chronic indices. Facilities with a health risk between 25/M and 10/M for cancer or between 2.5 and 1.0 for hazard indices would not be affected until 2020. Furthermore, the Risk Reduction Plan requirement under §11-18-404.6 allows five years for the implementation of the Plan, and allows the Air District to grant an additional five years for implementation if the facility can demonstrate technical feasibility issue or an unreasonable economic burden. Lastly, the way the rule will be implemented indicates that most hospitals would be in the second phase of implementation, which isn't due to begin until 2021.

Comment 1.3: Proposed Rule 11-18's risk action level of 10/M is unnecessarily stringent and impractical, given that the Air District's CARE study estimated that average background air quality in the Bay Area poses a risk roughly 50 times greater than proposed Rule 11-18's risk threshold.

Air Liquide

Response 1.3: The risk action level in combination of the allowance for the application of TBARCT is both reasonable and technically feasible. Further, this risk action level has been in place in ten other air districts throughout the state since the mid-1990s, including Sacramento Metropolitan Air Pollution Control District, Santa Barbara and San Luis Obispo Air Pollution Control District which have a large mix of industrial sources. Further, because there may be people residing and/or working in close proximity to these facilities, it is important to consider and address the localized health impacts they pose that may not be reflected in area-wide studies.

Comment 1.4: Rule 11-18 should prioritize facilities that are located in CARE areas, because these are the areas at greatest risk, and emissions related to diesel engines, because these are the biggest drivers of risk.

Air Liquide

Response 1.4: Because almost half of the potentially affected facilities are in CARE Areas, the rule will have a disproportionate benefit to the CARE Areas. Furthermore, §11-18-402 allows the Air District to initial the HRA process early for those facilities that are in areas that have vulnerable populations or are overburden by toxic emissions.

Comment 1.5: The Air District should provide guidance on the interaction between proposed Rule 11-18 and the changes proposed to the New Source Review Rules in Regulation 2, Rule 5.

Air Liquide

Response 1.5: BACT/TBACT as required in the New Source Review rules (including Rule 2-5) applies to the installation of new sources or modifications of existing sources. The installation of control technologies (abatement devices) are not typically considered a modification of the upstream source. There is also the following exemption in Rule 2-2 regarding BACT:

2-2-102 Exemption, Emissions from Operation of Abatement Devices and Techniques: The BACT requirements of Section 2-2-301 shall not apply to emissions of secondary pollutants that are the direct result of the use of an abatement device or emission reduction technique implemented to comply with the BACT or BARCT requirements for control of another pollutant. However, the APCO shall require the use of Reasonably Available Control Technology (RACT) for control of emissions of such pollutants.

Comment 1.6: This Rule will result in no meaningful improvement in air quality while imposing significant new costs on Bay Area employers, public and private and, on the individuals and families who live here.

EBLC

Response 1.6: The Air District disagrees with this comment. This rule has the potential to greatly reduce the health risks posed by stationary sources, many of which are located in overburdened communities. The rule requires facilities to develop risk reduction plans, which would include cost-effective options for reduction chosen by the

affected facility. In this manner, the plans would reflect the most economical way to reduce the facilities' health risk.

Comment 1.7: Phase in the new rule over time. Many facilities will not be able to get below the 10/M threshold in the time allotted.[1] Therefore, we would like to recommend the Air District explore an alternate two-phased approach. The first phase would focus on getting high priority facilities below a 25-in-million threshold. The second phase would focus on getting facilities below a 10-in-a-million threshold, or force installation of TBARCT in cases where the threshold could not be met. This would allow facilities time to upgrade equipment and alter operations, create a level playing field among facilities, and provide time for District staff to develop needed TBARCT determinations.

SVLG

Response 1.7: The Rule is written in the manner similar to what the commenter suggests. Initially, in the first phase of the rule the risk action level is set at 25/M for cancer and 2.5 for hazard indices; however, in this phase, facilities must reduce their risk below 10/M and 1.0 respectively. In 2020, those risk action levels would drop to 10/M and 1.0 respectively. This phase-in allows facilities with risks between 10/M and 25/M to reduce their risks and not be included in the rule. In addition, the rule also allows for the implementation of TBARCT if a facility can demonstrate that it is infeasible to reduce its health risk below the risk action levels.

Comment 1.8: Rule 11-18 may interfere with the implementation of AB 617 and regulations being developed by the California Air Resources Board (ARB) to develop a uniform statewide emissions inventory and targeted approach to reducing TACs in identified communities, using cost-effective measures. In light of this ongoing statewide effort, the independent adoption of Rule 11-18 by the District may exceed the District's authority and interferes with ARB's efforts to implement AB 617.

WSPA

Response 1.8: Because Rule 11-18 would reduce health risks from stationary sources to the lowest levels achievable, the Air District believes this rule complements the objectives of AB 617, one of which is to reduce toxic air contaminants in communities affected by high cumulative exposure burden. In addition, the Air Resources Board has expressed their support for Rule 11-18 since the rule supports the efforts needed to comply with AB 617.

Comment 1.9: The Air District has not demonstrated the necessity of Rule 11-18, and as currently proposed the rule contains many provisions that lack clarity, exceed District authority, and interfere with state law. Because Rule 11-18 is premature, based on unjustified residual risk thresholds, and will not address the underlying driver of TAC risk in the Bay Area, the Air District should postpone the adoption of Rule 11-18 unless and until it is revised to address the concerns raised herein.

[1] This action level is much more stringent than other areas and sets up significant compliance challenges and that a 25-in-a-million action level, consistent with rules in the San Joaquin Valley and South Coast, is most appropriate.

WSPA

Response 1.9: The Air District disagrees with this comment. In fact, AB 617 in combination with SB 1731 (H&SC §44391.2 (3)) requires an air district "…to conduct an assessment of whether a district should update and implement the risk reduction audit and emissions reduction plan developed pursuant to §44391 for any facility to achieve emission reductions commensurate with its relative contribution, if the facility's emissions either cause or significantly contribute to a material impact on a sensitive receptor location or disadvantaged community, based on any data available for assessment pursuant to paragraph (1) of subdivision (b) or other relevant data." Based on this provision of AB 617, the Air District would be remiss if it did not assess and address health risk from sources under its jurisdiction.

2. Exemptions

Comment 2.1: Since Air District is deferring requirements on facilities that only have diesel back-up generators, then it seems logical to defer actions on sites that are above the risk prioritization score of 10 because of generators if the risk score from all other operations is below 10. The Air District should not require a health risk assessment (HRA) on the generators, or require a risk reduction plan that covers the generators before setting Air District policy regarding generators. If operations at a mixed facility would score above ten without the risk from the generators, then the source should proceed with the HRA and Risk Reduction plan, at least for the sources other than generators.

Lockeed Martin

Response 2.1: While individual sources of risk as a facility may have a prioritization score less than ten, the cumulative from these sources may exceed the risk action level of the rule. If that is the case, the facility can potentially reduce its risk by addressing sources other than the diesel generators.

Comment 2.2: The Air District should retain exemptions to Rule 11-18 and further exempt facilities already covered by similar regulations. The version of Rule 11-18 proposed in September 2017, exempts "Retail Gasoline Dispensing Facilities." The Air District should retain this exemption, both for practical reasons and to maintain consistency with Rule 2-5. The Air District should also exempt sources from Rule 11-18 that were already subject to or listed as exempt from Rule 2-5, including certain new and modified internal combustion engines smaller than 50 bhp and retail gasoline facilities. The Air District acted correctly when it exempted emergency diesel generators and retail gasoline facilities from the version of Rule 11-18 proposed in September 2017 and the Air District should retain those exemptions to maintain consistency and non-duplication with other rules. Retail gasoline dispensing facilities are already subject to Rule 8-7, which requires installation of the same type of pollution control measures contemplated by Rule 11-18. Regulating these facilities under Rule 11-18 would simply duplicate the effect of Rule 8-7, an outcome that would have no practical health or air quality benefit while imposing substantial burdens on small

facilities in the Bay Area.

WSPA

Response 2.2: The HRAs used for Rule 11-18 would consider all stationary sources of toxic emissions from a facility. It would be inappropriate to exclude a smaller source from the HRA, such as engines smaller than 50 bhp, simply because it may be exempt from another Air District rule. This approach ensures the cumulative impacts of all sources even those that may be exempt from other rules would be considered. If the facility risk (including sources exempt from Rule 2-5) exceeded the RAL, the facility is afforded the choice of which sources to address in the risk reduction plan, provided the plan reduces the facility risk below the risk action level or the facility qualifies for the TBARCT option.

Comment 2.3: Rule 11-18 is unlikely to provide any emissions reductions for certain existing source types that are already implementing analogous TBARCT. The Air District should exempt any facilities from Rule 11-18 that are already subject to requirements that reflect TBARCT. Otherwise, Rule 11-18 will simply duplicate existing regulations, adding cost while creating little to no additional environmental or health benefits.

WSPA

Response 2.3: The purpose of the Rule "…is to ensure that facilities that emit toxic air contaminants do not pose an unacceptable health risk to nearby residents, workers, or students." From this perspective, all sources of toxic emissions must be considered and, therefore, included in an HRA. If the facility included under Rule 11-18 could demonstrate that it was not able to reduce its health risk, the facility would be eligible for the TBARCT option for compliance. Under this option, the facility would have to demonstrate that all significant sources are controlled with TBARCT or equivalent.

3. Definitions

Comment 3.1: The definitions in Rule 11-18 reference sources in other rules. If a definition changes in a source rule, it is unclear whether the definition in Rule 11-18 would change automatically. A source rule could potentially change without thorough consideration of effects on Rule 11-18. To satisfy the clarity requirement of the H&S Code, and to assure the integrity of Rule 11-18, the definitions in Rule 11-18 should stand alone and not depend on citations to other rules.

WSPA

Response 3.1: Only two definitions in Rule 11-18 that define terms used in the provisions of the rule cross reference definitions in other Air District rules: The definition of "health risk assessment" and the definition of "toxic air contaminant.". These definitions cross-reference the same terms in Rule 2-5 (toxics new source review). This

is an appropriate reference because the methodology used to conduct HRAs must be consistent in both Rules 2-5 and 11-18.

