BOARD OF DIRECTORS
MEETING
Board of Supervisors Chambers
700 H Street - Suite 1450
Sacramento, California

AGENDA

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Thursday **October 24, 2024** **9:00 AM**

DIRECTORS

Chair
Patrick Kennedy

Vice-Chair
Sarah Aquino

Rich Desmond	Caity Maple	Phil Serna
Sue Frost	Porsche Middleton	Donald Terry
Eric Guerra	Kevin Papineau	Shoun Thao
Patrick Hume	Sergio Robles	Mai Vang

ANNOUNCEMENTS

Members of the public may participate in the meeting in-person, by video conference via Zoom, conference line, and by submitting written comments electronically by email at boardclerk@airquality.org.

Comments submitted will be delivered to the Board of Directors by staff. Public comments regarding matters under the jurisdiction of the Board of Directors will be acknowledged by the Chairperson during the meeting. Public comments will be accepted live until the adjournment of the meeting, distributed to the Board of Directors, and included in the record.

Submit public comments via email to: boardclerk@airquality.org

Zoom Meeting Link:
https://us06web.zoom.us/j/87314130035?pwd=pTxA45BE35JssyS9bsq2AAvu2Zgaab.1

Meeting ID: 873 1413 0035
Passcode: 101299

Call In Number
(669) 900-6833
(408) 638-0968

Teleconference Locations:
Sacramento City Hall, 915 I Street, Room 5100, Sacramento, CA 95814

CALL TO ORDER/ROLL CALL

PLEDGE OF ALLEGIANCE

BOARD CLERK ANNOUNCEMENTS

BROWN ACT

SPECIAL PRESENTATIONS

1. Board Member Service Recognition

CONSENT CALENDAR

2. September 26, 2024 Board of Directors Meeting Minutes

   Recommendation: Approve the September 26, 2024 Board of Director Meeting Minutes.

3. Contract Amendment with Bruns Auri Inc. for the Our Community CarShare Program

   Recommendation: Authorize the Executive Director/Air Pollution Control Officer to amend the contract with Bruns Auri Inc. to: 1) increase the contract amount by $60,000 for a new not to exceed amount of $285,000, 2) extend the term through June, 30 2026, and 3) in consultation with District Counsel, make minor revisions so long as the action is consistent with the purpose of the contract and does not increase the maximum amount authorized by the Board.

4. Hearing Board Vacancy Notification

   Recommendation: Receive and file an informational report notifying the Board that one Hearing Board member term expires January 27, 2025.

5. Incentive Contracts Under the Low Emission Vehicle and Infrastructure Program, (LEVIP)

   Recommendation: Authorize the Executive Director/Air Pollution Control Officer to execute the following agreements under the Low Emission Vehicle Incentive Program (LEVIP) and, in consultation with District Counsel, make any minor revisions to the contracts necessary to fully implement their intent, provided they remain within the specified funding limits:

   1. Sacramento Regional Transit District (SacRT) – SACHUB: Not to exceed $4,000,000
   2. SacRT - H2: Not to exceed $3,000,000
   3. Community Resource Project – Louise Perez Community Center Mobility Hub: Not to exceed $1,800,000
   4. Penske Truck Leasing LLC: Not to exceed $1,268,685
   5. Mitra EV Inc.: Not to exceed $1,400,000
   6. Sacramento Municipal Utilities District (SMUD): Not to exceed $2,000,000
   7. Black Oak Mine Unified School District (BOMUSD): Not to exceed $1,534,546

6. Contract Amendment with Experis US LLC for Project Management Support of the Enterprise Software Custom-build Solution (AiriA)

   Recommendation: Authorize the Executive Director to amend the contract with Experis US, LLC, and in consultation with District Counsel, make minor revisions so long as the action is consistent with the purpose of the contract and does not increase the maximum amount authorized by the Board, to continue providing ongoing project management services for the implementation of the District's custom-built enterprise software solution known as AiriA. The amendment will: 1) increase the contract amount by $306,300, for a new not to exceed amount of $500,000, 2) extend the contract until June 30, 2026, and 3) update the Scope of Services.

7. Quarterly Contracts Report (July 2024 – September 2024)

   Recommendation: Receive and file a report on certain contracts executed by the Air Pollution Control Officer under the Non-Incentive Purchasing Authority for the quarter July 2024 – September 2024.

PUBLIC HEARINGS

8. Contingency Measures for the 2008 and 2015 Ozone Standards: Revisions to the State Implementation Plan (SIP), Rule 489 - Greenwaste Composting Operations, and Rule 490 - Liquefied Petroleum Gas Transfer and Dispensing

   Recommendation: Conduct a public hearing to adopt the 2008 and 2015 ozone standard

contingency measures. This includes the revision to the State Implementation Plan (SIP) and the adoption of Rules 489 (Greenwaste Composting Operations) and 490 (Liquefied Petroleum Gas Transfer and Dispensing). Determine that these actions are exempt from the California Environmental Quality Act (CEQA) and direct staff to forward all necessary supporting documentation to the California Air Resources Board (CARB) for submittal to the U.S. Environmental Protection Agency (EPA).

9. Air Toxics "Hot Spots" Program Annual Report (AB 2588)

   Recommendation: Conduct a public hearing for the Air Toxics "Hot Spots" Program Annual Report (AB 2588) and receive and file the report.

DISCUSSION CALENDAR

10. Greenfield Development in the Context of Achieving Air Quality and Climate Goals

    Recommendation: Receive and file a presentation on greenfield development in the context of achieving air quality and climate goals.

BOARD IDEAS, COMMENTS AND AB 1234 REPORTS

PUBLIC COMMENT

ADJOURN

Agenda Revision: This agenda may be revised. A final agenda will be posted on the website (www.airquality.org) and at the meeting site 72 hours in advance of the meeting. Materials submitted within 72 hours of the meeting and after distribution of the agenda packets will be made available on the Sac Metro Air District website subject to staff's ability to post the documents prior to the meeting. The order of the agenda items are listed for reference and may be taken in any order deemed appropriate by the Board of Directors. The agenda provides a general description and staff recommendation; however, the Board of Directors may take action other than what is recommended.

Testimony: The Board of Directors welcomes and encourages participation in Board meetings. When it appears there are several members of the public wishing to address the Board on a specific item, at the outset of the item the Chair of the Board will announce the maximum amount of time that will be allowed for presentation of the testimony. Matters under the jurisdiction of the Board and not on the posted agenda may be addressed by the general public immediately prior to the close of the meeting. The Board limits testimony on matters not on the agenda to three minutes per person and not more than 15 minutes for a particular subject.

Meeting Broadcast: The meeting is videotaped in its entirety and will be cablecast without interruption on Metro Cable 14, the Government Affairs Channel and will be webcast at https://metro14live.saccounty.gov. This morning's meeting is being cablecast live and will be rebroadcast on Saturday, October 26, 2024 at 2:00 p.m. on Channel 14.

Closed Captioning: Metro Cable now provides closed captioning of the Sac Metro Air District Board meetings for the deaf and hard of hearing community. The captioning will be available on both the live and playback broadcasts on the Metro Cable television channel (Channel 14).

Assisted Listening: Assisted listening devices are available for use by the public. Please see the Clerk of the Board for further information.

Board Action: The Board of Directors may take action on any of the items listed on this agenda.

Information: Full staff reports are available for public review on the District's website (www.airquality.org), including all attachments and exhibits, or for public inspection at the District's office at 777 12th Street, Suite 300, Sacramento, CA. Copies of items prepared by staff and distributed for the first time at the meeting will be available at the back of the meeting room or may be obtained from the Board Clerk. Copies of items that were not prepared by staff may be obtained after the meeting from the Clerk. Materials related to an item on this Agenda submitted to Sac Metro Air District after distribution of the agenda packet are available for public inspection in the Clerk of the Board's office during normal business hours. For information regarding this agenda, please contact Salina Martinez, Clerk of the Sac Metro Air District Board of Directors, at 279-207-1164.

Meeting Date: 10/24/2024
Report Type: CONSENT CALENDAR
Report ID: 2024-1024-2.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 2.

Title: September 26, 2024 Board of Directors Meeting Minutes

Recommendation: Approve the September 26, 2024 Board of Director Meeting Minutes.

Rationale for Recommendation: Meeting minutes serve as the official record of the actions and decisions made during board or committee meetings. It is the Board of Directors' practice to approve the minutes at a subsequent Board meeting. The minutes from the September 2024 Board meeting are provided as Attachment A for the Board's review and approval. All approved Board resolutions from that meeting are also attached.

Contact: Salina Martinez, Administrative Supervisor/ Clerk of the Board, 279-207-1164

Presentation: No

ATTACHMENTS:

Attachment A: September 26, 2024 BOD Meeting Minutes
Resolution No. 2024-018 AB617 Best Available Retrofit Control Technology Determination for Steam Methane Reforming
Resolution No. 2024-019 Sacramento Area Sewer District SEED Loans

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Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

Board Meeting Video

MINUTES

BOARD OF DIRECTORS
Sacramento Metropolitan Air Quality Management District
700 H Street, Suite 1450
Sacramento, California

Thursday **September 26, 2024** **9:00 AM**

DIRECTORS

Chair
Patrick Kennedy

Vice-Chair
Sarah Aquino

Rich Desmond
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Meeting ID: 873 1413 0035
Passcode: 101299

Call In Number
(669) 900-6833
(408) 638-0968

Teleconference Locations:
Sacramento City Hall, 915 I Street, Room 5100, 5th Floor, Sacramento, CA 95814
Folsom Fire Station No. 34, 3255 Westwood Dr, Folsom, CA

CALL TO ORDER/ROLL CALL

Meeting was called to order.

Directors Present: Sarah Aquino, Sue Frost, Eric Guerra, Patrick Kennedy, Caity Maple, Porsche Middleton, Sergio Robles, Phil Serna, Donald Terry, Shoun Thao, and Mai Vang.

Directors Absent: Rich Desmond, Patrick Hume, and Kevin Papineau.

Director Thao arrived after the consent calendar was passed.

PLEDGE OF ALLEGIANCE

CONSENT CALENDAR

ACTION:
Eric Guerra Moved /Caity Maple Seconded

Ayes: Sarah Aquino, Sue Frost, Eric Guerra, Patrick Kennedy, Caity Maple, Porsche Middleton, Sergio Robles, Phil Serna, and Donald Terry.

Abstain: Mai Vang.

Absent: Rich Desmond, Patrick Hume, Kevin Papineau, and Shoun Thao.

1. August 22, 2024 Board of Directors Meeting Minutes
   Recommendation: Approve the August 22, 2024 Board of Director Meeting Minutes.

Approved

2. Board of Directors Meeting Schedule for 2025
   Recommendation: Approve the 2025 Sacramento Metropolitan Air Quality Management District Board of Directors Meeting Schedule.

Approved

3. Transportation Incentive Grant to San Juan Unified School District
   Recommendation: Authorize the Executive Director/Air Pollution Control Officer to execute an agreement with San Juan Unified School District under the Low Emission Vehicle Incentive Program not to exceed $1,850,335, and make minor revisions to the contract, in consultation with the District Counsel and within the funding limits, that may be necessary to fully implement its intent.

Authorized

PUBLIC HEARINGS

4. AB 617 Best Available Retrofit Control Technology Determination for Steam Methane Reforming
   Recommendation: Conduct a public hearing and 1) determine that the approval of the Best Available Retrofit Control Technology (BARCT) determination for steam methane reforming is not subject to the California Environmental Quality Act (CEQA), and 2) adopt a resolution approving the BARCT determination for Steam Methane Reforming.

Pedro Vega, Monitoring, Planning and Rules Division, gave a presentation on AB617 Best Available Retrofit Technology Determination for Steam Methane Reforming.

Resolution No. 2024-018

Public Hearing was opened and closed with no comment.

ACTION:
Eric Guerra Moved /Sergio Robles Seconded

Ayes: Sarah Aquino, Sue Frost, Eric Guerra, Patrick Kennedy, Caity Maple, Porsche Middleton, Sergio Robles, Phil Serna, Donald Terry, Shoun Thao, and Mai Vang.

Absent: Rich Desmond, Patrick Hume, and Kevin Papineau.

DISCUSSION CALENDAR

5. Sacramento Area Sewer District Biogeneration Project and Community Bank Emission Reduction Credits

   Recommendation: (1) Receive and file a presentation on the Sacramento Area Sewer District Biogeneration Project and (2) adopt a resolution transferring a total of 30,153 pounds of nitrogen oxides (NOx) per year and a total of 12,920.3 pounds of reactive organic compounds (VOC) from the Community Bank to Sacramento Area Sewer District (SacSewer) for thirty years.

Amy Roberts, Engineering and Compliance Division, gave a presentation on Sacramento Area Sewer District Biogeneration Project and Community Bank Emission Reduction Credits.

Resolution No. 2024-019

Received and filed presentation.

ACTION:
Phil Serna Moved /Eric Guerra Seconded

Ayes: Sarah Aquino, Sue Frost, Eric Guerra, Patrick Kennedy, Caity Maple, Porsche Middleton, Sergio Robles, Phil Serna, Donald Terry, Shoun Thao, and Mai Vang.

Absent: Rich Desmond, Patrick Hume, and Kevin Papineau.

6. Light Duty Equity Programs: Update on Clean Cars 4 All, CarShare, and Mobility Hubs

   Recommendation: Receive and file a presentation on the Clean Cars 4 All (CC4A) program August 2024 relaunch, updates on the Our Community CarShare Program, and current efforts on zero emission mobility hubs.

Raef Porter, Transportation and Climate Change Division, gave a presentation on Light Duty Equity Programs: Update on Clean Cars 4 All, CarShare, and Mobility Hubs.

Received and filed.

AIR POLLUTION CONTROL OFFICER'S REPORT

7. Air Pollution Control Officer Presentation

   Recommendation: Receive and file a presentation from the Air Pollution Control Officer.

Alberto Ayala, Executive Director/Air Pollution Control Officer, gave a presentation.

Received and filed.

BOARD IDEAS, COMMENTS AND AB 1234 REPORTS

PUBLIC COMMENT

ADJOURN

RESOLUTION NO. 2024 – 018

Adopted by the Sacramento Metropolitan Air Quality Management District Board of Directors

AB 617 BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY DETERMINATION FOR STEAM METHANE REFORMING

BACKGROUND:

A. California Health and Safety Code (HSC) Section 40920.6(c)(1), as amended by California Assembly Bill 617 [Statutes of 2017, Ch. 136, Sec. 2. AB 617, Christina Garcia], requires each California air district that is a nonattainment area for one or more air pollutants to adopt an expedited schedule for implementation of Best Available Retrofit Control Technology (BARCT) on or before January 1, 2019.

B. Expedited BARCT is required for each industrial source subject to the California Greenhouse Gas Cap-and-Trade regulation [Title 17, California Code of Regulations, Section 95802 *et seq.*] as of January 1, 2017.

C. The Sacramento Metropolitan Air Quality Management District (District) is designated nonattainment for the federal and state ozone standards, the federal standard for particulate matter less than 2.5 microns in diameter (PM2.5), and the state standard for particulate matter less than 10 microns in diameter (PM10).

D. The Board of Directors (Board) adopted the District's expedited BARCT schedule on October 25, 2018, which identifies each industrial source for which the District must implement expedited BARCT and commits the District to evaluating BARCT and adopting or amending District rules if necessary.

E. Air Products Manufacturing Corporation, a steam methane reforming operation, is subject to the AB 617 expedited BARCT requirements.

F. Staff performed a detailed analysis of available control technologies, including cost-effectiveness and concluded that the District's Rule 411, NOx from Boilers, Process Heaters, and Steam Generators, which limits nitrogen oxide (NOx) emission from the operation of steam methane reformers, meets BARCT requirements.

G. The Board has considered Staff's AB 617 BARCT Analysis for Steam Methane Reforming.

H. A notice for this public hearing, which included a link to the AB 617 Best Available Control Technology Analysis for Steam Methane Reforming, was posted on the District's website on August 30, 2024, inviting public comment and describing how comments could be submitted.

I. An action that will not cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, is not a project subject to the California Environmental Quality Act (CEQA) [Public Resources Code Section 21065 and State CEQA Guidelines Section 15378].

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

Section 1. The adoption of the AB 617 BARCT Analysis for steam methane reforming is not subject to CEQA.

Section 2. The District's implementation and enforcement of District Rule 411 meets BARCT for steam methane reforming operations in Sacramento County.

Section 3. AB 617 BARCT Analysis for Steam Methane Reforming shown in the attached Exhibit A, is approved and adopted.

Section 4. Exhibit A is attached to and incorporated into this Resolution.

ON A MOTION by Director Eric Guerra, seconded by Director Caity Maple, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Metropolitan Air Quality Management District on September 26, 2024, by the following vote:

Ayes: Sarah Aquino, Sue Frost, Eric Guerra, Patrick Kennedy, Caity Maple, Porsche Middleton, Sergio Robles, Phil Serna, Donald Terry, Shoun Thao, and Mai Vang.

Noes:

Abstain:

Absent: Rich Desmond, Patrick Hume, and Kevin Papineau.

ATTEST: Salina Martinez

Digitally signed by: Salina Martinez
DN: CN = Salina Martinez email = smartinez@airquality.org C = AD O = Sac Metro Air District
Date: 2024.09.27 11:23:00 -07'00'

Clerk, Board of Directors
Sacramento Metropolitan Air Quality Management District

Exhibit A

SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT

STATEMENT OF REASONS

BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY ANALYSIS FOR STEAM METHANE REFORMING

August 30, 2024

Prepared by: Pedro Vega
Air Quality Engineer

Marc Cooley
Air Quality Engineer

Reviewed by: Kevin J. Williams, Ph.D.
Program Supervisor

Approved by: Mark Loutzenhiser
Director– Monitor, Planning and Rules Division

Table of Contents

BACKGROUND

AB 617 – Community Air Protection Program

California Assembly Bill (AB) 617[1] was signed into law on July 26, 2017. Among its provisions, California Health and Safety Code (HSC) section 40920.6 was amended to require each air district that is a nonattainment area for one or more air pollutants to adopt an expedited schedule for implementation of Best Available Retrofit Control Technology (BARCT). BARCT is defined as "an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source."[2]

The Sacramento Metropolitan Air Quality Management District (SMAQMD or District) is designated nonattainment for the state and federal ozone standards, the state PM10 standard, and the federal PM 2.5 standard. Therefore, the expedited BARCT schedule applies to the control of these pollutants and their precursors. Nitrogen Oxide (NOx) is a precursor to ozone formation The expedited BARCT requirement applies to each industrial source subject to the California Greenhouse Gas Cap-and-Trade regulation.[3]

On October 25, 2018, the District's Board of Directors (Board) adopted an expedited schedule to analyze and implement BARCT in Sacramento County. The District identified three industrial sources that are subject to the California Greenhouse Gas (GHG) Cap-and-Trade regulation. One of these sources, owned by Air Products, is a Steam Methane Reforming (SMR) process.

This document presents staff's analysis of BARCT for Rule 411 - NOx from Boilers, Process Heaters, and Steam Generators. The SMR operations at Air Products have a separate limit for NOx emissions and this analysis evaluates whether the regulatory requirements for Rule 411 meet BARCT or if amendments to the District rule are necessary.

Steam Methane Reforming Operations in Sacramento

Operations in Sacramento County include two SMR Furnaces operating at Air Products 83Rd St. Facility in Sacramento. The Sacramento facility produces gaseous hydrogen by reforming natural gas with steam. Sulphur is removed from the natural gas to prevent the poisoning of the catalyst. The desulfurized gas is combined with steam and heated in the reformer furnace, then fed through nickel catalyst-filled tubes to produce hydrogen and carbon oxides in the following reaction:

$$CH_4 + H_2O \rightarrow CO + 3H_2$$

From the reformer, the gas enters a series of shift converters, where hydrogen is produced by way of reaction in the presence of an iron-chromium catalyst:

$$CO + H_2O \rightarrow CO_2 + H_2$$

To produce pure hydrogen the gas stream enters a pressure swing activation unit, a physically selective adsorption process, which raises the purity of the hydrogen gas. The resulting hydrogen gas is then prepared for delivery or sent through a liquefaction process.

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1 Statues of 2017, CH. 136 Sec. 2. AB 617, Christina Garcia
2 HSC § 40406
3 Title 17, California Code of Regulations (CCR), § 95800 *et seq*.

Gaseous hydrogen leaving the pressure swing adsorption process is compressed and sent through activated carbon adsorption filters to remove traces of oil. The liquefaction process occurs as the gas passes through multiple expansion engines. The resulting liquid hydrogen is stored in storage tanks and delivered by tank trucks. Production of gaseous hydrogen is done in Plant B and the liquefaction and production of liquid Hydrogen is done in Plant A.

Plant A utilizes a 19.1 million British thermal units per hour (mmBtu/hr) reformer furnace, equipped with three low-NOx burners. Plant B utilizes a 37 mmBtu/hr reformer furnace, also equipped with three low-NOx burners.

AVAILABLE CONTROL TECHNOLOGY

NOx from combustion is created through three processes[4]. "Thermal NOx" forms when molecular nitrogen and oxygen from the air react at high temperatures. "Fuel NOx" is formed from the oxidation of nitrogen compounds in the fuel. "Prompt NOx" is formed first from the reaction of molecular nitrogen from the air with the fuel under fuel-rich conditions, then through subsequent oxidation of these nitrogen compounds. NOx formation varies in the combustion process depending on the air-to-fuel ratio, nitrogen content of the fuel, flame temperature, and residence time. Two primary technologies are used to limit the formation or reduce the emission of NOx to the atmosphere.

1. Ultra-low NOx burners (UNLB)
2. Selective Catalytic Reduction (SCR)

Ultra-Low NOx Burners

Ultra-Low NOx burners utilize one or a combination of control technologies (e.g., low excess air, fuel and/or air staging) in the design of the burner to reduce NOx emissions.

Low excess air reduces the amount of oxygen available for combustion and thus reducing the number of oxygen atoms available to react with nitrogen to form NOx.

Fuel staging, which is applicable to gas only, is done by burning part of the fuel at high excess air (low temperature) in a primary combustion zone. The remaining fuel is injected through another set of orifices or a gas gun into a secondary zone where combustion is completed at relatively low excess air. Since the inert products of combustion from the primary zone pass through the secondary zone, temperatures and NOx are reduced.

In air staging, fuel is mixed with part of the air in a fuel rich primary combustion zone at low temperatures and without excess oxygen. Any remaining fuel burns completely with the remaining combustion air in the secondary combustion zone through which the inert products of combustion pass.

Staff is aware of next generation burner technology demonstration projects in the South Coast Air Quality Management District that may become commercially available to reduce NOx emissions

[4] "Technical Bulletin – Nitrogen Oxides (NOx), Why and How they are Controlled." EPA. November 1999. p. 5.

to 5 ppmv without the use of SCR. However, at the current time, the technology is not available/achieved in practice for SMRs, without the use of SCR, for units less than or equal to 40 mmBtu/hr[5].

Selective Catalytic Reduction

Selective Catalytic Reduction is a post-combustion control in which combustion exhaust gas passes through a catalyst bed, where NOx reacts with a reducing agent, such as urea or ammonia. SCR systems typically can achieve NOx emission concentrations as low as 5 ppmv. SCR systems have been applied to steam-methane reformers[6] like the units at Air Products.

Air Products sought a proposal from a vendor for the engineering, design, and supply of an SCR system for the two Sacramento reformers. This proposal was provided by CECO Peerless Environmental. The proposal consisted of the design of a Catalyst Reactor Housing, supply of NOx catalyst, an ammonia injection system, and Computation Fluid Dynamic (CFD) system modeling for both reactors.

Existing Requirements for Steam Methane Reforming

The operation of the Air Products SMR Furnaces fall under the District Rule 411 - NOx from Boilers, Process Heaters, and Steam Generators. Rule 411 classifies the SMR Furnaces as Gas Fired Reformer Furnaces and limits NOx emissions to 30 parts per million by volume (ppmv, corrected to an exhaust oxygen concentration of 3%).

During the 2005 revision process for Rule 411, the District initially proposed regulating all process heaters with a HIC greater than 20 mmBtu/hr to 9 ppmv NOx. Air Products responded to the proposed rulemaking by providing information that demonstrated that while technologically was feasible to achieve 25 ppmv NOx concentrations reliably using ultra-low NOx burner (ULNB) technology, it was not cost effective for their reactors to meet the emission limit using ULNB. Some of the challenges presented included:

- Much higher operating temperatures for reforming reactors, 1900° - 2000° F
- Use of multiple burners which allows for higher peak flame temperatures
- The fuel used in the reforming process differs from standard boilers and process heaters which traditionally use natural gas. The reforming furnaces run on primarily purge gas with natural gas mainly used as a trim fuel (providing <20% of the heat input)

Also mentioned at the time, selective catalytic reduction (SCR) systems were significantly more expensive than burner replacement.[7] The District revised the proposed Rule 411 to include a category specifically for Gas Fired Reformer Furnaces with a NOx limit of 30 ppmv.

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5 South Coast Air Quality Management District. NOx BARCT Analysis Review by Norton Engineering. December 4, 2020. p. 29.

6 Johnson Matthey , “SINOx – HT SCR catalyst” https://matthey.com/products-and-markets/energy/stationary-emissions-control/sinox-ht-scr-catalyst, accessed June 5, 2024

7 SMAQMD. Staff Report Rule 411, NOx from Boilers, Process Heaters, and Steam Generators. December 1, 2004. Attachment E, p. 14.

Expected Reductions using SCR

For the purposes of this BARCT analysis, staff calculates emissions and reductions using the allowable permit emission limits of 30 ppmv. Using the reported exhaust flow rate and composition the District calculated the reductions expected from reducing permit limits from 30 ppmv to 5 ppmv as 2.77 tons per year (TPY) for Plant A and 4.45 TPY for Plant B for a total reduction of 7.22 TPY.

COST ANALYSIS

Cost Analysis Methods

The District used a cost evaluation consistent with its procedure for evaluating the Best Available Control Technology (BACT) when evaluating cost effectiveness of control technology for the Air Products facility. In this process, capital costs are annualized and added to operating and maintenance (O&M) costs to compare them to annual emission reductions. The annualization equations are shown below.

$$CRF = \frac{i(1+i)^n}{i(1+i)^n - 1}$$

Where CRF is the Cost Recovery Factor, i is the annual interest rate, and n is the equipment lifetime. The interest rate is determined as the average interest rate on the United States Treasury Securities for the period closest to the equipment life, averaged over the previous 6 months plus 2 percent and rounded up to the next whole percent. As of May 31, 2024, the value for i is 7 percent. A higher interest rate will result in emission controls being less cost effective (i.e. less likely to be implemented). The equipment life is generally assumed to be ten years; however, SCR equipment is known to have a long equipment life. Increasing the equipment life results in more cost-effective emission controls (i.e. more likely to be implemented), so equipment life was assumed 20 years for the initial stages of the evaluation when determining whether further evaluation was needed.

$$Annualized\ Costs = CRF \times Capital\ Costs + O\&M\ costs$$

Where annualized cost is the cost of implementing emission controls annualized into current day dollars per year, capital costs are the total direct and indirect costs of implementing emission controls and O&M costs including costs to operate and maintain the emission controls. Capital costs include direct costs like equipment and indirect costs like engineering and design.

$$Cost\ Effectiveness = \frac{Annualized\ cost}{Emission\ Reductions}$$

Where Cost Effectiveness is how cost effective a control technology is at removing a pollutant in present day dollars per pound of pollutant and Emission Reduction is the amount of pollutant emission reduced by implementing the control technology in pounds per year.

Current Cost Effectiveness Thresholds

The highest cost for NOx controls approved by the District was Rule 411 which had a cost of $13.90/lb-NOx reduced in 2005. Adjusted to the most recent full year of inflation data, 2023 dollars, this equals $21.68/lb-NOx, or $43,380/ton-NOx.[8] For reference, the most recent Best Available Control Technology (BACT) threshold for major new or modified equipment construction has been established at $36,700/ton-NOx as of June 25th, 2024.[9] The BACT cost effectiveness, while not the only metric, is the primary metric by which rules are checked for cost effectiveness/economic feasibility.

Air Products Cost Estimate

The District requested that Air Products perform a cost study for the implementation of SCR for the Sacramento SMR furnaces. In 2021 Air Products combined their internal costs with a quote from CECO Peerless Environmental and presented the District a breakdown of cost shown in Table 1:

Table 1 – Air Products Cost Study Breakdown

Category	Cost
Engineering	$1,563,000
Procurement	$1,448,000
Construction/Commissioning	$3,577,000
Misc	$160,000
Taxes/Tariffs	$231,000
Reserve & Contingency	$1,047,000
Total	**$8,024,000**
Annual Operating Costs (Both Plants)	$222,000
Annualized Catalyst Costs (Both Plants)	$27,500

District EPA SCR Cost Estimate Spreadsheet & ERG Review

Equipment costs were estimated using data from the U.S. Environmental Protection Agency (EPA) Air Pollution Control Cost Manual[10]. EPA's cost control manual includes a SCR cost calculation spreadsheet to estimate costs[11]. Using the spreadsheet with the inventory calculations and provided process information staff estimated a total installation cost for SMR units at approximately $4,421,638. EPA's calculation methodology includes total capital investment and annual costs including direct and indirect costs. All costs are converted to 2023 dollars using the Chemical Engineering Plant Cost Index (CEPCI) for 2023 (Value of 798). The spreadsheet annualized the costs at an interest rate of 7% and assumed an equipment useful life of 20 years.

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[8] 2005 Annual Average CPI 195.3, 2023 Annual Average CPI 304.7, https://www.bls.gov/cpi/tables/supplemental-files/historical-cpi-u-202404.pdf

[9] SMAQMD Memo, BACT Cost Effectiveness Thresholds – June 25th, 2024

[10] United States Environmental Protection Agency. *Cost Reports and Guidance for Air Pollution Regulations.* https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution

[11] United States Environmental Protection Agency. *Air Pollution Control Cost Estimation Spreadsheet For Selective Catalytic Reduction (SCR).* June 2019.

The District contracted Eastern Research Group to review the reasonableness of the Air Products cost study and the District's use of the EPA cost control manual. ERG noted that the EPA cost manual is intended for use with gas-fired industrial units with heat input rates between 250 mmBtu/hr and 4,100 mmBtu/hr. The units at Air Products are much smaller than this and so the EPA methodology will most likely underestimate the costs due to lack of economies of scale for smaller boilers. Due to the heat input rates being well below the recommended range of the EPA methodology an expected probable error of 30 percent is conservative and while may provide better than an order-of-magnitude error, it is likely much greater than 30 percent.[12] Overall factors that could inflate costs:

- Loss of economies of scale due to smaller heat input value
- Sharp increase in inflation which will significantly increase costs
- Increase in annualized costs due to increased interest rates
- The more difficult nature of the retrofit as shown by a larger portion of the costs in engineering and construction/commissioning costs as compared to procurement and equipment upgrade costs

ERG did note areas where costs in the Air Products model were higher than expected. Reagent costs were 12 to 38 percent higher than EPA methodology but found to be reasonable. The cost for catalyst replacement is 24 percent greater than the EPA methodology but found to be a reasonable estimate. ERG estimated the Air Products model required 5 to 11 times more power than EPA methodology estimates for the upgrade to induced draft fan and operating equipment changes. ERG states this discrepancy could be due to the Air Products furnaces falling outside the recommended heat input range, but it is not clear. After following up with Air Products the increased power demands where attributed to a more than doubling in the size of the induced draft fans in both reactor as well as transformer upgrades and other related equipment such as the instrumentation air compressors.

In Table 2 the total and annualized costs from the Air Products cost study is compared to the District's estimate using the EPA methodology. The cost breakdown from Air Products is presented without adjustment to inflation from the 2021-dollar figures originally presented to the District. The elevated levels of inflation since the original submittal of the quote, noted by ERG in their review, indicates that inflation adjustment would only increase these figures. The cost effectiveness of both estimates are also compared to the current BACT thresholds and also reference the costliest BARCT requirement the District has implemented to date.

[12] ERG Memo, Air Products SCR Cost Estimate – Draft Final Technical Memorandum – April 12, 2024

Table 2 – Cost Effectiveness Comparison

Source	Estimated NOx Emission Reductions (tpy)	Useful Life of SCR (years)	Total Costs (Includes Installation and Construction Costs)	Annualized Cost (Includes Operating and Catalyst Replacement Costs)	Cost Effectiveness ($/ton of NOx reduced)	Cost Effectiveness ($/lb of NOx reduced)
Air Products Engineering Quote	**7.22**	**20**	**$8,024,000**	**$1,006,909**	**$139,461**	**$69.73**
District Evaluation Using EPA Methodology	**7.22**	**20**	**$4,285,805**	**$478,899**	**$66,329**	**$33.16**
Highest District BARCT Cost	**-**	**-**	**-**	**-**	**$43,380**	**$21.68**
Current BACT Cost	**-**	**-**	**-**	**-**	**$36,700**	**$18.35**

BARCT AND BACT COMPARISONS TO OTHER DISTRICTS

SCAQMD BARCT Evaluation: SCAQMD does not have a BARCT evaluation for this size unit. For reference though, a BARCT analysis for NOx emissions limits for SMR units was completed by SCAQMD during the rulemaking process for adoption of Rule 1109.1 in 2021 for units ≥ 110 mmBtu/hr . SCAQMD determined the BARCT NOx emission limit for SMR units of ≥ 110 mmBtu/hr at 5 ppmv. During the rulemaking, SCAQMD considered a NOx limit of 3 ppmv by utilizing SCR upgrades but due technical feasible and incremental cost, from reducing from 5 ppmv to 3 ppmv, was not cost effective.

SMAQMD BACT Determinations: None, the District has not performed a BACT determination for this category or source. The existing equipment at Air Products were not subject to BACT. BACT is provided for reference as is considered more stringent than BARCT.

SCAQMD BACT Determination: None, SCAQMD does not list a BACT determination for SMR units.

PUBLIC COMMENTS

Staff held a public workshop to discuss the BARCT analysis on August 28, 2024. A public notice for the workshop was published on the District's website and was also be sent by e-mail to interested parties. The statement of reasons was available for public review at that time. Staff did not receive any comments during the workshop.

CONCLUSION

Comparing the costs required in both the Air Products provided model and the District's own estimation using the EPA Air Pollution Control Cost Estimation Spreadsheet the District has found that implementing SCR at the Air Products reformers would represent an 80% to 280% higher cost than has been previously required for BACT implementation in the past.

Therefore, based on the cost effectiveness determination, District staff finds District's Rule 411 emission limits for gas fired reformer furnaces meet the AB 617 requirement to implement BARCT for Air Products. No new or amended District rules need to be adopted for this category.

Appendix A – EPA SCR Costing Spreadsheets of Plants A and B

Air Pollution Control Cost Estimation Spreadsheet
For Selective Catalytic Reduction (SCR)

U.S. Environmental Protection Agency
Air Economics Group
Health and Environmental Impacts Division
Office of Air Quality Planning and Standards
(June 2019)

This spreadsheet allows users to estimate the capital and annualized costs for installing and operating a Selective Catalytic Reduction (SCR) control device. SCR is a post-combustion control technology for reducing NO_x emissions that employs a metal-based catalyst and an ammonia-based reducing reagent (urea or ammonia). The reagent reacts selectively with the flue gas NO_x within a specific temperature range to produce N_2 and water vapor.

The calculation methodologies used in this spreadsheet are those presented in the U.S. EPA's Air Pollution Control Cost Manual. This spreadsheet is intended to be used in combination with the SCR chapter and cost estimation methodology in the Control Cost Manual. For a detailed description of the SCR control technology and the cost methodologies, see Section 4, Chapter 2 of the Air Pollution Control Cost Manual (as updated March 2019). A copy of the Control Cost Manual is available on the U.S. EPA's "Technology Transfer Network" website at: http://www3.epa.gov/ttn/catc/products.html#cccinfo.

The spreadsheet can be used to estimate capital and annualized costs for applying SCR, and particularly to the following types of combustion units:

(1) Coal-fired utility boilers with full load capacities greater than or equal to 25 MW.
(2) Fuel oil- and natural gas-fired utility boilers with full load capacities greater than or equal to 25 MW.
(3) Coal-fired industrial boilers with maximum heat input capacities greater than or equal to 250 MMBtu/hour.
(4) Fuel oil- and natural gas-fired industrial boilers with maximum heat input capacities greater than or equal to 250 MMBtu/hour.

The size and costs of the SCR are based primarily on five parameters: the boiler size or heat input, the type of fuel burned, the required level of NOx reduction, reagent consumption rate, and catalyst costs. The equations for utility boilers are identical to those used in the IPM. However, the equations for industrial boilers were developed based on the IPM equations for utility boilers. This approach provides study-level estimates (±30%) of SCR capital and annual costs. Default data in the spreadsheet is taken from the SCR Control Cost Manual and other sources such as the U.S. Energy Information Administration (EIA). The actual costs may vary from those calculated here due to site-specific conditions. Selection of the most cost-effective control option should be based on a detailed engineering study and cost quotations from system suppliers. The methodology used in this spreadsheet is based on the U.S. EPA Clean Air Markets Division (CAMD)'s Integrated Planning Model (IPM) (version 6). For additional information regarding the IPM, see the EPA Clean Air Markets webpage at http://www.epa.gov/airmarkets/power-sector-modeling. The Agency wishes to note that all spreadsheet data inputs other than default data are merely available to show an example calculation.

Instructions

Step 1: Please select on the ***Data Inputs*** tab and click on the ***Reset Form*** button. This will clear many of the input cells and reset others to default values.

Step 2: Select the type of combustion unit (utility or industrial) using the pull down menu. Indicate whether the SCR is for new construction or retrofit of an existing boiler. If the SCR will be installed on an existing boiler, enter a retrofit factor between 0.8 and 1.5. Use 1 for retrofits with an average level of difficulty. For more difficult retrofits, you may use a retrofit factor greater than 1; however, you must document why the value used is appropriate.

Step 3: Select the type of fuel burned (coal, fuel oil, and natural gas) using the pull down menu. If you select fuel oil or natural gas, the HHV and NPHR fields will be prepopulated with default values. If you select coal, then you must complete the coal input box by first selecting the type of coal burned from the drop down menu. The weight percent sulfur content, HHV, and NPHR will be pre-populated with default factors based on the type of coal selected. However, we encourage you to enter your own values for these parameters, if they are known, since the actual fuel parameters may vary from the default values provided. Method 1 is pre-selected as the default method for calculating the catalyst replacement cost. For coal-fired units, you choose either method 1 or method 2 for calculating the catalyst replacement cost by selecting appropriate radio button.

Step 4: Complete all of the cells highlighted in yellow. If you do not know the catalyst volume ($Vol_{catalyst}$) or flue gas flow rate ($Q_{flue\ gas}$), please enter "UNK" and these values will be calculated for you. As noted in step 1 above, some of the highlighted cells are pre-populated with default values based on 2014 data. Users should document the source of all values entered in accordance with what is recommended in the Control Cost Manual, and the use of actual values other than the default values in this spreadsheet, if appropriately documented, is acceptable. You may also adjust the maintenance and administrative charges cost factors (cells highlighted in blue) from their default values of 0.005 and 0.03, respectively. The default values for these two factors were developed for the CAMD Integrated Planning Model (IPM). If you elect to adjust these factors, you must document why the alternative values used are appropriate.

Step 5: Once all of the data fields are complete, select the ***SCR Design Parameters*** tab to see the calculated design parameters and the ***Cost Estimate*** tab to view the calculated cost data for the installation and operation of the SCR.

Data Inputs

Enter the following data for your combustion unit:

Is the combustion unit a utility or industrial boiler? Industrial

What type of fuel does the unit burn? Natural Gas

Is the SCR for a new boiler or retrofit of an existing boiler? Retrofit

Please enter a retrofit factor between 0.8 and 1.5 based on the level of difficulty. Enter 1 for projects of average retrofit difficulty. 1.2

* NOTE: You must document why a retrofit factor of 1.2 is appropriate for the proposed project.

Complete all of the highlighted data fields:

What is the maximum heat input rate (QB)?	19.1	MMBtu/hour
What is the higher heating value (HHV) of the fuel? *HHV value of 1033 Btu/scf is a default value. See below for data source. Enter actual HHV for fuel burned, if known.	1,033	Btu/scf
What is the estimated actual annual fuel consumption?	161,970,958	scf/Year
Enter the net plant heat input rate (NPHR)	8.2	MMBtu/MW

If the NPHR is not known, use the default NPHR value:

Fuel Type	Default NPHR
Coal	10 MMBtu/MW
Fuel Oil	11 MMBtu/MW
Natural Gas	8.2 MMBtu/MW

Plant Elevation: 20 Feet above sea level

Not applicable to units burning fuel oil or natural gas

Type of coal burned: Not Applicable

Enter the sulfur content (%S) = percent by weight

Not applicable to units buring fuel oil or natural gas

Note: The table below is pre-populated with default values for HHV and %S. Please enter the actual values for these parameters in the table below. If the actual value for any parameter is not known, you may use the default values provided.

Coal Type	Fraction in Coal Blend	%S	HHV (Btu/lb)
Bituminous	0	1.84	11,841
Sub-Bituminous	0	0.41	8,826
Lignite	0	0.82	6,685

Please click the calculate button to calculate weighted average values based on the data in the table above.

For coal-fired boilers, you may use either Method 1 or Method 2 to calculate the catalyst replacement cost. The equations for both methods are shown on rows 85 and 86 on the ***Cost Estimate*** tab. Please select your preferred method:

- ○ Method 1
- ○ Method 2
- ◉ Not applicable

Enter the following design parameters for the proposed SCR:

Number of days the SCR operates (t_{SCR})	365	days
Number of days the boiler operates (t_{plant})	365	days
Inlet NO_x Emissions (NOx_{in}) to SCR	0.03980	lb/MMBtu
Outlet NO_x Emissions (NOx_{out}) from SCR	0.00668	lb/MMBtu
Stoichiometric Ratio Factor (SRF)	1.050	

*The SRF value of 1.05 is a default value. User should enter actual value, if known.

Number of SCR reactor chambers (n_{scr})	1	
Number of catalyst layers (R_{layer})	3	
Number of empty catalyst layers (R_{empty})	1	
Ammonia Slip (Slip) provided by vendor	2	ppm
Volume of the catalyst layers ($Vol_{catalyst}$) (Enter "UNK" if value is not known)	UNK	Cubic feet
Flue gas flow rate ($Q_{fluegas}$) (Enter "UNK" if value is not known)	9,300	acfm

Estimated operating life of the catalyst ($H_{catalyst}$)	24,000	hours
Estimated SCR equipment life	20	Years*

* For industrial boilers, the typical equipment life is between 20 and 25 years.

Gas temperature at the SCR inlet (T)	595	°F
Base case fuel gas volumetric flow rate factor (Q_{fuel})	486.93	ft^3/min-MMBtu/hour

Concentration of reagent as stored (C_{stored})	29	percent*
Density of reagent as stored (ρ_{stored})	56	lb/cubic feet*
Number of days reagent is stored ($t_{storage}$)	14	days

*The reagent concentration of 29% and density of 56 lbs/cft are default values for ammonia reagent. User should enter actual values for reagent, if different from the default values provided.

Densities of typical SCR reagents:

50% urea solution	71 lbs/ft^3
29.4% aqueous NH_3	56 lbs/ft^3

Select the reagent used: Ammonia

Enter the cost data for the proposed SCR:

Desired dollar-year	2023				
CEPCI for 2023	798	Enter the CEPCI value for 2023	541.7	2016 CEPCI	CEPCI = Chemical Engineering Plant Cost Index
Annual Interest Rate (i)	7	Percent			
Reagent ($Cost_{reag}$)	1.870	$/gallon for 29% ammonia			
Electricity ($Cost_{elect}$) - SMAQMD BACT #s	0.1394	$/kWh			changed from default
Catalyst cost ($CC_{replace}$)	227.00	$/cubic foot (includes removal and disposal/regeneration of existing catalyst and installation of new catalyst			* $227/cf is a default value for the catalyst cost based on 2016 prices. User should enter actual value, if known.
Operator Labor Rate	60.00	$/hour (including benefits)*			* $60/hour is a default value for the operator labor rate. User should enter actual value, if known.
Operator Hours/Day	4.00	hours/day*			* 4 hours/day is a default value for the operator labor. User should enter actual value, if known.

Note: The use of CEPCI in this spreadsheet is not an endorsement of the index, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

Maintenance and Administrative Charges Cost Factors:

Maintenance Cost Factor (MCF) =	0.005
Administrative Charges Factor (ACF) =	0.03

Data Sources for Default Values Used in Calculations:

Data Element	Default Value	Sources for Default Value	If you used your own site-specific values, please enter the value used and the reference source . . .	Recommended data sources for site-specific information
Reagent Cost ($/gallon)	$0.293/gallon 29% ammonia solution 'ammonia cost for 29% solution	U.S. Geological Survey, Minerals Commodity Summaries, January 2017 (https://minerals.usgs.gov/minerals/pubs/commodity/nitrogen/mcs-2017-nitro.pdf		Check with reagent vendors for current prices.
Electricity Cost ($/kWh)	0.0676	U.S. Energy Information Administration. Electric Power Monthly. Table 5.3. Published December 2017. Available at: https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a.	1/1/2023 SMUD Comercial/Industrial Rates, average of summer and winter peak and off-peak rates	Plant's utility bill or use U.S. Energy Information Administration (EIA) data for most recent year. Available at https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a.
Percent sulfur content for Coal (% weight)		Not applicable to units burning fuel oil or natural gas		Check with fuel supplier or use U.S. Energy Information Administration (EIA) data for most recent year." Available at http://www.eia.gov/electricity/data/eia923/.
Higher Heating Value (HHV) (Btu/lb)	1,033	2016 natural gas data compiled by the Office of Oil, Gas, and Coal Supply Statistics, U.S. Energy Information Administration (EIA) from data reported on EIA Form EIA-923, Power Plant Operations Report. Available at http://www.eia.gov/electricity/data/eia923/.		Fuel supplier or use U.S. Energy Information Administration (EIA) data for most recent year." Available at http://www.eia.gov/electricity/data/eia923/.
Catalyst Cost ($/cubic foot)	227	U.S. Environmental Protection Agency (EPA). Documentation for EPA's Power Sector Modeling Platform v6 Using the Integrated Planning Model. Office of Air and Radiation. May 2018. Available at: https://www.epa.gov/airmarkets/documentation-epas-power-sector-modeling-platform-v6.		Check with vendors for current prices.
Operator Labor Rate ($/hour)	$60.00	U.S. Environmental Protection Agency (EPA). Documentation for EPA's Power Sector Modeling Platform v6 Using the Integrated Planning Model. Office of Air and Radiation. May 2018. Available at: https://www.epa.gov/airmarkets/documentation-epas-power-sector-modeling-platform-v6.		Use payroll data, if available, or check current edition of the Bureau of Labor Statistics, National Occupational Employment and Wage Estimates – United States (https://www.bls.gov/oes/current/oes_nat.htm).
Interest Rate (Percent)	5.5	Default bank prime rate	Per SMAQMD BACT Policy. Average interest rate on 20-year treasury security (corresponding to useful life), averaged over the prior six months (April to September, 2023). Add 2 points and round up to the next highest whole point.	Use known interest rate or use bank prime rate, available at https://www.federalreserve.gov/releases/h15/.

SCR Design Parameters

The following design parameters for the SCR were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Parameter	Equation	Calculated Value	Units	
Maximum Annual Heat Input Rate (Q_B) =	HHV x Max. Fuel Rate =	19.1	MMBtu/hour	
Maximum Annual fuel consumption (mfuel) =	(QB x 1.0E6 x 8760)/HHV =	161,970,958	scf/Year	
Actual Annual fuel consumption (Mactual) =		161,970,958	scf/Year	
Heat Rate Factor (HRF) =	NPHR/10 =	0.82		
Total System Capacity Factor (CF_{total}) =	(Mactual/Mfuel) x (tscr/tplant) =	1.000	fraction	
Total operating time for the SCR (t_{op}) =	CF_{total} x 8760 =	8760	hours	
NOx Removal Efficiency (EF) =	$(NOx_{in} - NOx_{out})/NOx_{in}$ =	83.2	percent	0.8320688
NOx removed per hour =	NOx_{in} x EF x Q_B =	0.63	lb/hour	
Total NO_x removed per year =	(NOx_{in} x EF x Q_B x t_{op})/2000 =	2.77	tons/year	
NO_x removal factor (NRF) =	EF/80 =	1.04		
Volumetric flue gas flow rate ($q_{flue\ gas}$) =	Q_{fuel} x QB x (460 + T)/(460 + 700)n_{scr} =	9,300	acfm	
Space velocity (V_{space}) =	$q_{flue\ gas}/Vol_{catalyst}$ =	106.05	/hour	
Residence Time	$1/V_{space}$	0.01	hour	
Coal Factor (CoalF) =	1 for oil and natural gas; 1 for bituminous; 1.05 for sub-bituminous; 1.07 for lignite (weighted average is used for coal blends)	1.00		
SO_2 Emission rate =	(%S/100)x(64/32)*1x10^6)/HHV =			Not applicable; factor applies only to coal-fired boilers
Elevation Factor (ELEVF) =	14.7 psia/P =			Not applicable; elevation factor does not apply to plants located at elevations below 500 feet.
Atmospheric pressure at sea level (P) =	2116 x [(59-(0.00356xh)+459.7)/518.6]$^{5.256}$ x (1/144)* =	14.7	psia	
Retrofit Factor (RF)	Retrofit to existing boiler	1.20		

* Equation is from the National Aeronautics and Space Administration (NASA), Earth Atmosphere Model. Available at https://spaceflightsystems.grc.nasa.gov/education/rocket/atmos.html.

Catalyst Data:

Parameter	Equation	Calculated Value	Units
Future worth factor (FWF) =	(interest rate)(1/((1+ interest rate)^Y -1) , where Y = $H_{catalyts}/(t_{SCR}$ x 24 hours) rounded to the nearest integer	0.3111	Fraction
Catalyst volume ($Vol_{catalyst}$) =	2.81 x Q_B x EF_{adj} x Slipadj x NOx_{adj} x S_{adj} x (T_{adj}/N_{scr})	87.70	Cubic feet
Cross sectional area of the catalyst ($A_{catalyst}$) =	$q_{flue\ gas}$ /(16ft/sec x 60 sec/min)	10	ft^2
Height of each catalyst layer (H_{layer}) =	($Vol_{catalyst}/(R_{layer}$ x $A_{catalyst}$)) + 1 (rounded to next highest integer)	4	feet

SCR Reactor Data:

Parameter	Equation	Calculated Value	Units
Cross sectional area of the reactor (A_{SCR}) =	1.15 x $A_{catalyst}$	11	ft^2
Reactor length and width dimensions for a square reactor =	$(A_{SCR})^{0.5}$	3.3	feet
Reactor height =	(R_{layer} + R_{empty}) x (7ft + h_{layer}) + 9ft	53	feet

Reagent Data:

Type of reagent used: Ammonia

Molecular Weight of Reagent (MW) = 17.03 g/mole

Density = 56 lb/ft^3

Parameter	Equation	Calculated Value	Units
Reagent consumption rate ($m_{reagent}$) =	(NOx_{in} x Q_B x EF x SRF x MW_R)/MW_{NOx} =	0	lb/hour
Reagent Usage Rate (m_{sol}) =	$m_{reagent}$/Csol =	1	lb/hour
	(m_{sol} x 7.4805)/Reagent Density	0	gal/hour
Estimated tank volume for reagent storage =	(m_{sol} x 7.4805 x $t_{storage}$ x 24)/Reagent Density =	100	gallons (storage needed to store a 14 day reagent supply rounded to

Capital Recovery Factor:

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	i (1+ i)^n/(1+ i)^n - 1 = Where n = Equipment Life and i= Interest Rate	0.0944

Other parameters	Equation	Calculated Value	Units
Electricity Usage: Electricity Consumption (P) =	A x 1,000 x 0.0056 x (CoalF x HRF)$^{0.43}$ = where A = (0.1 x QB) for industrial boilers.	9.82	kW

Cost Estimate

Total Capital Investment (TCI)

TCI for Oil and Natural Gas Boilers

For Oil and Natural Gas-Fired Utility Boilers between 25MW and 500 MW:

$$TCI = 86{,}380 \times (200/B_{MW})^{0.35} \times B_{MW} \times ELEVF \times RF$$

For Oil and Natural Gas-Fired Utility Boilers >500 MW:

$$TCI = 62{,}680 \times B_{MW} \times ELEVF \times RF$$

For Oil-Fired Industrial Boilers between 275 and 5,500 MMBTU/hour :

$$TCI = 7{,}850 \times (2{,}200/Q_B)^{0.35} \times Q_B \times ELEVF \times RF$$

For Natural Gas-Fired Industrial Boilers between 205 and 4,100 MMBTU/hour :

$$TCI = 10{,}530 \times (1{,}640/Q_B)^{0.35} \times Q_B \times ELEVF \times RF$$

For Oil-Fired Industrial Boilers >5,500 MMBtu/hour:

$$TCI = 5{,}700 \times Q_B \times ELEVF \times RF$$

For Natural Gas-Fired Industrial Boilers >4,100 MMBtu/hour:

$$TCI = 7{,}640 \times Q_B \times ELEVF \times RF$$

Total Capital Investment (TCI) =	$1,689,354	in 2023 dollars

Annual Costs

Total Annual Cost (TAC)

TAC = Direct Annual Costs + Indirect Annual Costs

Direct Annual Costs (DAC) =	$24,357 in 2023 dollars
Indirect Annual Costs (IDAC) =	$162,204 in 2023 dollars
Total annual costs (TAC) = DAC + IDAC	$186,561 in 2023 dollars

Direct Annual Costs (DAC)

DAC = (Annual Maintenance Cost) + (Annual Reagent Cost) + (Annual Electricity Cost) + (Annual Catalyst Cost)

Annual Maintenance Cost =	0.005 x TCI =	$8,447 in 2023 dollars
Annual Reagent Cost =	$m_{sol} \times Cost_{reag} \times t_{op}$ =	$1,855 in 2023 dollars
Annual Electricity Cost =	$P \times Cost_{elect} \times t_{op}$ =	$11,991 in 2023 dollars
Annual Catalyst Replacement Cost =	$n_{scr} \times Vol_{cat} \times (CC_{replace}/R_{layer}) \times FWF$	$2,064 in 2023 dollars
Direct Annual Cost =		$24,357 in 2023 dollars

Indirect Annual Cost (IDAC)

IDAC = Administrative Charges + Capital Recovery Costs

Administrative Charges (AC) =	Annual Maintenance Cost) =	$2,729 in 2023 dollars
Capital Recovery Costs (CR)=	CRF x TCI =	$159,475 in 2023 dollars
Indirect Annual Cost (IDAC) =	AC + CR =	$162,204 in 2023 dollars

Cost Effectiveness

Cost Effectiveness = Total Annual Cost/ NOx Removed/year

Total Annual Cost (TAC) =	$186,561 per year in 2023 dollars
NOx Removed =	2.77 tons/year
Cost Effectiveness =	$67,339 per ton of NOx removed in 2023 dollars

Air Pollution Control Cost Estimation Spreadsheet
For Selective Catalytic Reduction (SCR)

U.S. Environmental Protection Agency
Air Economics Group
Health and Environmental Impacts Division
Office of Air Quality Planning and Standards
(June 2019)

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The spreadsheet can be used to estimate capital and annualized costs for applying SCR, and particularly to the following types of combustion units:

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(4) Fuel oil- and natural gas-fired industrial boilers with maximum heat input capacities greater than or equal to 250 MMBtu/hour.

The size and costs of the SCR are based primarily on five parameters: the boiler size or heat input, the type of fuel burned, the required level of NOx reduction, reagent consumption rate, and catalyst costs. The equations for utility boilers are identical to those used in the IPM. However, the equations for industrial boilers were developed based on the IPM equations for utility boilers. This approach provides study-level estimates (±30%) of SCR capital and annual costs. Default data in the spreadsheet is taken from the SCR Control Cost Manual and other sources such as the U.S. Energy Information Administration (EIA). The actual costs may vary from those calculated here due to site-specific conditions. Selection of the most cost-effective control option should be based on a detailed engineering study and cost quotations from system suppliers. The methodology used in this spreadsheet is based on the U.S. EPA Clean Air Markets Division (CAMD)'s Integrated Planning Model (IPM) (version 6). For additional information regarding the IPM, see the EPA Clean Air Markets webpage at http://www.epa.gov/airmarkets/power-sector-modeling. The Agency wishes to note that all spreadsheet data inputs other than default data are merely available to show an example calculation.

Instructions

Step 1: Please select on the ***Data Inputs*** tab and click on the ***Reset Form*** button. This will clear many of the input cells and reset others to default values.

Step 2: Select the type of combustion unit (utility or industrial) using the pull down menu. Indicate whether the SCR is for new construction or retrofit of an existing boiler. If the SCR will be installed on an existing boiler, enter a retrofit factor between 0.8 and 1.5. Use 1 for retrofits with an average level of difficulty. For more difficult retrofits, you may use a retrofit factor greater than 1; however, you must document why the value used is appropriate.

Step 3: Select the type of fuel burned (coal, fuel oil, and natural gas) using the pull down menu. If you select fuel oil or natural gas, the HHV and NPHR fields will be prepopulated with default values. If you select coal, then you must complete the coal input box by first selecting the type of coal burned from the drop down menu. The weight percent sulfur content, HHV, and NPHR will be pre-populated with default factors based on the type of coal selected. However, we encourage you to enter your own values for these parameters, if they are known, since the actual fuel parameters may vary from the default values provided. Method 1 is pre-selected as the default method for calculating the catalyst replacement cost. For coal-fired units, you choose either method 1 or method 2 for calculating the catalyst replacement cost by selecting appropriate radio button.

Step 4: Complete all of the cells highlighted in yellow. If you do not know the catalyst volume ($Vol_{catalyst}$) or flue gas flow rate ($Q_{flue\ gas}$), please enter "UNK" and these values will be calculated for you. As noted in step 1 above, some of the highlighted cells are pre-populated with default values based on 2014 data. Users should document the source of all values entered in accordance with what is recommended in the Control Cost Manual, and the use of actual values other than the default values in this spreadsheet, if appropriately documented, is acceptable. You may also adjust the maintenance and administrative charges cost factors (cells highlighted in blue) from their default values of 0.005 and 0.03, respectively. The default values for these two factors were developed for the CAMD Integrated Planning Model (IPM). If you elect to adjust these factors, you must document why the alternative values used are appropriate.

Step 5: Once all of the data fields are complete, select the ***SCR Design Parameters*** tab to see the calculated design parameters and the ***Cost Estimate*** tab to view the calculated cost data for the installation and operation of the SCR.

Data Inputs

Enter the following data for your combustion unit:

Is the combustion unit a utility or industrial boiler? Industrial

What type of fuel does the unit burn? Natural Gas

Is the SCR for a new boiler or retrofit of an existing boiler? Retrofit

Please enter a retrofit factor between 0.8 and 1.5 based on the level of difficulty. Enter 1 for projects of average retrofit difficulty. 1.2

* NOTE: You must document why a retrofit factor of 1.2 is appropriate for the proposed project.

Complete all of the highlighted data fields:

What is the maximum heat input rate (QB)?	37	MMBtu/hour
What is the higher heating value (HHV) of the fuel?	1,033	Btu/scf
What is the estimated actual annual fuel consumption?	313,765,731	scf/Year
Enter the net plant heat input rate (NPHR)	8.2	MMBtu/MW
Plant Elevation	20	Feet above sea level

*HHV value of 1033 Btu/scf is a default value. See below for data source. Enter actual HHV for fuel burned, if known.

If the NPHR is not known, use the default NPHR value:

Fuel Type	Default NPHR
Coal	10 MMBtu/MW
Fuel Oil	11 MMBtu/MW
Natural Gas	8.2 MMBtu/MW

Not applicable to units burning fuel oil or natural gas

Type of coal burned: Not Applicable

Enter the sulfur content (%S) = percent by weight

Not applicable to units buring fuel oil or natural gas

Note: The table below is pre-populated with default values for HHV and %S. Please enter the actual values for these parameters in the table below. If the actual value for any parameter is not known, you may use the default values provided.

Coal Type	Fraction in Coal Blend	%S	HHV (Btu/lb)
Bituminous	0	1.84	11,841
Sub-Bituminous	0	0.41	8,826
Lignite	0	0.82	6,685

Please click the calculate button to calculate weighted average values based on the data in the table above.

For coal-fired boilers, you may use either Method 1 or Method 2 to calculate the catalyst replacement cost. The equations for both methods are shown on rows 85 and 86 on the ***Cost Estimate*** tab. Please select your preferred method:

- ○ Method 1
- ○ Method 2
- ◉ Not applicable

Enter the following design parameters for the proposed SCR:

Number of days the SCR operates (t_{SCR})	365	days
Number of days the boiler operates (t_{plant})	365	days
Inlet NO_x Emissions (NOx_{in}) to SCR	0.03295	lb/MMBtu
Outlet NO_x Emissions (NOx_{out}) from SCR	0.00549	lb/MMBtu
Stoichiometric Ratio Factor (SRF)	1.050	

*The SRF value of 1.05 is a default value. User should enter actual value, if known.

Number of SCR reactor chambers (n_{scr})	1	
Number of catalyst layers (R_{layer})	3	
Number of empty catalyst layers (R_{empty})	1	
Ammonia Slip (Slip) provided by vendor	2	ppm
Volume of the catalyst layers ($Vol_{catalyst}$) (Enter "UNK" if value is not known)	UNK	Cubic feet
Flue gas flow rate ($Q_{fluegas}$) (Enter "UNK" if value is not known)	14,871	acfm

Estimated operating life of the catalyst ($H_{catalyst}$)	24,000	hours
Estimated SCR equipment life	20	Years*

* For industrial boilers, the typical equipment life is between 20 and 25 years.

Concentration of reagent as stored (C_{stored})	29	percent*
Density of reagent as stored (ρ_{stored})	56	lb/cubic feet*
Number of days reagent is stored ($t_{storage}$)	14	days

*The reagent concentration of 29% and density of 56 lbs/cft are default values for ammonia reagent. User should enter actual values for reagent, if different from the default values provided.

Gas temperature at the SCR inlet (T)	540	°F
Base case fuel gas volumetric flow rate factor (Q_{fuel})	484	ft^3/min-MMBtu/hour

Densities of typical SCR reagents:

50% urea solution	71 lbs/ft^3
29.4% aqueous NH_3	56 lbs/ft^3

Select the reagent used: Ammonia

Enter the cost data for the proposed SCR:

Desired dollar-year	2023				
CEPCI for 2023	798	Enter the CEPCI value for 2023	541.7	2016 CEPCI	CEPCI = Chemical Engineering Plant Cost Index
Annual Interest Rate (i)	7	Percent			
Reagent ($Cost_{reag}$)	1.870	$/gallon for 29% ammonia			
Electricity ($Cost_{elect}$) - SMAQMD BACT #s	0.1394	$/kWh			changed from default
Catalyst cost ($CC_{replace}$)	227.00	$/cubic foot (includes removal and disposal/regeneration of existing catalyst and installation of new catalyst			* $227/cf is a default value for the catalyst cost based on 2016 prices. User should enter actual value, if known.
Operator Labor Rate	60.00	$/hour (including benefits)*			* $60/hour is a default value for the operator labor rate. User should enter actual value, if known.
Operator Hours/Day	4.00	hours/day*			* 4 hours/day is a default value for the operator labor. User should enter actual value, if known.

Note: The use of CEPCI in this spreadsheet is not an endorsement of the index, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

Maintenance and Administrative Charges Cost Factors:

Maintenance Cost Factor (MCF) =	0.005
Administrative Charges Factor (ACF) =	0.03

Data Sources for Default Values Used in Calculations:

Data Element	Default Value	Sources for Default Value	If you used your own site-specific values, please enter the value used and the reference source . . .	Recommended data sources for site-specific information
Reagent Cost ($/gallon)	$0.293/gallon 29% ammonia solution 'ammonia cost for 29% solution	U.S. Geological Survey, Minerals Commodity Summaries, January 2017 (https://minerals.usgs.gov/minerals/pubs/commodity/nitrogen/mcs-2017-nitro.pdf		Check with reagent vendors for current prices.
Electricity Cost ($/kWh)	0.0676	U.S. Energy Information Administration. Electric Power Monthly. Table 5.3. Published December 2017. Available at: https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a.	1/1/2023 SMUD Comercial/Industrial Rates, average of summer and winter peak and off-peak rates	Plant's utility bill or use U.S. Energy Information Administration (EIA) data for most recent year. Available at https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a.
Percent sulfur content for Coal (% weight)		Not applicable to units burning fuel oil or natural gas		Check with fuel supplier or use U.S. Energy Information Administration (EIA) data for most recent year." Available at http://www.eia.gov/electricity/data/eia923/.
Higher Heating Value (HHV) (Btu/lb)	1,033	2016 natural gas data compiled by the Office of Oil, Gas, and Coal Supply Statistics, U.S. Energy Information Administration (EIA) from data reported on EIA Form EIA-923, Power Plant Operations Report. Available at http://www.eia.gov/electricity/data/eia923/.		Fuel supplier or use U.S. Energy Information Administration (EIA) data for most recent year." Available at http://www.eia.gov/electricity/data/eia923/.
Catalyst Cost ($/cubic foot)	227	U.S. Environmental Protection Agency (EPA). Documentation for EPA's Power Sector Modeling Platform v6 Using the Integrated Planning Model. Office of Air and Radiation. May 2018. Available at: https://www.epa.gov/airmarkets/documentation-epas-power-sector-modeling-platform-v6.		Check with vendors for current prices.
Operator Labor Rate ($/hour)	$60.00	U.S. Environmental Protection Agency (EPA). Documentation for EPA's Power Sector Modeling Platform v6 Using the Integrated Planning Model. Office of Air and Radiation. May 2018. Available at: https://www.epa.gov/airmarkets/documentation-epas-power-sector-modeling-platform-v6.		Use payroll data, if available, or check current edition of the Bureau of Labor Statistics, National Occupational Employment and Wage Estimates – United States (https://www.bls.gov/oes/current/oes_nat.htm).
Interest Rate (Percent)	5.5	Default bank prime rate	Per SMAQMD BACT Policy. Average interest rate on 20-year treasury security (corresponding to useful life), averaged over the prior six months (April to September, 2023). Add 2 points and round up to the next highest whole point.	Use known interest rate or use bank prime rate, available at https://www.federalreserve.gov/releases/h15/.

SCR Design Parameters

The following design parameters for the SCR were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Parameter	Equation	Calculated Value	Units	
Maximum Annual Heat Input Rate (Q_B) =	HHV x Max. Fuel Rate =	37	MMBtu/hour	
Maximum Annual fuel consumption (mfuel) =	(QB x 1.0E6 x 8760)/HHV =	313,765,731	scf/Year	
Actual Annual fuel consumption (Mactual) =		313,765,731	scf/Year	
Heat Rate Factor (HRF) =	NPHR/10 =	0.82		
Total System Capacity Factor (CF_{total}) =	(Mactual/Mfuel) x (tscr/tplant) =	1.000	fraction	
Total operating time for the SCR (t_{op}) =	CF_{total} x 8760 =	8760	hours	
NOx Removal Efficiency (EF) =	(NOx_{in} - NOx_{out})/NOx_{in} =	83.3	percent	
NOx removed per hour =	NOx_{in} x EF x Q_B =	1.02	lb/hour	
Total NO_x removed per year =	(NOx_{in} x EF x Q_B x t_{op})/2000 =	4.45	tons/year	
NO_x removal factor (NRF) =	EF/80 =	1.04		
Volumetric flue gas flow rate ($q_{flue\ gas}$) =	Q_{fuel} x QB x (460 + T)/(460 + 700)n_{scr} =	14,871	acfm	
Space velocity (V_{space}) =	$q_{flue\ gas}$/$Vol_{catalyst}$ =	66.55	/hour	
Residence Time	1/V_{space}	0.02	hour	
Coal Factor (CoalF) =	1 for oil and natural gas; 1 for bituminous; 1.05 for sub-bituminous; 1.07 for lignite (weighted average is used for coal blends)	1.00		
SO_2 Emission rate =	(%S/100)x(64/32)*1x10^6)/HHV =			Not applicable; factor applies only to coal-fired boilers
Elevation Factor (ELEVF) =	14.7 psia/P =			Not applicable; elevation factor does not apply to plants located at elevations below 500 feet.
Atmospheric pressure at sea level (P) =	2116 x [(59-(0.00356xh)+459.7)/518.6]$^{5.256}$ x (1/144)* =	14.7	psia	
Retrofit Factor (RF)	Retrofit to existing boiler	1.20		

* Equation is from the National Aeronautics and Space Administration (NASA), Earth Atmosphere Model. Available at https://spaceflightsystems.grc.nasa.gov/education/rocket/atmos.html.

Catalyst Data:

Parameter	Equation	Calculated Value	Units
Future worth factor (FWF) =	(interest rate)(1/((1+ interest rate)^Y -1) , where Y = $H_{catalyts}$/(t_{SCR} x 24 hours) rounded to the nearest integer	0.3111	Fraction
Catalyst volume ($Vol_{catalyst}$) =	2.81 x Q_B x EF_{adj} x Slipadj x NOx_{adj} x S_{adj} x (T_{adj}/N_{scr})	223.43	Cubic feet
Cross sectional area of the catalyst ($A_{catalyst}$) =	$q_{flue\ gas}$ /(16ft/sec x 60 sec/min)	15	ft^2
Height of each catalyst layer (H_{layer}) =	($Vol_{catalyst}$/(R_{layer} x $A_{catalyst}$)) + 1 (rounded to next highest integer)	6	feet

SCR Reactor Data:

Parameter	Equation	Calculated Value	Units
Cross sectional area of the reactor (A_{SCR}) =	1.15 x $A_{catalyst}$	18	ft^2
Reactor length and width dimensions for a square reactor =	(A_{SCR})$^{0.5}$	4.2	feet
Reactor height =	(R_{layer} + R_{empty}) x (7ft + h_{layer}) + 9ft	60	feet

Reagent Data:

Type of reagent used: Ammonia

Molecular Weight of Reagent (MW) = 17.03 g/mole

Density = 56 lb/ft^3

Parameter	Equation	Calculated Value	Units
Reagent consumption rate ($m_{reagent}$) =	(NOx_{in} x Q_B x EF x SRF x MW_R)/MW_{NOx} =	0	lb/hour
Reagent Usage Rate (m_{sol}) =	$m_{reagent}$/Csol =	1	lb/hour
	(m_{sol} x 7.4805)/Reagent Density	0	gal/hour
Estimated tank volume for reagent storage =	(m_{sol} x 7.4805 x $t_{storage}$ x 24)/Reagent Density =	100	gallons (storage needed to store a 14 day reagent supply rounded to th

Capital Recovery Factor:

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	i (1+ i)^n/(1+ i)^n - 1 = Where n = Equipment Life and i= Interest Rate	0.0944

Other parameters	Equation	Calculated Value	Units
Electricity Usage:			
Electricity Consumption (P) =	A x 1,000 x 0.0056 x (CoalF x HRF)$^{0.43}$ = where A = (0.1 x QB) for industrial boilers.	19.03	kW

Cost Estimate

Total Capital Investment (TCI)

TCI for Oil and Natural Gas Boilers

For Oil and Natural Gas-Fired Utility Boilers between 25MW and 500 MW:

$$TCI = 86{,}380 \times (200/B_{MW})^{0.35} \times B_{MW} \times ELEVF \times RF$$

For Oil and Natural Gas-Fired Utility Boilers >500 MW:

$$TCI = 62{,}680 \times B_{MW} \times ELEVF \times RF$$

For Oil-Fired Industrial Boilers between 275 and 5,500 MMBTU/hour :

$$TCI = 7{,}850 \times (2{,}200/Q_B)^{0.35} \times Q_B \times ELEVF \times RF$$

For Natural Gas-Fired Industrial Boilers between 205 and 4,100 MMBTU/hour :

$$TCI = 10{,}530 \times (1{,}640/Q_B)^{0.35} \times Q_B \times ELEVF \times RF$$

For Oil-Fired Industrial Boilers >5,500 MMBtu/hour:

$$TCI = 5{,}700 \times Q_B \times ELEVF \times RF$$

For Natural Gas-Fired Industrial Boilers >4,100 MMBtu/hour:

$$TCI = 7{,}640 \times Q_B \times ELEVF \times RF$$

Total Capital Investment (TCI) =	$2,596,451	in 2023 dollars

Annual Costs

Total Annual Cost (TAC)

TAC = Direct Annual Costs + Indirect Annual Costs

Direct Annual Costs (DAC) =	$44,450 in 2023 dollars
Indirect Annual Costs (IDAC) =	$247,889 in 2023 dollars
Total annual costs (TAC) = DAC + IDAC	$292,338 in 2023 dollars

Direct Annual Costs (DAC)

DAC = (Annual Maintenance Cost) + (Annual Reagent Cost) + (Annual Electricity Cost) + (Annual Catalyst Cost)

Annual Maintenance Cost =	0.005 x TCI =	$12,982 in 2023 dollars
Annual Reagent Cost =	$m_{sol} \times Cost_{reag} \times t_{op}$ =	$2,979 in 2023 dollars
Annual Electricity Cost =	$P \times Cost_{elect} \times t_{op}$ =	$23,228 in 2023 dollars
Annual Catalyst Replacement Cost =		$5,260 in 2023 dollars
	$n_{scr} \times Vol_{cat} \times (CC_{replace}/R_{layer}) \times FWF$	
Direct Annual Cost =		$44,450 in 2023 dollars

Indirect Annual Cost (IDAC)

IDAC = Administrative Charges + Capital Recovery Costs

Administrative Charges (AC) =	0.03 x (Operator Cost + 0.4 x Annual Maintenance Cost) =	$2,784 in 2023 dollars
Capital Recovery Costs (CR)=	CRF x TCI =	$245,105 in 2023 dollars
Indirect Annual Cost (IDAC) =	AC + CR =	$247,889 in 2023 dollars

Cost Effectiveness

Cost Effectiveness = Total Annual Cost/ NOx Removed/year

Total Annual Cost (TAC) =	$292,338 per year in 2023 dollars
NOx Removed =	4.45 tons/year
Cost Effectiveness =	$65,694 per ton of NOx removed in 2023 dollars

Appendix B – CECO Peerless Cost Quote

CECO Peerless

PEERLESS MFG. CO. SYSTEMS PROPOSAL P2187199 Rev. 0

For

Air Products Sacramento
Steam-Methane Reforming Heater SCR
Aqueous Ammonia SCR

Submitted to

Ryan Wu
Air Products

Prepared by

Patrick Boyker
CECO Peerless | CECO CCA
14651 North Dallas Parkway, Suite 500
Dallas, TX 75254

Tel: 214.708.7620
www.cecoenviro.com/peerless

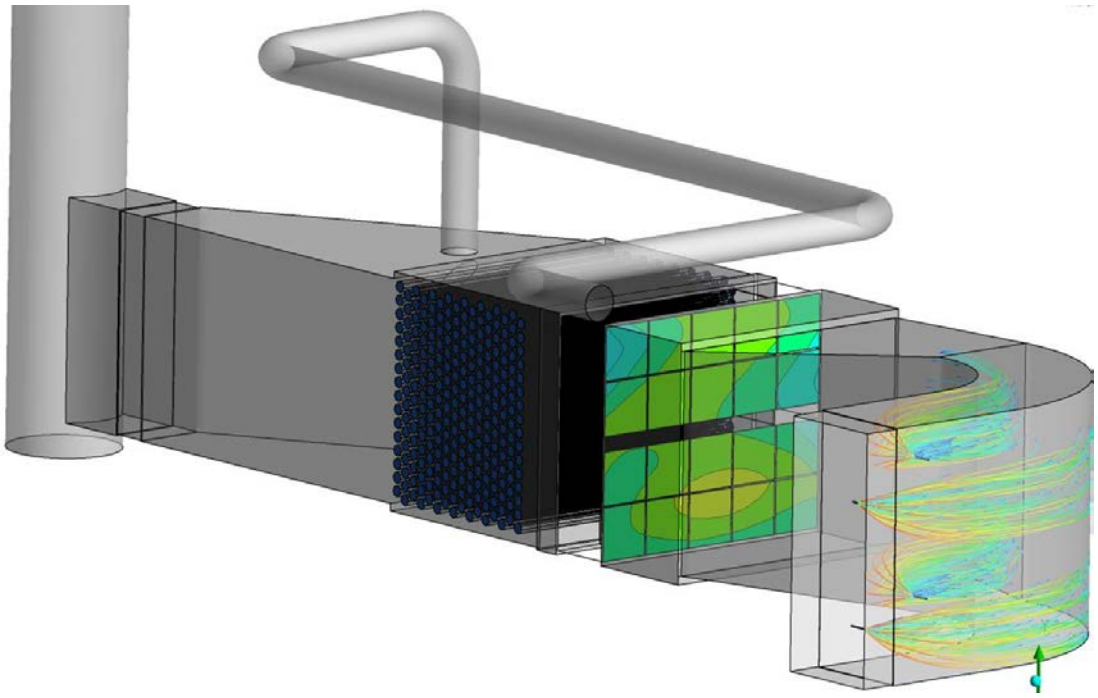
March 23, 2021

Rev	Date	Changes	By
0	3/23/2021	Budget Proposal	P. Boyker

Introduction

Peerless Manufacturing, a CECO Environmental Brand, is a global enterprise providing innovative products and solutions to the Energy industry. Focused on engineering excellence, Peerless employs more than 500 staff world-wide in selected locations close to our customers and primary markets. Complementing its network of sales, project management, engineering and aftermarket service personnel, Peerless benefits from a competitive international supply chain using its own manufacturing facilities in the USA and China and network of proven supply partners strategically located to support the market.

Peerless has a dedicated SCR staff who have supported over 1,000 SCR systems from design all the way through installation. These systems range from small package boilers to large gas turbine SCRs and vary from new installations to complex retrofits. With a wide range of technologies, Peerless has the capabilities to support and deliver complex SCR solutions.



Peerless' technical services include:

- *Inhouse CFD Modeling Analysis,*
- *Field service optimization, startup, and tuning*
- *SCR Design & Expertise*
- *Retrofit SCR Design*
- *Diagnostic testing*
- *Atomization characterization in our in house spray lab*

Peerless' product offering includes:

- *SCR Systems*
- *SNCR Systems*
- *EDGE® AIG – Ammonia Injection Grid*
- *Separation and Filtration Equipment*
- *Silencers*
- *ASME Code Vessels*
- *Marine Products*

Overview

CECO Peerless is pleased to submit our proposal to engineer, design, and supply of a SCR system to be installed in Sacramento, CA. Our scope is detailed herein and is summarized as follows:

- **Scope of Work**
  - **SCR System A:**
    - All Engineering Deliverables
    - (1) Catalyst Reactor Housing
    - (1) NOx Catalyst
    - (1) TRIM-NOX® Injection System
    - CFD Modeling of Systems
  - **SCR System B:**
    - All Engineering Deliverables
    - (1) Catalyst Reactor Housing
    - (1) NOx Catalyst
    - (1) TRIM-NOX® Injection System
    - CFD Modeling of Systems

Commercial

ITEM	QUANTITY	DESCRIPTION	Price
A	1	SCR System A as Described Below	**$221,000**
B	1	SCR System B as Described Below	**$253,500**

Design Data

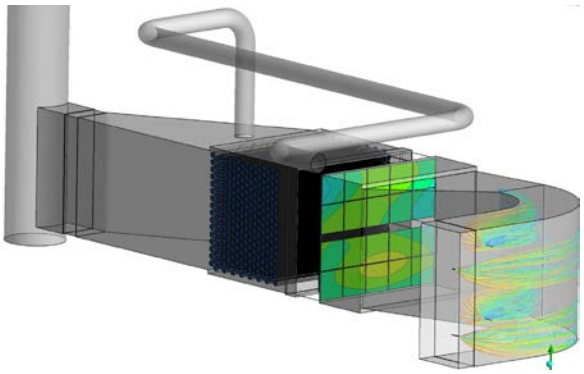
Air Products Sacramento H2 Plant - SCR Retrofit Cost Estimate						
Last Updated JCMacMurray - 01Mar2021					**UPDATE QUOTATION FOR THESE CASES**	
		Peerless			**Air Products Design Basis**	
		Tim Buttke - Southport Equipment 818.706.1400			**Joel MacMurray - 01Mar2021**	
		Plant A	**Plant B**		**Plant A**	**Plant B**
Fuel Type		Nat. gas and process gas	Nat. gas and process gas		Nat. gas and process gas	Nat. gas and process gas
Operating Hours	hr	8760	8760		8760	8760
Exhaust Mass Flow Rate - Wet Basis	lb/hr	26,500	35,290		20,901	35,074
Gas Temp	degF	Unknown	Unknown		560 - 630	510 - 570
Exhaust Composition - wet						
O2	mol%	3.6	5.4		3.22	4.07
H2O	mol%	20.7	19.13		19.56	18.51
N2	mol%	57	58		60.61	62.37
CO2	mol%	18.3	16.9		15.85	14.31
Ar	mol%	<1%	<1%		0.77	0.73
Inlet NOx - ppmvd @ 3mol% O2	ppmvd	22.6	29.2		24.0	30.3
Inlet CO - ppmvd @ 3mol% O2	ppmvd	37.4	44.9		37.4	44.9
Particulate	lb/hr	Unknown	Unknown		Nil	Nil
Inlet SO2 - ppmvd @ 3mol% O2	ppmvd	Unknown	Unknown		<0.1	<0.1
Outlet Guarantees						
NOx - ppmvd @ 3mol% O2	pppmvd	<5	<5		<5	<5
CO - ppmvd @ 3mol% O2	ppmv	<400	<400		<400	<400
NH3 Concentration	wt%	29 wt %	29 wt %		25 wt %	25 wt %
NH3 Consumption	lb/hr	~2	~2		By Vendor	By Vendor
NH3 Slip - ppmvd @ 3 mol% O3	ppmvd	Not Stated	Not Stated		<5	<5
Flue Gas Pressure Loss	inWC	Not Stated	Not Stated		By Vendor	By Vendor
Catalyst Life	yrs	Not Stated	Not Stated		4	4
Connecting Duct Dimension		Not Stated	Not Stated		24" NPS	30" NPS
Minimum Catalyst Hydaulic Dimension	mm	Not Stated	Not Stated		4.1 mm	4.1 mm

Scope of Supply

Major Equipment

Below is a summary of the major equipment supplied by Peerless.

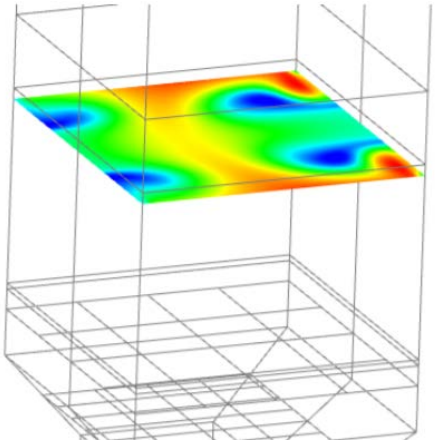
SCR System A:



- **Qty. 1 – SCR Reactor**
  - Horizontal flow design
  - Carbon Steel Housing
    - External Insulation by others
  - Top access door
  - Catalyst loading door
  - Approximate dimensions: 4'W x 4'H x 12'D
  - Approximate weight: 8,000 lbs.
  - Estimated Total System Pressure Drop: 2.5 inH2O

- **Qty. 1 - TRIM-NOX® Injection System**
  - Factory assembled and tested
  - Includes all necessary temperature, pressure and flow devises for a fully functional system
  - Injection Metering Station
    - 2 x 100% Metering Pumps
      - 0.5 hp
    - 2 x 100% Dual / Redundant ammonia injection filters
      - SS 325 mesh basket filters
    - Injection Flow Transmitter
    - Injection Pressure Transmitter
  - Estimated Ammonia Injection Rate: 1.0 lb/hr
  - Atomizing air control equipment
  - Air Assisted Ammonia Injectors
  - Approximate dimensions: 7'W x 4'D x 7.5'H.
  - Approximate weight is 1,200 lbs
  - Atomizing Air Flow Requirements: 40 SCFM / 80 PSI

- **Qty. 1 – Lot of NOx SCR Catalyst**
  - Honeycomb substrate
  - Cormetech, Umicore or Equal
  - Catalyst supplied in modules for field installation into the reactor by others based on project details
  - Inlet NOx: 24 ppmvd @ 3% O2
  - Outlet NOx: 24 ppmvd @ 3% O2
  - NH3 Slip: 5 ppmvd
  - Temperature: 560°F
  - Life Expectancy: 4 years
  - Catalyst Pressure Drop: ~1.3 inH2O



- **CFD System Analysis**
  - In-house CFD Engineers
  - Complete model of SCR system
  - Verification of NH3:NOx Distribution
  - Models of Velocity and Temperature Profiles through the system

SCR System B:

- **Qty. 1 – SCR Reactor**
  - Horizontal flow design
  - Carbon Steel Housing
    - External Insulation by others
  - Top access door
  - Catalyst loading door
  - Approximate dimensions: 4'W x 5.5'H x 12'D
  - Approximate weight: 10,000 lbs.
  - Estimated Total System Pressure Drop: 2.9 inH2O

- **Qty. 1 - TRIM-NOX® Injection System**
  - Factory assembled and tested
  - Includes all necessary temperature, pressure and flow devises for a fully functional system
  - Injection Metering Station
    - 2 x 100% Metering Pumps
      - 0.5 hp
    - 2 x 100% Dual / Redundant ammonia injection filters
      - SS 325 mesh basket filters
    - Injection Flow Transmitter
    - Injection Pressure Transmitter

- Estimated Ammonia Injection Rate: 2.0 lb/hr
- Atomizing air control equipment
- Air Assisted Ammonia Injectors
- Approximate dimensions: 7'W x 4'D x 7.5'H.
- Approximate weight is 1,200 lbs
- Atomizing Air Flow Requirements: 40 SCFM / 80 PSI

- **Qty. 1 – Lot of NOx SCR Catalyst**
  - Honeycomb substrate
  - Cormetech, Umicore or Equal
  - Catalyst supplied in modules for field installation into the reactor by others based on project details
  - Inlet NOx: 30.3 ppmvd @3% O2
  - Outlet NOx: 5 ppmvd @3% O2
  - NH3 Slip: 5 ppmvd
  - Temperature: 510°F
  - Life Expectancy: 4 years
  - Catalyst Pressure Drop: ~1.7 inH2O

- **CFD System Analysis**
  - In-house CFD Engineers
  - Complete model of SCR system
  - Verification of NH3:NOx Distribution
  - Models of Velocity and Temperature Profiles through the system

Engineering Services

BASIC ENGINEERING AND DESIGN CECO PEERLESS	CECO PEERLESS	OPTIONAL	BUYER	OUT OF SCOPE
Drawing and Document Index (if requested)	X			
P&IDs	X			
Component Specification	X			
Paint Specification	X			
Piping Specification	X			
I-O List	X			
Dilution air or exhaust blower & motor data (includes fan curves, motor drawing, motor wiring diagrams, motor performance sheet, cut sheets of auxiliary equipment)	X			
Inspection and Test Plan	X			
Utility Consumption List (includes electricity and air users)	X			
Weld Procedures and Supporting PQRs	X			
Spare Parts List	X			
Shipping Bill of Material	X			
Operation & Maintenance manuals – one electronic copy	X			
Equipment general arrangement drawings (including location of anchor bolts)	X			
Design of anchor bolts (size and length)			X	
Design of insulation (if applicable)			X	
Supply and installation of insulation (if applicable)			X	
PE Stamp (can be included for an additional cost)		X		
Design, supply, and installation of heat tracing or instrument protection (if applicable)			X	
Computation Fluid Dynamics (CFD) Modeling	X			
Trim-NOx PLC – AB Compact Logix (additional cost)		X		

Notes / Clarifications

1. 480/3/60 power are to be field wired to each pump.
2. 3x 120 VAC/20 Amp circuits are to be field wired to each metering skid.
3. Unloading and positioning of the skids is by others.
4. Catalyst installation is by others, can be added to Peerless scope for additional cost
5. Gas Path and Reactor Dimensions can be adjusted to meet site layout, duct work / economizer dimensions.