Comment 3.2: Proposed Rule Definition 11-18-225 references "Guidelines." It would be less subjective and cleaner if the definition of Toxic Air Contaminant simply referenced chemicals listed in Table 2-5-1. BAAQMD already has a definition of Toxic Air Contaminant in its regulations, found at Rule 2-5-222. To be consistent, it is recommended that Rule 11-18-225 have the exact same definition of Toxic Air Contaminant as the definition found in existing Rule 2-5-222:

> "Toxic Air Contaminant or TAC: An air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health. For the purposes of this rule, TACs consist of the substances listed in Table 2-5-1."

US Pipe

Comment 3.3: Data in Table 2-5-1 of Rule 2-5 should be expressly referenced in Rule 11-18.

WSPA

Response 3.2-3: Staff agrees with these comments and has revised the definition of TAC to be consistent with that in Rule 2-5, §2-5-222.

Comment 3.4: In proposed §11-18-217, there is a definition of a priority community. For a facility located in a priority community, the district can accelerate compliance with the proposed risk action levels in §11-18-218. The term priority community is vaguely defined, noting that CARE communities "can" be included but establishing broad discretion to use other, undefined emissions or community vulnerability parameters to identify those communities. It is recommended that the Air District create an objective numeric definition of what is a priority community in order to have regulatory certainty.

Tesoro

Response 3.4: The definition for "priority community" comes, verbatim, from Rule 2-5, §2-5-227. As the elements of AB 617 are developed and implemented, the Air District may find it necessary to amend this definition to ensure better alignment with the definition of "disadvantaged community" under this statue (H&SC §39711).

Comment 3.5: The definition of toxic air contaminant is a moving target**.** The current definition of "Toxic Air Contaminant or TAC" is an open-ended definition and blindly relies on the Office of Environmental Health Hazard Assessment (OEHHA) without any review or feedback from stakeholders. CMC suggests using existing Rule 2-5-222, which clearly states: "Toxic Air Contaminant or TAC: An air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health. For the purposes of this rule, TACs consist of the substances listed in Table 2-5-1."

CMC

Response 3.5: The Office of Environmental Health Hazard Assessment (OEHHA) is the state agency charged with identifying toxic air contaminants. The ARB and all the air districts throughout the state rely on their expertise. Their work in identify a compound is reviewed by an independent body—the Scientific Review Panel (SRP/Panel), which is charged with evaluating the risk assessments of substances proposed for identification as toxic air contaminants by the ARB, OEHHA and the Department of Pesticide Regulation (DPR), and the review of guidelines prepared by OEHHA. The Air District reliance upon the expert findings of OEHHA is embedded in state statue and should not be considered blind as suggested by the commenter. Updates to the list of TACs that the Air District regulates must be adopted into Rule 2-5, Table 2-5-1 in a public forum, subject to input from stakeholders, including industry, governmental entities and the general public. From this perspective, the definition of a TAC cannot be considered a moving target.

Comment 3.6: Expanding the definition of Unreasonable Economic Burden. The definition "Unreasonable Economic Burden" (§11-18-227) should also reflect the following:

(1) Confidentiality. California businesses compete with businesses across the US and around the world. The profitability of a company will be used against them by their competitors if it becomes public.
(2) Economic Downturn. As seen with the recent "Great Recession," profitability is volatile and unpredictable. Rule 11-18 must allow for the facility to put on hold commitments to PR 11-18 when future rule requirements exceed 10% of profits. Without an ongoing assessment, definition 11-18-227 is just a one-time snap shot.
(3) Does Annualized Capital Costs Assume the Business Can Get a Loan? It is unclear if the annualized capital cost assessment assumes the facility can get a loan and spread the cost over multiple years (ex: 20-year loan). Capital costs are measured against the profitability of the new equipment. This is especially true when pursuing a loan for new equipment. If Rule 11-18 requires a $5 million investment, and this investment does not produce profit, then the facility will not likely be able to get a loan and amortize this investment over a multiyear period. In this example, the $5 million investment will be measured against a single year profitability.

Definition 11-18-227 should state that the capitol costs are measured against a single year profitability unless a loan against the equipment (and not a business line of credit).

CMC

Comment 3.7: The proposed definition of an Unreasonable Economic Burden should be improved. As proposed, an Unreasonable Economic Burden would exist when the annualized cost of compliance (the sum of the annual operating cost and annualized capital costs) exceeds ten percent of the annual profits of a facility or one percent of the annual operational budget of a non-profit facility. This is a difficult and inappropriate measurement.

MFANC

Response 3.6-7: The Air District has generally as policy, used a benchmark of 10 percent of profits to indicate an adverse economic impact to industry. The ten percent threshold was based on the parameters of accepted methodologies discussed in a 1995 California Air Resource Board (ARB) report called "Development of a Methodology to Assess the Economic Impact Required by SB 513/AB 969" (by Peter Berck, PhD, UC Berkeley Department of Agricultural and Resources Economics, Contract No. 93-314, August, 1995). This benchmark was extrapolated to non-profits based on the general rule of thumb that profits are approximately 10 percent of the general operating budget—1 percent of the operating budget.

4. Health Risk Assessment (HRA) Process

Comment 4.1: The Air District's proposed HRA calculation methodology lacks clarity and will result in artificially inflated results. Rule 11-18 does not describe how the Air District will conduct HRAs with sufficient clarity to allow regulated entities to replicate those calculations. The Air District must clarify that (1) the HRAs to be prepared by the Air District will be done consistently with the OEHHA 2015 Health Risk Assessment Guidelines, and (2) facilities will be provided with an opportunity to review and comment on both the inputs to and results of HRAs prior to being required to submit Risk Reduction Plans.

WSPA

Response 4.1: The Air District has been abundantly clear that the HRAs will be conducted in accordance to the Health Risk Assessment (HRA) Guidelines[2] which were updated in January 2016 to incorporate the OEHHA 2015 Health Risk Assessment Guidelines. Further, staff has stated on numerous occasion that it will work with affected facilities to ensure the inputs to the HRA are as accurate and representative of the facility as possible by working with the operators to update emissions factors, emission parameters, throughput and any other information that may impact the results of the HRA. In addition, we have clarified this issue with changes to Section 11-18-403 of the final rule.

Comment 4.2: The Air District should fully disclose any changes the state has made to the air toxics risk assessment methodology and its impact on the proposed regulation.

Hospital Council

Response 4.2: Staff agrees with this comment. Any updates to risk assessment methodologies developed by the state must be evaluated and proposed for adoption in

[2] http://www.baaqmd.gov/~/media/files/planning-and-research/rules-and-regs/workshops/2016/reg-2-5/hra-guidelines_clean_jan_2016-pdf.pdf?la=en

a public forum, subject to input from stakeholders, including industry, governmental entities and the general public.

Comment 4.3: Since contaminants from required periodic testing often make-up a substantial portion of a hospital's toxic air emissions, Rule 11-18 should consider these requirements in the HRA, especially if hospitals are running generators in a declared emergency.

Hospital Council

Response 4.3: The HRAs conducted for Rule 11-18 would only consider the emissions associated with testing of diesel engines—emissions associated with emergency use would not be included.

Comment 4.4: There should be a formal review process for Health Risk Assessments that would include a hearing board appeal process. Section 11-18-403 's reference to the APCO "taking into account any comments from a facility on preliminary HRA results" does not provide sufficient guidance on a facility's opportunity to comment on a draft Health Risk Assessment, or the District's corresponding obligation to provide that opportunity to review and comment.

Air Liquide

Response 4.4: The Air District's actions under Rule 11-18 are not permitting actions, and are therefore not within the statutory authority of the Hearing Board. However, the Air District recognizes that some kind of third-party assessment of technical issues associated with the implementation of the Rule would be useful. To that end, we will be working with industry to establish such a process. The current language of the rule allows for such a process.

Comment 4.5: Allow for binding facility changes prior to a final HRA. The HRA modeling conducted by the Air District will be based on a specific set of data points and facility assumptions. Some CMC members may be in the middle of facility upgrades, or prepared to conduct facility upgrades that will further reduce their risk. The overall goal is to get below the nation-leading proposed risk level of 10/M. Proposed Rule 11-18 must allow for facilities to make binding commitments for facility upgrades prior to the Air District completing its HRA report. Binding commitments for the metals industry can be done through Rule 12-13 and 6-4. The Air District-approved plans are enforceable, but have to go through a review process. Proposed Rule 11-18 must clearly allow for binding facility changes to be counted prior to the BAAQMD HRA. This will result in facilities reducing their risks to the lowest levels, which is the goal of this rule.

CMC

Response 4.5: One way to address the concern raised by the commenter is conduct the HRA with facility inputs with and without the commitments. These commitments could also be included in the risk reduction plan and serve as risk reduction measures that would be used toward the achievement of the risk reduction goals of the facility. Staff will continue to work with CMC members to ensure that their binding commitments

are appropriately captured in the HRA process so that the health impacts of the facility are characterized appropriately.

Comment 4.6: The facility owner/operator must be given the opportunity to thoroughly review the numerous calculations and assumptions that are included within a preliminary HRA. HRAs are highly technical and complex. They include hundreds of data points and assumptions entered into computerized risk modeling programs. Any factual errors found during the review of a preliminary HRA must be corrected by the APCO before the HRA is finalized. If not, the public could be provided with inaccurate and misleading information. Therefore, it is recommended that the review process, prior to APCO finalizing the HRA, be revised as follows:

11-18-403 **Notification of HRA Results and Submission of Plan:** The APCO shall provide the facility owner/operator with a copy of the preliminary HRA. The facility owner/operator shall be given 90 days to review and comment on the preliminary HRA. After taking into account any comments from a facility on preliminary HRA results and correcting factual errors, the APCO shall notify a facility owner/operator when a final APCO-approved HRA indicates a facility health risk exceeds one or more of the risk action levels set forth in Section 11-18-218 and provide the facility owner/operator with a copy of the final APCO-approved HRA. Within 180 days of notification, the facility owner/operator shall submit a draft Risk Reduction Plan to the APCO that complies with Section 11-18-404

CMC, US Pipe

Notification of HRA Results and Submission of Plan: After taking into account any comments from a facility on preliminary HRA results, the APCO shall notify a facility owner/operator when a final APCO-approved HRA indicates a facility health risk equals or exceeds one or more of the risk action levels set forth in Section 11-18-218 and provide the facility owner/operator with a copy of the HRA. Within 180 days of notification, the facility owner/operator shall submit a draft Risk Reduction Plan to the APCO that complies with Section 11-18-404.

Response 4.6: Staff agrees with the recommended revisions and has amended the provision accordingly.

Comment 4.7: Improve iterative process used to conduct health risk assessments. Facilities should have the ability to contract directly with Air District-approved consultants to conduct HRAs. This would improve the timeliness and accuracy of HRA results. At a minimum, staff should improve and expand the iterative process among facilities, Air District staff, and Air District-contracted consultants in order to check the accuracy of information going into the HRA analysis. For example, staff and consultants should hold a meeting with facility operators to review inputs and assumptions going into the Air District's HRA model. Preliminary results should be shared with facilities for review and input before being releasing to the public. This pre-check should include all background documentation used in the analysis.

CCEEB2

Response 4.7: The Air District would afford the facilities every opportunity to discuss and revise as appropriate the input to the HRA prior to its development. Further, once a

draft HRA is completed, the affected facility would again have opportunity to work with the Air District to revise any input parameter that might have been erroneous. These collaborations would ensure the facilities have sufficient opportunity to provide the most accurate data for inclusion in the HRAs.

Comment 4.8: The Air District's proposal to conduct all HRAs internally raises significant concerns for a complex facility with multiple risk drivers and complicated emissions inventories. The current process is likely to drive facilities to conduct parallel HRAs to verify Air District HRA results and develop RRPs that will deliver required risk reductions. If facilities will not be allowed to conduct the HRAs (our preferred approach), we urge enhanced coordination in the proposed HRA development process to check the accuracy of inputs to the analysis. For example, staff and consultants should hold a meeting with facility operators to review inputs and assumptions going into the Air District's HRA model. Additionally, preliminary HRA results should be shared with facilities for review and input before being releasing to the public. This pre-check should include all background documentation used in the analysis.

Tesoro 2

Comment 4.9: Allow facilities to voluntarily use Air District-approved consultants for HRAs. The Air District should allow facilities to select and use Air District-approved consultants to conduct HRAs. This would allow for greater efficiency and accuracy, streamline the review process, and focus Air District staff resources on reviewing HRAs and conducting HRAs for facilities that opt to have the Air District do this work.

SVLG

Response 4.8-9: There is nothing in the Rule that would prevent a facility from conducting its own HRA. This action would serve to inform the facility operator on where to focus efforts of reviewing HRA inputs parameters and the best ways to reduce the facility risk. However, to ensure consistency and transparency, the Air District, in consultation with the affected facility, will be responsible for conducting the HRAs. Preliminary HRA meetings are a good idea and we will incorporate that into our implementation planning.

Comment 4.10: Rule 11-18 should incorporate an HRA review process that provides sufficient time for source testing and ambient air testing, and that a Hearing Board appeal process be added to the rule's provisions, much like with permit determinations. Absent input from facilities, the Air District may incorrectly characterize facility emissions and/or health risk, which could lead to the District requiring facilities to install control equipment on sources that testing may show do not pose a health risk.

WSPA

Response 4.10: If the operators of the potentially affected facilities believe HRA input parameters, such as emissions factors, process throughputs, or exhaust parameters are inaccurate, the lead time would allow for much of this work to be verified and corrected prior to HRA development. In fact, it would benefit many facilities to ensure that their emissions characterization was as accurate as possible for not only risk assessments,

but emissions inventory purposes in general. As mentioned above appeal to the Hearing Board is not possible, as these are not permitting actions. However, the Air District will work with industry on a similar process to allow for 3rd party consideration of key technical issues.

Comment 4.11: It appears the Air District intends to conduct HRAs using outdated emissions factors that are decades old and based on emissions from refineries outside the Bay Area. The Air District has not justified its continued reliance on these inflated emissions factors, which appear arbitrarily selected and do not track real-world refinery emissions. The Air District should clarify that HRAs conducted pursuant to Rule 11-18 will employ CAPCOA emissions factors, at least until results from the Bay Area refinery study are available, at which time real-world data may be available to create more accurate and realistic HRAs for Bay Area refineries.

WSPA

Response 4.11: The Air District has made it clear that it intends to consult with the affected facilities to ensure the inputs to the both the prioritization scores and the HRAs, including emissions factors, are as accurate as possible. As stated in the Staff Report: "The Air District would conduct the HRAs for facilities in accordance with the OEHHA HRA Guidelines and the CARB/CAPCOA Risk Management Guidelines that were updated in 2015."[3]

Comment 4.12: Public notification templates should be included in the staff report. Currently, the report only lists possible communication methods or channels, but does not provide the details about the District's risk communication.

CCEEB2

Comment 4.13: The Air District should provide templates for the communication of toxic risks from facilities, showing how such risks will be described and communicated to the public. Facility information should be provided to the public only where the facility is above risk action levels, as opposed to the significant risk threshold, and that information should be limited to final, Air District-approved documents.

Air Liquide

Response 4.12-13: The Air District will consider the Air Toxics "Hot Spots" Program Public Notification Guidelines that are being prepared by the California Air Pollution Control Officers Association in determining how best to conduct notification. Methods could include email notices, social media outreach, posting on the Air District website, opt in mailing via the U.S. Postal Service, and community meetings. The Air District will develop and maintain a list of emails of individuals and organizations who have indicated they are interested in being notified of events and updates regarding facilities that pose a toxic risk. Air District staff will consult with the affected industry on the characterization of the facility's risk and how the information would be made available.

[3] Proposed Regulation 11: Hazardous Pollutants, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities, Staff Report, October 2017, Page 31.

Comment 4-14: Health Risk Assessment Information Requirement: The Air District should consider the short timeframes that are set forth in the proposed regulation. Within 60 days of a request from the APCO, a facility owner/operator shall submit to the APCO any information necessary to complete an HRA of the facility. The facility owner/operator may request additional time to submit the requested information (up to an additional 60 days) provided that the facility owner/operator can demonstrate that additional time is necessary. Notification of HRA Results and Submission of Plan: Within 180 days of notification, the facility owner/operator shall submit a draft Risk Reduction Plan to the APCO that complies with §11-18-404.

MFANC

Response 4-14: Staff believes the timeframes are appropriate and reflect past practices established by the AB 2588 "Hot Spots" Program.

Comment 4-15: The Air District has no authority to regulate cargo carriers. The Air District should clarify that the emissions from cargo carriers (e.g., ships and trains) are excluded from Rule 11-18. Similarly, the Air District should clarify that emissions from all mobile sources are excluded from draft Rule 11-18. In meetings, Air District staff has provided conflicting information on whether health risk from mobile sources are subject to regulation under Rule 11-18.

WSPA

Response 4-15: Rule 11-18 will not require reductions in emissions from cargo carries and other mobile sources.

Comment 4-16: In proposed §11-18-404.6, there are requirements in a risk reduction plan to demonstrate that the risk reduction plan will get a facility to an acceptable risk level. The Air District plans to conduct the HRAs that will inform the risk reduction plan. As part of §11-18-403, the rule should include the express requirement for the Air District to provide a facility with both the output from the HRA and the underlying work product in a timely manner such that the owner required to submit a risk reduction can accurately assess whether measures being taken will meet the goals of the rule.

Tesoro

Response 4-16: The Air District will vet all information used in the development of the prioritization scores and HRAs with the affected facilities.

5. Risk Action Levels

Comment 5.1: The Air District continues to propose drafts of Rule 11-18 that establish "Risk Action Levels" that appear arbitrary, are not justified or backed by evidence, may not be technologically achievable, and will have little impact on air quality, the environment, or human health. A calculated risk level of 10/M represents a reduction that is an order of magnitude lower than the current risk level of 100/M. Moreover, the Air District's own analysis demonstrates that 82 percent of the risk in the Bay Area

related to toxic air contaminants (TACs) is attributable to diesel particulate emissions, while all industrial stationary sources of the type regulated by proposed Rule 11-18 account for just 16 percent of all TAC emissions in the Bay Area. Current background risk from TACs is 690/M. In other words, Rule 11-18 addresses only a very small subset of TAC emissions in the Bay Area, and will do nothing to address the most significant source of risk: diesel emissions from mobile sources. The Air District has failed to justify its drastic reduction in Risk Action Levels for stationary sources (from 100/M to 10M), or demonstrate that Rule 11-18 is necessary or will be effective to measurably lower the actual risk attributable to TAC emissions in the Bay Area.

WSPA

Comment 5.2: Setting an unachievable—and unnecessarily low—goal is unreasonable, arbitrary, not cost-effective, and not necessary to protect health. WSPA encourages the District to conduct a comprehensive cost-benefit analysis that adequately evaluates incremental costs and benefits of emissions reductions achieved at 100/M, 25/M, and 10/M residual risk thresholds and to place those emissions reductions in the broader context of air quality in the Bay Area.

WSPA

Response 5.1-2: The Air District considers the RALs to be reasonable—being both health protective and technically achievable due to the compliance flexibility built into the rule. These levels have been implemented in ten air districts throughout the state since 1992. While staff agrees that ambient background risk are high, localized risks can be even higher and the Air District must act to address these localized risks from stationary sources to ensure the best health outcome for those individuals exposed to toxic air contaminants and other pollutants.

Comment 5.3: Proposed §11-18-218 sets an initial risk action level §11-18-218.1 that becomes applicable on January 1, 2018 with that risk action level stepping down two years later on January 1, 2020 (§ 11-18-218.2). It is recommended that the Air District adopt §11-18-218.1 (25/M) as the single risk action level for this rule. In an area where the ambient cancer air risk is approximately 690 in a million and the global risk of contracting cancer is approximately 400,000 in a million (40 percent) (per the American Cancer Society), the Air District has not sufficiently demonstrated that there is enough additional benefit in stepping down the risk level to justify the incremental compliance burden and related economic costs to Bay Area businesses and citizens.

Tesoro

Comment 5.4: If the Air District elects to continue with its two-step process, it is recommended that a longer time period (at least five years) between §§11-18-218.1 and 218.2. The time necessary to develop an accurate inventory for a HRA, conduct the HRA, develop a risk reduction plan, get a risk reduction plan approved and begin implementation of any plan measures that can be implemented expeditiously will likely consume much if not all of the two-year gap between phase 1 and phase 2. This short window between the two stages essentially voids any benefit of a two-step process.