CECO PEERLESS STANDARD DESIGN SPECIFICATIONS:

Paint Specification:

Surface Preparation: SSPC SP-6, Commercial Blast Cleaning
Primer: Inorganic Zinc Primer, Carboline, Carbo Zinc 11, Gray #0700, 2-3 mils DFT
Top Coat: Carboline Carbothane 133HB, 2-2.5 mils, 4701 Gray White Color

** Applies to all CS surfaces that are not ultimately insulated (either in Peerless' shop, other shop, or in the field):*

*** All stainless steel surfaces (ferric or austenitic) will be SSPC SP-1 solvent cleaned only.*

**** Valves will not be painted (primer or top coat) regardless of material of valve or material of line in which the valve is installed*

Piping Design, Fabrication, and Testing Specifications:

Urea Systems: ASME/ANSI B31.1

All structural welding (e.g., AFCU skid base) will be designed, fabricated, and tested to ASME code, Section IX

Electrical Classification:

Enclosure Type: NEMA 4
IEC Enclosure Class: IP56
Area Classification: Non-hazardous

Native format of all drawings: AutoCAD 2006
Native format of all documents: Microsoft Word, Excel, Adobe Acrobat

** Please note all drawings and documents will be officially submitted in Adobe Acrobat format*

COMPONENT	STANDARD SUPPLIER	TECHNICALLY ACCEPTABLE ALTERNATES (Additional Cost may Apply)
Dilution Blower (high temp exhaust)	Robinson	
Dilution Blower (ambient air)	Chicago Blower	AirTech, Atlantic
Dilution Blower Motors (either type)	TECO Westinghouse	Reliance, Baldor, Siemens, GE
Electric Heater (flanged immersion style)	Chromalox	Watlow, CCI Thermal
Electric Heater Power Panels	Peerless	Chromalox
Valves – Gate (forged, smaller than 2”)	Vogt	Powell, Velan
Valves – Gate (cast, 2” and larger)	Powell	Velan, Vogt
Valves – Ball	Marwin	Velan, KF Contromatics, Metso (Jamesbury)
Valves – Check (wafer style)	Crane	Champion
Valves – Butterfly	Keystone	WKM
Valves – Globe	Velan	Vogt
Damper	Advanced Valve Design	Shanrod
Thermocouple/Thermowell	Rosemount	STI
RTD/Thermowell	Rosemount	STI
Temperature Indicator (thermometer)	Wika	Ashcroft
Temperature Transmitter	Rosemount	Honeywell
Pressure Gauge	Wika	Ashcroft, 3D Instruments
Differential Pressure Gauge	Midwest	Ashcroft
Pressure transmitter	Rosemount	Honeywell
Differential pressure transmitter	Rosemount	Honeywell
Pressure switch	SOR	Ashcroft
Flowmeter/transmitter (ammonia) – coriolis	Micromotion	
Flowmeter/transmitter (dilution media) – annubar	Rosemount	Veris
Orifice plates	Fluidic Techniques (Vickery-Simms)	Primary Flow Signal, Triad, Daniel Industries
Flow control valve (ammonia line) • Valve • Actuator (pneumatic) • Positioner (I/P) • Air regulator	 Fisher-Baumann Baumann Fisher Fisher	
Actuated Damper (exhaust line) • Damper • Actuator (pneumatic) • Solenoid valve • Limit Switches • Air regulator	 Advanced Valve Design Tyco-Morin ASCO Westlock Fisher	 Shanrod Fisher (Field Q) Burkett Topworx, Tyco-Avid SMC
Actuated ball valve (ammonia line)	Marwin	Velan, KF Contromatics, Metso

• Valve • Actuator (pneumatic) • Solenoid valve • Limit switch • Air regulator	Tyco-Morin ASCO Westlock Fisher	(Jamesbury) Rotork Burkett Topworx, Tyco-Avid SMC
Needle Valves	AGCO	Hex
Instrument Root Valves	AGCO	Hex
Instrument Manifold Valves	AGCO	Hex
Pressure regulator	Fisher	
Strainers	Armstrong	
Expansion Joints (metallic)	American Boa	Unaflex
Expansion Joints (rubber)	General Rubber	
Expansion Joints (fabric)	Johnson Expansion Joints	
Excess flow check valve	MGM	Rego
Level Indicator (float style)	Rochester	
Level indicator (bridled, magnetic flag style)	Magnetrol	K-TEK, Jerguson
Level Transmitter (guided wave radar style)	Magnetrol	Rosemount
Flow sight glass (unloading station)	Penberthy	
Remote level indication (unloading station)	Rosemount	
Pressure relief valve (vapor ammonia)	Crosby	Rego, Farris
Hydrostatic relief valve (liquid ammonia)	Rego	Crosby
Vacuum breaker valve (storage tank)	Groth	
Emergency shut-off valve (unloading station)	Fisher	Rego
Ammonia gas detectors	Scott Instruments	
Junction boxes	Peerless	
PLC's	Allen Bradley (Compact Logix)	GE Fanuc (9030 series)

Peerless reserves the right to provide alternate suppliers

COMMERCIAL TERMS

A. PROPOSAL PRICE: The price proposed is for the design, materials, or components listed. If specific design conditions differ from the inquiry, the specifications shall be modified, and an equitable adjustment shall be made in the contract price or delivery schedule, or both. Any changes in this quotation will be submitted and approved in writing.

B. DELIVERY: Typical delivery for catalyst and all equipment is within thirty-five (35) weeks from the order date, contingent upon the timely return of approved drawings/documents. Storage fees will be charged if delivery is delayed beyond the project schedule for delays not caused by Peerless Mfg. Co. (Peerless). These charges will be imposed at the time of the delay.

C. TRANSPORTATION: Shipment of the equipment shall be via Motor Freight, Ex Works, Manufacturing Point. No allowance has been made for any freight charges, special packaging, or export packaging / crating.

D. EXCLUDED ITEMS: The quoted price does not include any custom duties, tariffs, import fees, income tax, nor any other taxes, duties, levies, etc., imposed by governmental organizations. Equipment delivered to the following states will require a Tax Exemption Certificate to exclude those current state taxes from our invoice: Arizona, California, Georgia, Kentucky, Tennessee, and Texas.

E. VALIDITY: The offered price is valid for thirty (30) days from the proposal date, and thereafter, is subject to our acceptance. Due to the current fluctuation in steel prices, all pricing in this proposal must be confirmed at time of purchase order.

F. PAYMENT TERMS: Payment shall be made, net 30 days, according to the following schedule:
25% - upon receipt of order
25% - upon approved drawings
25% - upon Peerless' purchase of materials
25% - upon Peerless' notification that equipment is ready for shipment.

G. CHANGES / CANCELLATION SCHEDULE: Any changes to or cancellation of the Agreement, once accepted, are subject to written approval by Peerless under conditions that shall include, among other things, protection against any loss to Peerless.

Cancellation Schedule:
25% - after receipt of purchase order
50% - after submittal of general arrangement drawings
90% - after release to purchase materials
100% - upon release to fabricate

H. WARRANTY:

1. All hardware is under warranty for eighteen (18) months from contracted delivery or twelve (12) months from scheduled start-up, whichever occurs first. The extent of the warranty includes replacement of defective components, and is limited to material only.

2. Peerless is not responsible for any damage resulting from mis-operation or improper maintenance of the unit as described in the Peerless Operation & Maintenance Manuals for this project. Warranty is voided if the system is not operated and maintained in accordance with the Operation & Maintenance Manual.

3. The aqueous ammonia or aqueous urea must be reagent grade, diluted with fully de-ionized water to the % by weight specified above.

Schedule

Peerless provides the following preliminary estimated schedule:

Receipt of PO, Internal Kick off meeting:	1 week ARO
Submittal of GA, P&ID's:	3-6 weeks ARO
Submittal of Balance of Submittal Package	10 weeks ARO
Customer review and approval:	2 weeks after submittal
Fabrication, testing, packing:	20 weeks after approval
Total Estimated Shipment ARO:	35 weeks

Note: current estimates for catalyst delivery is 5 ***months after release to catalyst vendor****. Discussions of project timelines should be had to ensure on time deliveries.*
Note: If the above estimated schedule does not meet project demands, Peerless can discuss the project requirements to meet those demands

Terms of Payment

Schedule in above section F
Payment schedule excludes engineering field support services quoted.
Payment terms: NET 30

Validity

This is a budget proposal.

Exclusions

1. Certified emissions testing
2. Connecting duct work / IC Piping to Ammonia skid from boiler duct
3. Walkways / stairs / handrails
4. Interconnecting flu gas duct work
5. Piping from bulk storage to Trim-NOx skid and to injectors
6. Expansion joints not located on Peerless skids
7. Supply of Ammonia
8. Cable trays / glands not located on Peerless supplied skids
9. Junction boxes not located on Peerless supplied skids
10. Operating costs
11. Eye wash / safety showers
12. Unloading skid spray nozzles
13. CEMS / Emissions Analyzers
14. Compressed Air Supply
15. Shipping
16. Field installation
17. External insulation

Performance Warranty Statement

Peerless equipment is guaranteed against defects or poor performance which occur during the guarantee period.

Peerless agrees repair or replace any equipment designed and supplied by us which is found to be defective in materials or workmanship within 18 months from delivery or 12 months from initial operation, whichever occurs sooner provided we are given written notice of such defects as soon as they have been discovered. Upon such notification, Peerless shall propose a method to achieve a satisfactory correction of the defect, provided that such method need not involve premium costs (such as premium costs of overtime labor and air freight) or transportation, insurance or installation costs, except to the extent that Peerless was required to incur such costs for the original supply of the item involved. The Purchaser may agree to Peerless' proposed method or select another method. Peerless shall perform the corrective work in accordance with the method selected by the purchaser and the Purchaser shall reimburse Peerless for any difference in cost to Peerless between the method selected and the method proposed by Peerless. Such defects shall be exclusive of time effects, corrosion, erosion, or miss-operation of the process or equipment. Equipment which is not of Peerless' design and/or manufacture (valves, instruments, controls, subcontract items, etc.) will be warranted by their respective manufacturers, however, Buyer need only look to Peerless for corrective action as Peerless will act as liaison for Buyer in this respect.

CATALYST WARRANTY CONDITIONS

1. Unit operating conditions shall be within the limits of design cases specified in the Quotation.
2. The catalysts must be handled, operated, and maintained according to Peerless instruction.
3. Peerless maintains warranty protection as long as normal furnace start-up and shut-down procedures are followed and no moisture other than from flue gas or ambient air is present. The allowed start-up and shut-down temperature gradient for the catalyst is 10°C/min below and 100°C/min above the flue gas dew point.
4. Catalyst has been designed to accommodate profile maldistributions, based on a Normal Distribution, per SCR Catalyst Quotation.
5. Peerless is not responsible for catalyst deterioration caused by reagent drainage or other liquid contact to catalyst.

6. Suitable means must be employed, if needed, to clean catalyst masked or plugged by firing of particulate producing fuel. Customer will inspect visually at shutdowns and clean, as needed.
7. Access must be provided to Peerless for visual inspection and catalyst sampling. Peerless reserves the right to review the Unit's operating data at any time during the warranty period.
8. Customer must provide catalyst samples to Peerless, if requested during the warranty period, in order to maintain warranties. Peerless will provide an advance written request of a need to obtain catalyst samples, construction and sampling method that permits ease of extraction and replacement of samples, and schedule coordination for the operating plant's convenience.
9. Customer will provide a copy of all procedures and methods of analysis to be employed in catalyst evaluation for Acceptance and anytime throughout the warranty period.

CATALYST WARRANTY FULLFILLMENT

1. Peerless warranties are fulfilled at the end of the period stated in SCR Catalyst Quotation if the results:
    a. If the results of on-site tests during the warranty period indicate that the warranted values are not being met, Customer will conduct an on-site investigation to determine the cause of non-performance. If the catalyst is suspect, Peerless will conduct laboratory tests, according to the conditions specified in SCR Catalyst Quotation, to verify the catalyst performance.
    b. If the results of the laboratory tests indicate that the warranted values are being met, Peerless warranties will be deemed in fulfilment at this time and Customer will continue their investigation to determine the cause of non-fulfilment. Customer will compensate Peerless for the cost of laboratory evaluation.
    c. If the results of the laboratory tests indicate that the warranty values are not being met, Peerless will absorb cost of laboratory evaluation. Peerless will in its sole discretion, either (a) repair, replace, or add catalyst, or (b) offer Buyer a credit against the purchase price for the value of the catalyst failing to meet warranties or performance specification on a pro rata basis. Peerless's selection of (a) or (b) shall be Buyer's sole and exclusive remedy for such breach of the warranties or performance guarantees or specifications or criteria. No back-charges, administrative costs, or other fees or costs will be payable by Seller in conjunction with the exclusive remedies set forth herein.

Attachments:

- Terms and Conditions

Contact Information

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Peerless Sales Representative
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818-618-7272

COMMERCIAL CLARIFICATIONS AND EXCEPTIONS:

- Peerless Mfg. Co. has not provided any comments to commercial terms and conditions. If our proposal is otherwise technically acceptable, Peerless requests acceptance of CECO/Peerless Standard Terms and Conditions or to negotiate a mutually agreed upon set of terms and conditions.

  Peerless requests the following major items to be considered as part of the final negotiations.

- ✓ Important information from Peerless' proposal and e-mails to be incorporated in the final contract.
- ✓ Consequential Damage Disclaimer: Seller shall not be liable for incidental, special, punitive, or consequential damages, including loss of profit or revenue, for any breach of this contract.
- ✓ Limitation of Liability
- ✓ Suspension of work: Peerless requires a cap on any potential period of suspension.
- ✓ Clear Warranty Language: See Peerless standard warranty.
- ✓ Default (Time to Cure): Peerless requires a reasonable time to commence to cure for all events of default (not less than 15 days) after notice of the supposed default or breach.
- ✓ Force Majeure Clause
- ✓ Intellectual Property of Peerless: Unless otherwise specified in this contract, buyer shall not obtain any rights or interests in any patent, copyright, confidential know-how, trademark, process or other proprietary right owned by seller or any other party and any proprietary rights developed by seller pursuant to the contract shall belong to seller.
- ✓ Exclusivity of Warranty: EXCEPT AS EXPRESSLY SET FORTH IN THIS CONTRACT, SELLER MAKES NO, AND SPECIFICALLY DISCLAIMS, REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, REGARDING ANY MATTER, INCLUDING THE MERCHANTABILITY, SUITABILITY, ORIGINALITY, FITNESS FOR A PARTICULAR USE OR PURPOSE OR RESULTS TO BE DERIVED FROM ANY GOODS, SERVICES OR OTHER ITEMS PROVIDED UNDER THIS CONTRACT.
- ✓ Confidentiality: Buyer shall handle confidentially all designs and specifications and technical, commercial, financial and other information which Buyer receives from Seller pursuant to this transaction and shall not use, copy or communicate such information to others except in the performance of Buyer's obligations pursuant to this Purchase Order or as necessary for operation and use of the goods, without prior written consent of and the payment of fair compensation to Seller. If Buyer discloses such information to any other party, as permitted by this paragraph, Buyer shall secure such party's written agreement to the same confidentiality restrictions as stipulated herein and shall cause such party to comply with such confidentiality restrictions.
- ✓ Exports: If all or any portion of the goods to be provided pursuant to this Quotation are to be exported from the United States, Buyer agrees that such exportation is subject in all respects to, and Buyer shall comply in all respects with, United States laws with respect to such export and subsequent re-export of such goods. Seller makes no representation or warranty relative to the export or re-export of such goods.
- ✓ Dispute Resolution, binding arbitration
- ✓ Change Orders: The Purchaser may be permitted to modify the specifications for the goods which Peerless is manufacturing with Peerless' written agreement. If the change effects either the price or delivery date for the goods, Peerless shall have the ability to notify the purchaser and require that, before continuing performance, the parties must agree in writing upon an equitable adjustment of the price (which may be increased or reduced) and/or the delivery date to reflect the effect of the change. In the event that the purchaser requests a change which itself or as a result of negotiations between Peerless and purchaser concerning the impact of the change, results in the need for an extension of the time required for performance by Peerless, then the time for such performance must be equitably extended in light of such matters.
- ✓ No "time is of the essence" language
- ✓ Submission to jurisdiction of Buyer's courts: Peerless prefers to submit to mutually agreed upon jurisdiction of courts in the contract.
- ✓ No payment in foreign currency, unless already agreed to by Peerless and the Buyer during the proposal stage of the contract.
- ✓ Peerless requests to limit liquidated damages (in the aggregate) to 5% of the contract price.
- ✓ Indemnities: The intellectual property indemnity shall not apply to the extent any infringement or violation results from (i) the combination or use of the equipment provided by Peerless with other equipment, software or materials, (ii) use of equipment provided by Peerless other than as anticipated by the specifications or other than in accordance with operating instructions provided by Peerless, (iii) work performed by, or other acts or omissions of, the Buyer or any party other than Peerless or (iv) modifications to the equipment provided by any party other than by Peerless. Indemnities should not apply unless the Buyer (i) promptly notifies Peerless, in writing, of any claim and (ii) reasonably cooperates with Peerless and gives Peerless full opportunity to control the response to the claim.

Indemnities must constitute the sole and exclusive remedy for the circumstance to which they relate.

- ✓ No prohibitions on subcontracting.
- ✓ Ownership: Unless otherwise specified in this Contract, Buyer shall not obtain any rights or interests in any patent, copyright, proprietary right or confidential know-how, trademark or process owned by Seller or any other party. Any and all intellectual property rights, including rights of patent, copyright and trademark, in any reports, drawings, documents, specifications, calculations, confidential know-how, materials, or processes (the "Intellectual Property Rights") owned or created by Seller and used or embodied in goods or services covered by this Quotation shall remain the sole property of Seller. Any and all Intellectual Property Rights developed by Seller, whether in the provision of goods and services covered by this Quotation or independently thereof, shall belong to Seller. Any and all right, title or interest that Buyer or any other party may have or obtain in or to Seller's Intellectual Property Rights is hereby assigned to Seller and Buyer shall take, or cause to be taken, all necessary or appropriate actions to vest such Intellectual Property Rights in Seller.
- ✓ No setoff rights pursuant to which the Buyer can "setoff" against amounts due to Peerless any amounts supposedly owed by Peerless to the Buyer, either under the contract at hand or another contract between the parties.
- ✓ Reservation of right to accept goods or services: Buyer shall promptly inspect the goods or services and accept or reject them.
- ✓ No waiver of liens by Peerless or its subcontractors except conditioned on payment.
- ✓ Interest on Unpaid Balances: Amounts not paid when due by buyer shall bear interest at the highest lawful rate on the unpaid amount from the due date until paid; provided, however, extended payment terms are acceptable only if agreed upon in writing by Seller.
- ✓ Termination for convenience whether in whole or in part: Peerless requires payment for work performed and payment for expenses which will result from such termination (e.g., termination of related contracts and reassignment of people and resources).
- ✓ The contract should specifically identify any codes or laws that Peerless must comply with, and the Purchaser shall be responsible for providing a copy of such regulations for Seller's review.

GENERAL TERMS AND CONDITIONS FOR THE SALE OF GOODS AND SERVICES

1. Applicability.
(a) These terms and conditions of sale (these "**Terms**") are the only terms which govern the sale of the goods, including equipment, machinery, materials, consumables (collectively, "**Goods**") and services ("**Services**") by CECO Environmental Corp. and all of its affiliated companies (collectively, "**Seller**") to the buyer named on the signature line of these Terms ("**Buyer**"). Any provisions or conditions of Buyer's order which are in any way inconsistent with, or in addition to these Terms shall not be binding on Seller, and shall not be applicable, except with Seller's written acceptance.

(b) The accompanying quotation (the "**Sales Confirmation**") and these Terms (collectively, this "**Agreement**") comprise the entire agreement between the parties, and supersede all prior or contemporaneous understandings, agreements, negotiations, representations and warranties, and communications, both written and oral. These Terms prevail over any of Buyer's general terms and conditions of purchase regardless whether or when Buyer has submitted its purchase order or such terms. Fulfillment of Buyer's order does not constitute acceptance of any of Buyer's terms and conditions and does not serve to modify or amend these Terms.

(c) Notwithstanding anything to the contrary contained in this Agreement, Seller may, from time to time change the Services without the consent of Buyer provided that such changes do not materially affect the nature or scope of the Services, or the fees or any performance dates set forth in the Sales Confirmation.

2. **Delivery of Goods and Performance of Services**.
(a) The Goods will be shipped within a reasonable time after the receipt of Buyer's purchase order. Seller shall not be liable for any delays, loss or damage in transit.

(b) Unless otherwise agreed in writing by the parties, Seller shall ship the Goods F.O.B. from Seller's location (the "**Delivery Point**") using Seller's standard methods for packaging and shipping such Goods. Buyer shall take delivery of the Goods within ten (10) days of Seller's written notice that the Goods have been shipped to the Delivery Point. Buyer shall be responsible for all loading costs and provide equipment and labor reasonably suited for receipt of the Goods at the Delivery Point.

(c) Seller may, in its sole discretion, without liability or penalty, make partial shipments of Goods to Buyer. Each shipment will constitute a separate sale, and Buyer shall pay for the units shipped whether such shipment is in whole or partial fulfillment of Buyer's purchase order.

(d) If for any reason Buyer fails to accept delivery of any of the Goods on the date fixed pursuant to Seller's notice that the Goods have been delivered at the Delivery Point, or if Seller is unable to deliver the Goods at the Delivery Point on such date because Buyer has not provided appropriate instructions, documents, licenses or authorizations: (i) risk of loss to the Goods shall pass to Buyer; (ii) the Goods shall be deemed to have been delivered; and (iii) Seller, at its option, may store the Goods until Buyer picks them up, whereupon Buyer shall be liable for all related costs and expenses (including, without limitation, storage and insurance).

(e) Seller shall use commercially reasonable efforts to meet any performance dates to render the Services specified in the Sales Confirmation, and any such dates shall be estimates only.

(f) With respect to the Services, Buyer shall (i) cooperate with Seller in all matters relating to the Services and provide such access to Buyer's premises, and such office accommodation and other facilities as may reasonably be requested by Seller, for the purposes of performing the Services; (ii) respond promptly to any Seller request to provide direction, information, approvals, authorizations or decisions that are reasonably necessary for Seller to perform Services in accordance with the requirements of this Agreement; (iii) provide such customer materials or information as Seller may reasonably request to carry out the Services in a timely manner and ensure that such customer materials or information are complete and accurate in all material respects; and (iv) obtain and maintain all necessary licenses and consents and comply with all applicable laws in relation to the Services before the date on which the Services are to start.

(g) Any and all data books, instructions, operating manuals and specifications documents will be provided by Seller in an electronic format free of charge. Bound versions may be provided at Buyer's request, subject to additional charges.

3. **Non-Delivery**.
(a) The quantity of any installment of Goods as recorded by Seller on dispatch from Seller's place of business is conclusive evidence of the quantity received by Buyer on delivery unless Buyer can provide conclusive evidence proving the contrary.

(b) Seller shall not be liable for any non-delivery of Goods (even if caused by Seller's negligence) unless Buyer gives written notice to Seller of the non-delivery within ten (10) days of the date when the Goods would in the ordinary course of events have been received.

(c) Any liability of Seller for non-delivery of the Goods shall be limited to replacing the Goods within a reasonable time or adjusting the invoice respecting such Goods to reflect the actual quantity delivered.

(d) The remedies set forth in this **Section 3** are Buyer's exclusive remedies for the delivery of Nonconforming Goods. Except as provided under **Section 3(c)**, all sales of Goods to Buyer are made on a one-way basis and Buyer has no right to return Goods purchased under this Agreement to Seller.

4. **Shipping Terms**. Delivery of the Goods shall be made F.O.B. point of shipment at Seller's location.

5. **Title and Risk of Loss**. Title and risk of loss passes to Buyer F.O.B. point of shipment unless otherwise specified. As collateral security for the payment of the purchase price of the Goods, Buyer hereby grants to Seller a lien on and security interest in and to all of the right, title and interest of Buyer in, to and under the Goods, wherever located, and whether now existing or hereafter arising or acquired from time to time, and in all accessions thereto and replacements or modifications thereof, as well as all proceeds (including insurance proceeds) of the foregoing. The security interest granted under this provision constitutes a purchase money security interest under the Uniform Commercial Code.

6. **Buyer's Acts or Omissions**. If Seller's performance of its obligations under this Agreement is prevented or delayed by any act or omission of Buyer or its agents, subcontractors, consultants or employees, Seller shall not be deemed in breach of its obligations under this Agreement or otherwise liable for any costs, charges or losses sustained or incurred by Buyer, in each case, to the extent arising directly or indirectly from such prevention or delay.

7. **Inspection and Rejection of Nonconforming Goods**.
(a) Buyer shall inspect the Goods within ten (10) days of receipt ("**Inspection Period**"). Buyer will be deemed to have accepted the Goods unless it promptly notifies Seller in writing of any Nonconforming Goods during the Inspection Period and furnishes such written evidence or other documentation as reasonably required by Seller. "**Nonconforming Goods**" means only the following: (i) product shipped is different than identified in Buyer's purchase order; or (ii) product's label or packaging incorrectly identifies its contents.

(b) If Buyer timely notifies Seller of any Nonconforming Goods, Seller shall, in its sole discretion, (i) replace such Nonconforming Goods with conforming Goods, or (ii) credit or refund the Price for such Nonconforming Goods, together with any reasonable shipping and handling expenses incurred by Buyer in connection therewith. Buyer shall ship, at its expense and risk of loss, the Nonconforming Goods to Seller's facility. If Seller exercises its option to replace Nonconforming Goods, Seller shall, after receiving Buyer's shipment of Nonconforming Goods, ship to Buyer, at Buyer's expense and risk of loss, the replaced Goods to the Delivery Point.

(c) Buyer acknowledges and agrees that the remedies set forth in **Section 7(b)** are Buyer's exclusive remedies for the delivery of Nonconforming Goods. Except as provided under **Section 7(b)**, all sales of Goods to Buyer are made on a one-way basis and Buyer has no right to return Goods purchased under this Agreement to Seller.
8. **Price**.
(a) Buyer shall purchase the Goods and Services from Seller at the prices (the "**Prices**") set forth in Seller's quotation or bid. Prices may be increased by Seller before delivery of the Goods to a carrier for shipment to Buyer, due to Seller's increased cost of supply. In such event, these Terms shall be construed as if the increased prices were originally inserted herein, and Buyer shall be billed by Seller on the basis of such increased prices. All Prices are F.O.B. point of shipment unless otherwise specified.

(b) Buyer agrees to reimburse Seller for all reasonable travel and out-of-pocket expenses incurred by Seller in connection with the performance of the Services.

(c) All Prices are exclusive of all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any Governmental Authority on any amounts payable by Buyer. Buyer shall be responsible for all such charges, costs and taxes; provided, that, Buyer shall not be responsible for any taxes imposed on, or with respect to, Seller's income, revenues, gross receipts, personnel or real or personal property or other assets.

9. **Payment Terms**.
(a) Buyer shall pay all invoiced amounts due to Seller within thirty (30) days from the date of Seller's invoice. Buyer shall make all payments hereunder in US dollars.

(b) Buyer shall pay interest on all late payments at the lesser of the rate of 1.5% per month or the highest rate permissible under applicable law, calculated daily and compounded monthly. Buyer shall reimburse Seller for all costs incurred in collecting any late payments, including, without limitation, reasonable attorneys' fees. In addition to all other remedies available under these Terms or at law (which Seller does not waive by the exercise of any rights hereunder), Seller shall be entitled to suspend the delivery of any Goods or performance of any Services if Buyer fails to pay any amounts when due hereunder and such failure continues for ten (10) days following written notice thereof.

(c) Progress payments specified in the Sales Confirmation will apply if the total Prices for the Goods and Services purchased hereunder is equal to or greater than $250,000.00 USD.

(d) Buyer shall not withhold payment of any amounts due and payable by reason of any set-off of any claim or dispute with Seller, whether relating to Seller's breach, bankruptcy or otherwise.

10. **Suspensions and Cancellations**.
(a) No cancellations of an order or any portion of an order by Buyer will be effective unless accepted by Seller in writing. Accepted cancellations will be subject to a charge to cover all costs and expenses incurred by Seller through the date of cancellation, plus reasonable cancellation costs and a reasonable profit margin on the completed work. Cancellation of orders for Goods made to order and not part of Seller's regular stock will not be accepted after fabrication has commenced.
(b) In the event Buyer suspends Seller's performance of work, Buyer shall reimburse Seller for all costs incurred by Seller as a result of the suspension, including, without limitation, all borrowing and opportunity costs. In the event a suspension exceeds 180 days in duration, in addition to being entitled to full reimbursement of costs, Seller shall have the unqualified right to cancel the unfinished portion of the order without liability.

11. **Limited Warranty**.

(a) Subject to the other provisions of this **Section 11**, Seller warrants to Buyer that for a period of the lesser of eighteen (18) months from the date of shipment of the Goods, or twelve (12) months after the Goods are initially placed in operation ("**Warranty Period**"), that such Goods will materially conform to the specifications set forth in Buyer's order and will be free from material defects in material and workmanship.

(b) Seller warrants to Buyer that it shall perform the Services using personnel of required skill, experience and qualifications and in a professional and workmanlike manner in accordance with generally recognized industry standards for similar services and shall devote adequate resources to meet its obligations under this Agreement.

(c) Any performance guarantee of Seller relating to the Goods with regard to compliance with any governmental specifications, including, without limitation, particulate levels or pollution controls, are specifically limited to the time of commissioning or start-up of the Goods in question. It is the Buyer's responsibility to properly maintain the Goods, monitor system performance and take corrective actions.

(d) **EXCEPT FOR THE WARRANTIES SET FORTH IN SECTIONS 11(a) AND 11(b), SELLER MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO THE GOODS OR SERVICES, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; OR (c) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY, WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.**

(e) Products manufactured by a third party ("**Third Party Product**") may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the Goods. Third Party Products are not covered by the warranty in **Section 11(a)**. For the avoidance of doubt, **SELLER MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY THIRD PARTY PRODUCT, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.**

(f) Seller shall not be liable for a breach of the warranties set forth in **Section 11(a)** and **Section 11(b)** unless: (i) Buyer gives written notice of the defective Goods or Services, as the case may be, reasonably described, to Seller within ten (10) days of the time when Buyer discovers or ought to have discovered the defect; (ii) if applicable, Seller is given a reasonable opportunity after receiving the notice of breach of the warranty set forth in **Section 11(a)** to examine such Goods and Buyer (if requested to do so by Seller) returns such Goods to Seller's place of business at Seller's cost for the examination to take place there; and (iii) Seller reasonably verifies Buyer's claim that the Goods or Services are defective.

(g) Seller shall not be liable for a breach of the warranty set forth in **Section 11(a)** and **Section 11(b)** if: (i) Buyer makes any further use of such Goods after giving such notice; (ii) the defect arises because Buyer failed to follow Seller's oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods; or (iii) Buyer alters or repairs such Goods without the prior written consent of Seller.

(h) Subject to **Section 11(f)** and **Section 11(g)** above, with respect to any such Goods during the Warranty Period, Seller shall, in its sole discretion, either: (i) repair or replace such Goods (or the defective part) or (ii) credit or refund the price of such Goods at the pro rata contract rate provided that, if Seller so requests, Buyer shall, at Seller's expense, return such Goods to Seller. **ALL COSTS OF DISMANTLING, REINSTALLATION AND FREIGHT, AND THE TIME AND EXPENSES OF SELLER'S PERSONNEL FOR SITE TRAVEL AND DIAGNOSIS ONSITE UNDER THIS WARRANTY SHALL BE BORNE BY BUYER.**

(i) Subject to **Section 11(f)** and **Section 11(g)** above, with respect to any Services subject to a claim under the warranty set forth in **Section 11(b)**, Seller shall, in its sole discretion, (i) repair or re-perform the applicable Services or (ii) credit or refund the price of such Services at the pro rata contract rate.

(j) **THE REMEDIES SET FORTH IN SECTION 11(h) AND SECTION 11(i) SHALL BE THE BUYER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTIES SET FORTH IN SECTION 11(a) AND SECTION 11(b).**

12. **Intellectual Property Rights**.

(a) Buyer acknowledges and agrees that: (i) any and all Seller's intellectual property rights are the sole and exclusive property of Seller or its licensors; (ii) Buyer shall not acquire any ownership interest in any of Seller's intellectual property rights under this Agreement; (iii) any goodwill derived from the use by Buyer of Seller's intellectual property rights inures to the benefit of Seller or its licensors, as the case may be; (iv) if Buyer acquires any intellectual property rights, rights in or relating to any Goods (including any rights in any trademarks, derivative works or patent improvements relating thereto) by operation of law, or otherwise, such rights are deemed and are hereby irrevocably assigned to Seller or its licensors, as the case may be, without further action by either of the parties; and (v) Buyer shall use Seller's intellectual property rights solely for purposes of using the Goods under this Agreement and only in accordance with this Agreement and the instructions of Seller.

(b) Buyer shall not: (i) take any action that interferes with any of Seller's rights in or to Seller's intellectual property rights, including Seller's ownership or exercise thereof; (ii) challenge any right, title or interest of Seller in or to Seller's intellectual property rights; (iii) make any claim or take any action adverse to Seller's ownership of Seller's intellectual property rights; (iv) register or apply for registrations, anywhere in the world, for Seller's trademarks or any other trademark that is similar to Seller's trademarks or that incorporates Seller's trademarks; (v) use any mark, anywhere that is confusingly similar to Seller's trademarks; (vi) engage in any action that tends to disparage, dilute the value of, or reflect negatively on the Goods or any Seller's trademarks; (vii) misappropriate any of Seller's trademarks for use as a domain name without prior written consent from Seller; or (viii) alter, obscure or remove any Seller's trademarks, or trademark or copyright notices or any other proprietary rights notices placed on the Goods, marketing materials or other materials that Seller may provide.

13. **Seller's Intellectual Property Indemnification**.
(a) Subject to the terms and conditions of this Agreement, including **Section 13(b)** and **Section 13(c)**, Seller shall indemnify, defend and hold harmless Buyer from and against all losses awarded against Buyer in a final non-appealable judgment arising out of any claim of a third party alleging that any of the Goods or Buyer receipt or use thereof infringes any intellectual property right of a third party.

(b) If the Goods, or any part of the Goods, becomes, or in Seller's opinion is likely to become, subject to a claim of a third party that qualifies for intellectual property indemnification coverage under this **Section 13**, Seller shall, at its sole option and expense, notify Buyer in writing to cease using all or a part of the Goods, in which case Buyer shall immediately cease all such use of such Goods on receipt of Seller's notice.

(c) Notwithstanding anything to the contrary in this Agreement, Seller is not obligated to indemnify or defend Buyer against any claim (direct or indirect) under **Section 13(a)** if such claim or corresponding losses arise out of or result from, in whole or in part, (i) Buyer's marketing, advertising, promotion or sale or any product containing the Goods; (ii) use of the Goods in combination with any products, materials or equipment supplied to Buyer by a person other than Seller or its authorized representatives, if the infringement would have been avoided by the use of the Goods not so combined; or (iii) any modifications or changes made to the Goods by or on behalf of any person other than Seller or its representatives, if the infringement would have been avoided without such modification or change.

(d) **THIS SECTION 13 SETS FORTH THE ENTIRE LIABILITY AND OBLIGATION OF SELLER AND THE SOLE AND EXCLUSIVE REMEDY FOR BUYER FOR ANY LOSSES COVERED BY SECTION 13.**

14. **Limitation of Liability**.
(a) **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY THIRD PARTY FOR ANY LOSS OF USE, REVENUE OR PROFIT OR LOSS OF DATA OR DIMINUTION IN VALUE, OR FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES WHETHER ARISING OUT OF BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND NOTWITHSTANDING THE FAILURE OF ANY AGREED OR OTHER REMEDY OF ITS ESSENTIAL PURPOSE.**

(b) **IN NO EVENT SHALL SELLER'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO SELLER FOR THE GOODS AND SERVICES SOLD HEREUNDER. THE LIMITATION OF LIABILITY PROVISIONS SET FORTH IN THIS SECTION 14 SHALL APPLY EVEN IF BUYER'S REMEDIES UNDER THIS AGREEMENT FAIL OF THEIR ESSENTIAL PURPOSE.**

(c) The limitation of liability set forth in **Section 14(b)** shall not apply to (i) liability resulting from Seller's gross negligence or willful misconduct or (ii) death or bodily injury to the extent resulting from Seller's negligent acts or omissions.

15. **Insurance**. During the term of this Agreement and for a period of two (2) years thereafter, Buyer shall, at its own expense, maintain and carry insurance in full force and effect which includes, but is not limited to, commercial general liability (including product liability) in a sum no less than $1,000,000, with financially sound and reputable insurers. Upon Seller's request, Buyer shall provide Seller with a certificate of insurance from Buyer's insurer evidencing the insurance coverage specified in these Terms. Buyer shall provide Seller with thirty (30) days' advance written notice in the event of a cancellation or material change in Buyer's insurance policy. Except where prohibited by law, Buyer shall require its insurer to waive all rights of subrogation against Seller's insurers and Seller.

16. **Compliance with Law**.
(a) *Generally*. Buyer shall comply with all applicable laws, regulations and ordinances. Buyer shall maintain in effect all the licenses, permissions, authorizations, consents and permits that it needs to carry out its obligations under this Agreement. Buyer shall comply with all export and import laws of all countries involved in the sale of the Goods under this Agreement or any resale of the Goods by Buyer. Buyer assumes all responsibility for shipments of Goods requiring any government import clearance. Seller may terminate this Agreement if any governmental authority imposes antidumping or countervailing duties or any other penalties on Goods.

(b) *OFAC Representation and Warranty*. Buyer is in compliance with the International Emergency Economic Powers Act (50 U.S.C. § 1701) and all other Laws administered by OFAC or any other Governmental Authority imposing economic sanctions and trade embargoes ("**Economic Sanctions Laws**") against countries ("**Embargoed Countries**") and persons designated in such Laws (collectively, "**Embargoed Targets**"). Buyer is not an Embargoed Target or otherwise subject to any Economic Sanctions Law.

(c) *OFAC Covenant*. Without limiting the generality of **Section 16(a)**, Buyer shall comply with all Economic Sanctions Laws. Without limiting the generality of the foregoing, Buyer shall not: (i) directly or indirectly export, re-export, transship or otherwise deliver the Goods or any portion of the Goods to an Embargoed Country or an Embargoed Target; or (ii) broker, finance or otherwise facilitate any transaction in violation of any Economic Sanctions Law.

(d) *Export Regulation (EAR and ITAR) Covenant*. Buyer acknowledges that the Goods, including any software, documentation and any related technical data included with, or contained in, such Goods, and any products utilizing any such Goods, software, documentation or technical data (collectively, "**Regulated Goods**") may be subject to US export control Laws and regulations, including the Export Administration Regulations promulgated under the Export Administration Act of 1979, and the International Traffic in Arms Regulations administered by the US Department of State. Without limiting the generality of **Section 16(a)**, Buyer shall not, and shall not permit any third parties to, directly or indirectly, export, re-export or release any Regulated Goods to any jurisdiction or country to which, or any party to whom, the export, re-export or release of any

Regulated Goods is prohibited by applicable federal or foreign law. Buyer shall be responsible for any breach of this Section by its, and its successors' and permitted assigns', parent, affiliates, employees, officers, directors, partners, members, shareholders, customers agents, distributors, resellers or vendors that are not Buyer.

(e) *Foreign Corrupt Practices Act Representation and Warranty*. Buyer is in compliance with the Foreign Corrupt Practices Act of 1977, as amended ("**FCPA**") and the UK Bribery Act of 2010 ("**Bribery Act**"). Neither Buyer nor any of its representatives has: (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity or to influence official action; (ii) made any direct or indirect unlawful payment to any foreign or domestic government official or employee from corporate funds; (iii) made any bribe, rebate, payoff, influence payment, kickback or other unlawful payment; or (iv) failed to disclose fully any contribution or payment made by Buyer (or made by any Person acting on its behalf of which Buyer is aware) that violates the FCPA or the Bribery Act.

(f) *Anti-Bribery Covenant*. Without limiting the generality **of Section 16(a)**, Buyer shall, and shall cause its representatives to, comply with the FCPA and the Bribery Act, including maintaining and complying with all policies and procedures to ensure compliance with these Acts.

17. **Termination**. In addition to any remedies that may be provided under these Terms, Seller may terminate this Agreement with immediate effect upon written notice to Buyer, if Buyer: (a) fails to pay any amount when due under this Agreement and such failure continues for ten (10) days after Buyer's receipt of written notice of nonpayment; (b) has not otherwise performed or complied with any of these Terms, in whole or in part; or (c) becomes insolvent, files a petition for bankruptcy or commences or has commenced against it proceedings relating to bankruptcy, receivership, reorganization or assignment for the benefit of creditors.

18. **Waiver**. No waiver by Seller of any of the provisions of this Agreement is effective unless explicitly set forth in writing and signed by Seller. No failure to exercise, or delay in exercising, any right, remedy, power or privilege arising from this Agreement operates, or may be construed, as a waiver thereof. No single or partial exercise of any right, remedy, power or privilege hereunder precludes any other or further exercise thereof or the exercise of any other right, remedy, power or privilege.

19. **Confidential Information**. All non-public, confidential or proprietary information of Seller, including but not limited to, specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, customer lists, pricing, discounts or rebates, disclosed by Seller to Buyer, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential" in connection with this Agreement is confidential, solely for the use of performing this Agreement and may not be disclosed or copied unless authorized in advance by Seller in writing. Upon Seller's request, Buyer shall promptly return all documents and other materials received from Seller. Seller shall be entitled to injunctive relief for any violation of this Section. This Section does not apply to information that is: (a) in the public domain; (b) known to Buyer at the time of disclosure; or (c) rightfully obtained by Buyer on a non-confidential basis from a third party.

20. **Force Majeure**. Seller shall not be liable or responsible to Buyer, nor be deemed to have defaulted or breached this Agreement, for any failure or delay in fulfilling or performing any term of this Agreement when and to the extent such failure or delay is caused by or results from acts or circumstances beyond the reasonable control of Seller including, without limitation, acts of God, flood, fire, earthquake, explosion, governmental actions, war, invasion or hostilities (whether war is declared or not), terrorist threats or acts, riot, or other civil unrest, national emergency, revolution, insurrection, epidemic, lockouts, strikes or other labor disputes (whether or not relating to either party's workforce), or restraints or delays affecting carriers or inability or delay in obtaining supplies of adequate or suitable materials, materials or telecommunication breakdown or power outage.

21. **Assignment**. Buyer shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Seller. Any purported assignment or delegation in violation of this Section is null and void. No assignment or delegation relieves Buyer of any of its obligations under this Agreement.

22. **Relationship of the Parties**. The relationship between the parties is that of independent contractors. Nothing contained in this Agreement shall be construed as creating any agency, partnership, joint venture or other form of joint enterprise, employment or fiduciary relationship between the parties, and neither party shall have authority to contract for or bind the other party in any manner whatsoever.

23. **No Third-Party Beneficiaries**. This Agreement is for the sole benefit of the parties hereto and their respective successors and permitted assigns and nothing herein, express or implied, is intended to or shall confer upon any other person or entity any legal or equitable right, benefit or remedy of any nature whatsoever under or by reason of these Terms.

24. **Governing Law**. All matters arising out of or relating to this Agreement are governed by and construed in accordance with the internal laws of the State of Texas, USA without giving effect to any choice or conflict of law provision or rule (whether of the State of Texas or any other jurisdiction) that would cause the application of the laws of any jurisdiction other than those of the State of Texas. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to the transactions contemplated by these Terms and Conditions.

25. **Submission to Jurisdiction**. Any legal suit, action or proceeding arising out of or relating to this Agreement shall be instituted in the federal courts of the United States of America or the courts of the State of Texas each case located in the City of Dallas, and each party irrevocably submits to the exclusive jurisdiction of such courts in any such suit, action or proceeding.

26. **Notices**. All notices, requests, consents, claims, demands, waivers and other communications hereunder (each, a "**Notice**") shall be in writing and addressed to the parties at the addresses set forth on the face of the Sales Confirmation or to such other address that may be designated by the receiving party in writing. All Notices shall be delivered by personal delivery, nationally recognized overnight courier (with all fees pre-paid), facsimile (with confirmation of transmission) or certified or registered mail (in each case, return receipt requested, postage prepaid). Except as

otherwise provided in this Agreement, a Notice is effective only (a) upon receipt of the receiving party, and (b) if the party giving the Notice has complied with the requirements of this Section.

27. **Severability**. If any term or provision of this Agreement is invalid, illegal or unenforceable in any jurisdiction, such invalidity, illegality or unenforceability shall not affect any other term or provision of this Agreement or invalidate or render unenforceable such term or provision in any other jurisdiction.

28. **Survival**. Provisions of these Terms which by their nature should apply beyond their terms will remain in force after any termination or expiration of this Order including, but not limited to, the following provisions: Insurance, Compliance with Laws, Confidential Information, Governing Law, Submission to Jurisdiction and Survival.

29. **Amendment and Modification**. These Terms may only be amended or modified in a writing stating specifically that it amends these Terms and is signed by an authorized representative of each party.

DOMESTIC FIELD SERVICE RATE SHEET

Effective 02/2020

(Does not include Alaska, Hawaii or any U.S. territories-refer to International Rate Document)

FIELD SERVICE includes onsite inspection, maintenance, commissioning, optimization, and troubleshooting/repair of equipment in a plant system. Peerless/CCA also offers supplemental training and testing for facility personnel. These services do not include the supply of any parts and are performed only based on a purchase order issued by the ultimate customer or their authorized representative, covering the specific type of service desired. Peerless Mfg. Co/CCA's service is subject to the Field Service Terms & Conditions shown on the following page.

Service Category	Type of Service	Hourly Rates
A	Field Service Specialist	$185/Hr. – Plus Expenses
B	Commissioning Technician	$200/Hr. – Plus Expenses
C	Automation/PLC Programming	$250/Hr. – Plus Expenses
D	Combustion/De-NOx Engineer	$250/Hr. – Plus Expenses
E	Construction Supervisor	$2000/Day -Plus Expenses
F	Classroom Instructor	$185/Hr. – Plus Expenses
G	Engineering Consultation	Open Purchase Order

Billing will be based on rates in effect at the time service is rendered, at a minimum of eight (8) hours per day. Rates apply within the continental United States only.

EQUIPMENT This is company owned equipment that is available to customers. The daily rate will include the hourly rate for applicable company personnel to mobilize, operate, and monitor equipment.

Type of Equipment	Daily Rates
Truck or Trailer	105cts/mi
Portable Gas Analyzer	$340/Day
NH3 Test Equipment	$340/Day
Coal Flow Testing Equipment	$750/Day
LOI Testing	$750/Day
CEM Van Rental	$1,050/Day
Flow Laboratory Facility	$2,000/Day
*Combustion Test Rig	$3,300/Day
*Diesel Engine Test Rig	$3,300/Day

Billing will be based on rates in effect at the time service is rendered, at a daily rate. Rates apply within the continental United States only.

***Diesel Engine and Combustion Test Rigs do not include the cost of the setup & dismantling, fuel, SNCR or SCR, reagent, or freight which shall be billed at cost plus 10%**

Expenses:

A) Travel – round trip plane tickets, private or rental automobile charges from the point of regularly assigned location of the service representative plus any required local travel. Private automobile charges will be 60 cents per mile. Tolls and parking fees are additional. When our service representative goes from job to job rather than returning to his corporate office, travel charges will be distributed on a prorated basis.

B) Living – lodging, meals, and incidental costs are living expenses.

C) Training – training required for site specific access including onsite, offsite, and classroom will be billed at applicable rate.

D) Receipts for air travel, automobile rental and lodging will be available upon request. Receipts for meals and incidental costs are not required by Peerless Mfg. Co./CCA but will be supplied upon prior arrangements.

E) Special Equipment – if necessary, for start-up or is requested by the customer, Peerless Mfg. Co./CCA will furnish any special equipment:

- Rented equipment – charged at rental cost plus 15%
- Site Specific required Safety equipment be will billed to customer.

F) 10% administration fee total cost

Appendix C – Eastern Research Group Evaluation

MEMORANDUM

TO: Kevin Williams, SMAQMD

FROM: Dan Roper and Marty Wolf, ERG

DATE: April 12, 2024

SUBJECT: **Air Products SCR Cost Estimate – Draft Final Technical Memorandum**

SMAQMD directed ERG to evaluate the reasonableness of a selective catalytic reduction (SCR) cost estimate prepared by Air Products for two steam-methane reforming (SMR) furnaces located at Air Products' Sacramento hydrogen plant. Section 1 of this memorandum summarizes ERG's review and evaluation of Air Products' cost estimate. Section 2 discusses the overall cost estimate compared to U.S. EPA cost estimate methodology. Section 3 reviews capital cost components. Section 4 reviews operating cost components. Attachments 1 and 2 to this memorandum provide supporting cost estimate spreadsheets for Plants A and B, respectively.

1. EVALUATION BASIS

ERG originally reviewed three documents that Air Products submitted to SMAQMD:

- Sacramento H2 Plant SCR Cost Study slide deck dated May 14, 2021;
- Capital and Operating Cost Breakouts spreadsheet tables; and
- CECO Peerless SCR System Proposal P2187199 dated March 23, 2021.

Air Products' costs were provided in 2021 dollars. ERG previously identified several data gaps in these documents in a memo dated November 28, 2023. SMAQMD subsequently requested additional information from Air Products, which Air Products provided in an email to SMAQMD on February 16, 2024, and during a call between SMAQMD, Air Products, and ERG on February 28, 2024.

ERG evaluated Air Products' cost estimate in comparison to the SCR methodology described in U.S. Environmental Protection Agency's (U.S. EPA's) *Air Pollution Control Cost Manual*[1]. U.S. EPA also published a cost estimate template spreadsheet using this methodology which ERG used.[2] For gas-fired industrial units, this methodology is intended for heat input rates between 205 and 4,100 mmBTU/hr. The Air Products' heaters are substantially smaller at 25 and 33 mmBTU/hr. The EPA SCR cost estimate methodology may therefore underestimate the SCR costs due to a lack of economies of scale for these smaller heaters. The U.S. EPA SCR cost estimate methodology was published in June 2019 and used 2016 dollars. The U.S. EPA

[1] EPA 2019. "Chapter 2 Selective Catalytic Reduction." In EPA *Air Pollution Control Cost Manual*. https://www.epa.gov/sites/default/files/2017-12/documents/scrcostmanualchapter7thedition_2016revisions2017.pdf

[2] https://www.epa.gov/sites/default/files/2019-06/scrcostmanualspreadsheet_june-2019vf.xlsm

methodology uses the Chemical Engineering Plant Cost Index (CEPCI) for cost escalation from a 2016 CEPCI of 541.7. ERG updated the estimates for the following individual cost factors to 2021 basis:

- 2021 CEPCI of 708.8.
- Annual interest rate of 4 percent based on 2021 average of approximately 2 percent for 20-year treasury security plus 2 percent per SMAQMD BACT policy (for comparison, the 2021 bank prime rate was 3.5 percent).[3]
- Ammonia cost of $500/ton per Air Products.
- Electricity cost of $0.06/kWh per Air Products.
- Catalyst cost of $255/ft^3 per updated U.S. EPA Integrated Planning Model (IPM) documentation.

ERG evaluated the costs on a 2021 dollar basis for consistency with the existing Air Products documents and did not attempt to escalate to current dollars at this time. Costs are expected to have increased significantly from 2021 due to high inflation. The preliminary CEPCI for 2023 is 798, a 12.5 percent increase from 2021. The current bank prime rate is 8.5 percent, compared to 3.5 percent in 2021, which does not directly affect the total capital cost estimates but would affect the annualization of costs and cost effectiveness.

2. OVERALL COST EVALUATION

The table below summarizes the Air Products' cost estimate and results from the U.S. EPA SCR cost estimate methodology. Air Products' capital cost estimate is more than twice the U.S. EPA methodology estimate. The U.S. EPA *Air Pollution Control Cost Manual* provides "study" estimates with probable error of 30 percent. However, as noted above, the heat input rates of the two Air Products' heaters are well below the recommended range for the U.S. EPA SCR cost estimate methodology. In this case, the U.S. EPA methodology may provide better than an order-of-magnitude estimate but the probable error is more than 30 percent. Additionally, the U.S. EPA methodology has a default retrofit factor of 1 for average retrofits. The methodology document does not specify a maximum retrofit factor but the associated template spreadsheet indicates a maximum retrofit factor of 1.5. The majority of Air Products' capital costs come from engineering and construction/commissioning costs, rather than the procurement of the SCR and other equipment upgrades, which supports an assessment of this as a more difficult than average retrofit. Given the capital cost breakdown Air Products provided in its February 16, 2024 email, the retrofit nature, and the large error expected for the U.S. EPA SCR cost estimate methodology expected in this case, the capital costs differ by much less than an order of magnitude and are in reasonable agreement.

Air Products' annual operating costs are approximately six times greater than the U.S. EPA SCR cost estimate methodology. As discussed in Section 4 below, the SCR reagent (ammonia) and SCR catalyst costs are in reasonable agreement. However, Air Products' estimated electricity costs are 5 to 10 times greater than the U.S. EPA methodology. It is not clear if this discrepancy is due to the relatively small heat input rates compared to the U.S. EPA

[3] Federal Reserve Board. "H.15 Selected Interest Rates." https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15

methodology recommended range, or if these SMR heaters require greater induced fan power to overcome the SCR pressure drop compared to other industrial heaters and boilers.

Estimate Basis	Cost Type	Plant A	Plant B	Total
Air Products	Total Capital Costs	$8,024,000		
	Annual Operating Costs[a]	$70,000	$174,000	$244,000
EPA Methodology	Total Capital Costs	$1,490,000	$1,784,000	$3,274,000
	Annual Operating Costs	$17,000	$23,000	$40,000

[a] 10-year average annual operating costs including catalyst replacements in Years 4 and 8.

3. CAPITAL COSTS

Air Products provided a breakdown of individual capital cost components in its February 16, 2024 email. In general, the estimates for new equipment, equipment upgrades, and utility upgrades appear reasonable for a study level cost estimate. As discussed above, the majority of Air Products' capital costs are from its internal engineering costs and construction costs. The high proportion of these costs relative to the control equipment costs is indicative of a more difficult retrofit application. In particular, the civil/structural and electrical/instrumentation costs together are more than twice the mechanical costs. Air Products' individual capital costs components appear reasonable for the level of detail provided. The overall difference between the Air Products' capital cost estimate and the U.S. EPA SCR cost estimate methodology is likely attributable to the size of these heaters being outside the intended scope of the U.S. EPA methodology.

4. OPERATING COSTS

4.1 SCR Reagent Costs

Air Products' estimate used 29% aqueous ammonia as the SCR reagent at a cost of $0.25 per pound (i.e., $500 per ton). The USGS reported a 2021 average ammonia price of $510 per ton.[4] Air Products' ammonia price is reasonable assuming it was expressed on a pure ammonia basis, as is common in industry. Air Products estimated use rates of 1 pound per hour (lb/hr) for Plant A and 2 lb/hr for Plant B (i.e., 8,760 lb and 17,520 lb annually). Using the U.S. EPA SCR cost estimate methodology, the estimated use rates are 0.89 lb/hr for Plant A and 1.44 lb/hr for Plant B. Air Products' estimated use rates are 12 to 38 percent greater than but reasonable compared to the U.S. EPA methodology.

4.2 SCR Catalyst Costs

The CECO Peerless SCR System Proposal did not identify the SCR catalyst volume (ft^3) or the SCR catalyst unit cost ($/$ft^3$). Air Products indicated in its February 16, 2024 email that it could not provide more details on the catalyst volume or unit cost, but that it estimated $50,000

[4] USGS 2022. "Nitrogen (Fixed)—Ammonia." In *Mineral Commodity Summaries, January 2022.* https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nitrogen.pdf

per plant for the catalyst replacements every four years (note, this was $55,000 per plant in the earlier Operating Cost Breakouts per Plant spreadsheet). The four-year (35,040 hours) catalyst life is common for industry estimates and is similar to the U.S. EPA SCR cost estimate methodology estimate of 40,000 hours for gas-fired units.

The CECO Peerless SCR System Proposal did provide the proposed reactor dimensions which can be used to calculate the reactor volumes as 192 ft^3 for Plant A and 264 ft^3 for Plant B. The reactor volume is larger than the expected catalyst volume because there are gaps between catalyst module layers, but it can be used as an upper-bound approximation for the catalyst volume. The U.S. EPA SCR cost estimate methodology results in catalyst volumes of 115 ft^3 for Plant A and 200 ft^3 for Plant B. The proposed reactor volumes are generally consistent with the catalyst volumes predicted by the U.S. EPA methodology.

For SCR catalyst unit cost, the U.S. EPA SCR cost estimate methodology references a technical background document for U.S. EPA's Integrated Planning Model (IPM) with a catalyst unit cost of $8,000/$m^3$ in 2016 dollars (equivalent to $227/$ft^3$).[5] The IPM background document was updated in 2023 with a catalyst unit cost of $9,000/$m^3$ in 2021 dollars (equivalent to $255/$ft^3$).[6] Both versions of the IPM background document indicated the cost "includes removal and disposal of existing catalyst and installation of new catalyst," which is similar to the basis of Air Products' estimate. Using Air Products' overall replacement costs and the EPA methodology estimated catalyst volumes results in an average catalyst cost of $317/$ft^3$, which is 24 percent greater than but reasonable compared to the EPA estimates.

4.3 Electric Power Costs

Air Products assumed an electricity price of $0.06/kWh, which is lower than the 2021 average industrial price of $0.0717/kWh per the U.S. EIA.[7] Air Products estimated the increased electric power demand to be 67 kW for Plant A and 186 kW for Plant B, in both cases to supply induced draft fans and instrument air compressors. The EPA SCR cost estimate methodology primarily accounts for increased power for induced draft fan and resulted in 13 kW for Plant A and 17 kW for Plant B. Air Products' estimates are 5 to 11 times greater than the EPA methodology estimates. It is not clear if the large discrepancy between these Air Products' estimates and the EPA methodology is because these units are outside the recommended heat input range.

[5] Sargent & Lundy 2017. "IPM Model – Updates to Cost and Performance for APC Technologies – SCR Cost Development Methodology." https://www.epa.gov/sites/default/files/2018-05/documents/attachment_5-3_scr_cost_development_methodology.pdf

[6] Sargent & Lundy 2023. "IPM Model – Updates to Cost and Performance for APC Technologies – SCR Cost Development Methodology for Coal-fired Boilers." https://www.epa.gov/system/files/documents/2023-01/13527-002%20Coal-Fired%20SCR%20Cost%20Methodology.pdf

[7] U.S. Energy Information Administration. "Electricity Data Browser." https://www.eia.gov/electricity/data/browser/

RESOLUTION NO. 2024 –019

Adopted by the Sacramento Metropolitan Air Quality Management District Board of Directors

EMISSION REDUCTION CREDITS FROM THE COMMUNITY BANK FOR SACRAMENTO AREA SEWER DISTRICT – LOAN NUMBERS C24-1006, C24-1008, C24-1009, C24-1010, and C24-1011

BACKGROUND:

A. The Board of Directors of the Sacramento Metropolitan Air Quality Management District (Board) adopted Rule 205, COMMUNITY BANK AND PRIORITY RESERVE BANK.

B. Pursuant to Rule 205, Section 101, the Community Bank is a depository of certified emission reduction credits, which may be loaned for compliance with Rule 202, NEW SOURCE REVIEW offset requirements.

C. Sacramento Area Sewer District (SacSewer) is a public utility that operates the sewer network, pump stations, and a wastewater treatment plant for Sacramento County. Emissions of Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOCs) from their proposed electricity generation project exceed offset trigger levels in Rule 202, Section 302.

D. Rule 205, Section 310 requires that loan applications to the Community Bank for amounts greater than 900 pounds per quarter or longer than five years must be approved by the Board prior to disbursement. These loans meet both of these requirements.

E. Pursuant to Rule 205, Section 310, the Board considered the impact of this loan on the health of the bank and the extent to which cleaner innovative technologies have been used to minimize the credits needed, and imposes no additional conditions on the loan.

F. Staff of SacSewer prepared an Environmental Impact Report (EIR), State Clearinghouse No. 2021050080, and the SacSewer Board approved the EIR finding that the operational emissions of the Regional Sanitation BioGeneration Facility Project will be mitigated to be less than significant.

G. Rule 205, Section 310.4 authorizes the loans be active at the beginning of the calendar quarter, October 1, 2024, because the final action on the Authority to Construct permits was taken on August 26, 2024.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

Section 1. The approval of the loan is exempt from CEQA.

Section 2. The Board authorizes and directs the loans for the following NOx and VOC emission reduction credits from the Community Bank to SacSewer for thirty (30) years:

Loan Number	Permit No.	`Pollutant	Emission Reductions Credit from the Community Bank (lbs/quarter)			
			1st qtr	2nd qtr	3rd qtr	4th qtr
C24-1006	27780	NOx	423	428	433	433
		VOC	121	122	124	124
C24-1008	27782	NOx	1,753	1,772	1,792	1,792
C24-1009	27783	NOx	1,753	1,772	1,792	1,792
C24-1010	27784	NOx	1,753	1,772	1,792	1,792
		VOC	1,132.3	1,340.2	1,451	1,396.8
C24-1011	27785	NOx	1,753	1,772	1,792	1,792
		VOC	1,753	1,772	1,792	1,792

Section 3. Loan numbers C24-1006, C24-1008, C24-1009, C24-1010, and C24-1011 are effective as of October 1, 2024.

ON A MOTION by Director Phil Serna, seconded by Director Eric Guerra, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Metropolitan Air Quality Management District on September 24, 2024, by the following vote:

Ayes: Sarah Aquino, Sue Frost, Eric Guerra, Patrick Kennedy, Caity Maple, Porsche Middleton, Sergio Robles, Phil Serna, Donald Terry, Shoun Thao, and Mai Vang.

Noes:

Abstain:

Absent: Rich Desmond, Patrick Hume, and Kevin Papineau.

ATTEST: Salina Martinez

Digitally signed by: Salina Martinez
DN: CN = Salina Martinez email = smartinez@airquality.org C = AD O = Sac Metro Air District
Date: 2024.09.27 11:22:17 -07'00'

Clerk, Board of Directors
Sacramento Metropolitan Air Quality Management District

Meeting Date: 10/24/2024
Report Type: CONSENT CALENDAR
Report ID: 2024-1024-3.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 3.

Title: Contract Amendment with Bruns Auri Inc. for the Our Community CarShare Program

Recommendation: Authorize the Executive Director/Air Pollution Control Officer to amend the contract with Bruns Auri Inc. to: 1) increase the contract amount by $60,000 for a new not to exceed amount of $285,000, 2) extend the term through June, 30 2026, and 3) in consultation with District Counsel, make minor revisions so long as the action is consistent with the purpose of the contract and does not increase the maximum amount authorized by the Board.

Rationale for Recommendation: In December 2020, the District conducted a public Request for Proposals and selected Bruns Auri Inc. as the qualified firm to provide Outreach and Reporting services in support of the District's Our Community CarShare (OCCS) Program. The contract commenced on March 1, 2021 and will terminate on October 31, 2024. The District would like to continue the OCCS program at existing sites and extend the program to new sites; therefore, continuation of these contracted services is needed. Board approval is required for professional services contracts whose total value exceeds $200,000.

Contact: Steffani Charkiewicz, Air Quality Engineer, Transportation & Climate Change Division, (916) 201-8488

Presentation: No

Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

Discussion / Justification: The OCCS program is bridging transportation gaps for disadvantaged communities by improving access to zero or near-zero-emission vehicles and ridesharing opportunities. The program launched in 2017 and is looking to expand to publicly accessible sites, to support more community members, in partnership with Zipcar and Breathe California Sacramento Region. Bruns Auri Inc. is a local woman-owned and operated non-profit that specializes in documentation, reporting, and sustainability analysis in the green economy and transportation sector. The District would like Burns Auri Inc. to provide data and reporting support to the Clean Cars 4 All program. The scope of services in the amended contract will reflect this addition.

Financial Considerations: The contract amount will be increased by $60,000, bringing the total not-to-exceed amount to $285,000 through June 30, 2026. Funding for this contract is provided by the CarShare grant from the California Air Resources Board as part of the Fiscal Year (FY) 19/20 Greenhouse Gas Reduction Fund and is included in the approved FY 24/25 budget. Continuation of the contract beyond the current FY will be subject to the availability of sufficient funds in the budget adopted for the applicable FY.

Meeting Date: 10/24/2024
Report Type: CONSENT CALENDAR
Report ID: 2024-1024-4.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 4.

Title: Hearing Board Vacancy Notification

Recommendation: Receive and file an informational report notifying the Board that one Hearing Board member term expires January 27, 2025.

Rationale for Recommendation: The term of the attorney member on the District's Hearing Board will expire on January 27, 2025. In accordance with section 40800 of the California Health and Safety Code, the Board of Directors is responsible for maintaining a five-member hearing board, which includes one attorney, one professional engineer, one medical professional, and two members of the general public. Each member is appointed by the Board of Directors for a three-year term.

Contact: Virginia Muller, Clerk of the Hearing Board (279) 207-1138

Presentation: No

Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

Discussion / Justification:
The Hearing Board meets monthly, or as needed, to consider petitions for variances from District rules, regulations, and permit requirements. This Board also hears petitions for abatement orders and appeals of permitting decisions made by the Air Pollution Control Officer.

To assist in selecting members for the Hearing Board, a Hearing Board Nomination Committee was formed. At the January 26, 2023, Board of Directors Meeting, Board Chair Patrick Kennedy, appointed Vice-Chair Sarah Aquino, and Director Eric Guerra to serve with him on this Committee for a two-year term ending December 2024. The next committee members will be selected at the January 23, 2025, Board of Directors meeting.

District staff will initiate the recruitment process in early November, following the schedule outlined below. To fill this vacancy, staff will advertise the position in the Sacramento Bee and circulate announcements to Sac Metro Air District Board Members, city council members, city managers, planning commission members, and other relevant public entities. Should a competitive selection be required, applicants will be referred to the Hearing Board Nomination committee for review and recommendation. The Committee will then submit a finalist to the full Board for consideration and appointment. The term of service for the new attorney member will be January 28, 2025 through January 27, 2028.

Dates	Action
Nov 4, 2024	Opening date of 3 week application period
Nov 22, 2024	Closing date of application period
Dec 2, 2024	Application review begins
Dec 16, 2024	Applicants referred to Hearing Board Nomination Committee (if needed)
Jan 23, 2025	Submit recommendation to Board of Directors for approval

Financial Considerations: Each hearing board member is compensated $75 per meeting.

Meeting Date: 10/24/2024
Report Type: CONSENT CALENDAR
Report ID: 2024-1024-5.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 5.

Title: Incentive Contracts Under the Low Emission Vehicle and Infrastructure Program, (LEVIP)

Recommendation:
Authorize the Executive Director/Air Pollution Control Officer to execute the following agreements under the Low Emission Vehicle Incentive Program (LEVIP) and, in consultation with District Counsel, make any minor revisions to the contracts necessary to fully implement their intent, provided they remain within the specified funding limits:

1. Sacramento Regional Transit District (SacRT) – SACHUB: Not to exceed $4,000,000
2. SacRT - H2: Not to exceed $3,000,000
3. Community Resource Project – Louise Perez Community Center Mobility Hub: Not to exceed $1,800,000
4. Penske Truck Leasing LLC: Not to exceed $1,268,685
5. Mitra EV Inc.: Not to exceed $1,400,000
6. Sacramento Municipal Utilities District (SMUD): Not to exceed $2,000,000
7. Black Oak Mine Unified School District (BOMUSD): Not to exceed $1,534,546

Rationale for Recommendation: Under the District's purchasing authority, incentive contracts exceeding $1,000,000 require Board approval. The applications received for these seven projects exceed the threshold. Funding these projects will support the deployment of low and zero-emission vehicles, providing community-specific mobility solutions in the Sacramento region. These efforts are aimed at improving air quality in communities disproportionately impacted by local air pollution.

Contact: Michael Neuenburg, Transportation and Climate Change, Program Supervisor, 916-531-1119

Presentation: No

Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

Discussion / Justification:
Regional Transit SACHUB: In Summer of 2024, SacRT applied to receive District funds to transform existing Light Rail Stations found within disadvantaged communities into mobility hubs. Three locations are planned: Alkali Flat, Globe Station, and Marconi Arcade. These locations were recently awarded a Department of Energy grant in collaboration with the Air District, called SACHUB. This funding will be used to implement the design concepts shown in each respective site plan, including amenities to ensure equitable community assets.

Regional Transit H2: The project will deliver a permanent hydrogen fueling station at SacRT's Bus Maintenance Facility (BMF-2), found at 3701 Dudley Blvd, McClellan Park, CA 95652. This is vital to SacRT's plan to convert BMF-2 into a zero-emission maintenance facility, essential for the agency's transition to a 100% zero-emission transit fleet by 2040. The hydrogen fueling station, featuring a 25,000-gallon liquid hydrogen (LH2) tank, will be capable of fueling up to 85 buses. The infrastructure will accommodate hydrogen fuel cell electric vehicles for transit, county, and city use, thus catalyzing a zero-emission transition in Northern California. The location is in a disadvantaged community and meets LEVIP requirements.

Community Resource Project - Louise Perez Community Center Mobility Hub: In Summer of 2024, CRP applied to receive District funds to install building electrification integration and electric vehicle charging at 3835 41st Ave. Sacramento, CA 95822. This project will install (2) dual port dispensers @ 100kW of power and (1) dual port level II charger for ADA EV Van. The location is in a disadvantaged community and meets LEVIP requirements.

Penske Truck Leasing: In Summer of 2024, Penske Truck Leasing LLC applied to receive District funds to install a privileged access battery charging station at 53 Morrison Ave, Sacramento CA. This project will support the use of at least 20 heavy duty zero emission vehicles in the community. The location is in a disadvantaged community and meets LEVIP requirements.

MITRA EV, Inc.: In Summer of 2024, MITRA EV Inc. applied to receive District funds to deploy four 180kw dual DC Fast Chargers (eight ports), with Battery Energy Storage plus a photovoltaic solar canopy to serve a mix of medium duty fleet and other vehicles for shared use charging. Additionally, they applied for a second site at 1535 Howe Ave. to deploy two 180kw dual DC Fast Chargers (four ports) with Battery Energy Storage and a photovoltaic solar array canopy for shared use charging. The project will benefit and serve medium and light trucks, as well as other community charging needs. Solar canopy will also demonstrate how DCFC performance will improve with shade cover. The location is in a disadvantaged community and meets LEVIP requirements.

SMUD: In Summer of 2024, SMUD applied to receive District funds to deploy several EVSE projects leveraging their existing Community Impact Plan Business District Electrification funds and Commercial EV Incentive Program. The locations are all in disadvantaged communities and meet LEVIP requirements.

Black Oak Mine Unified School District: In Summer of 2024, BOMUSD applied to receive District funds to procure 7 school buses and 24 medium duty electric vehicles for their white fleet. This incentive will allow their entire white fleet to be converted to EV's. They meet El Dorado SECAT incentive requirements.

Financial Considerations: Unless otherwise specified, these projects will be funded primarily by the Carl Moyer Grant Program, supplemented with other sources as necessary.

Regional Transit SACHUB: The project cost is estimated at $5,942,547, with the District's award up to $4,000,000, funded by the Carl Moyer Grant Program Funds and a state budget allocation from Assembly Member Kevin McCarty.

Regional Transit H2: The project, including design, environmental clearance, and construction, is estimated to cost, $14 million, with the District's award up to $3,000,000.

Community Resource Project - Louise Perez Community Center Mobility Hub: The project cost is estimated at $2,500,000, with the District's award up to $1,800,000.

Penske Truck Leasing: The total project cost is estimated at $2,537,371, with the District's award up to $1,268,685, .

MITRA EV, Inc.: The project cost is estimated at $3,000,000, with the District's award up to $1,400,000.

SMUD: The project cost is estimated at $12,000,000, with the District's award up to $2,000,000.

Black Oak Mine Unified School District: The project cost is estimated at $3,434,919, with the District's award up to $1,534,546.

There is sufficient funding in the approved Fiscal Year 24/25 budget to cover these projects. The applicants are responsible for funding the balance of the project costs.

Meeting Date: 10/24/2024
Report Type: CONSENT CALENDAR
Report ID: 2024-1024-6.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 6.

Title: Contract Amendment with Experis US LLC for Project Management Support of the Enterprise Software Custom-build Solution (AiriA)

Recommendation: Authorize the Executive Director to amend the contract with Experis US, LLC, and in consultation with District Counsel, make minor revisions so long as the action is consistent with the purpose of the contract and does not increase the maximum amount authorized by the Board, to continue providing ongoing project management services for the implementation of the District's custom-built enterprise software solution known as AiriA. The amendment will: 1) increase the contract amount by $306,300, for a new not to exceed amount of $500,000, 2) extend the contract until June 30, 2026, and 3) update the Scope of Services.

Rationale for Recommendation: In December 2023, under the District's Purchasing Policy, the Executive Director executed a contract with Experis US, LLC to provide critical project management expertise for the development of the District's custom-built enterprise software solution known as AiriA. The initial contract was not to exceed $193,700, with a termination date of June 30, 2025.

Since the commencement of this partnership, it has become increasingly evident that the scope and complexity of the AiriA project necessitate a greater level of project management support than originally anticipated. In light of this, extending both the level of support and the contract term will be essential to the successful completion of this project. As the contract amount will exceed the Executive Director's $200,000 contracting authority, Board approval is required.

Contact: Amy Roberts, Engineering & Compliance Director, (916) 825-6840

Presentation: No

Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

Discussion / Justification: In 2022, the District began the development of AiriA, a custom-built enterprise software solution designed to modernize and streamline a wide range of operations across the agency. This multi-year, Districtwide initiative aims to replace outdated, inefficient, and in some cases unsupported database systems and program tracking tools, while also introducing new online services to enhance the customer experience. Given the project's complexity, scale, and phased implementation, expected to extend into 2026, effective project management is essential to its success.

To ensure the required level of oversight, the District determined that engaging with a third-party project management service would be critical. As such, a contract with Experis US, LLC was executed in December 2023 to provide these services. This contract amendment will (1) increase the spending authority from $193,700 to $500,000, (2) extend the termination date from June 30, 2025 to June 30, 2026, and (3) update the Scope of Services to better align with District project management needs. The additional funding and extended timeline will allow for continuity of the AiriA project to include more District divisions in replacing of their legacy database systems also continuing to enhance AiriA modules already in use.

Financial Considerations: This amendment will increase the contract amount by $306,300 for a new not to

exceed amount of $500,000 to allow for additional hours and an additional year of project management support. Funding for this contract is in the approved Fiscal Year 24/25 budget. Continuation of the contract beyond the current fiscal year will be subject to the availability of sufficient funds in the budget adopted for the applicable fiscal year.

Meeting Date: 10/24/2024
Report Type: CONSENT CALENDAR
Report ID: 2024-1024-7.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 7.

Title: Quarterly Contracts Report (July 2024 – September 2024)

Recommendation: Receive and file a report on certain contracts executed by the Air Pollution Control Officer under the Non-Incentive Purchasing Authority for the quarter July 2024 – September 2024.

Rationale for Recommendation: This report is provided in compliance with the District's Purchasing Policies, which require quarterly reporting on all non-incentive purchases exceeding $50,000 but under $200,000. Contracts exceeding $200,000 are subject to Board approval.

The attached report details contracts and contract amendments executed between July 1, 2024 and September 30, 2024. All expenditures are consistent with the FY 24/25 Approved Budget or were authorized at the time of contract or amendment approvals.

Contact: Megan Shepard, Director of Administrative Services (279) 207-1143

Presentation: No

ATTACHMENTS:

Attachment A: 2024 3rd Quarter Report

Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

This is a quarterly report covering July 2024 through September 2024. The contracts for the 3rd Quarter are listed below.

2024 3rd Quarter Report – Certain contracts under the Non-Incentive Purchasing Authority

Contractor	Type of Agreement	Services	Amount	Term
GovOS Inc. (2019-00000081-C)	Amendment	SeamlessDocs software subscription renewal. Term extension of 12 months and funding increase of $16,570.95.	$85,024.95	6 years Terminates: 10/31/2025
Civic Thread (2024-00000021)	New	Project review and technical assistance.	$162,584.28	3 years Terminates: 6/30/2027
Breathe California (2024-00000066)	New	Outreach and policy work on land use, transportation and stationary sources.	$160,000	21 months Terminates: 6/30/2026
Public Health Institute (2024-00000068)	New	Two CivicSpark fellows for the 2024-2025 service year.	$62,000	1 year Terminates: 8/30/2025

Meeting Date: 10/24/2024
Report Type: PUBLIC HEARINGS
Report ID: 2024-1024-8.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 8.

Title: Contingency Measures for the 2008 and 2015 Ozone Standards: Revisions to the State Implementation Plan (SIP), Rule 489 - Greenwaste Composting Operations, and Rule 490 - Liquefied Petroleum Gas Transfer and Dispensing

Recommendation: Conduct a public hearing to adopt the 2008 and 2015 ozone standard contingency measures. This includes the revision to the State Implementation Plan (SIP) and the adoption of Rules 489 (Greenwaste Composting Operations) and 490 (Liquefied Petroleum Gas Transfer and Dispensing). Determine that these actions are exempt from the California Environmental Quality Act (CEQA) and direct staff to forward all necessary supporting documentation to the California Air Resources Board (CARB) for submittal to the U.S. Environmental Protection Agency (EPA).

Rationale for Recommendation: The District is part of the Sacramento Federal Nonattainment Area (SFNA). The EPA has determined that the the SFNA does not meet Clean Air Act (CAA) requirements for Contingency Measures for the 2008 and 2015 National Ambient Air Quality Standard (NAAQS). To avoid imposition of a Federal Implementation Plan (FIP) by the EPA, the SFNA must correct the deficiencies by July 17, 2025 through an EPA approved SIP revision, by adopting rules 489 and 490 as contingency measures. These measures are designed to reduce volatile organic compound (VOC) emissions and will ensure emission reductions are automatically triggered, without any further rulemaking or other action, if the area fails to meet progress milestones or attainment deadlines. EPA will not approve plans that do not include contingency measures, and disapproval of plans start federal sanctions clocks.

Contact: Marc Cooley, Air Quality Engineer, Monitoring, Planning & Rules Division, (279) 207-1151

Presentation: Yes

ATTACHMENTS:

Resolution: SIP Revision to Address Contingency Measure Requirements for the 2008 & 2015 8-Hour Ozone NAAQS
Resolution A: Rule 489 Greenwaste Composting Operations
Resolution B: Rule 490 Liquefied Petroleum Gas Transfer and Dispensing
Attachment 1: Contingency Measure SIP Revision
Attachment 2: Rule 489 Statement of Reasons
Attachment 3: Rule 490 Statement of Reasons
Attachment 4: SIP Public Hearing Notice
Attachment 5: SIP Evidence of Public Notice
Attachment 6: Rule 489 Evidence of Public Notice
Attachment 7: Rule 490 Evidence of Public Notice
Exhibit A: Proposed Rule 489
Exhibit B: Proposed Rule 490
Presentation: Contingency Measures for the 2008 & 2015 Ozone Standards; Proposed New Rule 489 Greenwaste Composting Operations; and Proposed Rule 490 Liquefied Petroleum Gas Transfer and Dispensing

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Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/16/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/15/2024

Discussion / Justification: The SFNA is already designated as a 'severe' nonattainment area for the 2008 federal 8-hour ozone standard, and a similar designation is pending for the 2015 standard. Due to that designation, the SFNA is required under Sections 172 and 182 of the Clean Air Act to adopt contingency measures that automatically trigger if it fails to meet established reasonable further progress goals or to attain the NAAQS by the attainment date. The SFNA air districts' adopted and proposed contingency measures are identified in the analysis, and the proposed contingency measures are expected to be adopted before the end of 2024.

On October 21, 2021, the EPA approved all revisions to the SIP except for the contingency measures, deferring final action due to a pending court decision on SIP contingency approvals. Following a series of rulings, the EPA issued draft contingency measure guidance in March 2023, which outlined specific criteria and a new method for calculating the emission reductions required.

Subsequently, on July 15, 2023, the EPA disapproved the SFNA's SIP contingency measures for the 2008 ozone standard, citing the absence of adequate measures that would be triggered if the area fails to meet the attainment or progress goals. This disapproval started a sanctions clock that will impose penalties unless the SFNA air districts adopt appropriate, EPA approved, SIP revisions. The first sanction, an increased emission offset ratio of 2:1, would be imposed on January 17, 2025, followed by a loss of federal highway funds for non-obligated transportation projects on July 17, 2025.

In response, the SFNA has conducted an analysis aligned with with the EPA's guidance to identify the necessary contingency measures for SIP approval. The SFNA air districts intend to resolve the deficiencies related to the 2008 ozone standard, and meet the contingency requirements for the 2015 standard through this SIP revision. Upon EPA approval of this SIP revision and the adopted contingency measures, the sanctions process will be halted, and the EPA will no longer be required to impose a FIP for the SFNA.

Proposed contingency measures, Rule 489 (Greenwaste Composting Operations) and Rule 490 (Liquefied Petroleum Gas Transfer and Dispensing) are intended to reduce VOC emissions if contingency conditions are triggered for either the 2008 or 2015 ozone NAAQS. More detailed descriptions of these rules are provided in the "Summary of Plan / Rule / Amendment" section below. If approved by the Board, these rules will be forwarded to CARB for submittal to EPA as a revision to the SIP.

Summary of Plan / Rule / Amendment:
Staff performed an analysis consistent with EPA's "Draft Guidance on the Preparation of State Implementation Plan Provisions that Address the Nonattainment Area Contingency Measure Requirements for Ozone and Particulate Matter." The analysis shows that several volatile organic compound (VOC) measures are required to satisfy the contingency measure requirements for both the 2008 and 2015 8-hour federal ozone standards. The SFNA air districts have adopted or are proposing several VOC contingency measures, including:

1. Architectural Coatings (adopted by all SFNA air districts)
2. Composting (proposed to be adopted by SMAQMD in October 2024 and Yolo-Solano AQMD in December 2024)
3. Liquified Petroleum Gas Transfer and Dispensing (proposed to be adopted by SMAQMD in October 2024)
4. Solvent Cleaning (proposed to be adopted by Placer County APCD in December 2024).

The analysis concluded that there are no feasible NOx measures the air districts could implement as contingency measures. However, CARB's updated Smog Check Program, if triggered as a contingency measure, will accelerate vehicle smog checks by one to two years, providing minimal reductions in VOC and NOx .

By adopting these proposed contingency measures, the SFNA air districts will address the deficiencies identified

in the contingency requirements and, upon EPA approval, satisfy the remaining SIP requirement. The remaining identified contingency measures, which will automatically take effect if contingency conditions are triggered, are:

Rule 489 Greenwaste Composting Operations
This rule applies to composting facilities of any throughput that are subject to Local Enforcement Agency (LEA) notification or permitting requirements. Greenwaste, includes any organic waste material such as grass clippings, leaves, tree and shrub trimmings, and plant remains, with up to 20 percent manure by volume. The rules requires that each active phase compost pile be covered with a layer of finished compost after forming the pile and that water be applied before turning the pile. These measures are expected to reduce VOC emissions from composting by 40%. Facilities will be required to maintain on-site records and submit them to the District annually.

Rule 490 Liquefied Petroleum Gas Transfer and Dispensing
This rule applies to LPG bulk plants and LPG transfer and dispensing facilities. The rule includes equipment and operational requirements for the transfer and dispensing of LPG from any cargo tank, stationary or portable storage tank, or cylinder into any other cargo tank, stationary or portable storage tank, or cylinder. Emission reductions are achieved using low emission connectors and low emission Fixed Liquid Level Gauges (FLLGs). Owners/operators of affected facilities will be required to implement leak detection and repair programs. They will also be required to meet training, reporting, and recordkeeping requirements .

Financial Considerations:
Rule 489 Greenwaste Composting Operations
Implementation of rule 489, if triggered, will not require additional Staff resources. The only facility currently subject to this rule is Lopez Agricultural Services (Lopez Ag), which is already subject to periodic inspections by the District.

Rule 490 Liquefied Petroleum Gas Transfer and Dispensing
Rule 490, if triggered, will require 0.50 full-time equivalents (FTE) in the first year for development of inspection protocol and compliance inspections, with 0.25 FTE required in subsequent years for ongoing compliance monitoring.

Emissions Impact:
When this SIP revision is implemented, rule amendments and new rules will reduce VOC emissions in the SFNA as a whole by 613 tons per year in 2024 and 610 tons per year in 2032. The estimated reduction of fugitive VOC emissions for proposed rules 489 and 490, if triggered, are as follows:

Rule 489 Greenwaste Composting Operations
34 tons per year in 2024 and 33 tons per year in 2032.

Rule 490 Liquefied Petroleum Gas Transfer and Dispensing
72 tons per year in both 2024 and 2032.

Economic Impact:
When this SIP revision is implemented, the sources subject to each of the continency measures may incur compliance costs. The economic impact of those costs will be evaluated during the rulemaking process.

Rule 489 Greenwaste Composting Operations
Lopez Ag, is the only facility currently subject to the proposed rule. Compliance costs include additional labor and operational costs for finished compost covering, watering of piles, and the on-going recordkeeping requirements. For Lopez Ag, the LEA and District permits for the source already require recordkeeping and reporting of facility throughputs. Compliance costs are estimated to be $41,911 per year.

The overall cost-effectiveness of proposed Rule 489 is estimated to be $1,581 per ton ($0.79 per pound) of VOC reduced. In comparison, previously adopted District rules have had cost-effectiveness values for emissions reductions, in 2024 dollars, ranging from $1.62 to $27.39 per pound of VOC reduced. The District's current maximum cost-effectiveness for requiring Best Available Control Technology for new sources is $13.15 per

pound of VOC reduced.

Rule 490 Liquefied Petroleum Gas Transfer and Dispensing
The proposed rule will require sources to retrofit existing connectors and FLLGs with low emission connectors and low emission FLLGs. The rule also requires sources to perform leak detection and repair, training programs, and routine maintenance. These are already common practice in the industry and the costs associated with these requirements would be minimal. Potential costs to sources are estimated at $734,863 per year. This includes the initial equipment costs (annualized) and ongoing operational costs such as quarterly inspections, reporting, recordkeeping, and tank maintenance.

The overall cost-effectiveness of proposed Rule 490 is estimated to be $5.14 per pound of VOC reduced. In comparison, previously adopted District rules have had cost-effectiveness values for emissions reductions, in 2024 dollars, ranging from $1.62 to $27.39 per pound of VOC reduced. The District's current maximum cost-effectiveness for requiring Best Available Control Technology for new sources is $13.15 per pound of VOC reduced.

Public Outreach/Comments:
Revision to the 2008 and 2015 Ozone State Implementation Plans
Staff held a public workshop on September 18, 2024, to discuss the necessity of the SIP submittal and the proposed contingency measures. The public notice for the workshop was emailed to interested parties and posted on the District website, along with the draft analysis for public review. No comments from the public were received during the workshop.

For today's hearing, public outreach included:
- A notice posted on the District website with links to the proposed contingency measure and reasoned justification analysis.
- Email notices to all persons who have requested SIP planning or general interest notices.

Rule 489 - Greenwaste Composting Operations
Staff met with representatives of the lone affected source, Lopez Ag, on September 18, 2024. During the meeting, the proposed rule requirements and potential impacts were discussed. The primary change to their current operation will be adding finished compost to the tops of windrows after initial pile formation; however, the source did not anticipate any undue cost impacts.

For today's hearing, public outreach included:

- A public notice in the *Sacramento Bee*.
- A notice posted on the District website with links to the proposed rule and Statement of Reasons.
- Email notices to CARB and EPA, Lopez Agricultural Services, and all persons who have requested rulemaking notices.

As of the date of this report, no additional comments have been received in response to the notice for today's hearing. Any comments received prior to the public hearing will be distributed to Board members at the meeting.

Rule 490 - Liquefied Petroleum Gas Transfer and Dispensing
A public workshop was held on September 19, 2024, to discuss the draft rule and Statement of Reasons. The notice was emailed to individuals requesting rulemaking updates and posted on the District website. The draft rule and Statement of Reasons were sent to CARB and EPA and made available for public review at that time. The workshop was held at the District office and participants were given the option to attend in person or via Zoom.

Following the workshop, staff received written comments from the Western Propane Gas Association (WPGA) and held a follow-up meeting on September 23, 2024, to address their feedback. Their comments and Staff's responses are included in Appendix C of the Statement of Reasons.

For today's hearing, public outreach included:

- A public notice in the *Sacramento Bee*.
- A notice posted on the District website with links to the proposed rule and Statement of Reasons.
- Email notices to CARB and EPA and all persons who have requested rulemaking notices.

Aside from the comment letter from the WPGA on September 23, 2024, no further comments have been received as of the date of this report. Any comments received prior to the public hearing will be distributed to Board members at the meeting.

Environmental Review:
California Public Resources Code Section 21159 requires an environmental analysis of the reasonably foreseeable methods of compliance. Staff has concluded there will be no adverse environmental impacts from the proposed rules. Staff finds that the proposed rules are exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for the protection of the environment (Class 8 Categorical Exemption, §15308 State CEQA Guidelines) and because it can be seen with certainty that there is no possibility that the activities in question may have a significant adverse effect on the environment (§15061(b)(3), State CEQA Guidelines).

Rule 489 Greenwaste Composting Operations
Staff expects that operators will comply with the rule by covering each active phase compost pile with a layer of finished compost and applying water before turning the pile. If triggered, the rule would result in an air quality benefit by reducing VOC emissions from greenwaste composting operations by 34 tons per year in 2024 and 33 tons per year in 2032.

Rule 490 Liquefied Petroleum Gas Transfer and Dispensing
Staff expects that LPG bulk loading facilities and LPG transfer and dispensing facilities will comply with the proposed rule by replacing existing connectors and FLLGs with their low emission counterparts. Specifically for on-site forklift tank refilling operations, operators may choose to install a liquid pump, convert to a cylinder exchange service, or have cylinders refilled directly from bobtail trucks visiting the facility. If triggered, the rule would result in an air quality benefit by reducing VOC emissions from LPG transfer and dispensing by 72 tons per year.

RESOLUTION NO. 2024 – XXXX

Adopted by the Sacramento Metropolitan Air Quality Management District
Board of Directors

SIP REVISION TO ADDRESS CONTINGENCY MEASURE REQUIREMENTS FOR THE 2008 AND 2015 8-HOUR OZONE NAAQS

BACKGROUND:

A. The Sacramento Metropolitan Air Quality Management District ("District") is within the Sacramento Federal Nonattainment Area (SFNA) classified as a "severe" nonattainment area for the 2008 primary National Ambient Air Quality Standard (NAAQS) for ozone and "serious" nonattainment for the 2015 primary NAAQS for ozone.

B. The air districts of the SFNA, which is comprised of Sacramento and Yolo counties, western portions of El Dorado and Placer counties, the southern portion of Sutter County, and the northeastern portion of Solano County, requested a voluntary reclassification to a "severe" nonattainment area for the 2015 NAAQS, and this request is pending U.S. Environmental Protection Agency (EPA) action.

C. Sections 172(c)(9) and 182(c)(9) of the federal Clean Air Act (CAA) require states and districts in areas classified as "serious" ozone nonattainment or worse to revise their State Implementation Plans (SIPs) to require contingency measures that take effect if an area fails to attain the ozone NAAQS by the attainment date or fails to make reasonable further progress towards attainment.

D. In March 2023, EPA released the "Draft Guidance on the Preparation of State Implementation Plan Provisions that Address the Nonattainment Area Contingency Measure Requirements for Ozone and Particulate Matter," which interprets the CAA requirements for contingency measures.

E. On June 15, 2023, the EPA disapproved the contingency measures element of the "Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress (RFP) Plan," adopted November 16, 2017, as modified by the "2018 Updates to the California State Implementation Plan," adopted October 25, 2018, for the Sacramento Metropolitan Nonattainment Area with respect to the 2008 ozone NAAQS, because the plan did not include specific measures to be triggered upon a failure to attain or to meet an RFP milestone.

F. On October 26, 2023, the California Air Resources Board forwarded the "Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment and RFP Plan" to EPA for final review and approval.

G. In the plan for the 2015 ozone NAAQS, the SFNA air districts committed to amending their architectural coating rules as contingency measures and to further evaluate additional contingency measures based on EPA's guidance once the guidance becomes final.

H. Although EPA has not yet finalized the guidance, the SFNA must utilize the draft guidance to meet EPA's timelines for adopting contingency measures, as failure to satisfy this

requirement, due to the disapproval of the plan for the 2008 ozone NAAQS, will result in an increase of the offset ratio and loss of federal highway funds.

I. Staff performed an analysis, consistent with EPA's draft contingency measure guidance, identifying the contingency measures necessary to satisfy the EPA requirements for volatile organic compound (VOC) contingency measures for both the 2008 and 2015 8-hour ozone NAAQS and a reasoned justification for not committing to any oxides of nitrogen (NOx) measures.

J. The Board of Directors of the Sacramento Metropolitan Air Quality Management District (Board) has determined that once the air districts of the SFNA adopt or amend rules that implement the contingency measures identified in this SIP revision and submit them to EPA, the SFNA will meet the requirements of CAA Sections 172(c)(9) and 182(c)(9).

K. The Board evaluated the proposed SIP revision to determine whether it is exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for the protection of the environment (Class 8 Categorical Exemption, Section 15308, State CEQA Guidelines) and because it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment (Section 15061(b)(3), State CEQA Guidelines).

L. The District published a notice on September 23, 2024, inviting public comment on the proposed plan revision and providing a 30-day period to submit written comments in accordance with CAA Section 110(l) and Title 40 of the Code of Federal Regulations (CFR), Section 51.102(d).

M. The Board conducted a public hearing on October 24, 2024, and considered public comment on the proposed SIP revision in accordance with CAA Section 110(l) and 40 CFR 51.102(a).

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

Section 1. The SIP revision is exempt from CEQA.

Section 2. Approves the SIP revision, as shown in the attached Exhibit A.

Section 3. Directs Staff to forward the SIP revision and all necessary supporting documents to the California Air Resources Board for submittal to U.S. EPA as a revision to the California SIP to help satisfy the requirements of CAA Sections 110, 172, 182, and 40 CFR Part 51.

Section 4. Exhibit A is attached to and incorporated into this Resolution.

ON A MOTION by Director _____, seconded by Director _____, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Metropolitan Air Quality Management District on October 24, 2024, by the following vote:

Ayes:

Noes:

Abstain:

Absent:

ATTEST:

Clerk, Board of Directors
Sacramento Metropolitan Air Quality Management District

RESOLUTION NO. 2024 – XXXX

Adopted by the Sacramento Metropolitan Air Quality Management District
Board of Directors

RULE 489 – GREENWASTE COMPOSTING OPERATIONS

BACKGROUND:

A. The Board of Directors (Board) of the Sacramento Metropolitan Air Quality Management District (District) is authorized by Sections 40001, 40702, and 41010 of the California Health and Safety Code (HSC) to adopt, amend or repeal rules and regulations [HSC Section 40727(b)(2)].

B. The District is within an area designated nonattainment for the 2008 and 2015 8-hr ozone National Ambient Air Quality Standards.

C. The Board has determined that a need exists to adopt Rule 489 to fulfill the contingency measure requirements of Clean Air Act Sections 172(c)(9) and 182(c)(9) [HSC Section 40727(b)(1)].

D. The Board has determined that the meaning of Rule 489 can be easily understood by the persons affected by it [HSC Section 40727(b)(3)].

E. The Board has determined that Rule 489 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations [HSC Section 40727(b)(4)].

F. The Board has determined that Rule 489 does not duplicate any existing state or federal regulations [HSC Section 40727(b)(5)].

G. The Board has determined that Rule 489 implements the requirements of CAA Section 172(c)(9) and 182(c)(9), and HSC Sections 40150 and 40600 [HSC Section 40727(b)(6)].

H. The Board has considered a written analysis for Rule 489 in Staff's Statement of Reasons [HSC Section 40727.2].

I. The Board has maintained records of the rulemaking proceedings [HSC Section 40728].

J. The Board held a duly noticed public hearing on October 24, 2024, and considered public comments on Rule 489 [HSC Sections 40725 and 40726 and 40 CFR 51.102].

K. The Board has considered the socioeconomic impacts of Rule 489 in Staff's Statement of Reasons [HSC Section 40728.5].

L. The Board evaluated Rule 489 to determine whether it is exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for protection of the environment (Class 8 Categorical Exemption, §15308 State CEQA Guidelines) and as an action in which it can be seen with certainty that there is no possibility that the activity may have a significant adverse effect on the environment (§15061(b)(3), State CEQA Guidelines).

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

Section 1. The proposed Rule 489 is exempt from CEQA.

Section 2. Approves RULE 489 – GREENWASTE COMPOSTING OPERATIONS, shown in the attached Exhibit A.

Section 3. Determines that Rule 489 is effective at the time specified in the Rule.

Section 4. Directs Staff to forward Rule 489 and all necessary supporting documents to the California Air Resources Board for submittal to U.S. EPA as a revision to the California State Implementation Plan.

Section 5. Exhibit A is attached to and incorporated into this Resolution.

ON A MOTION by Director _____, seconded by Director _____, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Metropolitan Air Quality Management District on October 24, 2024, by the following vote:

Ayes:

Noes:

Abstain:

Absent:

ATTEST:

Clerk, Board of Directors
Sacramento Metropolitan Air Quality Management District

RESOLUTION NO. 2024 – XXXX

Adopted by the Sacramento Metropolitan Air Quality Management District
Board of Directors

RULE 490 – LIQUEFIED PETROLEUM GAS TRANSFER AND DISPENSING

BACKGROUND:

A. The Board of Directors (Board) of the Sacramento Metropolitan Air Quality Management District (District) is authorized by Sections 40001, 40702, and 41010 of the California Health and Safety Code (HSC) to adopt, amend or repeal rules and regulations [HSC Section 40727(b)(2)].

B. The SMAQMD is within an area designated nonattainment for the 2008 and 2015 8-hr ozone National Ambient Air Quality Standards.

C. The Board has determined that a need exists to adopt Rule 490 to fulfill the contingency measure requirements of Clean Air Act Sections 172(c)(9) and 182(c)(9) [HSC Section 40727(b)(1)].

D. The Board has determined that the meaning of Rule 490 can be easily understood by the persons affected by it [HSC Section 40727(b)(3)].

E. The Board has determined that Rule 490 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations [HSC Section 40727(b)(4)].

F. The Board has determined that Rule 490 does not duplicate any existing state or federal regulations [HSC Section 40727(b)(5)].

G. The Board has determined that Rule 490 implements the requirements of CAA Section 172(c)(9) and 182(c)(9), and HSC Sections 40150 and 40600 [HSC Section 40727(b)(6)].

H. The Board has considered a written analysis for Rule 490 in Staff's Statement of Reasons [HSC Section 40727.2].

I. The Board has maintained records of the rulemaking proceedings [HSC Section 40728].

J. The Board held a duly noticed public hearing on October 24, 2024, and considered public comments on Rule 490 [HSC Sections 40725 and 40726 and 40 CFR 51.102].

K. The Board has considered the socioeconomic impacts of Rule 490 in Staff's Statement of Reasons [HSC Section 40728.5].

L. The Board evaluated Rule 490 to determine whether it is exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for protection of the environment (Class 8 Categorical Exemption, §15308 State CEQA Guidelines) and as an action in which it can be seen with certainty that there is no possibility that the activity may have a significant adverse effect on the environment (§15061(b)(3), State CEQA Guidelines).

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

Section 1. The proposed Rule 490 is exempt from CEQA.

Section 2. Approves RULE 490 – LIQUEFIED PETROLEUM GAS TRANSFER AND DISPENSING, shown in the attached Exhibit A.

Section 3. Determines that Rule 490 is effective at the time specified in the Rule.

Section 4. Directs Staff to forward Rule 490 and all necessary supporting documents to the California Air Resources Board for submittal to U.S. EPA as a revision to the California State Implementation Plan.

Section 5. Exhibit A is attached to and incorporated into this Resolution.

ON A MOTION by Director _____, seconded by Director _____, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Metropolitan Air Quality Management District on October 24, 2024, by the following vote:

Ayes:

Noes:

Abstain:

Absent:

ATTEST:

Clerk, Board of Directors
Sacramento Metropolitan Air Quality Management District

SACRAMENTO FEDERAL OZONE NONATTAINMENT AREA
AIR QUALITY MANAGEMENT DISTRICTS

STATE IMPLEMENTATION PLAN REVISION FOR THE 2008 AND 2015 8-HOUR OZONE NATIONAL AMBIENT AIR QUALITY STANDARD FOR THE SACRAMENTO FEDERAL NONATTAINMENT AREA

Proposed Contingency Measures and Reasoned Justification

September 23, 2024

Prepared by: Marc Cooley
Associate Air Quality Engineer
Sacramento Metropolitan Air Quality Management District

Approved by: El Dorado County Air Quality Management District
Feather River Air Quality Management District
Placer County Air Pollution Control District
Sacramento Metropolitan Air Quality Management District
Yolo-Solano Air Quality Management District

TABLE OF CONTENTS

INTRODUCTION

The El Dorado County Air Quality Management District (EDCAQMD), Feather River Air Quality Management District (FRAQMD), Placer County Air Pollution Control District (PCAPCD), Sacramento Metropolitan Air Quality Management District (SMAQMD), and Yolo-Solano Air Quality Management District (YSAQMD) are local regulatory air quality agencies with the primary responsibility for meeting and maintaining federal air quality health standards through adopting and enforcing air quality areawide, indirect and stationary source programs, air monitoring and planning as well as for administering air quality improvement grant programs and for the Sacramento Federal Ozone Nonattainment Area (SFNA). The SFNA region includes Sacramento and Yolo counties, the western portions of El Dorado and Placer counties, the southern portion of Sutter County, and the northeastern portion of Solano County.

In 2008 and 2015, the U.S. Environmental Protection Agency (EPA) promulgated a National Ambient Air Quality Standards (NAAQS) for Ozone (O_3) at a maximum daily 8-hour average of 75 parts per billion (ppb) for the 2008 standard and a maximum daily 8-hour average of 70 ppb for the 2015 standard. For the 2008 O_3 NAAQS, the SFNA did not meet the standard and is classified as a “severe” nonattainment area. For the 2015 O_3 NAAQS, the SFNA did not meet the standard and is classified as “serious” nonattainment area for the 2015 NAAQS. However, the SFNA air districts have requested a voluntarily reclassification to “severe” because additional time is needed to meet the standard. EPA is expected to take action to reclassify the SFNA.

The federal Clean Air Act (CAA) requires areas that are classified as nonattainment to develop State Implementation Plans (SIPs) that describes how the SFNA will attain the 2008 and 2015 O_3 standard through strategies that achieve air quality improvements. One requirement of the SIP is to include contingency measures. This document describes the CAA’s requirements for contingency measures, the triggers, details of the contingency measures, and an infeasibility justification for nitrogen oxides (NOx) contingency measures. The CAA requires contingency measures to be implemented quickly if triggered when an area fails to make reasonable further progress (RFP) or attain the NAAQS by the attainment date. For the 2008 and 2015 O_3 NAAQS, the attainment dates are December 31, 2024, and August 3, 2033, respectively. Attainment of the 2008 and 2015 O_3 standards may be referenced by the attainment year, which is the last full O_3 season prior to the attainment date or years 2024 for the 2008 standard and 2032 for the 2015 standard.

The SFNA air districts have previously committed to adopting a contingency measure for architectural coatings in the 2015 O_3 NAAQS SIP. All SFNA air districts have adopted the architectural coatings contingency measure for both the 2008 and 2015 O_3 NAAQS. In addition to the already adopted SFNA contingency measures, the California Air Resources Board (CARB) adopted a California Smog Check Contingency Measure SIP revision[1] to help address the contingency measure requirements.

This document evaluates the additional need for contingency measures based on the requirements of EPA’s Draft contingency measure guidance published in March 2023[2] for both the 2008 and 2015 O_3 NAAQS.

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[1] *California Smog Check Contingency Measure State Implementation Plan Revision*. California Air Resources Board. October 23, 2023.

[2] 88 FR 17571. March 23, 2023.

BACKGROUND

Contingency Measures Requirements

Clean Air Act Sections 172 and 182[3] require contingency measures to be implemented quickly if triggered when an area fails to make RFP or attain the NAAQS by the attainment date. The CAA specifies that SIPs must provide for contingency measures, defined in section 172(c)(9) as "specific measures to be undertaken if the area fails to make reasonable further progress, or to attain the national primary ambient air quality standard by the attainment date…." The CAA is silent though on the specific level of emission reductions that must come from contingency measures.

Over the last few years, multiple court decisions by the United States Court of Appeals for the Ninth Circuit (Ninth Circuit) and in other parts of the country have effectively disallowed the SIP-approved approach, which CARB, local air districts, and the rest of the country have historically used to meet contingency measure requirements.

As of 1992, in the absence of specific requirements for the amount of emission reductions required, EPA conveyed that the contingency measures should, at a minimum, ensure that an appropriate level of emissions reduction progress continues to be made if attainment of RFP is not achieved and additional planning by the State is needed[4]. Further, EPA ozone guidance states that "contingency measures should represent one year's worth of progress amounting to reductions of 3 percent of the baseline emissions inventory for the nonattainment area". EPA has accepted contingency measures that equal less than one year's worth of RFP when the circumstances fit under "EPA's long-standing recommendation that states should consider 'the potential nature and extent of any attainment shortfall for the area' and that contingency measures 'should represent a portion of the actual emissions reductions necessary to bring about attainment in the area.'"

Historically, EPA allowed contingency measure requirements to be met via excess emission reductions from ongoing implementation of adopted emission reduction programs, a method that CARB and local air districts have used to meet contingency measure requirements, and EPA has approved it in the past. In 2016, in Bahr v. EPA (Bahr), the Ninth Circuit determined EPA erred in approving a contingency measure that relied on an already-implemented measure for a nonattainment area in Arizona, thereby rejecting EPA's longstanding interpretation of section 172(c)(9). EPA staff interpreted this decision to mean that contingency measures must include a future action triggered by a failure to attain or failure to make RFP. This decision was applicable to the states covered by the Ninth Circuit. In the rest of the country, EPA still allowed contingency measures using their pre-Bahr stance.

In January 2021, in Sierra Club v. Environmental Protection Agency, the United States Court of Appeals for the D.C. Circuit, ruled that already implemented measures do not qualify as contingency measures for the rest of the country (Sierra Club). In response to Bahr and as part of the 75 ppb 8-hour ozone SIPs due in 2016, CARB developed the statewide Enhanced Enforcement Contingency Measure (Enforcement Contingency Measure) as a part of the 2018 Updates to the California State Implementation Plan to address the need for a triggered action as

[3] 42 U.S.C. §7502 and §7511a
[4] 57 FR 74. pp. 13510 & 13512. April 16, 1992

a part of the contingency measure requirement. CARB worked closely with EPA regional staff in developing the contingency measure package that included the triggered Enforcement Contingency Measure, a district triggered measure and emission reductions from implementation of CARB's mobile source emissions program. However, as part of the San Joaquin Valley 2016 Ozone Plan for 2008 8-hour Ozone Standard SIP action, EPA wrote in their final approval that the Enforcement Contingency Measures did not satisfy requirements to be approved as a "standalone contingency measure" and approved it only as a "SIP strengthening" measure. EPA did approve the district triggered measure and the implementation of the mobile reductions along with a CARB emission reduction commitment as meeting the contingency measure requirement for this SIP.

Subsequently, the Association of Irritated Residents filed a lawsuit against EPA for their approval of various elements within the San Joaquin Valley 2016 Ozone Plan for 2008 8-hour Ozone Standard, including the contingency measure. The Ninth Circuit issued its decision in Association of Irritated Residents v. EPA (AIR) that EPA's approval of the contingency element was arbitrary and capricious and rejected the triggered contingency measure that achieves much less than one year's worth of RFP. Most importantly, the Ninth Circuit said that, in line with EPA's longstanding interpretation of what is required of a contingency measure and the purpose it serves, together with Bahr, all reductions needed to satisfy the CAA's contingency measure requirements need to come from the contingency measure itself and the amount of reductions needed for contingency should not be reduced by the fact of surplus emission reductions from ongoing programs absent EPA formally changing its historic stance on the amount of reductions required.

Considering more recent court decisions[5,6], EPA released a draft contingency measure guidance in March 2023. The guidance interprets the court decisions to mean that triggered contingency measures must achieve the entirety of the required one year's worth of emission reductions on their own. The draft guidance proposes a new method for how to calculate one year's worth of progress needed for contingency and provides new clarification on the reasoned justification that would be needed for measures to be approved with a lesser amount of reductions. The guidance effectively reduces the amount of VOC reductions needed but adds an amount of NOx reductions needed. This analysis is based on the draft guidance[7] published by EPA on March 23, 2023.

SFNA 2008 O_3 NAAQS SIP

The SFNA air districts adopted the Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan (2008 O_3 SIP) that address how the Sacramento region will attain the 2008 O_3 NAAQS. The 2008 O_3 SIP was submitted to CARB, and CARB approved and submitted it to EPA on December 18, 2017. Actions by EPA to approve or disapprove the 2008 O_3 SIP were delayed in part due to court decisions discussed previously. In collaboration with the SFNA air districts and other California air districts with nonattainment areas, CARB developed and adopted the 2018 Updates to the California State Implementation Plan (2018 SIP Update), to address the issues identified by the court findings.

A Final Rule was issued by the EPA in the Federal Register on October 22, 2021[8], approving all revisions to the SIP except for the contingency measures revision where EPA deferred final action

[5] Sierra Club v. Environmental Protection Agency, (D.C. Cir. 2021) 985 F.3d 1055.
[6] Association of Irritated Residents v. U.S. Environmental Protection Agency, (9th Cir. 2021) 10 F.4th 937
[7] *Draft: Guidance on the Preparation of State Implementation Plan Provisions That Address the Nonattainment Area Contingency Measure Requirements for Ozone and Particulate Matter*. U.S. Environmental Protection Agency. March 16, 2023
[8] 86 FR 58581. October 22, 2021.

due to a court decision on approving SIP contingency measures. On June 15, 2023, EPA disapproved the SFNA SIP contingency measures because the 2008 O_3 SIP did not include measures that would be triggered if the area fails to attain the NAAQS by the attainment date or make reasonable further progress[9]. EPA's disapproval started a sanctions clock, which required the SFNA air districts to correct the contingency measure deficiencies and obtain full SIP approval within 18 months (by January 17, 2025); otherwise, the emission reduction credit offset ratio will increase to 2:1. If no corrections are made within 6 months of the increased offset ratio sanction, EPA must withhold highway funds to the nonattainment area. In addition, EPA must promulgate a Federal Implementation Plan (FIP) within 24 months of EPA's disapproval if the contingency measure deficiencies are not corrected.

The SFNA air districts propose to address the contingency measure deficiencies by adopting this SIP revision and contingency measures detailed in this document and submitting it to EPA. If EPA approves this SIP revision and the adopted contingency measures, the sanctions clock will end, and EPA will no longer be required to promulgate a FIP for the SFNA.

SFNA 2015 O_3 NAAQS SIP

In Fall 2023, the SFNA air districts adopted the Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment & Reasonable Further Progress Plan. This plan was adopted by CARB on October 26, 2023, and forwarded to EPA for final review and approval[10]. In the plan, the SFNA air districts committed to amend their architectural coating rules to help meet the contingency measure requirements and to evaluate additional local control measures in accordance with EPA's guidance on contingency measures once the guidance is finalized. At the time of this document, the guidance has not been finalized but the SFNA will nonetheless need to evaluate contingency measures. This document evaluates the additional need for contingency measures based on the requirements of EPA's Draft contingency measure guidance.

ONE YEAR'S WORTH (OYW) OF PROGRESS

The contingency measure guidance specifies a calculation method for determining the necessary contingency measure emissions reductions for both VOC and NOx. The required reductions of VOC and NOx are referred to as "one year's worth (OYW) of progress." The guidance specifies the following calculation method to determine the OYW of progress:

$$\frac{(base\ year\ EI - attainment\ year\ EI\ )}{(attainment - base\ year)} \div base\ year\ EI\ \times attainment\ year\ EI = OYW\ of\ Progress$$

For the SFNA, Tables 1 and 2 identify SFNA's OYW of progress required for VOC and NOx for both the 2008 and 2015 O_3 NAAQS. The SIP emission inventory for the 2008 O_3 NAAQS used CARB's California Emissions Projection Analysis Model (CEPAM) 2016, where the emissions forecasts were projected from a 2011 base year, and the 2015 O_3 NAAQS used CEPAM 2019, where the emissions forecasts were projected from a 2017 base year.

[9] 88 FR 39179. June 15, 2023.
[10] California Air Resources Board. Letter from Steven S. Cliff, Executive Officer to Martha Guzman. November 17, 2023.

Table 1: OYW of Progress for the SFNA for 2008 O_3 NAAQS			
Pollutant	**Total SFNA 2008 SIP Inventory[11],[12] (tpd)**		**OYW of Progress (tpd)**
	2011	**2024**	**2024**
NOx	107.7	46.6	2.03
VOC	111.6	82.9	1.64

Table 2: OYW of Progress for the SFNA for 2015 O_3 NAAQS			
Pollutant	**Total SFNA 2015 SIP Inventory[13] (tpd)**		**OYW of Progress (tpd)**
	2017	**2032**	**2032**
NOx	70.6	34.2	1.18
VOC	96.6	79.9	0.92

VOC CONTINGENCY MEAUSURES FOR THE 2008 AND 2015 O_3 NAAQS

The SFNA air districts have identified the VOC contingency measures to meet the required OYW of progress for both the 2008 and 2015 O_3 NAAQS. The VOC contingency measure reductions are provided by the already adopted SFNA air districts' architectural coating rules and CARB's Smog Check contingency measure, and local commitments to adopt or amend rules for composting operations, liquid petroleum gas transfer and dispensing, and solvent cleaning. For the purposes of showing that the SFNA has the emission reductions to meet OYW of Progress, the estimated emission reductions will be calculated for the attainment years, 2024 for the 2008 O_3 NAAQS and 2032 for the 2015 O_3 NAAQS, even though the emission reductions from contingency measures, if triggered, will not be realized in those years. For the 2008 O_3 NAAQS, the 2024 emissions reductions are calculated based on the emission inventory from CEPAM2016, and for the 2015 O_3 NAAQS, the 2032 emissions reductions are based the emission inventory from CEPAM2019. The already adopted and proposed SFNA commitments for VOC contingency measures are:

[11] California Air Resources Board. *CEPAM: 2016 SIP - Standard Emission Tool, Emission Projections By Summary Category, Version 1.05 with External Adjustments, Sacramento Ozone Nonattainment Area Ozone, Base Year: 2012. Sacramento NAA Ozone Version 1.05. https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php.* Updated February 16, 2017.

[12] California Air Resources Board. 2018 Updates to the California State Implementation Plan. Adopted: October 25, 2018.

[13] California Air Resources Board. *CEPAM: 2019 SIP - Standard Emission Tool, Emission Projections By Summary Category, Version 1.04 with External Adjustments, Sacramento Ozone Nonattainment Area, Base Year: 2017. https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php.* Updated April 28, 2022.

Table 3: SFNA Commitments for Contingency Measures				
Contingency Measure by District	**Rule(s)**	**Estimated 2024 VOC Reductions (tpd)**	**Estimated 2032 VOC Reductions (tpd)**	**Adoption Date**
Architectural Coatings				
EDAQMD	215	0.002	0.003	Adopted July 16, 2024
FRAQMD	3.15	0.001	<0.001	Adopted June 3, 2024
PCAPCD	218	0.133	0.016	Adopted June 13, 2024
SMAQMD	442	0.279	0.092	Adopted July 25, 2024
YSAQMD	2.14	0.074	0.032	Adopted May 8, 2024
Composting				
SMAQMD	None	0.092	0.092	Anticipated: October 2024
YSAQMD	None	0.60	0.82	Anticipated: December 2024
Liquified Petroleum Gas Transfer and Dispensing				
SMAQMD	None	0.196	0.196	Anticipated: October 2024
Solvent Cleaning				
PCAPCD	216/240	0.302	0.420	Anticipated October 2024
Total SFNA VOC Reductions		1.679	1.672	
CARB Smog Check[14] VOC Reduction		0.037	0.015	Adopted October 26, 2023
Total SFNA VOC Commitment		1.716	1.687	
OYW for Progress for VOC		1.64	0.92	

Consistent with the draft contingency measure guidance, the adopted and committed measures meet the OYW of progress for VOC emission reductions in the SFNA, and no other VOC contingency measures need be considered. The already adopted contingency measures include each of SFNA District's architectural coatings rules and the CARB Smog Check Contingency Measure, that includes a NOx reduction for the SFNA, in addition to the VOC amounts detailed in Table 3. For more details of the NOx reduction of the CARB Smog Check Contingency Measure see "CARB's Analysis of Additional Contingency Measures" section. The commitments for composting, Liquified Petroleum Gas (LPG) transfer and dispensing and solvent cleaning contingency measures are new or modified rules that are scheduled to be adopted by the dates shown in Table 3.

Detailed evaluations of the SFNA VOC contingency measures are included in Appendix A.

JUSTIFICATION OF LESS THAN OYW OF PROGRESS FOR NOX REDUCTIONS

The already adopted and committed VOC contingency measure will meet the OYW of progress for VOC; however, the SFNA air districts have not identified enough feasible NOx contingency measures. EPA's draft guidance allows for providing less than OYW of progress as long as it is

[14] *California Smog Check Contingency Measure State Implementation Plan Revision*. California Air Resources Board. October 23, 2023. pp. 29-31.

supported by a reasoned justification[15]. The guidance provides nonattainment areas, such as the SFNA, that are seeking to satisfy the contingency measure requirement with less than OYW of progress, based on lack of feasible measures, to conduct and submit an “infeasibility justification.” The infeasibility justification needs to show that for any remaining infeasible measures, the air agency must document why it reached the conclusion that each measure is infeasible, including whether the conclusion is based on technological or economic infeasibility.

Table 4 shows the SFNA NOx planning emissions inventory for the attainment years of 2024 for the 2008 O_3 NAAQS and 2032 for the 2015 O_3 NAAQS. For each of the largest sources of NOx the SFNA air districts evaluated NOx measures for those categories.

[15] *Draft: Guidance on the Preparation of State Implementation Plan Provisions That Address the Nonattainment Area Contingency Measure Requirements for Ozone and Particulate Matter*. U.S. Environmental Protection Agency. March 16, 2023. pp.29-40

Table 4: SFNA NOx Planning Inventories

Source Category	2024 SFNA NOx Emissions (tpd)	% of 2024 SFNA NOx Inventory	2032 SFNA NOx Emissions (tpd)	% of 2032 SFNA NOx Inventory
010-ELECTRIC UTILITIES	**1.40**	3.01%	1.25	3.66%
020-COGENERATION	**0.01**	0.02%	0.01	0.03%
030-OIL AND GAS PRODUCTION (COMBUSTION)	**0.05**	0.10%	0.03	0.09%
050-MANUFACTURING AND INDUSTRIAL	**1.46**	3.13%	1.19	3.47%
052-FOOD AND AGRICULTURAL PROCESSING	**0.87**	1.87%	0.72	2.10%
060-SERVICE AND COMMERCIAL	**1.56**	3.34%	1.78	5.20%
099-OTHER (FUEL COMBUSTION)	**0.52**	1.12%	0.29	0.84%
110-SEWAGE TREATMENT	**0.00**	0.00%	0.00	0.01%
120-LANDFILLS	**0.04**	0.09%	0.05	0.16%
130-INCINERATORS	**0.02**	0.05%	0.05	0.15%
140-SOIL REMEDIATION	**0.00**	0.00%	0.00	0.00%
199-OTHER (WASTE DISPOSAL)	**0.00**	0.00%	0.00	0.01%
210-LAUNDERING	**0.00**	0.00%	0.00	0.00%
220-DEGREASING	**0.00**	0.00%	0.00	0.00%
230-COATINGS AND RELATED PROCESS SOLVENTS	**0.01**	0.03%	0.01	0.04%
240-PRINTING	**0.01**	0.01%	0.00	0.00%
250-ADHESIVES AND SEALANTS	**0.00**	0.00%	0.00	0.00%
299-OTHER (CLEANING AND SURFACE COATINGS)	**0.00**	0.00%	0.00	0.00%
310-OIL AND GAS PRODUCTION	**0.00**	0.00%	0.00	0.01%
320-PETROLEUM REFINING	**0.00**	0.00%	0.00	0.00%
330-PETROLEUM MARKETING	**0.01**	0.02%	0.02	0.04%
399-OTHER (PETROLEUM PRODUCTION AND MARKETING)	**0.00**	0.00%	0.00	0.00%
410-CHEMICAL	**0.17**	0.38%	0.08	0.23%
420-FOOD AND AGRICULTURE	**0.02**	0.04%	0.02	0.04%
430-MINERAL PROCESSES	**0.49**	1.05%	0.40	1.17%
440-METAL PROCESSES	**0.01**	0.02%	0.01	0.03%
450-WOOD AND PAPER	**0.05**	0.10%	0.04	0.13%
470-ELECTRONICS	**0.00**	0.00%	0.00	0.00%
499-OTHER (INDUSTRIAL PROCESSES)	**0.03**	0.07%	0.03	0.08%
510-CONSUMER PRODUCTS	**0.00**	0.00%	0.00	0.00%
520-ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVE	**0.00**	0.00%	0.00	0.00%
530-PESTICIDES/FERTILIZERS	**0.00**	0.00%	0.00	0.00%
540-ASPHALT PAVING / ROOFING	**0.00**	0.00%	0.00	0.00%
610-RESIDENTIAL FUEL COMBUSTION	**1.85**	3.97%	1.82	5.32%
620-FARMING OPERATIONS	**0.00**	0.00%	0.00	0.00%
630-CONSTRUCTION AND DEMOLITION	**0.00**	0.00%	0.00	0.00%
640-PAVED ROAD DUST	**0.00**	0.00%	0.00	0.00%
645-UNPAVED ROAD DUST	**0.00**	0.00%	0.00	0.00%
650-FUGITIVE WINDBLOWN DUST	**0.00**	0.00%	0.00	0.00%
660-FIRES	**0.01**	0.03%	0.02	0.05%
670-MANAGED BURNING AND DISPOSAL	**0.29**	0.62%	0.32	0.94%
690-COOKING	**0.00**	0.00%	0.00	0.00%
699-OTHER (MISCELLANEOUS PROCESSES)	**0.00**	0.00%	0.00	0.00%
710 through 890 Mobile Source Categories	**37.68**	80.93%	26.04	76.22%
Grand Total	**46.55**	100.00%	**34.16**	100.00%

The significant source categories of NOx emissions in the SFNA are:

1. Mobile sources;
2. Residential fuel combustion (space and water heating, cooking, and wood burning fireplaces and stoves);
3. Electric utilities (turbines, internal combustion (IC) engines, and biomass boilers);
4. Food and agricultural processing (IC engines and boilers);
5. Manufacturing and industrial (boilers, dryers, ovens, space heaters, IC engines, and process heaters);
6. Service and commercial (boilers, dryers, ovens, space heaters and IC engines);
7. Mineral processing operations (ovens and asphaltic concrete dryers); and
8. Chemical manufacturing of plastics and synthetic organic fibers (ovens, dryers, and boilers);
9. Managed burning and disposal;
10. Oil and gas production (boilers and IC engines);
11. Waste gas flares – Landfill, Sewage Treatment, and Incineration;
12. Wood and paper emissions (oven, dryer, process heaters); and
13. Other fuel combustion.

The largest source category of NOx in the SFNA is mobile sources, which is approximately 75 to 80% of the NOx emissions inventory. The SFNA air districts do not have the authority to reduce emissions from this category of emissions other than through incentive programs to encourage the use of cleaner technology. Consistent with EPA's conclusion for the San Joaquin Valley, the overwhelming amount of mobile source emissions for NOx significantly limits the ability for the SFNA to achieve OYW of NOx reductions from contingency measures[16]. Mobile sources generally fall under the jurisdiction of the federal government to establish controls, unless the state qualifies for and has obtained a waiver. California has obtained a waiver from the federal over some mobile sources, and CARB has evaluated opportunities for contingency measures in it program as part of California Smog Check Contingency Measure SIP revision[17]. Besides the Smog Check contingency measures, CARB was unable to identify any other opportunities for contingency measures (see "CARB's Analysis of Additional Contingency Measures" section). Further action is needed by EPA to adequately address the emissions from mobile sources.

Except for mobile sources, the other sources are stationary sources, and the NOx emission are from the combustion processes, such as internal combustion engines, boilers, water heaters, space heaters, furnaces, dryers, turbines, flares, fireplaces and woodstoves. Local air districts may adopt rules and regulations for these stationary sources. Each control measure for these stationary sources and its infeasibility as a contingency measure are summarized below in the "Infeasibility Justification of Local NOx Control Measures" section and discussed in Appendix B.

[16] "EPA Source Category and Control Measure Assessment and Reasoned Justification Technical Support Document. Proposed Contingency Measures Federal Implementation Plan for the Fine Particulate Matter Standards for San Joaquin Valley, California." U.S. Environmental Protection Agency, Region IX. p. 8. July 2023.

[17] *California Smog Check Contingency Measure State Implementation Plan Revision*. California Air Resources Board. October 23, 2023.

CARB's Analysis of Additional Contingency Measures

In CARB's California Smog Check Contingency Measure SIP Revision released on September 15, 2023[18], CARB evaluated potential options for contingency measures within each of CARB's regulations consistent with EPA's draft contingency measure guidance if any additional contingency measures were feasible statewide. CARB identified the difficulties of contingency measures to provide large amount of reductions within two years of a triggering event for regulations that rely on accelerated turnover of older engines/trucks such as the In-Use Locomotive Regulation, advanced Clean Fleets, and Transportation Refrigeration Unit II. CARB concluded that due to the need for buildout of potential infrastructure upgrades and market-readiness of new equipment options are infeasible for contingency measure reductions.

Additionally, CARB's commitment to driving sources of air pollution in California to zero-emissions everywhere feasible as expeditiously as possible limits possibilities of contingency measures. One part of CARB's zero-emissions commitment is the recent rulemaking that will ban the sale of new gas furnace and water heaters in California starting in 2030 making contingency measure reductions in these categories infeasible.

At this time, CARB only identified the California Smog Check Contingency Measure. CARB did not identify any other feasible contingency measures. CARB's Smog Check Contingency Measure includes a NOx reduction of 0.077 tpd in 2024, and 0.047 tpd in 2032 for the SFNA. The Smog Check Contingency Measure was adopted on October 26, 2023.

Infeasibility of Transportation Control Measures

Vehicular emissions can be reduced through implementation of Transportation Control Measures (TCMs), which are strategies that reduce transportation-related air pollution and fuel use by reducing vehicle miles traveled and improving roadway operations[19]. TCMs may reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion. In the SFNA, SACOG is the primary Metropolitan Planning Organization (MPO) for the greater Sacramento region (includes Sacramento, Yolo, Placer, El Dorado, Sutter, and Yuba Counties). SACOG provides transportation planning and funding for the region and has worked with local governments and the SFNA air districts to develop and implement TCMs. For example, one of the TCMs developed for the previous attainment plans for the SFNA is the Spare The Air program, a program that has achieved a high level of public awareness.

TCMs are not feasible contingency measures because TCMs have to be developed through the area's transportation planning process, which can take a significant amount of time and are funded to a large degree by the Federal Highway Administration and the Federal Transit Administration based on transportation improvement programs developed by the MPOs in the area. Therefore, given the time it would take to advance these projects through the planning and funding processes, TCMs are not a feasible contingency measure.

[18] *California Smog Check Contingency Measure State Implementation Plan Revision*. California Air Resources Board. October 23, 2023. pp. 7-12.

[19] "Transportation Control Measures – Information Document for Developing and Implementing Emissions Reductions Programs." U.S. Environmental Protection Agency. EPA-430-09-040. March 2011.

Infeasibility Justification of Local NOx Control Measures

The SFNA air districts evaluated local NOx control measures for each NOx emissions category for feasibility. The summary of the evaluations and the reasons for infeasibility are shown in Table 5; detailed infeasibility justifications for each NOx measure are included in Appendix B. The identified NOx control measures are disqualified as contingency measures due to:

1) The infeasibility of achieving NOx reductions within one or two years of a triggering event. For any permitted source that would be subject to control measures requiring equipment replacement or retrofit, the time to apply for and obtain permits (permitting within in the SFNA requires both a pre-construction and operating (post-construction) permits), perform engineering/design evaluation, and purchase, install, and test replaced or retrofitted equipment in less than 2 years of a triggering event to obtain meaningful reductions within 2 years is not feasible. For point-of-sale measures, the required turnover of existing units makes reductions negligible within 2 years of a triggering event; and/or
2) Control measures are already committed as part of the State SIP Strategy;
3) Control measures are not cost-effective; and/or
4) No other most stringent controls were identified.

Table 5: Evaluated NOx Contingency Measures

Control Measure	Opportunity for Reductions	Infeasibility Reasons
Asphaltic Concrete	Identified lower NOx emission limits identified in SCAQMD Rule 1147.1 adopted in 2021.	Infeasible of achieving reductions within the contingency measure time period and not cost effective within the SFNA.
Boilers	Identified lower limits in SCAQMD Rule 1146.1 and San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) Rules 4306 and 4320.	Infeasible of achieving reductions within the contingency measure time period and not cost effective within the SFNA.
Biomass Boilers	No other more stringent controls were identified	No other more stringent controls were identified
Furnaces (Residential)	Identified “point of sale” NOx limits and potential reductions from requiring electrification of new units.	Infeasible of achieving reductions due to point-of-sale mechanism for this category. The required turnover of existing units makes reductions negligible within 2 years of a triggering event. In addition, CARB has committed as part of the 2022 State SIP Strategy to adopt by 2025 a zero-emission standard for new gas furnace in California, disqualifying this measure as a contingency measure.
IC Engines	Identified lower limits in SCAQMD Rule 1110.2.	Infeasible of achieving reductions within the contingency measure time period and not cost effective within the SFNA.

Managed Burning and Disposal	Identified agricultural crop burn ban in SJVAPCD open burning rule, Rule 4103.	Infeasible of achieving reductions due to high costs to implement similar burn ban.
Miscellaneous Combustion	Identified lower limits in SCAQMD Rule 1147.	Infeasible of achieving reductions within the contingency measure time period and not cost effective within the SFNA.
Water Heaters (Residential) – Less than 1 mmBtu/hr	Identified lower limits in BAAQMD, which recently adopted zero emission regulations for furnaces and water heaters starting in 2027 for water heaters and 2029 for space heaters.	Infeasible of achieving reductions within the contingency measure time period due to the point-of-sale mechanism for this category. The required turnover of existing units makes reductions negligible within 2 years of a triggering event. In addition, CARB has committed as part of the 2022 State SIP Strategy to adopt by 2025 a zero-emission standard for new gas water heater in California, disqualifying this measure as a contingency measure.
Turbines	Identified more stringent limits identified in SCAQMD and SJVUAPCD.	Infeasible of achieving reductions within the contingency measure time period.
Waste Gas Flares	Identified controls consistent with SJVUAPCD Rule 4311 to reduce emissions from flaring operations.	Infeasible of achieving reductions within the contingency measure time period and not cost effective within the SFNA.

PUBLIC OUTREACH/COMMENTS

The districts of the SFNA held a public workshop on September 18, 2024, to discuss the proposed SIP revision for the 2008 and 2015 O_3 NAAQS. No comments were received at the workshop. A notice for the workshop was sent by e-mail to interested parties, including the affected sources and all those who have requested planning and rulemaking notices, and published on the air districts' website. In addition, each contingency measure will conduct a separate public workshop to discuss specific changes in the measure.

ENVIRONMENTAL REVIEW

In this SIP revision, the District is not proposing to adopt any changes to air district rules. Staff has determined that the adoption of this Contingency Measure Analysis SIP revision is exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for the protection of the environment (Class 8 Categorical Exemption, Section 15308, State CEQA Guidelines) and because it can be seen with certainty that there is no possibility that the activity in question may have a significant adverse effect on the environment (Section 15061(b)(3), State CEQA Guidelines).

CONCLUSION

Staff is proposing to submit for SIP approval the contingency measure analysis and the contingency measures as specified in Table 3 to satisfy the contingency measure requirements for the 2008 and 2015 O_3 NAAQS. This analysis also demonstrates the lack of achievable NOx contingency measures consistent with the infeasibility analysis allowed by EPA's Draft Contingency Measure Guidance.

REFERENCES

California Air Resources Board. *California Smog Check Contingency Measure State Implementation Plan Revision.* Sacramento, CA. September 15, 2023.

California Air Resources Board*. CEPAM: 2016 SIP – Standard Emission Tool, Emission Projections By Summary Category, Base Year: 2012. <https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php>.* Sacramento: California Air Resources Board. Updated February 16, 2017.

California Air Resources Board*. CEPAM: 2019 SIP – Standard Emission Tool, Emission Projections By Summary Category, Base Year: 2017. <https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php>.* Sacramento: California Air Resources Board. Updated April 28, 2022.

Draft Guidance on the Preparation of State Implementation Plan Provisions That Address the Nonattainment Area Contingency Measure Requirements for Ozone and Particulate Matter, Federal Register 88:56 (March 23, 2023) p. 17571.

"Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area State Implementation Plan Requirements", Federal Register 83:234 (December 6, 2018) p. 62998.

U.S. Environmental Protection Agency, Region IX. *EPA Proposed Contingency Measures Technical Support Document. Proposed Contingency Measures Federal Implementation Plan for the Fine Particulate Matter Standards for San Joaquin Valley, California.* San Fransisco, CA. July 23.

U.S. Environmental Protection Agency. *Transportation Control Measures – Information Document for Developing and Implementing Emissions Reductions Programs.* EPA-430-09-0404. March 2011.

APPENDIX A
SFNA COMMITMENTS FOR VOC CONTINGENCY MEASURES

Based on EPA's Draft Contingency Measure Guidance, the SFNA air districts has identified VOC reductions from feasible contingency measures in the SFNA to meet OYW of Progress for VOC for both the 2008 and 2015 O_3 NAAQS. The VOC contingency measures are shown in the table below. Further discussion is provided below.

Table A-1: SFNA Commitments for Contingency Measures

Contingency Measure by District	Rule(s)	Estimated 2024 VOC Reductions (tpd)	Estimated 2032 VOC Reductions (tpd)	Adoption Date
Architectural Coatings				
EDAQMD	215	0.027	0.003	Adopted July 16, 2024
FRAQMD	3.15	0.001	<0.001	Adopted June 3, 2024
PCAPCD	218	0.133	0.016	Adopted June 13, 2024
SMAQMD	442	0.279	0.092	Adopted July 25, 2024
YSAQMD	2.14	0.074	0.032	Adopted May 8, 2024
Composting				
SMAQMD	None	0.083	0.083	Anticipated: October 2024
YSAQMD	None	0.60	0.82	Anticipated: October 2024
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SMAQMD	None	0.196	0.196	Anticipated: October 2024
Solvent Cleaning				
PCAPCD	216/240	0.302	0.420	Anticipated: October 2024
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Total SFNA VOC Reduction		1.719	1.687	
OYW of VOC		1.64	0.92	

Architectural Coatings (Adopted by All Air District)

Architectural coatings include interior and exterior house coatings, stains, industrial maintenance coatings, concrete/masonry sealers, traffic marking coatings, and many other coating products. Architectural coatings are typically applied at industrial, commercial, and residential facilities by painting professionals and residential consumers. The air district rules for architectural coatings establish maximum VOC content categories for specific categories of architectural coatings and prohibits the application of coatings that exceed the VOC limits.

This adopted control measure, based on the 2019 California Air Resources Board Suggested Control Measure (SCM), lowered the VOC limits for some architectural coatings, improved definitions for many categories, established new VOC content limits for colorants, and removed some coating categories no longer relevant. This contingency measure has already been adopted by all air districts of the SFNA.

[20] Ibid. pp. 29-31.

Each architectural coating rule in the SFNA includes provisions that, if triggered, would automatically establish the more stringent requirements, consistent with the 2019 SCM. The contingency measure trigger date is the effective date of a final EPA rule finding that the SFNA fails to meet reasonable further progress in a milestone year or attain the standard by the attainment date of the 2008 or 2015 ozone NAAQS.

Composting Operations (SMAQMD and YSAQMD)

Composting is a biological process where organic material is decomposed by microorganisms under controlled conditions in the presence of oxygen to produce a compost material that can be used to reintroduce nutrients into the soil. Composting is a three-stage process that begins as soon as appropriate materials are combined and piled together. After two to four months of composting, the material becomes finished compost. The initial stage of the process is referred to as active composting, followed by curing or finishing, and finally storage and/or processing of composted products. Emissions during the first 15 days of the active phase period account for a majority (87%) of the total integrated VOC emissions[21]. Two composting methods are used: static pile composting and turned windrow composting.

Static pile composting is characterized by infrequent turning, which is similar to backyard composting but on a larger scale. The material is placed into piles, where it decomposes over an extended period of time with little or no mixing during the composting process. Therefore, it is crucial to construct the pile to the appropriate size, with the material being thoroughly blended and having a moisture content and porosity to allow adequate aeration through the composting process.

The predominant method of greenwaste composting is the turned windrow composting, where materials are moved with a front-end loader into long piles called windrows. Aeration is achieved both by natural advection and mechanically turning the piles with a front-end loader or a windrow turner. Temperature, moisture content and oxygen concentration are maintained to optimize and hasten decomposition.

Currently, no district in the SFNA has a rule covering this source category. The proposed composting contingency measures in SMAQMD and YSAQMD will be new rules that include automatic contingency measure triggering mechanisms.

Potential controls

This contingency measure will regulate emissions of volatile organic compounds (VOC) from new and existing composting operations. The contingency measure requirements will require best management practices for composting facilities, consistent with SCAQMD Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations. The best management practices include covering (with screened or unscreened finished compost) on each active phase compost pile within 24 hours of formation, the application of water as necessary to the top of the compost pile within six hours prior to turning (such that the top half of the pile is wet to a depth of three inches), or allows use of an alternative mitigation measure that achieves emissions reductions of at least 40 percent by weight of VOC emissions for combined cover and water application (including measures such as enclosures, aerated static piles, or other emission control devices). Under the contingency measure requirements, two composting facilities

[21] SCAQMD. “Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations.” July 2011. p. 9.

in the SFNA (one located in the SMAQMD and one located in the YSAQMD) would be subject to this contingency measure requirements.

Composting Emissions Inventory

EIC codes	District	Description	VOC Inventory for Composting Contingency Measure (tpd)	
			2024	2032
330-319-0120-0000	SMAQMD	COMPOSTING	0.252	0.251
199-190-0010-0000 410-436-5800-0000	YSAQMD	COMPOSTING	4.48*	5.59*
		Total	4.73	5.84

* YSAQMD has two permitted composting facilities.

Composting Emission Reductions

EIC codes	District	Description	VOC Reduction for Composting Contingency Measure (tpd)	
			2024	2032
330-319-0120-0000	SMAQMD	COMPOSTING	0.083	0.083
199-190-0010-0000 410-436-5800-0000	YSAQMD	COMPOSTING	0.6**	0.82**
		Total	0.683	0.903

**One permitted facility will be subject to this contingency control measure. The other permitted facility has recently moved their operation and is already subject to requirements more stringent than the requirements specified in this control measure.

Feasibility

The SCAQMD amendments to Rule 1133.1 & 1133.3 estimated a cost-effectiveness of $1,340 per ton of VOC reduction ($0.67 per pound of VOC reduced). To adjust this to 2031 dollars, the cost-effectiveness is $2,158 per ton of VOC reduced ($1.08 per pound of VOC reduced).

The contingency measure is cost-effective and feasible within the contingency measure time period as the controls are based on best management practices and do not require equipment changes.

Liquified Petroleum Gas (LPG) Transfer and Dispensing (SMAQMD)

LPG consists of propane, propylene, butane, and butylene and is used in numerous applications as fuel for automobiles, barbeques, engines, forklifts, space heaters, trucks, agricultural and industrial equipment, and in chemical processing operations. LPG is a colorless, odorless, and non-toxic gas that is compressed and stored as a liquid. LPG is about 1.5 times heavier than air in the vapor state and is

considered a volatile organic compound (VOC). LPG is commonly referred to as propane when used for domestic heating. LPG is produced during the production and processing of natural gas and crude oil and is stored as a liquid under moderate pressure. LPG is transported to multiple destinations through a series of transfer operations between storage facilities, rail cars, tanker trucks/trailers, bobtails and dispensing into tanks and cylinders. Fugitive emissions are released into the atmosphere during the LPG transfer and dispensing operations.

After LPG is produced, it is transported to multiple destinations through a series of storage facilities, rail cars, tank trucks, bobtails, and various size cylinders. There are three sources of fugitive emissions during each LPG transfer or dispensing event; 1) leaks from the equipment used to transfer the LPG, 2) entrapped liquid and vapor in the connector housings that is released to the atmosphere upon disconnection, and 3) liquid and vapor released from the open fixed liquid level gauge (FLLG) used to vent the tank and prevent overfilling.

Currently, no district in the SFNA has a rule covering this source category.

Potential controls

This contingency measure is based on adopting the requirements of South Coast AQMD Rule 1177 – Liquefied Petroleum Gas Transfer and Dispensing. Identical requirements are included in Ventura County APCD Rule 74.33. The contingency measure will reduce emissions from LPG through two methods: decreasing the size of the orifice on the fixed liquid level gauge (FLLG), which is opened during the filling of LPG cylinders, and by using low emission connectors that reduce the amount of LPG entrapped in the connector housing. Using a FLLG with a smaller orifice reduces the fugitive emissions by about 50%, while using low-emission connectors reduces the fugitive emissions by varying amounts, depending on the type of LPG transfer and size of the connectors.

LPG Transfer and Dispensing Emissions Inventory

EIC codes	Description	VOC Inventory for Control Measures (tpd)	
		2024	2032
330-319-0120-0000	LPG TRANSFER AND DISPENSING LOSSES	0.5693	0.5693
	Total	0.5693	0.5693

LPG Transfer and Dispensing Emissions Reductions

EIC codes	Description	VOC Inventory for Control Measures (tpd)	
		2024	2032
330-319-0120-0000	LPG TRANSFER AND DISPENSING LOSSES	0.196	0.196
	Total	0.196	0.196

Feasibility

The contingency measure is cost-effective and feasible within the contingency measure time period as the controls are based on best management practices and do not require equipment changes. Both SCAQMD and VCAPCD implemented the rule within one year (SCAQMD effective date was one year and VCAPCD effective date was less than six months).

Solvent Cleaning (PCAPCD)

Solvents are used in many cleaning operations including cleaning of products during manufacturing processes; cleaning of surfaces prior to application of coatings, adhesives, sealants, or inks; cleanup of application equipment; cleaning for repair and maintenance; and cleaning of tools and work surfaces. Cleaning may be performed using degreasers, or outside degreasers using wipe cleaning or other means. VOCs are emitted from the evaporation of organic solvents.

PCAPCD Rule 240, Surface Preparation and Cleanup, reduces emissions from cleaning operations from hand-wiping type cleaning and degreasing operations. Currently, Rule 240 requires that solvents used in most cleaning applications contain 50 g/l or less of VOC, with higher limits for special operations such as cleaning of electrical/electronic components (100 g/l) and medical devices (800 g/l). This VOC limit applies on the surface prep and cleanup activities that are not regulated by other existing district VOC rules. For example, metal parts and products, wood coating operations, automotive refinishing, and etc. all currently have a lower VOC limit (25 g/l) for surface preparation and cleanup.

PCAPCD Rule 216, Organic Solvent Cleaning and Degreasing Operations, reduces emissions from degreasers. Rule 216 requires cold cleaners and vapor degreases to meet specific design requirements. Currently, Rule 216 requires non-vapor degreasers use solvents with a VOC content of 50 grams per liter or less.

Potential controls

The following rules were reviewed and compared to PCAPCD's Rule 240 and 216:

- SMAQMD Rule 466 and 454
- SCAQMD Rules 1122 and 1171
- SJVUPACD Rules 4661, 4662, and 4663
- BAAQMD Rule 8-4
- VCAPCD Rules 74.6 and 74.6.1
- SDAPCD Rules 67.6.1 and 67.6.2

The rules referenced above set a VOC limit for general wipe cleaning and degreasing at 25 g/l. The contingency measure will implement a 25 g/l for general wipe cleaning and degreasing in PCACPD Rules 216 and 240.

Emission Inventory

The following table summarizes the VOC emissions from related EIC categories subject to PCAPCD Rule 216 and 240 requirements for 2024 and 2032 for the 2008 and 2015 O_3 NAAQS, respectively:

EIC Category	Description	VOC Inventory for Control Measure (tpd)	
		2024	2032
220- 204- 0500- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – PETROLEUM NAPTHA	0.2641	0.2824
220- 204- 3008- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – ACETONE	0.0049	0.0000
220- 204- 3022- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) ALCOHOLS	0.0338	0.0349
220- 204- 3083- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – CFC'S	0.0045	0.0046
220- 204- 3176- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – GLYCOL ETHERS	0.0029	0.0030
220- 204- 3204- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – KETONES	0.0005	0.0006
220- 204- 3246- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) METHYLENE DICHLORIDE	0.0000	0.0000
220- 204- 3333- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – TERPENES	0.0151	0.0156
220- 204- 3339- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – TOLUENE/XYLENE	0.0012	0.0012
220- 204- 3344- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – TCA	0.0000	0.0000
220- 204- 8106- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – BLENDS	0.1030	0.1099
220- 206- 3083- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – CFC'S	0.0019	0.0019
220- 206- 3107- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – DICHLOROFLUOROETHANE	0.0002	0.0003
220- 206- 3301- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – PERFLUOROCARBONS	0.0006	0.0000
220- 206- 3344- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – TRICHLOROETHANE	0.0000	0.0000
220- 208- 0500- 0000	208-HANDWIPING – PETROLEUM NAPTHA	0.0754	0.0806
220- 208- 3022- 0000	208-HANDWIPING – ALCOHOLS	0.0711	0.0734
220- 208- 3083- 0000	208-HANDWIPING – CFC'S	0.0005	0.0006
220- 208- 3176- 0000	208-HANDWIPING – GLYCOL ETHERS	0.0152	0.0156
220- 208- 3204- 0000	208-HANDWIPING – KETONES	0.0538	0.0556
220- 208- 3246- 0000	208-HANDWIPING – METHYLENE CHLORIDE	0.0000	0.0000
220- 208- 3339- 0000	208-HANDWIPING – TOLUENE/XYLENE	0.0140	0.0144
220- 208- 3344- 0000	208-HANDWIPING – 1,1,1, TRICHLOROEHTANE	0.0000	0.0000
220- 208- 8104- 0000	208-HANDWIPING – PURE UNSPECIFIED	0.0108	0.0112
220- 208- 8106- 0000	208-HANDWIPING – DEGREASING SOLVENTS – BLENDS	0.0335	0.0350
230- 240- 8300- 0000	240-THINNING AND CLEANUP SOLVENT USES – THINNING & CLEANUP SOLVENTS – COATINGS UNSPECIFIED	0.0144	0.0294
240- 995- 8000- 0000	995-OTHER – SOLVENTS (UNSPECIFIED)	0.1450	0.1304
520- 522- 8310- 0000	522-THINNING AND CLEANUP SOLVENTS – ADDITIVES	0.0047	0.0055
520- 522- 8350- 0000	522-THINNING AND CLEANUP SOLVENTS – CLEANUP SOLVENTS (UNSPECIFIED	0.1259	0.1439
	Total	0.997	1.0501

Emission Reductions

Lowering the VOC emission limit from 50 g/l to 25 g/l in both Rule 216 and 240 consistent with the other local air district's rules will produce an approximate 50% reduction in VOC's for the EIC categories listed below.

EIC Category	Description	VOC/ROG Emission Reductions for Control Measure (tpd)	
		2024	2032
220- 204- 0500- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – PETROLEUM NAPTHA	0.1056	0.1129
220- 204- 3008- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – ACETONE	0.0020	0.0000
220- 204- 3022- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) ALCOHOLS	0.0135	0.0140
220- 204- 3083- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – CFC'S	0.0018	0.0018
220- 204- 3176- 0000	COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – GLYCOL ETHERS	0.0012	0.0012
220- 204- 3204- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – KETONES	0.0002	0.0002
220- 204- 3246- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) METHYLENE DICHLORIDE	0.0000	0.0000
220- 204- 3333- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – TERPENES	0.0060	0.0062
220- 204- 3339- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – TOLUENE/XYLENE	0.0005	0.0005
220- 204- 3344- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – TCA	0.0000	0.0000
220- 204- 8106- 0000	204-COLD CLEANING (BATCH, CONVEYOR, SPRAY GUN) – BLENDS	0.0412	0.0440
220- 206- 3083- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – CFC'S	0.0019	0.0007
220- 206- 3107- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – DICHLOROFLUOROETHANE	0.0002	0.0001
220- 206- 3301- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – PERFLUOROCARBONS	0.0006	0.0000
220- 206- 3344- 0000	206-VAPOR DEGREASING (BATCH, CONVEYOR) – TRICHLOROETHANE	0.0000	0.0000
220- 208- 0500- 0000	208-HANDWIPING – PETROLEUM NAPTHA	0.0000	0.0323
220- 208- 3022- 0000	208-HANDWIPING – ALCOHOLS	0.0000	0.0294
220- 208- 3083- 0000	208-HANDWIPING – CFC'S	0.0000	0.0002
220- 208- 3176- 0000	208-HANDWIPING – GLYCOL ETHERS	0.0000	0.0063
220- 208- 3204- 0000	208-HANDWIPING – KETONES	0.0000	0.0222
220- 208- 3246- 0000	208-HANDWIPING – METHYLENE CHLORIDE	0.0000	0.0000
220- 208- 3339- 0000	208-HANDWIPING – TOLUENE/XYLENE	0.0000	0.0058
220- 208- 3344- 0000	208-HANDWIPING – 1,1,1, TRICHLOROEHTANE	0.0000	0.0000
220- 208- 8104- 0000	208-HANDWIPING – PURE UNSPECIFIED	0.0000	0.0045

EIC Category	Description	VOC/ROG Emission Reductions for Control Measure (tpd)	
		2024	2032
220- 208- 8106- 0000	208-HANDWIPING – DEGREASING SOLVENTS – BLENDS	0.0134	0.0140
230- 240- 8300- 0000	240-THINNING AND CLEANUP SOLVENT USES – THINNING & CLEANUP SOLVENTS – COATINGS UNSPECIFIED	0.0058	0.0118
240- 995- 8000- 0000	995-OTHER – SOLVENTS (UNSPECIFIED)	0.0580	0.0522
520- 522- 8310- 0000	522-THINNING AND CLEANUP SOLVENTS – ADDITIVES	0.0000	0.0022
520- 522- 8350- 0000	522-THINNING AND CLEANUP SOLVENTS – CLEANUP SOLVENTS (UNSPECIFIED	0.0504	0.0576
	Total	0.3022	0.4200

Feasibility

The contingency measure is technically feasible and cost-effective. Manufacturers are currently required to meet the solvent coating limit proposed in this control measure for several other major air districts within the State. Given that such solvents are already available in the market, the cost-effectiveness associated with this control measure is assumed $0/ton.

California Smog Check Contingency Measure (Adopted by CARB)

On October 26, 2023, CARB adopted the California Smog Check Contingency Measure State Implementation Plan Revision and transmitted it to EPA on November 13, 2023. The California Smog Check Contingency Measure SIP Revision addresses SIP contingency measure requirements of the federal CAA for certain areas designated as nonattainment of the NAAQS within the State, including the SFNA.

Several exemptions are provided by the California Smog Check program. In 2017, the California Health and Safety code was amended to exempt vehicles up to eight model years old rather than six model years old. To reduce emissions, California will eliminate this exemption in areas of the state that are nonattainment, including the SFNA, when triggered as a contingency measure.

The contingency measure is technically feasible and cost-effective and has already been adopted by CARB.

APPENDIX B
INFEASIBILITY OF NOX CONTINGENCY MEASURES

Based on EPA's Draft Contingency Measure Guidance, there are no achievable NOx reductions from feasible local contingency measures in the SFNA to meet the OYW of Progress for NOx. A small amount of NOx contingency measure reductions will come from the CARB Smog Check Program but the SFNA air districts have not identified any specific NOx measures. No measures were identified due to one or more of the following reasons: meaningful emission reductions cannot be achieved within two years of the triggering event, no more stringent requirements or more stringent requirements already committed by the state, and/or high cost effectiveness. Cost effectiveness for the analyzed measures were calculated to 2031 dollars.

The following SFNA source categories, which were derived from the SFNA emission inventory categories, were evaluated to determine if there were feasible contingency measures:

- Asphaltic Concrete
- Boilers
- Biomass Boilers
- Furnaces (Residential)
- Internal Combustion Engines
- Managed Burning and Disposal
- Miscellaneous Combustion
- Water Heaters (Residential)
- Turbines
- Waste Gas Flares

Asphaltic Concrete

Asphaltic concrete, or hot-mix pavement material, is produced in both continuous and batch plants; some of the latter are portable. The process involves heating aggregate in a rotary dryer to approximately 300 °F and mixing it with melted asphalt cement refined from petroleum. This measure targets NOx emissions from the burners used to heat the dryer.

Relevant Emission Inventory

The emissions inventory associated with asphaltic concrete operations is shown in the table below:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
EDCAQMD	None	N/A	N/A	N/A
FRAQMD	None	N/A	N/A	N/A
PCAPCD	430-424-7006-0000	Asphaltic Concrete Production	0.076	0.065
SMAQMD	430-424-7006-0000	Asphaltic Concrete Production	0.061	0.035
YSAQMD	430-424-7006-0000	Asphaltic Concrete Production	0.093	0.079

Potential controls

SCAQMD Rule 1147, SJVUAPCD Rule 4309 and Ventura County Air Pollution Control District (VCAPCD) Rule 74.34, require asphalt manufacturing operations meet 40 ppm NOx @ 3% O_2. In 2021, SCAQMD adopted Rule 1147.1, NOx Reductions from Aggregate Dryers, that requires asphaltic concrete dryers to meet 30 ppm NOx @ 3% O_2. The more stringent limits in SCAQMD Rule 1147.1 allowed sources that were meeting the current Rule 1147 emissions limits of 40 ppm NOx to continue using their existing burners until the burner is 32 years of age or January 1, 2023, whichever is later.

To meet the lower NOx limits for this source category, the equipment must be replaced or retrofitted with cleaner technology equipment.

PCAPCD Analysis

PCAPCD does not have an applicable control rule for this industrial process. Currently, only one facility is permitted in Placer County. The permit requires the NOx emission concentration from facility's aggregate drum dryer to meet 36 ppmvd @ 3% O_2. This permit requirement is lower than the other existing asphaltic concrete production rule with 40 ppmvd @ 3% O_2. SCAQMD estimated a cost-effectiveness of $46,000 per ton of NOx for units to meet 30 ppmvd @ 3% O_2, which is not cost effective in Placer County.

SMAQMD Analysis

Rule 419 was amended in 2018 requiring asphalt manufacturing operations to meet the 40 ppm NOx emissions limit. To amend Rule 419 and lower the limits from 40 ppm to 30 ppm NOx would, under a similar compliance schedule as SCAQMD Rule 1147.1, would possibly have until 2050 to continue to use upgraded burners. The five asphalt plant burners in Sacramento have initial operation years of 2012, 2015, 2020, 2021, and 2021. All these units are currently meeting at least 40 ppm NOx. Assuming these burners are allowed to operate for 32 years from installation,

this measure would not result in any contingency measure reductions for the 2015 NAAQS timeline of 2032.

In addition to the infeasible timelines for equipment turnover within the contingency measure two-year period, SCAQMD estimated a cost-effectiveness of $46,000/ton of NOx reduced for units already meeting 40 ppm to comply with 30 ppm[22]. These costs are more expensive than current SMAQMD's thresholds and are cost-prohibitive for adoption in Sacramento County.

YSAQMD Analysis

The permits for the applicable sources operating in the YSAQMD were reviewed. Currently, each of the permits has NOx limits of 0.012 lb/MMBtu for the dryers used in the production process, which is equivalent to 100 ppm @ 3% O2. A rule like SCAQMD Rule 1147 or SJVUAPCD Rule 4309 would require these sources to meet lower NOx limits of 40 ppm at 3% O2.

YSAQMD estimated a cost-effectiveness of ~$33,000/ton of NOx reduced for units to meet 30 ppm. These costs are more expensive than current YSAQMD thresholds and is cost prohibitive for adoption.

Reasons for infeasibility

Generally, operation of these types of equipment requires an air district permit. To comply with the lower NOx limits, a permitted source would need time to perform engineering/design evaluation for the replacement or retrofitted equipment, apply for and obtain pre-construction permit, purchase and obtain the equipment or retrofit from a manufacturer or distributor, complete the installation or retrofit, perform source test of new or retrofitted equipment, and obtain an operating (post-construction) permit. Thus, the time to complete all listed tasks in less than 2 years of a triggering event to obtain meaningful reductions within 2 years is not feasible. In addition, the costs for this source category, as discussed above, are cost prohibitive for adoption in the SFNA.

Boilers – 1 mmBtu/hr or greater

Boilers and process heaters are used to provide hot water and steam for a variety of industrial and commercial applications, including space heating, food processing, garment laundering, and equipment sterilization. Manufacturing operations use process heaters to heat materials or equipment during the manufacturing process. The equipment burners can be fired on solid, liquid, or gaseous fuels. NOx emissions are generated from the combustion of the fuel.

SFNA Emissions Inventories

[22] SCAQMD. *Final Staff Report Proposed Rule 1147.1 – NOx Reductions from Aggregate Dryers.* August 2021. p. 4-2.

EDCAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
EDCAQMD	060-995-0110-0000	Service and Commercial – Other– Natural Gas	0.012	0.017

FRAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
FRAQMD	060-995-0110-0000	Service and Commercial – Other– Natural Gas	0.001	0.002

PCAPCD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
PCAPCD	050- 005- 0110- 0000	Manufacturing and Industrial – Boilers – Natural gas	0.009	0.018
PCAPCD	050- 005- 0124- 0000	Manufacturing and Industrial – Boilers – Propane	0	N/A
PCAPCD	050- 010- 0110- 0000	Manufacturing and Industrial – Process Heaters – Natural gas	0.006	0.007
PCAPCD	060- 005- 0110- 0000	Service and Commercial – Boilers – Natural gas	0.021	0.051
PCAPCD	060- 005- 0124- 0000	Service and Commercial- Boilers – Propane	0.002	0.006
PCAPCD	060- 005- 0218- 0000	Service and Commercial- Boilers – Lignite	0	0
		Total	0.039	0.084

SMAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
SMAQMD	030-010-0100-0000	Oil and Natural Gas Production – Process Heaters – Gaseous Fuel	0	0
SMAQMD	050-005-0110-0000	Manufacturing and Industrial – Boilers – Natural gas	0.020	0.022
SMAQMD	050-005-0124-0000	Manufacturing and Industrial – Boilers – Propane	0.004	0.004
SMAQMD	050-005-1220-0000	Manufacturing and Industrial – Boilers – Distillate Oil	0.002	0
SMAQMD	050-010-0110-0000	Manufacturing and Industrial – Process Heaters – Natural gas	0.005	0.010
SMAQMD	050-995-0110-0000	Manufacturing and Industrial – Other – Natural Gas	0.034	N/A
SMAQMD	050-995-0120-0000	Manufacturing and Industrial – Other – LPG	0.033	0.033
SMAQMD	050-995-0200-0000	Manufacturing and Industrial – Other – Solid Fuel (Unspecified)	0.001	0
SMAQMD	050-995-1000-0000	Manufacturing and Industrial – Other – Liquid Fuel (Unspecified)	0	0.001
SMAQMD	050-995-1500-0000	Manufacturing and Industrial – Other – Residual Oil	0	0
SMAQMD	052-005-0110-0000	Food and Agricultural Processing – Boilers – Natural Gas	0.009	0.017
SMAQMD	052-010-0110-0000	Food and Agricultural Processing – Process Heaters – Natural Gas	0.003	0.004
SMAQMD	060-005-0110-0000	Service and Commercial – Boilers – Natural gas	0.005	0.002
SMAQMD	060-005-0144-0000	Service and Commercial – Boilers – Sewage Gas	0.002	0.001
SMAQMD	060-005-1220-0000	Service and Commercial – Boilers – Distillate Oil	0	0
SMAQMD	060-995-0110-0000	Service and Commercial – Other – Natural Gas	0.240	0.218
SMAQMD	060-995-0110-0005	Service and Commercial – Other – Natural Gas < 1 MMBtu/hr	0.125	0.079

SMAQMD	060-995-0120-0000	Service and Commercial – Other – LPG	0.039	0.054
SMAQMD	060-995-1220-0000	Service and Commercial – Other – Distillate Oil	0.001	0
		Totals	0.523	0.445

YSAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
YSAQMD	010-005-0110-0000	Electric Utilities – Boilers – Natural Gas	0	0
YSAQMD	030-010-0100-0000	Oil and Natural Gas Production – Process Heaters – Gaseous Fuel	0	0
YSAQMD	050-005-0110-0000	Manufacturing and Industrial – Boilers – Natural gas	0.011	0.015
YSAQMD	050-005-0243-0000	Manufacturing and Industrial – Boilers – Refuse Derived Fuel	0	0
YSAQMD	050-010-0110-0000	Manufacturing and Industrial – Boilers – Natural gas	0.014	0.013
YSAQMD	050-010-0120-0000	Manufacturing and Industrial – Process Heaters – Liquid Petroleum Gas	0.013	0.001
YSAQMD	050-010-0130-0000	Manufacturing and Industrial – Process Heaters – Process Gas	0	0
YSAQMD	050-010-1224-0000	Manufacturing and Industrial – Process Heaters – Distillate Oil #2	0	N/A
YSAQMD	050-995-0110-0000	Manufacturing and Industrial – Other – Natural Gas	0.443	0.469
YSAQMD	050-995-1220-0000	Manufacturing and Industrial – Other – Distillate Oil		0.001
YSAQMD	052-005-0110-0000	Food and Agricultural Processing – Boilers – Natural Gas	0.103	0.106
YSAQMD	052-010-0110-0000	Food and Agricultural Processing – Process Heaters – Natural Gas	0.020	0.017
YSAQMD	052-010-0120-0000	Food and Agricultural Processing – Process Heaters – Liquefied Petroleum Gas	0.004	0.004
YSAQMD	052-010-1224-0000	Food and agricultural Processing – Process Heaters – Distillate Oil #2	0	0
YSAQMD	060-005-0110-0000	Service and Commercial – Boilers – Natural gas	0.092	0.070

YSAQMD	060-005-0124-0000	Service and Commercial – Boilers – Propane	0	N/A
YSAQMD	060-010-0110-0000	Service and Commercial – Process Heaters – Natural Gas	0.005	0.003
YSAQMD	060-010-0130-0000	Service and Commercial – Process Heaters – Process Gas	0	N/A
YSAQMD	060-995-0110-0000	Service and Commercial – Other – Natural Gas	0.835	0.813
YSAQMD	060-995-0120-0000	Service and Commercial – Other – LPG	0	N/A
YSAQMD	060-995-1220-0000	Service and Commercial – Other – Distillate Oil	0.001	0.001
		Totals	1.541	1.513

Potential controls

The table below compares NOx emission limits in SCAQMD Rules 1146.1 and 1146 and SJVUAPCD Rules 4306 and 4320 to SFNA rules. Emissions of NOx can be reduced using combustion controls, which modify the combustion characteristics, or using post-combustion controls, such as nonselective catalytic reduction (NSCR) and selective catalytic reduction (SCR). The most stringent limits are shown in bold.

SFNA Boiler Rule Comparison Chart

Unit Rating, mmBtu/hr	EDCAQMD Rule 229	FRAQMD Rule 3.21	PCAPCD Rules 231/247	SMAQMD Rule 411	YSAQMD Rules 2.27/2.45	NOx Emission Limit, ppmvd @ 3% O_2			
						SCAQMD Rule 1146.1	SCAQMD Rule 1146	SJVUAPCD Rule 4306	SJVUAPCD Rule 4320 (enhanced)
>2 to <5	Not permitted	20	20	30	30	**7** ppm (firetube); otherwise **9** (12 for atmospheric)	N/A	N/A	N/A
5 to 20	30	30	30	15	15	N/A	7 ppm (firetube); otherwise 9 ppm	7 ppm (firetube) otherwise 9 ppm	**5** ppm (firetube); otherwise 5 except for Schools, digester gas, thermal fluid heaters (9 ppmv)
>20 to 75	30	30	30	9	9	N/A	If >12 ppm today: **5 ppm with SCR** ≤ 12 ppm: 7 ppm (firetube); otherwise 9	7 ppm	**2.5** ppm Oilfield steam generators, Refinery units, process heaters, low usage: 5 ppm
>75 to 110	30	30	30	9	9	N/A	**5**	5	**2.5**
>110	N/A	30	30	9	9	N/A	5	5	**2.5**

Lower NOx limits for some boilers are feasible as shown in SCAQMD and SJVUAPCD, however the specific use cases and the total amount of reductions achieved are based on the pre-amendment emission limits. Specifically, each district within the SFNA has specific scenarios to determine the feasibility of rule amendments, and the scenarios for each district are discussed below.

SMAQMD Analysis

Using source-specific data and based on cost information in the SJVUAPCD staff report for Rules 4306 and 4320 and the SCAQMD staff reports for Rules 1146 and 1146.1, the cost effectiveness of each SMAQMD boiler category is discussed below in ton of NOx reduced:

- For boilers > 75 mmBtu/hr, the actual usage for these boilers is about 10% of capacity, making a cost-effectiveness for this category cost prohibitive at over ~$270,000 per ton of NOx reduced.
- For boilers from > 20 mmBtu/hr to less than 75 mmBtu/hr, the cost-effectiveness of the SJVUAPCD limit of 2.5 ppm is approximately $58,195 per ton of NOx reduced. At a higher limit of 7 ppm, the cost-effectiveness is prohibitive at ~$274,444 per ton of NOx reduced.
- For boilers from > 5 mmBtu/hr to less than 20 mmBtu/hr, the cost-effectiveness of the SJVUAPCD limit of 5 ppm is approximately $115,438 per ton of NOx reduced. At a higher limit of 7 ppm, the cost-effectiveness is prohibitive at ~$184,066 per ton of NOx reduced.
- For boilers from > 2 mmBtu/hr to less than 5 mmBtu/hr, the cost effectives of the SCAQMD limit of 9 ppm is approximately $61,627 per ton of NOx reduced.

For each boiler size range, using source specific data, in SMAQMD, the overall cost effectiveness of a boiler rule is cost-prohibitive and infeasible.

EDCAQMD Analysis

There is only one source (with two boilers) in El Dorado County in the nonattainment area to which the >5 mmBtu/hr portion of the rule would apply, and a new replacement boiler (as the existing boilers cannot be retrofitted to meet the standard) is several thousand dollars, and the maximum reduction would be 0.0104 tpd. Additionally, using the cost information in the SJVUAPCD staff report for Rules 4306 and 4320 and the SCAQMD staff reports for Rules 1146 and 1146.1, the overall cost-effectiveness of is $103,234 per ton of NOx reduced. The proposed measure is not cost-effective.

FRAQMD Analysis

There are three boilers in the south Sutter County portion of the SFNA above 1 million BTU/hr. The boilers are rated at 1.01 million BTU/hr, 1.2 million BTU/hr, and 1.5 million BTU/hr. None of the boilers would be subject to the SCAQMD Rules 1146.1 and 1146 or SJVUPACD Rules 4306 and 4320 because those limits are effective at 2 million BTU/hr and above. SCAQMD Rule 1146.2 was adopted in June of 2024 and does not require emission reductions from existing boilers of this size until 2031. The SCAQMD Rule 1146.2 also exempts boilers with low usage (under 3,000 therms per year) from meeting the zero-emission standards. Two of three boilers in south Sutter County would qualify for the low-usage exemption and would not be required to meet the zero-emission standards after 2031. Additionally, the cost-effectiveness would be $152,000 or greater for this size of units per ton of NOx reduced. The proposed measure is not cost-effective.

PCAPCD Analysis

PCAPCD Rule 231 sets a NOx limit at 30 ppm for units that are 5 million Btu and greater, and Rule 247 sets a NOx limit at 20 ppm for boilers and heaters with a heat rating from 75,000 Btu to less than 5 million Btu. Since natural gas boilers and heaters from 75,000 Btu to 2 million Btu already meet the SCAQMD requirement, and since there are no boilers or heaters in the district's inventory which exceed 20 million Btu, emission reductions can only be claimed from units ranging from greater than 2 million to 20 million Btu. The cost effectiveness for implementing this control measure is based on cost information in the SJVUAPCD staff report for Rule 4320 and the SCAQMD staff reports for Rules 1146 and 1146.1. The cost effective for this control measure is $134,640 per ton of NOx reduced. Adoption of more stringent limits would not be cost effective in Placer County.