Tesoro

Response 5.3-4: The Air District believes it is necessary for all facilities that emit TACs to reduce their health risk to the lowest level achievable. The step down approach contained in the proposed Rule allows the Air District to focus on the highest risk facilities first, requiring them to reduce their risk below 10/M for cancer and 1.0 for both acute and chronic hazard indices. It also allows the other toxic risk facilities additional time to assess and potentially reduce emissions from their sources of TACs in anticipation of Air District action when the RALs step down to the lower levels.

Comment 5.5: The Staff Report's discussion of the 10/M and 25/M RALs does not provide a complete and robust assessment of each potential option.

Tesoro 2

Response 5.5: As the CEQA analysis shows, a 25/M RAL results in fewer emission controls being installed. At a risk action level of 10/M nearly 400 facilities would be reviewed to ensure they are not posing an unacceptable health risk. At 25/M, only 50 would be reviewed. This would omit many smaller emitting sources that contribute to cumulative toxics exposure in CARE areas. Staff analysis further indicates that thousands of people in Richmond alone would benefit from the more stringent risk action levels.

Staff appreciates industry's concern about potential costs, but toxic emission rules don't lend themselves to cost effectiveness analyses used for regional pollutants such as ozone precursors because doing so would necessarily require the Air District to put a dollar value on a health outcome (e.g. cancer incidence or a developmental disability) avoided. The appropriate approach is to require toxic emissions to be reduced to the greatest extent feasible. This is why the risk action level was set at 10/M. Economic feasibility is a consideration, and costs will be addressed and carefully considered in implementation of the Rule.

Comment 5.6: Both the Staff Report (Table 1) and the District's 2017 Clean Air Plan (Figure 2-9) document diesel particulate matter as the primary driver of cancer risk from TACs—64 percent or 82 percent respectively. Yet Rule 11-18 targets stationary sources which are small contributors to that risk. In either case, applying a dramatic reduction in the RAL to stationary facilities is not likely to be the most effective way to reduce overall risk.

Tesoro 2

Response 5.6: Rule 11-18 is one of many approaches the governmental agencies that regulate air pollution employ to reduce ambient risk. In concert, these rules and regulations continue to reduce people's exposure to toxic air contaminants and elevated risk levels.

Comment 5.7: Citing the Sacramento Metropolitan AQMD and the Santa Barbara and San Luis Obispo County APCDs achievement of 10/M cancer risk is not instructive as

those jurisdictions host very different types of facilities with different risk profiles and compliance challenges.

Tesoro 2

Response 5.7: Staff disagrees with the comment. While these air districts may not have the numbers of facilities that are in the Bay Area, they do have numerous facilities that are similar to those in those in the Bay Area, including petroleum refining operations,[4] chemical plants, POTWs, crematoria, data centers, etc.

Comment 5.8: The Air District should establish a risk reduction threshold in Rule 11-18 of 100/M. If the Air District does proceed with a lower threshold, the Air District should consider a risk reduction threshold of 25/M or higher, assess the feasibility and cost-effectiveness of a 25/M threshold as compared to a 100/M threshold, and further assess the incremental costs and benefits of lowering the threshold from 25/M to 10/M.

WSPA

Response 5.8: The Air District currently has RALs of 100/M and 10 for hazard indices; these were established under the AB 2588 "Hot Spots" Program (H&SC Sections 44300 et seq.). The Air District believes that these RALs (100/M and 25/M) are not sufficient to address localized health risk, especially in areas impacted by elevated risk levels from both stationary and mobile sources, because there are currently no facilities that exceed the 100/M etc. risk levels and less than 50 facilities that exceed the 25/M etc. levels—staff estimates that there may be approximately 400 facilities that exceed the 10/M etc. risk levels. Reducing the health risk posed by these facilities would serve to improve air quality in the communities in which these facilities are located many of which are CARE Communities. For the reasons mentioned above, cost effectiveness calculations used in rules for regional pollutants such as ozone precursors are not appropriate for rules limiting toxic emissions.

6. Risk Reduction Plans (Plans)

Comment 6.1: The commenter supports the additional flexibility mechanisms incorporated into the latest draft of proposed Rule 11-18 and encourages the Air District to retain and potentially expand those provisions. Specifically, extending the time to implement a Risk Reduction Plan from three to five years, with a further five-year extension in certain instances is supported.

WSPA

Response 6.1: Staff appreciates the above comment.

Comment 6.2: The Air District should create a pathway in Rule 11-18 that allows the submission of a Risk Reduction Plan that does not require the installation of TBARCT when such an installation would not result in a significant, measurable improvement in residual risk. Requiring further TBARCT installations to achieve incrementally minor

[4] ConocoPhillips Santa Maria Refinery in San Luis Obispo County.

benefits, yet at great cost, makes no sense in an air basin where stationary sources account for a small percentage of TAC emissions.

WSPA

Response 6.2: The Rule mandates TBARCT only if risk cannot be reduced below the risk action level and only for significant sources of risk. It also provides up to ten years for installation. As a result, staff believes it unlikely that costly installations with minor benefits will be required.

Comment 6.3: In some cases, even five years may not be adequate to design and install TBARCT; the Air District should consider an additional "extension" option that allows a refinery to either extend the timeframe past the initial deadline by five years or to install TBARCT (or other equipment) during the next scheduled shut-down. This will help avoid the unnecessary emissions caused by "extra" startup/shutdown operations while allowing refineries to better manage and plan for actions required by a Risk Reduction Plan.

WSPA

Response 6.3: The rule provides for extensions of time past five years for installation of TBARCT. The implementation timeframes reflect those that were allowed under the AB 2588 "Hot Spots" Risk Reduction Program (see H&SC §§44391 et seq.) and provide greater flexibility for increasing compliance times. Under §11-18-404.6, a facility can apply for an additional five years to fully implement the RRP if the facility can demonstrate that it is technically infeasible or places an unreasonable economic burden on the facility to meet the five-year schedule.

Comment 6.4: The Air District should consider a two-phase approach, allowing sufficient time (at least five years, with an extension in certain instances) for all facilities to achieve the initial threshold (as proposed, 25/M) and only then implementing a second Risk Reduction Plan to achieve any second threshold that the Air District subsequently determines is necessary; that second threshold, in turn, should again provide at least five years for implementation, with extensions as appropriate.

WSPA

Response 6.4: The proposed Rule contains a two-step approach that allows the Air District to focus on the highest risk facilities first, requiring them to reduce their risk below 10/M for cancer and 1.0 for both acute and chronic hazard indices. It also allows the other toxic risk facilities additional time to assess and potentially reduce emissions from their sources of TACs in anticipation of Air District action when the RALs step down to the lower levels.

Comment 6.5: Section 11-18-404.3 requires that a Risk Reduction Plan include a source characterization that includes "summary data from the applicable APCO-approved air toxic emission inventory," without providing any further clarity with respect

to the emissions inventory component. The Air District should revise Rule 11-18 to clarify that the emission inventory will be based on actual emissions.

Air Liquide

Response 6.5: The intent is to base the HRAs on the emissions inventory submitted by the facility pursuant to AB 2588 "Hot Spots" requirements and approved by the APCO. This is the most appropriate estimate of actual emissions to use for this purpose. Staff will work closely with facilities to make sure emissions calculations are based on current science and source test data where appropriate.

Comment 6.6: The Air District should allow refineries and other complex facilities will need substantially more time to prepare Risk Reduction Plans; the six months proposed is wholly inadequate given the number of components at issue. A longer period of up to three years to allow facilities to prepare plans that are realistic and actionable should be considered.

WSPA

Comment 6.7: Lack of understanding of compliance challenges for complex facilities when initially drafted, Rule 11-18 was projected to cover more than a thousand facilities. After engagement with the regulated community, many smaller facilities (e.g., facilities with back-up generators and retail gasoline outlets) have been excluded from the rule. A much higher proportion of the facilities affected by the rule are now represented by large, more complex facilities. However, the proposed timelines, estimated costs, and HRA development processes do not adequately recognize the compliance challenges for complex facilities.

Tesoro 2

Comment 6.8: Section 11-18-403 requires a facility to submit a draft risk reduction plan within 180 days of notification of a HRA score above a risk action level. This is far too short of a time period to develop such a complex document. Elements of the risk reduction plan include the risk reduction measures to be implemented and a schedule for implementing each risk reduction measure (§§11-18-404.4 and 404.5). The commenter operates a complex petroleum refinery with numerous safeguards in place intended to ensure safe operation of the facility. A key element of safely operating a refinery is to appropriately design and install new projects. In order to achieve that goal, a highly structured engineering work process has been adopted to ensure that projects meet their intended goals. An integral part of that process is to evaluate various options to achieve intended goals and then rigorously choose the best option. That is a lengthy process for complex projects. The incredibly short window provided for the submittal of a risk reduction plan would prevent Tesoro from following its engineering work process. Therefore, it is suggested the inclusion of a provision that would allow a facility that needs time to appropriately engineer a risk reduction solution to submit its engineering schedule for the installation of projects necessary to meet risk reduction goals rather than submitting a defined solution with defined timeline.

Tesoro

Comment 6-9: The staff report lays out an unrealistic timeline of 180 days and an estimated maximum cost of $158,000 dollars to develop an RRP. As noted in our letter of October 16, 2017, Tesoro has established a rigorous engineering process to ensure expensive and complicated construction projects are completed safely and effectively. The process is a gated review process that includes several formal steps to agree on objectives; identify options; conduct preliminary and more detailed engineering reviews; and finally selecting and engineering the best option. Integrated into the process are rigorous formal hazard reviews to ensure that hazards are understood with appropriate controls in place to control those hazards.

Unless a facility completes this process, it incurs several types of risk: 1) the project will not meet its objective (e.g., TBARCT projects may not meet their intended emission reduction targets or they may result in excessive energy consumption that drives risk to another source); and 2) a facility cannot identify potentially significant project flaws such as hazards that cannot be appropriately controlled or costs that exceed the benefit. An effective, reliable installation of a wet gas scrubber like the one described in the socioeconomic report, would take over a year, and would be significantly more expensive than the Staff Report estimates. One alternative for complex facilities requiring detailed engineering review of projects, would be to allow facilities to submit the engineering schedule for project installation rather than prematurely submitting a specific approach within the currently defined timeline.