YSAQMD Analysis

Rule 2.27 was last revised in 2019, with requirements for boilers with rated heat input greater than 20 million British thermal units per hour (MMBtu/hr) to limit NOx concentrations to 9 volumetric parts per million (ppmv) at 3 % oxygen (O_2) and for boilers with rated heat input greater than or equal to 5 MMBtu/hr up to 20 MMBtu/hr to limit NOx concentrations to 15 ppmv @ 3% O_2. Rule 2.27 requires implementation of these emission reductions by December 31, 2023. Annualized costs over 25 years for boilers 20 million Btu/hour or greater to retrofit to achieve a 9 ppmv NOx emissions limit at 3% O_2 were calculated to be between $33,336 and $247,492. Annualized costs over 10 years for boilers 5 million Btu/hour or greater to retrofit to achieve a 15 ppmv NOx emissions limit at 3% O_2 were calculated to be between $11,849 and $97,913. At the time of the amendment to Rule 2.27, the Staff Report concluded that any additional emission reductions would not be cost effective, and would, therefore, not be cost effective as RACM as these costs would be incrementally additive to the costs already incurred.

Reasons for infeasibility

Generally, operation of these types of equipment requires an air district permit. To comply with the lower NOx limits, a permitted source would need time to perform engineering/design evaluation for the replacement or retrofitted equipment, apply for and obtain pre-construction permit, purchase and obtain the equipment or retrofit from a manufacturer or distributor, complete the installation or retrofit, perform source test of new or retrofitted equipment, and obtain an operating (post-construction) permit. Thus, the time to complete all listed tasks in less than 2 years of a triggering event to obtain meaningful reductions within 2 years is not feasible. In addition, the costs for this source category, as discussed above, are cost prohibitive for adoption in the SFNA.

Boilers – Biomass

Biomass boilers are very similar to conventional boilers to provide hot water and steam for a variety of industrial and commercial applications. Different than the conventional boilers, biomass boilers work by burning organic materials (not from fossil fuels), such as agricultural crop residues, barks, lawn, yard and garden chippings, leaves, tree and brush pruning, logs, and wood chips. NOx emissions are generated from the combustion of biomass materials. In the SFNA, the only biomass boilers are located in Placer and Yolo Counties.

Relevant Emission Inventory

The emissions inventory associated with biomass boilers is shown in the table below:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
PCAPCD	010-005-0254-0000	Electric Utilities – Boilers – Wood/Bark Waste	0.779	0.614
YSAQMD	010-005-0254-0000	Electric Utilities – Boilers – Wood/Bark Waste	0.347	0.267

Potential controls
PCAPCD Rule 233 regulates the NOx emissions generated from biomass boilers that have a heat input less than 500 million Btu per hour. NOx emissions from biomass boilers are measured by a continuous emission monitoring system (CEMS) installed in the stack. Currently, PCAPCD Rule 233 limits NO_x emission to 115 ppmv corrected to 12% CO_2 for any 3-hour rolling average and 68 ppmv corrected to 12% CO_2 for a 24-hour block average. PCAPCD Rule 233 limit of 68 ppm at 12% is approximately equal to 90 ppm corrected to 3% O_2 on a 24-hour block average[23]. This is consistent with YSAQMD Rule 2.43 limit that limits NOx emissions to 90 ppm @ 3% O2 on a 24-hour rolling average from biomass boilers. YSAQMD's rule applies to any biomass boiler that has a heat input of more than 5 million Btu per hour.

PCAPCD Analysis
No other more stringent controls were identified.

YSAQMD Analysis
. No other more stringent controls were identified.

Reasons for infeasibility

No other more stringent controls were identified.

Furnaces (Residential)

Residential heating accounts for a large fraction of residential energy consumption. The majority of residential furnaces uses natural gas as fuel, which produces NOx during the combustion process.

Relevant Emission Inventory

The emissions inventory associated with residential furnaces is shown in the tables below:

[23] *Technical Support Document for EPA's Notice of Rulemaking for the California State Implementation Plan. Placer County Air Pollution Control District's Rule 233, Biomass Boilers.* United States Environmental Protection Agency, Region 9. July 2011.

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
EDCAQMD	610-606-0110-0000	Residential Fuel Combustion – Natural Gas Space Heating	0.004	0.039
EDCAQMD	610-606-1220-0000	Residential Fuel Combustion – Distillate Oil Space Heating	0.003	0.003
FRAQMD	610-606-0110-0000	Residential Fuel Combustion – Natural Gas Space Heating	0.001	0.001
FRAQMD	610-606-1220-0000	Residential Fuel Combustion – Distillate Oil Space Heating	0	0
PCAPCD	610-606-0110-0000	Residential Fuel Combustion – Natural Gas Space Heating	0.055	0.129
PCAPCD	610-606-1220-0000	Residential Fuel Combustion – Distillate Oil Space Heating	0.004	0.003
SMAQMD	610-606-0110-0000	Residential Fuel Combustion – Natural Gas Space Heating	0.394	0.384
SMAQMD	610-606-1220-0000	Residential Fuel Combustion – Distillate Oil Space Heating	0.001	0.001
YSAQMD	610-606-0110-0000	Residential Fuel Combustion – Natural Gas Space Heating	0.084	0.073
YSAQMD	610-606-1220-0000	Residential Fuel Combustion – Distillate Oil Space Heating	0	0

Potential controls

Several California districts regulate these units at “point of sale.” That is, only units certified to meet the district’s NOx standard may be sold or installed. SJVUAPCD and SCAQMD both require a NOx standard of 14 ng of NOx per Joule of heat output that began to phase in starting in 2015. Recent amendments to SCAQMD and SJVUAPCD rules allowed for additional compliance time; however, as of 2023, these district rules do not provide additional compliance time to meet 14 ng/J.

The lower end of thermal efficiencies for new units is approximately 80%. On the basis of heat output, pre-control units are estimated to emit 49.5 ng of NOx per Joule of heat output. Therefore, after all older units are eventually replaced with new units that meet the 14 ng/J standard, a NOx emission reduction of 72% may be expected. Units have been shown to be cost-effective and in use in many other air districts, including the most stringent limits in SCAQMD and SJVUAPCD.

In 2023, BAAQMD adopted rules requiring zero emissions for furnaces manufactured after January 1, 2029.

In the 2022 State SIP Strategy, CARB committed to develop and adopt by 2025 a zero-emission standard for space heaters, which includes furnaces, in California starting in 2030. On May 29,

2024, CARB held a public workshop to discuss proposed zero-emissions space and water heater standards[24].

No districts within the SFNA have a rule covering this source category.

Reasons for infeasibility

A residential furnace is assumed to have a lifetime of 20 years. Each year, then, 5% of the units are expected to be replaced. However, due to the time required for turnover of existing units, a rule would not be feasible as a contingency measure. Per EPA guidance, contingency measures should be measures that would result in the projected emission reductions within a year of the triggering event or within two years with proper justification. A new rule covering devices not currently subject to District rules and regulations would most likely require a two-year phase in to inform the public and allow manufacturers and distributors to prepare the marketplace with lower emission devices. In addition, the units manufactured prior to the effective date of rule amendments would be allowed to be sold thereby reducing any potential reductions in the first two years. This conclusion is consistent with EPA's conclusion for SJVUAPCD FIP that no meaningful reductions would occur within the two-year timeframe needed for contingency measures[25]. In addition to the timeline constraints, any CARB adopted standards that would achieve emission reductions for this category would preclude any district rules for contingency measure reductions.

Internal Combustion Engines

Internal combustion (IC) engines are used in a wide variety of applications, including electrical power generation, liquid pumping, gas compression, mobile equipment, and vehicles. NOx is generated in IC engines from both the oxidation of nitrogen in the air (thermal NOx) and from the oxidation of fuel-bound nitrogen (fuel NOx).

SFNA Emissions Inventories

The emissions inventory associated with IC engines is shown in the table below:

EDCAQMD Inventory

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
EDCAQMD	050-040-1200-0000	Manufacturing and Industrial, IC Reciprocating Engines – Diesel/Distillate Oil	0.022	0.020
EDCAQMD	052-042-1200-0010	Food and Agricultural Processing, Irrigation IC Engines – Natural Gas	0.003	0.002

[24] California Air Resources Board. Zero-Emission Space and Water Heater Standards. https://ww2.arb.ca.gov/our-work/programs/building-decarbonization/zero-emission-space-and-water-heater-standards/meetings-workshops
[25] Ibid. p. 50.

EDCAQMD	052-042-1200-0011	Food and Agricultural Processing, Irrigation IC Engines, Stationary – Diesel/Distillate Oil	0.003	0.002
EDCAQMD	099-040-1200-0000	Other Fuel Compression, Compressors, Rich-Burn – Natural Gas	0.038	0.010
		Totals	0.066	0.034

FRAQMD Inventory:

District	**EIC**	**Category**	**NOx Inventory for source categories (tpd)**	
			2024	**2032**
FRAQMD	030-304-0110-0000	Oil and Natural Gas Production, I.C. Reciprocating Engines, Natural Gas	0.004	0.001
FRAQMD	099-040-1200-0000	Other (Fuel Combustion) I.C. Reciprocating Engines, Diesel/Distillate Oil (Unspecified)	0.001	0
		Totals	0.005	0.001

PCAPCD Inventory:

District	**EIC**	**Category**	**NOx Inventory for source categories (tpd)**	
			2024	**2032**
PCAPCD	050-040-0012-0000	Manufacturing and Industrial, IC Reciprocating Engines – Unspecified Fuel	0	0
PCAPCD	050-040-0110-0000	Manufacturing and Industrial, IC Reciprocating Engines – Natural Gas	0	0
PCAPCD	050-040-0124-0000	Manufacturing and Industrial, IC Reciprocating Engines – Propane	0	0
PCAPCD	050-040-1100-0000	Manufacturing and Industrial, IC Reciprocating Engines – Gasoline	0.003	N/A
PCAPCD	050-040-1200-0000	Manufacturing and Industrial, IC Reciprocating Engines – Diesel/Distillate Oil	0.014	0.010
PCAPCD	052-040-0124-0000	Food & Ag, IC Reciprocating Engines – Propane	0	0
PCAPCD	060-040-0110-0000	Service and Commercial, IC Reciprocating Engines – Landfill Gas	0	0

PCAPCD	060-040-0124-0000	Service and Commercial, IC Reciprocating Engines – Propane	0.001	0.001
PCAPCD	060-040-0142-0000	Service & Commercial, IC Engines – Landfill Gas	0.019	N/A
PCAPCD	060-040-1200-0000	Service and Commercial, Compressors, Lean-Burn – Natural Gas	0.007	
PCAPCD	099-040-1200-0000	Other Fuel Compression, Compressors, Rich-Burn – Natural Gas	0.091	
		Totals	0.141	0.011

SMAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
SMAQMD	010-040-0142-0000	Electric Utilities, IC Engines – Landfill Gas	0.221	0.183
SMAQMD	030-307-0110-0000	Oil and Natural Gas Production, Compressors, Lean-Burn – Natural Gas	0.001	0
SMAQMD	030-309-0110-0000	Oil and Natural Gas Production, Compressors, Rich-Burn – Natural Gas	0.003	0.002
SMAQMD	050-040-0012-0000	Manufacturing and Industrial, IC Reciprocating Engines – Unspecified Fuel	0.041	0.002
SMAQMD	050-040-0110-0000	Manufacturing and Industrial, IC Reciprocating Engines – Natural Gas	0.161	0.014
SMAQMD	050-040-0120-0000	Manufacturing and Industrial, IC Reciprocating Engines – LPG	0	0
SMAQMD	050-040-0124-0000	Manufacturing and Industrial, IC Reciprocating Engines – Propane	0	0.003
SMAQMD	050-040-1200-0000	Manufacturing and Industrial, IC Reciprocating Engines – Diesel/Distillate Oil	0.009	0.015
SMAQMD	052-042-0110-0000	Food and Agricultural Processing, Irrigation IC Engines – Natural Gas	0.055	0.069
SMAQMD	052-042-1200-0010	Food and Agricultural Processing, Irrigation IC Engines, Stationary – Diesel/Distillate Oil	0.040	0.057
SMAQMD	060-040-1200-0000	Service and Commercial, IC Reciprocating Engines – Diesel/Distillate Oil	0.006	0.035

SMAQMD	099-040-1200-0000	Other Fuel Combustion, IC Reciprocating Engines – Diesel/Distillate Oil	0.354	0.191
		Totals	0.891	0.571

YSAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
YSAQMD	010-040-0110-0000	Electric Utilities – I.C. Reciprocating Engines – Natural Gas	0.001	0.001
YSAQMD	010-040-0142-0000	Electric Utilities, IC Engines – Landfill Gas	0.041	0.071
YSAQMD	010-040-1200-0000	Electric Utilities, IC Engines – Diesel/Distillate Oil	0.007	0.003
YSAQMD	030-040-0110-0000	Oil and Gas Production – IC Engines – Natural Gas	0.022	0.008
YSAQMD	030-040-1200-0000	Oil and Gas Production – IC Engines – Diesel/Distillate Oil	0.002	0.003
YSAQMD	030-307-0100-0000	Oil and Gas Production – Compressors Lean Burn – Gaseous Fuel	0.002	0.001
YSAQMD	030-307-0110-0000	Oil and Natural Gas Production, Compressors, Lean-Burn – Natural Gas	0.001	0.001
YSAQMD	030-309-0100-0000	Oil and Gas Production – Compressors, Rich Burn – Gaseous Fuel	0.012	0.009
YSAQMD	030-309-0110-0000	Oil and Natural Gas Production, Compressors, Rich-Burn – Natural Gas	0.004	0.003
YSAQMD	050-040-0110-0000	Manufacturing and Industrial, IC Reciprocating Engines – Natural Gas	0.001	0.009
YSAQMD	050-040-1200-0000	Manufacturing and Industrial, IC Reciprocating Engines – Diesel/Distillate Oil	0.003	0.016
YSAQMD	052-040-0110-0000	Food and Agricultural Processing – IC Engines – Natural Gas	0	0
YSAQMD	052-040-1200-0000	Food and Agricultural Processing – IC Engines – Diesel/Distillate Oil	0	0
YSAQMD	052-042-1200-0010	Food and Agricultural Processing, Irrigation IC Engines, Stationary – Diesel/Distillate Oil	0.207	0.168

YSAQMD	060-040-0110-0000	Service and Commercial, IC Reciprocating Engines – Landfill Gas	0.000	0.001
YSAQMD	060-040-1200-0000	Service and Commercial, Compressors, Lean-Burn – Natural Gas	0.005	0.052
YSAQMD	060-040-1412-0000	Service and Commercial – IC Engines – Keronaptha Jet Fuel	0.001	0
YSAQMD	060-045-0110-0000	Service and Commercial – IC Engines – Natural Gas	0.001	0.007
YSAQMD	060-045-1200-0000	Service and Commercial – IC Engines – Diesel/Distillate Oil	0	0
YSAQMD	099-040-1200-0000	Other Fuel Compression, Compressors, Rich-Burn – Natural Gas	0.081	0.017
		Totals	0.391	0.370

Potential controls

Emissions of NOx can be reduced using combustion controls, which modify the combustion characteristics, or using post-combustion controls, such as nonselective catalytic reduction (NSCR) and selective catalytic reduction (SCR). SCAQMD Rule 110.2, Emissions from Gaseous and Liquid-Fuel Engines, requires landfill and digester gas-fired engines to meet 11 ppm NOx @ 15% O_2.

EDCAQMD Analysis

Rule 233 would not apply to two agricultural EIC codes listed above. Of the permitted prime power engines in El Dorado County, there are 12 stationary engines (not portable) that would be subject to the SCAQMD rule. Two engines are very large cogenerators capable of using diesel or natural gas, one engine is natural gas, and the others are diesel powered. Staff performed a detailed review of these permits and determined, given the low use limits of these engines and the best available emission control devices for each respective engine, the emissions reductions would be minimal and not cost-effective.

FRAQMD Analysis

All permitted engines within FRAQMD portion of the nonattainment area are emergency standby engines and not subject to this analysis or any identified control strategies.

PCAPCD Rule 242 Analysis

PCAPCD Rule 242 regulates NOx emissions from stationary IC engines. Currently, 17 prime engines in the Placer County nonattainment area are subject to Rule 242; 2 are diesel-fueled, 7 are landfill gas-fueled, 7 are natural gas fueled, and 1 is propane-fueled. The combined NOx emissions from these 17 permitted prime engines are about 0.0352 tpd. Although the adoption of NOx emission limits consistent with SCAQMD Rule 110.2 would reduce NOx emissions from these 17 prime engines, this control measure is not considered cost-effective (~$71,400 per ton of NOx reduced).

SMAQMD Rule 412 Analysis

SMAQMD Rule 412 regulates only stationary IC engines rated 50 brake horsepower (bhp) that are located at major sources of NOx with exemptions provided for emergency standby. Staff performed a detailed review of the permits and source test results for all applicable IC engines within the SMAQMD jurisdiction. The engines that would generate nearly all reductions are all landfill gas-fueled engines that could be subject to 11 ppm NOx. Due to the specific conditions of the source, the pretreatment of siloxanes from the gas stream is necessary to implement an SCR system without destroying the system. The removal of the siloxanes would result in cost prohibitive controls. It is estimated, based on SCAQMD calculations, the cost of controls for these engines is $42,118 per ton of NOx reduced. The cost of controls is above the SMAQMD BACT cost effectiveness thresholds and is not cost-effective for the SMAQMD to adopt.

YSAQMD Rule 2.32 Analysis

YSAQMD Rule 2.32 applies to all stationary IC engines that are rated 50 bhp or greater with exceptions provided for emergency standby and engines operated less than 200 hours per calendar year. Staff performed a detailed review of the permits and source test results for all applicable IC engines within the YSAQMD jurisdiction. YSAQMD determined that as many as 23 engines could achieve reductions but due to the cost of controls, this measure is above the range of YSAQMD BACT cost effectiveness thresholds and is not cost-effective for YSAQMD to adopt. Similar conditions for landfill gas-fueled engines are applicable in YSAQMD. It is estimated based on SCAQMD calculations, the cost of controls for this control measure is between $57,760 and $97,354 per ton of NOx reduced.

Reasons for infeasibility

As identified, the costs of controls for this source category are cost prohibitive for adoption in the SFNA. Furthermore, the time needed to upgrade equipment within the contingency measure period to achieve reductions in the second year is infeasible.

Operation of internal combustion engines requires an air district permit. To comply with the lower NOx limits, a permitted source would need time to perform engineering/design evaluation for the replacement or retrofitted equipment, apply for and obtain pre-construction permit, purchase and obtain the equipment or retrofit from a manufacturer or distributor, complete the installation or retrofit, perform source test of new or retrofitted equipment, and obtain an operating (post-construction) permit. Thus, the time to complete all listed tasks in less than 2 years of a triggering event to obtain meaningful reductions within 2 years is not feasible. In addition, consistent with

EPA's analysis for the SJVUAPCD Contingency Measure FIP, the installation of SCR is technologically infeasible within the two-year contingency measure timeframe[26].

Managed Burning and Disposal

Managed burning and disposal consists of agricultural burning, range improvement burning, forest management, weed abatement, and non-agricultural open burning. Agricultural open burning is used to dispose of agricultural materials (e.g., pruning and orchard removals), reduce post-harvest field residue, prevent the spread of disease, and control weeds and pests. Non-agricultural open burning is used for land clearance, forest management, and range improvements. NO_x and VOC emissions are the result of combustion.

SFNA Emissions Inventories

The emissions inventory associated with managed burning and disposal is shown in the tables below:

EDCAQMD Inventory

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
EDCAQMD	670-660-0262-0000	Managed Burning and Disposal – Agricultural Burning – Prunings	0.000	0.000
EDCAQMD	670-664-0200-0000	Managed Burning and Disposal – Range Improvement	0.000	0.002
EDCAQMD	670-666-0200-0000	Managed Burning and Disposal – Forest Management	0.001	0.036
EDCAQMD	670-668-0200-0000	Managed Burning and Disposal – Weed Abatement	0.000	0.000
EDCAQMD	670-670-0200-0000	Managed Burning and Disposal – Non-Agricultural Open Burning	0.000	0.000
		Totals	0.002	0.038

[26] U.S. EPA. *EPA Source Category and Control Measure Assessment and Reasoned Justification Technical Support Document. Proposed Contingency Measures Federal Implementation Plan for the Fine Particulate Matter Standards for San Joaquin Valley, California.* July 2023. p. 29.

FRAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
FRAQMD	670-660-0262-0000	Managed Burning and Disposal – Agricultural Burning – Prunings	0.008	0.016
FRAQMD	670-662-0262-0000	Managed Burning and Disposal – Agricultural Burning – Field Crops	0.057	0.046
FRAQMD	670-666-0200-0000	Managed Burning and Disposal – Forest Management	0.000	0.000
FRAQMD	670-668-0200-0000	Managed Burning and Disposal – Weed Abatement	0.012	0.016
FRAQMD	670-670-0200-0000	Managed Burning and Disposal – Non-Agricultural Open Burning	0.009	0.009
FRAQMD	670-670-0200-0000	Managed Burning and Disposal – Other	0.000	0.000
		Totals	0.086	0.087

PCAPCD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
PCAPCD	670-660-0262-0000	Managed Burning and Disposal – Agricultural Burning – Prunings	0.000	0.018
PCAPCD	670-662-0262-0000	Managed Burning and Disposal – Agricultural Burning – Field Crops	0.020	0.004
PCAPCD	670-664-0200-0000	Managed Burning and Disposal – Range Improvement	0.000	0.001
PCAPCD	670-666-0200-0000	Managed Burning and Disposal – Forest Management	0.011	0.009
PCAPCD	670-668-0200-0000	Managed Burning and Disposal – Weed Abatement	0.000	0.000
PCAPCD	670-670-0200-0000	Managed Burning and Disposal – Non-Agricultural Open Burning	0.001	0.001
		Totals	0.032	0.034

SMAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
SMAQMD	670-660-0262-0000	Managed Burning and Disposal – Agricultural Burning – Prunings	0.007	0.0023
SMAQMD	670-662-0262-0000	Managed Burning and Disposal – Agricultural Burning – Field Crops	0.026	0.0142
SMAQMD	670-664-0200-0000	Managed Burning and Disposal – Range Improvement	0.008	0.0042
SMAQMD	670-666-0200-0000	Managed Burning and Disposal – Forest Management	0.001	0.0002
SMAQMD	670-668-0200-0000	Managed Burning and Disposal – Weed Abatement	0.001	0.0005
SMAQMD	670-670-0200-0000	Managed Burning and Disposal – Non-Agricultural Open Burning	0.015	0.0148
SMAQMD	670-995-0240-0000	Managed Burning- Other	0.000	0.0000
		Totals	0.058	0.036

YSAQMD Inventory:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
YSAQMD	670-660-0262-0000	Managed Burning and Disposal – Agricultural Burning – Prunings	0.020	0.046
YSAQMD	670-662-0262-0000	Managed Burning and Disposal – Agricultural Burning – Field Crops	0.040	0.047
YSAQMD	670-664-0200-0000	Managed Burning and Disposal – Range Improvement	0.042	0.000
YSAQMD	670-666-0200-0000	Managed Burning and Disposal – Forest Management	0.000	0.000
YSAQMD	670-668-0200-0000	Managed Burning and Disposal – Weed Abatement	0.006	0.032
YSAQMD	670-670-0200-0000	Managed Burning and Disposal – Non-Agricultural Open Burning	0.020	0.000
		Totals	0.109	0.125

Potential controls

SJVAPCD Rule 4103 will eliminate nearly all agricultural burning with some exceptions by 2025. As an alternative to burning, agricultural waste materials can be chipped and ground. By switching from agricultural burning to chipping and grinding of materials, an overall reduction in NOx emission can be realized. To achieve this goal in SJVAPCD, a significant amount of incentive funding is being provided by the SJVAPCD and the State of California.

For other types of managed burning and disposal, prescribed burning and range improvement, staff did not identify any more stringent provisions in other districts' rules. These programs have a proven record of reducing wildfire severity and therefore, have implications for public safety.

SFNA Rules for Open Burning

Within the SFNA, the air districts have rules and programs that manage agricultural burning through managed burn programs that reduce burning on days forecasted to be poor air quality days. To conduct burning within the SFNA, a valid burn permit must be issued by the corresponding district to minimize the impact of open burning.

District	Rule	Title
EDCAQMD	300	Open Burning
FRAQMD	Regulation 2.0	Open Burning
PCAPCD	302	Agricultural Waste Burning Smoke Management
SMAQMD	407 501	Open Burning Agricultural Burning
YSAQMD	6.1	Agricultural Burning

Reasons for infeasibility

Due to the extremely high costs to the agricultural sector to eliminate agricultural burning and the significant incentive dollars needed to achieve this, the SFNA does not consider an elimination of agricultural burning feasible within the SFNA. The SJVAPCD received $178.2 million to incentivize the agricultural industry to eliminate burning by 2025[27]. The SFNA does not have access to these resources for a similar measure.

Consistent with the SCAQMD infeasibility analysis for the Coachella Valley[28], due to the high incremental cost to require chipping and grinding, SJVAPCD provides incentives ranging from $300/acre to $1,300 per acre depending on the crop and whether soil incorporation is included. The limited extent of agricultural burning in the SFNA combined with the high-cost alternatives suggest that this measure is economically infeasible and would have an inconsequential impact on air quality. Additional reductions beyond the current managed burn programs within the SFNA would require significant monetary incentives resulting in negligible NOx reductions.

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[27] San Joaquin Valley Air Pollution Control District. *Item Number 10: Accept and Appropriate $178,200,000 in State Funding and Approve Enhancements to Alternative to Agricultural Open Burning Incentive Program.* August 19,2021.

[28] South Coast Air Quality Management District. *Final Staff Report Coachella Valley Contingency Measure SIP Revision for the 2008 8-Hour Ozone Standard.* pp.4-151 – 4-157.

Miscellaneous Combustion

Miscellaneous combustions devices are considered the devices that are not otherwise controlled by other district rules such as dryers, dehydrators, heaters, kilns, furnaces, crematories, incinerators, heated pots, cookers, roasters, heated tanks, evaporators, distillation units, afterburners, degassing units, vapor incinerators, catalytic or thermal oxidizers, and remediation units.

Within the SFNA, only SMAQMD has a rule covering this source category. SMAQMD Rule 419, NOx from Miscellaneous Combustion Units, applies to all gaseous and liquid fuel-fired miscellaneous combustion units with a total rated heat input capacity of 5 million Btu/hr or greater that are not subject to other district NOx rules, such as boilers, IC engines, turbines, or water heaters.

Relevant Emission Inventory

EDCAQMD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
EDCAQMD	050-995-0110-0000	Manufacturing and Industrial – Other – Natural Gas	0.007	0.007
EDCAQMD	050-995-1220-0000	Manufacturing and Industrial – Other – Distillate Oil	0.005	0.006
EDCAQMD	060-995-0110-0000	Service and Commercial – Other – Natural Gas	0.012	0.009
EDCAQMD	430-995-7000-0000	Mineral Process – Other – Mineral and Metal Products	0.019	0.016
		Totals	0.043	0.038

FRAQMD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
FRAQMD	050-995-0110-0000	Manufacturing and Industrial – Other – Natural Gas	0.014	0.015
FRAQMD	060-995-0110-0000	Service and Commercial – Other – Natural Gas	0.001	0.003
		Totals	0.015	0.018

PCAPCD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
PCAPCD	050-012-0110-0000	Manufacturing and Industrial – Oven Heaters – Natural Gas	0.004	0.004
PCAPCD	050-995-0110-0000	Manufacturing and Industrial – Other – Natural Gas	0	0
PCAPCD	050-995-1220-0000	Manufacturing and Industrial – Other – Distillate Oil	0.012	0.015
PCAPCD	060-995-0110-0000	Service and Commercial – Other – Natural Gas	0.036	0.036
PCAPCD	060-995-0120-0000	Service and Commercial – Other – LPG	N/A	0.024
PCAPCD	060-995-1220-0000	Service and Commercial – Other – Distillate Oil	0	0.025
PCAPCD	430-995-7000-0000	Mineral Process – Other – Mineral and Metal Products	0.043	0.040
PCAPCD	430-995-7012-0000	Mineral Process – Other – Bricks	0.007	0.005
PCAPCD	430-995-7020-0000	Mineral Process – Other – Ceramics	0.002	0
PCAPCD	430-995-7022-0000	Mineral Process – Other – Clay	0.004	0.003
		Totals	0.108	0.152

SMAQMD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
SMAQMD	050-012-0110-0000	Manufacturing and Industrial – Oven Heaters – Natural Gas	0.003	0.002
SMAQMD	050-995-0110-0000	Manufacturing and Industrial – Other – Natural Gas	0.034	0.037
SMAQMD	050-995-0120-0000	Manufacturing and Industrial – Other – LPG	0.003	0.033
SMAQMD	060-995-0110-0000	Service and Commercial – Other – Natural Gas	0.240	0.218
SMAQMD	060-995-0110-0005	Service and Commercial – Other – Natural Gas <1mmBtu/hr	0.125	0.079
SMAQMD	060-995-1220-0000	Service and Commercial – Other – LPG	0.039	0.054
SMAQMD	060-995-1220-0000	Service and Commercial – Other – Distillate Oil	0.001	0
SMAQMD	430-995-7000-0000	Mineral Process – Other – Mineral and Metal Products	0.156	0.136

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
SMAQMD	430-995-7012-0000	Mineral Process – Other – Bricks	0.025	0.018
SMAQMD	430-995-7020-0000	Mineral Process – Other – Ceramics	0	0
SMAQMD	430-995-7022-0000	Mineral Process – Other – Clay	0.003	0.002
		Totals	0.629	0.579

YSAQMD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
YSAQMD	050-012-0110-0000	Manufacturing and Industrial – Oven Heaters – Natural Gas	0	0.002
YSAQMD	050-995-0110-0000	Manufacturing and Industrial – Other – Natural Gas	0.443	0.469
YSAQMD	050-995-1220-0000	Manufacturing and Industrial – Other – Distillate Oil	0.001	0.001
YSAQMD	060-995-0110-0000	Service and Commercial – Other – Natural Gas	0.835	0.813
YSAQMD	060-995-1220-0000	Service and Commercial – Other – LPG	0	0.001
YSAQMD	060-995-1220-0000	Service and Commercial – Other – Distillate Oil	0.001	0.001
YSAQMD	430-995-7000-0000	Mineral Process – Other – Mineral and Metal Products	0	0
YSAQMD	430-995-7012-0000	Mineral Process – Other – Bricks	0	0
YSAQMD	430-995-7022-0000	Mineral Process – Other – Clay	0	0
		Totals	1.28	1.29

Potential controls

The requirements for these miscellaneous combustion sources are based on SCAQMD Rule 1147 – NOx Reductions from Miscellaneous Sources. The control measure establishes NOx emission limits that depend on the type of device and the process temperature. The NOx limits can be achieved by using low NOx burners. Compliance timelines for existing in-use equipment depend on the age of the equipment. Equipment with less than 1 lb/day of emissions would not be subject to the requirements until modification or replacement of the equipment.

SCAQMD amended Rule 1147 in 2022 that requires some units to meet lower limits than previously required. However, units that were already complying with the rule have up to 32 years of burner use.

EDCAQMD Analysis

Infeasible due potential costs (approximately $34,750 per ton of NOx reduced), and timeline concerns to design, permit, and install new equipment.

FRAQMD Analysis

Infeasible due to costs, (approximately $34,750 per ton of NOx reduced), and timeline concerns to design, permit, and install new equipment.

PCAPCD Analysis

Infeasible due to costs (approximately $34,750 per ton of NOx reduced), and timeline concerns to design, permit, and install new equipment.

SMAQMD Analysis

SMAQMD Rule 419 is consistent with other air district rules requiring 40 ppm NOx @ 3 % O_2; however, the rule could be expanded to cover additional smaller in-use equipment. Expanding the applicability to smaller in-use equipment will not achieve any emission reductions within the two-year contingency measure timeframe. SCAQMD Rule 1147 applicability for in-use units allowed an extended compliance schedule of 15 years old. A similar compliance schedule in the SFNA is not likely to obtain emission reductions within the two-year contingency measure timeframe.

For units already complying with Rule 419, a similar compliance schedule to SCAQMD, of 32 years of burner use, will not obtain emission reductions within the contingency measure timeframe. Many of the units in the SMAQMD were retrofitted in 2019 thru 2022. Furthermore, the estimated cost effectiveness for these small units within SMAQMD is estimated to be $40,809 per ton of NOx reduced based on information from the 2008 staff report for SCAQMD Rule 1147.

YSAQMD Analysis

Infeasible due to costs and timeline concerns. Estimated cost effectiveness of $39,082/ton of NOx reduced.

Reasons for infeasibility

Generally, operation of these types of equipment requires an air district permit. To comply with the lower NOx limits, a permitted source would need time to perform engineering/design evaluation for the replacement or retrofitted equipment, apply for and obtain pre-construction permit, purchase and obtain the equipment or retrofit from a manufacturer or distributor, complete the installation or retrofit, perform source test of new or retrofitted equipment, and obtain an operating (post-construction) permit. Thus, the time to complete all listed tasks in less than 2 years of a triggering event to obtain meaningful reductions within 2 years is not feasible.

In addition to timeframe infeasibility, the cost-effectiveness of a measure similar to SCAQMD Rule 1147 is considered to be cost prohibitive within the SFNA air districts.

Water Heaters (Residential) – Less than 1 mmBtu/hr

Water heaters and small boilers predominantly burn natural gas and are used to heat water and generate steam. These units are used in a variety of applications, including in homes, restaurants, retail stores, schools, hotels and office buildings. In SMAQMD Rule 414 and YSAQMD Rule 2.37, NOx emissions from water heaters and boilers rated less than 1 mmBtu/hr are "point-of-sale" rules that that applies to the manufacture and sale of new units as well as new installations.

Relevant Emission Inventory

The emissions inventory associated with residential water heaters is shown in the table below:

District	EIC	Category	2024 Emissions (tpd)	2032 Emissions (tpd)
EDCAQMD	610-608-0110-0000	Residential Fuel Combustion – Natural Gas Water Heating	0.015	0.076
FRAQMD	610-608-0110-0000	Residential Fuel Combustion – Natural Gas Water Heating	0.003	0.003
PCAPCD	610-608-0110-0000	Residential Fuel Combustion – Natural Gas Water Heating	0.024	0.251
SMAQMD	610-608-0110-0000	Residential Fuel Combustion – Natural Gas Water Heating	0.201	0.151
YSAQMD	610-608-0110-0000	Residential Fuel Combustion – Natural Gas Water Heating	0.171	0.115

Potential controls

The table below identifies each of the SFNA air districts rules for residential water heaters. For SMAQMD and YSAQMD, the lowest NOx emission limits are already in effect (excluding electrification).

District	Rule	Emissions Limit (ng/J)
EDCAPD	No Rule	None but due to California requirements in surrounding areas it is assumed all current residential water heaters meets 40 ng/J
FRAQMD	3.23	40 ng/J - mobile home water heaters 14 ng/J – all other units
PCAPCD	246	40 ng/J only for <75,000 Btu/hr
SMAQMD	414	10 ng/J for <75,000 Btu/hr (40 ng/J for mobile home) 14 ng/J for 75,000 to < 1 million Btu/hr (excluding Pool/Spa)
YSAQMD	2.37	10 ng/J for <75,000 Btu/hr (40 ng/J for mobile home) 14 ng/J for 75,000 to < 1 million Btu/hr (excluding Pool/Spa)

Another potential control for residential water heaters is requiring electrification. BAAQMD recently adopted zero emission regulations for furnaces and water heaters for units manufactured in 2027 for water heaters and 2029 for space heaters essentially setting a limit 0 ng/J. The CARB

2022 State SIP Strategy includes a Zero-Emission Standard for Space and Water Heaters measure to be adopted by 2025. This control measure specifies that beginning in 2030, 100 percent of sales of new space and water heaters would need to meet zero emission standard[29]. The state strategy would, therefore, preclude any local strategy and no contingency measure reductions would not be achieved within the two-year timeframe[30].

Reasons for infeasibility

Consistent with the conclusions for Residential Furnaces, due to the time required for turnover of existing units, additional controls of units are not feasible as a continency measure and meaningful reductions would not be achieved within the two-year timeframe needed for contingency measures[31]. In addition to the timeline constraints, any CARB adopted standards that would achieve emission reductions for this category would preclude any district rules for contingency measure reductions.

Turbines

Gas turbines use exhaust gases from the combustion of gaseous or liquid fuels to spin the turbine blades, driving a shaft and producing mechanical power. In most stationary applications, the shaft is coupled to an electrical generator, which converts the mechanical power into electricity. Gas turbines systems are classified as either simple cycle or combined cycle. In a simple cycle system, heat from the hot exhaust gases is not recovered. In a combined cycle system, heat from the exhaust gases is used to produce steam, which passes through a steam turbine, producing additional power.

Emissions Inventory

The emissions inventories associated with turbines is shown in the tables below. No associated inventory or EIC codes for turbines are located in EDCAQMD or FRAQMD.

PCAPCD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
PCAPCD	010-045-0110-0000	Electric Utilities – IC Turbine Engines – Natural Gas	0.039	0.006
PCAPCD	010-045-1200-0000	Electric Utilities – IC Turbine Engines – Diesel/Distillate Oil	0	N/A
PCAPCD	060-045-1200-0000	Service and Commercial – IC Turbine Engines – Diesel/Distillate Oil	0	N/A
Totals			0.039	0.006

[29] California Air Resources Board. Zero-Emission Space and Water Heater Standards. https://ww2.arb.ca.gov/our-work/programs/building-decarbonization/zero-emission-space-and-water-heater-standards/meetings-workshops
[30] Ibid. p. 50.
[31] Ibid. p. 50.

SMAQMD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
SMAQMD	010-045-0110-0000	Electric Utilities – IC Turbine Engines – Natural Gas	0.310	0.334
SMAQMD	010-045-1200-0000	Electric Utilities – IC Turbine Engines – Diesel/Distillate Oil	0	N/A
SMAQMD	020-045-0110-0000	Cogeneration – IC Turbine Engines	0	N/A
SMAQMD	050-045-1200-0000	Manufacturing and Industrial – IC Turbine Engines	0	
SMAQMD	060-045-1412-0000	Service and Commercial – IC Turbine Engines – Jet Fuel	0	N/A
Totals			0.310	0.334

YSAQMD Inventory

District	EIC codes	Category	NOx Inventory for source categories (tpd)	
			2024	2032
YSAQMD	010-045-0110-0000	Electric Utilities – IC Turbine Engines – Natural Gas	0.002	0.001
YSAQMD	010-045-1200-0000	Electric Utilities – IC Turbine Engines – Diesel/Distillate Oil	0	N/A
YSAQMD	020-045-0110-0000	Cogeneration – IC Turbine Engines – Natural Gas	0	0
YSAQMD	030-045-0110-0000	Oil and Gas Production – IC Turbine Engines	0.003	0.002
YSAQMD	050-045-1200-0000	Manufacturing and Industrial – IC Turbine Engines	N/A	0.001
YSAQMD	052-045-1200-0000	Food and Agricultural Processing – IC Turbine Engines	N/A	0
YSAQMD	060-045-0110-0000	Service and Commercial – IC Turbine Engines – Natural Gas	0.001	0.007
YSAQMD	060-045-0146-0000	Service and Commercial – IC Turbine Engines – Digester Gas	N/A	0.001
YSAQMD	060-045-1200-0000	Service and Commercial – IC Turbine Engines – Diesel/Distillate Oil	0	N/A
YSAQMD	060-045-1412-0000	Service and Commercial – IC Turbine Engines – Jet Fuel	0	N/A
Totals			0.006	0.012

Potential controls:

More stringent limits are in effect in SCAQMD Rule 1134 and SJVUAPCD Rule 4703 than those required in the SFNA. The table below shows a comparison of the limits in the rules.

	NOx Emission Limit for Gaseous Fuel, ppmvd @ 15% O_2				
Unit Rating	SMAQMD Rule 413 /	PCAPCD Rule 250	YSAQMD 2.34	SCAQMD Rule 1134 (Amended 2019)	SJVUAPCD Rule 4703
≥0.3 to <2.9 MW	42	42	42	**2.5**	9
a≥2.9 to <10 MW and <877 hr/yr operation	42	25	42	**2.5**	9
≥2.9 to <10 MW and ≥877 hr/yr operation	25	25	25	**2.5**	8
≥10 MW (no SCR) and <877 hr/yr operation	42	9	9	**2.5**	5 25 (if <200 hr/yr)
≥10 MW (no SCR) and ≥877 hr/yr operation	15	9	9	**2.5**	5
≥10 MW (w/ SCR) and <877 hr/yr operation	42	9	9	**2.5**	5 25 (if <200 hr/yr)
≥10 MW (w/ SCR) and ≥877 hr/yr operation	9	9	9	**2.5**	5
≥60 MW Combined Cycle <877 hr/yr operation	42	9	9	**2**	5 25 (if <200 hr/yr)
≥60 MW Combined Cycle ≥877 hr/yr operation	15 (no SCR) 9 (w/ SCR) /	15 (no SCR) 9 (w/SCR)	9	**2**	5

The lower limits of SCAQMD and SJVUAPCD are feasible and considered cost effective. No source specific turbines were identified in EDCAQMD or FRAQMD.

PCAPCD Analysis

The total NOx emissions from gas turbine operations are less than 0.006 tpd in 2032. Infeasible as a contingency measure because this control measure will result in minimal emission reductions.

SMAQMD Analysis

A review of the permits for the stationary gas turbines in SMAQMD shows that about half the existing turbines in Sacramento County could require retrofit to meet the lower SCAQMD NOx emission limits resulting in additional emission reductions. SCAQMD estimated a NOx reduction of 87.5%; however, further analysis of District permits found an estimated reduction of 25%. Infeasible as a contingency measure because achieving emissions reductions with retrofit technology (SCR) within 2 years is technologically infeasible for this category.

YSAQMD Analysis

A review of the permit for the stationary gas turbines in YSAQMD shows that the existing turbines could require retrofit to meet the lower SCAQMD NOx emission limits resulting in additional emission reductions. The current permit limit for the permitted turbines is 3.0 ppmv @ 15% O_2. Reducing the emission limit for these turbines to those in SCAQMD Rule 1134 would result in emission reductions of approximately 17%. Infeasible due to minimal reductions (0.0002 tpd of NOx reduced) and timeline concerns to design, permit, and install new equipment with retrofit SCR technology.

Reasons for infeasibility:

The potential contingency measures for this category would involve requiring installation of SCR on additional units or modification of SCR. In 2018, the SCAQMD provided approximately 6 years for compliance with new limits for combustion turbines in SCAQMD in Rule 1135. SCAQMD recently (February 22, 2023) proposed to revise Rule 1135 to provide an additional 3 months for compliance. SCAQMD Rule 1134 provides 24-36 months from issuance of a permit to construct to meet revised emission limits.

To comply with the lower NOx limits, a permitted source in the SFNA would need time to perform engineering/design evaluation for the replacement or retrofitted equipment, apply for and obtain pre-construction permit, purchase and obtain the equipment or retrofit from a manufacturer or distributor, complete the installation or retrofit, perform source test of new or retrofitted equipment, and obtain an operating (post-construction) permit. Thus, the time to complete all listed tasks in less than 2 years of a triggering event to obtain meaningful reductions within 2 years is not feasible.

Waste Gas Flares – Landfill, Sewage Treatment, and Incineration

Waste gas flares are used to reduce VOC emissions by incineration. In some applications, they are used for continuous control, and in other instances, may be used as safety devices during emergency situations. The combustion process produces NOx, which is emitted as a secondary pollutant.

Relevant Emission Inventory

The emissions inventory associated with waste gas flares is shown in the table below:

District	EIC	Category	NOx Inventory for source categories (tpd)	
			2024	2032
EDCAQMD	120-132-0136-0000	Flares – Waste Gas	0.006	0
FRAQMD	None	N/A	N/A	N/A
PCAPCD	120-132-0136-0000	Flares – Waste Gas	0.010	0.010
SMAQMD	120-132-0136-0000	Flares – Waste Gas	0.025	0.033
SMAQMD	130-132-0136-0000	Flares – Waste Gas	0.003	0.003
YSAQMD	110-132-0146-0000	Flares – Digester Gas	0.002	0.011
YSAQMD	130-132-0136-0000	Flares – Waste Gas	0	0

No districts within the SFNA have a rule covering this source category.

Potential controls

The controls identified for flares are based on SJVAPCD Rule 4311. SJVAPCD Rule 4311 controls emissions from flares by requiring flare minimization plans, extensive monitoring and record keeping, and submitting reports of planned and unplanned activities. In the December 2020 rule amendments, SJVAPCD further limit emission from flares by:

1. Removing the exemption for flares located at stationary sources with potentials to emit of less than 10 tons per year of VOC and less than 10 tons per year of NOx;
2. Curtailing the exemption for flares operated at municipal solid waste landfills for flares that combust less than 2000 MMscf of landfill gas per calendar year and that have ceased accepting waste; and
3. Adding performance standards that require Ultra Low NOx flaring technologies for operators of flares exceeding annual capacity through thresholds.

Reasons for infeasibility

The reduction in flaring operations has been shown to be feasible in SJVUAPCD by driving sources to reduce flaring operations. The removal of the exemptions in SJVAPCD's December 2020 would make similar sources in the SFNA be subject to the requirements in SJVAPCD Rule 4311. SJVUAPCD estimated the cost effectiveness of its rule amendments to be approximately $100,000 per ton of NOx removed. The cost effectiveness is estimated to be similar in the SFNA. Due to the high cost-effectiveness, this measure is not considered feasible in the SFNA.

In addition, it is infeasible for reductions to occur within the contingency measure 2-year period. In SJVUAPCD 2020 amendments to their flare rule, the rule allowed sources up to three years to meet the emission limits. Sources that were able to limit annual throughput to levels below newly specified thresholds were given 1.5 years to meet these requirements, but this action did result in reductions because these facilities were likely already operating below the threshold.

Operation of flares requires an air district permit. To comply with the emission limits and similar requirements in SJVUAPCD's rule, a permitted source would need time to perform engineering/design evaluation for the control technology, apply for and obtain pre-construction permit, purchase and obtain the control technology from a manufacturer or distributor, complete

the installation or retrofit, perform source test, and obtain an operating (post-construction) permit. Thus, the time to complete all listed tasks in less than 2 years of a triggering event to obtain meaningful reductions within 2 years is not feasible.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

STATEMENT OF REASONS

Proposed New Rule 489, GREENWASTE COMPOSTING OPERATIONS

September 23, 2024

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TABLE OF CONTENTS

RULE JUSTIFICATION

Health Effects

Ground-level ozone or "smog" is one of the air pollutants regulated by both federal and state laws. It is formed by photochemical reactions involving two types of precursor pollutants: volatile organic compounds (VOCs) and nitrogen oxides (NOX). VOCs and NOx are emitted by many types of sources, such as on-road and off-road combustion engine vehicles, power plants, industrial facilities, gasoline stations, organic solvents, consumer products, and composting. The high ozone season is from May through October for the Sacramento region.

Ground-level ozone is a strong irritant that adversely affects human health. Breathing ozone can reduce lung function and worsen respiratory problems. Ozone exposure has been associated with increased susceptibility to respiratory infections, cardiac-related effects, medical visits and school absenteeism, and can contribute to premature death, especially in people with heart and lung disease. Ozone can also cause damage to crops and natural vegetation by acting as a chemical oxidizing agent.

The District is currently designated as a nonattainment area for both the state and federal ozone standards. Since VOCs are a precursor to ozone, one of the strategies to control ozone pollution is to reduce VOC emissions from existing stationary sources. The summer season VOC emissions from composting facilities are estimated to be 0.252 tons per summer day for 2024[1] and 0.251 per summer day for 2032[2] in Sacramento County.

Legal Mandates

The District is within the Sacramento Federal Nonattainment Area (SFNA), which is classified as "severe" nonattainment for the 2008 National Ambient Air Quality Standard (NAAQS) for ozone[3]. For the 2015 ozone NAAQS, the SFNA area is currently classified as "serious" nonattainment[4]; however, the SFNA air districts have requested a voluntarily bump up to a severe nonattainment classification because additional time is needed to meet the standard. The U.S. Environmental Protection Agency (EPA) is expected to take action to reclassify the SFNA in a final rule. Title 40 of the Code of Federal Regulations, Subpart X, requires nonattainment areas to comply with the requirements for a "severe" ozone nonattainment area that are contained in Clean Air Act (CAA) Sections 182(c) and (d), which require that a plan be submitted to EPA that demonstrates attainment of the standard by the applicable attainment date and includes all control measures necessary for attainment and reasonable further progress (RFP).

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[1] CARB. "CEPAM: California 2016 Ozone SIP Baseline Emission Projections - Version 1.05 Sacramento Nonattainment Area Tool," Base Year 2012.
[2] CARB. "CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool," Base Year 2017.
[3] "Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes, Final Rule." 77 Federal Register (FR) 30088, May 21, 2012.
[4] "Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, Final Rule." 83 FR 25776, June 4, 2018.

In 2017, the air districts of the SFNA adopted the Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan (2008 Ozone NAAQS Plan)[5] to attain the 2008 ozone NAAQS by 2024. The RFP milestone years are 2017, 2020, and 2023. The plan to attain the 2015 ozone NAAQS by 2032 was adopted in 2023[6]. The RFP milestone years are 2023, 2026, and 2029.

CAA Sections 172(c)(9) and 182(c)(9) require ozone NAAQS attainment plans to include "contingency measures," which are to be triggered automatically if EPA promulgates a final rule finding that an ozone nonattainment area fails to meet RFP in the milestone years or attain the ozone standard by the attainment year. Contingency measures are intended to provide additional emission reductions in these circumstances to help achieve the standards. For many years, states relied on excess emission reductions from rules that had already been adopted to satisfy the contingency measure requirements. However, recent court decisions[7,8,9] have held that this approach doesn't meet CAA requirements because contingency measures must be unadopted measures that, when triggered, take effect without further action by the district, state, or EPA.

In June 2023, EPA partially disapproved[10] the SFNA's 2008 Ozone NAAQS Plan because it did not include contingency measures consistent with CAA Sections 172(c)(9) and 182(c)(9). To obtain approval, the districts of the SFNA must submit contingency measures that, in aggregate, achieve sufficient emission reductions. Failure to submit the contingency measures could lead to EPA sanctions with two penalties: an emission offset sanction, and a highway fund sanction resulting in the loss of Federal Highway Administration funding for new transportation projects.

Staff is proposing to adopt new Rule 489, Greenwaste Composting Operations, such that, if the contingency condition is triggered for either the 2008 or 2015 ozone NAAQS, the provisions of the rule will take effect and reduce VOC emissions from greenwaste composting operations by 0.0921 tons per summer day in 2024 and 0.0915 tons per summer day in 2032.

The adoption of Rule 489, together with other future measures planned for the districts of the SFNA, will meet the CAA contingency measure requirements.

Background

Composting is a biological process where organic material is decomposed by microorganisms under controlled conditions in the presence of oxygen to produce a compost material that can be used to reintroduce nutrients into soil. Composting is a three-stage process that begins as soon as appropriate materials are combined and piled together. After two to four months of composting, the material becomes finished compost. The initial stage of the process is referred to as active composting, followed by curing or finishing, and finally storage and/or processing of composted

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[5] *Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan.* El Dorado County Air Quality Management District (AQMD), Feather River AQMD, Placer County Air Pollution Control District (APCD), SMAQMD, Yolo Solano AQMD, July 24, 2017.

[6] *Sacramento Regional 2015 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan.* El Dorado County AQMD, Feather River AQMD, Placer County APCD), SMAQMD, Yolo Solano AQMD, October 17, 2023.

[7] *Bahr v. EPA*, 836 F.3rd 1218 (9th Cir. 2016).

[8] *Association of Irritated Residents v. EPA*, 10 F.4th 937 (9th Cir. 2021).

[9] *Sierra Club, et al. v. EPA*, 985 F.3d 1055 (D.C. Cir. 2021).

[10] "Disapproval of Clean Air Plans; Sacramento Metro, California; Contingency Measures for 2008 Ozone Standards," 88 FR 39179, June 15, 2013.

products. Emissions during the first 15 days of the active phase period account for a majority (87%) of the total integrated VOC emissions[11]. Two composting methods are used: static pile composting and turned windrow composting.

Static pile composting is characterized by infrequent turning, which is similar to backyard composting but on a larger scale. The material is placed into piles, where it decomposes over an extended period of time with little or no mixing during the composting process. Therefore, it is crucial to construct the pile to the appropriate size, with the material being thoroughly blended and having a moisture content and porosity to allow adequate aeration through the composting process.

The predominant method of greenwaste composting is turned windrow composting, in which materials are moved with a front-end loader into long piles called windrows. Aeration is achieved both by natural advection and mechanically turning the piles with a front-end loader or a windrow turner. Temperature, moisture content and oxygen concentration are maintained to optimize and hasten decomposition.

Control Techniques

Finished Compost Cover: Application of a finished compost cover to the top of greenwaste composting piles acts as a "pseudo-biofilter" that reduces VOC emissions during the active phase. A layer of finished compost at least six inches thick at the top should be applied within 24 hours of initial pile construction and stay in place for at least the first seven days of the active phase, during which the piles are not to be turned. SCAQMD, after reviewing several composting emission studies, estimated that this technique reduces active phase VOC emissions by 53% compared to regular greenwaste windrows without finished compost cover[12].

Water Irrigation: Application of water to the surface of compost piles during the active phase is also effective in reducing VOC emissions. Water should be applied to the surface of the pile such that the top one half of the pile is wet at a depth of at least three inches. Water irrigation was tested on an active phase composting windrow and showed 24% reductions in VOC emissions during 22 days of active phase composting[13]. Water is only required in amounts necessary to make the top three inches wet and does not require water application indiscriminately. A finished compost cover during the first 7 days of the active phase, combined with water irrigation for 22 days of the active phase, is estimated to result in a 40% reduction of total VOC emissions from greenwaste composting operations[14].

Control Device: Aerated static pile (ASP) is an example of a control technology that can be used to reduce composting emissions. Compostable material is placed on top of perforated pipes that are connected to blowers. In negative-pressure ASP, air is pulled through the pile and the exhaust is vented to an emission control device, such as a biofilter, to remove VOCs. Wood chips and compost can be used as biofilter media, and finished compost can be layered on the surface of the pile to increase capture efficiency of gas emissions from the pile. Overall control efficiencies

[11] SCAQMD. "Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." July 2011. p. 9.
[12] Ibid., p. 9.
[13] Ibid., p. 10.
[14] Ibid., p. 24.

of about 80 to 90 percent have been achieved[15]. SCAQMD Rule 1133.1, upon which proposed Rule 489 is based, requires control devices only for greenwaste composting facilities that include more than 5,000 tons per year of food waste in their feedstock. No facilities of this type have been identified in Sacramento County.

Other District's Regulations

Rules similar to proposed Rule 489 have been adopted by South Coast Air Quality Management District (SCAQMD, Rule 1133.3) and San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD, Rule 4566). SCAQMD Rule 1133.3 was adopted July 8, 2011, and required full compliance by no later than November 8, 2011. SJVUAPCD Rule 4566 was adopted August 18, 2011, and required full compliance by no later than August 18, 2012. The best management practice requirements in SCAQMD Rule 1133.3 are similar to the proposed Rule 489.

SCAQMD Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations
SCAQMD Rule 1133.3 requires best management practices to limit VOC emissions occurring during greenwaste composting operations. The best management practices apply to all permitted greenwaste composting facilities. Minor composting operations, such as community composting, nursery composting, backyard composting, and recreational facility composting, are exempt from the rule. The rule requires covering each initial active phase compost pile with finished compost or compost overs within 24 hours of initial pile formation, with no turning of piles within the first seven days of active composting. Water must be applied to the pile for the first 15 days of the active phase of composting. Composting operations with significant food waste throughput require an emission control device with an overall system control efficiency of 80 percent, by weight[16].

SJVUAPCD Rule 4566 – Organic Material Composting Operations
SJVUAPCD Rule 4566 requires best management practices to limit VOC emissions occurring during organic material composting operations. The best management practices range from watering system requirements for smaller facilities, finished compost cover for moderate sized facilities, or ≥ 80% reduction, by weight, in VOC emissions for the largest compost facilities. Covering of or removal of stockpiles are specified for several facility throughput classifications.

The requirements of both rules apply to greenwaste composting operations that limit the amount of manure allowed in pile formation. Similar watering controls and testing are required, but SJVUAPCD requires larger facilities to implement controls that achieve greater VOC reductions than SCAQMD.

Proposed Rule 489 best management practices include using stockpiles within specified time limits, covering initial pile formations with finished compost, and maintaining sufficient moisture within a windrow or static pile. An alternative mitigation measure, such as active controls, may be implemented if approved and demonstrated to reduce emissions by at least 40 percent by weight for VOC. An active control system for composting could likely be an alternative to the best management practices but are significantly more costly. These systems include aerated state pile systems, biofilter collection systems, or using vessels/buildings under negative pressure to contain and capture composting VOC emissions.

[15] Ibid., p. 11.
[16] Ibid., pp. 14-21.

The best management practices requirements in Rule 489 are consistent with the requirements in SCAQMD Rule 1133.3 and SJVUAPCD Rule 4566. The emission control requirements in SCAQMD Rule 1133.3 for composting operations processing food waste are not included in Rule 489 as these operations are outside the scope of the rulemaking and no facilities of this type have been identified in Sacramento County.

SUMMARY OF PROPOSED NEW RULE 489, GREENWASTE COMPOSTING OPERATIONS

In establishing proposed best management practice requirements for Rule 489, Staff considered and evaluated similar rules in effect in SVAQMD and SJVUAPCD for consistency (see previous discussion under Other District's Regulations). Rule 489 requirements are consistent with SCAQMD Rule 1133.3 and similar to the requirements in SJVUAPCD Rule 4566.

Applicability

Rule 489 applies to composting facilities of any throughput that are subject to Local Enforcement Agency notification or permitting requirements. These sources would also be subject to District permitting requirements. The rule defines greenwaste as any organic waste material such as grass clippings, leaves, tree and shrub trimmings, and plant remains, with up to 20 percent manure by volume, but does not include food waste.

Effective Date

Rule 489 will become effective on the effective date of an EPA final rulemaking that the SFNA has failed to attain the 2008 or 2015 federal 8-hour ozone standard or any applicable milestone for the standards. Facilities will have up to a year to comply with the rule requirements after the rule is triggered. The District will most likely know about a year in advance if the SFNA fails to attain a milestone or the 2008 or 2015 federal 8-hour ozone standard, and will conduct outreach to affected sources to inform them of triggered requirements.

Rule Exemptions

Minor composting facilities, including community composting, nursery composting, backyard composting, and recreational facility composting are also exempt from the rule, provided they are not subject to Local Enforcement Agency notification or permit regulations. In addition, facilities subject to Rule 496, Large Confined Animal Facilities, are not subject to Rule 489.

Composting Operation Requirements

Section 301 establishes the best management practice operation requirements for greenwaste composting operations/facilities. These requirements take effect one year after the rule is triggered.

1. Chip or grind and use greenwaste for on-site composting as allowed by the Local Enforcement Agency or within 10 days, whichever is earlier. The Local Enforcement Agency (LEA) for waste management programs within Sacramento County is the

Sacramento County Environmental Management Department[17]. LEAs are responsible for ensuring the correct operation of solid waste facilities in the state.

2. Cover each active phase pile with screened or unscreened finished compost within 24 hours of initial pile formation, such that the top is at least six inches thick, and the pile must not be turned for the first seven days of the active phase of composting, unless the pile needs to be turned within the first seven days for managing temperature or pathogen reduction pursuant to state regulations.
3. For the first 15 days after initial pile formation for the active phase period of composting, within six hours before turning, apply water as necessary to the surface area of each active phase pile such that the top one half of the pile is wet at a depth of at least three inches. Alternatively, the owner/operator may apply water during turning using a windrow turner which is equipped with an operating water spraying technology during the entire windrow turning process.
4. Allowances are provided if a rain event occurs prior to watering a pile within 6 hours before turning provided the pile is sufficiently wet.
5. An alternative mitigation measure may be used in lieu of the above requirements if the emission reductions are at least 40 percent by weight of VOC emissions for combined compost cover and water application. This could include using active composting controls to meet the control efficiency requirements.

Testing Procedures

Section 501.1 specifies the procedure for the Squeeze Ball Test, which is used to determine adequate pile wetness. Section 501.2 specifies the methods necessary to measure compost maturity. These test methods include the Test Methods for the Examination of Composting and Compost (TMECC) Solvita® Maturity test and the TMECC Specific Oxygen Update Rate. These test methods are consistent with SCAQMD and SJVUAPCD and are considered industry standard. More details of these testing methods can be found at https://www.compostingcouncil.org/. The TMECC test methods are not required to be performed unless the owner/operator wants to reduce the duration of the active phase to less than 22 days or the curing phase to less than 40 days.

Recordkeeping

Section 502 specifies the recordkeeping requirements for owners or operators of composting facilities. Affected composting facilities must maintain on-site records of organic waste throughput, watering, and active compost covering operations. The records are necessary to document the date, time, squeeze ball test results, and throughputs of the composting facility. Full details of the recordkeeping requirements are listed in Section 502.

All records must be maintained on site for a continuous 5-year period and submitted to the Air Pollution Control Officer by March 15 of each year for the previous calendar year. The submittal must be in electronic format.

A detailed description of each proposed section of Rule 489 is included in Appendix A.

[17] *Local Enforcement Agency (LEA) Directory*, https://www2.calrecycle.ca.gov/SolidWaste/LEA/Directory. Accessed March 27. 2024.

EMISSIONS IMPACT

Table 1 shows the California Emissions Projection Analysis Model (CEPAM) planning inventories for 2024 and 2032, with base years of 2012 and 2017, respectively. The planning inventory is comprised of emissions from one identified composting facility, Lopez Ag, and residential composting. Lopez Ag submits annual emissions inventory to the District. Also shown in Table 1 are emissions that have been adjusted to remove the 8.67% of the inventory attributed to residential composting[18], which is not subject to Rule 489.

TABLE 1: VOC Planning and Adjusted Emission Inventories for Composting Operations

EIC Code	EIC Description	VOC Emissions Inventory (tons per day)		VOC Emissions Inventory, Adjusted (tons per day)*	
		2024[19]	2032[20]	2024	2032
199-170-0260-0000	Composting	0.2520	0.2506	0.2301	0.2289

* The emission inventory subject to Rule 489 has been adjusted downward to remove the 8.67% attributed to residential composting, which is not subject to Rule 489.

Table 2 shows the emissions reductions, which are based on a 40 percent reduction, consistent with SCAQMD 1133.3[21], using finished compost cover and watering combined.

TABLE 2: VOC Emission Reductions for Composting Operations

EIC Code	EIC Description	VOC Emissions Reductions (tons per day) @ 40% Reduction	
		2024	2032
199-170-0260-0000	Composting	0.0921	0.0915

Rule 489, if triggered, is estimated to reduce VOC emissions by 0.0921 tons per summer day (33.6 tons per year) in 2024.

ECONOMIC IMPACT

Cost Impact

CHSC §40703 requires that the District consider and make public its findings relating to the cost-effectiveness of implementing an emission control measure. The proposed rule, if triggered, will require composting facilities to minimize fugitive VOC emissions through best management practices, including finished compost covering, watering, and windrow management. One existing

[18] Dooley, Todd. Email to Kevin J. Williams. *Insights Re: SMAQMD Composting Emission Inventory.* May 7, 2024.
[19] CARB. "CEPAM: California 2016 Ozone SIP Baseline Emission Projections - Version 1.05 Sacramento Nonattainment Area Tool," Base Year 2012.
[20] CARB. "CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool," Base Year 2017.
[21] SCAQMD. "Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." July 2011. pp. 21-24.

permitted source, Lopez Ag, is subject to proposed Rule 489. Although any future sources will be subject to the rule, a new source would be subject to Best Available Control Technology, which is as stringent or more stringent than the proposed rule. Therefore, no compliance costs for future sources are attributable to the proposed rule.

Compliance Costs**:** Staff used a methodology similar to that used for SCAQMD Rule 1133.3 to calculate the cost-effectiveness of the emissions reductions for proposed Rule 489. That analysis identified labor and operational costs for compost covering, watering of piles, and the on-going recordkeeping requirements. For Lopez Ag, the LEA and District permits for the source already require recordkeeping and reporting of facility throughputs. The cost-effectiveness was estimated based on the compliance costs calculated for finished compost cover and watering. These costs were calculated on a throughput basis of $1.30 per ton of throughput[22]. This 2011 estimate of $1.30 per ton of throughput is equivalent to $1.79 per ton in 2024 dollars.

Overall Cost-Effectiveness

Table 3 shows the estimated VOC emissions inventory and reductions for composting operations subject to Rule 489.

TABLE 3: Cost-Effectiveness for Composting Operations

Facility	Composting Throughput (Avg. last 5 years)	Emissions @ 5.65 lb VOC/ton of throughput (tpy)	Emissions Reduction @ 40% (tpy)	Mitigation Measures	Total Annual Compliance Costs (@ $1.79/ton of throughput	Cost-Effectiveness ($/ton VOC reduced)
Lopez Ag	23,414 tons	66.1	26.5	Finished compost cover and watering	$41,911	$1,581

In comparison, previously adopted District rules have had cost-effectiveness values for emissions reductions, in 2024 dollars, ranging from $3,240 per ton of VOC reduced (for the July 2011 amendment of Rule 459, AUTOMOTIVE, MOBILE EQUIPMENT AND ASSOCIATED PARTS AND COMPONENTS COATING OPERATIONS) to as much as $54,500 per ton of VOC reduced (for the December 1991 amendment of Rule 449, TRANSFER OF GASOLINE INTO VEHICLE FUEL TANKS).

Incremental Cost-Effectiveness

Pursuant to CHSC §40920.6(a)(3), the District is required to perform incremental cost-effectiveness analysis prior to adopting requirements for Best Available Retrofit Control Technology or a “feasible measure” requirement pursuant to CHSC §40914. The District is required to identify one or more potential control options that achieve the emission reduction

[22] *Socioeconomic Assessment for Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations.* SCAQMD. July 2011. pp. 3-5.

objective for the regulation. The incremental cost-effectiveness is the difference in the dollar cost divided by the emissions reduction potential "between each progressively more stringent potential control option as compared to the next, less expensive control option."

Proposed Rule 489 is consistent with the most stringent adopted control measures of SCAQMD and SJVUAPCD for existing facilities and is consistent with the most restrictive BACT determinations of SCAQMD and SJVUAPCD (see Table B-1). A more stringent potential VOC control option is active control, such as a forced aerated system equipped with an emission control device, which can be expected to achieve an overall control efficiency of 80%. SJVUAPCD requires active control as BACT for new facilities with annual throughputs of 50,000 tons or more; however, this is more than twice the average annual throughput of Lopez Ag.

In evaluating the incremental cost-effectiveness of active controls, Staff reviewed the analysis performed by SCAQMD during the adoption of Rule 1133.3. SCAQMD conducted an incremental cost-effectiveness analysis for an operation with 50,000 tons throughput per year using a control device with an overall efficiency of 80% control and a lifetime of 10 years[23]. SCAQMD concluded that the incremental cost-effectiveness would be $6,600 per additional ton of VOC reduced in 2011 dollars ($9,243 in 2024 dollars). This is approximately six times more expensive than the proposed Rule 489 best management practice requirements.

Socioeconomic Impact

CHSC §40728.5 requires a district to perform an assessment of the socioeconomic impacts before adopting, amending, or repealing a rule that will significantly affect air quality or emission limitations. The District Board is required to actively consider the socioeconomic impacts of the proposal and make a good faith effort to minimize adverse socioeconomic impacts.

CHSC §40728.5 defines "socioeconomic impact" to mean the following:

1. The type of industry or business, including small business, affected by the proposed rule or rule amendments.
2. The impact of the proposed rule or rule amendments on employment and the economy of the region.
3. The range of probable costs, including costs to industry or business, including small business.
4. The availability and cost-effectiveness of alternatives to the proposed rule or rule amendments.
5. The emission reduction potential of the rule or regulation.
6. The necessity of adopting, amending, or repealing the rule or regulation to attain state and federal ambient air standards.

Type of industry or business, including small business affected by the proposed rule:
Rule 489 applies to composting facilities that take incoming organic material and create piles or windrows to produce compost through biological decomposition. The requirements of Rule 489

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[23] SCAQMD. "Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." July 2011. pp. 24-25.

require owners and operators of composting facilities to implement best management practice operational changes. The single affected facility in Sacramento County, Lopez Ag, is a small business that produces compost and other landscaping supplies.

Impact on employment and economy in the District of the proposed rule:
Using the same assumptions from the economic analysis performed by SCAQMD[24], the average annual costs to comply with Rule 1133.3 requirements are approximately $42,000.annually. The costs are based on labor costs for covering active compost piles, time spent watering, and time spent maintaining records.

It is possible the costs of implementing this rule in Sacramento County may be slightly different than the estimated costs in SCAQMD for labor, equipment used to turn and water piles, and amount of time spent maintaining records.

Based on the SCAMQD analysis, Staff does not anticipate a significant impact on the economy or employment of the Sacramento region. If more specific information is provided to the District by the affected source, Staff will further exam the impact to the affected source.

Range of probable costs, including costs to industry or business, including small business of the proposed rule:
Costs for the identified business vary depending on the labor costs, watering costs, and the additional fuel and depreciation costs of using a front-end loader to apply finished compost covering. Operational costs may be lower than estimated if the source is already implementing some of the best management practices. Using SCAQMD cost data, Staff estimated a conservative cost of up to ~ $42,000 annually for compliance.

Availability and cost-effectiveness of alternatives to the proposed rule:
An alternative to the proposed rule is to not adopt the rule. If the proposed Rule 489 is not adopted, the District will not fulfill the contingency requirements for the 2008 and 2015 8-hour federal ozone standard. Failure to meet the ozone NAAQS planning requirements could result in sanctions, including increased emissions offset ratios for new and modified stationary sources and loss of federal highway funds. The adoption of Rule 489 as a contingency measure is necessary to meet federal mandates.

Emission reduction potential of the proposed rule:
The proposed Rule 489, if triggered, will achieve an estimated reduction in VOC emissions of 33.6 tons per year (see discussion under Emissions Impact).

Necessity of adopting the rule:
The proposed Rule 489 partially fulfills the District's requirements to include contingency measures into the attainment plan for the 2008 and 2015 federal 8-hour ozone standards. The VOC emission reductions will be necessary should the District fail to meet RFP milestones or attain the 2008 or 2015 federal 8-hour ozone standards by the attainment date.

[24] "Final Socioeconomic Assessment for Proposed Rule 1133.3 – Liquified Petroleum Gas Transfer and Dispensing." SCAQMD. June 2012.

PUBLIC OUTREACH/COMMENTS

On September 18, 2024, Staff met with the one source that will be subject to the proposed rule: Lopez Agricultural Services. Staff presented the proposed rule and discussed the requirements and potential impact with the source. The primary change to their current operation will be adding finished compost to the tops of windrows after initial pile formation; however, the source did not anticipate any undue cost impacts.

ENVIRONMENTAL REVIEW

California Public Resources Code Section 21159 requires an environmental analysis of the reasonably foreseeable methods of compliance. Compliance with the best management practices for greenwaste composting in Rule 489 is expected to be achieved by utilizing finished compost and sufficient watering to keep the windrows sufficiently wet to minimize fugitive VOC emissions.

In 2011, SCAQMD adopted Rule 1133.3, Emission Reductions from Greenwaste Composting Operations, and examined the environmental impact[25] of implementing best management practices for greenwaste composting facilities, including watering and covering initial active phase piles with finished compost within three hours of formation[26]. In evaluating the impacts of the rule, SCAMQD also evaluated the impacts of installing an emission control device for all active phase compost piles processing food waste, which is beyond the scope of this rulemaking.

SCAQMD also evaluated the operational impacts from Rule 1133.3. No operational air quality impacts in emissions are expected to occur for best management practices that are not already occurring. SCAQMD estimated a peak operational emission due to increase loader usage to place finished compost cover and concluded these emissions would not be of significance[27]. SCAQMD concluded that adopting Rule 1133.3 was expected to reduce VOC emissions and would not have the potential to generate significant adverse air quality impacts[28].

The conclusions by SCAQMD in the adoption of Rule 1133.3 are consistent with Staff's analysis of proposed Rule 489. Proposed Rule 489 will reduce operational VOC emissions from greenwaste composting operations. Staff has concluded that there will be no significant environmental impacts from compliance with the proposed rule.

Staff finds that the proposed rule is exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for protection of the environment (Class 8 Categorical Exemption, §15308 State CEQA Guidelines) and because it can be seen with certainty that there is no possibility that the activity in question may have a significant adverse effect on the environment (§15061(b)(3), State CEQA Guidelines).

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[25] "Final Environmental Assessment for Proposed Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." SCAQMD. July 2011.
[26] Ibid., pp. 1-9 – 1-10.
[27] Ibid., pp. 2-8 – 2-16.
[28] Ibid., Page 2-16.

FINDINGS

The California Health and Safety Code (HSC), Division 26, Air Resources, requires local districts to comply with a rule adoption protocol as set forth in §40727 of the Code. This section contains six findings that the District must make when developing, amending, or repealing a rule. These findings and their definitions are listed in the following table.

Finding	Finding Determination
Authority: The District must find that a provision of law or of a state or federal regulation permits or requires the District to adopt, amend, or repeal the rule. [CHSC Section 40727(b)(2)].	The District is authorized to adopt Rule 489 by California Health and Safety Code (CHSC) Sections 40001, 40702, and 41010.
Necessity: The District must find that the rulemaking demonstrates a need exists for the rule, or for its amendment or repeal. [CHSC Section 40727(b)(1).]	The proposed adoption of Rule 489 is necessary to meet the requirements of Clean Air Act Sections 182(c) and (d). These sections require that ozone attainment and further progress (RFP) plans include contingency measures that trigger automatically if EPA finds that a nonattainment area has not achieved a standard by the applicable attainment date or has not met RFP milestones.
Clarity: The District must find that the rule is written or displayed so that its meaning can be easily understood by the persons directly affected by it. [CHSC Section 40727(b)(3)].	Staff has reviewed the proposed rule and determined that it can be understood by the affected parties. In addition, the record contains no evidence that people directly affected by the rule cannot understand the rule.
Consistency: The rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations. [CHSC Section 40727(b)(4)].	The proposed rule does not conflict with, and is not contradictory to, existing statutes, court decisions, or state or federal regulations.
Non-Duplication: The District must find that either: 1) The rule does not impose the same requirements as an existing state or federal regulation; or (2) that the duplicative requirements are necessary or proper to execute the powers and duties granted to, and imposed upon the District. [CHSC Section 40727(b)(5)].	The proposed rule does not duplicate any existing state or federal regulations.
Reference: The District must refer to any statute, court decision, or other provision of law that the District implements, interprets, or makes specific by adopting, amending or repealing the rule. [CHSC 40727(b)(6).]	In adopting the proposed rule, the District is implementing the requirements of Clean Air Act Sections 172(c)(9) and 182(c)(9).
Additional Informational Requirements: In complying with HSC Section 40727.2, the District must identify all federal requirements and District rules that apply to the same equipment or source type as the proposed rule or amendments. [CHSC Section 40727.2].	No other District or federal rules apply to the same source type. BACT for this source category is based on SCAQMD composting BACT and SJVUAPCD BACT Guideline 6.4.10. A comparison of Rule 489 with BACT requirements is included in Appendix B.

REFERENCES

California Air Resources Board (CARB). *ARB Emissions Inventory Methodology for Composting Facilities.* Sacramento, CA. March 2, 2015.

California Air Resources Board (CARB). *CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool*. Base Year 2012.

CARB. *CEPAM: California 2016 Ozone SIP Baseline Emission Projections - Version 1.05 Sacramento Nonattainment Area Tool.* Base Year 2017.

San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). *Final Draft Staff Report for Revised Proposed New Rule 4566 (Organic Material Composting Operations)*. August 18, 2011.

SJVUAPCD. *Rule 4566 – Organic Material Composting Operations.* August 18, 2011.

South Coast Air Quality Management District (SCAQMD). *Emission Reductions from Greenwaste Composting Operations.* Diamond Bar, CA: South Coast Air Quality Management District, July 8, 2011.

SCAQMD. *Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations*. July 2011.

SCAQMD. *Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations.* July 8, 2011.

APPENDIX A:
LIST OF RULE PROVISIONS – RULE 489

SECTION NUMBER	PROPOSED PROVISIONS
101	Set the purpose of the rule to limit the emission of volatile organic compound occurring during greenwaste composting operations.
102	Set the applicability to any compost facility that compost and/or stockpile organic material. Currently, in Sacramento County there is one identified permitted composting facility that will be subject to the rule if the rule becomes effective.
103	Add the severability language consistent with other District rules.
110	Set an exemption from the rule for minor composting facilities that are not subject to Local Enforcement Agency notification or permitting requirements pursuant to 14 California Code of Regulations §17857.1(a). These exempt facilities are identified as community, nursery, backyard, and recreational facility composting as defined in the rule.
111	Set an exemption for operations subject to Rule 496 – LARGE CONFINED ANIMAL FACILTIIES.
200	Add definitions section.
201	Add definition of “active compost” consistent with SCAQMD Rule 1133.3. The abbreviation for Btu is used throughout the rule.
202	Add definition of “active phase” consistent with SCAQMD Rule 1133.3. Cooking units are a subset of miscellaneous devices that are provided higher NOx and CO emission limits than other types of miscellaneous combustion units.
203	Add definition of “backyard composting” consistent with SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
204	Add definition of “compost facility” consistent with SCAQMD Rule 1133.3.
205	Add definition of “community composting” consistent with the SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
206	Add definition of “composting” consistent with SCAQMD Rule 1133. The process of composting is the decomposition of organic material in the presence of oxygen, bacteria and other microorganisms.
207	Add definition of “composting overs” consistent with SCAQMD Rule 1133.3. Composting overs are woody materials that do not decompose in typical composting. Composting overs with finished compost are materials that can be used to cover initial active windrows.
208	Add definition of “curing phase” consistent with SCAQMD Rule 1133.3. Curing phase is the composting process that occurs after the end of the active phase.
209	Add definition of “finished compost” consistent with SCAQMD Rule 1133.3. Finished compost is the material created after the active and curing phases of composting.
210	Add definition of “greenwaste” consistent with SCAQMD Rule 1133.3. Greenwaste is a component of the organic material that is compostable.

SECTION NUMBER	PROPOSED PROVISIONS
211	Add definition of “greenwaste composting” consistent with SCAQMD Rule 1133.3. For the purposes of this rule, this defines the maximum allowable mixture of manure to greenwaste for composting.
212	Add definition of “Local Enforcement Agency” consistent with the authorities of the Sacramento County Environmental Management Department and CalRecycle.
213	Add definition of “nursery composting” consistent with the SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
214	Add definition of “organic waste” consistent with SCAQMD Rule 1133.3. This definition defines the component materials that make up compostable material for the purposes of this rule.
215	Add definition of “owner/operator” as any person who owns, leases, or operates a greenwaste composting operation.
216	Add definition of “pile” consistent with the SCAQMD Rule 1133.3.
217	Add definition of “recreational facility composting” consistent with SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
218	Add definition of “Solvita® maturity index” consistent with SCAQMD Rule 1133.3. This test can be used by operators to determine composting characteristics of windrows.
219	Add definition of “test methods for the examination of composting and compost (TMECC)” consistent with SCAQMD Rule 1133.3.
220	Add definition of “throughput” consistent with SJVUAPCD Rule 4566. Throughput recordkeeping is required pursuant to Section 501.
221	Add definition of “volatile organic compound (VOC)” consistent with as the same meaning in Rule 101.
222	Add definition of “windrow” consistent with SJVUAPCD Rule 4566. Windrows are the basic pile formation for composting organic waste material.
223	Add definition of “woodwaste” consistent with SCAQMD Rule 1133.3. Woodwaste is a component of the organic material that is compostable.
300	Add standards section.
301	Add operational requirements for greenwaste composting operations. These are the best management practices that operators must comply with.
301.1	Add chip and grind requirements section consistent with allowable Local Enforcement Agency requirements.
301.2	Add covered compost requirements section for initial active phase pile. No windrow turning is allowed within the first seven days unless temperature control or pathogen reduction is required pursuant Section 301.5 applies. The covering requirements are consistent with SCAQMD Rule 1133.3.
301.3	Add watering requirements section to require sufficient watering for the first 15 days after initial pile formation. The watering requirements are consistent with SCAQMD Rule 1133.3.
301.3a	Add wet determination using ball test as described in Section 501.1. The squeeze ball test is consistent with SCAQMD Rule 1133.3. The test is to quickly determine if the compost pile is sufficiently wet.

SECTION NUMBER	PROPOSED PROVISIONS
301.4	Add the option to not water after a rain event if the pile is wet enough. This allowance is consistent with SCAQMD Rule 1133.3.
301.5	Add alternative to covering requirements if a pile needs to be turned within the first seven days pursuant to California Code of Regulations requirements for composting. This allowance and requirements are consistent with SCAQMD Rule 1133.3.
301.6	Add option to allow operator to implement alternative mitigation measures that demonstrates emissions reductions by 40 percent by weight for VOC. The approval must be from the Air Pollution Control Officer, the California Air Resources Board, and the U.S. Environmental Protection Agency. This is consistent with SCAQMD Rule 1133.3.
400	No administrative requirements are applicable.
500	Add monitoring and recordkeeping section.
501	Add testing procedures section.
501.1	Add squeeze ball test method to approximate the water amount in a compost pile. This method is consistent with SCAQMD Rule 1133.3.
501.2	Add compost maturity test methods consistent with SCAQMD Rule 1133.3. These methods can be utilized to identify the active and curing phase of the composting process.
502	Add recordkeeping section consistent with SJVUAPCD Rule 4566.
501.2a-c	Add “watering requirements” recordkeeping requirements. The owner or operator subject to the rule must document date and times a windrow was tested for compliance. This includes the result of the ball test and the date and time a windrow was turned.
502.2a-b	Add “active compost covering” recordkeeping requirements. The owner or operator subject to the rule must document date and times each initial windrow or turned windrow was covered with a finished compost cover. a windrow was tested for compliance. This includes the result of the ball test and the date and time a windrow was turned.
502.3a-c	Add “throughput records” recordkeeping requirements. The owner or operator subject to the rule must document date, type, and weight (in wet tons) of each type of organic material received on site.
502.4	The owner or operator must maintain on-site records for a continuous 5-year period and submit the records to the Air Pollution Control Officer by March 15 of each year for the previous calendar year. The submittal must be in electronic format.

APPENDIX B:
COMPARISION OF PROPOSED RULE REQUIREMENTS WITH OTHER AIR POLLUTION CONTROL REQUIREMENTS

California Health and Safety Code (CHSC) §40727.2 requires air districts to provide a written analysis to 1) identify all existing federal air pollution control requirements, including Best Available Control Technology (BACT) for new or modified equipment, that apply to the same equipment or source type as the proposed rule, and 2) identify any of the District's existing or proposed rules that apply to the same equipment or source type. The analysis shall compare the following elements:

- Averaging provisions, units, and any other pertinent provisions associated with emission limits.
- Operating parameters and work practice requirements.
- Monitoring, reporting, and recordkeeping requirements, including test methods, format, content, and frequency.
- Any other element that the air district determines warrants review.

There are no other proposed or existing District rules that apply to this source category. Table B-1 contains the required analysis identifying federal BACT air pollution control requirements.

Comparison with BACT: See comparison in Table B-1.

Comparison with existing federal air pollution control requirements: No identified federal air pollution controls, including new source performance standards or national emission standards for hazardous air pollutants, are required for composting operations.

Table B-1
40727.2 Matrix for Proposed Contingency Measure 489 Composting Operations

Comparative Requirements			
Elements of Comparison	Proposed Rule 489	Best Available Control Technology (BACT)	
		SCAQMD BACT Guidelines Part D – Page 31	SJVUAPCD BACT Guideline 6.4.10
Applicability	The rule is applicable to any greenwaste composting facility.	Greenwaste composting	Organic Material Composting Operations as defined by Rule 4566 with >= 50,000 ton/yr throughput
Exemptions	• Minor composting facilities that are not subject to Local Enforcement Agency notification or permit regulations • Operations subject to Rule 496	• Operations subject to Rule 1133.2 – Emission Reductions from Co-Composting Operations • Installation of an emission control device • Minor composting facilities that are not subject to Local Enforcement Agency notification or permit regulations	• Facilities < 50,000 ton/yr throughput
Emission Limits	None	None	80% overall capture and control efficiency using: • positively aerated static windrow piles with engineered covers or equivalent; or • negatively aerated static windrow piles vented to a biofilter or equivalent
Averaging Provisions	None	None	
Operating parameters & Work Practice Requirements	Perform best management practices including: • Timelines to use incoming organic material • Watering of compost piles • Covering each pile or windrow with finished compost	Compliance with Rule 1133.3 including: • Timelines to use incoming organic material • Watering of compost piles • Covering each pile or windrow with finished compost	
Monitoring/ Testing	Wet Ball Test to quickly determine moisture content TEMCC 05.08-A & TMECC 05.08-E to determine compost maturity	Wet Ball Test to quickly determine moisture content TEMCC 05.08-A & TMECC 05.08-E to determine compost maturity	

Comparative Requirements			
Elements of Comparison	Proposed Rule 489	Best Available Control Technology (BACT)	
		SCAQMD BACT Guidelines Part D – Page 31	SJVUAPCD BACT Guideline 6.4.10
Monitoring/ Recordkeeping	• Keep records of watering, coverings, and throughput of organic materials • Maintain records on site for a continuous five-year period.	Compliance with Rule 1133.3 including: • Records of watering, application of finished compost, operation of control device, and source tests • Maintain records for five years with most recent two years on site	

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

STATEMENT OF REASONS

Proposed New Rule 490, LIQUEFIED PETROLEUM GAS TRANSFER AND DISPENSING

September 23, 2024

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TABLE OF CONTENTS

RULE JUSTIFICATION

Health Effects

Ground-level ozone or "smog" is one of the air pollutants regulated by both federal and state laws. It is formed by photochemical reactions involving two types of precursor pollutants: volatile organic compounds (VOCs) and nitrogen oxides (NOX). VOCs and NOx are emitted by many types of sources, including on-road and off-road combustion engine vehicles, power plants, industrial facilities, gasoline stations, organic solvents, consumer products, and liquefied petroleum gas transfer and dispensing. The high ozone season is from May through October for the Sacramento region.

Ground-level ozone is a strong irritant that adversely affects human health. Breathing ozone can reduce lung function and worsen respiratory problems. Ozone exposure has been associated with increased susceptibility to respiratory infections, cardiac-related effects, medical visits and school absenteeism, and can contribute to premature death, especially in people with heart and lung disease. Ozone can also cause damage to crops and natural vegetation by acting as a chemical oxidizing agent.

The District is currently designated as a nonattainment area for both the state and federal ozone standards. Since VOCs are a precursor to ozone, one of the strategies to control ozone pollution is to reduce VOC emissions from existing stationary sources. The summer season VOC emissions from liquified petroleum gas (LPG) transfer and dispensing losses are estimated to be 0.5693 tons per day in Sacramento County[1,2]. A portion of these emissions are already controlled by District Rule 447 – Organic Liquid Loading. The remaining emissions, 0.2860 tons per day, are emitted by operations that are not subject to any current District rule.

Legal Mandates

The District is within the Sacramento Federal Nonattainment Area (SFNA), which is classified as "severe" nonattainment for the 2008 National Ambient Air Quality Standard (NAAQS) for ozone (NAAQS)[3]. For the 2015 ozone NAAQS, the SFNA area is currently classified as "serious" nonattainment[4]; however, the SFNA air districts have recently requested a voluntarily bump up to a severe nonattainment classification because additional time is needed to meet the standard. The U.S. Environmental Protection Agency (EPA) is expected to take action to reclassify the SFNA in a final rule. Title 40 of the Code of Federal Regulations, Subpart X, requires nonattainment areas to comply with the requirements for a "severe" ozone nonattainment area that are contained in Clean Air Act (CAA) Sections 182(c) and (d), which require that a plan be submitted to EPA that demonstrates attainment of the standard by the applicable attainment date and includes all control measures necessary for attainment and reasonable further progress (RFP).

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1 CARB. "CEPAM: 2016 SIP - Standard Emission Tool, Emission Projections By Summary Category, Base Year: 2012.
2 CARB. "CEPAM: 2019 SIP - Standard Emission Tool, Emission Projections By Summary Category, Base Year: 2017.
3 "Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes, Final Rule." 77 Federal Register (FR) 30088, May 21, 2012.
4 "Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, Final Rule." 83 FR 25776, June 4, 2018.

In 2017, the air districts of the SFNA adopted the Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan (2008 Ozone NAAQS Plan)[5] to attain the 2008 ozone NAAQS by 2024. The RFP milestone years are 2017, 2020, and 2023. The plan to attain the 2015 ozone NAAQS by 2032 was adopted in 2023[6]. The RFP milestone years are 2023, 2026, and 2029.

CAA Sections 172(c)(9) and 182(c)(9) require ozone NAAQS attainment plans to include "contingency measures," which are to be triggered automatically if EPA promulgates a final rule finding that an ozone nonattainment area fails to meet RFP in the milestone years or attain the ozone standard by the attainment year. Contingency measures are intended to provide additional emission reductions in these circumstances to help achieve the standards. For many years, states relied on excess emission reductions from rules that had already been adopted to satisfy the contingency measure requirements. However, recent court decisions[7,8,9] have held that this approach doesn't meet CAA requirements because contingency measures must be unadopted measures that, when triggered, take effect without further action by the district, state, or EPA.

In June 2023, EPA partially disapproved[10] the 2008 Ozone NAAQS Plan because it did not include contingency measures consistent with CAA Sections 172(c)(9) and 182(c)(9). To obtain approval, the districts of the SFNA must submit contingency measures that, in aggregate, achieve sufficient emission reductions. Failure to submit the contingency measures could lead to EPA sanctions with two penalties: an emission offset sanction, and a highway fund sanction resulting in the loss of Federal Highway Administration funding for new transportation projects.

Staff is proposing to adopt Rule 490, Liquefied Petroleum Gas Transfer and Dispensing, such that, if the contingency condition is triggered for either the 2008 or 2015 ozone NAAQS, the provisions of the rule will take effect and reduce VOC emissions from these operations by 0.196 tons per day. The provisions include controls on LPG bulk plants and LPG transfer and dispensing facilities.

The adoption of Rule 490, together with other future measures planned for the districts of the SFNA, will meet the CAA contingency measure requirements.

Background

LPG consists of propane, propylene, butane, and butylenes and is used in numerous applications as fuel for automobiles, barbeques, engines, forklifts, space heaters, trucks, agricultural and industrial equipment, and in chemical processing operations. LPG is commonly referred to as propane when used for domestic heating. LPG is produced during the production and processing

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[5] *Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan.* El Dorado County Air Quality Management District (AQMD), Feather River AQMD, Placer County Air Pollution Control District (APCD), SMAQMD, Yolo Solano AQMD, July 24, 2017.

[6] *Sacramento Regional 2015 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan.* El Dorado County AQMD, Feather River AQMD, Placer County APCD), SMAQMD, Yolo Solano AQMD, October 17, 2023.

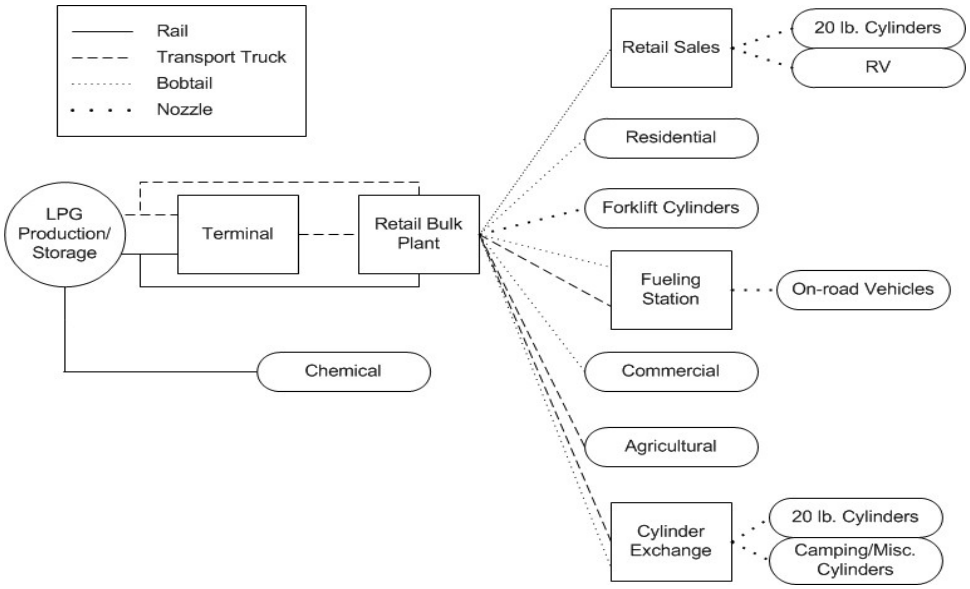
[7] *Bahr v. EPA*, 836 F.3rd 1218 (9th Cir. 2016).

[8] *Association of Irritated Residents v. EPA*, 10 F.4th 937 (9th Cir. 2021).

[9] *Sierra Club, et al. v. EPA*, 985 F.3d 1055 (D.C. Cir. 2021).

[10] "Disapproval of Clean Air Plans; Sacramento Metro, California; Contingency Measures for 2008 Ozone Standards," 88 FR 39179, June 15, 2013.

of natural gas and crude oil, and is stored as a liquid under moderate pressure. LPG is transported to multiple destinations through a series of transfer operations between storage facilities, rail cars, tanker trucks/trailers, bobtails and dispensing into tanks and cylinders. Fugitive emissions are released into the atmosphere during the LPG transfer and dispensing operations. A summary of the LPG transfer and dispensing distribution channels is shown in the following diagram.



Value Chain of LPG Distribution (Life Cycle Associates, LLC, 2011)

The typical path of LPG from production to end use is:

1. Bulk plants receive LPG from large storage terminals or directly from LPG production and storage facilities via rail cars (approx. 30,000 – 35,000 gallons water capacity) and large tanker trucks/trailers (also called transport trucks, approx. 10,000 gallons water capacity). The LPG is then loaded into stationary tanks at the bulk plant.
2. LPG is transferred from stationary tanks at the bulk plant into bobtail trucks (approximately 2,500 – 3,000 gallons water capacity) that deliver LPG to:
    - End users, such as residential, commercial, agricultural facilities, and industrial facilities (primarily for forklifts);
    - Retail sale facilities that refill portable LPG cylinders;
    - Fueling stations that dispense LPG into vehicles; and
    - Cylinder exchange facilities and camping cylinder marketers.

Fugitive emissions of LPG occur in three main areas:

- Release of entrapped liquid during disconnection of LPG supply and transfer lines;
- Vapor and liquid leaks in the equipment used for transfer and dispensing; and
- Venting through fixed liquid level gauges (FLLGs), also known as bleed valves or outage gauges, that are used as safety devices to ensure that receiving containers are not overfilled. LPG containers are filled to about 80% of their water capacities to accommodate thermal expansion of the liquid.

LPG Transfer and Dispensing Operations

When LPG is transferred from rail cars and tanker trucks/trailers into stationary storage tanks at the bulk plant, vapor recovery and equalization systems are used to balance the pressure between the cargo tank and the stationary tank. Lines between the vapor and liquid spaces in the cargo tank and stationary tank are connected to form a closed loop system. When rail cars are unloaded, LPG vapors expelled from the stationary tank enter a compressor, which pressurizes the vapor returning to the rail car and assists the transfer. When tanker trucks/trailers are unloaded, liquid pumps are used to move the LPG liquid into the stationary tank, and LPG vapors expelled from the stationary tank flow through the vapor line and into the cargo tank to equalize the pressure. Stationary storage tanks are equipped with FLLGs that are used during the transfer process to prevent overfilling the tank.

When LPG is transferred from stationary storage tanks into bobtails, vapor recovery and equalization systems are also used. A liquid pump moves liquid LPG from the storage tank into the cargo tank of the bobtail. LPG vapors expelled from the bobtail cargo tank during transfer flow back though the vapor line into the storage tank to equalize the pressure. The bobtail cargo tanks are equipped with FLLGs that are used during the transfer process to prevent overfilling the cargo tank.

Bobtails deliver LPG to smaller storage tanks at their customers' locations. A liquid line is connected from the bobtail cargo tank to the tank being filled. A liquid line is connected between the two tanks, and a liquid pump on the bobtail is used to move the liquid LPG into the tank being filled. In this operation, no vapor return line is used. The tanks that are filled at customer locations are equipped with FLLGs that are used during the transfer process to prevent overfilling.

Small LPG transfer and dispensing facilities, such as those located at gas stations and equipment rental businesses, dispense LPG from stationary tanks into portable containers, including 20-pound barbecue cylinders and cylinders for use on recreational vehicles (RVs). During filling, a dispensing nozzle is attached to the cylinder and a liquid pump is used to move liquid LPG from the stationary tank into the cylinder. Cylinders are equipped with FLLGs that are used during the transfer process to prevent overfilling.

Control Techniques

Low Emission Connectors: When transfer lines are disconnected after the transfer operation, the LPG remaining inside the connector volatilizes and is released into the air. Low emission connectors are designed to result in a release of no more than four cubic centimeters of LPG when disconnected. Low emission connectors reduce emissions by 80% to 99% compared to standard connectors, depending on the type of transfer operation.

Low Emission FLLGs: For safety reasons, LPG containers, including stationary and portable tanks, cargo tanks, and cylinders are filled to no more than 80% of their water capacities. This allows for any thermal expansion of the liquid due to temperature fluctuations. Industry practice is to use FLLGs to monitor the liquid level during filling.

An FLLG is a valve with an orifice, venting to the air, and connected to a dip tube that extends into the tank. As the tank fills, the valve can be opened to allow vapor to vent through the orifice. Once the liquid in the tank reaches the bottom of the dip tube, liquid is ejected through the orifice,

indicating that the maximum fill level has been reached. The FLLG is then closed, and the transfer is stopped.

Low emission FLLGs have number 72 orifices (0.025 inches). These reduce emissions by approximately 50% compared to standard number 54 orifices (0.055 inches).

Fill by Weight: An alternative to using an FLLG is to fill by weight. In this method, the liquid level in the container is monitored with a scale to prevent overfilling. Fill by weight is a standard practice in LPG cylinder exchange programs and in the production of single-use camping LPG cylinders.

Leak Detection and Repair Programs: LPG emissions from fugitive leaks can be minimized by implementing leak detection and repair programs. The programs require daily visual inspections and period testing for leaks. Connectors found to be leaking must be tagged and removed from service, and may not be returned to service unless repaired or replaced and re-inspected.

Other Districts' Regulations

Rules similar to proposed Rule 490 have been adopted by SCAQMD (Rule 1177) and VCAPCD (Rule 74.33). The requirements of these rules are functionally equivalent to those of proposed Rule 490. The requirements apply to LPG bulk loading facilities, LPG transfer and dispensing facilities, and mobile fuelers. Requirements include vapor recovery or equalization systems at bulk loading facilities, installation of low emission connectors and gauges, implementation of leak detection and repair programs, operator training, recordkeeping, and reporting.

SUMMARY OF PROPOSED NEW RULE 490, LIQUEFIED PETROLEUM GAS TRANSFER AND DISPENSING

Staff is proposing to adopt new Rule 490 to reduce emissions of VOC from the transfer and dispensing of LPG. In establishing equipment and operation requirements, Staff evaluated similar rules in other California air districts for consistency. SCAQMD Rule 1177 and VCAPCD Rule 74.33 have functionally equivalent requirements, which are feasible to implement in Sacramento County. The requirements proposed for Rule 490 are consistent with these rules.

Because Rule 490 is being proposed as a contingency measure, the rule will not take effect unless/until EPA promulgates a final rule finding that an ozone nonattainment area fails to meet RFP in the milestone years or attain the ozone standard by the attainment year. However, the District will most likely know about a year in advance if the SFNA fails to meet the milestones or attain the ozone standards. Staff will conduct outreach to affected sources and operators to inform them of any forthcoming EPA action.

Proposed Rule 490 applies to the transfer or dispensing of LPG to or from any container into any other container. This includes, for example, transfers of LPG from railroad tank cars and tanker trucks/trailers to stationary storage tanks at bulk loading facilities, transfer of LPG from stationary storage tanks into bobtail trucks, transfer of LPG from bobtail trucks into storage containers or cylinders, or the dispensing of LPG into portable barbeque tanks. The requirements of proposed Rule 490 require owners and operators of LPG transfer and dispensing facilities to install low emission connectors and low emission FLLGs, conduct routine maintenance, and implement leak detection and repair programs.

Rule Exemptions

The proposed rule provides an exemption for dispensing of LPG into small containers with a water capacity of less than 4 gallons. These containers are not typically refilled at gas stations and equipment rental businesses. Small refillable containers of this size are usually refilled by weight through exchange programs. Nonrefillable one-pound containers, typically used for camping, are filled by weight at manufacturer's facilities.

The proposed rule also provides an exemption for the transfer and dispensing into LPG containers that are specifically dedicated and installed for use with recreational vehicles (RVs). This means that a low emission fixed liquid level gauge (FLLG) or using a fill by weight technique will not apply to these RV cylinders. This exemption recognizes that RV owners may be travelling from other counties or states where the requirements for LPG containers are not in effect. However, operators that fill RV cylinders are still subject to the requirements for daily physical leak checks, inspections, training programs, and repairs.

Equipment and Operation Requirements

Sections 301 through 304 set equipment and operation requirements for LPG transfer and dispensing operations. Requirements are separated by type of LPG facility.

LPG Bulk Loading Facilities**:** An LPG bulk loading facility is a transfer and dispensing facility whose primary function is to store LPG for further distribution and has one or more stationary storage tanks with a water capacity of 10,000 gallons or more. The following requirements apply to the transfer from any cargo tank to a stationary tank located at the facility or from any stationary storage tank to a cargo tank:

1. Use an LPG vapor recovery or equalization system capable of recovering all LPG vapors during the transfer process and maintain and operate the system according to the manufacturer's specifications.
2. Ensure that all vapor return lines and liquid transfer lines are properly connected between the cargo tank and the stationary storage tank and maintained so that associated connectors are vapor tight and liquid tight during LPG transfer.
3. Properly maintain the transfer hose assembly, which includes the hose, fittings, and gaskets, to maintain vapor tight conditions.

LPG bulk loading facilities are also subject to the applicable requirements of LPG transfer and dispensing facilities.

LPG Transfer and Dispensing Facilities: An LPG transfer and dispensing facility is a mobile fueler (i.e., a cargo tank, tanker truck/trailer, or bobtail truck used to transport LPG), or a stationary facility consisting of one or more stationary storage tanks, and associated equipment which receives, stores, and either transfers or dispenses LPG to stationary storage tanks, cargo tanks, portable storage tanks, or cylinders. Equipment and operation requirements depend on the type of container being loaded. Specific requirements apply to each stationary storage tank, each cargo tank, and each container that is a cylinder or portable storage tank.

For each transfer into a stationary storage tank, the transfer must be performed by either: 1) closing the FLLGs during transfer and using a filling technology that monitors the maximum fill level without use of an FLLG, and/or 2) equipping the tank with a low emission FLLG (defined as an FLLG with a number 72 orifice size (0.025 inch)) whenever a tank is put into or taken out of service and prior to returning the tank to service, but no later than 18 months after the effective date of the rule; however, if the stationary storage tank being filled is equipped with an FLLG that cannot be retrofitted with a low emission FLLG in a safe manner without relocation of the stationary storage tank, the owner/operator has up to 48 months to retrofit with a low emission FLLG. Documentation of such tanks must be submitted to the Air Pollution Control Officer.

In practice, the industry has opted to comply with these requirements in SCAQMD and VCAPCD by installing low emission FLLGs.

For each transfer into a cargo tank (e.g., bobtail or tanker truck/trailer) equipped with an FLLG, the transfer must be performed by either: 1) closing the FLLG during transfer and using a filling technology that monitors the maximum fill level without the use of an FLLG, or 2) equipping the cargo tank with a low emission FLLG. Cargo tanks must also meet these requirements:

1. If a cargo tank is purchased as new or manufactured after the effective date of this rule, it must be equipped only with low emission FLLGs.
2. When a cargo tank is evacuated, it must be equipped only with low emission FLLGs prior to returning to service.
3. All cargo tanks must be equipped with only low emission FLLGs no later than 60 months after the effective date of the rule.

In practice, the industry has opted to comply with these requirements in SCAQMD and VCAPCD by installing low emission FLLGs.

For each transfer into a container that is a cylinder or portable storage tank, the transfer must be performed by either: 1) closing the FLLG during transfer and using a fill by weight technique or an alternative technology that monitors the maximum fill level without the use of the FLLG, or 2) equipping the cylinder or portable storage tank with a low emission FLLG no later than 18 months after the effective date of the rule

Companies with LPG cylinder exchange programs fill by weight, although the cylinders being filled are still equipped with low emission FLLGS. LPG transfer and dispensing stations will be prohibited from filling cylinders, such as barbecue cylinders, that are not equipped with low emission FLLGs. Noncompliant cylinders are easily identifiable. It will be the responsibility of customers to bring compliant cylinder. There are relatively few noncompliant cylinders in circulation, however, because manufacturers have been supplying only cylinders equipped with low emission FLLGs since 2017.

Low emission connectors that are liquid tight and vapor tight, except when actively connecting or disconnecting the connector, must be used when transferring LPG from one container to any other container. This requirement takes effect one year after the effective date of the rule.

Compliance methods for the equipment and operation requirements are shown in Table 1.

TABLE 1: Compliance Methods

LPG Equipment Type	Compliance Method
Residential Storage Tanks	Installation of low emission FLLGs
Commercial Storage Tanks	Installation of low emission FLLGs
Barbeque Cylinders	1. Convert from fill by volume to fill by weight system (supplier); 2. Exchange customer's existing, noncompliant cylinder with new cylinder; 3. Install replacement low emission FLLGs and low emission connectors on customer's existing cylinder; or 4. Customer to purchase new, compliant cylinder
Bobtail Trucks	Install low emission FLLGs
Bobtail Truck Dispensers	Install low emission connectors
Tanker Trucks/Trailers	Install low emission FLLGs
Forklift Tanks at industrial/commercial facility (depending on filling method)	1. Install low emission FLLGs 2. Remove existing tanks and convert to cylinder exchange program 3. Convert to a pressure-fill system by replacing existing tanks with larger tank with pump/motor (instead of gravity fill) 4. Fill cylinders at the facility directly from a bobtail truck.
Service Dispensers (Hose end from stationary tank to portable tank)	Install low emission connectors
Bulk Loading Facilities and Transfer and Dispensing Facilities	Install low emission connectors, perform daily visual inspections, conduct quarterly LDAR inspections and maintain/repair equipment

Leak Detection and Repair (LDAR) Program Requirements

Section 303 establishes leak detection and repair (LDAR) requirements for bulk loading facilities and transfer and dispensing facilities. The minimum requirements for a compliant leak detection repair program include:

1. Daily physical leak check for evidence of leakage.
2. Inspections once at least every 90 days using a bubble test (as defined in Section 202) or EPA Reference Method 21 (test method specified in Section 501).
3. Periodic training program for any employee involved in the maintenance or operation of LPG transfer. The training program must incorporate written training procedures, training frequency, scheduled training dates, and written record of the dates and training provided for each employee.
4. Repair requirements for any connector identified as leaking from a daily physical leak check, or testing using the bubble test or EPA Method 21. Records of maintenance activities, including identification and repair of leaky connectors must be maintained according to the requirements of the recordkeeping Section 502.2.

It is considered best practice and industry standard practice to use the bubble test during LPG transfers. Allowing the bubble test in addition to EPA Method 21 allows the industry to show compliance using standard practices. For facilities that choose to use EPA Method 21, any measurement of 10,000 ppm or less would be considered vapor tight.

Compliance Dates

The compliance dates are based on the effective date (trigger date) of the rule; therefore, individual requirements take effect a specified length of time after the rule becomes effective. If the rule becomes effective, the District will republish the rule with specific dates instead of timelines.

For LPG bulk loading facilities, the equipment and operation requirements are to use an LPG vapor recovery or equalization system and to properly connect and maintain associated connectors to ensure vapor and liquid tightness during transfer. These requirements are effective one year after the effective date of the rule.

For LPG transfer and dispensing facilities (which, by definition, also includes bulk loading facilities), the effective dates of the requirements are summarized in Table 2. Low emission connectors must be installed within one year after the effective date of the rule. Low emission FLLGs must be installed according to the schedule in Table 2. As an alternate to installing low emission FLLGs, the owner/operator may opt to comply with the requirements by using a filling technology that monitors the maximum fill level without the use of an FLLG, such as filling by weight. If this compliance method is chosen, the requirement to use such technology is effective one year after the effective date of the rule.

TABLE 2: Low Emissions Connectors and Low Emission FLLG Compliance Schedule

Container Type	Requirement	When Required?	Latest Compliance Date
Stationary Storage Tank	Low Emission FLLG*	When tank is put into or taken out of service but prior to returning to service	No later than 18 months after effective date of rule. For tanks that cannot be retrofitted with a low emission FLLG in a safe manner without relocation of the stationary storage tank, no later than 48 months.
Cargo Tank	Low Emission FLLG*	When a tank is purchased, put into service, or evacuated but prior to returning to service	No later than 60 months after effective date of rule
Cylinder / Portable Storage Tank	Low Emission FLLG*	Any time before last compliance date	No later than 18 months after effective date of rule
Any container to another	Low emission connectors that are leak tight and vapor tight	During all LPG transfers except when actively connecting or disconnecting the connector	No later than one year after the effective date of rule

* As an alternative to installing low emission FLLGs, the owner/operator may opt to comply with the requirements by using a filling technology that monitors the maximum fill level without the use of an FLLG. If this compliance method is chosen, the requirement to use such technology is effective one year after the effective date of the rule.

Administrative Requirements

By July 1 after the end of the first full calendar that the requirements for bulk loading facilities are in effect, the owner/operator must submit an end-of-year inventory, for the prior calendar year, of all low emission connectors installed at the facility and those installed on facility-owned or leased

LPG mobile fuelers associated with the transfer or storage of LPG. The inventory submittal must include the specific transfer or storage equipment involved and the manufacturer and identification or part number of all low emission connectors.

By July 1 each year after the end of the first full calendar that the requirements for bulk loading facilities are in effect, the owner/operator must submit an end-of-year inventory, for the prior calendar year, of all facility containers, including all facility-owned or leased mobile fuelers associated with the transfer and storage of LPG, that are equipped with one or more low emission FLLGs. The inventory submittal must include a summary, by size and classification, and include the associated number of installed low emission FLLGs. This reporting requirement will end after five consecutive annual reports have been submitted, which corresponds to the longest compliance timeline (cargo tanks must have low emission FLLGs installed no later than 60 months after the requirements are triggered).

Recordkeeping Requirements

Bulk loading or transfer and dispensing facilities must maintain purchase and installation records of low emission FLLGs and low emission connectors, and a maintenance log of all leaks found with details including type or leak, location, date and time discovered, date and time repaired, and the name and employer name of person performing the repair and details of the part.

Operators of mobile fuelers or railroad tank cars subject to the requirements of Section 304 must maintain on-site records of maintenance of the vapor recovery or equalization system and a copy of the manufacturer's maintenance schedule.

All records must be maintained on site for a continuous 5-year period. In addition, records must be submitted to the District by July 1 each year for the previous calendar. This requirement is consistent with recent EPA action regarding citizens' ability to participate in the enforcement of the SIP as allowed by CAA section 304.[11]

A detailed description of each proposed section of Rule 490 is included in Appendix A.

EMISSIONS IMPACT

Table 3 shows the estimated VOC emissions inventory for all categories of LPG transfer and dispensing losses operating in Sacramento County. The emission inventory methodology[12] is based on the most recent publicly available statewide LPG sales data provided by the American Petroleum Institute. The inventory, identified by Emission Inventory Code (EIC), includes emissions from residential, commercial, retail cylinder filling and exchanges, fuel for internal combustion engines, industrial, chemical, agricultural, and distribution facilities (bulk terminals/bulk plants).

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[11] "Air Plan Approval, Conditional Approval, Limited Approval and Limited Disapproval; Colorado; Serious Attainment Plan Elements and Related Revisions for the 2008 8-Hour Ozone Standard for the Denver Metro/ North Front Range Nonattainment Area," 88 FR 29827, May 9, 2023.

[12] SMAQMD. "Area Source Methodology – LPG Transfer and Dispensing Losses." Revised January 23, 2014.

TABLE 3: VOC Emissions Inventory for LPG Transfer and Dispensing Losses[13,14]

EIC Code	EIC Description	VOC Emissions Inventory (tons per day)
330-319-0120-0000	Petroleum Marketing – LPG Transfer and Dispensing Losses	0.5693

LPG transfers from stationary storage tanks into cargo tanks at bulk plants (or "offloading") are already subject to emission standards under Rule 447 – Organic Liquid Loading, and no emission reductions from these activities are attributed to Rule 490. However, Rule 490 will set equipment, operational, and leak detection and repair requirements that are not included in Rule 447. The portion of the emission inventory controlled by Rule 490 has been adjusted to remove the amount due to offloading at LPG bulk plants.

Using the methodology in Appendix B of the 2012 SCAQMD staff report for Rule 1177, Staff estimated that Rule 490 will reduce VOC emissions from operations controlled by the rule by 68.5%, or 0.1959 tons per day (71.5 tons per year). The emission reduction estimate is presented in Table 4.

TABLE 4: VOC Emissions Inventory and Reductions for LPG Transfer and Dispensing

Description	VOC (tons per day)
LPG Transfer and Dispensing Inventory	0.5693
LPG Transfer and Dispensing Inventory Controlled by Rule 490*	0.2860
LPG Transfer and Dispensing Emission Reduction from Rule 490	0.1959
Percent Reduction	68.5%

* LPG transfers from stationary storage tanks into cargo tanks at bulk plants are already subject to emission standards by Rule 447 – Organic Liquid Loading, and no emission reductions from these activities are attributed to Rule 490.

ECONOMIC IMPACT

California Health and Safety Code (CHSC) §40703 requires that the District consider and make public its findings relating to the cost-effectiveness of implementing an emission control measure. The proposed rule will require sources to minimize leaks through filling methods, low emissions connectors and FLLGs, leak detection and repair, and routine maintenance.

[13] CARB. "CEPAM: California 2016 Ozone SIP Baseline Emission Projections - Version 1.05 Sacramento Nonattainment Area Tool," Base Year 2012.
[14] CARB. "CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool," Base Year 2017.

Cost and Cost-Effectiveness

Initial Costs: Current material and labor costs were provided by the Western Propane Gas Association (WPGA)[15]. The estimated labor costs are based on a rate of $90 per hour, The number of units in the SMAQMD was estimated by multiplying the number of units in the SCAQMD[16] by the ratio of the population of the SMAQMD to the population of the SCAQMD (0.089 ratio, from the 2020 U.S. Census). The initial costs are shown below in Table 5.

TABLE 5: Estimated Initial Costs of Rule 490

Retrofit Activity	No. of Units (SMAQMD)(1)	Material Cost per Part	Labor Cost per Part	Total SMAQMD Retrofit Cost
FLLGs on Residential Tanks	3,534	$6.84	$90	$342,233
FLLGs on Commercial Tanks	502	$6.84	$90	$48,614
Scales to Allow for Fill by Weight	59	$1,338	N/A	$78,942
FLLGs on Bobtail Trucks	22	$6.84	$90	$2,130
Bobtail Trucks (Dispenser Vapor Tight Seals)	22	$273	$360	$13,926
LPG Low Emission Connectors on Tanker Trucks	9	$353 to $878	$360	$11,142
Forklift Tank FLLG Retrofits	5,340	$6.84	$90	$517,126
Forklift Cylinders (Current gravity fill)(2) Convert to Cylinder Exchange Option with Direct Fill	181 Tanks (136 customers)	$3,127 (9 cylinders and 1 storage cage)	$360	$631,147
Trucks (for Cylinder Exchange Program)	1	$190,000 to $220,000	N/A	$220,000
Forklift Cylinders (Current gravity fill)(2) Add Pump/Motor to Allow Fill by Volume Option	54 customers (with 54 tanks)	$3,940 to $5,598 based on pump type	$5,000	$572,292

[15] Email from Rob Scott, Western Propane Gas Association, to Kevin Williams, SMAQMD, August 27, 2024.
[16] SCAQMD. Final Staff Report: Proposed Amended Rule 1177 – Liquefied Petroleum Gas Transfer and Dispensing. June 2012. Table 6, p. 24.

Retrofit Activity	No. of Units (SMAQMD)[1]	Material Cost per Part	Labor Cost per Part	Total SMAQMD Retrofit Cost
Service (Hose End) Dispensers	445	$406 to $526	$180	$314,170
			Total Cost	$2,751,722

(1) The number of units in the SMAQMD was estimated by multiplying the number of units in the SCAQMD by the ratio of the population of the SMAQMD to the population of the SCAQMD (0.089 ratio, from the 2020 U.S. census)
(2) SCAQMD assumed that approximately 70% of customers using gravity fill for forklift cylinders would choose to convert to a cylinder exchange program.

Recurring Annual Costs: Staff used the recurring annual costs from the 2012 staff report for SCAQMD Rule 1177 to estimate the annual costs for SMAQMD. Staff identified six LPG bulk plants in Sacramento County, which also operate as LPG transfer and dispensing stations by loading LPG into bobtails and distributing LPG to residential, industrial, and commercial customers. There are numerous retail dispensing facilities (equipment rental facilities, retail gasoline dispensing facilities, RV storage facilities, and moving truck facilities), which primarily refill 20-pound barbecue cylinders and RV cylinders. The 2012 SCAQMD staff report stated that leak detection and repair is already common practice in the LPG transfer and dispensing industry, so there would be minimal costs for this requirement. Likewise, the industry already implements training programs, so the costs for this requirement would also be minimal.

Estimated annual costs are shown in Table 6.

TABLE 6: Estimated Annual Costs of Rule 490

Activity	No. of SMAQMD Facilities	Activity Frequency	Unit Cost	Annual Cost
Quarterly Inspections (>10,000 gal. tanks)	6	Quarterly	$360[1]	$8,640
Reporting	6	Annually (for 5 years)	$3,600[2]	$21,600
Recordkeeping	6	Annually	$8,640[3]	$51,840
Truck Driver	1	Annually	$126,000[4]	$126,000
Truck Maintenance	1	Annually	$9,000[5]	$9,000
Tank Maintenance Employee	1	Annually	$126,000[6]	$126,000
			Total:	$343,080

(1) Based on 4 hours per quarter for each bulk plant.
(2) Based on 40 hours per year for each bulk plant.
(3) Based on 1 day per month for recordkeeping at each bulk plant.
(4) Based on 1,400 hour per year for a truck driver for a forklift cylinder exchange program.
(5) Based on 100 hours per year for truck maintenance.
(6) Based on 1,400 hours per year for tank maintenance.

Total Cost: The total cost for compliance with Rule 490 is estimated by annualizing the initial cost, using a 10-year period and 7% interest rate, and adding the annual recurring costs, as shown in Table 7.

TABLE 7: Total Compliance Costs for Rule 490

Initial Cost	Annualized Initial Cost	Recurring Annual Cost	Total Annual Cost
$2,751,722	$391,783	$343,080	$734,863

Overall Cost-Effectiveness: The annual VOC emission reduction from Rule 490 is:
0.1959 tons/day x 365 days/year = 71.5 tons/year.

The cost-effectiveness is therefore:
($734,863/yr) / (71.5 tons/year) = $10,278/ton or $5.14/pound of VOC reduced

As shown above, the overall cost-effectiveness for proposed Rule 490 is estimated to be $5.14 per pound of VOC reduced. In comparison, previously adopted District rules have had cost-effectiveness values for emissions reductions, in 2024 dollars, ranging from $1.62 per pound of VOC reduced (for the July 2011 amendment of Rule 459 - Automotive, Mobile Equipment and Associated Parts and Components Coating Operations) to as much as $27.39 per pound of VOC reduced (for the December 1991 amendment of Rule 449 – Transfer of Gasoline into Vehicle Fuel Tanks).

SCAQMD Rule 1177 was implemented beginning in 2012 and VCAPCD Rule 74.33 was implemented beginning in January 2017. Some LPG bulk plants and transfer and dispensing facilities in the District may already be partially equipped with low emission connectors and FLLGs that meet the requirements of these rules, and container manufacturers may already be distributing cylinders with low emission FLLGs in Sacramento County. To the extent that this is happening, the cost-effectiveness of Rule 490 may be lower than the estimate presented here.

Incremental Cost-Effectiveness

Pursuant to CHSC §40920.6(a)(3), the District is required to perform incremental cost-effectiveness analysis prior to adopting requirements for Best Available Retrofit Control Technology (BARCT) or an “all feasible measure” requirement pursuant to CHSC §40914. The District is required to identify one or more potential control options that achieve the emission reduction objective for the regulation. The incremental cost-effectiveness is the difference in the dollar cost divided by the emissions reduction potential “between each progressively more stringent potential control option as compared to the next, less expensive control option.”

The requirements proposed for Rule 490 are the most stringent controls available for this source category. No other feasible control options can achieve emission reductions greater than or equal to those achievable by the proposed rule. Therefore, incremental cost-effectiveness analysis is not applicable to this rulemaking.

SOCIOECONOMIC IMPACT

CHSC §40728.5 requires a district to perform an assessment of the socioeconomic impacts before adopting, amending, or repealing a rule that will significantly affect air quality or emission limitations. The District Board is required to actively consider the socioeconomic impacts of the proposal and make a good faith effort to minimize adverse socioeconomic impacts.

CHSC §40728.5 defines "socioeconomic impact" to mean the following:

1. The type of industry or business, including small business, affected by the proposed rule or rule amendments.
2. The impact of the proposed rule or rule amendments on employment and the economy of the region.
3. The range of probable costs, including costs to industry or business, including small business.
4. The availability and cost-effectiveness of alternatives to the proposed rule or rule amendments.
5. The emission reduction potential of the rule or regulation.
6. The necessity of adopting, amending, or repealing the rule or regulation to attain state and federal ambient air standards.

Type of industry or business, including small business affected by the proposed rule: Rule 490 applies to LPG transfer and dispensing from one container to another container. LPG containers are used at large and small industrial and commercial businesses such as manufacturing facilities, warehouses, hotels, restaurants, agricultural operations, and residences. LPG is used in various applications including manufacturing, heating and drying of materials, off-road forklifts, agricultural equipment, incineration, and commercial and residential space heating and cooking.

Staff identified 6 LPG bulk plants, which also operate as transfer and dispensing facilities that will be subject to the proposed rule. In addition, there are numerous retail dispensing facilities (equipment rental facilities, retail gasoline dispensing facilities, RV storage facilities, and moving truck facilities) to which the rule will apply. Many of the retail dispensing facilities are small businesses. The many locations that exchange BBQ cylinders, such as big box retail stores, grocery stores and hardware stores, are not subject to the rule; however, the facilities that refill these cylinders are subject to the rule.

Impact on employment and economy in the District of the proposed rule: Staff estimated a total annualized cost of $734,863 for all sources subject to Rule 490, as shown in Table 7 above. It is possible the costs of implementing this rule in Sacramento County will be lower because:

- SCAQMD Rule 1177 was implemented beginning in 2012 and VCAPCD Rule 74.33 was implemented beginning in January 2017, and some LPG bulk plants and transfer and dispensing facilities in the District may already be partially equipped with low emission connectors and FLLGs that meet the requirements of these rules.
- Since 2017, all cylinders 100 pounds and smaller distributed by LPG container manufacturers have been equipped with low emission FLLGs.
- LPG product savings will offset a portion of the costs associated with this proposed rule

The industry has readily adapted to the same requirements in SCAQMD and VCAPCD. Staff does not anticipate a significant impact on the economy or employment of the Sacramento region.

Range of probable costs, including costs to industry or business, including small business of the proposed rule: Costs for individual businesses vary depending on the number of LPG connectors and FLLGs needing retrofit and the additional amount of inspection, recordkeeping, maintenance, and reporting that will be required. Table 6 shows the estimated initial costs to the business by retrofit type. Table 7 shows the estimated annual operational costs.

Availability and cost-effectiveness of alternatives to the proposed rule: An alternative to the proposed rule is to not adopt the rule. If the proposed Rule 490 is not adopted, emission reductions from this source category will not contribute to the SFNA's required emission reductions from contingency measures. Failure to meet the contingency measure requirements for the 2008 and 2015 8-hour federal ozone standards could result in sanctions, including increased emission offset ratios for new and modified stationary sources and loss of federal highway funds.

Emission reduction potential of the proposed rule: The proposed Rule 490, if triggered, will achieve an estimated reduction in VOC emissions of 0.1959 tons per day (see discussion under Emissions Impact).

Necessity of adopting the rule: The adoption of Rule 490 as a contingency measure is necessary to help the SFNA meet CAA mandates for contingency measures. Together with other measures planned by the districts of the SFNA, the required amount of emission reduction from contingency measures will be met. Failure to adopt this and other planned contingency measures would require the adoption of other, less cost-effective measures that individually result in fewer reductions.

PUBLIC OUTREACH/COMMENTS

Staff held a public workshop to discuss proposed Rule 490 on September 19, 2024. A notice for the workshop was sent by e-mail and U.S. mail (if requested) to interested parties, including the affected sources, and all those who have requested to receive rulemaking notices, and published on the District website. The public had access to review the draft rule and Statement of Reasons at that time.

Staff received no comments during the workshop. Staff received written comments after the workshop from the Western Propane Gas Association (WPGA), which expressed concerns about expenses incurred by small businesses and recommended that emissions be reduced from other sources instead. The comments and Staff's responses are included in Appendix C.

ENVIRONMENTAL REVIEW

California Public Resources Code Section 21159 requires an environmental analysis of the reasonably foreseeable methods of compliance. Staff expects compliance with the rule will be achieved through:

- installation of low emission FLLGs, which can be installed on new tanks at the time of manufacture, on existing tanks taken out of service for repair or during regularly scheduled maintenance, or on existing tanks at the time of LPG delivery. Certain brands of FLLGs

on residential tanks require the tank to be evacuated before installing a low emission FLLG.

- Installation of low emission connectors, which can be installed on cargo tanks by operators when a bobtail arrives for a refill or a tanker truck makes a delivery. Low emission connectors can be installed on service dispensers by the LPG provider during a regular refill visit.
- For barbeque cylinders, dispensing facilities may comply either by refilling only cylinders equipped with low emission FLLGs, or by using a fill by weight system. Customers' may obtain compliant cylinders through retail cylinder exchange services.
- For on-site forklift tank refilling operations, options include having existing gravity-fill systems equipped with low emission connectors and FLLGs (and possibly adding a liquid pump), converting to a cylinder exchange service, or having cylinders refilled directly from bobtail trucks visiting the facility.

Staff has concluded there will be no adverse environmental impacts from the proposed rule. If triggered, would result in an air quality benefit by reducing VOC emissions from LPG transfer and dispensing by 0.1959 tons per day.

Staff finds that the proposed rule is exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for the protection of the environment (Class 8 Categorical Exemption, §15308 State CEQA Guidelines) and because it can be seen with certainty that there is no possibility that the activity in question may have a significant adverse effect on the environment (§15061(b)(3), State CEQA Guidelines).

FINDINGS

The California Health and Safety Code (HSC), Division 26, Air Resources, requires local districts to comply with a rule adoption protocol as set forth in §40727 of the Code. This section contains six findings that the District must make when developing, amending, or repealing a rule. These findings and their definitions are listed in the following table.

Finding	Finding Determination
Authority: The District must find that a provision of law or of a state or federal regulation permits or requires the District to adopt, amend, or repeal the rule. [CHSC Section 40727(b)(2)].	The District is authorized to adopt Rule 490 by California Health and Safety Code (CHSC) Sections 40001, 40702, and 41010.
Necessity: The District must find that the rulemaking demonstrates a need exists for the rule, or for its amendment or repeal. [CHSC Section 40727(b)(1)].	The proposed adoption of Rule 490 is necessary to meet the requirements of Clean Air Act Sections 182(c) and (d). These sections require that ozone attainment and further progress (RFP) plans include contingency measures that trigger automatically if EPA finds that a nonattainment area has not achieved a standard by the applicable attainment date or has not met RFP milestones.
Clarity: The District must find that the rule is written or displayed so that its meaning can be easily understood by the persons directly affected by it. [CHSC Section 40727(b)(3)].	Staff has reviewed the proposed rule and determined that it can be understood by the affected parties. In addition, the record contains no evidence that people directly affected by the rule cannot understand the rule.
Consistency: The rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations. [CHSC Section 40727(b)(4)].	The proposed rule does not conflict with, and is not contradictory to, existing statutes, court decisions, or state or federal regulations.

Finding	Finding Determination
Non-Duplication: The District must find that either: 1) The rule does not impose the same requirements as an existing state or federal regulation; or (2) that the duplicative requirements are necessary or proper to execute the powers and duties granted to, and imposed upon, the District. [CHSC Section 40727(b)(5)].	The proposed rule does not duplicate any existing state or federal regulations.
Reference: The District must refer to any statute, court decision, or other provision of law that the District implements, interprets, or makes specific by adopting, amending or repealing the rule. [CHSC 40727(b)(6)].	In adopting the proposed rule, the District is implementing the requirements of Clean Air Act Sections 172(c)(9) and 182(c)(9).
Additional Informational Requirements: In complying with HSC Section 40727.2, the District must identify all federal requirements and District rules that apply to the same equipment or source type as the proposed rule or amendments. [CHSC Section 40727.2].	No other District or federal rules apply to the same equipment or source type. BACT for this source category is based on SJVUAPCD BACT Guideline 4.6.6. A comparison of Rule 490 with BACT requirements is included in Appendix B.

REFERENCES

California Air Resources Board (CARB). *CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool*. Base Year 2012.

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Ventura County Air Pollution Control District (VCAPCD). *Rule 74.33 - Liquefied Petroleum Gas Transfer or Dispensing.* Adopted January 13, 2015.

VCAPCD. *Staff Report. Proposed New Rule 74.33, Liquefied Petroleum Gast Transfer or Dispensing.* January 2015.

APPENDIX A:
LIST OF RULE PROVISIONS

Proposed New Rule 490 – Liquefied Petroleum Gas Transfer and Dispensing

SECTION NUMBER	PROPOSED PROVISION
100	Add general provisions section.
101	Set the purpose of the rule to limit the emission of volatile organic compounds from the transfer and dispensing of liquefied petroleum gas (LPG).
102	Set the applicability to the transfer or dispensing of LPG from any cargo tank, stationary or portable storage tank, or cylinder into any other cargo tank, stationary or portable storage tank, or cylinder. The applicability covers all LPG bulk plants and transfer/dispensing facilities, including distributors that deliver LPG to industrial and commercial businesses and residential customers. Commercial sites include those that refill LPG cylinders used for small appliances, cylinder exchange programs, and camping cylinder manufacturers.
103	Set the severability language consistent with other District rules.
110	Provide an exemption from the rule for small LPG containers. The transfer of LPG into containers with a water capacity of less than 4 gallons is not subject to any requirements of the rule. This exemption is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
111	Provide an exemption from the rule for LPG containers specifically dedicated and installed for use on recreational vehicles. An LPG container dedicated and installed onto a recreational vehicle is not subject to any requirement of the rule. This exemption is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
200	Add definitions section.
201	Define “bobtail truck” as any vehicle equipped with a cargo tank without a trailer and is used to deliver propane. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33. Bobtail trucks are also included in the definition of Mobile Fueler (see Section 218).
202	Define “bubble test” as a test application of a soap solution, detergent, aerosol spray or similar material that produces visible bubbles at the site of any potential LPG vapor leak source and observing for bubbles. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33. Bubble tests are an option to conduct inspections required by the leak detection and repair requirements in Section 304.
203	Define “cargo tank” as any container used to transport LPG and is either mounted on a conventional truck chassis or is an integral part of a cargo transporting vehicle, such as a bobtail, mobile fueler, or railroad tank car. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
204	Define “connector” as any component, including an adapter, hose, fitting, valve or coupling used in association with the transfer of LPG from one container to another and is disconnected following completion of an LPG transfer or dispensing activity. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.

SECTION NUMBER	PROPOSED PROVISION
205	Define “container” as a general term for any vessel, including cylinders, stationary or portable tanks, and cargo tanks, used for the transportation or storage of LPG. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
206	Define “cylinder” as any container designed, constructed, tested, and marked in accordance with the U.S. Department of Transportation (DOT) specifications, Title 49, Code of Federal Regulations or in accordance with a valid DOT special permit. This definition is consistent with VCAPCD Rule 74.33.
207	Define “fill by weight” as the filling of an LPG container without using of a Fixed Liquid Level Gauge and monitoring the fill level by weighing the filled container to prevent overfilling to no more than the maximum rated capacity. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
208	Define “fitting” as a general term that includes any machine component, piping, tubing, or fixture that attaches to larger parts or is used to connect two or more larger parts. This definition is consistent with VCAPCD Rule 74.33.
209	Define “fixed liquid level gauge (FLLG)” as a liquid level indicator, also called a bleeder valve or outage gauge, that uses a positive shutoff vent valve to indicate that the liquid level in a container being filled has reached the point at which the indicator communicates with the liquid. This definition is consistent with SCAQMD Rule 1177. FLLGs are used as overfill prevention devices.
210	Define “liquid tight” as any visible liquid leak rate not exceeding three drops per minute or exhibiting a visible liquid mist. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
211	Define “low emission FLLG” as fixed liquid level gauge with a number 72 orifice size (0.025 inch) or physical configuration that results in an equivalent or lower emissions rate that is tested and demonstrated using a method approved in writing by the Air Pollution Control Officer. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33. The installation of low emission FLLGs is the major method of compliance for many of the containers subject to the rule requirements.
212	Define “liquefied petroleum gas (LPG)” as an organic compound having a vapor pressure not exceeding that allowed for commercial propane, which is composed predominantly of the following hydrocarbons, either by themselves or as mixtures: propane, propylene, butane (normal butane or isobutane) and to a lesser extent butylenes, and that is stored and transported under pressure in a liquid state. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
213	Define “LPG bulk loading facility” as an LPG transfer and dispensing facility where the primary function is to store LPG for further distribution and has one or more stationary storage tanks with a water capacity of 10,000 gallons or more. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
214	Define “LPG low emission connector” as any component, including an adapter, hose, fitting, valve, or coupling used to transfer LPG from one container to another and is designed to result a maximum emission release of four cubic centimeters of LPG when disconnected. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.

SECTION NUMBER	PROPOSED PROVISION
215	Define “LPG transfer and dispensing facility” as a mobile fueler, or a stationary facility consisting of one or more stationary storage tanks and associated equipment which receives, stores, and either transfers or dispenses LPG to stationary storage tanks, cargo tanks, or portable storage tanks. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33. LPG transfer and dispensing facilities include, but are not limited to, LPG bulk loading facilities, retail service stations, mobile fuelers delivering LPG to residential, commercial, and industrial locations, and local LPG distributors filling mobile and portable storage tanks and cylinders.
216	Define “LPG vapor recovery or equalization system” as a system installed on an LPG mobile fueler or railroad tank car that facilitates the transfer of liquid LPG and allows for the collection and recovery of LPG vapors displaced or emitted from the stationary storage tank or cargo tank when LPG is transferred to or from the mobile fueler or the railroad tank car. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
217	Define “LPG vapors” as the organic compounds in vapor form as well as the entrained liquid LPG displaced during LPG transfer and dispensing operations. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
218	Define “mobile fueler” as any cargo tank, tanker truck or trailer, including a bobtail truck, which is used to transport LPG stored in an onboard cargo tank. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
219	Define “owner/operator” as any person who owns, leases, or operates any stationary facility or mobile fueler subject to the requirements of this rule. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
220	Define “portable cylinder” as a container designed, constructed, tested, and marked in accordance with U.S. Department of Transportation (DOT) specifications Title 49, Code of Federal Regulations or in accordance with a valid DOT special. This definition is consistent with SCAQMD Rule 1177. Examples of portable cylinders that contain LPG include those used with small hand torches, forklifts, barbeque grills, and agricultural weed burners.
221	Define “portable storage tank” as a container or portable cylinder designed to be easily moved by hand or hand truck (dolly) without mechanical assistance, as opposed to a container or stationary tank designed for stationary installations. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
222	Define “railroad tank car” as a mounted cargo tank designated for transport over rail. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
223	Define “recreational vehicle” as any vehicle or trailer used strictly for noncommercial leisure activities, and is equipped with living space and amenities found in a home. This definition is consistent with VCAPCD Rule 74.33.
224	Define “stationary storage tank” as a container that is used for the storage of LPG, including, but not limited, for residential, commercial or industrial usage, and includes containers constructed in accordance with the American Society of Mechanical Engineers Code. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.

SECTION NUMBER	PROPOSED PROVISION
225	Define “valve” as a device that regulates or isolates the fluid flow in a pipe, tube, tank, or conduit by means of an external actuator. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
226	Define “vapor tight” as a condition under which the concentration of total organic compounds from any LPG connector does not exceed 10,000 ppm above background. This definition is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33. Vapor tightness can be determined either by using the bubble test or by using EPA Method 21.
227	Define “volatile organic compound (VOC)” as having the same meaning as in Rule 101 – GENERAL PROVISIONS AND DEFINITIONS.
300	Add standards section.
301	Establish equipment and operation requirements for LPG bulk loading facilities. The requirements (Sections 301.1 through 301.3) apply to the transfer of LPG from any cargo tank to a stationary tank located at the facility or from any stationary storage tank to a cargo tank. The requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33 and take effect one year after the effective date of the rule.
301.1	Require the use an LPG vapor recovery or equalization system, capable of recovering all LPG vapors, to be used during the transfer process. The LPG vapor recovery or equalization system must be maintained and operated according to the specifications of the system manufacturer.
301.2	Require that all vapor return lines and liquid lines be properly connected between the cargo tank and the stationary storage tank so that associated connectors are maintained in a vapor tight and liquid tight condition during LPG transfer.
301.3	Require that the transfer hose assembly, which includes the hose, fittings and gaskets, be properly maintained in order to maintain vapor tight conditions.
302	Establish equipment and operation requirements for LPG transfer and dispensing facilities. The requirements (Sections 301.1 through 301.3) apply to the transfer and dispensing of LPG from any stationary storage tank, cargo tank, or cylinder into any stationary storage tank, cargo tank, portable storage tank, cylinder, or vehicle fuel tank. The requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33 and take effect one year after the effective date of the rule.
302.1	Require that each stationary storage tank meet one or both requirements in Sections 302.1.a and 302.1.b.
302.1a	Require all stationary storage tank FLLGs to be closed during LPG transfer, using a filling technology that monitors the maximum fill level without use of an FLLG; (such as fill by weight) or comply with Section 302.1.b.
302.1.b	Require that the tank comply with Section 302.2.a or be equipped only with low emission FFLGs as follows: 1. Whenever a tank is put into or taken out of service, the tank is equipped only with low emission FLLGs prior to returning the tank to service. 2. All stationary storage tanks must be equipped with low emission FLLGs no later than 18 months after the effective date of the rule, except as provided in 3, below. 3. For tanks that cannot be retrofitted with a low emission FLLG in a safe

SECTION NUMBER	PROPOSED PROVISION
	manner without relocation of the stationary storage tank, the tank must be equipped with low emission FLLGs no later than 48 months after the effective date of the rule, provided proper documentation is submitted to the APCO.
302.2	Require each cargo tank, if equipped with FLLGs, to meet one or both requirements in Sections 302.a and 302.2.b.
302.2.a	Require all cargo tank FLLGs to be closed while being filled using a filling technology that monitors the maximum fill level without the use of an FLLG, or comply with Section 302.2.b.
302.2.b	Require all cargo tanks to comply with Section 302.2.a or equip the tank only with low emission FFLGs as follows: 1. If a cargo tank is purchased as new or manufactured after the effective date of this rule, it must be equipped only with low emission FLLGs. 2. When a cargo tank is evacuated, it must be equipped only with low emission FLLGs prior to returning to service. 3. All cargo tanks must be equipped only with low emission FLLGs no later than 60 months after the effective date of the rule.
302.3	Require that each container that is a cylinder or portable storage tank to meet one or both requirements in Sections 302.3.a and 302.3.b.
302.3.a	Require the cylinder or portable storage tank FLLG to be closed during LPG transfer using a fill by weight technique or an alternative technology that monitors the maximum fill level without the use of the FLLG, or comply with Section 302.3.b.
302.3.b	Require all the cylinder or portable storage tank to comply with Section 302.3.a or equip the cylinder or portable storage tank with a low emission FLLG no later than 18 months after the effective date of this rule.
302.4	Require the use of low emission connectors during transfer of LPG from one container to any other container. The requirement is consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33 and takes effect one year after the effective date of the rule.
303	Require the owner/operator of an LPG bulk loading facility or an LPG transfer and dispensing facility to implement a leak detection and repair program meeting the requirements of Sections 304.1 through 304.4. The requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33 and take effect one year after the effective date of the rule.
303.1	Require daily physical leaks checks for all connectors involved with the transfer for evidence of leakage, such as the presence of odorant, hissing, or staining.
303.2	Require inspection of all LPG connectors during LPG transfers using the bubble test or EPA Method 21 at least once every 90 days, or if the time between the fillings is greater than 90 days, during or upon completion of the transfer of LPG. Visible bubbles when using the bubble test or a total organic compound concentration greater than 10,000 ppmv when using EPA Method 21 constitute a leak.
303.3	Require owners/operators to conduct a periodic training program for any employee involved in the maintenance or operation of LPG transfer. The training

SECTION NUMBER	PROPOSED PROVISION
	program must incorporate written training procedures, training frequency, scheduled training dates, and written record of the dates and training provided for each employee.
303.4	Require any connector identified as leaking pursuant to be remove from service and tagged. The connector may not be put back into service until the leaky connector is repaired or replaced, and re-inspected for leaks. The owner/operator must keep a written record of all leaks. Leaks identified by the owner/operator that are removed from service, tagged, repaired or replaced, re-inspected, and documented will not be considered violations of this rule.
304	Require the owner/operator of a mobile fueler or railroad cargo tank that is equipped with an LPG vapor recovery or equalization system to operate the system in accordance with the manufacturer's specifications and perform system maintenance in accordance with the manufacturer's schedule. The requirements are consistent with VCAPCD Rule 74.33 and take effect one year after the effective date of the rule.
400	Add administrative requirements section.
401	Require owners/operators of LPG bulk loading facilities to submit an end-of-year inventory, for the prior calendar year, of all low emission connectors installed at the facility and those installed on facility-owned or leased LPG mobile fuelers associated with the transfer or storage of LPG. The report must be submitted to the APCO by July 1 after the end of the first full calendar year that the requirements for LPG low emission connectors (Section 302) are in effect. The inventory submittal must include the specific transfer or storage equipment involved and the manufacturer and identification or part number of all low emission connectors. These requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33. In addition, any connectors installed at the facility or on facility-owned or facility-leased mobile fuelers that are not low emission must be identified. The submittal must be in electronic format.
402	Require owners/operators of LPG bulk loading facilities to submit an annual end-of-year inventory, for the prior calendar year, of all facility containers, including all facility-owned or leased mobile fuelers associated with the transfer and storage of LPG, that are equipped with one or more low emission FLLGs. The inventory submittal must include a summary, by size and classification, and include the associated number of installed low emission FLLGs. The first report must be submitted by July 1 after the end of the first full calendar that the requirements for low emission FLLGs (Section 302) are in effect and the reporting requirement ends after five consecutive annual submittals. These requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33. The submittal must be in electronic format.
500	Add monitoring and recordkeeping section.
501	Specify that if Method 21 is used to comply with Section 303.2 instead of the bubble test, leak concentrations of total organic compounds must be determined using United States Environmental Protection Agency Reference Method 21, with an appropriate analyzer calibrated with methane. The analyzer must be

SECTION NUMBER	PROPOSED PROVISION
	calibrated before inspection on the day of inspection. These requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
502	Add recordkeeping section.
502.1	Require the owner/operator of an LPG bulk loading facility or an LPG transfer and dispensing facility subject to the requirements of Sections 301 or 302 to maintain purchase and installation records of all low emission FLLGs and low emission connectors installed to comply with this rule including component name, part ID number, quantity purchased, and component manufacturer. These requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
502.2	Require the owner/operator of an LPG bulk loading facility or an LPG transfer and dispensing facility to maintain a maintenance log of all leaks found. The maintenance log will include the type of leak, location of leak, date and time leak discovered, date and time leak repaired, name of person who performed the repair and their employer's name and phone number, leaking connector name (part ID name, part number, and part manufacturer), and description of repair. These requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
502.3	Require the owner/operator of a mobile fueler or a railroad tank car subject to the requirements of Section 304 to maintain on-site maintenance records of the vapor recovery or equalization system and a copy of the manufacturer's maintenance schedule. These requirements are consistent with SCAQMD Rule 1177 and VCAPCD Rule 74.33.
502.4	Require records to be maintained on site for a continuous 5-year period This requirement is consistent with VCAPCD Rule 74.33 and other SMAQMD rules. In addition, records must be submitted by July 1 each year for the previous calendar year. This requirement is consistent with a recent EPA action regarding citizens' ability to participate in the enforcement of the SIP as allowed by CAA Section 304. The submittal must be in electronic format.

APPENDIX B:
COMPARISION OF PROPOSED RULE REQUIREMENTS WITH OTHER AIR POLLUTION CONTROL REQUIREMENTS

California Health and Safety Code (CHSC) §40727.2 requires air districts to provide a written analysis to: 1) identify all existing federal air pollution control requirements, including Best Available Control Technology (BACT) for new or modified equipment, that apply to the same equipment or source type as the proposed rule, and 2) identify any of the District's existing or proposed rules that apply to the same equipment or source type. The analysis shall compare the following elements:

- Averaging provisions, units, and any other pertinent provisions associated with emission limits.
- Operating parameters and work practice requirements.
- Monitoring, reporting, and recordkeeping requirements, including test methods, format, content, and frequency.
- Any other element that the air district determines warrants review.

There are no other proposed or existing District rules that apply to this source category. See Table B-1 for details of the required analysis.

Comparison with BACT: San Joaquin Valley APCD BACT Guideline 4.6.6, for an LPG cylinder refilling system, is the only relevant BACT found for LPG transfer and dispensing. San Joaquin Valley APCD requires CARB certified low emission adaptors to minimize dispensing losses. The proposed Rule 490 requirement to install low-emission connectors is consistent with SJVAPCD BACT Guideline 4.6.6.

Comparison with existing federal air pollution control requirements:
No identified federal air pollution controls are required for LPG transfer and dispensing. Federal (Department of Transportation) and state (California Division of Occupational Safety and Health) requirements for the safe transport, storage, and transfer and dispensing of LPG apply to the some of the affected sources but are not applicable for air pollution control requirements.

Table B-1:
40727.2 Matrix for Proposed Rule 490 Liquefied Petroleum Gas Transfer and Dispensing

Comparative Requirements			
Elements of Comparison	Proposed Rule 490	Best Available Control Technology (BACT) San Joaquin Valley APCD Guideline 4.6.6 LPG Cylinder Refilling System	No identified federal requirements for pollution control of LPG transfer and dispensing
Applicability	Applicable to the transfer or dispensing of LPG to or from any container, such as any cargo tank, any stationary or portable storage tank, or any cylinder into any other container	LPG Cylinder Refilling System located at LPG transfer and dispensing facility	N/A
Exemptions	• Small LPG containers (< 4 gallons) • Containers dedicated and installed for use with recreational vehicles	N/A	N/A
VOC Emission Standards / Units	Use of LPG low emission connectors that are leak tight and vapor tight (maximum emission release of 4 cubic centimeters of LPG per disconnect)	Use of CARB-certified low emission adaptor (maximum emissions release of 1.18 cubic centimeters of LPG per disconnect)	N/A
Averaging Provisions	None	None	N/A
Operating parameters & Work Practice Requirements	• Periodic training program for any employee involved in the maintenance or operation of LPG transfer • Maintain LPG vapor recovery or equalization system in accordance with manufacturer's specifications and schedule	N/A	N/A
Monitoring/ Testing	• Leak Detection: EPA Reference Method 21 • Soap bubble test	N/A	N/A
Monitoring	Leak detection and repair requirements: • Daily physical leak check • Test all connectors for leaks using bubble test or Method 21 at least once every 90 days	N/A	N/A
Recordkeeping	• Purchase and installation records of low emission FLLGs and low emission connectors • Maintenance records and log of all leaks and repairs	N/A	N/A

Comparative Requirements			
Elements of Comparison	Proposed Rule 490	Best Available Control Technology (BACT) San Joaquin Valley APCD Guideline 4.6.6 LPG Cylinder Refilling System	No identified federal requirements for pollution control of LPG transfer and dispensing
	• Records maintained on site for 5-year period and submitted to the APCO by July 1 each year for the previous calendar year.		
Reporting	• Initial low emission connector inventory submittal • Annual submittal of low emission FLLG installations	N/A	N/A

APPENDIX C:
COMMENTS AND RESPONSES

Public Workshop for Rule 490

September 19, 2024, at 9:30 A.M.

Attendees:

Rob Scott, Western Propane Gas Association (WPGA)
Krysta Wanner, WPGA

Oral Comments During the Public Workshop

There were no comments received during the workshop.

Written Comments from Krysta Wanner, Western Propane Gas Association (WPGA)

(September 19, 2024)

Comment #1: WPGA commented that Rule 490 would cause a significant cost burden to small businesses by requiring propane owners and operators to install low emission connectors and fixed liquid level gauges (FLLGs).

Response: Staff acknowledges the concerns of the WPGA. The estimated initial costs to retrofit equipment, $2,751,722, is equivalent to $391,783 per year when amortized over 10 years at 7% interest. When added to the estimated recurring annual costs, $343,080, the annual cost of the rule, industry-wide, is $734,863 per year.

The proposed rule, if triggered, will reduce VOC emissions by 71.5 tons per year. Staff's cost analysis demonstrates that the proposed rule is cost-effective. At $5.14 per pound of VOC reduced, it is on the lower end of cost-effectiveness of similar District rules limiting VOC emissions. Rules previously adopted by the District have cost-effectiveness values, in year 2024 dollars, ranging from $1.62 per pound of VOC reduced (Rule 459) to as much as $27.39 per pound of VOC reduced (Rule 449). Staff does not expect the proposed rule to have a disproportionate impact on small business, as many of these businesses lease tanks and dispensing equipment from propane gas suppliers, and retrofit costs for compliance under this rule would be incurred by the propane gas suppliers.

The requirements of proposed Rule 490 were adopted by the South Coast AQMD in 2012 and the Ventura County APCD in 2015. The requirements were found to be feasible and cost-effective in those districts as well.

Comment #2: WPGA commented that SMAQMD should take all steps to address emissions from larger industries (such as decomposing organic matter, diesel-powered heavy-duty equipment, and fugitive emissions from natural gas transmission, for example) before placing a significant cost burden onto small business propane operators.

Response: Staff worked with the other districts in our ozone nonattainment area to evaluate potential contingency measures that can meet Clean Air Act planning requirements. Some sources are already subject to state regulations. For instance, California has an existing regulation [17] that reduces fugitive emissions from oil and gas production. Other sources, such as diesel-powered heavy-duty equipment, are regulated by the state and are beyond local districts' authority to regulate.

In addition to proposed Rule 490, the District has already adopted a contingency measure for architectural coatings and Staff will propose a rule to reduce emissions from composting operations. Our neighboring districts are also planning to adopt additional VOC contingency measures.

[17] Title 17, California Code of Regulations, Sections 95665-95677.

WPGA
WESTERN PROPANE GAS ASSOCIATION

1107 9TH ST, SUITE 540, SACRAMENTO, CA 95814
P: (916) 447-9742 | F: (916) 447-9740
WESTERNPGA.ORG | USECALIFORNIAPROPANE.COM

September 19, 2024

Sacramento Metropolitan Air Quality Management District
777 12th Street, 3rd Floor
Sacramento, CA 95814
VIA ONLINE SUBMISSION

RE: Proposed New Rule 490 – Liquefied Petroleum Gas Transfer and Dispensing

The Western Propane Gas Association (WPGA) is pleased to submit comments on the Sacramento Metropolitan Air Quality Management District's (SMAQMD) proposed Rule 490 related to transfer and dispensing of liquified petroleum gas (LPG), also known as propane. The propane industry takes reducing climate emissions seriously and does its part to provide a clean and affordable fuel to Californians. WPGA thanks SMAQMD for working with us to gather cost data on labor and materials for economic impact analysis.

CREATES SIGNIFICANT COST BURDENS ON SMALL BUSINESSES

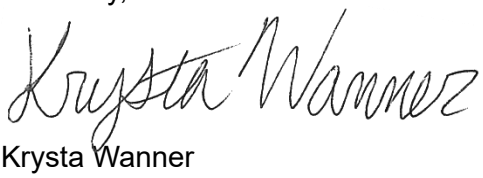
Were Rule 490 to be adopted, propane owners and operators within Sacramento County would be required to install low emission connectors and fixed liquid level gauges (FLLGs) on their containers, amongst other things. Though reducing emissions is a valuable goal, the cost of compliance for this Rule is a barrier for many businesses. According to SMAQMD's Statement of Reasons for New Rule 490, the total cost of retrofitting is $2,751,722, with most of this cost related to forklift cylinders.[1] The analysis does not account for the costs of running electric for pumps and motors, the permitting required to install this equipment, potential costs related to financing of equipment, and the cost of electricity itself. Propane is used in many applications within Sacramento County. It is important that businesses relying on this fuel, including goods movement, construction, agricultural, and more are not negatively impacted by adoption of this Rule. If SMAQMD is serious about significantly reducing emissions affecting nonattainment, more effect would be had elsewhere without subjecting propane businesses and those they serve to these costs.

While we understand that such measures must be taken, we expect that SMAQMD would take all steps to address emissions from larger industries (such as decomposing organic matter, diesel-powered heavy-duty equipment, and fugitive emissions from natural gas transmission, for example) before placing a significant cost burden onto small business propane operators. WPGA respectfully requests that these concerns be taken into consideration before the proposed Rule 490 be adopted.

WPGA looks forward to continuing to work with our colleagues within SMAQMD to find workable solutions that improve air quality and maximize benefits to residents and businesses within your footprint.

[1] SMAQMD. (2024, August 30). Rule 490 Statement of Reasons. Sacramento Metropolitan Air Quality Management District. (Rule 490 Statement of Reasons Workshop.docx (airquality.org))

Sincerely,



Krysta Wanner
Director of Government Affairs, WPGA
krysta@westernpga.org

NOTICE OF PUBLIC HEARING
SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

State Implementation Plan Revision for the 2008 and 2015 8-hour Ozone National Ambient Air Quality Standard for the Sacramento Federal Nonattainment Area – Proposed Contingency Measures and Reasoned Justification

The Board of Directors of the Sacramento Metropolitan Air Quality Management District (District) will conduct a public hearing on October 24, 2024, at 9:00 a.m. in Room 1450 (Board of Supervisors' Chambers), County Administration Building, 700 H Street, Sacramento, CA 95814, to consider the adoption of a revision to the State Implementation Plan (SIP) for the 2008 and 2015 8-hour ozone standard to comply with the federal Clean Air Act requirements for Contingency Measures (CM). If adopted, the plan revision will be submitted to the U.S. Environmental Protection Agency (EPA) for SIP approval. This notice, the public hearing, and the proposed SIP revision are intended to satisfy the requirements of Clean Air Act Sections 110, 172, and 182, and Title 40 of the Code of Federal Regulations Part 51.

Section 182(e) of the Clean Air Act requires SIPs to include contingency measures that are triggered if the nonattainment area fails to make reasonable progress or attain by the attainment date. To assist air districts with the development of contingency measures, EPA published a draft Guidance on the Preparation of SIP Provisions that address the Nonattainment Area CM requirements for Ozone and Particulate Matter (Guidance) on March 16, 2023. In accordance with EPA's draft guidance, Staff prepared a SIP revision analysis, that includes commitments to adopt and amend CMs that control emissions of VOC. The analysis also includes a reasoned justification concluding that there are no feasible NOx CMs within the SFNA.

Copies of this notice and the Proposed Contingency Measures and Reasoned Justification analysis are posted on the District website (www.airquality.org). A paper copy of the materials can be viewed at the District office or purchased for a cost of 25¢ per page plus mailing costs.

By this notice, all interested parties are specifically requested to provide comments on the proposed action. You may submit your comments by mail to the Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Attention: Marc Cooley (279) 207-1151 or by e-mail to mcooley@airquality.org. Oral testimony may be directed to the Board of Directors at the public hearing.

AVISO DE AUDIENCIA PÚBLICA
DISTRITO METROPOLITANO DE LA CALIDAD DEL AIRE DE SACRAMENTO

Revisión del plan de implementación estatal para el estándar nacional de calidad del aire ambiental de ozono de 8 horas de 2008 y 2015 para el área de incumplimiento federal de Sacramento –
Medidas de contingencia propuestas y justificación razonada

La Junta Directiva del Distrito Metropolitano de la Calidad del Aire de Sacramento (Distrito) llevará a cabo una audiencia pública el 24 de octubre de 2024 a las 9:00 a. m. en la Sala 1450 (Sala de Supervisores), Edificio de Administración del Condado, 700 H Street, Sacramento, CA 95814, para considerar la adopción de una revisión del Plan de Implementación Estatal (SIP) para el estándar de ozono de 8 horas de 2008 y 2015 para cumplir con los requisitos de la Ley de Aire Limpio federal para Medidas de Contingencia (CM). Si se adopta, la revisión del plan se enviará a la Agencia de Protección Ambiental de los EE.UU. (EPA) para la aprobación del SIP. Este aviso, la audiencia pública y la revisión propuesta del SIP tienen como objetivo satisfacer los requisitos de las Secciones 110, 172 y 182 de la Ley del Aire Limpio y el Título 40 del Código de Reglamentos Federales, Parte 51.

La Sección 182(e) de la Ley del Aire Limpio (Clean Air Act) requiere que los SIP incluyan medidas de contingencia que se activan si el área de incumplimiento no logra un progreso razonable o no logra alcanzar la fecha de cumplimiento. Para ayudar a los distritos aéreos con el desarrollo de medidas de contingencia, la EPA publicó un borrador de Guía sobre la preparación de disposiciones del SIP que aborden los requisitos de CM del área de incumplimiento para ozono y material particulado (Guía) el 16 de marzo de 2023. De acuerdo con el borrador de guía de la EPA, el personal preparó un análisis de revisión del SIP, que incluye compromisos para adoptar y modificar CM que controlen las emisiones de VOC. El análisis también incluye una justificación razonada que concluye que no hay CM de NOx factibles dentro del SFNA.

Se encuentran disponibles copias de este aviso y del análisis de las medidas de contingencia propuestas y la justificación razonada en el sitio web del Distrito (www.airquality.org). Se puede consultar una copia impresa de los materiales en la oficina del Distrito o comprarla por un costo de 25 centavos por página más los costos de envío.

Mediante este aviso, se solicita específicamente a todas las partes interesadas que brinden comentarios sobre la acción propuesta. Puede enviar sus comentarios por correo postal a Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Atención: Marc Cooley (279) 207-1151 o por correo electrónico a mcooley@airquality.org. El testimonio oral puede dirigirse a la Junta Directiva en la audiencia pública.

AFFIDAVIT

Sacramento Metropolitan Air Quality Management District
777 12th Street, Third Floor,
Sacramento, CA 95814

DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

COUNTY OF SACRAMENTO, STATE OF CALIFORNIA

I am a resident of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the below entitled matter. I am a Legal Assistant employed at the Sacramento Metropolitan Air Quality Management District.

The text below is a screen shot that was posted on the District's website, www.airquality.org, on September 23, 2024

I declare under penalty of perjury under the laws of California that the foregoing is true and correct and that this declaration was executed at Sacramento, California on October 9, 2024.

2024.10.09 16:00:01 -07'00'

Muller, Virginia
Legal Assistant

AIR QUALITY MANAGEMENT DISTRICT

AIR QUALITY & HEALTH | RESIDENTS | BUSINESSES | HOW DO I? | MEET

News & Notices Details

NOTICE OF PUBLIC HEARING / (AVISO DE AUDIENCIA PÚBLICA): Ozone SIP Revision – Proposed Contingency Measures and Reasoned Justification (Revisión del SIP para ozono – Medidas de contingencia propuesta y justificación razonada)

Posted: 9/23/2024 **Public Notice Category:** Board of Directors

Date: Thursday, October 24, 2024

Time: 9:00 a.m.

Location: Room 1450 (Board of Supervisors' Chambers)
County Administration Building
700 H Street, Sacramento, CA 95814

The Board of Directors of the Sacramento Metropolitan Air Quality Management District (District) will conduct a public hearing on October 24, 2024, at 9:00 a.m. in Room 1450 (Board of Supervisors' Chambers), County Administration Building, 700 H Street, Sacramento, CA 95814, to consider the adoption of a revision to the State Implementation Plan (SIP) for the 2008 and 2015 8-hour ozone standard to comply with the federal Clean Air Act requirements for Contingency Measures (CM). If adopted, the plan revision will be submitted to the U.S. Environmental Protection Agency (EPA) for SIP approval. This notice, the public hearing, and the proposed SIP revision are intended to satisfy the requirements of Clean Air Act Sections 110, 172, and 182, and Title 40 of the Code of Federal Regulations Part 51.

Section 182(e) of the Clean Air Act requires SIPs to include contingency measures that are triggered if the nonattainment area fails to make reasonable progress or attain by the attainment date. To assist air districts with the development of contingency measures, EPA published a draft Guidance on the Preparation of SIP Provisions that address the Nonattainment Area CM requirements for Ozone and Particulate Matter (Guidance) on March 16, 2023. In accordance with EPA's draft guidance, Staff prepared a SIP revision analysis, that includes commitments to adopt and amend CMs that control emissions of VOC. The analysis also includes a reasoned justification concluding that there are no feasible NOx CMs within the SFNA.

The document can be downloaded from the links below:

Proposed Contingency Measures and Reasoned Justification (PDF)

A paper copy of the materials can be viewed at the District office or purchased for a cost of 25¢ per page plus mailing costs. . You can also subscribe to e-mail notifications at www.airquality.org/Air-Quality-Health/Public-Outreach/Subscribe.

By this notice, all interested parties are specifically requested to provide comments on the proposed action. You may submit your comments by mail to the Sacramento Metropolitan AQMD, 777 12th

Fecha: 24 de octubre de 2024

Tiempo: 9:00 a.m.

Ubicación: El cuarto numero 1450 (Junta de Cámaras de Supervisores)
Edificio de Administración del Condado
700 H Street
Sacramento, CA 95814

La Junta Directiva del Distrito Metropolitano de la Calidad del Aire de Sacramento (Distrito) llevará a cabo una audiencia pública el 24 de octubre de 2024 a las 9:00 a. m. en la Sala 1450 (Sala de Supervisores), Edificio de Administración del Condado, 700 H Street, Sacramento, CA 95814, para considerar la adopción de una revisión del Plan de Implementación Estatal (SIP) para el estándar de ozono de 8 horas de 2008 y 2015 para cumplir con los requisitos de la Ley de Aire Limpio federal para Medidas de Contingencia (CM). Si se adopta, la revisión del plan se enviará a la Agencia de Protección Ambiental de los EE.UU. (EPA) para la aprobación del SIP. Este aviso, la audiencia pública y la revisión propuesta del SIP tienen como objetivo satisfacer los requisitos de las Secciones 110, 172 y 182 de la Ley del Aire Limpio y el Título 40 del Código de Reglamentos Federales, Parte 51.

La Sección 182(e) de la Ley del Aire Limpio (Clean Air Act) requiere que los SIP incluyan medidas de contingencia que se activan si el área de incumplimiento no logra un progreso razonable o no logra alcanzar la fecha de cumplimiento. Para ayudar a los distritos aéreos con el desarrollo de medidas de contingencia, la EPA publicó un borrador de Guía sobre la preparación de disposiciones del SIP que aborden los requisitos de CM del área de incumplimiento para ozono y material particulado (Guía) el 16 de marzo de 2023. De acuerdo con el borrador de guía de la EPA, el personal preparó un análisis de revisión del SIP, que incluye compromisos para adoptar y modificar CM que controlen las emisiones de VOC. El análisis también incluye una justificación razonada que concluye que no hay CM de NOx factibles dentro del SFNA.

Los materiales se pueden descargar desde los enlaces siguientes:

Medidas de contingencia propuestas y justificación razonada (PDF)

Se puede ver una copia impresa de los materiales en la oficina de SMAQMD o comprarla por un costo de 25¢ por página más los costos de envío. También puede suscribirse para recibir notificaciones por correo electrónico en www.airquality.org/Air-Quality-Health/Public-Outreach/Subscribe.

Mediante este aviso, se solicita específicamente a todas las partes interesadas que brinden comentarios sobre la acción propuesta. Puede enviar sus comentarios por correo postal a Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Atención: Marc Cooley (279) 207-1151 o por correo electrónico a mcooley@airquality.org. El testimonio oral puede dirigirse a la Junta Directiva en la audiencia pública.

McClatchy

The Beaufort Gazette
The Belleville News-Democrat
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12176	595259	Print Legal Ad-IPL01955710 - IPL0195571	Rule 489	$1,377.22	2	90 L

Attention:

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777 12TH STREET, 3RD FLOOR
SACRAMENTO, CA 95814

finance@airquality.org

**NOTICE OF PUBLIC HEARING / AVISO DE AUDIENCIA PUBLICA
SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT**

**Proposed New Rule 489 – Greenwaste Composting Operations
Propuesta nueva regla 489 – Operaciones de compostaje de residuos verdes**

The Board of Directors of the Sacramento Metropolitan Air Quality Management District (District) will conduct a public hearing on October 24, 2024, at 9:00 a.m. in Room 1450 (Board of Supervisors' Chambers), County Administration Building, 700 H Street, Sacramento, CA 95814.

The Board of Directors will consider new Rule 489 – GREENWASTE COMPOSTING OPERATIONS. Rule 489 will apply to greenwaste composting operations that are subject to Sacramento County Environmental Management Department permit or notification requirements.

The federal Clean Air Act requires State Implementation Plans for ozone nonattainment areas to include contingency measures that are automatically triggered if additional emissions reductions are needed to achieve National Ambient Air Quality Standards for ozone. The proposed rule, if triggered, will require greenwaste composting operations to implement specific operational practices that will reduce emissions of volatile organic compounds. If approved, the rule will be submitted to the U.S. Environmental Protection Agency to be included in the State Implementation Plan. This notice, the public hearing, and the proposed adoption are intended to satisfy the requirements of the federal Clean Air Act Sections 110, 172, 182 and Title 40 of the Code of Federal Regulations Part 51.

Copies of this notice, the proposed rule, and the Statement of Reasons are posted on the SMAQMD web site (www.airquality.org). A paper copy of the materials can be viewed at the SMAQMD office or purchased for a cost of 25¢ per page plus mailing costs. You can also subscribe to e-mail notifications at www.airquality.org/Air-Quality-Health/Public-Outreach/Subscribe.

By this notice, all interested parties are specifically requested to provide comments on proposed Rule 489. You may submit your comments by mail to the Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Attention: Kevin Williams (279) 207-1156 or by e-mail to KJWilliams@airquality.org. Oral testimony may be directed to the Board of Directors at the public hearing.

AVISO DE AUDIENCIA PÚBLICA

Propuesta nueva regla 489 – Operaciones de compostaje de residuos verdes

La Junta Directiva del Distrito Metropolitano de la Calidad del Aire de Sacramento (Distrito) llevará a cabo una audiencia pública el 24 de octubre de 2024 a las 9:00 a.m. en el cuarto numero 1450 (Junta de Cámaras de Supervisores), Edificio de Administración del Condado de Sacramento, 700 H Street, Sacramento, CA 95814.

La Junta Directiva considerará la nueva Regla 489 – OPERACIONES DE COMPOSTAJE DE RESIDUOS VERDES. La Regla 489 se aplicará a las operaciones de compostaje de residuos verdes que estén sujetas a los requisitos de permiso o notificación del Departamento de Gestión Ambiental del Condado de Sacramento.

La Ley federal del Aire Limpio (Clean Air Act) exige que los Planes de Implementación Estatal para las áreas en las que no se cumplen las normas de ozono incluyan medidas de contingencia que se activen automáticamente si se necesitan reducciones adicionales de emisiones para alcanzar las Normas Nacionales de Calidad del Aire Ambiental para el ozono. La norma propuesta, si se activa, exigirá que las operaciones de compostaje de desechos verdes implementen prácticas operativas especificas que reducirán las emisiones de compuestos orgánicos volátiles. Si se aprueba, la norma se enviará a la Agencia de Protección Ambiental de los EE.UU (US EPA). para que se incluya en el Plan de Implementación Estatal. Este aviso, la audiencia pública y la adopción propuesta tienen como objetivo satisfacer los requisitos de la Secciónes 110, 172 y 182 de la Ley de Aire Limpio federal y el Titulo 40 del Código de Reglamentos Federales, Parte 51.

Copias de este aviso, la regla propuesta y la exposición de motivos están publicadas en el sitio web de SMAQMD (www.airquality.org). Se puede ver una copia impresa de los materiales en la oficina de SMAQMD o comprarla por un costo de 25 centavos por página más los costos de envío. También puede suscribirse para recibir notificaciones por correo electrónico en www.airquality.org/Air-Quality-Health/Public-Outreach/Subscribe.

Mediante este aviso, se solicita específicamente a todas las partes interesadas que brinden comentarios sobre las enmiendas propuestas a la Regla 489. Puede enviar sus comentarios por correo a Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Atención: Kevin Williams (279) 207-1156 o por correo electrónico a KJWilliams@airquality.org. El testimonio oral podrá dirigirse a la Junta Directiva en la audiencia pública.
IPL0195571
Sep 23 2024

DECLARATION OF PUBLICATION (C.C.P.2015.5)

Mary Castro,I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

1 insertion(s) published on:

09/23/24

Mary Castro

Legals Clerk

COUNTY OF DALLAS
STATE OF TEXAS

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California,on 10/1/2024.

Margaret K. Wilson

Notary Public in and for the state of Texas, residing in Dallas County

MARGARET KATHLEEN WILSON
My Notary ID # 134916732
Expires May 24, 2028

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Attention:

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777 12TH STREET, 3RD FLOOR
SACRAMENTO, CA 95814

finance@airquality.org

NOTICE OF PUBLIC HEARING / AVISO DE AUDIENCIA PUBLICA
SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Proposed New Rule 490 – Liquefied Petroleum Gas (LPG) Transfer and Dispensing
Propuesta nueva regla 490 - Trasvase y distribución de gas licuado de petróleo (LPG)

The Board of Directors of the Sacramento Metropolitan Air Quality Management District (District) will conduct a public hearing on October 24, 2024, at 9:00 a.m. in Room 1450 (Board of Supervisors' Chambers), County Administration Building, 700 H Street, Sacramento, CA 95814.