Tesoro 2

Response 6.6-9: While staff agrees that refineries and other complex facilities have a large number of components that are sources of pollutants, there are a limited number of sources that contribute significantly to each facility's risk, as would be demonstrated by the facility's HRA. Systematically evaluating this subset of sources for risk reduction measures, beginning with the largest risk driving sources, would substantially address the majority of the facility risk and would reduce the level of effort that would be required if all TAC emitting components were evaluated.

Staff believes the timeframes are appropriate and reflect past practices established by the AB 2588 "Hot Spots" Program. There is substantial lead time between rule adoption and finalization of HRA results and Air District notifying each facility of their obligation to comply with the Rule. Upon adoption of the Rule, a facility could begin assessing it sources of toxic emissions for potential risk reduction measures in anticipation of development of a risk reduction plan. Further, if the facility determines that plan is inadequate, §11-18-406 allows the operator to petition the Air District to update the plan to address any inadequacies. In addition, the Rule has been modified to allow the APCO to grant additional time to complete the risk reduction plan if needed to comply with safety regulations.

Comment 6-10: There is no indication of what the Air District may consider to be "technically infeasible." Without a much clearer explanation of the parameters of the proposed requirements, WSPA and its members will not be provided a reasonable

opportunity to submit data and analysis supporting or opposing the economic and technical feasibility of the draft rule.

WSPA

Comment 6-11: Explain how to demonstrate that the risk action level is "infeasible." Subsection 11-18-404.6.3 allows a facility to comply with the rule if it can show that getting health risks at the facility below the Risk Action Level (RAL) is not "feasible." However, the proposed rule fails to define what is "feasible," and the staff report provides no guidance or description about what information should be submitted to staff by a facility to demonstrate infeasibility or how staff would be evaluate such information. It is requested that the Air District update the staff report to provide the necessary guidance, including a flowchart to show how the process would unfold.[5] This is important information given that many facilities will not be able to reduce risks below the RAL and will need to make this demonstration in order to take the TBARCT compliance pathway.

Tesoro

Response 6-10-11: The intent of Rule 11-18 is for facilities to do everything that is feasible to reduce risks below the risk action levels. In most cases, the Air District expects that standard, well understood control methods can be applied. These are described in the TBARCT workbook. The BACT/RACT/LAER clearinghouse maintained by the United States Environmental Protection Agency (USEPA) is another source of control technology guidance. With all of these sources, it should not be difficult for the facility to make a demonstration of technical infeasibility when appropriate. The proposed rule requires that the Air District take cost, health, environmental, and energy impacts into account in establishing TBARCT, which will require a case-by-case examination taking all of these factors into account.

Comment 6-12: Correct what appears to be a drafting error in §11-18-404.6. The October 14, 2016 version contained similar language related to the Risk Reduction Plan Requirements. The October 5, 2017 version contains a small but important drafting error by changing an "or" to an "and." Staff should correct this error and revert back to the prior draft rule language, or explain why this change made.

CCEEB

Response 6.12: There was not a drafting error in §11-18-404.6; however, the language has been revised to clarify the intent of the provision.

Comment 6-13: The Air District should consider the short timeframes that are set forth in the proposed rule, including the review and approval of risk reduction plans. The APCO will notify the facility owner/operator in writing if the submitted Plan is lacking information necessary to make an approval determination. The facility owner/operator shall submit a complete draft Plan within 45 days of receipt of this notification. If the

[5] The flowchart should be added to Figure 13, just as Figure 14 adds to Figure 13 by showing how TBARCT determinations will be made.

APCO determines that the resubmitted draft Plan is still incomplete, the APCO may disapprove the Plan or may notify the facility owner/operator that the draft Plan continues to lack necessary information and provide another opportunity to submit a complete draft Plan in 45 or fewer days.

MFANC

Comment 6-14: Final Action: If the APCO determines that the draft Plan does not meet the requirements of §11-18-404, the APCO will notify the facility owner/operator in writing and will specify the basis for this determination. Upon receipt of such notification, the facility owner/operator shall correct the identified deficiencies and resubmit the draft Plan within 45 days.

MFANC

Response 6-13-14: The compliance and implementation schedules associated with Rule 11-18 are appropriate and reflect similar schedules under the AB 2588 "Hot Spots" program. Further, the rule will be implemented in two phases, allowing the Air District to address the highest risk facilities first; this permits the facilities that are in the second phase additional time to prepare for compliance with Rule 11-18.

7. Best Available Retrofit Control Technology (TBARCT)

Comment 7.1: Define TBARCT so that it is consistent with the Health & Safety Code. Proposed draft Rule 11-18 defines TBARCT similarly to Best Available Control Technology (BACT) rather than Best Available Retrofit Control Technology (BARCT). The commenter disagrees with the proposed definition as it ignores standard tests of cost effectiveness inherent to all BARCT programs in the state. Staff is encouraged to redefine TBARCT so that it is consistent with the Health & Safety Code, as well as the Air District's own definition of BARCT in its Regulation 2, Rule 2.

CCEEB

Comment 7.2: TBARCT should be better defined in Rule 11-18 to ensure that costs, non-air quality and energy requirements are considered. Furthermore, the definition should also be revised to clarify that §11-18-204.4's reference to controls identified in a MACT standard or an ATCM relates only to existing sources, not new sources.

Air Liquide

Comment 7.3: The Air District revise the definition of TBARCT to ensure that costs, non-air-quality impacts, and energy requirements are considered. As currently written, the definition of TBARCT outlines four methods by which TBARCT may be determined. One option, identified in §11-18-204.3, expressly requires the consideration of costs, non-air-quality health and environmental impacts, and energy requirements. The other three methods do not. For example, the method identified by §11-18-204.1 would require use of the most effective technology that has ever been used successfully on that type of equipment, even if site-specific considerations make that technology economically infeasible, and even if the technology would have potentially damaging non-air impacts in an ecologically sensitive area. The District should revise the definition

of TBARCT to ensure that all appropriate factors are considered in making the determination, including costs.

WSPA

Comment 7.4: The breadth and vagueness of the definition of TBARCT, and the lack of clarity regarding the Air District's ability to consider costs in this determination, makes it nearly impossible for the Air District to properly evaluate the costs associated with Rule 11-18, as currently drafted.

WSPA

Response 7.1-4: The definition for TBARCT under Rule 11-18 is quite specific and is based on the definition of TBACT in Rule 2-5, which is more appropriate than basing the definition on BARCT, which is crafted for criteria pollutants. The definition has been clarified, however, to indicate that consideration of cost and non-air quality environmental impacts will be considered in all TBARCT determinations.

Comment 7.5: Section 11-18-204.4 also should be revised to clarify that the Air District is referring to the controls identified in a MACT standard or an ATCM for existing sources, not new sources. EPA's MACT standards for new and existing sources are based on entirely different data sets and impose different levels of control; the fact that EPA has concluded that a specific emissions limit is achievable for a new source that is designed to use a specific technology does not prove that an existing source can be retrofitted to achieve that same level of control (indeed, the persistence of less-stringent MACT limits for existing sources demonstrates that such retrofits are typically not possible).

WSPA

Response 7.5: The TBARCT definition has been revised to clarify that it is referring to the controls identified in a MACT standard or an ATCM for existing sources, not new sources

Comment 7.6: The District should establish a technical working group to advise District staff in developing a process to make TBARCT determinations and in defining TBARCT for specific sources.

Air Liquide

Response 7.6: Air District staff has consulted and continues to consult with various industry groups in the development of the TBARCT determinations and will continue to do so during implementation of the Rule.

Comment 7.7: The Legislature and Governor put the California Air Resources Board in lead on defining TBARCT. AB 617 (Garcia-D) was signed into law on July 26, 2017. AB 617 received bi-partisan support from the Legislature, as well as the state's leading environmental and business groups. AB 617 requires the California Air Resources Board (CARB) to establish and maintain a statewide clearinghouse that identifies the

best available control technology, best available retrofit control technology for criteria air pollutants, and related technologies for the control of toxic air contaminants. PR 11-18 must wait for guidance of state law when defining TBARCT.

CMC

Response 7.7: Staff does not believe that the Air District would need to wait for the ARB to establish a statewide clearinghouse that identifies TBARCT. In fact, it is more than likely that the ARB and CAPCOA would work closely with the Air District to identify TBARCT, in which case, the Air District TBARCT would greatly assist the State's endeavor.

Comment 7.8: Clarify how the TBARCT Workbook would be updated: The TBARCT Workbook is a critical piece of Rule 11-18, since so many facilities will need to follow this guidance in order to comply with the rule. CCEEB ask staff to explain what public process will be used to update the workbook, including Appendix A, and how staff will incorporate comments from public stakeholders.

CCEEB2

Response 7.8: The TBARCT Workbook would be updated in same manner as the Air District's BACT / TBACT Workbook. This would involve Air District staff evaluation of various toxic emissions control technologies to determine their effectiveness in reducing toxic emissions and risk. Staff are open to input from the regulated community on making the TBARCT Workbook as accurate and complete as possible.

Comment 7.9: Staff proposes that the TBARCT Review Panel consist solely of senior engineering staff. It is believed that adding review by independent experts would increase the transparency and credibility of Air District TBARCT determinations. Staff should include independent, outside reviewers to the panel, such as engineering experts from the Air Resources Board, third-party consultants, and/or the California Air Pollution Control Officers Association.

CCEEB2

Response 7.7: Staff believes that when need for case-by-case determinations of TBARCT arise, the expertise and objectivity of senior engineering staff would be sufficient under these circumstances. That said, we will be working with impacted industry on a process for 3rd party review of key technical issues associated with the implementation of Rule 11-18.

Comment 7.10: Operational time limits and throughput limits should not be defined as TBARCT. Throughout the draft TBARCT Workbook, staff indicates that operational time limits on equipment and/or throughput limits could be determined as TBARCT under Rule 11-18.8. Such limits, by default, should not be considered as feasible control measures, as this would be inconsistent with the approach used to make BACT and BARCT determinations for criteria pollutants under state and federal laws. If staff views such limits narrowly—for example, as only applying to testing hours for emergency

backup generators—then this should be clarified accordingly in the workbook and staff report.

CCEEB2

Comment 7.11: A TBARCT level of control for fugitive emissions at a petroleum refinery is to weld bonnet flanges. The assumption is that this will take 4 hours at an average wage rate of $30/hr. This estimated wage rate is significantly low. Under the provisions of SB 54, refineries are required to pay welders (boilermakers and blacksmiths) the prevailing wage rate as set by the California Department of Industrial Relations. The current prevailing wage rate for this craft is $81.63/ hour as set by determination C-14-X-2-2017-1. Therefore, the estimate per valve should be over $320/valve which is more than twice what is in the TBARCT draft workbook.

Tesoro 2

Comment 7.12: The Handbook includes a TBARCT determination to repack valves with zero emission seals and packing to control for fugitive emissions at a petroleum refinery. There is an obvious error in the cost estimate in that it is estimated that it will take $4,000 to purchase the materials along with 20 associated hours to select, procure and install at $30/hour. This would bring the cost estimate to $10,000 at $4,000 for the valve plus $6,000 (20 hours x $30/ hr.)—and as noted above, including more realistic rates would drive this unit level cost even higher. Finally, with over 50,000 individual components in a refinery, the overall cost would be significantly higher than the estimates included in the Staff Report.

Tesoro 2

Comment 7.13: A potential TBARCT to control hexavalent chromium from refinery heaters and boilers is non-catalytic supercritical water treatment of refinery crude charge. Tesoro is unaware of a successful commercial application of this technology in a petroleum refinery. Without a successful application, there is no means to understand the installation and operating costs of this technology. Subsection11-18-204.1 of the proposed rule indicates TBARCT needs to be a technology that has been successfully demonstrated.

Tesoro 2

Response 7.11-13: The TBARCT Workbook as indicated is in the draft stage. Staff welcomes input from stakeholders to improve its contents. It is a living document that will improve as Rule 11-18 is implemented.

Comment 7.14: It is imperative that the cost-effectiveness of compliance measures be included as a consideration in determining what constitutes TBARCT and which measures will be required at any particular facility. The Rule's current standard of "ten-percent of profit or one-percent of revenue" is unprecedented and would create a standard that is very likely to be cost-prohibitive.

EBLC

Response 7.14: The definition of TBARCT has been modified to make it clear that costs will be considered when determining TBARCT. The rule standard of "ten-percent

of profit or one-percent of revenue" is only used when determining if more time is needed for implementing risk reduction plans. The cost of TBARCT will be considered in the context of the type of facility, toxic emissions being reduced, and the number of individuals being exposed to that toxic pollution.

Comment 7.15: Define TBARCT as part of rulemaking process. It is believed that a 10/M cancer risk action level would be technically infeasible for many facilities to achieve, especially given the short time (three years) allowed to complete risk reduction projects. This is a wholly new and untested regulatory concept, without definition or identification of what controls would be required, and with no cost estimates for compliance. The Air District is encouraged to allow facilities to apply TBARCT and that it be made part of this rulemaking process.

SVLG

Response 7.15: TBARCT is clearly defined in proposed Rule 11-18 at §11-18-204.

Staff disagrees that the timeframe for compliance, five years, is too short This compliance schedule reflects what was allowed under the AB 2588 "Hot Spots" Program for risk reduction (SB 1731, H&SC§44390 et seq.). Further, the draft TBARCT Workbook[6] lists numerous technologies and their costs that the Air District would consider as TBARCT that could be used as risk reduction measures at affected facilities.

8. Dispute Resolution Process

Comment 8.1: Rule 11-18 should have a dispute resolution mechanism for Risk Reduction Plan disapprovals to avoid unnecessary litigation and provide better outcomes for both the District and facilities subject to Rule 11-18.

Air Liquide

Comment 8.2: It is essential that the Rule include an efficient dispute resolution process outside the direct control of Air District staff to ensure that due process principles are observed. As presently drafted, a regulated entity's only recourse is to the courts, a path that provides only delayed and limited review and comes at excessive cost to both the regulated entity and the Air District. We suggest the Rule be revised to include opportunities for review of Heath Risk Assessment and Risk Reduction Plan determinations before the Air District's Hearing Board.

EBLC

Comment 8.3: Add a dispute resolution process. A process to resolve disputes is needed in Rule 11-18 to allow facilities to appeal staff-developed emissions inventories, health risk assessments, and risk reduction plan determinations that they believe to be inaccurate or, in the case of risk reduction plans, infeasible. It is believed that the Air

[6] DRAFT BAAQMD TBARCT Workbook: http://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-11-rule-18/documents/20171004_tbarct_wkbk_1118-pdf.pdf?la=en.

District's Hearing Board can be used to arbitrate potential disagreements and recommends that the Air District amend its Hearing Board Rules, if necessary, to allow for this authority over Rule 11-18 appeals.

CCEEB

Comment 8.4: Include a process to reconcile potential disputes over risk reduction plan disapprovals between facilities and the Air District. We believe that facilities should be able to appeal to the Hearing Board any disapprovals by the Air Pollution Control Officer of a risk reduction plan, consistent with common practice under the statewide AB 2588 program. This right of appeal should be added to Rule 11-18 or clarified as already existing.

SVLG

Response 8.1-4: As mentioned above, the Air District's actions under Rule 11-18 are not permitting actions, and are therefore not within the statutory authority of the Hearing Board. However, the Air District recognizes that some kind of third-party assessment of technical issues associated with the implementation of the Rule would be useful. To that end, we will be working with industry to establish such a process. The current language of the rule allows for such a process.

9. Updating Risk Reduction Plans

Comment 9.1: §11-18-406 does not provide sufficient guidance as to what will trigger a facility's obligation to update a Risk Reduction plan. An update should be triggered only if a risk assessment based on new information (1) causes a facility to exceed the threshold for preparing such a plan for the first time, or (2) increases the risk associated with the site by more than the significant risk threshold.

Air Liquide

Comment 9.2: The term "Significant Impact" is undefined. Section 11-18-406 requires updates to Risk Reduction Plans if "health risk posed by a facility… would significantly impact health risks to exposed persons" (emphasis added). It is unclear whether "significantly impact" is a subjective term, or whether the Air District is referring to the "significant risk thresholds" elsewhere in Rule 11-18. The Air District should revise this language to clarify that the obligation to update the Risk Reduction Plan is triggered only if new information (1) causes a facility to exceed the threshold for preparing such a plan in the first instance, or (2) increases the risk associated with the source by more than the significant risk threshold.

WSPA

Response 9.1-2: This section has been revised to only apply to facilities that complied with the Rule through the application of TBARCT and continue to exceed any of the RALs.

Comment 9.3: Revise §11-18-406. As currently written, Rule 11-8 gives the Air Pollution Control Officer (APCO) wide discretion to force changes to an already

approved risk reduction plan, even in cases where a facility can demonstrate compliance. This creates regulatory double jeopardy and makes investment planning uncertain, as facilities cannot reasonably foresee when and if the APCO authority would be triggered. It is also not clear how such an action would impact implementation deadlines.

CCEEB

Comment 9.4: Fix double jeopardy when APCO updates already approved risk reduction plans. It unreasonable that the Air District could subject a facility to a continuous regulatory process "to reduce their risk as new methods and technologies for risk reduction become available."[7] This is particularly true for facilities on target to reduce risks below the 10/M action level. Instead, the Air District should rely on its source rules and New Source Review authority as a means to require installation of future, as-of-yet-unknown technologies. The double jeopardy approach in §11-18-406 is not an appropriate mechanism.

CCEEB2

Response 9.3-4: This provision has been revised to apply only when a facility submits a plan for compliance through installation of TBARCT. We expect this provision to be used sparingly and to address sources that were originally deemed to be infeasible to control, and not those for which substantial investments have already been made. Where new technology becomes available that make these sources technically and economically feasible to control, it is reasonable to require that those controls be installed to reduce risk as much as feasible.

Comment 9.5: The Air District should consider, in its cost-effectiveness calculations, the significant costs associated with updating Risk Reduction Plans and to implement new emission reduction technologies as a result of those updates. Failure to do so violates the H&S Code requirements to assess and document socioeconomic impacts associated with District rulemakings. See H&S Code §40728.5.

WSPA

Response 9.5: Rule 11-18 a performance-based rule which allows for great flexibility in how the risk action levels are met, as opposed to a command-and-control rule which depends upon the Air District knowing with some confidence what control technology will be installed at which facilities. As a result, the Air District made a good faith effort to estimate the extent of controls that will be installed at facilities subject to Rule 11-18. This estimate was based on our experience in implementing the toxics new source review program under Rule 2-5 and on some preliminary HRAs conducted for key facilities. The possibility that some few facilities may have to install additional controls after the approval of a Risk Reduction Plan does not significantly impact our estimate of costs of this Rule.

[7] BAAQMD Staff Report: Proposed Regulation 11: Hazardous Pollutants, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities. Page 2.

10. Staff Report

Comment 10.1: Lack of Transparent Demonstration of Costs and Benefits: The Staff Report claims that the 10/M RAL would reduce risk to 10-15 times more people than 25/M, but does not include a thorough and consistent analysis of incremental risk reduction for affected communities and the compliance costs to achieve those reductions.

Tesoro 2

Response 10.1: As the CEQA analysis shows, a 25/M RAL results in fewer emission controls being installed. At a risk action level of 10/M nearly 400 facilities would be reviewed to ensure they are not posing an unacceptable health risk. At 25/M, only 50 would be reviewed. This would omit many smaller emitting sources that contribute to cumulative toxics exposure in CARE areas. Staff analysis further indicates that thousands of people in Richmond alone would benefit from the more stringent risk action levels.

The kind of incremental analysis suggested by the commenter would only be possible after all of the HRAs and Risk Reduction Plans are completed. This is an unreasonable expectation given that there would be no rule in place to require facilities to complete the Risk Reduction Plans.

Staff appreciates industry's concern about potential costs, but toxic emission rules don't lend themselves to cost effectiveness analyses used for regional pollutants such as ozone precursors because doing so would necessarily require the Air District to put a dollar value on a health outcome avoided (e.g. cancer incidence, death, hospitalization, or a developmental disability). The Air District believes that the appropriate approach is to require toxic emissions to be reduced to the greatest extent feasible. This is why the risk action level was set at 10/M. Economic feasibility is a consideration, and costs will be addressed and carefully considered in implementation of the Rule.