The Board of Directors will consider new Rule 490 – LIQUEFIED PETROELUM GAS (LPG) TRANSFER AND DISPENSING. Rule 490 will apply to LPG transfer and dispensing operations.

The federal Clean Air Act requires State Implementation Plans for ozone nonattainment areas to include contingency measures that are automatically triggered if additional emissions reductions are needed to achieve National Ambient Air Quality Standards for ozone. The proposed rule, if triggered, will require emission control technologies and leak detection and repair to be implemented on sources that transfer and dispense LPG from any container into any other container, and it will reduce emissions of volatile organic compounds from fugitive emissions from LPG transfer and dispensing. If approved, the rule will be submitted to the U.S. Environmental Protection Agency to be included in the State Implementation Plan. This notice, the public hearing, and the proposed adoption are intended to satisfy the requirements of the federal Clean Air Act Sections 110, 172, 182 and Title 40 of the Code of Federal Regulations Part 51.

Copies of this notice, the proposed rule, and the Statement of Reasons are posted on the SMAQMD web site (www.airquality.org). A paper copy of the materials can be viewed at the SMAQMD office or purchased for a cost of 25¢ per page plus mailing costs. You can also subscribe to e-mail notifications at www.airquality.org/Air-Quality-Health/Public-Outreach/Subscribe.

By this notice, all interested parties are specifically requested to provide comments on proposed Rule 490. You may submit your comments by mail to the Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Attention: Ananya Srinivas (279) 207-1133 or by e-mail to ASrinivas@airquality.org. Oral testimony may be directed to the Board of Directors at the public hearing.

AVISO DE AUDIENCIA PÚBLICA

Propuesta nueva regla 490 - Trasvase y distribución de gas licuado de petróleo (LPG)

La Junta Directiva del Distrito Metropolitano de la Calidad del Aire de Sacramento (Distrito) llevará a cabo una audiencia pública el 24 de octubre de 2024 a las 9:00 a.m. en el cuarto numero 1450 (Junta de Cámaras de Supervisores), Edificio de Administración del Condado de Sacramento, 700 H Street, Sacramento, CA 95814.

La Junta Directiva considerará la nueva regla 490 – TRANSFERENCIA Y DISTRIBUCIÓN DE GAS LICUADO DE PETRÓLEO (LPG). La regla 490 se aplicará a las operaciones de transferencia y distribución de LPG.

La Ley federal del Aire Limpio (Clean Air Act) exige que los Planes de Implementación Estatal para las áreas de incumplimiento de las normas de ozono incluyan medidas de contingencia que se activen automáticamente si se necesitan reducciones adicionales de emisiones para alcanzar las Normas Nacionales de Calidad del Aire Ambiental para el ozono. La norma propuesta, si se activa, exigirá que se implementen tecnologías de control de emisiones y detección y reparación de fugas en las fuentes que transfieren y dispensan LPG de cualquier contenedor a cualquier otro contenedor, y reducirá las emisiones de compuestos orgánicos volátiles de las emisiones fugitivas de la transferencia y dispensación de LPG. Si se aprueba, la norma se enviará a la Agencia de Protección Ambiental de los EE.UU. (US EPA) para que se incluya en el Plan de Implementación Estatal. Este aviso, la audiencia pública y la adopción propuesta tienen como objetivo satisfacer los requisitos de la Secciónes 110, 172 y 182 de la Ley de Aire Limpio federal y el Título 40 del Código de Reglamentos Federales, Parte 51.

Copias de este aviso, la regla propuesta y la exposición de motivos están publicadas en el sitio web de SMAQMD (www.airquality.org). Se puede ver una copia impresa de los materiales en la oficina de SMAQMD o comprarla por un costo de 25 centavos por página más los costos de envío. También puede suscribirse para recibir notificaciones por correo electrónico en www.airquality.org/Air-Quality-Health/Public-Outreach/Subscribe.

Mediante este aviso, se solicita específicamente a todas las partes interesadas que brinden comentarios sobre las enmiendas propuestas a la Regla 490. Puede enviar sus comentarios por correo a Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Atención: Ananya Srinivas (279) 207-1133 or by e-mail to ASrinivas@airquality.org. El testimonio oral podrá dirigirse a la Junta Directiva en la audiencia pública.
IPL0195562
Sep 23 2024

DECLARATION OF PUBLICATION (C.C.P.2015.5)

Mary Castro,I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

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Mary Castro

Legals Clerk

COUNTY OF DALLAS
STATE OF TEXAS

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California,on 10/1/2024.

Margaret K. Wilson

Notary Public in and for the state of Texas, residing in Dallas County

MARGARET KATHLEEN WILSON
My Notary ID # 134916732
Expires May 24, 2028

Extra charge for lost or duplicate affidavits.
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RULE 489 – GREENWASTE COMPOSTING OPERATIONS
Adopted XX-XX-XX

[This rule will be effective on the effective date of an EPA final rulemaking that conditions described in Clean Air Act Sections 172(c)(9) and 182(c)(9) have occurred in the District regarding the 2008 or 2015 8-Hour Ozone National Ambient Air Quality Standards.]

INDEX

100 GENERAL

101 **PURPOSE:** To limit the emission of volatile organic compounds (VOC) occurring during greenwaste composting operations.

102 **APPLICABILITY:** Except as provided in Sections 110, 111, and 112, this rule applies to the owner/operator of any greenwaste composting operation that produces active or finished compost from greenwaste by itself or greenwaste in combination with manure.

103 **SEVERABILITY:** If any section, subsection, sentence, clause, phrase, or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, such portion is deemed as a separate, distinct, and independent provision, and such holding does not affect the validity of the remaining portions thereof.

110 **EXEMPTION – MINOR COMPOSTING FACILITIES:** This rule does not apply to the following composting facilities, provided that the operation is not subject to the Local Enforcement Agency notification or permit regulations pursuant to Title 14 Division 7, Chapter 3.1, Section 17857.1 of the California Code of Regulations:

110.1 Community composting;
110.2 Nursery composting;
110.3 Backyard composting; and
110.4 Recreational facility composting.

111 **EXEMPTION – OPERATIONS SUBJECT TO OTHER DISTRICT RULES:** The requirements of this rule do not apply to any composting facility subject to the requirements of Rule 496 – LARGE CONFINED ANIMAL FACILITIES.

200 DEFINITIONS

201 **ACTIVE COMPOST :** Any material that is in the process of being rapidly decomposed and is biologically unstable. Active compost generates temperature of at least 122 degrees Fahrenheit during decomposition. Active compost includes, but is not limited to, pathogen-reduced mulch.

202 **ACTIVE PHASE:** The phase of the greenwaste composting process that begins when organic waste materials are mixed together for composting and lasts a minimum of 22 days under uncontrolled conditions or until the compost has a Solvita® Maturity Index of five or greater measured pursuant to Section 501.2.a.

203 **BACKYARD COMPOSTING:** Any composting conducted by a household including, but not limited to, single family residences, condominiums, duplexes, or apartment buildings.

204 **COMPOSTING FACILITY:** A source that is required to obtain a District permit for composting operations in pursuant to District Rule 201, General Permit Requirements.

205 **COMMUNITY COMPOSTING:** Any composting conducted by a residential neighborhood association using feedstock generated within the residential neighborhood to produce compost for the neighborhood's use.

206 **COMPOSTING:** A process in which solid organic waste materials are decomposed in the presence of oxygen through the action of bacteria and other microorganisms.

207 **COMPOSTING OVERS:** The oversized woody materials that do not decompose in a typical composting cycle and are screened out of finished product at the end of composting. Composting overs have been through a pathogen reduction process outlined in Title 14, Section 17868.3 of the California Code of Regulations.

208 **CURING PHASE:** The phase of the greenwaste composting process that begins immediately after the end of the active phase of composting and lasts a minimum of 40 days or until the compost has a Solvita® Maturity Index of seven or the product respiration rate is below ten milligrams of oxygen consumed per gram of volatile solids per day as measured by direct respirometry, pursuant to Section 501.2.b.

209 **FINISHED COMPOST:** A humus-like material and/or compost overs that result from the controlled biological decomposition of organic waste materials and is biologically stable. Both the active and curing phases of the greenwaste composting are required to achieve this product.

210 **GREENWASTE:** Any organic waste material generated from gardening, agriculture, or commercial or municipal landscaping activities including, but not limited to, grass clippings, leaves, tree and shrub trimmings, and plant remains.

211 **GREENWASTE COMPOSTING:** Any composting of greenwaste by itself or with a mixture with up to 20 percent manure, per pile volume basis.

212 **LOCAL ENFORECEMENT AGENCY:** The local agency with authority to enforce state laws pertaining to the storage, processing and disposal of solid waste, including permitting and enforcement for composting facilities.

213 **NURSERY COMPOSTING:** Any composting conducted at a nursery to produce compost for on-site use.

214 **ORGANIC WASTE:** Any organic waste material that includes greenwaste, woodwaste, or manure, or a mixture thereof.

215 **OWNER/OPERATOR:** Any person who owns, leases, or operates a greenwaste composting operation.

216 **PILE:** Any composting material that is heaped together.

217 **RECREATIONAL FACILITY COMPOSTING:** Any composting conducted at parks, arboretums and other recreational facilities using feedstock generated on-site to produce compost for on-site use

218 **SOLVITA® MATURITY INDEX:** An index that defines the stage where compost exhibits resistance to further decompositions, as tested by the Solvita® Maturity Test pursuant to Section 501.2.a.

219 **TEST METHODS FOR THE EXAMINATION OF COMPOSTING AND COMPOST (TMECC):** The test methods published by the U.S. Composting Council Research and Education Foundation.

220 **THROUGHPUT:** The weight of organic waste material to be processed, as it is received by a facility, prior to treatment at the receiving location. Throughput includes the weight of moisture present in the organic waste material at the time it is received at a facility.

221 **VOLATILE ORGANIC COMPOUND (VOC):** For the purposes of this rule, “volatile organic compound” has the same meaning as in Rule 101 – GENERAL PROVISIONS AND DEFINITIONS.

222 **WINDROW:** Any organic waste material that is placed in an elongated pile for composting.

223 **WOODWASTE:** Any lumber and the woody material portion of mixed demolition and mixed construction wastes. Woodwaste also includes the large wood materials of curbside

greenwaste or mixed greenwaste that is screened or unscreened, such as tree trimmings, branches, tree trunks, stumps, and limbs exceeding two inches in any dimension.

300 STANDARDS

301 **OPERATION REQUIREMENTS – GREENWASTE COMPOSTING OPERATIONS:** Effective one year after the effective date of this rule, an owner/operator of a composting facility must comply with the following requirements:

301.1 Chip or grind, as necessary, and use greenwaste for on-site composting as allowed by the Local Enforcement Agency or within 10 days, whichever is earlier.

301.2 Cover each active phase pile with screened or unscreened finished compost within 24 hours of initial pile formation such that the top is at least six inches thick, and the pile must not be turned for the first seven days of the active phase of composting, unless Section 301.5 applies.

301.3 For the first 15 days after initial pile formation for the active phase period of composting, within six hours before turning, apply water as necessary to the surface area of each active phase pile such that the top one half of the pile is wet at a depth of at least three inches. Alternatively, the owner/operator may apply water during turning using a windrow turner which is equipped with an operating water spraying technology during the entire windrow turning process.

a. "Wet" must be determined using a squeeze ball test pursuant to Section 501.1. or an alternative approved by the Air Pollution Control Officer, California Air Resources Board, and the United States Environmental Protection Agency.

301.4 If a rain event occurs prior to watering the pile within 6 hours before turning and the pile is wet to a depth of three inches, the owner/operator may turn the pile without adding additional water. If the top half of the pile is dry to a three-inch depth, apply additional water pursuant to Section 301.3.

301.5 If the pile needs to be turned within the first seven days for managing temperature or pathogen reduction pursuant to Title 14 Division 7, Chapter 3.1 Section 17868.3 of the California Code of Regulations, the owner/operator does not need to re-apply the screened or unscreened finished compost cover and will apply water pursuant to Section 301.3 for the first 15 days of the active phase.

301.6 The owner/operator may implement an alternative mitigation measure that will be based on a test protocol approved by the Air Pollution Control Officer, California Air Resources Board, and the United States Environmental Protection Agency and that demonstrates emission reductions by at least 40 percent, by weight, for VOC, for combined screen or unscreened finished compost cover and water application.

400 ADMINISTRATIVE REQUIREMENTS (NOT APPLICABLE)

500 MONITORING AND RECORDKEEPING

501 **TESTING PROCEDURES:**

501.1 **SQUEEZE BALL TEST:** The squeeze ball test must be conducted by taking a sample of the compostable material from the top half of the pile, at least 3 inches below the outer surface. The material must be squeezed into a ball using hand pressure and wearing a protective glove. There should be at least enough water to form a ball when compressed, but the ball may break when tapped. If the ball crumbles upon release of the hand pressure, additional water must be applied to the windrow prior to turning until the material passes the ball squeeze ball test.

501.2 **COMPOST MATURITY:** The following test methods are incorporated herein by reference and will be used to test composting phase subject to provisions of this rule:

a. TMECC 05.08-E – Solvita® Maturity Index (April 7, 2002)

b. TMECC 05.08-A – Specific Oxygen Update Rate (April 7, 2002)

502 **RECORDKEEPING:** The owner/operator of a composting facility subject to this rule, must maintain the following records:

502.1 Watering requirements:

a. Date and time the waste organic material from the windrow was tested for compliance.

b. Windrow squeeze ball test result and, if applicable, all corrective action taken.

c. Date and time the windrow was turned.

502.2 Active composting cover:

a. Date and time each windrow was initially formed for the active phase and the time when finished compost cover was applied to each windrow.

b. Date and time each windrow was turned during the active phase and the time when finished compost cover was applied to each windrow.

502.3 Throughput records:

a. Date the organic waste material arrives on site.

b. Type of organic waste material received on site.

c Weight (in wet tons) of each type of organic waste material received on site.

502.4 Records must be maintained on site for a continuous 5-year period and submitted to the Air Pollution Control Officer by March 15 of each year for the previous calendar year. The submittal must be in electronic format.

RULE 490 – LIQUEFIED PETROLEUM GAS TRANSFER AND DISPENSING
Adopted XX-XX-24

[This rule will be effective on the effective date of an EPA final rulemaking that conditions described in Clean Air Act Sections 172(c)(9) and 182(c)(9) have occurred in the District regarding the 2008 or 2015 8-Hour Ozone National Ambient Air Quality Standards.]

INDEX

500 MONITORING AND RECORDKEEPING

501 TEST METHOD – LEAK CONCENTRATIONS

502 RECORDKEEPING

100 GENERAL

101 **PURPOSE:** To limit the emission of volatile organic compounds (VOC) from the transfer and dispensing of liquefied petroleum gas (LPG).

102 **APPLICABILITY:** This rule applies to the transfer or dispensing of LPG from any cargo tank, stationary or portable storage tank, or cylinder into any other cargo tank, stationary or portable storage tank, or cylinder.

103 **SEVERABILITY:** If any section, subsection, sentence, clause, phrase, or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, such portion is deemed as a separate, distinct, and independent provision, and such holding does not affect the validity of the remaining portions thereof.

110 **EXEMPTION – SMALL LPG CONTAINERS:** This rule does not apply to the transfer of LPG into any container with a water capacity of less than 4 gallons.

111 **EXEMPTION – RECREATIONAL VEHICLES:** The requirements of Sections 301 and 302 do not apply to any LPG containers that are specifically dedicated and installed for use on recreational vehicles.

200 DEFINITIONS

201 **BOBTAIL TRUCK:** Any vehicle equipped with a cargo tank without a trailer and is used to deliver propane.

202 **BUBBLE TEST:** A test application of a soap solution, detergent, aerosol spray or similar material that produces visible bubbles at the site of any potential LPG vapor leak source and is observed for bubbles.

203 **CARGO TANK:** Any container used to transport LPG and is either mounted on a conventional truck chassis or is an integral part of a cargo transporting vehicle, such as a bobtail, mobile fueler, or railroad tank car.

204 **CONNECTOR:** Any component, including an adapter, hose, fitting, valve or coupling used in association with the transfer of LPG from one container to another and is disconnected following completion of an LPG transfer or dispensing activity.

205 **CONTAINER:** Any vessel, including cylinders, stationary or portable tanks, and cargo tanks, used for the transportation or storage of LPG.

206 **CYLINDER:** Any container designed, constructed, tested, and marked in accordance with the U.S. Department of Transportation (DOT) specifications, Title 49, Code of Federal Regulations or in accordance with a valid DOT special permit.

207 **FILL BY WEIGHT:** The filling of an LPG container without using of a Fixed Liquid Level Gauge and monitoring the fill level by weighing the filled container to prevent overfilling to no more than the maximum rated capacity.

208 **FITTING:** Any machine component, piping, tubing, or fixture that attaches to larger parts or is used to connect two or more larger parts.

209 **FIXED LIQUID LEVEL GAUGE (FLLG):** A liquid level indicator, also called a bleeder valve or outage gauge, that uses a positive shutoff vent valve to indicate that the liquid level in a container being filled has reached the point at which the indicator communicates with the liquid.

210 **LIQUID TIGHT:** Any visible liquid leak rate not exceeding three drops per minute or exhibiting a visible liquid mist.

211 **LOW EMISSION FLLG:** A fixed liquid level gauge with a number 72 orifice size (0.025 inch) or physical configuration that results in an equivalent or lower emissions rate that is tested and demonstrated using a method approved in writing by the Air Pollution Control Officer.

212 **LIQUEFIED PETROLEUM GAS (LPG):** An organic compound having a vapor pressure not exceeding that allowed for commercial propane, which is composed predominantly of the following hydrocarbons, either by themselves or as mixtures: propane, propylene, butane (normal butane or isobutane) and to a lesser extent butylene, and that is stored and transported under pressure in a liquid state.

213 **LPG BULK LOADING FACILITY:** An LPG transfer and dispensing facility where the primary function is to store LPG for further distribution and has one or more stationary storage tanks with a water capacity of 10,000 gallons or more.

214 **LPG LOW EMISSION CONNECTOR:** Any component, including an adapter, hose, fitting, valve, or coupling used to transfer LPG from one container to another and is designed to result a maximum emission release of four cubic centimeters of LPG when disconnected.

215 **LPG TRANSFER AND DISPENSING FACILITY:** A mobile fueler, or a stationary facility consisting of one or more stationary storage tanks and associated equipment which receives, stores, and either transfers or dispenses LPG to stationary storage tanks, cargo tanks, or portable storage tanks.

216 **LPG VAPOR RECOVERY OR EQUALIZATION SYSTEM:** A system installed on an LPG mobile fueler or railroad tank car that facilitates the transfer of liquid LPG and allows for the collection and recovery of LPG vapors displaced or emitted from the stationary storage tank or cargo tank when LPG is transferred to or from the mobile fueler or the railroad tank car.

217 **LPG VAPORS:** The organic compounds in vapor form as well as the entrained liquid LPG displaced during LPG transfer and dispensing operations.

218 **MOBILE FUELER:** Any cargo tank, tanker truck or trailer, including a bobtail truck, which is used to transport LPG stored in an onboard cargo tank.

219 **OWNER/OPERATOR:** Any person who owns, leases, or operates any stationary facility or mobile fueler subject to the requirements of this rule.

220 **PORTABLE CYLINDER:** A container designed, constructed, tested, and marked in accordance with U.S. Department of Transportation (DOT) specifications Title 49, Code of Federal Regulations or in accordance with a valid DOT special permit. Examples of portable cylinders that contain LPG include those used with small hand torches, forklifts, barbeque grills, and agricultural weed burners.

221 **PORTABLE STORAGE TANK:** A container or portable cylinder designed to be easily moved by hand or hand truck (dolly) without mechanical assistance, as opposed to a container or stationary tank designed for stationary installations.

222 **RAILROAD TANK CAR:** A mounted cargo tank designated for transport over rail.

223 **RECREATIONAL VEHICLE:** Any vehicle or trailer used strictly for noncommercial leisure activities, and is equipped with living space and amenities found in a home.

224 **STATIONARY STORAGE TANK:** A container that is used for the storage of LPG, including, but not limited, for residential, commercial, or industrial usage, and includes containers constructed in accordance with the American Society of Mechanical Engineers Code.

225 **VALVE:** A device that regulates or isolates the fluid flow in a pipe, tube, tank, or conduit by means of an external actuator.

226 **VAPOR TIGHT:** A condition under which the concentration of total organic compounds from any LPG connector does not exceed 10,000 ppm above background, as determined pursuant to Section 501.

227 **VOLATILE ORGANIC COMPOUND (VOC):** For the purposes of this rule, "volatile organic compound" has the same meaning as in Rule 101 – GENERAL PROVISIONS AND DEFINITIONS.

300 STANDARDS

301 **LPG BULK LOADING FACILITIES:** Effective one year after the effective date of this rule, no person at an LPG bulk loading facility may transfer, allow the transfer, or provide equipment used to transfer LPG from any cargo tank to a stationary tank located at the facility or from any stationary storage tank to a cargo tank unless the all the following conditions are met:

301.1 An LPG vapor recovery or equalization system, capable of recovering all LPG vapors, is used during the transfer process. The LPG vapor recovery or equalization system is maintained and operated according to the specifications of the system manufacturer.

301.2 All vapor return lines and liquid lines are properly connected between the cargo tank and the stationary storage tank so that associated connectors are maintained in a vapor tight and liquid tight condition during LPG transfer.

301.3 The transfer hose assembly, which includes the hose, fittings, and gaskets, is properly maintained in order to maintain vapor tight conditions.

302 **LPG TRANSFER AND DISPENSING FACILITIES:** Effective one year after the effective date of this rule, no person may transfer LPG at an LPG transfer and dispensing facility from any stationary storage tank, cargo tank, or cylinder into any stationary storage tank, cargo tank, portable storage tank, cylinder, or vehicle fuel tank unless the transfer is made under the following conditions, as applicable:

302.1 Each stationary storage tank must meet one or both of the following conditions:

a. All stationary storage tank FLLGs are closed during LPG transfer, using a filling technology that monitors the maximum fill level without use of an FLLG; or

b. The tank is equipped only with low emission FLLGs as follows:

1. Whenever a tank is put into or taken out of service, the tank is equipped only with low emission FLLGs prior to returning the tank to service.

2. Except as provided in Section 302.1(b)(3), all stationary storage tanks must be equipped with low emission FLLGs no later than 18 months after the effective date of this rule.

3. Notwithstanding Section 302.1(b)(2), if the owner/operator demonstrates through documentation prior to 18 months after the effective date of this rule that the stationary storage tank being filled is equipped with an FLLG that cannot be retrofitted with a low emission FLLG in a safe manner without relocation of the stationary storage tank, the stationary storage tank must be equipped with a low emission FLLG no later than 48 months after the effective date of this rule. Such documentation must be

submitted to the Air Pollution Control Officer no later than 48 months after the effective date of this rule.

302.2 Each cargo tank, if equipped with FLLGs, must meet one or both of the following conditions:

a. All cargo tank FLLGs are closed while being filled using a filling technology that monitors the maximum fill level without the use of an FLLG; or

b. The cargo tank is equipped only with low emission FLLGs as follows:

1. If a cargo tank is purchased as new or manufactured after the effective date of this rule, it must be equipped only with low emission FLLGs.

2. When a cargo tank is evacuated, it must be equipped only with low emission FLLGs prior to returning to service.

3. All cargo tanks must be equipped only with low emission FLLGs no later than 60 months after the effective date of the rule.

302.3 Each container that is a cylinder or portable storage tank must meet one or both of the following conditions:

a. The cylinder or portable storage tank FLLG is closed during LPG transfer using a fill by weight technique or an alternative technology that monitors the maximum fill level without the use of the FLLG; or

b. The cylinder or portable storage tank is equipped with a low emission FLLG no later than 18 months after the effective date of this rule.

302.4 Each LPG transfer from one container to any other container is made using LPG low emission connectors that are liquid tight and vapor tight, except when actively connecting or disconnecting the connector.

303 **LEAK DETECTION AND REPAIR PROGRAM:** Effective one year after the effective date of this rule, the owner/operator of an LPG bulk loading facility or an LPG transfer and dispensing facility must implement a leak detection and repair program, including but not limited to the following requirements:

303.1 Daily Physical Leak Check: On a daily basis, physically check all connectors involved with the transfer for evidence of leakage, such as the presence of odorant, hissing, or staining.

303.2 Bubble Test or EPA Method 21 Inspection: Inspect all LPG connectors during LPG transfers using the bubble test or EPA Method 21 at least once every 90 days, or if the time between the fillings is greater than 90 days, during or upon completion of the transfer of LPG. Visible bubbles when using the bubble test or a total organic compound concentration greater than 10,000 ppmv when using EPA Method 21 constitute a leak.

303.3 Employee Training: Conduct a periodic training program for any employee involved in the maintenance or operation of LPG transfer. The training program must incorporate written training procedures, training frequency, scheduled training dates, and written record of the dates and training provided for each employee.

303.4 Leak Repair: Remove from service and tag any connector identified as leaking pursuant to Section 303.1 or 303.2. The connector may not be put back into service until the leaky connector is repaired or replaced, and re-inspected for leaks. The owner/operator must keep a written record of all leaks found pursuant to Section 502.2. Leaks identified by the owner/operator that are removed from service, tagged, repaired or replaced, re-inspected, and documented will not be considered violations of this rule.

304 **MOBILE FUELER OR RAILROAD CARGO TANK MAINTENANCE:** Effective one year after the effective date of this rule, the owner/operator of a mobile fueler or railroad cargo tank equipped with an LPG vapor recovery or equalization system must operate the system in accordance with the manufacturer's specifications and perform system maintenance in accordance with the manufacturer's schedule.

400 ADMINISTRATIVE REQUIREMENTS

401 **INITIAL LOW EMISSION CONNECTOR INVENTORY SUBMITTAL FOR BULK LOADING FACILITIES**: By July 1 after the end of the first full calendar year that the requirements in Section 302 are in effect, the owner/operator of an LPG bulk loading facility must submit to the Air Pollution Control Officer (APCO) an end-of-year inventory, for the prior calendar year, of all low emission connectors installed at the facility and those installed on facility-owned or leased LPG mobile fuelers associated with the transfer or storage of LPG. The inventory submittal must include the specific transfer or storage equipment involved and the manufacturer and identification or part number of all low emission connectors. In addition, any connectors installed at the facility or on facility-owned or facility-leased mobile fuelers that are not low emission must be identified. The submittal must be in electronic format.

402 **ANNUAL SUBMITTAL OF LOW EMISSION FLLG INSTALLATIONS FOR BULK LOADING FACILITIES:** Beginning July 1 after the end of the first full calendar that the requirements in Section 302 are in effect and ending after five consecutive annual submittals: By July 1 each year, the owner/operator of an LPG bulk loading facility must submit to the APCO an end-of-year inventory, for the prior calendar year, of all facility containers, including all facility-owned or leased mobile fuelers associated with the transfer and storage of LPG, that are equipped with one or more low emission FLLGs. The inventory submittal must include a summary, by size and classification, and include the associated number of installed low emission FLLGs. The submittal must be in electronic format.

500 MONITORING AND RECORDKEEPING

501 **TEST METHOD – LEAK CONCENTRATIONS:** If Method 21 is used to comply with Section 303.2 instead of the bubble test, leak concentrations of total organic compounds must be determined using United States Environmental Protection Agency Reference Method 21, with an appropriate analyzer calibrated with methane. The analyzer must be calibrated before inspection on the day of inspection.

502 **RECORDKEEPING:**

502.1 The owner/operator of an LPG bulk loading facility or an LPG transfer and dispensing facility subject to the requirements of Section 301 or 302 must maintain purchase and installation records of all low emission FLLGs and low emission connectors installed to comply with this rule including component name, part ID number, quantity purchased, and component manufacturer.

502.2 The owner/operator of an LPG bulk loading facility or an LPG transfer and dispensing facility must maintain a maintenance log of all leaks found. The maintenance log must include the type of leak, location of leak, date and time leak discovered, date and time leak repaired, name of person who performed the repair and their employer’s name and phone number, leaking connector name (part ID name, part number, and part manufacturer), and description of the repair.

502.3 The owner/operator of a mobile fueler or a railroad tank car subject to the requirements of Section 304 must maintain on-site maintenance records of the vapor recovery or equalization system and a copy of the manufacturer’s maintenance schedule.

502.4 Records must be maintained on site for a continuous 5-year period and submitted to the Air Pollution Control Officer by July 1 of each year for the previous calendar year. The submittal must be in electronic format.

Contingency Measures for the 2008 and 2015 Ozone Standards

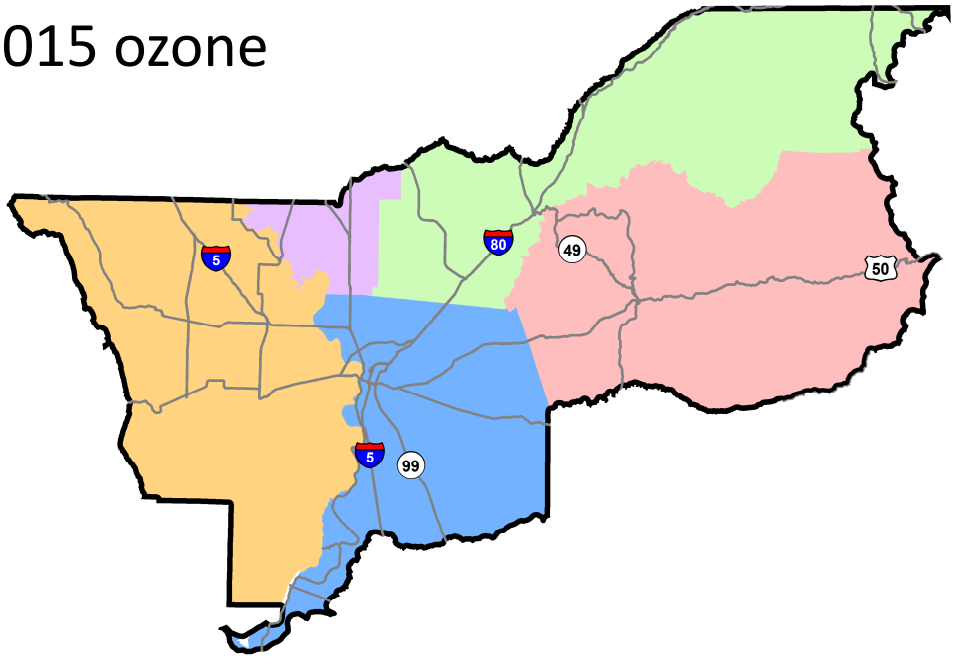
Marc Cooley, Air Quality Engineer

Board Meeting, October 24, 2024

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Sacramento Federal Nonattainment Area (SFNA)

Severe nonattainment area for 2008 and 2015 ozone standards



Regional Air District

- El Dorado County AQMD
- Feather River AQMD
- Placer County APCD
- Sacramento Metropolitan AQMD
- Yolo-Solano AQMD

Sacramento Federal Ozone Nonattainment Area

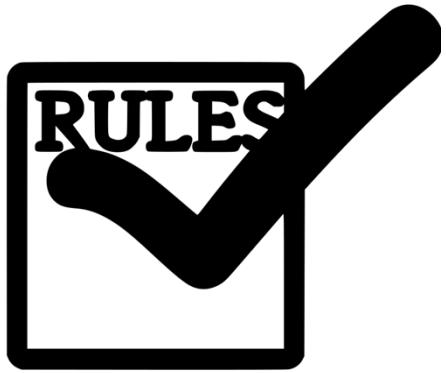
Major Highways

Ozone State Implementation Plans (SIPs)

- EPA disapproved the contingency portion of SIP for 2008 standard
- SIP for 2015 Standard under EPA review
- Action affected by recent court decisions
- Contingency measures follow EPA guidance

What are Contingency Measures?

- Rules that provide additional emission reductions **IF and only IF**:
  - Region fails to attain; or
  - Region fails to make progress towards attainment
- Must trigger automatically
- New rules **must be** included in regional SIP plans



Contingency Measures to Control Volatile Organic Compounds (VOC)

Architectural Coatings

(All Districts)

Composting

(Sacramento& Yolo-Solano)

LPG Transfer & Dispensing

(Sacramento)

Solvent Cleaning

(Placer)

Outreach

- Public Workshop: September 18, 2024
- Workshop and today's hearing noticed through the District website and by email
- No comments received during public comment period

Recommendations

- Conduct a public hearing
- Determine the proposed SIP revision is exempt from CEQA
- Approve the resolution adopting the SIP revision
- Direct staff to forward SIP revision to CARB for submittal to U.S. EPA to stop the sanctions clock
- Questions?

Proposed New Rule 489
Greenwaste Composting Operations

Background – Greenwaste Composting

- Composting: Aerobic (with oxygen) decomposition of organic waste
- "Greenwaste" - Organic waste generated from gardening, agriculture, or landscaping such as:
  - Grass clippings
  - Leaves
  - Tree and shrub trimmings
  - Up to 20% manure

Background (cont'd)

- Windrow composting is most common method
- Majority of emissions generated during first 15 days
- **Rule 489** proposed as a contingency measure to reduce emissions from greenwaste composting

Who is affected by Rule 489?

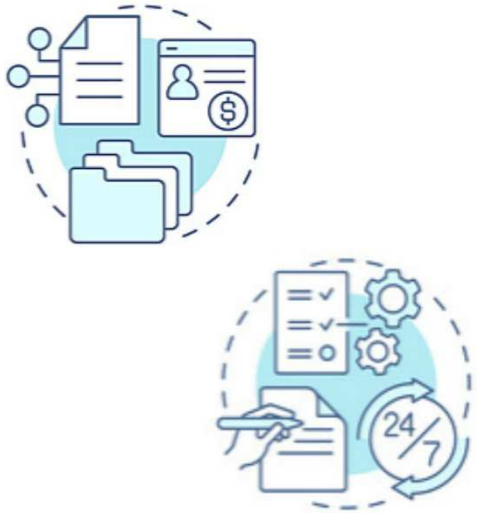
- Applies to composting facilities with Solid Waste Permits
  - Currently one facility in Sac County: Lopez Agricultural Services
- Minor composting facilities are not included:
  - Community composting
  - Nursery composting
  - Backyard composting
  - Recreational facility composting

Operational Requirements

1) Chip or grind greenwaste as necessary, then start composting within 10 days
2) Cover new piles with finished compost within 24 hours
3) For first 15 days, apply water to surface of piles within 6 hours before turning

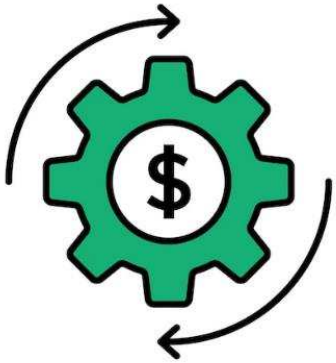
Recordkeeping and Reporting Requirements

- Maintain records of:
  - Finished compost cover
  - Watering
  - Throughput
- Submit records annually to the District



Emission Reductions and Cost Effectiveness

- Emission reductions of 34 tons per year (40% reduction)
- Very cost-effective rule: **$0.79** per pound of emissions reduced
  - Previous rules: $1.62 - $27.39
  - District reference: $13.15



Outreach

- September 18, 2024, Staff met with Lopez Agricultural Services
- Today's Hearing
  - Noticed through the *Sacramento Bee,* District website, and by email

Recommendations

- Conduct a public hearing
- Determine the proposed new Rule 489 is exempt from CEQA
- Adopt a resolution approving Rule 489
- Direct staff to forward amended rule to CARB for submittal to U.S. EPA
- Questions?

Proposed Rule 490
Liquefied Petroleum Gas (LPG) Transfer and Dispensing

Rule 490 Background and Purpose

- Liquefied Petroleum Gas (LPG or propane) is used as fuel
- **Purpose of Rule 490** – Limit fugitive emissions from transfer and dispensing of LPG
- Rule 490 is proposed as a contingency measure

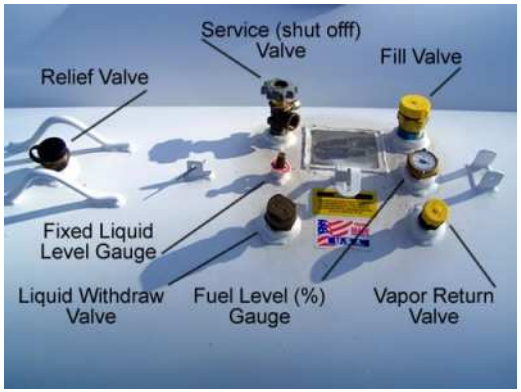
Who is affected by Rule 490?

- Applies to the transfer or dispensing of LPG to or from any container into any other container
- LPG bulk plants and suppliers
- Retail transfer and dispensing facilities
- Facilities that refill cylinders for exchange programs



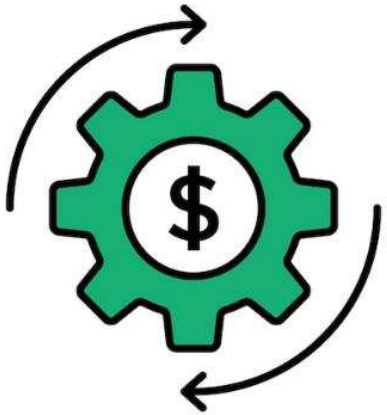
Emission Control Requirements

- Low emission fixed liquid level gauges (FLLGs)
- Low emission connectors
- Fill by weight
- Leak Detection and Repair
- Reporting and Recordkeeping



Emission Reductions and Cost Effectiveness

- Emission reductions 73 tons per year (69% reduction)
- Cost Effectiveness: **$5.14** per pound of emissions
  - Previous rules: $1.62 - $27.39
  - District reference: $13.15



Outreach

- Public Workshop: September 19, 2024
- Workshop and today's hearing noticed through the District website and by email
- Board hearing also noticed in the *Sacramento Bee*

Western Propane Gas Association (WPGA) Comments

- **Comment:** Rule would cause economic burden to small businesses
- **Response:**
    - Rule well below District cost-effectiveness reference
    - Successfully implemented at two other California Districts
- **Comment:** Request addressing emissions from larger industries first
- **Response:**
    - Largest District sources are subject to state or federal regulation
    - Additional measures are being adopted as contingencies

Recommendations

- Conduct a public hearing
- Determine the proposed Rule 490 is exempt from the CEQA
- Adopt a resolution approving Rule 490
- Direct staff to forward rule to CARB for submittal to U.S. EPA
- Questions?

Meeting Date: 10/24/2024
Report Type: PUBLIC HEARINGS
Report ID: 2024-1024-9.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 9.

Title: Air Toxics "Hot Spots" Program Annual Report (AB 2588)

Recommendation: Conduct a public hearing for the Air Toxics "Hot Spots" Program Annual Report (AB 2588) and receive and file the report.

Rationale for Recommendation: To comply with the Air Toxics "Hot Spots" Information and Assessment Act (Health and Safety Code § 44300 et. al.), the District is required to prepare and publish an annual report on facilities subject to the Act and hold a public hearing to present the report and discuss its findings and implications. This report, along with the associated public hearing, fulfills that requirement by providing information on emission inventories, approved health risk assessments (HRAs), public notification procedures, and steps undertaken to reduce public health risks. State and local health officials may use the report to prioritize the development and implementation air toxic control measures that protect public health.

Contact: Steve Mosunic, Program Supervisor, Engineering & Compliance Division, (279) 207-1137

Presentation: Yes

ATTACHMENTS:

Attachment A: 2024 Annual Report
Presentation: 2024 Air Toxics Hot Spots Annual Report

Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

Discussion / Justification: Toxic emissions have long been recognized by federal, state, and local health agencies as contributing to adverse health outcomes at localized levels, leading to targeted controls and emission standards. The California Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots Act) in 1987. This law requires facilities to report the types and quantities of specific substances routinely released into the air, with the goal of identifying facilities having localized impacts and notifying nearby residents of significant risks.

A key aspect of the Hot Spots Program is ensuring public access to the information generated. In accordance with Section 44363 of the Health and Safety Code, the District has prepared this 2024 Annual Report on the Air Toxics "Hot Spots" Information & Assessment Act. The report describes the program's elements and requirements, as well as the District's ongoing efforts to monitor, regulate, and reduce toxic air emissions.

Public Outreach/Comments: The report was noticed and posted to the District's website and the notice was sent out to the District's permit holders and AB 617 community listserv on September 25, 2024.

Attachment A

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

2024 ANNUAL REPORT

ON THE

AIR TOXICS "HOT SPOTS" INFORMATION & ASSESSMENT ACT

OCTOBER 2024

PREPARED BY: Matt Baldwin, Associate Air Quality Engineer
Quintin Phan, Associate Air Quality Engineer
Amar Zagdragchaa, Assistant Air Quality Engineer
Shaily Desai, Air Quality Intern

REVIEWED BY: Brian Krebs, Permitting Program Manager
Steve Mosunic, Permitting Program Supervisor

APPROVED BY: Amy Roberts, Engineering & Compliance Division Director

TABLE OF CONTENTS

Executive Summary

BACKGROUND

Many air pollutants are created in the operation of our modern society. From the combustion of gasoline in the cars we drive to the fossil fuels burned to provide electricity for our homes, these processes produce emissions of chemicals that contribute to poor air quality and potentially adverse health effects. While cars, power plants and many industrial plants release pollutants, like nitrogen oxides and carbon dioxide, that are well known to impact attainment of ambient air quality standards and climate targets, they can also emit many toxic chemicals that can be even more concerning for their potential to directly affect human health. Toxic chemicals, like benzene found in gasoline and particulate matter created from combusting diesel fuel, are of particular concern because these substances may pose a hazard to human health by either causing or contributing to an increase in serious illness or mortality.

Toxic emissions have long been recognized by federal, state, and local health agencies for their role in adverse health outcomes and impacts at localized levels and the need for emission standards and controls. In 1987, the California Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act[1] (Hot Spots Act). The statute requires facilities to report the types and quantities of certain substances routinely released into the air, with the goal of identifying facilities having localized impacts and notifying nearby residents of significant risks. Additionally, the Hot Spots Act requires risk management plans and public notification of significant health risks.

The Sac Metro Air District (SMAQMD) implements the Hot Spots Act in Sacramento County through its Hot Spots Program and in coordination with the California Air Resources Board (CARB).

The main goals of the Hot Spots Program include:

(i) collecting data from permitted facilities to calculate toxic air emissions,
(ii) identifying facilities having localized impacts,
(iii) ascertaining the health risks associated with exposure to the identified toxic emissions,
(iv) notifying the public if significant risks are determined, and
(v) reducing identified risks to acceptable health-preserving levels.

Facilities subject to the Hot Spots Program include large sources (Core Facilities) such as power plants and landfills that emit more than 10 tons/year of total organic gases (TOG), oxides of nitrogen (NOx), sulfur oxides (Sox), or particulate matter (PM), as well as smaller classes of sources, called industrywide facilities. These sources include diesel-fired engines commonly used for back-up power, retail gas stations, and chrome platers.

An important part of the Hot Spots Program is assuring public access to the information determined under the program. As required under Section 44363 of the Health and Safety Code, the SMAQMD has prepared this 2024 Annual Report on the Air Toxics "Hot Spots" Information & Assessment Act. The report describes the elements and requirements of the Hot Spots Program and the SMAQMD's ongoing efforts to regulate and reduce toxic air emissions. To ensure public access, the report is published on the SMAQMD website and distributed to the California Air Resources Board, County Board of Supervisors, city councils, local health officers, and Community Air Protection Program distribution lists available. It is also presented to the Sac Metro Air District Board of Directors during a regularly scheduled public meeting and opened to public hearing.

[1] Assem. Bill 2588 (Stats. 1987, ch. 1252)

RECENT UPDATES & UPCOMING CHANGES

Since the passage of the Hot Spots Act, other efforts have been made at the statewide and local air district level to continue to address toxic air emissions. These ongoing efforts are highlighted below.

2015 OEHHA HRA Guidelines – In February 2015, the Office of Environmental Health Hazard Assessment (OEHHA) adopted updated Health Risk Assessment (HRA) guidelines in response to the Children's Environmental Health Protection Act of 1999[2], which required infants and children to be explicitly considered when assessing health risks. Under these updated guidelines, risk estimates could increase compared to estimates under the previous risk guidelines. To address these changes, the SMAQMD adopted revised prioritization and HRA guidelines and reassessed health risks for certain large facilities using the updated OEHHA guidelines. The SMAQMD continues to assess health risks associated with new facility emissions and other smaller source categories using the updated guidelines.

Gasoline Dispensing Facility HRA Guidelines – In February 2022, CARB and the California Air Pollution Control Officers Association (CAPCOA) published updated risk assessment guidance for air districts to use when assessing emission risks from gasoline dispensing facilities (GDFs). The updated CARB/CAPCOA GDF guidance incorporated changes to risk methodology, air dispersion models, fuel composition, and emission factors that have occurred since the previous 1997 CARB/CAPCOA guidance. This guidance was used when screening GDFs and performing any site-specific risk assessments.

Criteria and Toxics Reporting Rule – To address concerns of air pollution impacts on local communities, especially disadvantaged communities that have historically borne a higher pollution burden, the Legislature in 2017 added and amended several sections of the Health & Safety Code[3]. The California Air Resources Board established the Community Air Protection Program to implement these statutes and coordinate efforts with involved air districts.

In response to the legislative mandate for additional reporting of criteria and toxic air contaminants from stationary sources, CARB adopted the "Regulation for the Reporting of Criteria Air Pollutants and Toxic Air Contaminants" (CTR).[4] Effective January 1, 2020, this regulation improves upon the existing criteria and toxics emission inventory data to meet the community protection, public right to know, and comprehensive needs of these mandates. The regulation underwent subsequent revisions to lower reporting emission thresholds and require additional businesses and industrial sectors to report their criteria and toxic emissions data annually. Those revisions were effective as of January 1, 2022.

Emissions Inventory Criteria and Guidelines Regulation – On November 19, 2020, CARB adopted amendments to the Emission Inventory Criteria and Guidelines (EICG) Regulation to harmonize Hot Spots Program requirements with the CTR. These amendments were approved by OAL and became effective on March 21, 2022. As amended, the EICG Regulation will:

(1) provide additional consideration factors for exempting facilities and reinstating previously exempt facilities.

(2) require reporting of 900+ new substances and three broad functional groups of chemicals found in the emissions from facilities; update risk screening modeling approaches; and

(3) align the EICG requirements with CTR.

District Challenges and Solutions to Increased Emission Inventory Requirements – Both the CTR and amended EICG represent a substantial increase in the data collection, analysis, and reporting requirements for emissions from permitted stationary sources. To be able to comply with these additional requirements, over the past several years, the SMAQMD devoted substantial effort and resources to

[2] Sen. Bill 25 (Stats. 1999, ch. 731, § 3)
[3] Assem. Bill 617 (Stats. 2017, ch. 136)
[4] Cal. Code Regs. tit. 17, § 93400 et. seq.

develop a new software solution that will help the SMAQMD more easily collect, process, and analyze this large amount of emission data from its permitted sources. The new system was released to the public on September 4, 2024, and includes an online portal for permitted sources to submit annual emission data. This new system is anticipated to improve the SMAQMD's tracking and reporting capabilities, thereby enhancing efficiency of emissions data collection and processing to better manage the additional workload. The new system will be used by permitted facilities in 2025 to report data for 2024 emission calculations.

SUMMARY OF ACTIVITIES

The following table summarizes key activities the SMAQMD accomplished since the last annual report:

Core Facilities (large facilities emitting 10 tons/year)	• Reviewed emission inventory plans for core facilities, which will be used to submit their emission inventory reports to report their toxic emissions. • Reviewed the 2021 and 2022 emissions inventory to identify new core facilities to be included in the Hot Spots Program. • Collected 2023 emissions inventory data for review and identification of new core facilities or facilities subject to reinstatement. The data was submitted to CARB for its review in August of 2024. The 2024 emissions inventory data will be collected in 2025 as part of the annual reporting process.
Industrywide Facilities (small emission sources in certain industry groups)	• Retail gasoline dispensing facilities (GDF): performed 360 screening and site-specific HRAs. No facilities had a significant risk. • Diesel engines: performed 1207 individual engine screening HRAs, identified 5 facilities as high risk, and will be requesting facilities to submit a site-specific HRA to further refine their risk.
General Hot Spots Program Activities	• Prepared 2024 Annual Report for Board Meeting and Public Hearing. • Attended workshops to prepare for implementation of the EICG amendments and harmonization with CTR. • Coordinated with CARB to resolve invoices for Hot Spots Program state fees.

In summary, the SMAQMD continues to implement this long-standing program to support the goals of reducing exposure to toxic chemicals emitted by stationary facilities. The Hot Spots Program, in conjunction with the SMAQMD's permitting program, its enforcement efforts, and other SMAQMD-wide programs, helps reduce exposure to air pollution and toxic emissions from both stationary and mobile sources by identifying critical areas where reductions and increased controls are needed. While implementation of state emission inventory and reporting regulatory requirements have been challenging, the SMAQMD fully supports the goals these regulations aim to achieve – increasing transparency and access to localized air pollution information for our communities. These efforts combined play a significant role in helping the SMAQMD achieve its overriding mission to improve air quality for all residents in Sacramento County.

Section 1
Background of the Air Toxics "Hot Spots" Program

Overview

Introduction

The Air Toxics "Hot Spots" Information and Assessment Act of 1987 established a statewide program to:

- inventory routine toxic air emissions from individual facilities
- assess health risks from these toxic air emissions
- notify the affected public of these toxic air emissions and their potential health risks
- reduce the toxic air emissions to the affected public

In This Section

This section is divided into the following parts:

Requirements of the Air Toxics "Hot Spots" Program

Annual Report Required

The Hot Spots Act requires air districts to prepare and publish an annual report that:

- describes the priorities and categorizes the results and progress of the health risk assessment program
- ranks and identifies facilities according to cancer risk
- identifies facilities that expose individuals to any chronic and acute non-cancer health risk
- describes the status of the development of control measures to reduce emissions of toxic air pollutants, if any
- disseminates the annual report to county boards of supervisors, city councils, and local health officers

Public Hearing Required

The Hot Spots Act requires the air district board of directors to hold a public hearing to present the report and discuss its content and significance.

Requirements of Facilities

The Hot Spots Act requires facilities meeting certain criteria to:

- prepare emission inventory plans
- prepare emission inventory reports quantifying toxic air emissions
- prepare and submit health risk assessments to the SMAQMD
- notify all individuals who are exposed to "significant health risks" in accordance with a procedure specified by the SMAQMD
- prepare and submit a plan to reduce toxic emissions
- reduce the toxic air emissions in accordance with the plan

Requirements of Air Districts

The Hot Spots Act requires air districts to:

- identify permitted facilities subject to the act
- collect, review, and approve emission inventory plans
- collect, review, and approve emission inventory reports
- submit the emission inventory reports to CARB for inclusion in the statewide Air Toxic Emission Data System
- review and approve health risk assessments considering comments from OEHHA
- consult with CARB as necessary to evaluate the emissions impact and modeling data contained in any risk assessment
- designate significant risk levels and determine which facilities must notify the public
- review and approve the risk reduction audits and plans

Air District Assistance to Facilities

Air District Assistance

The SMAQMD assists facilities in complying with this complex legislation by doing the following:

- providing support and guidance for facilities, supplying them with emission factors and other information to aid them in completing their plans and reports
- assisting facilities in completing their emission inventory plans and reports
- providing support and guidance for facilities in using CARB's Hotspots Analysis Reporting Program (HARP) software
- This assistance continues with the submittal of new and updated plans and reports

Industrywide Facilities

Requirements of Air Districts for Industrywide Facilities

For certain facilities emitting less than 10 tons/year of criteria pollutants, the air district may prepare the industrywide emissions inventory and health risk assessment if all the following conditions are met:

- All facilities in the class fall within one four-digit Standard Industrial Classification Code
- Individual compliance with this part would impose severe economic hardships on the majority of the facilities within the class
- The majority of the class is composed of small businesses; and
- Releases from individual facilities in the class can easily and generically be characterized and calculated

The SMAQMD has identified the following categories as industrywide facilities:

- retail gas stations
- dry cleaners using perchloroethylene
- chrome platers
- facilities with diesel internal combustion engines

For these industrywide facilities, the air district performs the following levels of review:

- prepares the industrywide emission inventory (conducting facility surveys, reviewing inspection reports, reviewing recordkeeping, cross-referencing with other sources or agencies)
- uses the collected emission inventory data and performs screening prioritization calculations or screening health risk assessments to identify high risk facilities
- for facilities screened as high risk, performs refined site-specific health risk assessments by incorporating available building, exhaust, and receptor data, and
- for facilities identified as high risk through the SMAQMD-performed risk assessment, requests a refined health risk assessment from the facility which incorporates further refinements unique to the facility and subject to review and approval from SMAQMD, OEHHA, and/or CARB

Section 2
Changes to the Air Toxics "Hot Spots" Program

Overview

Introduction

One of the main goals of the Hot Spots Program is to inventory toxic air emissions from facilities and identify those facilities that may pose a risk to the public. Until the Hot Spots Act was amended[5] in September 1996, many facilities remained in the Air Toxics Hot Spots Program even though the health risk these facilities posed to the public, or were likely to pose to the public, was insignificant.

As such, the Hot Spots Act and Hot Spots Program have been amended and revised to incorporate new requirements.

In This Section

This section covers the changes to the program:

Statutory & Regulatory Changes

Statutory Changes to the Hot Spots Act Since 2014

The Legislature has amended the Air Toxics "Hot Spots" Information and Assessment Act of 1987 several times over the last 10 years.

- 2018 – Code Maintenance (non-substantive changes)[6]
- 2018 – Added Health & Safety Code § 44391.3 to authorize schools and school districts located in communities with a high cumulative exposure burden, as identified as part of the statewide strategy to reduce emissions of toxic air contaminants and criteria air pollutants, to work with air districts to identify school sites in need of air quality improvements and to be eligible for a grant as part of a community emissions reduction program to implement air quality mitigation efforts, as specified.[7]
- 2019 – Added Health & Safety Code § 44391.4 to specify that funds made available by an appropriation from the Greenhouse Gas Reduction Fund may be made available to an air district for projects related to the reduction of mitigation of emissions from mobile and stationary sources in affected communities.[8]

[5] Assem. Bill 564 (Stats 1996, ch. 602)
[6] Sen. Bill 1289, (Stats 2018, ch. 92, § 144)
[7] Assem. Bill 2453 (Stats 2018, ch. 714, § 2)
[8] Sen. Bill 85, (Stats 2019, ch. 31 § 18)

Statutory Changes to the Hot Spots Act Since 2014

- 2021 – Amended Health & Safety Code § 44346 to enact conforming and technical changes related to the recodification and reorganization of the California Public Records Act.[9]
- 2022 – Added Health & Safety Code § 44391.5 to require an air district with a population of 1,000,000 persons or more that issues permits to stationary sources of criteria air pollutants or toxic air contaminants to make available in an easily identifiable location on the air district's internet website all permits issued by the air district for those stationary sources.

Regulatory Changes to the Hot Spots Program since 2014

On November 19, 2020, CARB adopted amendments to EICG[10], in part to support the Community Air Protection Program and the CTR Regulation. The EICG amendments do the following:

- provide additional factors for air district consideration of facility exemptions and reinstatements (based on latest risk assessment methods; population exposure and cancer burden; persistence and bioaccumulation; and combined impacts from multiple facilities)
- add 900+ new substances and 3 broad functional groups
- update screening modeling approaches

The EICG amendments (in alignment with the CTR) include these additional items:

- updated industrial sectors and reporting thresholds
- phase-in schedule by air district groups and sectors (permitted processes)
- requirement to report amount of substance used or produced when emission quantification methods are not available

The EICG amendments were approved by OAL and became effective on March 21, 2022.

[9] Assem. Bill 474 (Stats 2021, ch. 302, § 262)
[10] Cal. Code Regs. tit. 17, § 93300.5

Air Toxics Fees

Program Cost Recovery Options

The Hot Spots Act[11] requires an air district to recover:

- its program costs, and
- the air district's portion of the State's program costs

This statute also requires an air district to impose fees on facility operators that are proportionate to the amount of toxic air emissions and the priority assigned to the facility.

An air district may recover these costs by either:

- adopting a fee rule (see SMAQMD Rule 306 – Air Toxics Fees), or
- choosing to have air district fee schedules established in the State's Fee Regulation

Fee Structure

Fees are assessed based on the health risk posed by the facility and the number of different processes at the facility.

Fee Categories

Depending on the potential health risk to the public associated with the toxic air emissions from the facility, the facility will fall under one of the following reporting categories:

FEE CATEGORY	DESCRIPTION
1	Industrywide
2	Unprioritized
3	Health Risk Assessment (HRA) >1 to <10 in a million excess cancer risk, or Hazard Index (HI) > 0.1 to < 1
4	Priority score >10 and no HRA
5	HRA >10 to <50 in a million excess cancer risk, or HI >1
6	HRA >50 in a million excess cancer risk
4YRS	Priority score < 10 and subject to update reporting every four years.

[11] Health & Saf. Code § 44380.

Fee Category 1

An industrywide facility, which includes retail gas stations, dry cleaners using perchloroethylene as a solvent, chrome platers using hexavalent chrome, and facilities with diesel internal combustion engines.

As of May 2021, all perchloroethylene dry cleaning units in the SMAQMD have been removed from service and have cancelled their permits. All existing perchloroethylene dry cleaning machines were required to be removed from service by the Airborne Toxic Control Measure for Emissions of Perchloroethylene from Dry Cleaning and Water-Repelling Operations no later than January 1, 2023.[12]

Based on the 2022 inventory review period, there are 1,167 facilities in this category, organized as follows (Appendix C – AB 2588 Industrywide Screening Health Risk Assessment Results):

Industrywide Category	Number of Facilities
Retail Gas Stations	360
Dry Cleaners	0
Chrome Platers	2
Diesel Internal Combustion Engines	805

Fee Category 2

A facility included in the program whose emissions have not yet been prioritized or otherwise evaluated.

There are seven facilities in this category:

- B & J Dairy
- Cal Denier Dairy
- New Hope Dairy LLC
- SMUD Cosumnes Power Plant
- West Coast Grape Farming
- Pabco Clay Products, LLC
- Setzer Forest Products

[12] Cal. Code Regs. tit. 17, § 93109

Fee Category 3

A facility that has a health risk assessment cancer risk greater than or equal to 1 in a million and less than 10 in a million, or a non-cancer Hazard Index (HI) greater than or equal to 0.1 and less than or equal to 1.

There are five facilities in this category:

- Teichert & Son (Perkins Plant)
- Mercy General Hospital
- Mitsubishi Rayon Carbon Fiber & Composites
- SFPP, LP
- UCD Medical Center

Fee Category 4

A facility that has a priority score greater than 10 and does not have an approved health risk assessment.

There are four facilities in this category:

- Blue Diamond Growers
- ConFab Manufacturing Company LLC
- L and D Landfill
- Lopez Agricultural Services

Fee Category 5

A facility that has a health risk assessment cancer risk greater than or equal to 10 in a million but less than 50 in a million, or a hazard index greater than 1.

There are no facilities in this category.

Fee Category 6

A facility that has a health risk assessment cancer risk greater than or equal to 50 in a million.

There are no facilities in this category.

Fee Category SMAQMD Rule 306, Section 301.2

A facility that has a priority score less than or equal to 10.

There are ten facilities in this category:

- Bimbo Bakeries USA
- California Resources Production Corporation (Big Brannan)
- Chevron USA
- D & T Fiberglass
- Granite Construction Co. (4001 Bradshaw Road)
- County of Sacramento DWMR (Kiefer Landfill)
- City of Sacramento Solid Waste Public Works (Sacramento City Landfill)
- Sacramento Area Sewer District (Sacramento Regional County Sanitation District)
- Silgan Can Company
- Siemens Industry, Inc

Exempt Facilities

These facilities are exempt from fees and update reporting. See the Exempt Facilities section for additional categories.

There are ten facilities in this category:

- Teichert & Son (Grantline Plant)
- California Resources Production Corporation (Baby Brannan)
- Carson Cogeneration
- Granite Construction Co. (4291 Bradshaw Road)
- Huhtamaki, Inc.
- Procter & Gamble
- Sacramento Cogeneration Authority
- Sacramento Power Authority
- Triangle Rock Products, Inc.

Diesel Engine Only Facilities

Facilities Added

As of August 27, 2007, diesel internal combustion engine reporting requirements were added to the EICG, after CARB's 1998 identification of diesel PM as a toxic air contaminant and as part of an alignment with the Airborne Toxic Control Measure for Stationary Compression Ignition Engines reporting requirements.

A facility with a diesel engine is subject to the reporting requirements if the facility meets one of the following criteria:

- The facility operates any number of diesel engines for more than 5 hours per year combined for non-emergency operations; or the facility uses more than 30 gallons of fuel to operate any number of diesel engines that do not meet Tier 4 emission standards; or the facility uses more than 100 gallons of fuel to operate any number of diesel engines that meet Tier 4 emission standards; and
- The use of any number of diesel engines is part of the routine and predictable facility operation; or
- The diesel engine is stationary. The air district may include portable engines in this program if the routine and predictable emissions have the potential to pose a significant risk but is currently not including on-road engines and off-road engines in this program.

The air district must submit to CARB the list of facilities with diesel engines and their risk assessment scores and status in the Hot Spots Program during the annual update reporting.

Exempt Facilities

Exempt from Reporting

Certain low priority facilities are exempt from update reporting. These facilities include:

- Facilities with a prioritization score less than or equal to 1 for cancer health effects and less than or equal to 1 for non-cancer health effects (provided the facility does not emit more than 5 tons/year of a single HAP or 12.5 tons/year of total HAPs), or
- Facilities with an air district-approved health risk assessment that shows a total potential cancer risk at an actual receptor of less than 1 excess cancer case per one million persons and a total hazard index (HI) for each toxicological endpoint of less than 0.1, or
- Facilities where the primary activity falls into one of the classes listed in Appendix E of the EICG and for which the activity level is considered de minimis.

Exempt from Reporting

- The air district may opt to exempt a facility that was not required to conduct a risk assessment and that has a prioritization score greater than 1, if a conservative screening health risk assessment is performed that shows the facility's excess potential cancer risk is less than one case per one million persons and the total hazard index for each toxicological endpoint is less than 0.1.

Appendix E Exemptions

Certain classes of facilities emitting less than 10 tons/year of criteria pollutants and listed in Appendix E of the Hot Spots Guidelines are exempted from the program if established use thresholds are not exceeded. The recent amendments to the EICG expanded Appendix E to include additional classes of facilities and revised exemption thresholds.

Currently, these established thresholds include:

- Facilities using any amount of carcinogenic solvents or 55 gallons per month of non-carcinogenic degreasing solvents
- Facilities emitting less than 10 pounds per year of 1,4 Dioxane (can apply to 1,1,1 trichloroethane degreasers)
- Facilities using any quantity of ethylene oxide in sterilizers
- Cremation of humans or animals at any activity level
- Facilities emitting less than one pound per year of styrene or styrene compounds (including fiberglass fabricators)
- Facilities using less than two gallons per day of printing chemicals with no isocyanates or 0.5 gallons per day of printing chemicals with isocyanates
- Boat and ship building/repair facilities using less than one gallon per year of coatings
- Covered wastewater treatment plants with throughputs less than 10 million gallons per day, if they do not have sludge incinerators

The full list of affected facility classes and activity level thresholds is listed in Appendix E of the Emission Inventory Criteria and Guidelines Report.

Risk Assessment Changes

Risk Assessment Changes

OEHHA is required to develop guidelines for conducting health risk assessments under the Hot Spots Program. The original guidelines were adopted by OEHHA in 2003 as a compilation of information presented in four Technical Support Documents (TSDs) adopted between 1999 and 2003.

In 1999, the legislature passed the Children's Environmental Health Protection Act of 1999[13]. The Act required OEHHA to ensure infants and children are explicitly addressed in assessing risk. This necessitated revisions to the methods for both noncancer and cancer risk assessment and to the exposure variates. The following TSDs were adopted to update and replace the original methodologies.

- TSD for the Derivation of Noncancer Reference Exposure Levels (June 2008)
- TSD for Cancer Potency Factors (May 2009); and
- TSD for Exposure Assessment and Stochastic Analysis (June 2012)

These TSDs underwent public and peer review, were approved by the State's Scientific Review Panel on Toxic Air Contaminants and were adopted by OEHHA for use in the Hot Spots Program in February 2015. The Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments (2015 OEHHA Guidelines) combines the critical information from the three TSDs into a manual for the preparation of health risk assessments.

CARB and CAPCOA assessed the impacts of the 2015 OEHHA Guidelines and determined that risk estimates could increase approximately 1.5 to 3 times compared to estimates under the 2003 OEHHA Guidelines. In response, ARB and CAPCOA developed the ARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics (2015 ARB/CAPCOA Guidance). CARB officially adopted the guidance on July 23, 2015.

The SMAQMD adopted revised prioritization guidelines and health risk analysis guidelines in March 2016 to implement the 2015 OEHHA and 2015 ARB/CAPCOA Guidance as part of the Hot Spots Program. To assess the impacts of the 2015 OEHHA Guidelines, the SMAQMD requested revised 2016 inventories from existing core facilities and re-prioritized these facilities under the revised guidelines.

[13] Sen. Bill 25 (Stats. 1999, ch. 731, § 3)

Section 3
Air Toxics Hot Spots Risks

Overview

Introduction

One of the main goals of the Hot Spots Program is to identify facilities whose emissions may pose a risk, assessing the health risks associated with individual facilities and, if this risk is considered significant, the dissemination of this information to the affected public and the imposition of risk reduction plans to reduce the facility's risk below the significance level over the next 5-10 years.

In This Section

This section covers the elements used to assess the potential health risks and inform the public of the results:

Prioritization for Risk Assessment

Introduction

As toxic air emissions reports are received by the SMAQMD, the facilities are prioritized to determine which facilities must perform a health risk assessment. The risk prioritization process is a method of ranking facilities by calculating a numerical score based on the type, quantity, & potency or toxicity of emissions, and proximity to receptors. It does not provide an actual risk assessment at this point in the process, just a potential risk level.

Factors Used in Prioritization Procedures

The SMAQMD developed prioritization procedures that consider the following factors:

- potency of the facility's carcinogenic toxic air emissions
- toxicity of the facility's non-carcinogenic toxic air emissions
- mass of the facility's toxic air emissions
- any additional factors the SMAQMD determines to be significant

These procedures were originally approved by the Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) Board of Directors on January 29, 1991, and revisions were approved on March 24, 2016, to incorporate the 2015 OEHHA guidelines changes.

Prioritization Categories

Facilities are ranked and placed into one of three prioritization categories:

- Unprioritized
- High (priority score >10.0)
- Intermediate (priority score >1.0 and <10.0)
- Low (priority score <1.0)

Unprioritized

Unprioritized facilities are facilities that the SMAQMD has identified as subject to the Hot Spots Program and has requested submission of an emission inventory plan or an emission inventory report. Once identified as part of the program, a facility must:

- Prepare an emission inventory plan that provides a comprehensive and detailed description of the methods that will be used to quantify air releases or potential air releases of listed substances from all points of release.
- Submit an emission inventory report that includes a facility diagram, results of any source tests, and a quantification of emissions from substances identified in the emission inventory plan.

Once a facility has submitted and the SMAQMD has approved an emission inventory plan and report, the SMAQMD will prioritize the facility as high, intermediate or low according the SMAQMD's prioritization procedures.

The following facilities are currently in the Hot Spots Program but have not yet been prioritized pending submission and approval of their emission inventory plan or report:

Facility Name	Emission Inventory Plan or Report Status
B & J Dairy	inventory plan submitted and under review
Cal Denier Dairy	inventory plan submitted and under review
New Hope Dairy LLC	inventory plan submitted and under review
SMUD Cosumnes Power Plant	inventory plan approved and awaiting report
West Coast Grape Farming	inventory plan approved and awaiting report
Pabco Clay Products, LLC	inventory plan approved and awaiting report
Setzer Forest Products	inventory plan approved and awaiting report

High Priority

A designation of "high priority" does not necessarily indicate high risk, only that the SMAQMD needs more information about the facility, such as:

- the proximity of the facility's toxic air emissions points to potential receptors including, but not limited to, worksites, residences, hospitals, schools, and daycare centers
- how wind direction and wind speed affect the concentrations of the toxic air emissions
- how the combined effect of the facility's toxic air emissions may affect those people nearby

The facilities categorized as high priority are required to submit heath risk assessments to the SMAQMD within 150 days of being placed into the high priority category.

Four facilities were notified that they had been designated high priority and are required to perform health risk assessments. These facilities must prepare and submit health risk assessments that will be reviewed by the SMAQMD and OEHHA.

The high priority facilities are:

- Blue Diamond Growers
- ConFab Manufacturing Company LLC
- L and D Landfill
- Lopez Agricultural Services

Intermediate Priority

A designation of "Intermediate Priority" requires the facility to submit toxic emissions reports on a quadrennial basis unless new information becomes available that suggests the need to reevaluate sooner. Ten facilities have been designated intermediate priority. These facilities are required to submit an update every four years and were not required to submit health risk assessments under the Hot Spots Program.

The intermediate priority facilities are:

- Bimbo Bakeries USA
- California Resources Production Corporation (Big Brannan)
- Chevron USA
- D & T Fiberglass
- Granite Construction Co. (4001 Bradshaw Road)
- Kiefer Landfill
- Sacramento City Landfill
- Sacramento Regional County Sanitation District
- Silgan Can Company
- Siemens Industry, Inc

Low Priority

A designation of "Low Priority" exempts a facility from the Hot Spots Program unless new information becomes available that suggests the need to reevaluate the facility. Three facilities submitted emission inventory reports and were prioritized as a low priority facility.

The low priority facilities are:

- Teichert & Son (Grantline Plant)
- Granite Construction Co. (4291 Bradshaw Road)
- Triangle Rock Products, Inc.

Prioritization List

The current list of prioritized facilities can be found in Appendix A – Prioritization Scores.

Reducing Prioritization Scores

All facilities are encouraged to lower their prioritization score by implementing toxic air emission reduction measures such as:

- adding emissions control equipment
- making product changes to reduce the use of toxic materials
- eliminating processes that have toxic air emissions

Risk Assessment Review

Definition

A health risk assessment is an evaluation of the potential adverse health effects that may result from exposure to routine toxic air emissions. The assumptions used in the Hot Spots Program risk assessments are designed to err on the side of health protection and are very conservative.

Risk Assessment Process

After a facility is notified of the requirement to perform a risk assessment:

- within 45 days of the written notification, it must submit a risk assessment protocol if the facility does not want to use the OEHHA HRA Guidelines
- within 150 days of written notification, it must submit the completed health risk assessment, which will then be reviewed by the SMAQMD and OEHHA

Risk Assessment Includes

The review of the completed risk assessment includes, but is not limited to the following areas:

- types of air dispersion models used
- meteorological (weather) data used
- emission source type designations (area and point sources)
- source aggregation
- inhalation exposure
- multi-pathway (non-inhalation) exposure
- deposition values
- receptor grid and sensitive receptor proximity
- toxic air substances and emission amounts used
- references to be used
- accuracy of the amounts of the toxic air emissions used compared to the facility's emission inventory report

Health Risk Assessment Results

The results of all health risk assessments that have been submitted to the SMAQMD are listed in Appendix B –Health Risk Assessment Results.

Air Toxics Health Risks

Introduction

There are two categories of risk that are determined by a health risk assessment under Hot Spots Program requirements. These are cancer and non-cancer health risks. Risks for each are determined using different calculation methods and procedures.

Cancer Risk Definition

Cancer Risk is the probability of a person developing cancer from a lifetime exposure to carcinogenic substances.

Maximum individual cancer risk is the added statistical risk of an individual contracting cancer when exposed to a facility's toxic air emissions over a lifetime above the background cancer risk. According to the 2017 California Air Toxics Assessment (CATA), the background cancer risk in Sacramento County is 395[14] cases per million persons. This term does not imply cancer fatalities as there are many other determinants of health outcomes.

Maximum Risk

As the term "maximum risk" implies, this estimate is conservative. In areas of uncertainty, assumptions are made that tend to overestimate rather than underestimate risk. Therefore, it is unlikely that the risk would be higher than this estimate.

Examples of Assumptions

The following are some of the assumptions used in a risk assessment:

- The current guidelines assume different breathing rates for different age groups, to account for higher breathing rates for infants and young children.
- Residential receptors are assumed to be located at their residence for a 30-year exposure duration beginning at the third trimester. Worker receptors are assumed to work at the same location and be exposed for a duration of 25 years beginning at age 16.
- Residential receptors are assumed to spend a fraction of time at home, depending on age. Young children are assumed to spend more time at home, while adults spend less.

Note: In the risk assessments performed for the Hot Spots Act process, the maximum individual cancer risk is calculated for the most exposed individual in the nearby residential area and in a nearby commercial/industrial area.

Non-Cancer Risk Defined

A non-cancer risk is defined as the risk of an adverse health effect, other than cancer, which may result from exposure to toxic air emissions. This risk is measured using a Hazard Index.

[14] Air Resources Board, 2017. California Air Toxics Assessment Dashboard. Available online at: https://california-air-toxics-assessment-californiaarb.hub.arcgis.com/

Hazard Index

The Hazard Index (HI) indicates the potential for adverse health impacts on the same organ or organ system from all compounds emitted from a given facility. The index is a ratio of the estimated exposure level compared to an OEHHA approved reference exposure level.

Both short term effects (acute) and long-term effects (chronic) are estimated.

Hazard Index Examples

The following are examples of how a Hazard Index is treated for health impacts:

- Long term exposure to either ammonia or chlorine can cause respiratory irritation. Therefore, if a facility emits both substances, then the hazard index for each substance is added together.
- If a facility emits ammonia and ethylbenzene, ammonia causes respiratory damage, but is not known to cause liver damage; ethylbenzene can cause liver damage but is not known to be a respiratory irritant. Therefore, the hazard indices are not added together, but instead the highest resulting hazard index is reported.

Risk Categories

Facilities are ranked and placed into one of three risk categories:

- High (cancer risk >10.0 or Hazard Index >1.0)
- Intermediate (cancer risk >1.0 and <10.0 and Hazard Index >0.1 and <1.0)
- Low (cancer risk <1.0 and Hazard Index <0.1)

Risks Assessment Results Requiring Notification

Facilities Required to Notify

Based on the results of the risk assessments, facilities are required to notify the affected public when the added risks:

- equal or exceed 10.0 in a million for cancer, and/or
- equal or exceed a Hazard Index of 1.0 and OEHHA determines that the level is significant.

Facilities That Notified

There were no facilities that were required to notify the public of health risks in this review period.

Public Notification Requirements

Notification Methods

The notification procedure relies primarily on:

- letters sent to individual residences and workplaces
- notices published in newspapers, and
- public meetings

Notification Goals

The following are the primary goals of the notification procedure:

- notify and inform, yet not alarm, the recipient
- put the risk of health hazards into perspective

Notification Package Content

The following table describes the elements contained in the notification package:

Item	Maximum Hazard Index
Air District Letter	The air district explains the health risk associated with the facility's emissions based on the approved health risk assessment.
Facility Letter	The facility describes its operations and the results of the health risk assessment and explains what steps the facility has taken to minimize the health risks.
Site Map	Shows the facility in relation to the residences and worksites of the notified public.

Notification Timelines

Once a facility is notified by the SMAQMD in writing that its health risk assessment indicates that there is a significant health risk, the facility must:

- mail a notification package to the public and to the SMAQMD within 90 days of the written notice, and
- hold a public meeting within 30 days of mailing the notice

Notification Guidelines

Additional information on the public notification procedure is contained in the Sac Metro Air District AB 2588 Air Toxics "Hot Spots" Significant Risk Thresholds and Public Notification Guidelines (June 1, 1993), which can be obtained from the SMAQMD.

Risk Reduction Audits and Plans

Background

The Hot Spots Act[15] requires air districts to review and oversee the implementation of risk reduction plans developed by existing high priority facilities of toxic air emissions.

Risk Reduction Requirements

The following table shows the requirements and their timelines to implement risk reduction:

[15] Health & Saf. Code § 44390.

Facility Risk	Requirement	Timeline
Cancer risk < 10.0 in a million or noncancer Hazard Index < 1.0	1. No risk reduction plan required.	1. Not applicable
Cancer risk equal to or greater than 10.0 in a million or noncancer Hazard Index equal to or greater than 1.0	1. Prepare risk reduction audit and plan including an implementation schedule. 2. Implement all feasible risk reduction measures to the lowest level achievable. 3. Reduce cancer risk at all specific receptor locations to less than 10.0 in a million and Hazard Index to less than 1.0.*	1. Within 6 months of determination of significant risk 2. Deadline set in implementation schedule or sooner 3. Within 5 years **

* Non-cancer Hazard Index (HI) greater than 1.0 may be allowed with OEHHA's approval.

** The APCO may grant an extension based on specific findings of up to an additional 5 years.

Risk Reduction Plans

No facilities were required to complete a risk reduction plan in this review period.

Risk Reduction Guidance

The California Air Resources Board, in cooperation with representatives from the local air districts and industry, has put together various guidelines for facilities to use to comply with the risk reduction audit and plan requirements the Hot Spots Act. These guidelines include:

- Risk Reduction Plan General Guidance (November 1997)
- General Checklist for Risk Reduction Audit and Plan (November 1997)
- Guidelines for the Aerospace Industry Facilities (November 1997)
- Guidelines for the Automobile Refinishing Industry (May 1997)
- Guidelines for Chrome Plating Facilities (November 1997)
- Guidelines for Halogenated Solvents Degreasing Operations (November 1997)
- Guidelines for Dry Cleaning Facilities (in-progress)
- Guidelines for Gasoline Service Station Facilities (February 2022)
- Guidelines for Stationary Diesel Engines (July 2024)

Section 4
Air Toxics Hot Spots Reporting

Overview

Introduction

This section will explain how facilities become subject to the Hot Spots Act and how those facilities report their air toxic emissions inventories.

In This Section

This section will cover the following topics:

Criteria for Adding Facilities to the Air Toxic Hot Spots List

Criteria for Adding Facilities

A facility is added to the Air Toxic Hot Spots List when it exceeds 10 tons/year of one of these four criteria pollutants:

- total organic gases (TOG)
- particulate matter (PM)
- nitrogen oxides (NOx)
- sulfur oxides (SOx)

Appendix E

In addition, several classes of facilities emitting less than 10 tons/year of the four criteria pollutants are included in the Hot Spots program. These classes of facilities are listed in Appendix E of the Hot Spots Guidelines. Effective March 21, 2022, Appendix E was expanded to include additional classes of facilities and thresholds (e.g., facilities emitting greater than 4 tons/year) to harmonize with the CTR.

Appendix E – Facility Classes

Appendix E of the Hot Spots Guidelines lists 54 classes of facilities that potentially affect Sacramento:

- Metal plating using cadmium or chromium
- Plating, polishing, coating, engraving, and allied services, including thermal spraying, using chromium, cadmium, or nickel
- Industrial machinery manufacturing
- Fumigation of crops
- Rubber and miscellaneous plastics product manufacturing
- Processes emitting more than 10 pounds per year of 1,4-dioxane in several industries
- Combustion of crude, residual distillate, or diesel oil, excluding agricultural operations and medical related industry sectors

Appendix E – Facility Classes

- Processes emitting more than one pound of styrene per year in various manufacturing industries
- Use of methylene chloride as a paint stripper
- Paint stripping and varnish stripping for facilities engaged in furniture reupholstery and repair
- Use of N-methyl pyrrolidone (solvent) exceeding one gallon per year
- Solvent dry-cleaning facilities
- Tert-butyl acetate use of more than 20 pounds per year used in various manufacturing sectors
- Parachlorobenzotrifluoride (PCBTF) use of more than 5 pound or 0.5 gallons per year in cleaning or degreasing solvents, adhesives, printing inks, or coating operations
- Solvent cleaning and degreasing for various industry sectors
- Isocyanate compound use in materials containing more than three pounds per year in various industry sectors
- Printing and publishing including print shops and miscellaneous commercial printing
- Welding, laser cutting and plasma cutting of metal materials in various industry sectors
- Construction aggregate processing if asphalt products are also used or produced
- Chemicals and allied products manufacturing in various industry sectors
- Bulk petroleum storage and loading, bulk benzene storage and loading, and related wholesalers
- Polybrominated biphenyl compounds (PBBs), and any brominated diphenyl ethers, manufacture or use
- Use of ethylene oxide for sterilization
- Retail sale of gasoline more than 25,000 gallons of gasoline sold per year
- Auto body repair and coating operations at auto body shops, including new and used car dealers using more than 50 gallons of paint per year
- Medical services, hospitals, and related facilities which use formaldehyde (or formalin), glutaraldehyde, ethylene oxide, or diesel engines
- Cooling towers that use hexavalent chromium
- Cremation of humans or animals
- Fiberglass and various fiberglass materials and product manufacturing
- Oil and gas extraction or production
- Prepared feed manufacturing
- Wood preserving
- Long term asbestos removal on a routine and predictable basis
- Combustion of natural gas or propane of more than 77,000 MMBtu per year
- Collection and disposal of refuse that emits more than one pound of vinyl chloride or one pound of benzene per year

Appendix E – Facility Classes

- Composting of organic waste of more than 500 tons per year
- Recycling facilities, and material recovery facilities that separate organic waste from recyclable materials
- Scrap and waste wholesale handling and recycling or more than 1,000 tons per year, including but not limited to junk metals, auto dismantling, and shredding operations of more than 40,000 tons per year
- Wastewater treatment at wastewater treatment plants, including incineration of sludge
- Facilities identified by districts under Section II.E.(3)(a)

Criteria for Removing Facilities from the Air Toxic Hot Spots List

Emissions Decrease Below 10 TPY

A facility may be removed from the Air Toxic Hot Spots List by an air district if the facility emissions of any one of the four criteria pollutants decrease below 10 tons/year (cumulatively) and if the air district determines that:

- The emission reductions are permanent and enforceable
- The facility poses no significant risk to public health, and
- The facility is not included in any class listed in Appendix E of the Hot Spots Guidelines

Facilities No Longer Listed in Appendix E

An air district may remove a facility that emits less than 10 tons/year of criteria pollutants (cumulatively) and is no longer included in an “Any SIC” Class Description listed in Appendix E of the Hot Spots Guidelines from the Air Toxic Hot Spots list if the facility meets all the following criteria:

- The facility does not satisfy any of the other conditions for inclusion on the Air Toxics “Hot Spots” List,
- The process listed in Appendix E of the EICG is discontinued permanently, and
- The facility poses no significant risk to public health

Reinstating Facilities to the Air Toxic “Hot Spots” List

Reinstatement

If at any time a facility ceases to satisfy any of the criteria specified for deletion from the Air Toxic “Hot Spots” List, the facility is again subject to the regulations, including update requirements.

Reinstatement Criteria

An exempt facility may again be subject to the requirements of the Hot Spots Program if any of the following reinstatement criteria are met:

- The facility emits a substance which has been added to the list of substances and for which there is an appropriate health effects value; or
- The air district determines that a sensitive receptor has been established or constructed within 500 meters of the facility after the facility became exempt; or

Reinstatement Criteria

- The facility emits a substance for which there is an appropriate health effects value, and the air district determines the facility no longer qualifies as a “low level” facility; or
- The air district determines that the approved source test method or emission estimation method used by the facility to calculate its emissions changed after the facility became exempt, such that the facility no longer qualifies as a “low level” facility; or
- The air district determines there is good cause to expect the facility no longer qualifies for an exemption as a "low level" facility.

Facilities Subject to Reinstatement Review

Two previously-exempt “Low Priority” facilities were notified that they had annual emissions exceeding 10 tons per year of TOG, PM, NOx, or SOx. Both facilities demonstrated that the reinstatement criteria were not met.

The 2 facilities reviewed were:

- Teichert & Son (Grantline Plant)
- Granite Construction Co. (4291 Bradshaw Road)

Section 5
Airborne Toxic Control Measures

Overview

Introduction

Various control measures have been or are being developed to control toxic emissions. As the results of the Hot Spots Act are received and analyzed, other specific control measures to control toxic emissions could be developed.

Current Rules

Current District rules regarding toxics are:

- Rule 902 – Asbestos
- Rule 903 – Mercury
- Rule 904 – Air Toxics Control Measures

Airborne Toxic Control Measures

Under the toxic air contaminant identification and control program, CARB has developed Airborne Toxic Control Measures (ATCMs) to control toxic air emissions from specific processes. Air districts are required to either implement and enforce any ATCM approved and adopted by CARB or adopt and enforce its own adopted rule equivalent to the state adopted ATCM.