Comment 10.2: Clarify Table 1: Table 1 of the Rule 11-18 staff report lists the percent contribution of various compounds to ambient risk, based on 2015 emissions. However, Table 1 differs markedly from Figure 2-9 in the 2017 Clean Air Plan, which is also based on 2015 data. For example, Table 1 shows diesel particulate matter as 64 percent of ambient risk, whereas Figure 2-9 shows that it is 82 percent of cancer-risk weighted emissions. We ask staff to explain the difference in these estimates.

CCEEB2

Response 10.2: Table 1 of the Rule 11-18 staff report lists the percentage contribution of various toxic air contaminants to cancer risk, based on an average of toxicity-weighted *ambient concentration measurements* collected in the Bay Area in 2014, where diesel particulate matter (diesel PM) concentrations were estimated using measurements of elemental carbon as an approximate surrogate. The Figure 2-9 pie chart in the 2017 Clean Air Plan shows a breakdown, by compond, of toxictity-weighted

emissions from all Bay Area sources. The emission estimates shown in Figure 2-9 were forecast in 2010 from a 2005 base year to, what was then, a future year 2015. Ratios of measured pollutant concentrations often differ from ratios of emissions of the same pollutants. One reason for the difference is that pollutants have varying lifetimes in the atmosphere. For example, carbon tetrachloride has an atmospheric lifetime of decades while 1,3-butadiene has a lifetime of hours. Because the lifetime of carbon tetrachloride is much longer, we expect the ratio of carbon tetrachloride to 1,3-butatdiene to be larger for measured concentrations than for emissions. Another reason that ratios of measured pollutant concentrations can differ from ratios of basin-wide emissions is that different sources of emissions are not transported to measurement sites in equal proportion. For example, the total fraction of diesel PM emissions from offshore ships that reach our measurement sites is less than the fraction of benzene emissions from cars and trucks. We also recognize that emission forecasts have large uncertainties and that differences in ratios of measured pollutant concentrations versus emissions could result from errors in emission forecasts. Air District staff are currently working on a revised estimate of 2015 emissions of toxic air contaminants from all sources, using base year 2015 emissions rather than forecasts.

Comment 10.3: What are the calculable emission reductions due to Rule 11-18? California's metalworking industry is arguably the most environmentally advanced facilities in the world. Metalworking businesses that choose to operate in California have made advances at their facilities far beyond their competition. Proposed Rule 11-18 is a multi-billion-dollar proposal that puts tens of thousands of families at risk. What are the measurable emission reductions linked to Rule 11-18? Is there any risk of leakage if the facilities leave California and move to a border location (ex: Nevada, Mexico)?

CMC

Response 10.3: H&SC §40728.5, Required Assessment requires the air districts "…to the extent data are available, to perform an assessment of the socioeconomic impacts of the adoption, amendment, or repeal of the rule or regulation." It is virtually impossible to predetermine how the operator of each facility would chose to comply with this Rule—what risk reduction measures might be employed. Some risk reduction measure, while reducing risk, may not result in emissions reductions, such as increasing stack heights or relocating equipment. From this perspective, a calculation of emission reductions is not possible. The Air District has made a good faith effort to conservatively estimate the impacts of the rule, based on our experience in implementing other programs to control toxic air contaminants.

11. Socioeconomic Analysis

Comment 11.1: Proposed Rule 11-18 will eliminate 10,000 jobs and $2 Billion in economic activity. The 19-page economic report states that proposed Rule 11-18 would conservatively eliminate 10,000 middle class jobs over a 10-year period. Jobs lost in the manufacturing sector will be replaced by lower wage jobs in the service sector. This means less opportunity for Bay Area working families. For the metalworking sector, we would be losing hundreds of union jobs.

CMC

Response 11.1: Table 8 of the Socioeconomic Assessment list that under the worst-case scenario, at most 1,106 jobs could be lost and is not annual but total. The impact to the economy could over a ten-year period be as much as $2 billion. This is significant, but it is based on a very conservative assumption of the impacts of the rule. Cost to industry will be considered at every point in implementing the rule in order to minimize socioeconomic impact.

Comment 11.2: September 29, 2017 Socioeconomic Assessment is extremely weak. The 19-page socioeconomic assessment is predominantly a regurgitation of readily available data about the number of facilities, estimated employment numbers, and potential emissions. For the BAAQMD Board of Directors to deem this study complete is highly objectionable.

- On page 13, the author states, “Since it is not possible at this time in the Rule process to determine the compliance measures and specific costs associated with particular facilities, BAE has developed a methodology to estimate the costs based on available information from BAAQMD on types of measures and a range of costs by type of facility.” This statement clearly demonstrates the shortcomings of the report.

- On Page 12, Table 6 does not include many of the required changes needed at a metal melting or metal recycling facility. It is heavily weighted towards backup engines/generators and refineries. Some of the additional items that need to be included are: (1) Total Facility Enclosures ($750,000-$10,000,000), (2) Individual Process Enclosures ($300,000-$2,000,000), (3) Multiple baghouses (estimated $2,000,000 x number of baghouses), (4) Additional Source Testing ($150,000), (5) Negative Air ($300,000-$2,500,000), (6) localized emission control such as downdraft tables ($20,000/unit), and (7) retrofitting grandfathered sources ($500,000-$6,000,000).

- On page 17, Table 8 is overly optimistic to state that the worst-case scenario is the loss of 1,105 jobs. This scenario of job loss can be attributed to the metal sector alone, especially if just a couple impacted companies close their doors.

CMC

Comment 11.3: Costs are not given in either the Socioeconomic Analysis or TBARCT Workbook. Many risk reduction measures expected to be needed to comply with Rule 11-18 have no costs associated with them. Some of these measures have been deemed “no- or low-cost” yet would have significant costs associated with them, such as stack height adjustments and operational time limits for equipment. Others simply have no cost estimates given, without any explanation. It is asked that staff review the missing information and work with facilities and equipment providers to estimate costs whenever possible. For operational time limits, staff should estimate the expected impact on profitability due to the associated loss in sales or production.

Response 11.4: Rule 11-18 a performance-based rule which allows for great flexibility in how the risk action levels are met, as opposed to a command-and-control rule for which the Air District can know with some confidence what control technology will be installed at which facilities. As a result, the Air District made a good faith effort to estimate the extent of controls that will be installed at facilities subject to Rule 11-18. This estimate was based on our experience in implementing the toxics new source review program under Rule 2-5 and on some preliminary HRAs conducted for key facilities.

Staff will work with affected facilities to ensure complete any mission information and improve cost estimates as the implementation of the Rule moves forward.

Comment 11.5: Costs given in draft TBARCT Workbook, but not part of Socioeconomic Analysis. In other cases, the TBARCT workbook provides installation costs and annual operating costs for expected risk reduction measures by sector, yet this information is not included in the socioeconomic analysis. It is asked that any estimated cost from the TBARCT Workbook be included in the socioeconomic report, and that Table 6 be updated accordingly.

CCEEB2

Response 11.5: Cost provided in Table 6 of the Socioeconomic Analysis are based directly on cost provided in the draft TBARCT Workbook. The TBARCT workbook intended to be a comprehensive list of potential controls. The socioeconomic analysis is a good faith estimate of what is likely to be installed because of the Rule. Therefore, the TBARCT workbook will necessarily include more possible controls than would be reasonable to assume in the socioeconomic analysis.

Comment 11.6: Costs are not given for certain sectors and facilities. The socioeconomic report notes, "…that for a substantial number of locations, one or more data points were lacking. These sites were excluded from the direct analysis…"[8] It is requested that staff provide background details explaining which facilities or facility types were excluded from analysis, and what data points were missing.

The report also notes that no cost estimates were made for public entities because these facilities "could not be evaluated based on impacts on rates of return. These facilities are largely public utility districts or departments, and as such should be able to pass through any compliance costs to ratepayers, so potential socioeconomic impacts on these facilities have not been further assessed."[9] CCEEB disagrees with this rationale, and suggests instead that the Air District base its socioeconomic analysis on

[8] BAE Urban Economics Report, "Socioeconomic Impacts of Proposed Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities," September 29, 2017. Page 7.
[9] Ibid. Page 3.

the rule's definition of "unreasonable economic burden," which uses either 10 percent of annual profits or one percent of the operational budget for a non-profit facility.

CCEEB2

Response 11.6: As mentioned above, the socioeconomic analysis is a good faith estimate of what is likely to be installed as a result of the Rule based on the information available at the time the Rule was developed.

Regarding the impact on public entities. The Air District recognizes that they do not have complete flexibility to pass on their costs to ratepayers. However, it is not appropriate to assume that they will react to increased costs in the same way that private entities do.

Comment 11.7: Costs for activities needed to comply with Rule 11-18, but not part of the Rule. The most important among these will be the cost to conduct a Health Risk Assessment, which could be substantial for a large or complex facility. Additionally, there are other foreseeable expenses that would be common and relatively easy to include, such as needed engine retrofits or replacements to accommodate installation of diesel particulate filters (DPFs), or changes to the physical space of a building needed to install control equipment. Costs for the former could be particularly significant; analysis done for Regulation 2, Rule 5 (Rule 2-5) amendments show that this can increase the cost of DPFs by as much as a factor of six or more.[10]

CCEEB2

Response 11.7: The Air District would be responsible for conducting the HRAs that are associated with the Rule and recover those costs from a fee increase already adopted into Regulation 3. The cost of the aforementioned equipment is addressed in the draft TBARCT Workbook and the Socioeconomic Analysis at Table 6. Changes to space are very site specific and will be addressed as part of determinations on appropriate TBARCT on a case-by-case basis.

Comment 11.8: Staff is asked to provide greater detail about assumptions underlying the socioeconomic analysis. Specifically, we ask how Air District consultants calculated the annualized costs in Table 6, and what information was used as the basis for these estimates. We note that this level of detail was provided for recent amendments to Rule 2-5, which includes many of the same air toxics risk reduction measures expected to be installed or implemented under Rule 11-18. That same level of detail should be given for Rule 11-18.

CCEEB2

Response 11.8: Staff estimated the annualized costs in Table 6 of the Socioeconomic Analysis by amortizing the capital costs of the risk reduction measures over a 10-year period at a 7 percent interest rate and summing that with the available annual operating costs.

[10] The project used as an example in the Rule 2-5 analysis had a cost of $430,000, whereas the estimated range of costs for a DPF in Rule 2-5 was from $20,000 to $65,000.