The ATCMs which have been adopted by the District under Rule 904 – Air Toxics Control Measures are:

- Benzene from Retail Service Stations
- Hexavalent Chromium and Nickel from Thermal Spraying
- Chromium Plating and Chromic Acid Anodizing Facilities
- Chromate Treated Cooling Towers
- Dioxins from Medical Waste Incinerators
- Asbestos from Construction, Grading, Quarrying, and Surface Mining Operations
- Asbestos from Surfacing Operations
- Toxic Metals from Non-Ferrous Metal Melting
- Ethylene Oxide from Non-Commercial Sterilizers and Aerators and Commercial Sterilizers and Aerators Using Less Than 2,000 Pounds of Ethylene Oxide Per 12 Consecutive Months – Part 1
- Ethylene Oxide from Commercial Sterilizers and Aerators and Commercial Sterilizers and Aerators Using Less Than 2,000 Pounds or More of Ethylene Oxide Per 12 Consecutive Months – Part 2
- Perchloroethylene from Dry Cleaning and Water-Repelling Operations
- Environmental Training Program for Perchloroethylene Dry Cleaning Operations
- Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Activities

Airborne Toxic Control Measures

- Hexavalent Chromium and Cadmium from Motor Vehicle and Mobile Equipment Coatings
- Toxic Air Contaminants from Outdoor Residential Waste Burning
- Particulate Emissions from Diesel-Fueled Engines – Standards for Non-vehicular Diesel Fuel
- Stationary Compression Ignition Engines
- Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater
- Particulate Emissions from Diesel-Fueled Engines – Standards for Non-vehicular Diesel Fuel Used in Intrastate Diesel-Electric Locomotives and Harbor Craft
- Auxiliary Diesel Engines and Diesel- Electric Engines Operated on Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline
- Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline
- Commercial Harbor Craft
- Formaldehyde Emissions from Composite Wood Products

Appendix A
Prioritization Scores

Approved Prioritization Scores

FAC. NO.	FACILITY NAME	ADDRESS	CITY	INVENTORY YEAR	PRIORITIZATION	
					SCORE	CATEGORY
4795	LOPEZ AGRICULTURAL SERVICES	11499 FLORIN RD	SACRAMENTO	2017	497.03	HIGH
67	BLUE DIAMOND GROWERS	1802 C ST	SACRAMENTO	2020	40.04	HIGH
4490	L AND D LANDFILL	8635 FRUITRIDGE RD	SACRAMENTO	2017	16.99	HIGH
160	CONFAB MANUFACTURING COMPANY, LLC.	901 SIMMERHORN RD	GALT	2020	16.77	HIGH
2573	GRANITE CONSTRUCTION CO.	4001 BRADSHAW RD	SACRAMENTO	2017	9.27	INTERMEDIATE
2841	SIEMENS INDUSTRY, INC.	7464 FRENCH RD	SACRAMENTO	2017	7.6	INTERMEDIATE
124	BIMBO BAKERIES USA (FORMERLY EARTHGRAINS)	3211 6TH AVE	SACRAMENTO	2016	8.0	INTERMEDIATE
198	SACRAMENTO CITY LANDFILL	20 28TH STREET	SACRAMENTO	2018	6.99	INTERMEDIATE
106	SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT	8521 LAGUNA STATION RD	ELK GROVE	2017	5.21	INTERMEDIATE
196	KIEFER LANDFILL	KIEFER BLVD. & GRANTLINE RD.	SACRAMENTO	2016	1.7	INTERMEDIATE
995	D & T FIBERGLASS COMPANY, INC.	8900 OSAGE AVENUE	SACRAMENTO	2016	1.3	INTERMEDIATE
4720	CALIFORNIA RESOURCES PRODUCTION CORPORATION (BIG BRANNAN)	BIG BRANNAN COMPRESSOR STATION	RIO VISTA	2017	1.09	INTERMEDIATE
60	CHEVRON USA	2420 FRONT ST	SACRAMENTO	2016	1.0	INTERMEDIATE
201	SILGAN CAN COMPANY	6200 FRANKLIN BLVD.	SACRAMENTO	2018	3.59	INTERMEDIATE
111	GRANITE CONSTRUCTION CO.	4291 BRADSHAW RD	SACRAMENTO	2016	0.7	LOW
117	TRIANGLE ROCK PRODUCTS, INC.	11501 FLORIN ROAD	SACRAMENTO	2019	0.12	LOW
14	A. TEICHERT & SON (GRANTLINE PLANT)	3417 GRANTLINE RD	RANCHO CORDOVA	2016	0.1	LOW
4716	CALIFORNIA RESOURCES PRODUCTION CORPORATION (BABY BRANNAN)	BABY BRANNAN COMPRESSOR STATION	RIO VISTA	2017	0.00197	LOW

Appendix B
Health Risk Assessment Results

Health Risk Assessment Results Approved by District & OEHHA

FAC. NO.	FACILITY NAME	ADDRESS	CITY	HRA YEAR	CANCER RISK (A)	ACUTE HAZARD INDEX (B)	CHRONIC HAZARD INDEX (B)
171	UCD MEDICAL CENTER	2315 STOCKTON BLVD.	SACRAMENTO	2016	7.0	0.4	0.005
37	SFPP, LP	2901 BRADSHAW RD	SACRAMENTO	2016	3.4	0.09	0.01
192	A. TEICHERT & SON (PERKINS PLANT)	8760 KIEFER BLVD.	SACRAMENTO	2016	1.5	0.3	0.04
67	BLUE DIAMOND GROWERS	1802 C STREET	SACRAMENTO	2016	1.1	0.2	0.09
126	HUHTAMAKI FOODSERVICE, INC.	8450 GERBER RD	SACRAMENTO	2016	0.8	0.003	0.0009
193	CARSON COGENERATION	8580 LAGUNA STATION RD	ELK GROVE	2016	0.6	0.01	0.0007
112	MITSUBISHI RAYON CARBON FIBER & COMPOSITES	5900 88TH ST	SACRAMENTO	2016	0.4	0.4	0.2
195	SACRAMENTO COGENERATION AUTHORITY	5000 83RD ST	SACRAMENTO	2016	0.14	0.006	0.005
194	SACRAMENTO POWER AUTHORITY	3215 47TH AVENUE	SACRAMENTO	2016	0.01	0.008	0.0003
27	PROCTER & GAMBLE	8201 FRUITRIDGE RD	SACRAMENTO	2016	0.018	0.0057	0.00056

(A) Cancer Risk is expressed as lifetime excess cancer risk in chances per million.

(B) Hazard Index (HI) is the ratio of the concentration to the reference exposure level.

Appendix C

Industrywide Screening Health Risk Assessment Results

Retail Gas Stations

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
3820	COSTCO WHOLESALE C/O BARGHAUSEN	7000 AUBURN BLVD	CITRUS HEIGHTS	CARB TOOL	7.5	0.3	0.0
6947	S & S MADISON, LLC	4700 MADISON AVE	SACRAMENTO	CARB TOOL	7.1	0.4	0.0
7048	BP PRODUCTS NORTH AMERICA INC.	3921 WATT AVE	SACRAMENTO	CARB TOOL	7.1	0.5	0.0
7043	BP PRODUCTS NORTH AMERICA INC.	4224 MARCONI AVE	SACRAMENTO	CARB TOOL	6.8	0.5	0.0
5410	AIS OPERATIONS DBA ARCO AMPM	2225 16TH STREET	SACRAMENTO	SITE SPECIFIC	6.6	0.1	0.1
6833	BP PRODUCTS NORTH AMERICA INC.	6240 FREEPORT BLVD	SACRAMENTO	CARB TOOL	5.9	0.3	0.0
4618	BROADWAY CHEVRON / HARJAP INC.	1828 BROADWAY	SACRAMENTO	CARB TOOL	5.8	0.4	0.0
5145	QUIK STOP MARKET	8500 FLORIN RD	SACRAMENTO	CARB TOOL	5.4	0.4	0.0
6636	COSTCO WHOLESALE C/O BARGHAUSEN	7570 ELK GROVE BLVD	ELK GROVE	CARB TOOL	5.4	0.5	0.2
1530	SERVO GASOLINE	2931 MATHER FIELD RD	RANCHO CORDOVA	CARB TOOL	5.2	0.3	0.0
6503	APRO, LLC	3480 FAIR OAKS BLVD	SACRAMENTO	CARB TOOL	5.2	0.5	0.0
6638	ELVERTA FOOD & LIQUOR	8008 DUTCH HAVEN BLVD	ELVERTA	CARB TOOL	5.1	0.5	0.0
7045	BP PRODUCTS NORTH AMERICA INC.	4400 SUNRISE BLVD	FAIR OAKS	SITE SPECIFIC	4.9	1.6	0.0
5293	DB & S, LLC DBA DHILLONS SACRAMENTO SHELL	5551 MARTIN LUTHER KING BLVD	SACRAMENTO	CARB TOOL	4.9	0.5	0.0
6911	PAT101 INC / COME N GO	4516 FREEPORT BLVD	SACRAMENTO	CARB TOOL	4.9	0.4	0.0
7008	JASON + JOBIN INC DBA EL CAMINO SHIFT CHANGE	300 EL CAMINO AVE	SACRAMENTO	CARB TOOL	4.9	0.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
6681	AU ENERGY, LLC	3701 FRANKLIN BLVD	SACRAMENTO	CARB TOOL	4.4	0.3	0.0
6576	AU ENERGY, LLC	7401 SHELDON RD	ELK GROVE	CARB TOOL	4.3	0.4	0.0
2467	CJ GAS INC	6441 FOLSOM BLVD	SACRAMENTO	CARB TOOL	4.1	0.5	0.0
6060	7 ELEVEN INCORPORATED	6955 WALERGA	SACRAMENTO	CARB TOOL	4.1	0.4	0.0
6425	GIL MOORE OIL COMPANY	8361 SHELDON RD	ELK GROVE	CARB TOOL	3.9	0.5	0.1
7050	BP PRODUCTS NORTH AMERICA INC.	8024 ELDER CREEK RD	SACRAMENTO	CARB TOOL	3.9	0.3	0.0
6215	SAFEWAY, INC	10605 FOLSOM BLVD	RANCHO CORDOVA	CARB TOOL	3.8	0.4	0.0
7046	BP PRODUCTS NORTH AMERICA INC.	5751 HILLSDALE BLVD	SACRAMENTO	CARB TOOL	3.8	0.2	0.0
3029	CHEVRON PRODUCTS COMPANY	4221 RALEY BLVD	SACRAMENTO	CARB TOOL	3.7	0.3	0.0
5220	CONVENIENCE ACQUISITION COMPANY DBA MORE FOR LESS	702 NORTH LINCOLN WAY	GALT	CARB TOOL (D)	3.6	0.3	0.3
5124	TESORO REFINING AND MARKETING COMPANY	2281 EL CAMINO AVE	SACRAMENTO	CARB TOOL	3.6	0.2	0.0
6713	BRUCEVILLE ENTERPRISES, INC DBA BRUCEVILLE AMPM	10057 BRUCEVILLE RD	ELK GROVE	CARB TOOL	3.5	0.4	0.0
3411	QUIK STOP MARKET	1295 FULTON AV	SACRAMENTO	CARB TOOL	3.4	0.3	0.0
4152	STRAUCH & COMPANY, A CALIFORNIA CORPORATION	9590 HARBOUR POINT DR	ELK GROVE	CARB TOOL	3.4	0.4	0.1
6629	7 ELEVEN INCORPORATED	4625 SAN JUAN AVE	FAIR OAKS	CARB TOOL	3.4	0.4	0.0
4823	OHRI'S GAS & MINI MART	9401 MADISON AVE	ORANGEVALE	CARB TOOL	3.4	0.4	0.0
5122	NORWOOD AM/PM	4000 NORWOOD AVE	SACRAMENTO	CARB TOOL	3.4	0.4	0.0
7145	COLOMA STORE, INC.	10670 COLOMA RD	RANCHO CORDOVA	CARB TOOL	3.4	0.5	0.0
2308	RIO FOOD & LIQUOR	6401 RIO LINDA BLVD	RIO LINDA	CARB TOOL	3.2	0.4	0.0
7129	TRMC RETAIL LLC	2600 ARDEN WAY	SACRAMENTO	CARB TOOL	3.2	0.5	0.0
1501	SPINNERS CINNAMON ROLLS / 76 INC.	1400 SUTTERVILLE RD	SACRAMENTO	CARB TOOL	3.1	0.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
2061	STOP & SHOP	3440 FOLSOM BLVD	SACRAMENTO	CARB TOOL	3.1	0.3	0.0
4179	SAFEWAY STORES	2811 DEL PASO RD	SACRAMENTO	CARB TOOL	3.1	0.8	0.1
1284	CHEVRON PRODUCTS COMPANY	201 RICHARDS BLVD	SACRAMENTO	CARB TOOL	3	0.3	0.0
6794	JOHL PETROLEUM, INC DBA BLACKFOOT AM/PM	7670 WATT AVE	ANTELOPE	CARB TOOL	3	0.1	0.0
4619	TOOLEY OIL COMPANY	730 29TH STREET	SACRAMENTO	CARB TOOL (D)	2.9	0.4	0.0
3738	CITY LIQUOR & FOOD	7595 FRANKLIN BLVD	SACRAMENTO	CARB TOOL	2.9	0.3	0.0
6226	DOUBLE AA CORP DBA SACRAMENTO-76	1165 43RD AVE	SACRAMENTO	CARB TOOL	2.9	0.3	0.0
3867	SAMS WEST INC	7147 GREENBACK LN (#4799)	CITRUS HEIGHTS	CARB TOOL	2.8	0.3	0.0
7047	BP PRODUCTS NORTH AMERICA INC.	1855 WATT AVE	SACRAMENTO	CARB TOOL	2.8	0.4	0.0
2359	SUPER STAR PLUS CORP	6351 FRANKLIN BLVD	SACRAMENTO	CARB TOOL	2.7	0.3	0.0
5290	GREENHAVEN SHELL	6431 RIVERSIDE BLVD	SACRAMENTO	CARB TOOL	2.7	0.2	0.0
5446	SUNRISE RANCHO GAS INC.	2295 SUNRISE BLVD	RANCHO CORDOVA	CARB TOOL	2.7	0.4	0.0
7296	ECO GAS & MART	6323 WATT AVENUE	NORTH HIGHLANDS	CARB TOOL	2.7	0.7	0.0
2157	QUIK STOP MARKET	3296 MARYSVILLE BLVD	SACRAMENTO	CARB TOOL	2.6	0.3	0.0
5923	ELKHORN GAS	4261 ELKHORN BLVD	NORTH HIGHLANDS	CARB TOOL	2.6	0.3	0.0
6532	ONE STOP GAS	2401 16TH STREET	SACRAMENTO	CARB TOOL	2.6	0.4	0.0
6897	RADC ENTERPRISES INC.	25045 BLUE RAVINE RD.	FOLSOM	CARB TOOL	2.6	0.3	0.0
6855	BP PRODUCTS NORTH AMERICA INC.	4420 MACK RD	SACRAMENTO	CARB TOOL	2.6	0.2	0.0
4614	DILLON FOOD MART #2	3907 STOCKTON BLVD	SACRAMENTO	CARB TOOL	2.5	0.3	0.0
5123	TESORO REFINING AND MARKETING COMPANY	10051 FOLSOM BLVD	SACRAMENTO	CARB TOOL	2.5	0.3	0.0
6498	JB MART INC DBA BELL ARCO	1595 BELL AVE	SACRAMENTO	CARB TOOL	2.5	0.4	0.0
7248	GAS'N SNACKS	3907 STOCKTON BLVD	SACRAMENTO	CARB TOOL	2.5	0.2	0.0
5574	STRAUCH & COMPANY	9215 ELK GROVE FLORIN RD	ELK GROVE	CARB TOOL	2.4	0.2	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
7405	CAPUTO ENTERPRISES, INC DBA ARCO AM/PM	2933 65TH STREET	SACRAMENTO	CARB TOOL	2.4	0.6	0.1
2869	NORWOOD VALERO	4200 NORWOOD AVE	SACRAMENTO	CARB TOOL	2.3	0.5	0.0
4825	DISCOUNT FOOD & LIQUOR	700 EAST BIDWELL	FOLSOM	CARB TOOL	2.3	0.4	0.0
7390	BI PETROLEUM INC,	7700 AUBURN BLVD	CITRUS HEIGHTS	CARB TOOL	2.3	0.1	0.0
5903	SOUTHLAND CORPORA-TION	2005 MARCONI AVE	SACRAMENTO	CARB TOOL	2.2	0.3	0.0
5667	CHEVRON PRODUCTS COMPANY	4300 MADISON AVE	SACRAMENTO	CARB TOOL	2.2	0.2	0.0
3603	KEM CORPORATION DBA GLEN COX CHEVRON	430 29TH ST	SACRAMENTO	CARB TOOL	2.2	0.3	0.0
6757	BONFARE MARKETS INC	3120 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	2.2	0.3	0.0
6016	ORCHID PETROLEUM CORP/ ARCO	5440 SAN JUAN AVE.	CITRUS HEIGHTS	CARB TOOL	2.2	0.4	0.1
7310	VALLEJO PETROLEUM INC. DBA POWERFUL FOOD MART	4305 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	2.2	0.2	0.0
2317	OAK PARK MARKET	3300 12TH AVE	SACRAMENTO	CARB TOOL	2.1	0.4	0.0
7285	EDWARD R. MARSZAL ENT. INC. DBA CAL. RETAIL MGMT.	7966 WALERGA RD	ANTELOPE	CARB TOOL	2.1	0.4	0.0
2196	BISLA DEVELOPMENT & PETROLEUM, LLC DBA SHELL	3591 BRADSHAW RD	SACRAMENTO	CARB TOOL	2.1	0.1	0.0
5069	HH GAS/FOOD ENT, INC	3800 47TH AVE	SACRAMENTO	CARB TOOL	2.1	0.3	0.0
5695	M&M ZAMIRI, INC	2200 EL CAMINO AVE	SACRAMENTO	CARB TOOL	2.1	0.2	0.0
6167	JASSI GAS & MART INC DBA ARDEN SHELL	860 ARDEN WAY	SACRAMENTO	CARB TOOL	2.1	0.2	0.0
5038	FOODS CO #532	7331 W. STOCKTON BLVD	ELK GROVE	CARB TOOL	2	0.7	0.1
6501	APRO, LLC	3329 MATHER FIELD RD.	RANCHO CORDOVA	CARB TOOL	2	0.2	0.0
3412	QUIK STOP MARKET	8696 GREENBACK LN	ORANGEVALE	CARB TOOL	1.9	0.4	0.0
1948	SOUTHLAND CORPORATION	5791 BROADWAY	SACRAMENTO	CARB TOOL	1.9	0.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
6504	APRO, LLC	3031 P STREET	SACRAMENTO	CARB TOOL	1.9	0.5	0.0
7149	XPRESS GAS & CAR WASH	500 E BIDWELL ST	FOLSOM	CARB TOOL	1.9	0.7	0.0
1798	QUIK STOP MARKET	602 4th ST	GALT	CARB TOOL	1.8	0.2	0.0
1961	COSTCO WHOLESALE C/O BARGHAUSEN	1601 EXPO PARKWAY	SACRAMENTO	CARB TOOL	1.8	0.4	0.1
2769	PASTOR EXXON	7560 SUNRISE BLVD	CITRUS HEIGHTS	CARB TOOL	1.8	0.5	0.0
4235	SAFEWAY STORES	5400 DEWEY DRIVE	FAIR OAKS	CARB TOOL	1.8	0.7	0.1
6428	WATT CIRCLE 7	2900 WATT AVE	SACRAMENTO	CARB TOOL	1.8	0.2	0.0
6658	NORCAL PETROLEUM	12821 STOCKTON BLVD	GALT	CARB TOOL	1.8	0.4	0.1
4348	CHEVRON PRODUCTS COMPANY	1235 FLORIN RD	SACRAMENTO	CARB TOOL	1.7	0.1	0.0
7069	7 ELEVEN INCORPORATED	9146 HARBOUR POINT DR.	ELK GROVE	CARB TOOL	1.7	0.3	0.0
4433	FREEPORT UNION 76	5600 FREEPORT BLVD	SACRAMENTO	CARB TOOL	1.7	0.2	0.0
6513	A1-MARKETPLACE	7261 STOCKTON BLVD	SACRAMENTO	CARB TOOL	1.7	0.2	0.0
3072	GIL MOORE OIL COMPANY	7901 COLLEGE TOWN DR	SACRAMENTO	CARB TOOL	1.6	0.2	0.0
6677	SOHAL 5	2500 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	1.6	0.2	0.0
7291	INNOVATIONS INC DBA NORTHGATE LIQUOR & FOOD	3016 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	1.6	0.3	0.0
7397	GREAT GAS AUBURN INC DBA GREAT GAS	3040 AUBURN BLVD	SACRAMENTO	CARB TOOL	1.6	0.3	0.0
5448	ROSEMONT SHELL	9100 KIEFER BLVD	SACRAMENTO	CARB TOOL	1.5	0.3	0.0
7015	MICNAN LLC DBA TOOLEY OIL CO	8995 GRANT LINE RD	ELK GROVE	CARB TOOL	1.5	0.4	0.0
6142	ARCO SITE #4968 ARDEN TOWNE GAS & MINIMART, INC	3501 FAIR OAKS BLVD	SACRAMENTO	CARB TOOL	1.5	0.2	0.0
6379	PREETSINGH7, INC DBA TOWNE MART	8223 AUBURN BLVD	CITRUS HEIGHTS	CARB TOOL	1.5	0.3	0.0
6574	AU ENERGY, LLC	8900 POCKET RD	SACRAMENTO	CARB TOOL	1.5	0.1	0.0
6898	RADC ENTERPRISES INC.	3200 ARENA BLVD.	SACRAMENTO	CARB TOOL	1.5	0.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
633	MAKS ARCO	1101 BROADWAY	SACRAMENTO	CARB TOOL	1.4	0.2	0.0
2112	ARDEN VILLAGE SERVICE	4230 ARDEN WAY	SACRAMENTO	CARB TOOL	1.4	0.4	0.0
2727	STRAUCH & COMPANY, A CALIFORNIA CORPORATION	13401 FOLSOM BLVD	FOLSOM	CARB TOOL	1.4	0.5	0.1
554	SPEEDBIRD MINI-MART	5000 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	1.4	0.4	0.0
6385	D. MILLER INC. DBA MILLERS AMPM	1391 FLORIN RD	SACRAMENTO	CARB TOOL	1.4	0.3	0.0
6572	AU ENERGY, LLC	1599 W. EL CAMINO AVE	SACRAMENTO	CARB TOOL	1.4	0.3	0.0
7383	JWC STORES INC.	301 E. BIDWELL ST	FOLSOM	CARB TOOL	1.4	0.2	0.0
1835	CIRCLE K STORES	5555 HEMLOCK ST	SACRAMENTO	CARB TOOL	1.3	0.4	0.0
6546	QUIK STOP MARKET	7901 MADISON AVE	CITRUS HEIGHTS	CARB TOOL	1.3	0.3	0.0
2940	CHEVRON PRODUCTS COMPANY	1890 PRAIRIE CITY RD	FOLSOM	CARB TOOL	1.3	0.4	0.0
1907	SILVER GAS & FOOD SERVICE	4625 EL CAMINO AVE	SACRAMENTO	CARB TOOL	1.3	0.3	0.0
4062	SAMS WEST INC	2495 IRON POINT RD (#6620)	FOLSOM	CARB TOOL	1.3	0.4	0.1
5552	GALT GAS & FOOD	627 N. LINCOLN WAY	GALT	CARB TOOL	1.3	0.2	0.0
5744	SACRAMENTO PETROLEUM	4745 WATT AVE	NORTH HIGHLANDS	CARB TOOL	1.3	0.2	0.0
5125	TESORO REFINING AND MARKETING COMPANY	7550 WATT AVE	NORTH HIGHLANDS	CARB TOOL	1.3	0.1	0.0
6899	RADC ENTERPRISES INC.	5345 HAZEL AVE.	FAIR OAKS	CARB TOOL	1.5	0.3	0.0
7056	RAI & BASSI PETROLEUM INC	3501 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	1.4	0.2	0.0
7249	RMA GERBER PETROLEUM INC.	8501 GERBER RD	SACRAMENTO	CARB TOOL	1.4	0.4	0.0
5712	SUPERIOR GAS & MART INC DBA J STREET AMPM	2838 J ST	SACRAMENTO	CARB TOOL	1.4	0.5	0.1
1297	CHEVRON PRODUCTS COMPANY	2358 SUNRISE BLVD	RANCHO CORDOVA	CARB TOOL	1.4	0.4	0.0
5147	SAFEWAY STORES	8369 ELK GROVE FLORIN RD	ELK GROVE	CARB TOOL	1.4	0.3	0.0
3671	CITY MARKET	6825 GREENBACK LN	CITRUS HEIGHTS	CARB TOOL	1.4	0.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
6502	APRO, LLC	191 IRON POINT RD	FOLSOM	CARB TOOL	1.4	0.2	0.0
7083	DS&D PETROLEUM INC	2701 ORCHARD LN	SACRAMENTO	CARB TOOL	1.3	0.4	0.0
1226	SPEEDBIRD MINI-MART	4901 47TH AVE	SACRAMENTO	CARB TOOL	1.3	0.3	0.0
1942	CHEVRON PRODUCTS COMPANY	8169 ELK GROVE BLVD	ELK GROVE	CARB TOOL	1.3	0.4	0.0
1963	COSTCO WHOLESALE C/O BARGHAUSEN	11260 WHITE ROCK RD	RANCHO CORDOVA	CARB TOOL	1.3	0.3	0.0
2659	SERVO GASOLINE	2400 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	1.3	0.4	0.1
5550	SUNRISE CHEVRON SKSP INC	7551 SUNRISE BLVD	CITRUS HEIGHTS	CARB TOOL	1.3	0.2	0.0
5679	BM PETRO INC	8240 FAIR OAKS BLVD	CARMICHAEL	CARB TOOL	1.3	0.2	0.0
5713	GERBER GAS & MART INC	8100 GERBER RD	SACRAMENTO	CARB TOOL	1.3	0.1	0.0
6080	FAST N EASY FOOD MART	2101 EL CAMINO AVE	SACRAMENTO	CARB TOOL	1.3	0.6	0.1
6581	AU ENERGY, LLC	9100 HARBOUR POINT BLVD	ELK GROVE	CARB TOOL	1.3	0.2	0.0
6689	ZAILDAR LIQUOR INC DBA GAS & GO	3449 EL CAMINO AVE	SACRAMENTO	CARB TOOL	1.3	0.1	0.0
6809	GAUR INC DBA AMERICAN FOOD STORE	5682 MAIN AVE	ORANGEVALE	CARB TOOL	1.3	0.3	0.0
7281	H&S ENERGY, LLC DBA H&S ENERGY PRODUCTS, LLC #3074	8501 BOND RD	ELK GROVE	CARB TOOL	1.2	0.3	0.0
1191	CHEVRON PRODUCTS COMPANY	12205 TRIBUTARY POINT DR	RANCHO CORDOVA	CARB TOOL	1.2	0.1	0.0
2057	SD FOOD INC	5740 WINDING WAY	CARMICHAEL	CARB TOOL	1.2	0.4	0.0
3480	HOPEWELL HOLDINGS DBA ANTELOPE CHEVRON	5869 ANTELOPE RD	SACRAMENTO	CARB TOOL	1.2	0.3	0.0
7071	7 ELEVEN INCORPORATED	8100 SHELDON RD	ELK GROVE	CARB TOOL	1.2	0.1	0.0
7409	LAO-MIEN SERVICE STATION INC DBA FLORIN ARCO AM/PM	4422 FLORIN RD	SACRAMENTO	CARB TOOL	1.0	0.4	0.0
6780	H&S ENERGY, LLC DBA H&S 44	3481 FAIR OAKS BLVD	SACRAMENTO	CARB TOOL	1.0	0.5	0.0

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6702	HAZEL INVESTMENTS LLC DBA HAZEL ARCO AM/PM	12210 TRIBUTARY POINT DR	RANCHO CORDOVA	CARB TOOL	1.0	0.2	0.0
7037	DEVAN DALLA ENTERPRISES, LLC	952 SIMMERHORN RD	GALT	CARB TOOL	1.0	0.2	0.0
5352	GAWFCO ENTERPRISES, INC.	2893 65TH	SACRAMENTO	CARB TOOL	0.9	0.1	0.0
5129	RIO LINDA GAS & MART	732 M ST	RIO LINDA	CARB TOOL	0.9	0.8	0.0
6394	GALT FUEL STATION, LLC DBA CHEVRON STATION GALT	955 SIMMERHORN RD	GALT	CARB TOOL	0.9	0.1	0.0
6538	GSARWAR MARKET	2199 EL CAMINO AVE	SACRAMENTO	CARB TOOL	0.9	0.2	0.0
6577	AU ENERGY, LLC	2221 DEL PASO RD	SACRAMENTO	CARB TOOL	0.9	0.4	0.0
6648	H&S ENERGY, LLC DBA H&S 44	5597 STOCKTON BLVD	SACRAMENTO	CARB TOOL	0.9	0.3	0.0
6750	KPS BROTHERS INC DBA BONFARE MARKET #40	861 FULTON AVE	SACRAMENTO	CARB TOOL	0.9	0.2	0.0
6892	DIAMOND GAS AND MART #3	8329 FOLSOM BLVD	SACRAMENTO	CARB TOOL	0.9	0.4	0.0
6976	ORBIT DIAMOND INC.	8994 GREENBACK LN	ORANGEVALE	CARB TOOL	0.9	0.1	0.0
7279	H&S ENERGY, LLC DBA H&S ENERGY PRODUCTS, LLC #3072	5049 MARCONI AVE	CARMICHAEL	CARB TOOL	0.9	0.1	0.0
7369	BASSI GROUP LLC	2401 SUNRISE BLVD	RANCHO CORDOVA	CARB TOOL (D)	0.8	0.2	0.0
3814	CHEVRON PRODUCTS COMPANY	2700 DEL PASO RD	SACRAMENTO	CARB TOOL	0.8	0.4	0.0
1259	ATWAL & MUNDI CORPORATION	3500 WATT AVE	SACRAMENTO	CARB TOOL	0.8	0.3	0.0
1667	COSTCO WHOLESALE C/O BARGHAUSEN	7981 E STOCKTON BLVD	SACRAMENTO	CARB TOOL	0.8	0.2	0.0
3700	BONFARE MARKETS INC	2600 RIO LINDA	SACRAMENTO	CARB TOOL	0.8	0.2	0.0
4791	S-GILL CORP DBA JOE'S MARKET	11070 FAIR OAKS BLVD	FAIR OAKS	CARB TOOL	0.8	0.1	0.0

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5117	AMBER FLOW INC DBA MANZANITA AMPM	4101 MANZANITA AVE	CARMICHAEL	CARB TOOL	0.8	0.5	0.0
5502	SUPERIOR GAS & CONVEN-IENCE STORE DBA ZINFANDEL AMPM	2896 ZINFANDEL DR	RANCHO CORDOVA	CARB TOOL	0.8	0.4	0.0
6801	MAAK PETROLEUM, INC DBA MEADOWVIEW CHEVRON	1481 MEADOWVIEW RD	SACRAMENTO	CARB TOOL	0.8	0.1	0.0
6893	TAKHAR SOUTH SAC PETROLEUM, LLC DBA ARCO AM/PM	5625 FLORIN RD	SACRAMENTO	CARB TOOL	0.8	0.1	0.0
7212	M&J PETROLEUM LLC DBA FRANKLIN VALERO	5601 FRANKLIN BLVD	SACRAMENTO	CARB TOOL	0.8	0.6	0.0
7393	CHRONICLE MARKET	5399 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	0.8	0.4	0.0
7128	TRMC RETAIL LLC ATTN: GASOLINE COMPLIANCE	4250 MADISION AVE.	NORTH HIGHLANDS	CARB TOOL (D)	0.7	0.5	0.0
399	CIRCLE K STORES	5809 MANZANITA AVE	CARMICHAEL	CARB TOOL	0.7	0.4	0.0
1774	CALIFORNIA RETAIL MANAGEMENT	2323 LAGUNA BLVD	ELK GROVE	CARB TOOL	0.7	0.1	0.0
3899	COSTCO WHOLESALE C/O BARGHAUSEN	1800 CAVITT COURT (COSTCO #765)	FOLSOM	CARB TOOL	0.7	0.1	0.0
3393	R & L THOMPSON INC. DBA NATOMAS CHEVRON	3950 TRUXEL RD	SACRAMENTO	CARB TOOL	0.7	0.5	0.0
4423	CAMELLIA CITY CHEVRON	4700 MANZANITA AVE	CARMICHAEL	CARB TOOL	0.7	0.7	0.0
5215	SEREIS CORP DBA CHOICE GAS	7900 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	0.7	0.3	0.0
5746	MADISON SERVICE	5200 MANZANITA AVE	CARMICHAEL	CARB TOOL	0.7	0.2	0.0
6099	SARB ENTERPRISES CORP DBA FRANKLIN GAS MART	4991 FRANKLIN BLVD	SACRAMENTO	CARB TOOL	0.7	0.1	0.0
6509	APRO, LLC	8001 WATT AVE	ANTELOPE	CARB TOOL	0.7	0.2	0.0
7052	BP PRODUCTS NORTH AMERICA INC.	6140 GREENBACK LN	CITRUS HEIGHTS	CARB TOOL	0.7	0.2	0.0

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7280	H&S ENERGY, LLC DBA H&S ENERGY PRODUCTS, LLC #3073	8900 MADISON AVE	FAIR OAKS	CARB TOOL	0.7	0.3	0.0
6555	PACIFIC FUEL & AUTO SERVICES INC	8999 ELK GROVE BLVD	ELK GROVE	CARB TOOL (D)	0.6	0.2	0.0
6587	COLONIAL ENERGY, LLC	3519 A ST	NORTH HIGHLANDS	CARB TOOL (D)	0.6	0.1	0.0
4350	CHEVRON PRODUCTS COMPANY	2789 E. BIDWELL ST	FOLSOM	CARB TOOL	0.6	0.4	0.0
4349	CHEVRON PRODUCTS COMPANY	8296 LAGUNA BLVD	ELK GROVE	CARB TOOL	0.6	0.4	0.0
3698	BONFARE MARKETS INC	3100 BROADWAY	SACRAMENTO	CARB TOOL	0.6	0.1	0.0
5195	SAMS WEST INC	8250 POWER INN RD	SACRAMENTO	CARB TOOL	0.6	0.1	0.0
6154	TERA CHEVRON	8099 FOLSOM BLVD	SACRAMENTO	CARB TOOL	0.6	0.5	0.0
6029	UNITED EXPORTS LLC DBA WESTERN GAS AUTO REPAIR & S	4790 47TH AVE	SACRAMENTO	CARB TOOL	0.6	0.1	0.0
6284	SOHAL 4 INC.	8901 MADISON AVE	FAIR OAKS	CARB TOOL	0.6	0.3	0.0
6582	AU ENERGY, LLC	8607 ELK GROVE BLVD	ELK GROVE	CARB TOOL	0.6	0.1	0.0
6588	COLONIAL ENERGY, LLC	2150 MARCONI AVE	SACRAMENTO	CARB TOOL	0.6	0.2	0.0
7044	BP PRODUCTS NORTH AMERICA INC.	2100 BROADWAY	SACRAMENTO	CARB TOOL	0.6	0.2	0.0
7053	BP PRODUCTS NORTH AMERICA INC.	4000 SUNRISE BLVD	RANCHO CORDOVA	CARB TOOL	0.6	0.2	0.0
7130	TRMC RETAIL LLC ATTN: GASOLINE COMPLIANCE	2650 GATEWAY OAKS DR.	SACRAMENTO	CARB TOOL	0.6	0.4	0.0
7278	H&S ENERGY, LLC DBA H&S ENERGY PRODUCTS, LLC #3072	4231 ARDEN WAY	SACRAMENTO	CARB TOOL	0.6	0.2	0.0
1385	BASIC PROPERTIES	8061 FLORIN RD	SACRAMENTO	CARB TOOL	0.5	0.5	0.0
4215	QUIK STOP MARKET	5764 ANTELOPE RD	SACRAMENTO	CARB TOOL	0.5	0.2	0.0
7443	JAVAN CORP	7149 S WATT AVE	SACRAMENTO	CARB TOOL	0.5	0.4	0.0
3093	STOP & SHOP MARKET	6007 DRY CREEK RD	RIO LINDA	CARB TOOL	0.5	0.2	0.0

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3577	MARDAN, INC. DBA NORTHGATE CHEVRON	2449 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	0.5	0.2	0.0
3699	BONFARE MARKETS INC	809 20TH STREET	SACRAMENTO	CARB TOOL	0.5	0.4	0.0
3702	ELK GROVE EXXON	9603 E STOCKTON BLVD	ELK GROVE	CARB TOOL	0.5	0.3	0.0
3707	SANJOG INVESTMENTS INC., DBA ELSIE CHEVRON.	7314 ELSIE AVE	SACRAMENTO	CARB TOOL	0.5	0.4	0.0
4512	FLORIN INVESTMENT, INC.	4700 FLORIN RD	SACRAMENTO	CARB TOOL	0.5	0.3	0.0
4606	LAND PARK GAS	4000 SOUTH LAND PARK	SACRAMENTO	CARB TOOL	0.5	0.3	0.0
4702	DISCOUNT GROCERY ENTERPRISE	3840 MADISON AVE	NORTH HIGHLANDS	CARB TOOL	0.5	0.2	0.0
4821	SAHOTA ENTERPRISES	4311 ANTELOPE RD	ANTELOPE	CARB TOOL	0.5	0.1	0.0
5209	RIVERMART	222 JIBBOOM ST	SACRAMENTO	CARB TOOL	0.5	0.3	0.0
5647	GREEN DESERT OIL GROUP-83056 AM/PM ARCO	7969 WALERGA RD	ANTELOPE	CARB TOOL	0.5	0.1	0.0
6141	FLORIN RD GAS	5500 FLORIN RD	SACRAMENTO	CARB TOOL	0.5	0.2	0.0
6177	TOWN MART LIQUOR & GAS	7210 ROSEVILLE RD	SACRAMENTO	CARB TOOL	0.5	0.1	0.0
6294	FOLSOM FUEL	51 NATOMA ST	FOLSOM	CARB TOOL	0.5	0.2	0.0
6451	KAN HERITAGE INC	7620 FOLSOM AUBURN RD	FOLSOM	CARB TOOL	0.5	0.2	0.0
6505	APRO, LLC	2200 FAIR OAKS BLVD	SACRAMENTO	CARB TOOL	0.5	0.3	0.0
6507	APRO, LLC	9001 GRANTLINE RD	ELK GROVE	CARB TOOL	0.5	0.1	0.0
6543	MIKE & BALJIT INC	2500 FULTON AVE	SACRAMENTO	CARB TOOL	0.5	0.4	0.0
6573	AU ENERGY, LLC	7969 WATT AVE	ANTELOPE	CARB TOOL	0.5	0.2	0.0
6793	DEEP & PREET	8487 ELK GROVE - FLORIN RD	ELK GROVE	CARB TOOL	0.5	0.2	0.0
6386	BP PRODUCTS NORTH AMERICA INC.	5150 MANZANITA AVE	CARMICHAEL	CARB TOOL	0.5	0.5	0.0
7049	BP PRODUCTS NORTH AMERICA INC.	6337 FAIR OAKS BLVD	CARMICHAEL	CARB TOOL	0.5	0.4	0.0
7051	BP PRODUCTS NORTH AMERICA INC.	8121 FLORIN RD	SACRAMENTO	CARB TOOL	0.5	0.2	0.0
7245	JACKSONS ENERGY #6821	3096 SUNRISE BLVD	RANCHO CORDOVA	CARB TOOL	0.5	0.4	0.0

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5844	DK & GK INC. DBA SHELL GAS STATION WITH CARWASH	9190 E. STOCKTON BLVD	ELK GROVE	CARB TOOL (D)	0.4	0.1	0.0
6165	ZINFANDEL CHEVRON	3001 ZINFANDEL DR	RANCHO CORDOVA	CARB TOOL (D)	0.4	0.1	0.0
1092	W N HUNT & SONS	4200 ROSEVILLE RD	SACRAMENTO	CARB TOOL	0.4	0.4	0.0
7123	SOUTHLAND CORPORA-TION	4140 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	0.4	0.3	0.0
775	CHEVRON PRODUCTS COMPANY	6151 GREENBACK LN	CITRUS HEIGHTS	CARB TOOL	0.4	0.3	0.0
2219	EZ STOP INC FOOD AND LIQUOR	10501 FOLSOM BLVD	RANCHO CORDOVA	CARB TOOL	0.4	0.3	0.0
2423	SERVO GASOLINE	5701 WATT AVE	NORTH HIGHLANDS	CARB TOOL	0.4	0.2	0.0
3737	R & B STATIONS	3430 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	0.4	0.2	0.0
7070	7 ELEVEN INCORPORATED	8344 POWER INN RD	ELK GROVE	CARB TOOL	0.4	0.4	0.0
3958	MARCONI 76	2549 MARCONI AVE	SACRAMENTO	CARB TOOL	0.4	0.3	0.0
4178	UNITED PETROLEUM	10299 FOLSOM BLVD	RANCHO CORDOVA	CARB TOOL	0.4	0.1	0.0
4262	MIDTOWN GAS & FOOD MART	1031 30TH STREET	SACRAMENTO	CARB TOOL	0.4	0.3	0.0
4800	HOWE & HURLEY FOOD MART	1266 HOWE AVE	SACRAMENTO	CARB TOOL	0.4	0.2	0.0
5935	ELITE CAPITAL INVEST-MENTS	5960 24TH ST	SACRAMENTO	CARB TOOL	0.4	0.1	0.0
6578	AU ENERGY, LLC	3500 AUBURN BLVD	SACRAMENTO	CARB TOOL	0.4	0.1	0.0
6631	7-ELEVEN, INC DBA 7-ELEVEN #37620	2401 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	0.4	0.2	0.0
6764	JARON & JOBIM INC	3900 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	0.4	0.3	0.0
6945	FREEPORT GAS & FOOD	4011 FREEPORT BLVD	SACRAMENTO	CARB TOOL	0.4	0.3	0.0
6954	THIND PETROLEUM	10109 FOLSOM BLVD	RANCHO CORDOVA	CARB TOOL	0.4	0.4	0.0
7078	CIRCLE D GAS MART, INC	9301 GREENBACK LN	ORANGEVALE	CARB TOOL	0.4	0.4	0.0
7157	SK GASOLINE INC DBA KWIK SERV	5040 EL CAMINO AVENUE	CARMICHAEL	CARB TOOL	0.4	0.1	0.0

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7277	H&S ENERGY, LLC DBA H&S ENERGY PRODUCTS, LLC #3072	3300 BRADSHAW RD	SACRAMENTO	CARB TOOL	0.4	0.3	0.0
7411	ELEMENTS PETROLEUM INC./KWIK SERV	5365 DEWEY DR	FAIR OAKS	CARB TOOL	0.4	0.2	0.0
5883	PROPEL BIOFUELS, INC.	1101 BROADWAY	SACRAMENTO	CARB TOOL (E)	0.3	0.2	0.0
7398	GREAT GAS AUBURN INC DBA GREAT GAS	2849 WATT AVE	SACRAMENTO	CARB TOOL (F)	0.3	0.2	0.0
1266	CIRCLE K STORES	7796 SUNRISE BLVD	CITRUS HEIGHTS	CARB TOOL	0.3	0.3	0.0
2230	ORBIT GAS STATION	4716 AUBURN BLVD	SACRAMENTO	CARB TOOL	0.3	0.3	0.0
2551	QUIK STOP MARKET	3700 AUBURN BLVD	SACRAMENTO	CARB TOOL	0.3	0.2	0.0
4469	TOOLEY OIL COMPANY, DBA SHELL	9616 W. TARON DR	ELK GROVE	CARB TOOL	0.3	0.1	0.0
3824	CHEVRON PRODUCTS COMPANY	9615 WEST TARON DR	ELK GROVE	CARB TOOL	0.3	0	0.0
4344	CHEVRON PRODUCTS COMPANY	1940 65TH ST	SACRAMENTO	CARB TOOL	0.3	0.3	0.0
7284	CALIFORNIA RETAIL MANAGEMENT	5361 SUNRISE BLVD	FAIR OAKS	CARB TOOL	0.3	0.3	0.0
3576	GAWFCO ENTERPRISES, INC.	2330 BROADWAY	SACRAMENTO	CARB TOOL	0.3	0.3	0.0
3775	SAFEWAY STORES	4040 MANZANITA AVE	CARMICHAEL	CARB TOOL	0.3	0.1	0.0
7158	7 ELEVEN INCORPORATED	8498 FLORIN RD	SACRAMENTO	CARB TOOL	0.3	0.1	0.0
7286	EDWARD R. MARSZAL ENT. INC.	9881 GREENBACK LN	FOLSOM	CARB TOOL	0.3	0.1	0.0
1743	TOOLEY OIL COMPANY, DBA SHELL	3050 ZINFANDEL DR	RANCHO CORDOVA	CARB TOOL	0.3	0.3	0.0
4912	SAI PETROLEUM INC.	9611 AUTO CENTER DR	ELK GROVE	CARB TOOL	0.3	0.2	0.0
5210	786 ENTERPRISE DBA VALERO GAS STATION	8461 FOLSOM BLVD	SACRAMENTO	CARB TOOL	0.3	0.3	0.0
5241	CHEVRON PRODUCTS CO DBA CHEVRON STATION #30-5078	215 OLD PLACERVILLE DR	FOLSOM	CARB TOOL	0.3	0.4	0.0

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5296	DB & S, LLC DBA DHILLONS SACRAMENTO SHELL	2400 DEL PASO BLVD	SACRAMENTO	CARB TOOL	0.3	0.2	0.0
5425	EXPRESS LANE INC.	301 PINE ST.	GALT	CARB TOOL	0.3	0.3	0.0
5517	FOLSOM CHEVRON INVEST-MENT, INC	12399 FOLSOM BLVD	RANCHO CORDOVA	CARB TOOL	0.3	0.3	0.0
5547	STRAUCH & COMPANY	4747 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	0.3	0.1	0.0
5559	PUNDHAR INVESTMENTS, INC	7800 LINCHEN DR	CITRUS HEIGHTS	CARB TOOL	0.3	0.3	0.0
5685	DHARNI LADA, LLC DBA MACK RD INC.	6698 MACK RD	SACRAMENTO	CARB TOOL	0.3	0.2	0.0
5711	EAGLE GAS & LIQUOR	4646 EL CAMINO AVE	SACRAMENTO	CARB TOOL	0.3	0.3	0.0
5828	ED'S 76	2400 15TH ST	SACRAMENTO	CARB TOOL	0.3	0.1	0.0
6175	BANWAIT PETRO INC DBA CIRCLE K	600 RIO TIERRA AVE	SACRAMENTO	CARB TOOL	0.3	0.1	0.0
6430	PAMA GASOLINE CORPO-RATION	1300 FULTON AVE	SACRAMENTO	CARB TOOL	0.3	0.4	0.0
6506	APRO, LLC	7899 MADISON AVE	CITRUS HEIGHTS	CARB TOOL	0.3	0.3	0.0
6616	APRO, LLC	4705 FLORIN RD	SACRAMENTO	CARB TOOL	0.3	0.3	0.0
6583	AU ENERGY, LLC	6141 GREENBACK LN	CITRUS HEIGHTS	CARB TOOL	0.3	0.2	0.0
6692	S&P BHANGU, INC DBA CALVINE ARCO	8338 POWER INN RD	ELK GROVE	CARB TOOL	0.3	0.3	0.0
6895	BPS FUEL	1949 ARDEN WAY	SACRAMENTO	CARB TOOL	0.3	0.1	0.0
6896	RADC ENTERPRISES INC.	10450 TWIN CITIES RD.	GALT	CARB TOOL	0.3	0.2	0.0
7292	MICNAN LLC, DBA ANTE-LOPE SHELL	7741 AUBURN BLVD	CITRUS HEIGHTS	CARB TOOL	0.3	0.1	0.0
6359	TOOLEY OIL COMPANY, DBA SHELL	5103 FAIR OAKS BLVD	CARMICHAEL	CARB TOOL (D)	0.2	0.3	0.0
6973	MICNAN LLC DBA TOOLEY OIL CO	8830 E. STOCKTON BLVD	ELK GROVE	CARB TOOL (D)	0.2	0.1	0.0
1997	TOOLEY OIL COMPANY, DBA SHELL	3721 TRUXEL RD	SACRAMENTO	CARB TOOL (D)	0.2	0.2	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
2117	SOUTHLAND CORPORATION	10246 MILLS STATION RD	RANCHO CORDOVA	CARB TOOL	0.2	0.3	0.0
1306	SOUTHLAND CORPORATION	6170 AUBURN BLVD	CITRUS HEIGHTS	CARB TOOL	0.2	0.1	0.0
2358	SOUTHLAND CORPORATION	5500 FLORIN PERKINS RD	SACRAMENTO	CARB TOOL	0.2	0.1	0.0
1368	SOUTHLAND CORPORATION	6701 AUBURN BLVD	CITRUS HEIGHTS	CARB TOOL	0.2	0.1	0.0
3940	RAMOS OIL COMPANY	5300 FLORIN PERKINS RD	SACRAMENTO	CARB TOOL	0.2	0.2	0.0
2492	CALIFORNIA RETAIL MANAGEMENT	9198 ELK GROVE-FLORIN RD	ELK GROVE	CARB TOOL	0.2	0.1	0.0
2290	RANCHO MURIETA CTRY STORE	7175 MURIETA DR	SLOUGHHOUSE	CARB TOOL	0.2	0.3	0.0
3938	7 ELEVEN INCORPORATED	5501 AUBURN BLVD	SACRAMENTO	CARB TOOL	0.2	0.2	0.0
6593	7 ELEVEN INCORPORATED	1301 HOWE AVE	SACRAMENTO	CARB TOOL	0.2	0.3	0.0
4066	PRIME GAS, INC	7282 FRANKLIN BLVD	SACRAMENTO	CARB TOOL	0.2	0.3	0.0
4260	B & E MARKET	7596 BRADSHAW RD	SACRAMENTO	CARB TOOL	0.2	0.2	0.0
6776	TERA CHEVRON	10610 PROMENADE PARKWAY	ELK GROVE	CARB TOOL	0.2	0.2	0.0
5233	FLORIN SHELL	8062 FLORIN RD	SACRAMENTO	CARB TOOL	0.2	0.1	0.0
5288	ELK GROVE SHELL	8901 ELK GROVE BLVD	ELK GROVE	CARB TOOL	0.2	0.3	0.0
5289	CAMPUS SHELL	2270 FAIR OAKS BLVD	SACRAMENTO	CARB TOOL	0.2	0.2	0.0
5295	T R & G PROPERTY DEVELOPMENT LLC	13397 FOLSOM BLVD	FOLSOM	CARB TOOL	0.2	0.2	0.0
5418	POWER OIL INC DBA POWER INN SHELL	8090 FOLSOM BLVD	SACRAMENTO	CARB TOOL	0.2	0.2	0.0
5537	PERDUN ENTERPRISES INC. DBA ARCO #82803	3099 SUNRISE BLVD	RANCHO CORDOVA	CARB TOOL	0.2	0.1	0.0
5944	CIRCLE 7 FOOD & LIQUORS	7601 STOCKTON BLVD	SACRAMENTO	CARB TOOL	0.2	0.3	0.0
6091	RANA FOLSOM LLC	9199 FOLSOM BLVD	SACRAMENTO	CARB TOOL	0.2	0.1	0.0
6217	MAAK PETROLEUM, INC DBA SUNRISE CHEVRON	2707 SUNRISE BLVD	RANCHO CORDOVA	CARB TOOL	0.2	0.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
6508	APRO, LLC	6500 MACK RD	SACRAMENTO	CARB TOOL	0.2	0.2	0.0
6575	AU ENERGY, LLC	6490 MACK RD	SACRAMENTO	CARB TOOL	0.2	0.1	0.0
6580	AU ENERGY, LLC	3510 FAIR OAKS BLVD	SACRAMENTO	CARB TOOL	0.2	0.2	0.0
6589	COLONIAL ENERGY, LLC	4430 AUBURN BLVD	SACRAMENTO	CARB TOOL	0.2	0.1	0.0
6599	NAV GAS AND FOODS, INC	10847 FOLSOM BLVD	RANCHO CORDOVA	CARB TOOL	0.2	0.1	0.0
6621	RR MS OILS, INC DBA MIMI'S MINI MART	700 C ST	GALT	CARB TOOL	0.2	0.3	0.0
6800	H & OIL LLC DBA ELK GROVE AMPM	8500 ELK GROVE BLVD	ELK GROVE	CARB TOOL	0.2	0.2	0.0
6875	DELTA FOOD & FUEL	14161 RIVER RD	WALNUT GROVE	CARB TOOL	0.2	0.4	0.0
6977	POWER GROUP OIL / FOLSOM SHELL FOOD MART	9871 GREENBACK LN	FOLSOM	CARB TOOL	0.2	0.2	0.0
7040	7-ELEVEN INC	9396 GREENBACK LN	ORANGEVALE	CARB TOOL	0.2	0.1	0.0
7054	BP PRODUCTS NORTH AMERICA INC.	9670 KIEFER BLVD	SACRAMENTO	CARB TOOL	0.2	0.1	0.0
7282	H&S ENERGY, LLC DBA H&S ENERGY PRODUCTS, LLC #3075	9680 BUSINESS PARK DR	SACRAMENTO	CARB TOOL	0.2	0.1	0.0
5484	PROPEL BIOFUELS, INC.	8062 FLORIN RD	SACRAMENTO	CARB TOOL (E)	0.1	0.1	0.0
2160	FORTY-NINER TRUCK STOP	2828 EL CENTRO RD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
5878	INTER-STATE OIL COMPANY	9765 DINO DR	ELK GROVE	CARB TOOL	0.1	0.2	0.0
481	INTER-STATE OIL COMPANY	8221 ALPINE AVE	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
663	W N HUNT & SONS	11341 WHITE ROCK RD	RANCHO CORDOVA	CARB TOOL	0.1	0.1	0.0
4253	RAMOS OIL COMPANY	4420 NORTHGATE BLVD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
4252	RAMOS OIL COMPANY	2732 CITRUS RD	RANCHO CORDOVA	CARB TOOL	0.1	0.1	0.0
647	HUNT AND SONS	5800 S. WATT AVE	SACRAMENTO	CARB TOOL	0.1	0.2	0.0
2086	HUNT AND SONS	1201 FEE DR	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
3331	R & B STATIONS	6919 STOCKTON BLVD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
7077	7 ELEVEN INCORPORATED	5550 S. WATT AVE	SACRAMENTO	CARB TOOL	0.1	0.1	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
7117	7 ELEVEN INCORPORATED	8010 ORCHARD LOOP LN	ELK GROVE	CARB TOOL	0.1	0.1	0.0
7403	PRIYA INC	8908 ELDER CREEK RD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
5189	FRUITRIDGE AMPM	8880 FRUITRIDGE RD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
5294	DB & S, LLC DBA DHILLONS SACRAMENTO SHELL	1600 ARDEN WAY	SACRAMENTO	CARB TOOL	0.1	0.2	0.0
5342	SACRAMENTO DUNNIGAN HOLDING INC.	4300 WATT AVE	NORTH HIGHLANDS	CARB TOOL	0.1	0.1	0.0
5353	BHULLARS INC	4631 WATT AVE	NORTH HIGHLANDS	CARB TOOL	0.1	0.2	0.0
5534	MICNAN LLC DBA TOOLEY OIL CO	5520 DUDLEY BLVD	NORTH HIGHLANDS	CARB TOOL	0.1	0.2	0.0
7067	MICNAN LLC DBA TOOLEY OIL CO	5038 MADISON AVE	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
5702	IJAZ CORPORATION/ DBA GRANTLINE ARCO	10421 GRANTLINE RD	ELK GROVE	CARB TOOL	0.1	0.1	0.0
5750	F & W OIL, INC	2390 FLORIN RD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
5882	KAJLA PETROLEUM INC DBA JACKSON SHELL	9701 JACKSON RD	SACRAMENTO	CARB TOOL	0.1	0.2	0.0
6004	GOLD STAR GAS/FOOD DBA PETRO STAR OIL CO	2399 FLORIN RD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
6375	WINSTARR INC. DBA DILLARD STORE	9797 DILLARD RD	WILTON	CARB TOOL	0.1	0.1	0.0
6413	FLORIN PETROLEUM, INC. DBA SAC VALLEY TRUCK STOP	7891 STOCKTON BLVD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
6514	AHY INVESTMENTS LLC	8475 ELK GROVE BLVD	ELK GROVE	CARB TOOL	0.1	0.1	0.0
6571	AU ENERGY, LLC	4050 FLORIN RD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
6579	AU ENERGY, LLC	225 N JIBBOOM ST	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
6584	AU ENERGY, LLC	7899 GREENBACK LN	CITRUS HEIGHTS	CARB TOOL	0.1	0.2	0.0
6622	SK YREKA INC DBA FLORIN FOOD MART	2460 FLORIN RD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
7099	7-ELEVEN STORE #38788	7171 STOCKTON BLVD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	HAZARD INDEX (C)	
						ACUTE	CHRONIC
7267	FOUR B ONE INC DBA BELL GAS & MINIMART	4400 RALEY BLVD	SACRAMENTO	CARB TOOL	0.1	0.1	0.0
7276	H&S ENERGY, LLC DBA H&S ENERGY PRODUCTS, LLC #3072	1020 RILEY ST	FOLSOM	CARB TOOL	0.1	0.1	0.0
5482	PROPEL BIOFUELS, INC.	8090 FOLSOM BLVD	SACRAMENTO	CARB TOOL (E)	0.0	0.1	0.0
5790	PROPEL BIOFUELS, INC.	7901 MADISON AVE	CITRUS HEIGHTS	CARB TOOL (E)	0.0	0.2	0.0
5481	PROPEL BIOFUELS, INC.	7741 AUBURN BLVD	CITRUS HEIGHTS	CARB TOOL (E)	0.0	0.2	0.0
5879	INTER-STATE OIL COMPANY	9050 ELKMONT WY	ELK GROVE	CARB TOOL	0.0	0.1	0.0
4102	W N HUNT & SONS	9687 GORE RD	SACRAMENTO	CARB TOOL	0.0	0.1	0.0
6526	RAMOS OIL COMPANY	7001 EAST PARKWAY	SACRAMENTO	CARB TOOL	0.0	0.1	0.0
6061	7 ELEVEN INCORPORATED	11079 FOLSOM BLVD	RANCHO CORDOVA	CARB TOOL	0.0	0.1	0.0
5419	KAYLA INVESTMENTS INC DBA CAL EXPO CHEVRON	2000 ARDEN WY	SACRAMENTO	CARB TOOL	0.0	0.2	0.0
5522	RIVERBANK HOLDING CO, LLC	1371 GARDEN HWY #200	SACRAMENTO	CARB TOOL	0.0	0.1	0.0
5567	GREEN DESERT GROUP OIL INC	6100 AIRPORT BLVD	SACRAMENTO	CARB TOOL	0.0	0.1	0.0
4511	EL CENTRO INVESTMENT, INC	2738 EL CENTRO RD	SACRAMENTO	CARB TOOL	0.0	0.1	0.0
7210	GUY RENTS INC. DBA RENTAL GUYS	9325 GREENBACK LN	ORANGEVALE	CARB TOOL	0.0	0.4	0.0

(A) Modeling methods used include:
  (1) CARB Variable Meteorology Tool (CARB Tool): Risk screening tool developed by the California Air Resources Board. Risk was calculated using the facility's most recent throughput data.
  (2) Site-Specific: SMAQMD performed an HRA to refine the results obtained from the screening assessment.

(B) Cancer Risk is expressed as lifetime excess cancer risk in chances per million.

(C) Hazard Index (HI) is the ratio of the concentration to the reference exposure level.

(D) Facility dispenses both gasoline and E85 (or equivalent) fuels. Total gasoline throughput for the facility was calculated as: (Gasoline Throughput) + (0.15 × (E85 Throughput)). CARB Tool was then used for risk screening based on the facility's most recent throughput data.

(E) Facility dispenses only E85 fuel. Total gasoline throughput for the facility was calculated as 0.15 × (E85 Throughput). CARB Tool was used for risk screening based on the facility's most recent throughput data.

(F) Facility dispenses both gasoline and racing fuel. Total gasoline throughput for the facility was calculated assuming zero ORVR vehicles were fueled.

Chrome Platers

FAC. NO.	FACILITY NAME	ADDRESS	CITY	CANCER RISK (A)	CHRONIC HAZARD INDEX (B)
3505	SHERMS CUSTOM PLATING	2140 ACOMA ST	SACRAMENTO	0.03 (C)	<0.1 (C)
6868	BLACK DIAMOND BLADE CO., INC. DBA CHROME CRAFT	5950 88TH ST	SACRAMENTO	9.9 (C)	<0.1 (C)
6026	A & A ENTERPRISES, LLC	8290 ALPINE AVE	SACRAMENTO	(D)	(D)

(A) Cancer Risk is expressed as lifetime excess cancer risk in chances per million.
(B) Hazard Index (HI) is the ratio of the concentration to the reference exposure level. Note: while a chronic reference exposure level has been established for Hexavalent Chromium, an acute reference exposure level has not; therefore, only a chronic HI has been calculated here.
(C) Based on the maximum permitted throughput as evaluated during the permitting process.
(D) Plating operation does not use hexavalent chromium and was not evaluated in this Annual Report.

Diesel Internal Combustion Engines

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
3608	SUTTER HEALTH ATTN: FACILITIES	1726 28TH ST	SACRAMENTO	SITE SPECIFIC (D)	20.2	0.0
1342	MERCY GENERAL HOSPITAL	4001 J ST	SACRAMENTO	SITE SPECIFIC (D)	15.6	0.0
2802	MCCLELLAN BUSINESS PARK	3140 PEACEKEEPER WAY	MCCLELLAN	SITE SPECIFIC (D)	14.4	0.0
6816		2818 JAMES WY				
2066	VERIZON DATA SERVICES, INC	7901 FREEPORT BLVD	SACRAMENTO	SITE SPECIFIC (D)	13.8	0.0
644	COUNTY OF SAC DEPT OF GENERAL SERVICES	651 I ST	SACRAMENTO	SITE SPECIFIC (D)	11.1	0.0
3136	NTT GLOBAL DATA CENTERS AMERICAS, INC.	1200 STRIKER AVE	SACRAMENTO	SITE SPECIFIC	9.9	0.0
5286		1312 STRIKER AVE				
5937	ADVANCED CALL CENTER TECHNOLOGIES	5949 FAIR OAKS BLVD	CARMICHAEL	SHARP TOOL	9.6	0.0
2435	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	CAL EXPO PARKING	SACRAMENTO	SHARP TOOL	9.6	0.0
3180	COUNTY OF SACRAMENTO - DTECH	CLARKSVILLE RD	FOLSOM	SHARP TOOL	9.5	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
3530	COSUMNES FIRE DEPT	8545 SHELDON RD	ELK GROVE	SHARP TOOL	9.3	0.0
6630	DIGNITY HEALTH	4400 DUCKHORN DR	SACRAMENTO	SITE SPECIFIC	9.1	0.0
5018	SUNBRIDGE BRITTANY HEALTHCARE	3900 GARFIELD AVE	CARMICHAEL	SITE SPECIFIC	9.1	0.0
1183	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	GARDEN HWY/EL CENTRO	SACRAMENTO	SHARP TOOL	9.0	0.0
6819	SACRAMENTO HEALTHCARE INVESTORS LP DBA ADVANCED	1411 EXPO PARKWAY	SACRAMENTO	SITE SPECIFIC	8.9	0.0
2681	STATE OF CALIF DGS/OFS-PROGRAM SUPPORT ACCT. SECT.	9645 BUTTERFIELD WAY	SACRAMENTO	SHARP TOOL	8.8	0.0
6612	ATRIA EL CAMINO GARDENS	2426 GARFIELD AVE	CARMICHAEL	SHARP TOOL	8.6	0.0
1836	SAN JUAN WATER DISTRICT	BACON PUMP STATION	FOLSOM	SHARP TOOL	8.5	0.0
1486	THE HOME DEPOT #6620 - C/O 3E	8000 FOLSOM BLVD	SACRAMENTO	SHARP TOOL	8.4	0.0
1656	US GOVT GSA	650 CAPITOL MALL	SACRAMENTO	SHARP TOOL	8.4	0.0
5199	HOLIDAY INN	300 J ST	SACRAMENTO	SHARP TOOL	8.4	0.0
3173	COUNTY OF SAC DEPT OF GENERAL SERVICES	9250 BOND RD	SACRAMENTO	SHARP TOOL	8.3	0.0
3665	A/P PROCESSING CENTER CITY OF SACRAMENTO	3530 RIVERSIDE BLVD	SACRAMENTO	SHARP TOOL	8.2	0.0
750	CITRUS HEIGHTS IRRIGATION	6230 SYLVAN RD	CITRUS HEIGHTS	SHARP TOOL	8.2	0.0
2102	US GOVT FAA	11375 DOUGLAS RD	MATHER	SHARP TOOL	8.0	0.0
1922	HYATT REGENCY SACRAMENTO	1209 L ST	SACRAMENTO	SHARP TOOL	7.8	0.0
1271	HEALTH NET, INC	12033 FOUNDATION PLACE	RANCHO CORDOVA	SHARP TOOL	7.7	0.0
4409	CITY OF SACRAMENTO - GENERAL SERVICES	7399 SAN JOAQUIN ST	SACRAMENTO	SHARP TOOL	7.6	0.0
5908	TELEPACIFIC COMMUNICATIONS	1515 K ST, STE 100	SACRAMENTO	SITE SPECIFIC	7.5	0.0
1218	CITIZENS TELECOMMUNICATIONS COMPANY	11810 WASHINGTON AVE	COURTLAND	SHARP TOOL	7.5	0.0
5796	BUZZ OATES, LLC	10175 IRON ROCK	ELK GROVE	SHARP TOOL	7.4	0.0
1010	KAISER FOUN HOSP SOUTH	6600 BRUCEVILLE RD	SACRAMENTO	SITE SPECIFIC	7.4	0.0
2906	CITY OF FOLSOM	46 NATOMA ST	FOLSOM	SHARP TOOL	7.3	0.0
5541	MERCURY CASUALTY COMPANY	104 WOODMERE RD	FOLSOM	SHARP TOOL	7.3	0.0
3183	COUNTY OF SACRAMENTO - DTECH	7788 FREEPORT BLVD	SACRAMENTO	SHARP TOOL	7.2	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5734	BURLINGTON COAT FACTORY - ELK GROVE	9175 E. STOCKTON BLVD	ELK GROVE	SHARP TOOL	7.2	0.0
4699	COUNTY OF SAC DEPT OF GENERAL SERVICES	9601 KIEFER BLVD	SACRAMENTO	SITE SPECIFIC	7.2	0.0
2512	CALIFORNIA STATE UNIVERSITY, SACRAMENTO	6000 J ST (SAC STATE CAMPUS)	SACRAMENTO	SHARP TOOL	7.1	0.0
7113	UNIVERSITY TRANSPORTATION & PARKING SERVICES, CSUS					
7172	PRIME-US PARK TOWER, LLC C/O CUSHMAN & WAKEFIELD	980 9TH ST	SACRAMENTO	SHARP TOOL	7.0	0.0
5670	CALIFORNIA ISO	250 OUTCROPPING	FOLSOM	SITE SPECIFIC	7.0	0.0
6234	QTS SACRAMENTO, LLC	1100 N. MARKET BLVD	SACRAMENTO	SHARP TOOL	7.0	0.0
1794	FRYS ELECTRONICS	4100 NORTHGATE BLVD	SACRAMENTO	SHARP TOOL	6.9	0.0
1828	HOME DEPOT (C/O 3E COMPANY) #6649	3611 TRUXEL RD	SACRAMENTO	SHARP TOOL	6.9	0.0
1646	STATE OF CALIF DEPT OF GENERAL SVCS (PROPERTY MGT)	1516 9TH ST	SACRAMENTO	SHARP TOOL	6.9	0.0
2396	APPLE COMPUTER	2511 LAGUNA BLVD	ELK GROVE	SHARP TOOL	6.9	0.0
2944	CITY OF SACRAMENTO PW	828 I ST	SACRAMENTO	SHARP TOOL	6.9	0.0
3191	RALEYS	4061 GATEWAY PARK BLVD	SACRAMENTO	SHARP TOOL	6.8	0.0
1595	US GOVT GSA	801 I ST	SACRAMENTO	SHARP TOOL	6.6	0.0
5366	BUZZ OATES DEVELOPMENT, LP	5091 KELTON WAY	SACRAMENTO	SHARP TOOL	6.6	0.0
5192		5081 KELTON WAY				
2905	CITY OF FOLSOM	50 NATOMA ST	FOLSOM	SHARP TOOL	6.5	0.0
6565	SUSTAINABLE PAVEMENT TECHNOLOGIES	4291 BRADSHAW RD	SACRAMENTO	SITE SPECIFIC	6.4	0.0
3403	PACIFIC BELL DBA AT&T CA	98 MONTROSE DR	FOLSOM	SHARP TOOL	6.4	0.0
2212	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	12500 BRUCEVILLE RD	SACRAMENTO	SHARP TOOL	6.4	0.0
6989	CENTENE CORPORATION	10734 INTERNATIONAL DR	RANCHO CORDOVA	SHARP TOOL	6.4	0.0
2334	MANOR CARE	7807 UPLANDS WAY	CITRUS HEIGHTS	SHARP TOOL	6.4	0.0
2927	MCKESSON DATA CENTER	11000 TRADE CENTER DR	RANCHO CORDOVA	SHARP TOOL	6.3	0.0
3943	STATE OF CALIFORNIA GS	1615 CAPITOL AVE	SACRAMENTO	SHARP TOOL	6.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
2103	US GOVT DEPT OF VET AFFAIRS	10535 HOSPITAL WAY	MATHER	SHARP TOOL	6.3	0.0
4592	NEW CINGULAR WIRELESS PCS, LLC DBA AT&T MOBILITY	10030 GOETHE RD	SACRAMENTO	SHARP TOOL	6.2	0.0
2695	MERCY SAN JUAN HOSPITAL	6501 COYLE AVE	CARMICHAEL	SITE SPECIFIC	6.1	0.0
667	CITIZENS TELECOMMUNICATIONS COMPANY	6301 LAGUNA BLVD	ELK GROVE	SHARP TOOL	6.1	0.0
4107	AMERISOURCEBERGEN CORPORATION	1325 STRIKER AVE	SACRAMENTO	SITE SPECIFIC	6.0	0.0
3092	LOWES HIW INC	800 E BIDWELL ST	FOLSOM	SHARP TOOL	5.9	0.0
6021	SUTTER VALLEY MEDICAL FOUNDATION	8200 LAGUNA BLVD	ELK GROVE	SHARP TOOL	5.9	0.0
6229	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	2200 TANZANITE AVE	SACRAMENTO	SHARP TOOL	5.9	0.0
1547	COUNTY OF SAC DEPT OF GENERAL SERVICES	4800 BROADWAY	SACRAMENTO	SHARP TOOL	5.8	0.0
5625	PARK PLACE	1230 N ST	SACRAMENTO	SHARP TOOL	5.7	0.0
3841	CITY OF FOLSOM	70 CLARKSVILLE RD	FOLSOM	SHARP TOOL	5.7	0.0
6829	SHORENSTEIN REALTY SERVICES DBA US BANK TOWER	621 CAPITOL MALL	SACRAMENTO	SHARP TOOL	5.7	0.0
7073	HANCOCK S-REIT-SACRAMENTO LLC	400 CAPITOL MALL, STE 670	SACRAMENTO	SHARP TOOL	5.7	0.0
1095	COUNTY OF SACRAMENTO AIRPORT	6300 AVIATION DR	SACRAMENTO	SHARP TOOL	5.7	0.0
1602		6900 AIRPORT BLVD				
1643		6736 EARHART DR				
1973		6850 AIRPORT BLVD				
4666		5036 BAYOU WAY				
5699		6701 LINDBERGH DR				
5771		6725 LINDBERGH DR				
3107	SAC COUNTY WATER AGENCY	N MARKET BLVD	SACRAMENTO	SHARP TOOL	5.5	0.0
4103	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	8719 ANTELOPE NORTH RD	ANTELOPE	SHARP TOOL	5.5	0.0
4352	BRIDGEWAY TOWERS OWNER'S ASSOCIATION	500 N ST	SACRAMENTO	SHARP TOOL	5.5	0.0
1552	METHODIST HOSPITAL	7500 HOSPITAL DR	SACRAMENTO	SHARP TOOL	5.4	0.0
1826	HOME DEPOT (C/O 3E COMPANY) #0652	2756 SUNRISE BLVD	RANCHO CORDOVA	SHARP TOOL	5.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
867	COUNTY OF SAC DEPT OF GENERAL SERVICES	5510 GARFIELD AVE	SACRAMENTO	SHARP TOOL	5.3	0.0
6547	NEW LEGACY 555, LLC	555 CAPITOL MALL	SACRAMENTO	SITE SPECIFIC	5.3	0.0
928	US GOVT GSA	2800 COTTAGE WAY	SACRAMENTO	SHARP TOOL	5.2	0.0
2668	CAL PERS	400 P ST	SACRAMENTO	SHARP TOOL	5.1	0.0
4321		400 Q ST				
2387	HOME DEPOT #6675 - C/O 3E	2675 E BIDWELL ST	FOLSOM	SHARP TOOL	5.1	0.0
3182	COUNTY OF SACRAMENTO - DTECH	7399 SAN JOAQUIN ST	SACRAMENTO	SITE SPECIFIC	5.0	0.0
6131	ESKATON PROPERTIES INC DBA ESKATON CARE CTR GREENH	455 FLORIN RD	SACRAMENTO	SITE SPECIFIC	5.0	0.0
6783	AMAZON.COM SERVICES, LLC (FACILITY SMF1)	4900 W ELKHORN BLVD	SACRAMENTO	SHARP TOOL	5.0	0.0
2515	MCI WORLDCOM	20TH & C ST	SACRAMENTO	SHARP TOOL	4.9	0.0
5581	ELK GROVE SCHOOL DISTRICT	13580 JACKSON RD	SLOUGHHOUSE	SITE SPECIFIC	4.9	0.0
1028	KXTV CHANNEL 10	400 BROADWAY	SACRAMENTO	SITE SPECIFIC	4.8	0.0
5841	CALIFORNIA AMERICAN WATER CO.	8324 FINTOWN CT	SACRAMENTO	SHARP TOOL	4.8	0.0
6327	RECLAMATION DISTRICT NO 556	15540 ANDRUS ISLAND RD	ISLETON	SHARP TOOL	4.8	0.0
6551	SUTTER VALLEY MEDICAL FOUNDATION	3161 L ST	SACRAMENTO	SHARP TOOL	4.8	0.0
1362	MERCY HOSPITAL FOLSOM	1650 CREEKSIDE DR	FOLSOM	SHARP TOOL	4.8	0.0
3704	FOLSOM SURGICAL CENTER	1651 CREEKSIDE DR. #100	FOLSOM	SHARP TOOL	4.8	0.0
6345	KMS BUSINESS PARK OWNERS ASSOC	171 ENTERPRISE CT, #1	GALT	SHARP TOOL	4.8	0.0
6346		120 ENTERPRISE CT				
4737	COUNTY OF SACRAMENTO - DTECH	9250 BOND RD	SACRAMENTO	SHARP TOOL	4.7	0.0
6797	MAXIMUS	11050 OLSON DR	RANCHO CORDOVA	SHARP TOOL	4.7	0.0
3171	SAC COUNTY WATER AGENCY	9560 BAY POINT WY	ELK GROVE	SHARP TOOL	4.7	0.0
348	SACRAMENTO REG. COUNTY SANITATION DISTRICT	NORTHROP AVE WESTEND	SACRAMENTO	SHARP TOOL	4.6	0.0
5003	CALIFORNIA OFFICE OF EMERGENCY SERVICES - PSC	111 BERCUT DR	SACRAMENTO	SHARP TOOL	4.6	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
1613	STATE OF CALIF DEPT OF GENERAL SVCS (PROPERTY MGT)	901 P ST	SACRAMENTO	SHARP TOOL	4.6	0.0
6632	PRIME DATA CENTERS DBA SVO BUILDING ONE LLC	2407 AK ST	MCCLELLAN	SITE SPECIFIC	4.6	0.0
7329	DPNP LLC	2721 CITRUS RD STE C	RANCHO CORDOVA	SHARP TOOL	4.6	0.0
3916	CATHEDRAL OFFICE BLDG	1100 J ST STE A	SACRAMENTO	SHARP TOOL	4.6	0.0
3413	SACRAMENTO REG. COUNTY SANITATION DIS-TRICT	8335 RIVER RD	SACRAMENTO	SHARP TOOL	4.5	0.0
5213	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	11922 ELK VIEW WAY	RANCHO CORDOVA	SITE SPECIFIC	4.5	0.0
6311	THE JACKSON LABORATORY, WEST	1650 SANTA ANA AVE	SACRAMENTO	SITE SPECIFIC	4.5	0.1
6919	BONNEVILLE INTERNATIONAL CORP	14751 WHITE ROCK RD	SACRAMENTO	SHARP TOOL	4.5	0.0
6011	CANNERY VENTURE L.P.	1651 ALHAMBRA BLVD	SACRAMENTO	SHARP TOOL	4.5	0.0
6467	6200 FRANKLIN LLC DBA CAPITAL COMMERCE CENTER	6200 FRANKLIN BLVD	SACRAMENTO	SHARP TOOL	4.5	0.0
7335	CFT NV DEVELOPMENTS, LLC	2730 BROADWAY	SACRAMENTO	SHARP TOOL	4.5	0.0
666	PACIFIC BELL DBA AT&T CA	1407 J ST	SACRAMENTO	SHARP TOOL	4.4	0.0
780	ARDEN FAIR ASSOCIATES	1689 ARDEN WAY	SACRAMENTO	SITE SPECIFIC	4.4	0.0
2680	CITY OF SACRAMENTO (C/O EOLA)	1001 I ST	SACRAMENTO	SITE SPECIFIC	4.3	0.0
2934	CARMICHAEL WATER DISTRICT	3501 BAJAMONT WAY	CARMICHAEL	SHARP TOOL	4.2	0.0
3987	SACRAMENTO SUBURBAN WATER DISTRICT	6649 WATT AVE	NORTH HIGHLANDS	SHARP TOOL	4.2	0.0
660	ROTUNDA PARTNERS	1201 K ST	SACRAMENTO	SHARP TOOL	4.2	0.0
2530	COUNTY OF SACRAMENTO MSA DWR DOMS	3112 KADEMA DR - D02	SACRAMENTO	SHARP TOOL	4.2	0.0
4169	FLORIN WATER DISTRICT	7330 FRENCH RD	SACRAMENTO	SHARP TOOL	4.1	0.0
4170	FLORIN WATER DISTRICT	7491 REESE RD	SACRAMENTO	SHARP TOOL	4.1	0.0
7328	24 STREET BINGO LLC	2350 FLORIN RD	SACRAMENTO	SHARP TOOL	4.1	0.0
3037	CITY OF SACRAMENTO PW	2812 MEADOWVIEW RD	SACRAMENTO	SHARP TOOL	4.1	0.0
6233	ELK GROVE SCHOOL DISTRICT	9721 DILLARD RD	WILTON	SITE SPECIFIC	4.1	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
6661	NATOMAS SENIOR LIVING COMMUNITIES DBA THE VILLAGE	2001 ROSE ARBOR DR	SACRAMENTO	SHARP TOOL	4.1	0.0
6628	WINCO FOODS LLC	2300 WATT AVE	SACRAMENTO	SITE SPECIFIC	4.1	0.0
5356	BANNON INVESTORS DBA NATOMAS GATEWAY TOWER	2020 W. EL CAMINO AVE	SACRAMENTO	SITE SPECIFIC	4.0	0.0
4115	CITY OF FOLSOM	194 RANDALL DR	FOLSOM	SHARP TOOL	4.0	0.0
4368	ACC NURSING HOME	7801 RUSH RIVER DR	SACRAMENTO	SHARP TOOL	4.0	0.0
3405	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	8121 FRANKLIN BL	SACRAMENTO	SHARP TOOL	3.9	0.0
5109	LOWES HIW INC	3251 ZINFANDEL DR	RANCHO CORDOVA	SHARP TOOL	3.9	0.0
6326	NTT GLOBAL DATA CENTERS AMERICAS, INC.	1625 NATIONAL DR	SACRAMENTO	SITE SPECIFIC	3.8	0.0
2091	US SPRINT	3065 GOLD CAMP DR	RANCHO CORDOVA	SHARP TOOL	3.8	0.0
4380	ALLIED AVIATION C/O SOUTHWEST AIRLINES	7330 EARHART DR	SACRAMENTO	SHARP TOOL	3.8	0.0
4774	BOX 509 RFD, LLC	6501 SYLVAN RD	CITRUS HEIGHTS	SHARP TOOL	3.8	0.0
3418	PACIFIC BELL DBA AT&T CA	12700 FOLSOM BL	SACRAMENTO	SHARP TOOL	3.7	0.0
2416	PACIFIC BELL DBA AT&T CA	8295 FRUITRIDGE RD	SACRAMENTO	SHARP TOOL	3.7	0.0
4236	SACRAMENTO METROPOLITAN FIRE DISTRICT	4727 KILZER AVENUE	SACRAMENTO	SHARP TOOL	3.7	0.0
6903	CITRUS HEIGHTS MEMORY CARE DEVELOP-MENT, LLC DBA TH	6825 SUNRISE BLVD	CITRUS HEIGHTS	SHARP TOOL	3.7	0.0
1494	PACIFIC BELL DBA AT&T CA	3333 BRADSHAW RD	SACRAMENTO	SHARP TOOL	3.7	0.0
1263	PACIFIC BELL DBA AT&T CA	2700 WATT AVE	SACRAMENTO	SITE SPECIFIC	3.6	0.0
4764	AIRGAS USA, LLC -- WEST DIVISION	6801 FLORIN PERKINS RD	SACRAMENTO	SHARP TOOL	3.6	0.0
1190	FRANKLIN RESOURCES	3310 QUALITY DR	RANCHO CORDOVA	SHARP TOOL	3.6	0.0
1053		3355 DATA DR				
1758		3343 CAPITOL CENTER				
1981		3344 QUALITY DR				
1278		3366 QUALITY DR				
101	FOLSOM STATE PRISON	FOLSOM PRISON	REPRESA	SITE SPECIFIC	3.6	0.0
4164		300 PRISON RD				