Comment 11.9: Staff is asked to explain what risk reduction measures—and estimated costs—were used to form the low, median, and high-cost scenarios listed in Table 7. While we appreciate that each facility is unique and will rely on a unique set of risk reduction measures, the assumptions used for the Table 7 scenarios are known to staff and should be made explicit in the report so that stakeholders and the Board can understand staff analysis. The report should also note whether these cost estimates were for facilities assumed to be reducing risks below 10/M or for those installing TBARCT on all significant sources. Many facilities will need to take the TBARCT pathway and the costs for these facilities will be much higher.

CCEEB2

Response 11.9: The estimated costs listed in Table 7 were derived from the cost associated with the listed risk reduction measure listed in Table 6. The risk reduction measure listed in Table 6 were those listed in the draft TBARCT Workbook.

Comment 11.10: While the Health Risk Assessments called for under the proposed regulation will limit the number of hospitals impacted in the Bay Area, hospitals with older buildings and equipment may be disproportionately affected. These same hospitals are also the least likely to be able to afford replacements or upgrades due to their financial circumstances. Just the cost to hospitals for replacing or modifying their diesel generators can be very expensive. For example, installation of an emission control system for a two-megawatt generator is an estimated $250,000. The Air District must consider a hospital's financial situation when helping to design a mitigation plan.

Hospital Council

Comment 11.11: Socioeconomic Impacts NOT Assessed for Public Facilities - "Pass Any Compliance Costs to Ratepayers." It is stated on Page 3 of the Socioeconomic Impact Report that:

> "*…, many of the potentially impacted facilities are public entities, and thus could not be evaluated based on impacts on rates of return. These facilities are largely public utility districts or departments, and as such should be able to pass through any compliance costs to ratepayers, so potential socioeconomic impacts on these facilities have not been further assessed.*"

Approximately 31 percent of all facilities impacted by Rule 11-18 are considered publicly owned facilities per Table 1 of the Report, this includes wastewater treatment facilities that are governed by elected or appointed officials and managed by professionals who protect the environment and public health. As a publicly owned facility, if there are any new charges and/or increases to existing charges/rates, then tax (rate) payers must be given the opportunity to vote to approve the rate increases as required by Proposition 218. It is critical that the socioeconomic impact of implementing control technologies and the subsequent impact those projects will have on the public entity's capital improvement plan (CIP) be assessed.

A letter report was prepared and delivered on April 4, 2017 to the Air District summarizing the planning and project implementation process wastewater agencies must undertake when investing in projects, particularly with regard to schedule and unique factors public agencies must consider to satisfy stakeholders, ratepayers, and their elected (or appointed) Board or Council members. Following a one to two-year planning process, POTWs begin financial planning to determine if and when to increase customer rates to support the CIP schedule. The financial planning process can take a year to complete and includes rate projections for funding the identified CIP projects. While BAAQMD is not going to assess the socioeconomic impacts of Rule 11-18 on public facilities, BACWA appreciates the lengthened period of time provided to comply with Rule 11-18 from three to five years, with the ability to extend the period for an additional five years, if needed. The ability to extend this period for an additional five years provides enough time to properly assess the impact, plan, design, and construct capital improvement projects to satisfy Rule 11-18 requirements.

BACWA

Response 11.10-11: The Rule is crafted to allow ample time for facilities to properly prepare for the development and implementation of the risk reduction plans. First, the rule will affect the highest risk facilities, first—those with health risk in excess of 25/M for cancer and 2.5 for acute and chronic indices. Facilities with a health risk between 25/M and 10/M for cancer or between 2.5 and 1.0 for hazard indices would not be affected until 2020. Furthermore, the Risk Reduction Plan requirement under §11-18-404.6 allows five years for the implementation of the Plan, and allows the Air District to grant an additional five years for implementation if the facility can demonstrate technical feasibility issue or an unreasonable economic burden. Lastly, the way the rule will be implemented indicates that most hospitals would be in the second phase of implementation, which isn't due to begin until 2021. Regarding costs, facilities will be able to select the lowest cost approach to get below the Risk Action Levels. If that's not feasible, then TBARCT must be applied. Facility specific cost and toxic exposure issues will be addressed as part of determinations on appropriate TBARCT on a case-by-case basis.

Comment 11.12: The No-Cost Option Is Not An Option: The proposed no-cost option of limiting hours of operation to reduce emissions is not feasible for publicly owned (wastewater) treatment works (POTWs). POTWs must operate continuously to protect public health and the environment. Therefore, any other approach to reduce emissions—covering processes, relocating stacks, adding oxidation catalysts, etc.—will incur costs that will be borne by ratepayers. Table 1 of the Socioeconomic Impact Report summarizes estimated annualized cost ranges for control technology/approach by source. BACWA recommends BAAQMD revise the table to clarify and separate the one-time capital costs from the on-going (annual) operations and maintenance costs.

BACWA

Comment 11.13: The socioeconomic analysis is not sufficiently comprehensive and transparent to support the rulemaking proposal.

Tesoro 2

Comment 11.14: The socioeconomic analysis designed to estimate costs of compliance omits cost impacts for 30 percent of affected facilities due to unavailable data. It also selectively includes the cost of certain compliance technologies but not others, some of which are included in the TBARCT Workbook. Where facility information was not available, the analysis should make clear which facilities were excluded so it is possible to assess the impacts on the cost estimates. The analysis should also clarify why certain compliance technologies were included/ excluded relative to the TBARCT Handbook.

Tesoro 2

Comment 11.15: The analysis does not define its low, median, and high scenarios or provide data that suggest one is more likely than another. Despite that lack of clarity, the report states on p. 15, "no more than 27 percent of the privately-operated facilities should have their profits significantly impacted by Rule 11-18." This assumes that the low case is most likely while even the median case shows that almost 75 percent of facilities would see a significant impact on profits.

Tesoro 2

Response 11.12-15: Rule 11-18 is a performance-based rule instead of the typical "command-and-control" based rule that the Air District normally adopts. The performance-based approach allows the affected industries a great deal of flexibility in the manner of compliance. In light of this, the socioeconomic analysis errs on the side of caution when characterizing the potential economic impacts of the Rule because it would be extremely difficult for staff to anticipate the manner in which each affected facility would choose to achieve the performance standard of the RALs.

Comment 11.16: The Air District should consider the costs that could be incurred by a facility for Airborne Toxic Control Measures and Best Available Retrofit Control Technology for Toxics. The potential costs of such measures and technologies can threaten the financial viability of facilities.

MFANC

Response 11-16: The way the rule is crafted considers the cost of compliance, and the rule contains allowances for "Unreasonable Economic Burden including additional time for compliance and the allowance for compliance through the implementation of TBARCT on significant sources of risk. In addition, facility specific cost and toxic exposure issues will be addressed as part of determinations on appropriate TBARCT on a case-by-case basis.

12. Miscellaneous

Comment 12.1: All Publicly Owned (Wastewater) Treatment Works Are Placed in Phase II. As BACWA members have been meeting with BAAQMD staff to educate them on the impact Rule 11-18 will have on POTWs and the need to build in an appropriate planning horizon for implementation, the Executive Officer decided to place all POTWs

in Phase II of the implementation of Rule 11-18 (see the attached letter dated May 19, 2017 from BAAQMD Executive Officer, Jack Broadbent). This provides POTWs the needed time for assessing the economic impact of Rule 11-18, incorporating its requirements into their capital planning programs, as well as involving their elected boards and ratepayers in the process (which is required by law). The decision to place all POTWs in Phase II is made possible by Section III.D (Proposed Rule Requirements for Implementation) of the Staff Report. It is recommended that this decision is documented within that section (e.g., as a footnote).

BACWA

Response 12.1: Rule 11-18 implementation for a facility begins with the development of an HRA. The Rule does not specify how the 400 facilities to be examined under the rule will be prioritized. The Air District intends to prioritize based on toxicity-weighted emissions, type of facility, extent of toxic emissions, and whether the facility is located in an area already burdened by cumulative exposure to toxic pollutants. The unique capital planning concerns of public entities will be part of this consideration.

Comment 12.2: Land Use Planning: The Air District should promote a proactive approach to zoning and public health. Nearly all CMC members have occupied industrial areas of the Bay Area long before the construction of parks, schools, residences, hospitals, or businesses with sensitive receptors. There are countless situations where metal facilities acquire a new neighbor, and the new neighbor is a sensitive receptor. As an example, one of our light industrial metal working members in the Bay Area made a $10 million equipment investment in his company only to have a swimming school, day care, and restaurant approved by the city and built within 300 feet. The Air District is challenged to become a stronger advocate for public health by getting directly involved in city planning decisions. The current approach is not effective, especially if the BAAQMD is relying on advisories. This advocacy will require the use of BAAQMD's many lobbyists in Sacramento to create the necessary change for our future.

CMC

Response 12.2: The Air District agrees that better informed land use decision-making is key to addressing overburdened communities. Because the Air District does not have land use authority, staff often comments on CEQA EIRs for various projects that may be affected by nearby sources of toxic emissions and seeks to balance infill housing needs with health protection. We will be expanding our work with local planning authorities through the development and implementation of community emission reduction plans required under AB 617.

Comment 12.3: We agree with the comments of Board Members Kaplan and Mitchoff from the Board of Directors meeting on October 18, 2017, in which they suggest a review of the proposed rule by the District's Advisory Council. While Rule 11-18 has been proposed for some time, it is worth reviewing the rule because the regulatory context has changed:

1) The Air District initially planned only to update the AB 2588 program with the 2015 OEHHA risk factors but has consistently expanded the scope and impact of Rule 11-18;
2) Rule 12-16 (with which consideration of Rule 11-18 was commingled for some time) is no longer in play and;
3) AB 617 was passed which now establishes a new approach for measuring and addressing risks from air emissions at the community level.

Tesoro 2

Response 12.3: Rule development is a legal and administrative process that relies upon agency experts who are engineers, scientists, administrators, writers, and lawyers, all with extensive experience in the translation of complex technological requirements into regulatory language and the navigation of the administrative and political process involved. The Air District's Advisory Council has little experience with this process, and, instead, advises the Air District on specific scientific and engineering issues. Because of this difference in roles, having the Advisory Council opine on the rule would not be the best use of their expertise.