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
654	STATE OF CALIF PRISON SAC	FACILTIY A	REPRESA	SITE SPECIFIC	3.6	0.0
4322		100 PRISON RD., FAC A MHCB				
5276	COUNTY OF SAC DEPT OF GENERAL SERVICES	9660 ECOLOGY LN	SACRAMENTO	SHARP TOOL	3.5	0.0
5367	BUZZ OATES DEVELOPMENT, LP	4592 FLORIN PERKINS RD	SACRAMENTO	SHARP TOOL	3.5	0.0
6380	SACRAMENTO AREA SEWER DISTRICT (SASD)	9180 MADISON AVE	ORANGEVALE	SHARP TOOL	3.5	0.0
2586	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	3.5	0.0
7038	300 CAPITOL MALL INVESTORS, LP	300 CAPITOL MALL	SACRAMENTO	SITE SPECIFIC	3.5	0.0
6381	SACRAMENTO AREA SEWER DISTRICT (SASD)	5509 55TH ST	SACRAMENTO	SHARP TOOL	3.5	0.0
1179	SUREWEST TELEPHONE	7656 OLD AUBURN BLVD	CITRUS HEIGHTS	SHARP TOOL	3.5	0.0
6235	FORT SUTTER SURGERY CENTER, LP	2801 K ST	SACRAMENTO	SHARP TOOL	3.5	0.0
4425	JC PENNEY C/O PROFESSIONAL SERVICE INDUSTRIES	6100 SUNRISE BLVD	CITRUS HEIGHTS	SHARP TOOL	3.4	0.0
2901	COUNTY OF SACRAMENTO MATHER AIRPORT	10321 TRUEMPER WAY	MATHER	SHARP TOOL	3.4	0.0
5756	SACRAMENTO AREA SEWER DIST DBA SAILOR BAR PARK PUM	8232 OLIVE AVE	FAIR OAKS	SHARP TOOL	3.4	0.0
6623	NIDEC MOTOR CORPORATION DBA MOTION CONTROL ENGINEE	11380 WHITE ROCK RD	RANCHO CORDOVA	SHARP TOOL	3.4	0.0
1648	STATE OF CALIFORNIA - RESD-BPM	751 N ST	SACRAMENTO	SHARP TOOL	3.4	0.0
1698		801 CAPITOL MALL				
1699		721 CAPITOL MALL				
1649		800 CAPITOL MALL				
3015	LANSET AMERICA CORP	10321 PLACER LN	SACRAMENTO	SHARP TOOL	3.3	0.0
3482	US COAST GUARD AIR STATION	6037 PRICE AVE	MCCLELLAN	SHARP TOOL	3.3	0.0
5965	SACRAMENTO METROPOLITAN FIRE DISTRICT	10545 ARMSTRONG AVE	MATHER	SHARP TOOL	3.3	0.0
6456	CATHEDRAL PIONEER CHURCH HOME II	415 P ST	SACRAMENTO	SITE SPECIFIC	3.3	0.3
6970	SENATOR SEAGATE, LP	1121 L ST STE 204	SACRAMENTO	SITE SPECIFIC	3.3	0.0
4638	SAC COUNTY WATER AGENCY	10325 WILDHAWK DR	SACRAMENTO	SHARP TOOL	3.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
3040	VISION SERVICE PLAN	3333 QUALITY DR -MS422	RANCHO CORDOVA	SHARP TOOL	3.3	0.0
2752		10845 INTERNATIONAL DR				
758	CITIZENS TELECOMMUNICATIONS COMPANY	8985 ELK GROVE BLVD	ELK GROVE	SHARP TOOL	3.2	0.0
2569	RANCHO MURIETA COMMUNITY SERVICES DIST	15160 JACKSON RD	RANCHO MURIETA	SHARP TOOL	3.2	0.0
2031	STATE OF CALIF DEPT OF GEN. SERVICES	1300 I ST	SACRAMENTO	SHARP TOOL	3.2	0.0
4537	COUNTY OF SACRAMENTO MSA DWR DOMS	4401 BAYOU RD	SACRAMENTO	SHARP TOOL	3.2	0.0
5525	CALIFORNIA SHOCK TRAUMA AIR RESCUE DBA CALSTAR	4933 BAILEY LOOP	MCCLELLAN	SHARP TOOL	3.2	0.0
3894	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	600 LEISURE LN	SACRAMENTO	SHARP TOOL	3.1	0.0
4363	FEDEX GROUND PACKAGE SYSTEM, INC.	8200 ELDER CREEK RD	SACRAMENTO	SHARP TOOL	3.1	0.0
4190	CATTIN DEVELOPMENT, LLC/ DBA: MAXIMUS	625 COOLIDGE DR	FOLSOM	SHARP TOOL	3.1	0.0
4806	VERIZON WIRELESS	14400 ANDRUS ISLAND RD	WALNUT GROVE	SHARP TOOL	3.1	0.0
5351	QUEST COMMUNICATIONS	4235 FORCUM AVE	MCCLELLAN	SHARP TOOL	3.1	0.0
5583	COUNTY OF SACRAMENTO - DTECH	10059 TWIN CITIES RD	GALT	SHARP TOOL	3.0	0.0
1882	STATE OF CALIF DEPT OF JUSTICE	4949 BROADWAY	SACRAMENTO	SHARP TOOL	3.0	0.0
5900	CALIFORNIA FAMILY FITNESS	8680 GREENBACK LN	ORANGEVALE	SHARP TOOL	3.0	0.0
7010	GOLD TAILINGS INVESTMENTS LLC	10815 GOLD CENTER DRIVE	RANCHO CORDOVA	SHARP TOOL	3.0	0.0
2096	MACYS WEST	6000 SUNRISE BLVD	CITRUS HEIGHTS	SHARP TOOL	3.0	0.0
5500	SACRAMENTO AREA SEWER DISTRICT DBA WALNUT GROVE PU	0 WHYSE LN	WALNUT GROVE	SHARP TOOL	3.0	0.0
6720	GPT PROPERTIES TRUST DBA THE RMP GROUP LLC	801 K ST	SACRAMENTO	SITE SPECIFIC	3.0	0.0
2818	AKT CORPORATION, 118	1 CAPITOL MALL	SACRAMENTO	SHARP TOOL	2.9	0.0
2335	ENTERCOM SACRAMENTO	5831 ROSEBUD LN	SACRAMENTO	SHARP TOOL	2.9	0.0
2626	STATE OF CALIF DMV	2415 1ST AVE	SACRAMENTO	SITE SPECIFIC	2.9	0.0
6383	SACRAMENTO AREA SEWER DISTRICT (SASD)	11728 CHRYSANTHY BLVD	RANCHO CORDOVA	SHARP TOOL	2.9	0.0
6382	SACRAMENTO AREA SEWER DISTRICT (SASD)	10010 ATKINS DR	ELK GROVE	SHARP TOOL	2.9	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
6860	ELK GROVE MSL, LLC DBA COMMONS AT ELK GROVE	9564 SABRINA LN	ELK GROVE	SHARP TOOL	2.9	0.0
1781	KAISER HOSPITAL	1650 RESPONSE RD	SACRAMENTO	SHARP TOOL	2.9	0.0
7091	CALIFORNIA AMERICAN WATER CO.	6540 VERNACE WAY	SACRAMENTO	SHARP TOOL	2.9	0.0
881	COUNTY OF SAC DEPT OF GENERAL SERVICES	2150 STOCKTON BLVD	SACRAMENTO	SHARP TOOL	2.9	0.0
2795	SAC COUNTY WATER AGENCY	10140 CALVINE RD	SACRAMENTO	SHARP TOOL	2.8	0.0
2994	QWEST COMMUNICATIONS CORP DBA CENTRUY LINK	3040 GOLD CAMP DR	RANCHO CORDOVA	SHARP TOOL	2.8	0.0
6008	SCHOOLS FINANCIAL CREDIT UNION	6000 MAIN AVE	ORANGEVALE	SITE SPECIFIC	2.8	0.0
6792	CITY OF FOLSOM FIRE DEPARTMENT	2139 RITCHIE ST	FOLSOM	SITE SPECIFIC	2.8	0.0
4694	AMPAC FINE CHEMICALS	HIGHWAY 50 AND HAZEL AVE	RANCHO CORDOVA	SHARP TOOL	2.8	0.0
477	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	7522 POCKET RD	SACRAMENTO	SHARP TOOL	2.8	0.0
4556	THE HOME DEPOT #6966 C/O 3E COMPANY	2000 HOWE AVE	SACRAMENTO	SHARP TOOL	2.8	0.0
1873	RANCHO MURIETA COMMUNITY SERVICES DIST	MAIN LIFT NO	RANCHO MURIETA	SHARP TOOL	2.7	0.0
3825	COUNTY OF SAC DEPT OF GENERAL SERVICES	3700 BRANCH CENTER RD	SACRAMENTO	SHARP TOOL	2.7	0.0
3138	FAIR OAKS WATER DISTRICT	10317 FAIR OAKS BLVD	FAIR OAKS	SHARP TOOL	2.7	0.0
6696	CVICH SACRAMENTO II	8670 FRUITRIDGE RD	SACRAMENTO	SHARP TOOL	2.7	0.0
2357	KAISER FOUN HOSP SOUTH	6601 WYNDHAM DR	SACRAMENTO	SHARP TOOL	2.7	0.0
2741	CITY OF SACRAMENTO PW	5303 FRANKLIN BLVD	SACRAMENTO	SHARP TOOL	2.7	0.0
4378	U.S. DEPT OF INTERIOR, BUREAU OF RECLAMATION	7794 FOLSOM DAM RD	FOLSOM	SHARP TOOL	2.7	0.0
6907	DCPIII-SAC-11085 SUN CENTER DR, LLC	11085 SUN CENTER DR.	RANCHO CORDOVA	SITE SPECIFIC	2.6	0.0
1221	CPC HERITAGE OAKS HOSP	4250 AUBURN BLVD	SACRAMENTO	SHARP TOOL	2.6	0.0
3529	UNION PACIFIC RAILROAD	401 I ST	SACRAMENTO	SHARP TOOL	2.6	0.0
5343	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	WILSON RD PUMP STATION	COURTLAND	SHARP TOOL	2.6	0.0
7366	1415 MERIDIAN PLAZA INVESTORS, LP	1415 L ST	SACRAMENTO	SHARP TOOL	2.6	0.0
4017	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	2200 ROSE ARBOR LN	SACRAMENTO	SHARP TOOL	2.6	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
4893	COUNTY OF SAC DEPT OF GENERAL SERVICES	4001 BRANCH CENTER RD	SACRAMENTO	SITE SPECIFIC	2.6	0.0
3863	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	BANNISTER RD	SACRAMENTO	SITE SPECIFIC	2.5	0.0
6469	STATE STREET CORPORATION	2495 NATOMAS PARK DR	SACRAMENTO	SITE SPECIFIC	2.5	0.0
7090	CALIFORNIA AMERICAN WATER CO.	6660 46TH ST	SACRAMENTO	SHARP TOOL	2.5	0.0
3526	PACIFIC BELL DBA AT&T CA	1115 P ST	SACRAMENTO	SHARP TOOL	2.5	0.0
5007	C & S WHOLESALE GROCERS	8301 FRUITRIDGE RD	SACRAMENTO	SITE SPECIFIC	2.5	0.0
3491	STATE OF CA - DGS/BPM	1500 11TH ST	SACRAMENTO	SHARP TOOL	2.5	0.0
5412	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	10060 GOETHE RD	SACRAMENTO	SHARP TOOL	2.5	0.0
1831	HOME DEPOT (C/O 3E COMPANY)	4641 FLORIN RD	SACRAMENTO	SHARP TOOL	2.4	0.0
2213	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	3615 AUBURN BLVD	SACRAMENTO	SHARP TOOL	2.4	0.0
1212	PACIFIC BELL DBA AT&T CA	3809 FLORIN RD	SACRAMENTO	SHARP TOOL	2.4	0.0
6857	MNCVAD II-OFC 770 L STREET CA LLC	770 L ST ST	SACRAMENTO	SHARP TOOL	2.4	0.0
2745	CITY OF SACRAMENTO PW	5730 24TH ST	SACRAMENTO	SHARP TOOL	2.4	0.0
5747	GPT PROPERTIES TRUST C/O REIT MANAGEMENT & RESEARC	915 L ST, STE 1420	SACRAMENTO	SHARP TOOL	2.4	0.0
3998	SACRAMENTO SUBURBAN WATER DISTRICT	1000 RIVER WALKWAY	CARMICHAEL	SHARP TOOL	2.4	0.0
6443	VERIZON WIRELESS	1415 47TH AVE	SACRAMENTO	SHARP TOOL	2.3	0.0
6049	1325 J STREET, LLC	1325 J ST	SACRAMENTO	SHARP TOOL	2.3	0.0
2035	CITY OF GALT	10059 TWIN CITIES RD	GALT	SHARP TOOL	2.3	0.0
5810	ELK GROVE RETIREMENT RESIDENCE LP	8476 SHELDON RD	ELK GROVE	SHARP TOOL	2.3	0.0
5977	HILTON ARDEN WEST	2200 HARVARD ST	SACRAMENTO	SITE SPECIFIC	2.3	0.0
1830	SACRAMENTO AREA FLOOD	5334 EAST LEVEE RD	SACRAMENTO	SHARP TOOL	2.3	0.0
2502	METHODIST HOSPITAL	8151 BRUCEVILLE RD	SACRAMENTO	SHARP TOOL	2.3	0.0
4283	SACRAMENTO REG. COUNTY SANITATION DISTRICT	AUBURN BLVD/VAN MAREN	CITRUS HEIGHTS	SHARP TOOL	2.3	0.0
6918	BONNEVILLE INTERNATIONAL CORP	12610 RISING RD	WILTON	SHARP TOOL	2.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
3889	DEPT OF TRANSPORTATION DIVISION OF ENGINEERING SER	1801 30TH ST	SACRAMENTO	SHARP TOOL	2.3	0.0
5052	FIRST COVENANT CHURCH	10933 PROGRESS CT	RANCHO CORDOVA	SHARP TOOL	2.3	0.0
5264	ROYAL ELECTRIC CORP FACILITY	8481 CARBIDE CT	SACRAMENTO	SHARP TOOL	2.3	0.0
3137	FAIR OAKS WATER DISTRICT	5005 SKYWAY DR	FAIR OAKS	SHARP TOOL	2.2	0.0
871	SAC COUNTY WATER AGENCY	8246 WATERMAN RD	ELK GROVE	SHARP TOOL	2.2	0.0
5588	SUNRISE SENIOR LIVING OF CARMICHAEL	5451 FAIR OAKS BLVD	CARMICHAEL	SHARP TOOL	2.2	0.0
6782	REGAL CINEMAS, INC	8136 DELTA SHORES CIR SOUTH	SACRAMENTO	SITE SPECIFIC	2.2	0.0
5324	KAISER PERMANENTE	285 PALLADIO PARKWAY	FOLSOM	SHARP TOOL	2.2	0.0
5375	AMERICAN MEDICAL RESPONSE	1041 FEE DR.	SACRAMENTO	SHARP TOOL	2.2	0.0
6043	COUNTY OF SAC DEPT OF GENERAL SERVICES	4000 BRADSHAW RD	SACRAMENTO	SHARP TOOL	2.2	0.0
676	PACIFIC BELL DBA AT&T CA	2216 STOCKTON BLVD	SACRAMENTO	SHARP TOOL	2.1	0.0
3525	PACIFIC BELL DBA AT&T CA	2594 RIO LINDA BLVD	SACRAMENTO	SHARP TOOL	2.1	0.0
3993	SACRAMENTO SUBURBAN WATER DISTRICT	917 ENTERPRISE DR	SACRAMENTO	SHARP TOOL	2.1	0.0
6414	ARCH U.S. MI SERVICES INC.	11050 WHITE ROCK RD	RANCHO CORDOVA	SHARP TOOL	2.1	0.0
3455	SCHETTER ELECTRIC	471 BANNON ST	SACRAMENTO	SHARP TOOL	2.1	0.0
5112	SACRAMENTO REGIONAL FIRE/EMS COMMUNI-CATION CENTER	10230 SYSTEMS PKWY	SACRAMENTO	SHARP TOOL	2.1	0.0
5273	COUNTY OF SAC DEPT OF GENERAL SERVICES	3839 BRADSHAW RD	SACRAMENTO	SHARP TOOL	2.1	0.0
4358	CITY OF FOLSOM	756 LORENA LN	FOLSOM	SHARP TOOL	2.1	0.0
4838	COMCAST - PERKINS HUB SITE	2175 PERKINS WAY	SACRAMENTO	SITE SPECIFIC	2.0	0.0
2616	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	5701 ELVAS AVE	SACRAMENTO	SHARP TOOL	2.0	0.0
5046	VERIZON WIRELESS	151 COMMERCE CIRCLE	SACRAMENTO	SHARP TOOL	2.0	0.0
4453	SACRAMENTO REG. COUNTY SANITATION DISTRICT	8150 FRUITRIDGE RD	SACRAMENTO	SHARP TOOL	2.0	0.0
4911	LEVEL 3 COMMUNICATIONS	1005 NORTH B ST	SACRAMENTO	SHARP TOOL	2.0	0.0
6354	ENTERCOM SACRAMENTO	719 NORTH MARKET	SACRAMENTO	SHARP TOOL	2.0	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5056	ASTORIA OWNERS ASSOCIATION C/O TRIDENT PROP MGMT	2580 W. EL CAMINO AVE	SACRAMENTO	SHARP TOOL	2.0	0.0
3860	LOWES HIW INC	6199 SUNRISE BLVD	CITRUS HEIGHTS	SHARP TOOL	2.0	0.0
2027	MACYS WEST	1701 ARDEN WAY	SACRAMENTO	SHARP TOOL	2.0	0.0
5725	SANITATION DISTRICTS AGENCY	5026 DON JULIO BLVD	SACRAMENTO	SITE SPECIFIC	2.0	0.0
1495	SPRINT	3433 RAMONA AVE	SACRAMENTO	SHARP TOOL	2.0	0.0
3574	AGILENT TECHNOLOGIES, INC - REGULATORY FEE #131814	91 BLUE RAVINE RD	FOLSOM	SHARP TOOL	2.0	0.0
1993	JC PENNEY C/O PROFESSIONAL SERVICE INDUSTRIES	1695 ARDEN WAY	SACRAMENTO	SHARP TOOL	1.9	0.0
5497	BROADSTONE LAND LLC (DBA TRI PROPERTIES)	340 PALLADIO PARKWAY	FOLSOM	SHARP TOOL	1.9	0.0
5492	XO COMMUNICATIONS	770 L ST	SACRAMENTO	SHARP TOOL	1.9	0.0
7019	NBC UNIVERSAL, LLC	500 MEDIA PL	SACRAMENTO	SHARP TOOL	1.9	0.0
2258	MCI WORLDCOM	2991 GOLD CANAL DR	RANCHO CORDOVA	SHARP TOOL	1.9	0.0
4461	ELK GROVE WATER SERVICE	9715 RAILROAD ST	ELK GROVE	SHARP TOOL	1.9	0.0
5623	ALLDATA, LLC	9650 W TARON DR	ELK GROVE	SHARP TOOL	1.9	0.0
2062	PACIFIC BELL DBA AT&T CA	553 C ST	GALT	SHARP TOOL	1.9	0.0
138	SMUD	6201 S ST	SACRAMENTO	SHARP TOOL	1.9	0.1
3096	455 CAPITOL MALL COMPLEX	455 CAPITOL MALL	SACRAMENTO	SHARP TOOL	1.9	0.0
5513	SACRAMENTO SUBURBAN WATER DISTRICT	1210 STEWART RD	SACRAMENTO	SHARP TOOL	1.9	0.0
6038	CARDINAL HEALTH 414, LLC	201 LATHROP WAY	SACRAMENTO	SHARP TOOL	1.9	0.0
6361	AMERICAN TOWER CORPORATION	606 W DELANO ST	ELVERTA	SHARP TOOL	1.9	0.0
964	PACIFIC BELL DBA AT&T CA	7931 CALIFORNIA AVE	SACRAMENTO	SHARP TOOL	1.8	0.0
5153	COUNTY OF SACRAMENTO	799 G ST	SACRAMENTO	SHARP TOOL	1.8	0.0
6104	PHILLIPS 66 COMPANY	76 BROADWAY	SACRAMENTO	SHARP TOOL	1.8	0.0
3729	EMBASSY SUITES HOTEL SACRAMENTO	100 CAPITOL MALL	SACRAMENTO	SHARP TOOL	1.8	0.0
6343	WORLDPAC	310 COMMERCE CIR	SACRAMENTO	SHARP TOOL	1.8	0.0
6439	VIBRA HOSPITAL OF SACRAMENTO	330 MONTROSE DR	FOLSOM	SHARP TOOL	1.8	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
1947	A/P PROCESSING CENTER CITY OF SACRAMENTO	U ST/FRONT ST	SACRAMENTO	SHARP TOOL	1.8	0.0
5097	THE PEPSI BOTTLING GROUP	7550 REESE RD	SACRAMENTO	SHARP TOOL	1.8	0.0
5235	CAPITAL NEPHROLOGY	1111 EXPOSITION BLVD #300	SACRAMENTO	SITE SPECIFIC	1.8	0.0
6732	DOWNTOWN COMMONS COMMERCIAL OWNERS ASSOC	500 J ST	SACRAMENTO	SITE SPECIFIC	1.8	0.0
4560	UNITED STATIONERS SUPPLY COMPANY	5440 STATIONERS WAY	SACRAMENTO	SHARP TOOL	1.8	0.0
5370	CIM/ J STREET HOTEL SACRAMENTO INC.	1230 J ST	SACRAMENTO	SITE SPECIFIC	1.8	0.0
5916	COUNTY OF SAC, DEPT OF TRANSPORTATION OPERATIONS	GEORGIANA SLOUGH BRDG	WALNUT GROVE	SHARP TOOL	1.8	0.0
1557	STATE OF CALIF DGS/RESD/BPM	4949 BROADWAY	SACRAMENTO	SHARP TOOL	1.8	0.0
3942	SACRAMENTO SUBURBAN WATER DISTRICT	5331 WALNUT AVE	SACRAMENTO	SHARP TOOL	1.7	0.0
6805	CITY OF FOLSOM	354 PLACERVILLE RD	FOLSOM	SHARP TOOL	1.7	0.0
1523	SHRINERS HOSPITALS	2425 STOCKTON BLVD	SACRAMENTO	SITE SPECIFIC	1.7	0.0
6308	16TH & O GATEWAY	1510 16TH ST	SACRAMENTO	SHARP TOOL	1.7	0.0
5373	CARLTON CROWN PLAZA	1071 FULTON AVE	SACRAMENTO	SHARP TOOL	1.7	0.0
5493		1075 FULTON AVE				
6610	POWER RIDGE OWNERS ASSOCIATION	8151 FRUITRIDGE RD	SACRAMENTO	SITE SPECIFIC	1.7	0.0
7065	TOOR PCC, LLC	10929 DISK DR	RANCHO CORDOVA	SHARP TOOL	1.7	0.0
2995	PACIFIC BELL DBA AT&T CA	BORDEN RD & HERALD RD	HERALD	SHARP TOOL	1.7	0.0
3823	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	10740 BEAR HOLLOW DR	SACRAMENTO	SHARP TOOL	1.7	0.0
5660	CITY OF CITRUS HEIGHTS DBA CITRUS HEIGHTS COMM CTR	6300 FOUNTAIN SQ DR.	CITRUS HEIGHTS	SHARP TOOL	1.7	0.0
6003	TRANSTOWER, INC	14003 RIVER RD	WALNUT GROVE	SHARP TOOL	1.7	0.0
2195	CARDINAL HEALTH INC	3238 DWIGHT RD	ELK GROVE	SHARP TOOL	1.7	0.0
6309	MERCY SAN JUAN HOSPITAL	6660 COYLE AVE, STE 100	CARMICHAEL	SHARP TOOL	1.7	0.0
4124	PARATRANSIT, INC	2501 FLORIN RD	SACRAMENTO	SITE SPECIFIC	1.7	0.0
5348	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	7501 COLLEGE TOWN DR	SACRAMENTO	SHARP TOOL	1.7	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
2744	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	1391 35TH AVE	SACRAMENTO	SHARP TOOL	1.7	0.0
3897	ENTERCOM SACRAMENTO	2072 BROADSTONE PARKWAY	FOLSOM	SHARP TOOL	1.7	0.0
4268	CITY OF SACRAMENTO PW	5990 H ST	SACRAMENTO	SHARP TOOL	1.7	0.0
5554	RECOLOGY, INC.	8301 LUZON AVE	SACRAMENTO	SHARP TOOL	1.7	0.0
913	KAISER HOSPITAL	2025 MORSE AVE	SACRAMENTO	SITE SPECIFIC	1.6	0.0
1220	PACIFIC BELL DBA AT&T CA	6441 CRAIGHURST DR	NORTH HIGHLANDS	SHARP TOOL	1.6	0.0
6079	CLEAR CHANNEL COMMUNICATIONS	1545 RIVER PARK DR, STE 500	SACRAMENTO	SHARP TOOL	1.6	0.0
6644	ADESA CALIFORNIA, LLC DBA ADESA BRASHER'S	6233 BLACKTOP RD	RIO LINDA	SHARP TOOL	1.6	0.0
6742	RC WILLEY SACRAMENTO DBA RC WILLEY	8340 DELTA SHORES CIR SOUTH	SACRAMENTO	SITE SPECIFIC	1.6	0.0
6880	FANEUIL, INC	5012 DUDLEY BLVD	MCCLELLAN PARK	SITE SPECIFIC	1.6	0.0
882	COUNTY OF SAC DEPT OF GENERAL SERVICES	12500 BRUCEVILLE RD	ELK GROVE	SHARP TOOL	1.6	0.0
4412	SACRAMENTO REG. COUNTY SANITATION DISTRICT	3350 AIRPORT RD	SACRAMENTO	SHARP TOOL	1.6	0.0
4695	CAL PERS	11086 SUN CENTER DR	RANCHO CORDOVA	SHARP TOOL	1.6	0.0
2722	CARMICHAEL WATER DISTRICT	DEWEY & WINDING WAY	CARMICHAEL	SHARP TOOL	1.6	0.0
2987	FOLSOM WATER TREATMENT PLANT	194 RANDALL DR	FOLSOM	SHARP TOOL	1.6	0.0
6300	CITY OF RANCHO CORDOVA	2897 KILGORE RD	RANCHO CORDOVA	SHARP TOOL	1.6	0.0
1644	STATE OF CALIF GS/OB&G	744 P ST	SACRAMENTO	SHARP TOOL	1.6	0.0
1824	CITIZENS TELECOMMUNICATIONS COMPANY	8224 ELK GROVE-FLORIN RD	ELK GROVE	SHARP TOOL	1.6	0.0
3666	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	1.6	0.0
1120	KAISER PERMANENTE	10725 INTERNATIONAL DR	SACRAMENTO	SITE SPECIFIC	1.6	0.0
4232	COUNTY OF SACRAMENTO, DEPT. OF GENERAL SERVICES	4000 BRANCH CENTER RD	SACRAMENTO	SHARP TOOL	1.6	0.0
2124	STATE OF CALIF CHP	2555 1ST AVE	SACRAMENTO	SHARP TOOL	1.5	0.0
6981	7405 GREENHAVEN, ACLP DBA CPM PROPERTY MGMT	7405 GREENHAVEN DR	SACRAMENTO	SHARP TOOL	1.5	0.0
7035	CAPSTONE REALTY INVESTMENTS, LLC	2440 GOLD RIVER RD	RANCHO CORDOVA	SHARP TOOL	1.5	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
6595	SAC COUNTY WATER AGENCY	1349 W. STRIKER AVE	SACRAMENTO	SITE SPECIFIC	1.5	0.0
4146	COUNTY OF SACTO EDUCATION	10474 MATHER BLVD	MATHER	SHARP TOOL	1.5	0.0
6018	CALIFORNIA AMERICAN WATER CO.	3450 REITH CT	SACRAMENTO	SHARP TOOL	1.5	0.0
4455	QUEST DIAGNOSTICS, INC.	3714 NORTHGATE BLVD	SACRAMENTO	SHARP TOOL	1.5	0.0
5464	CITY OF RANCHO CORDOVA	2729 PROSPECT PARK DR	RANCHO CORDOVA	SHARP TOOL	1.5	0.0
5740	SACRAMENTO METROPOLITAN FIRE DISTRICT	5824 KELLY WAY	MCCLELLAN	SHARP TOOL	1.5	0.0
5651	COUNTY OF SACRAMENTO - DTECH	7641 GREENBACK LN	CITRUS HEIGHTS	SITE SPECIFIC	1.5	0.0
1414	WELLS FARGO BANK CORP PROP GRP – BE 199038	3640 NORTHGATE BLVD	SACRAMENTO	SHARP TOOL	1.5	0.0
4112	COUNTY OF SAC DEPT OF GENERAL SERVICES	4600 BROADWAY	SACRAMENTO	SHARP TOOL	1.5	0.0
4242	HOME DEPOT (C/O 3E COMPANY)	6001 MADISON AVENUE	CARMICHAEL	SHARP TOOL	1.5	0.0
4297	CITY OF FOLSOM FIRE DEPARTMENT	535 GLENN DRIVE	FOLSOM	SHARP TOOL	1.5	0.0
5741	BENEFIT & RISK MANAGEMENT SERVICES (BRMS)	80 IRON POINT CIR, STE 200	FOLSOM	SHARP TOOL	1.5	0.0
1963	COSTCO WHOLESALE C/O BARGHAUSEN	11260 WHITE ROCK RD	RANCHO CORDOVA	SITE SPECIFIC	1.5	0.0
4042	STATE OF CALIFORNIA, DEPT OF FORESTRY, AMU	5509 PRICE AVE, BLDG 877	MCCLELLAN	SHARP TOOL	1.5	0.0
4116	CALIFORNIA TEACHERS ASSN	1118 10TH ST	SACRAMENTO	SHARP TOOL	1.5	0.0
4544	US SPRINT	1530 C ST	SACRAMENTO	SHARP TOOL	1.5	0.0
5507	SACRAMENTO SUBURBAN WATER DISTRICT	3312 EASTERN AVE	SACRAMENTO	SHARP TOOL	1.5	0.0
866	SAC COUNTY WATER AGENCY	DWIGHT RD	ELK GROVE	SHARP TOOL	1.4	0.0
3580	FEDERAL HOME LOAN BANK OF SAN FRAN-CISCO	11050 WHITE ROCK RD	RANCHO CORDOVA	SHARP TOOL	1.4	0.0
668	CITIZENS TELECOMMUNICATIONS COMPANY	11000 FREEMAN RD	WILTON	SHARP TOOL	1.4	0.0
4848	SAN JUAN WATER DISTRICT	110 HORN CT	FOLSOM	SHARP TOOL	1.4	0.0
3692	HOME DEPOT (C/O 3E COMPANY)	1461 MEADOWVIEW RD	SACRAMENTO	SHARP TOOL	1.4	0.0
6066	SUTTER HEALTH CORP.	7700 FOLSOM BLVD	SACRAMENTO	SHARP TOOL	1.4	0.0
6944	WELLTOWER COGIR TENANT LLC / STOCK RANCH RD	7418 STOCK RANCH RD	CITRUS HEIGHTS	SITE SPECIFIC	1.4	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
4306	CITY OF FOLSOM	2034 BRANDING IRON CT	FOLSOM	SHARP TOOL	1.4	0.0
5818	CALIFORNIA LOTTERY	700 N. 10TH ST	SACRAMENTO	SHARP TOOL	1.4	0.0
3908	SUREWEST	5411 LUCE AVE	MCCLELLAN	SHARP TOOL	1.4	0.0
1458	COUNTY OF SACRAMENTO, DEPT OF GENERAL SVCS	700 H ST	SACRAMENTO	SHARP TOOL	1.3	0.0
3990	SACRAMENTO SUBURBAN WATER DISTRICT	FAIRBAIRN DR & KARL DR	NORTH HIGHLANDS	SHARP TOOL	1.3	0.0
5996	CITY OF GALT	901 GOLDEN HEIGHTS DR	GALT	SHARP TOOL	1.3	0.0
6603	CITY OF SACRAMENTO	3101 MCKINLEY VILLAGE WY	SACRAMENTO	SHARP TOOL	1.3	0.0
958	CITY OF SACRAMENTO PW	1700 CHALLENGE WAY	SACRAMENTO	SHARP TOOL	1.3	0.0
1697	US GOVT FAA	5922 ROSEVILLE RD	NORTH HIGHLANDS	SHARP TOOL	1.3	0.0
3567	LOWES HIW INC	8369 POWER INN RD	ELK GROVE	SHARP TOOL	1.3	0.0
1471	PACIFIC BELL DBA AT&T CA	1423 J ST	SACRAMENTO	SHARP TOOL	1.3	0.0
2877	PACIFIC BELL DBA AT&T CA	710 L ST	SACRAMENTO	SHARP TOOL	1.3	0.0
3666	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	1.3	0.0
3989	SACRAMENTO SUBURBAN WATER DISTRICT	AUBURN BLVD & NORRIS AVE	SACRAMENTO	SHARP TOOL	1.3	0.0
6132	SMUD	9750 KIEFER BLVD	SACRAMENTO	SHARP TOOL	1.3	0.0
4625	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS		SHARP TOOL	1.3	0.0
6240	DEFENSE MICROELECTRONICS ACTIVITY	5584 PATROL B	MCCLELLAN	SHARP TOOL	1.3	0.0
5624	SAC COUNTY WATER AGENCY	10151 FLORIN RD	SACRAMENTO	SITE SPECIFIC	1.3	0.0
2038	CSU SACRAMENTO UNIV UNION	6000 J ST	SACRAMENTO	SHARP TOOL	1.2	0.0
3038	CITY OF SACRAMENTO PW	3550 MARYSVILLE BLVD	SACRAMENTO	SHARP TOOL	1.2	0.0
3838	CITY OF SACRAMENTO	VARIOUS LOCATION	SACRAMENTO	SHARP TOOL	1.2	0.0
4155	SUNRISE ASSISTED LIVING OF SACRAMENTO	345 MUNROE ST	SACRAMENTO	SHARP TOOL	1.2	0.0
2547	CALTRANS	3165 GOLD VALLEY DR	RANCHO CORDOVA	SHARP TOOL	1.2	0.0
700	COUNTY OF SAC DEPT OF GENERAL SERVICES	14049 BOYS RANCH RD	SLOUGHHOUSE	SHARP TOOL	1.2	0.0
4705	CITY OF SACRAMENTO	8117 RUSH RIVER DR	SACRAMENTO	SITE SPECIFIC	1.2	0.0
6643	BOYD SACRAMENTO GSA LLC	4330 WATT AVE	SACRAMENTO	SHARP TOOL	1.2	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
899	CITIZENS TELECOMMUNICATIONS COMPANY	7601 SHASTA AVE	ELK GROVE	SHARP TOOL	1.2	0.0
3538	STATE OF CALIFORNIA OES	3650 SCHRIEVER AVE	SACRAMENTO	SHARP TOOL	1.2	0.0
5861	SACRAMENTO AREA SEWER DIST	4806 DUDLEY BLVD	NORTH HIGHLANDS	SHARP TOOL	1.2	0.0
3666	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	1.2	0.0
5503	SACRAMENTO SUBURBAN WATER DISTRICT	GREAT VALLEY DR	ANTELOPE	SHARP TOOL	1.2	0.0
6458	CITY OF GALT	10065 LIVE OAK AVE	GALT	SITE SPECIFIC	1.2	0.0
3066	PACIFIC BELL DBA AT&T CA	4752 ARCO ARENA BLVD	SACRAMENTO	SHARP TOOL	1.2	0.0
4177	AT & T COMMUNICATIONS	603 S ST	SACRAMENTO	SHARP TOOL	1.2	0.0
1859	SACRAMENTO METROPOLITAN FIRE DISTRICT	2101 HURLEY WAY	SACRAMENTO	SHARP TOOL	1.2	0.0
4910	LEVEL 3 COMMUNICATIONS	13368 ALTA MESA RD	GALT	SHARP TOOL	1.2	0.0
5586	COUNTY OF SACRAMENTO - DTECH	15731 JACKSON RD	RANCHO MURIETA	SHARP TOOL	1.1	0.0
6353	NEW CINGULAR WIRELESS PCS, LLC DBA AT&T MOBILITY	8398 SHELDON RD	ELK GROVE	SHARP TOOL	1.1	0.0
6362	AMERICAN TOWER CORPORATION	719 N MARKET BLVD	SACRAMENTO	SHARP TOOL	1.1	0.0
2533	H.V. HOUSTON DEVELOPMENT DBA MARRIOT HOTEL	11211 POINT EAST DR	RANCHO CORDOVA	SHARP TOOL	1.1	0.0
7092	CALIFORNIA AMERICAN WATER CO.	3100 47TH ST	SACRAMENTO	SHARP TOOL	1.1	0.0
4615	GOLDEN STATE WATER COMPANY -- R1	3445 OSELOT WAY	RANCHO CORDOVA	SHARP TOOL	1.1	0.0
4625	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS		SITE SPECIFIC	1.1	0.0
6315	LEVEL 3 COMMUNICATIONS	1303 J ST	SACRAMENTO	SHARP TOOL	1.1	0.0
4611	THE GOLDEN 1 CREDIT UNION	8945 CAL CENTER DR	SACRAMENTO	SHARP TOOL	1.1	0.0
3129	UNION PACIFIC RAILROAD	ROSEVILLE RAIL YARD	ANTELOPE	SHARP TOOL	1.1	0.0
3431	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	181 PINEDALE AVE	SACRAMENTO	SHARP TOOL	1.1	0.0
5077	L STREET LOFTS, LLC C/O NETWORK COMMUNITY MGMT	1818 L ST	SACRAMENTO	SHARP TOOL	1.1	0.0
6614	REGIONAL TRANSIT	2811 O ST	SACRAMENTO	SITE SPECIFIC	1.1	0.0
3536	STATE OF CA, DEPT OF TECHNOLOGY SERVICES	3101 GOLD CAMP DR	RANCHO CORDOVA	SHARP TOOL	1.1	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
4410	CITY OF SACRAMENTO - GENERAL SERVICES	2152 RIO LINDA BLVD	SACRAMENTO	SHARP TOOL	1.1	0.0
5615	JUDICIAL COUNCIL OF CALIFORNIA	301 BICENTENNIAL CIR	SACRAMENTO	SHARP TOOL	1.1	0.0
6601	CORDOVA, LLC	10850 WHITE ROCK RD	RANCHO CORDOVA	SHARP TOOL	1.1	0.0
1871	STATE OF CALIF FISH & GAME-AMERICAN RIVER HATCHERY	2101 NIMBUS RD	RANCHO CORDOVA	SHARP TOOL	1.1	0.0
5259	500 CAPITOL MALL TOWER, LLC	500 CAPITOL MALL	SACRAMENTO	SHARP TOOL	1.1	0.0
3988	SACRAMENTO SUBURBAN WATER DISTRICT	2841 BELL ST	SACRAMENTO	SHARP TOOL	1.1	0.0
4427	CITY OF ELK GROVE – PUBLIC WORKS DRAINAGE	10000 BOBBELL DR	ELK GROVE	SHARP TOOL	1.1	0.0
4706	CITY OF SACRAMENTO	8054 TORRENTE WAY	SACRAMENTO	SHARP TOOL	1.1	0.0
4733	SAC COUNTY WATER AGENCY	DOUGLAS RD & SECURITY PK	RANCHO CORDOVA	SHARP TOOL	1.1	0.0
4625	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS		SHARP TOOL	1.1	0.0
5896	COUNTY OF SAC, DEPT OF GS	9630 CONSERVATION RD	SACRAMENTO	SHARP TOOL	1.1	0.0
1411	LEGISLATIVE COUNSEL BUREAU / LEGISLATIVE DATA CTR	1100 J ST #200	SACRAMENTO	SHARP TOOL	1.0	0.0
3590	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	7851 FREEPORT BLVD	SACRAMENTO	SHARP TOOL	1.0	0.0
6522	LEVEL 3 COMMUNICATIONS	12120 CONLEY RD	HERALD	SHARP TOOL	1.0	0.0
3717	SACRAMENTO REG. COUNTY SANITATION DISTRICT	1855 IRON POINT RD	FOLSOM	SHARP TOOL	1.0	0.0
6237	COPART, INC	8687 WEYAND AVE	SACRAMENTO	SHARP TOOL	1.0	0.0
5441	CITY OF SACRAMENTO	1510 STRIKER AVE	SACRAMENTO	SHARP TOOL	1.0	0.0
5613	JUDICIAL COUNCIL OF CALIFORNIA	9605 KIEFER BLVD	SACRAMENTO	SHARP TOOL	1.0	0.0
6452	SACRAMENTO FOOD BANK & FAMILY SERVICES	1951 BELL AVE	SACRAMENTO	SHARP TOOL	1.0	0.0
6585	OMNINET SACRAMENTO LLC	2000 EVERGREEN ST	SACRAMENTO	SITE SPECIFIC	1.0	0.0
2001	US GOVT GSA	501 I ST	SACRAMENTO	SHARP TOOL	1.0	0.0
4216	CITY OF FOLSOM	1979 BROADSTONE PKWY	FOLSOM	SHARP TOOL	1.0	0.0
5415	CITY OF SACRAMENTO	5642 66TH ST	SACRAMENTO	SHARP TOOL	1.0	0.0
3794	CENIC DBA UC DAVIS COMMUNICATIONS RESOURCES	1107 9TH ST	SACRAMENTO	SHARP TOOL	1.0	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
4704	CITY OF SACRAMENTO	3951 MACK RD	SACRAMENTO	SHARP TOOL	1.0	0.0
6946	CONDUENT STATE AND LOCAL SOLUTIONS INC.	10390 PETER A MCCUEN BLVD	RANCHO CORDOVA	SHARP TOOL	1.0	0.0
5053	LOCKE WATER WORKS CO.	13910 RIVER RD	WALNUT GROVE	SITE SPECIFIC	1.0	0.1
6835	RAINTREE REALTY II, LLC C/O BASIN STREET PRO	10951 WHITE ROCK RD	RANCHO CORDOVA	SHARP TOOL	1.0	0.0
6836		10911 WHITE ROCK RD				
6837		10877 WHITE ROCK RD				
6922	BRE DEPOT PARK, LLC	15 BUSINESS PARK WY	SACRAMENTO	SITE SPECIFIC	1.0	0.0
3666	CITY OF SAC., DEPT OF UTILITIES - ORG #3323	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	1.0	0.0
4388	SAC COUNTY WATER AGENCY	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	1.0	0.0
6559	EAST COMMERCE BUILDING A CLP	4450 E. COMMERCE WY	SACRAMENTO	SHARP TOOL	1.0	0.0
6745	CITY OF FOLSOM	2601 PRAIRIE CITY RD	FOLSOM	SITE SPECIFIC	1.0	0.0
7059	EGP DEA NORTH HIGHLANDS LLC.	4328 WATT AVE	SACRAMENTO	SHARP TOOL	1.0	0.0
6377	SG DOWNTOWN DBA SACRAMENTO DOWNTOWN PLAZA	445 DOWNTOWN PLAZA	SACRAMENTO	SITE SPECIFIC	1.0	0.0
4264	SAC COUNTY WATER AGENCY	7510 POPPY RIDGE RD	ELK GROVE	SHARP TOOL	0.9	0.0
2529	COUNTY OF SACRAMENTO MSA DWR DOMS	W END OF RAFAEL DR - D34	SACRAMENTO	SHARP TOOL	0.9	0.0
3684	CELLCO PARTNERSHIP	295 PARKSHORE DR	FOLSOM	SHARP TOOL	0.9	0.0
4087	PACIFIC BELL DBA AT&T CA	5951 MAIN AVE	ORANGEVALE	SHARP TOOL	0.9	0.0
4538	SAC COUNTY WATER AGENCY	4323 SUNRISE BLVD	RANCHO CORDOVA	SHARP TOOL	0.9	0.0
346	SACRAMENTO REG. COUNTY SANITATION DISTRICT	CHASE DR WEST END	RANCHO CORDOVA	SHARP TOOL	0.9	0.0
2918	PACIFIC BELL DBA AT&T CA	7100 STONE HOUSE RD	RANCHO MURIETA	SHARP TOOL	0.9	0.0
3838	CITY OF SACRAMENTO	VARIOUS LOCATION	SACRAMENTO	SHARP TOOL	0.9	0.0
4625	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS		SHARP TOOL	0.9	0.0
883	RANCHO MURIETA COMMUNITY SERVICES DIST	RIO OSO WTR BSTR STN	RANCHO MURIETA	SHARP TOOL	0.9	0.0
6188	WEST TARON HOLDINGS, LLC	9700 W. TARON DR	ELK GROVE	SHARP TOOL	0.9	0.0
7124	COUNTY OF SACRAMENTO MSA DWR DOMS	4969 MARLBOROUGH WAY	CARMICHAEL	SHARP TOOL	0.9	0.0
6017	SACRED HEART PARISH SCHOOL	856 39TH ST	SACRAMENTO	SITE SPECIFIC	0.9	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
1611	STATE OF CALIF OFF BLDG/G	915 CAPITOL MALL	SACRAMENTO	SHARP TOOL	0.9	0.0
1609		914 CAPITOL MALL				
3407	CITY OF SACRAMENTO PW	5770 FREEPORT	SACRAMENTO	SHARP TOOL	0.9	0.0
3193	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	TRUXEL RD	SACRAMENTO	SHARP TOOL	0.9	0.0
3991	SACRAMENTO SUBURBAN WATER DISTRICT	3848 BAINBRIDGE DR	NORTH HIGHLANDS	SHARP TOOL	0.9	0.0
4411	CITY OF SACRAMENTO - GENERAL SERVICES	1901 CLUB CENTER DR	SACRAMENTO	SHARP TOOL	0.9	0.0
4769	NEW CINGULAR WIRELESS PCS, LLC DBA AT&T MOBILITY	1750 HOWE AVE	SACRAMENTO	SHARP TOOL	0.9	0.0
1684	CITY OF SACRAMENTO PW	3301 MARTIN LUTHER KING	SACRAMENTO	SHARP TOOL	0.9	0.0
4528	SACRAMENTO FIRE STATION #5 C/O CITY OF SAC DGS	731 BROADWAY	SACRAMENTO	SHARP TOOL	0.9	0.0
6541	COMCAST OF SACRAMENTO	9055 LOCUST ST	ELK GROVE	SHARP TOOL	0.9	0.0
6568	LEVEL 3 COMMUNICATIONS	1107 9TH ST	SACRAMENTO	SHARP TOOL	0.9	0.0
3596	US GOVT FAA	4175 CONVAIR LINER RD	MATHER	SHARP TOOL	0.9	0.0
3667	CITY OF SAC., DEPT OF UTILITIES – ORG #3324	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.9	0.0
6917	FOLSOM ENDOSCOPY CENTER, LLC	1671 CREEKSIDE DR. STE 100	FOLSOM	SITE SPECIFIC	0.9	0.0
1184	CPC SIERRA VISTA HOSPITAL	8001 BRUCEVILLE RD	SACRAMENTO	SHARP TOOL	0.9	0.0
2688	STATE OF CA, DEPT OF TRANSPORTATION	1120 N ST	SACRAMENTO	SHARP TOOL	0.9	0.0
3733						
4214	VERIZON WIRELESS	8320 ESCHINGER RD	ELK GROVE	SHARP TOOL	0.9	0.0
5881	ENTERCOM SACRAMENTO	15125 WHITE ROCK RD	RANCHO CORDOVA	SHARP TOOL	0.9	0.0
6608	AGILENT TECHNOLOGIES, INC – REGULATORY FEE #131814	101 BLUE RAVINE RD	FOLSOM	SITE SPECIFIC	0.9	0.0
1683	CITY OF SACRAMENTO PW	6500 WYNDHAM DR	SACRAMENTO	SHARP TOOL	0.8	0.0
3691	HOME DEPOT (C/O 3E COMPANY)	9150 W. STOCKTON BLVD	ELK GROVE	SHARP TOOL	0.8	0.0
6497	GPT PROPERTIES TRUST DBA BUREAU OF AUTOMOTIVE REPA	10949 N. MATHER DR	RANCHO CORDOVA	SHARP TOOL	0.8	0.0
2475	DELTANET DBA DELTA DENTAL	3241 KILGORE RD	RANCHO CORDOVA	SHARP TOOL	0.8	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
3960	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.8	0.0
4225	RANCHO MURIETA COMMUNITY SERVICES DIST	7305 BERMUDA CT	RANCHO MURIETA	SHARP TOOL	0.8	0.0
3888	A/P PROCESSING CENTER CITY OF SACRAMENTO	300 FAIRBANKS AVE	SACRAMENTO	SHARP TOOL	0.8	0.0
5190	SUTTER GENERAL HOSPITAL	2725 CAPITOL AVE	SACRAMENTO	SITE SPECIFIC	0.8	0.0
5405	ESQUIRE TOWER, A DBA OF TSAKOPOULOS FAMILY LLC AND	1215 K ST	SACRAMENTO	SHARP TOOL	0.8	0.0
5431	VERIZON WIRELESS	6602 GUTHRIE ST	NORTH HIGHLANDS	SHARP TOOL	0.8	0.0
5891	SACRAMENTO FIRE STATION #5 C/O CITY OF SAC DGS	4201 EL CENTRO RD	SACRAMENTO	SHARP TOOL	0.8	0.0
6924	KIOXIA AMERICA, INC	35 IRON POINT RD	FOLSOM	SHARP TOOL	0.8	0.0
5304	MULTICULTURAL RADIO BROADCASTING	13051 KIEFER BLVD	SLOUGHHOUSE	SHARP TOOL	0.8	0.0
4685	COUNTY OF SACRAMENTO, DEPT. OF GENERAL SERVICES	3990 BRANCH CENTER RD	SACRAMENTO	SITE SPECIFIC	0.8	0.0
4748	VERIZON WIRELESS	9415 MADISON AVE	ORANGEVALE	SHARP TOOL	0.8	0.0
3100	CITY OF SACRAMENTO PW	624 Q ST	SACRAMENTO	SHARP TOOL	0.8	0.0
3982	SACRAMENTO SUBURBAN WATER DISTRICT	2736 AUBURN BLVD	SACRAMENTO	SHARP TOOL	0.8	0.0
5761	15TH &L INVESTORS, LLC DBA RESIDENCE INN BY MARRIOT	1121 15TH ST	SACRAMENTO	SITE SPECIFIC	0.8	0.0
1217	CITIZENS TELECOMMUNICATIONS COMPANY	7850 AMHERST ST	ELK GROVE	SHARP TOOL	0.8	0.0
1755	WELLS FARGO BANK CORP PROP GRP – BE 193002	2125 BUTANO DR	SACRAMENTO	SHARP TOOL	0.8	0.0
1872	RANCHO MURIETA COMMUNITY SERVICES DIST	REYNOSA DR	RANCHO MURIETA	SHARP TOOL	0.8	0.0
4899	FAIR OAKS WATER DISTRICT	7601 HEATHER RD	FAIR OAKS	SHARP TOOL	0.8	0.0
6433	IRON MOUNTAIN	8150 SIGNAL CT	SACRAMENTO	SITE SPECIFIC	0.8	0.0
6964	COSUMNES COMMUNITY SERVICES DISTRICT	8820 ELK GROVE BLVD	ELK GROVE	SITE SPECIFIC	0.8	0.0
3417	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	NATOMAS/N PARK DR	SACRAMENTO	SHARP TOOL	0.8	0.0
6849	NMC SOUTHGATE PLAZA, LLC	4424 FLORIN RD	SACRAMENTO	SITE SPECIFIC	0.8	0.1
5582	WALMART STORE 02735 C/O APTIM LICENSING SUPPORT	6051 FLORIN RD	SACRAMENTO	SHARP TOOL	0.8	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5753	STATE OF CALIFORNIA EMS AUTHORITY	10161 CROYDON WAY, #2	SACRAMENTO	SITE SPECIFIC	0.8	0.0
3910	SUREWEST	3278 NORTHGATE BLVD	SACRAMENTO	SHARP TOOL	0.7	0.0
4778	VERIZON WIRELESS	11680 KESTREL LAKE RD	ELK GROVE	SHARP TOOL	0.7	0.0
5614	JUDICIAL COUNCIL OF CALIFORNIA	720 9TH ST	SACRAMENTO	SHARP TOOL	0.7	0.0
2513	COUNTY OF SACRAMENTO	12500 BRUCEVILLE RD	ELK GROVE	SHARP TOOL	0.7	0.0
2811	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	CREST DR (SW OF DANBROOK)	SACRAMENTO	SHARP TOOL	0.7	0.0
3194	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	7788 FREEPORT BLVD	SACRAMENTO	SHARP TOOL	0.7	0.0
3262	CHANNEL 40	4655 FRUITRIDGE RD	SACRAMENTO	SHARP TOOL	0.7	0.0
3874	QWEST COMMUNICATIONS CORP DBA CENTRUY LINK	770 L ST	SACRAMENTO	SHARP TOOL	0.7	0.0
6473	CITY OF RANCHO CORDOVA	BEAR HOLLOW DR & N. MATHER	RANCHO CORDOVA	SHARP TOOL	0.7	0.0
7018	CENTRAL J STREET LLC	1201 J ST	SACRAMENTO	SITE SPECIFIC	0.7	0.0
3019	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	REGENCY CIR & HONOR PRKWY	SACRAMENTO	SHARP TOOL	0.7	0.0
5173	VERIZON WIRELESS	5424 LEMON HILL AVE	SACRAMENTO	SHARP TOOL	0.7	0.0
7088	CALIFORNIA AMERICAN WATER CO.	6300 41ST ST	SACRAMENTO	SHARP TOOL	0.7	0.0
3508	SUREWEST	5115 ARNOLD AV	MCCLELLAN	SHARP TOOL	0.7	0.0
6144	CITY OF SACRAMENTO	700 7TH ST	SACRAMENTO	SHARP TOOL	0.7	0.0
5328	BLOODSOURCE -- SACRAMENTO	10585 ARMSTRONG AVE	MATHER	SHARP TOOL	0.7	0.0
5548	BLUFF ENTERPRISES DBA FOLSOM CONVALESCENT	510 MILL ST	FOLSOM	SHARP TOOL	0.7	0.0
6163	DATACATE INC	2999 GOLD CANAL DR	RANCHO CORDOVA	SHARP TOOL	0.7	0.0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.7	0.0
7087	CALIFORNIA AMERICAN WATER CO.	6016 37TH ST	SACRAMENTO	SHARP TOOL	0.7	0.0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	SITE SPECIFIC	0.7	0.0
3970	THE MEADOWS AT ELK GROVE	9325 EAST STOCKTON BLVD	ELK GROVE	SHARP TOOL	0.7	0.0
4290	CSUS AQUATIC CENTER	1901 HAZEL AVE	RANCHO CORDOVA	SHARP TOOL	0.7	0.0
7030	CDCR / CCHCS DBA CDCR PHARMACY	8364 ROVANA CIRCLE	ELK GROVE	SHARP TOOL	0.7	0.0
3119	CBS RADIO INC	280 COMMERCE CIRCLE	SACRAMENTO	SHARP TOOL	0.7	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
6352	SAFE CREDIT UNION	12519 FOLSOM BLVD	RANCHO CORDOVA	SHARP TOOL	0.6	0.0
6378	CITY OF SACRAMENTO – GENERAL SERVICES	785 FLORIN RD	SACRAMENTO	SHARP TOOL	0.6	0.0
6968	SHI-III PRARIE CITY LANDING OWNER, LLC	645 WILLARD DR	FOLSOM	SITE SPECIFIC	0.6	0.0
3404	CITY OF SACRAMENTO PW	1000 I ST	SACRAMENTO	SHARP TOOL	0.6	0.0
5859	SAM'S CLUB NO. 662 C/O SHAW LICENSING SUPPORT	8250 POWER INN RD	SACRAMENTO	SHARP TOOL	0.6	0.0
6914	BLACKROCK FINANCIAL MANAGEMENT, INC	10850 GOLD CENTER DR.	RANCHO CORDOVA	SHARP TOOL	0.6	0.0
3859	CITY OF GALT	49 LIVE OAK AVE	GALT	SHARP TOOL	0.6	0.0
4057	A/P PROCESSING CENTER CITY OF SACRAMENTO	NATOMAS & ELK HORN	SACRAMENTO	SHARP TOOL	0.6	0.0
5471	VERIZON WIRELESS	8775 PALLADAY RD	ELVERTA	SHARP TOOL	0.6	0.0
5835	DGS DBA EDD, STATE OF CA C/O REIT M. & R. LLC	9815 GOETHE RD	SACRAMENTO	SITE SPECIFIC	0.6	0.0
6995	BRE 8371 ROVANA OWNER, LLC (BR42220)	8371 ROVANA CIR	SACRAMENTO	SITE SPECIFIC	0.6	0.0
911	US BUREAU OF RECLAMATION – MP-3100	2800 COTTAGE WAY	SACRAMENTO	SHARP TOOL	0.6	0.0
2160	FORTY-NINER TRUCK STOP	2828 EL CENTRO RD	SACRAMENTO	SITE SPECIFIC	0.6	0.0
6605	EL & EL WOOD PRODUCTS, INC	700 INDUSTRIAL DR	GALT	SITE SPECIFIC	0.6	0.0
6912	MBK SENIOR LIVING DBA ALMOND HEIGHTS MSL LLC	8685 GREENBACK LN	ORANGEVALE	SITE SPECIFIC	0.6	0.0
7321	THE PRESS AT MIDTOWN	1714 21ST ST	SACRAMENTO	SITE SPECIFIC	0.6	0.2
2032	CITY OF GALT	10570 KOST RD	GALT	SHARP TOOL	0.6	0.0
3909	SUREWEST	3625 MARCONI AVE	SACRAMENTO	SHARP TOOL	0.6	0.0
5250	VERIZON WIRELESS	7309 ROSEVILLE RD	SACRAMENTO	SHARP TOOL	0.6	0.0
2292	COUNTY OF SACRAMENTO MSA DWR DOMS	D12 WINDING WAY/AUBURN - D12	SACRAMENTO	SHARP TOOL	0.6	0.0
4388	SAC COUNTY WATER AGENCY	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.6	0.0
4939	CITY OF SACRAMENTO - GENERAL SERVICES	216 O ST	SACRAMENTO	SHARP TOOL	0.6	0.0
681	KVIE	1400 TWIN CITIES RD	WALNUT GROVE	SHARP TOOL	0.6	0.0
4233	COUNTY OF SACRAMENTO MSA DWR DOMS	D010 MANLOVE STORM DRAINAGE	SACRAMENTO	SHARP TOOL	0.6	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
1219	CITIZENS TELECOMMUNICATIONS COMPANY	14111 GRAND AVE	WALNUT GROVE	SHARP TOOL	0.5	0.0
2737	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	6525 65TH EXPRESSWAY	SACRAMENTO	SHARP TOOL	0.5	0.0
4082	LOS RIOS COMMUNITY COLLEGE DISTRICT	1919 SPANOS CT	SACRAMENTO	SHARP TOOL	0.5	0.0
4465	CAPITOL CITY SURGERY CENTER	1800 TRIBUTE RD	SACRAMENTO	SHARP TOOL	0.5	0.0
5004	CALIFORNIA OFFICE OF EMERGENCY SERVICES - PSC	630 SEQUOIA PACIFIC BLVD	SACRAMENTO	SITE SPECIFIC	0.5	0.0
6145	COUNTY OF SACRAMENTO, GENERAL SERVICES	7000 65TH ST	SACRAMENTO	SITE SPECIFIC	0.5	0.0
6351	SAFE CREDIT UNION	2295 IRON POINT RD	FOLSOM	SHARP TOOL	0.5	0.0
6721	TURLOCK LAKEPARK, LP DBA IMPERIAL TOWER APARTMENTS	331 J ST, STE 110	SACRAMENTO	SITE SPECIFIC	0.5	0.0
3740	SAC COUNTY WATER AGENCY	WELL #19, 3RD ST	HOOD	SHARP TOOL	0.5	0.0
4091	DIGNITY HEALTH	3400 DATA DR	RANCHO CORDOVA	SHARP TOOL	0.5	0.0
4388	SAC COUNTY WATER AGENCY	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.5	0.0
6627	FAIR OAKS WATER DISTRICT	5404 ALAIRE VIA DR	FAIR OAKS	SITE SPECIFIC	0.5	0.0
3677	SAC COUNTY WATER AGENCY	9960 WATERMAN RD.	ELK GROVE	SHARP TOOL	0.5	0.0
3994	MCCLELLAN JET SERVICES	4545 DUDLEY BLVD	MCCLELLAN	SHARP TOOL	0.5	0.0
5980	WSIN, INC	1825 BELL ST	SACRAMENTO	SHARP TOOL	0.5	0.0
6686	KAISER FOUN HOSP SOUTH	10305 PROMENADE PKWY	ELK GROVE	SITE SPECIFIC	0.5	0.0
4388	SAC COUNTY WATER AGENCY	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.5	0.0
5050	CITY OF SACRAMENTO PW	3301 JULLIARD DR	SACRAMENTO	SHARP TOOL	0.5	0.0
6336	CALIFORNIA AMERICAN WATER CO.	4701 BELOIT DR.	SACRAMENTO	SHARP TOOL	0.5	0.0
3661	CALIFORNIA AMERICAN WATER CO.	2403 COVERED WAGON CIRCLE	ANTELOPE	SHARP TOOL	0.5	0.0
7366	1415 MERIDIAN PLAZA INVESTORS, LP	1415 L ST	SACRAMENTO	SHARP TOOL	0.5	0.0
3904	SAC COUNTY WATER AGENCY	9400 HARBOUR POINT DR	ELK GROVE	SHARP TOOL	0.5	0.0
3911	SUREWEST	1316 FULTON AVE	SACRAMENTO	SHARP TOOL	0.5	0.0
4183	COMCAST OF SACRAMENTO	6901 ROSEVILLE RD (HEADEND)	RANCHO CORDOVA	SHARP TOOL	0.5	0.0
4714	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	3540 DETBASIN, N FREEWAY BLVD	SACRAMENTO	SHARP TOOL	0.5	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
6228	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	TERRACINA DR (OFF TRUXEL)	SACRAMENTO	SHARP TOOL	0.5	0.0
5171	VERIZON WIRELESS	8915 GERBER RD	SACRAMENTO	SHARP TOOL	0.5	0.0
5858	CALIFORNIA HIGHWAY PATROL	601 N. 7TH ST.	SACRAMENTO	SITE SPECIFIC	0.5	0.0
1	AEROJET ROCKETDYNE, INC.	2001 AEROJET RD	RANCHO CORDOVA	SHARP TOOL	0.5	0.0
2781	PACIFIC GAS AND ELECTRIC COMPANY	2740 GATEWAY OAKS DR	SACRAMENTO	SHARP TOOL	0.5	0.0
4669	VERIZON WIRELESS	2591 ELKHORN BLVD	RIO LINDA	SHARP TOOL	0.5	0.0
5102	VERIZON WIRELESS	12389 CLAY STATION RD	HERALD	SHARP TOOL	0.5	0.0
5272	VERIZON WIRELESS	1955 CAVERSHAM WAY	FOLSOM	SHARP TOOL	0.5	0.0
6718	AT&T MOBILITY	1931 ARENA BLVD	SACRAMENTO	SITE SPECIFIC	0.4	0.0
6775	OMNINET SACRAMENTO LLC	2005 EVERGREEN ST	SACRAMENTO	SHARP TOOL	0.4	0.0
6039	FOLSOM CORDOVA SCHOOL DIS	1965 ALABAMA AVE	RANCHO CORDOVA	SHARP TOOL	0.4	0.0
6523	BIT CALIFORNIA, LLC. DBA DOCUMENT FULFILLMENT	2930 RAMONA AVE #100	SACRAMENTO	SHARP TOOL	0.4	0.0
6864	CEGM RANCHO CORDOVA, LLC	3300 ZINFANDEL DR	RANCHO CORDOVA	SHARP TOOL	0.4	0.0
7138	NP SACRAMENTO MAP, LLC	7000 POWER LINE RD	SACRAMENTO	SITE SPECIFIC	0.4	0.0
7139	NP SACRAMENTO MAP, LLC	6500 POWER LINE RD	SACRAMENTO	SITE SPECIFIC	0.4	0.0
7214	NORTH EAST MEDICAL SERVICES (NEMS)	4025 VISTA PARK COURT	SACRAMENTO	SITE SPECIFIC	0.4	0.0
6397	EDGECONNEX SACRAMENTO HOLDINGS, LLC	10980 GOLD CENTER DR	RANCHO CORDOVA	SHARP TOOL	0.4	0.0
3406	CITY OF SACRAMENTO PW	805 14TH ST	SACRAMENTO	SHARP TOOL	0.4	0.0
5292	EAST BAY MUNICIPAL UTILITY DISTRICT	12352 CLAY STATION RD	HERALD	SHARP TOOL	0.4	0.0
5494	CITY OF SACRAMENTO - GENERAL SERVICES	3720 47TH AVE	SACRAMENTO	SHARP TOOL	0.4	0.0
5691	SAC COUNTY WATER AGENCY	4296 W. MEISTER WAY	SACRAMENTO	SHARP TOOL	0.4	0.0
6478	SACRAMENTO DOWNTOWN ARENA, LLC	609 L ST	SACRAMENTO	SHARP TOOL	0.4	0.0
2121	CITIZENS TELECOMMUNICATIONS COMPANY	64 MAIN ST	ISLETON	SHARP TOOL	0.4	0.0
3666	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.4	0.0
4089	SUREWEST	3008 U ST	SACRAMENTO	SHARP TOOL	0.4	0.0
4897	VERIZON WIRELESS	7437 SUNSET AVE	FAIR OAKS	SHARP TOOL	0.4	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5051	CITY OF SACRAMENTO PW	4500 24TH ST	SACRAMENTO	SHARP TOOL	0.4	0.0
5684	MICRON TECHNOLOGY INC.	2235 IRON POINT RD	FOLSOM	SHARP TOOL	0.4	0.0
5918	VERIZON WIRELESS	6060 SUNRISE VISTA DR	CITRUS HEIGHTS	SHARP TOOL	0.4	0.0
7347	KB PARKSHORE MT, LLC. C/O RUBICON PROPERTY MGMT	255 PARKSHORE DR	FOLSOM	SHARP TOOL	0.4	0.0
4331	VERIZON WIRELESS	13333 KIEFER BLVD	SLOUGHHOUSE	SHARP TOOL	0.4	0.0
3378	RICHARD A MCGEE CORRECTIONAL TRAINING	9850 TWIN CITIES RD	GALT	SHARP TOOL	0.4	0.0
5020	SACRAMENTO MATHER AIRPORT	10312 MACREADY AVE.	MATHER	SITE SPECIFIC	0.4	0.0
2572	COUNTY OF SACRAMENTO MSA DWR DOMS	NO. LEVEE E. OF WATT -D43	SACRAMENTO	SHARP TOOL	0.4	0.0
4515	VERIZON WIRELESS	15731 JACKSON HWY	RANCHO MURIETA	SHARP TOOL	0.4	0.0
4594	NEW CINGULAR WIRELESS PCS, LLC DBA AT&T MOBILITY	9375 CALVINE RD	SACRAMENTO	SHARP TOOL	0.4	0.0
5635	VERIZON WIRELESS	3830 SCOTT RD	SACRAMENTO	SHARP TOOL	0.4	0.0
6591	CITY OF SACRAMENTO	7363 24th ST	SACRAMENTO	SHARP TOOL	0.4	0.0
7144	DESCOR BUILDERS DBA MANSION APARTMENTS	1517 H ST	SACRAMENTO	SITE SPECIFIC	0.4	0.0
7163	CITY OF SACRAMENTO FIRE STATION # 14	1400 NORTH B ST	SACRAMENTO	SITE SPECIFIC	0.4	0.0
5781	VERIZON WIRELESS	3261 "C" FITZGERALD RD	RANCHO CORDOVA	SHARP TOOL	0.4	0.0
5897	VERIZON WIRELESS	1912 C ST	SACRAMENTO	SHARP TOOL	0.4	0.0
6777	EVERGREEN PHARMACEUTICAL OF CA, INC DBA OMNICARE	3630 BUSINESS DR	SACRAMENTO	SHARP TOOL	0.3	0.0
5035	VERIZON WIRELESS	4746 EL CAMINO AVE	CARMICHAEL	SHARP TOOL	0.3	0.0
61	STATE OF CALIF GS	625 Q ST	SACRAMENTO	SITE SPECIFIC	0.3	0.0
2320	RIO LINDA WATER DISTRICT	730 L ST	RIO LINDA	SHARP TOOL	0.3	0.0
3465	A/P PROCESSING CENTER CITY OF SACRAMENTO	6203 GLORIA DR	SACRAMENTO	SHARP TOOL	0.3	0.0
5042	VERIZON WIRELESS	8475 AUBURN BLVD	CITRUS HEIGHTS	SHARP TOOL	0.3	0.0
5959	STATE OF CALIF CALTRANS	FRONT ST. & NEASHAM	SACRAMENTO	SHARP TOOL	0.3	0.0
6715	OPTUM360, LLC (JLL/UHG)	3215 PROSPECT PARK DR	RANCHO CORDOVA	SHARP TOOL	0.3	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
3660	CALIFORNIA AMERICAN WATER CO.	10201 MISSILE WAY	SACRAMENTO	SHARP TOOL	0.3	0.0
4357	VERIZON WIRELESS	6960 65TH ST	SACRAMENTO	SHARP TOOL	0.3	0.0
5246	VERIZON WIRELESS	5525 DEWEY DR	FAIR OAKS	SHARP TOOL	0.3	0.0
5730	VERIZON WIRELESS	6380 TUPELO DR, UNIT B-54	CITRUS HEIGHTS	SHARP TOOL	0.3	0.0
3731	HUHTAMAKI, INC	8450 GERBER RD	SACRAMENTO	SHARP TOOL	0.3	0.0
5958	STATE OF CALIF CALTRANS	O ST./BOAT SECTION	SACRAMENTO	SHARP TOOL	0.3	0.0
4744	FDI COLLATERAL MANAGEMENT	9750 GOETHE RD	SACRAMENTO	SHARP TOOL	0.3	0.0
5457	VERIZON WIRELESS	14355 BLUE RAVINE RD	FOLSOM	SHARP TOOL	0.3	0.0
5911	VERIZON WIRELESS	6307 STONEHOUSE RD	RANCHO MURIETA	SHARP TOOL	0.3	0.0
6424	VERIZON WIRELESS	2000 W. EL CAMINO AVE	SACRAMENTO	SITE SPECIFIC	0.3	0.0
5491	428 ASSOCIATES LP	428 J ST	SACRAMENTO	SITE SPECIFIC	0.3	0.0
6847	KAISER PERMANENTE	3200 ARDEN WY	SACRAMENTO	SITE SPECIFIC	0.3	0.0
7250	AMAZON.COM SERVICES, LLC (FACILITY SMF1)	7601 METRO AIR PARKWAY	SACRAMENTO	SITE SPECIFIC	0.3	0.0
7392	RIO LINDA ELVERTA COMMUNITY WATER DIS-TRICT	NORTH OF U ST/ DRY CR	RIO LINDA	SITE SPECIFIC	0.3	0.0
1946	STATE OF CALIF GS DEPT REAL ESTATE SVCS REGION 4	1304 O ST	SACRAMENTO	SHARP TOOL	0.3	0.0
2743	CITY OF SACRAMENTO PW	1515 J ST	SACRAMENTO	SHARP TOOL	0.3	0.0
4635	RIO LINDA WATER DISTRICT	8359 RIO LINDA BLVD	ELVERTA	SHARP TOOL	0.3	0.0
5044	VERIZON WIRELESS	2347 GOLD RIVER RD	RANCHO CORDOVA	SHARP TOOL	0.3	0.0
6962	25 NORTH 14TH STREET LLC	10888 WHITE ROCK RD	RANCHO CORDOVA	SHARP TOOL	0.3	0.0
2071	SACRAMENTO TOWER JOINT VENTURE	14003 RIVER RD	WALNUT GROVE	SITE SPECIFIC	0.3	0.0
4364	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	SUMP 85	SACRAMENTO	SHARP TOOL	0.3	0.0
6955	4500 ORANGE GROVE, A CALIFORNIA LTD PARTNERSHIP	4500 ORANGE GROVE AVE	SACRAMENTO	SHARP TOOL	0.3	0.0
3886	SACRAMENTO HOUSING & REDEVELOPMENT AGENCY	600 I ST	SACRAMENTO	SHARP TOOL	0.2	0.0
4634	VERIZON WIRELESS	5663 FRANKLIN BLVD	SACRAMENTO	SHARP TOOL	0.2	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
4670	VERIZON WIRELESS	11167 TRADE CENTER DR	RANCHO CORDOVA	SHARP TOOL	0.2	0.0
5043	VERIZON WIRELESS	10220 ELDER CREEK RD	SACRAMENTO	SHARP TOOL	0.2	0.0
5175	VERIZON WIRELESS	5831 ROSEBUD LN	SACRAMENTO	SHARP TOOL	0.2	0.0
5271	VERIZON WIRELESS	8480 SUNSET AVE	FAIR OAKS	SHARP TOOL	0.2	0.0
5578	SACRAMENTO HOUSING & REDEVELOPMENT AGENCY	801 12TH ST	SACRAMENTO	SHARP TOOL	0.2	0.0
5774	VERIZON WIRELESS	11840 FOLSOM BLVD	RANCHO CORDOVA	SHARP TOOL	0.2	0.0
6371	KINGS CASINO, LLC DBA STONES GAMBLING HALL	6510 ANTELOPE RD	CITRUS HEIGHTS	SHARP TOOL	0.2	0.0
7136	SAC COUNTY WATER AGENCY	8280 CIVIC CENTER DRIVE	ELK GROVE	SITE SPECIFIC	0.2	0.0
4950	VERIZON WIRELESS	3341 LANATT ST	SACRAMENTO	SHARP TOOL	0.2	0.0
5172	VERIZON WIRELESS	3500 W ELVERTA RD	ELVERTA	SHARP TOOL	0.2	0.0
6997	WG CARMICHAEL OAKS, LP DBA ATRIA CARMICHAEL OAKS	8350 FAIR OAKS BLVD	CARMICHAEL	SHARP TOOL	0.2	0.0
3469	STATE OF CALIF MILITARY	9800 GOETHE RD	SACRAMENTO	SHARP TOOL	0.2	0.0
4633	VERIZON WIRELESS	9950 ELK GROVE-FLORIN RD	ELK GROVE	SHARP TOOL	0.2	0.0
5244	VERIZON WIRELESS	7933 BRADSHAW RD	SACRAMENTO	SHARP TOOL	0.2	0.0
6673	VERIZON WIRELESS- SHORTLINE	8545 SHELDON RD	ELK GROVE	SHARP TOOL	0.2	0.0
2594	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	SAN JUAN & NATOMAS E	SACRAMENTO	SHARP TOOL	0.2	0.0
4756	CITY OF ELK GROVE - FAC MGMT - POLICE DEPT	8401 LAGUNA PALMS WY	ELK GROVE	SHARP TOOL	0.2	0.0
4894	VERIZON WIRELESS	10800 WILTON RD	ELK GROVE	SHARP TOOL	0.2	0.0
5032	STATE OF CA, DEPT OF TRANSPORTATION	ROUTE 160 @ PAINTERSVILLE	ISLETON	SHARP TOOL	0.2	0.0
5421	VERIZON WIRELESS	12525 QUICKSILVER DR	RANCHO CORDOVA	SHARP TOOL	0.2	0.0
5938	VERIZON WIRELESS	5144 "B" ARDEN WAY	CARMICHAEL	SITE SPECIFIC	0.2	0.0
6065	BEVERLY HEALTH & REHAB SERVICES	144 F ST	GALT	SITE SPECIFIC	0.2	0.0
6500	CITY OF SACRAMENTO	1100 43RD AVE	SACRAMENTO	SHARP TOOL	0.2	0.0
3839	CITY OF GALT	455 INDUSTRIAL DR	GALT	SITE SPECIFIC	0.2	0.0
5256	CITY OF SACRAMENTO - GENERAL SERVICES	300 RICHARDS BLVD	SACRAMENTO	SITE SPECIFIC	0.2	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
675	SACTO TOWER JOINT VENTURE	14001 RIVER RD	WALNUT GROVE	SHARP TOOL	0.2	0.0
5729	VERIZON WIRELESS	5508 SORENTO RD	SACRAMENTO	SHARP TOOL	0.2	0.0
5890	VERIZON WIRELESS	10260 WATERMAN RD	ELK GROVE	SHARP TOOL	0.2	0.0
6013	SACRAMENTO RECYCLING & TRANSFER STATION	8491 FRUITRIDGE RD	SACRAMENTO	SHARP TOOL	0.2	0.0
6667	CALIFORNIA IVF	2590 VENTURE OAKS WAY	SACRAMENTO	SITE SPECIFIC	0.2	0.0
5620	VERIZON WIRELESS	820 DELANO ST	ELVERTA	SHARP TOOL	0.2	0.0
6238	CA DEPT OF WATER RESOURCES	VARIOUS LOCATIONS		SITE SPECIFIC	0.2	0.0
6496	IGT GLOBAL SOLUTIONS, CORP	180 PROMENADE CIR, STE 310	SACRAMENTO	SITE SPECIFIC	0.2	0.0
6778	CITY OF RANCHO CORDOVA	VARIOUS LOCATIONS	RANCHO CORDOVA	SHARP TOOL	0.2	0.0
6812	CITY OF SACRAMENTO	1640 WEST EL CAMINO AVE	SACRAMENTO	SITE SPECIFIC	0.2	0.0
6844	CITY OF FOLSOM	14890 SCENIC VISTA CT	FOLSOM	SHARP TOOL	0.2	0.0
7085	ELK GROVE MEMORY CARE LLC DBA THE GARDENS AT LAGUNA SPRINGS	9750 LAGUNA SPRINGS DRIVE	ELK GROVE	SITE SPECIFIC	0.2	0.0
7061	ALM ELK GROVE, LLC	9051 UNION PARK WY	ELK GROVE	SITE SPECIFIC	0.2	0.0
4388	SAC COUNTY WATER AGENCY	VARIOUS LOCATIONS	SACRAMENTO	SITE SPECIFIC	0.2	0.0
5527	FREEPORT REGIONAL WATER AUTHORITY	10141 GERBER RD	SACRAMENTO	SHARP TOOL	0.2	0.0
5604	VERIZON WIRELESS	2629 JUNIPER LN	SACRAMENTO	SHARP TOOL	0.2	0.0
5737	KOHL'S CORP	6135 SAN JUAN AVE	CITRUS HEIGHTS	SHARP TOOL	0.2	0.0
6007	CITY OF CITRUS HEIGHTS DBA CITRUS HEIGHTS COMM CTR	6315 FOUNTAIN SQ DR.	CITRUS HEIGHTS	SHARP TOOL	0.2	0.0
6771	PENSKE LOGISTICS LLC DBA PENSKE LOGISTICS-STARBUCK	4040 VISTA PARK CT	SACRAMENTO	SITE SPECIFIC	0.2	0.0
4332	VERIZON WIRELESS	9595 FRANKLIN BLVD	ELK GROVE	SHARP TOOL	0.1	0.0
5981	VERIZON WIRELESS	3425 51ST AVE	SACRAMENTO	SHARP TOOL	0.1	0.0
6457	RANCHO MURIETA COMMUNITY SERVICES DIST	7161 MURIETA PARKWAY	RANCHO MURIETA	SITE SPECIFIC	0.1	0.0
4063	SUTTER HEALTH-INFORMATION TECHNOLOGY	3707 SCHRIEVER AVE	MATHER	SHARP TOOL	0.1	0.0
4754	MPOWER COMMUNICATIONS CORPORATION	770 L ST	SACRAMENTO	SHARP TOOL	0.1	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5898	VERIZON WIRELESS	2373 FAIR OAKS BLVD	SACRAMENTO	SHARP TOOL	0.1	0.0
5899	VERIZON WIRELESS	3520 STOCKTON BLVD	SACRAMENTO	SHARP TOOL	0.1	0.0
5954	VERIZON WIRELESS	7950 CALIFORNIA AVE	FAIR OAKS	SHARP TOOL	0.1	0.0
6006	VERIZON WIRELESS	E. NATOMAS ST	FOLSOM	SITE SPECIFIC	0.1	0.0
7160	CALIFORNIA AMERICAN WATER CO.	6309 VAN MAREN LN	CITRUS HEIGHTS	SITE SPECIFIC	0.1	0.0
4810	VERIZON WIRELESS	11844 COLONY HILL RD	WILTON	SHARP TOOL	0.1	0.0
3170	SACRAMENTO CONVENTION CENTER	1030 15TH ST	SACRAMENTO	SHARP TOOL	0.1	0.0
3960	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	SITE SPECIFIC	0.1	0.0
5029	VERIZON WIRELESS	2239 CHASE DR	RANCHO CORDOVA	SITE SPECIFIC	0.1	0.0
5197	VERIZON WIRELESS	9605 OATES DR	SACRAMENTO	SHARP TOOL	0.1	0.0
4420	SUNRISE ASSISTED LIVING OF FAIR OAKS	4820 HAZEL AVE	FAIR OAKS	SHARP TOOL	0.1	0.0
5975	VERIZON WIRELESS	8150 37TH AVE	SACRAMENTO	SITE SPECIFIC	0.1	0.0
6297	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.1	0.0
7354	WELLSPACE HEALTH	1500 EXPO PARKWAY	SACRAMENTO	SHARP TOOL	0.1	0.0
4407	VERIZON WIRELESS	4564 MACK RD	SACRAMENTO	SHARP TOOL	0.1	0.0
4913	VERIZON WIRELESS	1415 RUSHDEN DR	SACRAMENTO	SITE SPECIFIC	0.1	0.0
5030	STATE OF CA, DEPT OF TRANSPORTATION	ROUTE 160 NEAR ISLETON	ISLETON	SHARP TOOL	0.1	0.0
5242	WESTERN AREA POWER ADMINISTRATION	7940 SORENTO RD	ELVERTA	SHARP TOOL	0.1	0.0
5247	VERIZON WIRELESS	8500 CARBIDE CT	SACRAMENTO	SHARP TOOL	0.1	0.0
5955	VERIZON WIRELESS	5800 MADISON AVE	SACRAMENTO	SHARP TOOL	0.1	0.0
3117	CBS RADIO INC	3802 GARDEN HWY	SACRAMENTO	SITE SPECIFIC	0.1	0.0
4436	JOHN JACKSON JR, JOHN JACKSON SR, JOHN & CLAUDINE	3740 BUSINESS DR	SACRAMENTO	SITE SPECIFIC	0.1	0.0
5226	VERIZON WIRELESS	5700 S. LAND PARK DR	SACRAMENTO	SHARP TOOL	0.1	0.0
6003	TRANSTOWER, INC	14003 RIVER RD	WALNUT GROVE	SITE SPECIFIC	0.1	0.0
6639	CONSOLIDATED COMMUNICATIONS	8295 ELK GROVE BLVD	ELK GROVE	SITE SPECIFIC	0.1	0.0
3184	COUNTY OF SACRAMENTO – DTECH	8552 ELVERTA RD	ELVERTA	SITE SPECIFIC	0.1	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5031	STATE OF CA, DEPT OF TRANSPORTATION	ROUTE 160 @ STEAMBOAT	ISLETON	SHARP TOOL	0.1	0.0
5626	VERIZON WIRELESS	3581 23rd ST	SACRAMENTO	SHARP TOOL	0.1	0.0
6741	BUILDING MATERIAL DISTRIBUTOR	104 INDUSTRIAL CT	GALT	SITE SPECIFIC	0.1	0.0
7208	AMAZON.COM SERVICES, LLC (FACILITY SMF1)	8040 METRO AIR PARKWAY	SACRAMENTO	SITE SPECIFIC	0.1	0.0
1476	STATE OF CA FOOD & AG PLANT PESTS DIAGNOSTICS LAB	3294 MEADOWVIEW RD, BLDG E	SACRAMENTO	SHARP TOOL	0.1	0.0
2676	DEFENSE COMMISSARY AGENCY	3401 DOGWOOD ST, BLDG 948	MCCLELLAN	SITE SPECIFIC	0.1	0.0
3666	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	VARIOUS LOCATIONS	SACRAMENTO	SITE SPECIFIC	0.1	0.1
5045	VERIZON WIRELESS	2150 BELL AVE	SACRAMENTO	SITE SPECIFIC	0.1	0.0
5619	VERIZON WIRELESS	6320 FAIR OAKS BLVD	CARMICHAEL	SHARP TOOL	0.1	0.0
6324	GROVE RIVER DISTRICT, LLC DBA CALIFORNIA HIGHWAY	601 N. 7TH ST	SACRAMENTO	SITE SPECIFIC	0.1	0.0
6781	MACYS WEST	6041 SUNRISE BLVD	CITRUS HEIGHTS	SITE SPECIFIC	0.1	0.0
2420	HEARST ARGYLE STATIONS INC	1650 LEVEE RD	WALNUT GROVE	SHARP TOOL	0.1	0.0
2431	SUBURBAN PROPANE	10450 GRANT LINE RD	ELK GROVE	SHARP TOOL	0.0	0.0
4072	CLEAR CHANNEL COMMUNICATIONS	606 WEST DELANO ST	ELVERTA	SITE SPECIFIC	0.0	0.0
4388	SAC COUNTY WATER AGENCY	VARIOUS LOCATIONS	SACRAMENTO	SHARP TOOL	0.0	0.0
4639	VERIZON WIRELESS	4000 SAN JUAN AVE	FAIR OAKS	SITE SPECIFIC	0.0	0.0
5137	NATOMAS UNIFIED SCHOOL DISTRICT DBA NATOMAS HIGH	3200 NORTH PARK DR	SACRAMENTO	SITE SPECIFIC	0.0	0.0
7095	ELK GROVE INDEPENDENT LIVING LLC DBA THE PARK AT LAGUNA SPRINGS	9670 LAGUNA SPRINGS DR	ELK GROVE	SITE SPECIFIC	0.0	0.0
3673	STATE OF CALIFORNIA, DEPT OF GENERAL SERVICES	1430 N ST	SACRAMENTO	SHARP TOOL	0.0	0.0
4318	CITY OF SACRAMENTO - GENERAL SERVICES	915 I ST	SACRAMENTO	SHARP TOOL	0.0	0.0
4596	VERIZON WIRELESS	1600 EXPOSITION BLVD	SACRAMENTO	SHARP TOOL	0.0	0.0
5027	VERIZON WIRELESS	8998 POCKET RD	SACRAMENTO	SITE SPECIFIC	0.0	0.0
5251	VERIZON WIRELESS	8990 KRUITOF WAY	FAIR OAKS	SHARP TOOL	0.0	0.0
5968	PACIFIC GAS AND ELECTRIC COMPANY	2730 GATEWAY OAKS DR	SACRAMENTO	SHARP TOOL	0.0	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5978	VERIZON WIRELESS	3651 TRUXEL RD	SACRAMENTO	SHARP TOOL	0.0	0.0
6747	KAISER HOSPITAL	501 J ST	SACRAMENTO	SITE SPECIFIC	0.0	0.0
6821	AXALTA COATING SYSTEMS U.S.A., LLC	8201 POWER RIDGE RD	SACRAMENTO	SITE SPECIFIC	0.0	0.0
2419	HEARST ARGYLE STATIONS INC	14003 RIVER RD	WALNUT GROVE	SHARP TOOL	0.0	0.0
2541	CALIFORNIA EXPOSITION & STATE FAIR	1600 EXPOSITION BLVD	SACRAMENTO	SITE SPECIFIC	0.0	0.0
3537	MCI WORLDCOM	2001 B ST	SACRAMENTO	SHARP TOOL	0.0	0.0
5263	QWEST COMMUNICATIONS CORP DBA CENTRUY LINK	9727 BUSINESS PARK DR, BLDG H	SACRAMENTO	SHARP TOOL	0.0	0.0
5627	VERIZON WIRELESS	8401 CENTER PARKWAY	SACRAMENTO	SHARP TOOL	0.0	0.0
5731	VERIZON WIRELESS	6623 QUAIL RUN LN	ELK GROVE	SITE SPECIFIC	0.0	0.0
6292	VERIZON WIRELESS	7399 SAN JOAQUIN ST	SACRAMENTO	SHARP TOOL	0.0	0.0
6746	PERIMETER SOLUTIONS LP	5500 PRICE AVE	MCCLELLAN	SITE SPECIFIC	0.0	0.0
6959	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	LAMBERT RD PUMP STATION	COURTLAND	SHARP TOOL	0.0	0.0
2103	US GOVT DEPT OF VET AFFAIRS	10535 HOSPITAL WAY	MATHER	SITE SPECIFIC	0.0	0.0
6605	EL & EL WOOD PRODUCTS, INC	700 INDUSTRIAL DR	GALT	SITE SPECIFIC	0.0	0.0
7211	US FOODS, INC.	4455 WINTERS ST	MCCLELLAN	SITE SPECIFIC	0.0	0.0
1045	SMUD	14440 TWIN CITIES RD	HERALD	SITE SPECIFIC	0.0	0.0
2760	INTEL CORPORATION	1900 PRAIRIE CITY RD	FOLSOM	SITE SPECIFIC	0.0	0.0
4168	FLORIN WATER DISTRICT	7090 MCCOMBER ST	SACRAMENTO	SHARP TOOL	0.0	0.0
4223	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	6441 ELVAS AVE	SACRAMENTO	SHARP TOOL	0.0	0.0
4602	VERIZON WIRELESS	6000 J ST	SACRAMENTO	SHARP TOOL	0.0	0.0
4799	VERIZON WIRELESS	2225 19TH ST	SACRAMENTO	SHARP TOOL	0.0	0.0
4830	REGIONAL TRANSIT	2760 ACADEMY WAY	SACRAMENTO	SITE SPECIFIC	0.0	0.0
1057		2700 ACADEMY WAY				
4895	VERIZON WIRELESS	5117 HEDGE AVE	SACRAMENTO	SITE SPECIFIC	0.0	0.0
5311	VERIZON WIRELESS	3517 A ST	NORTH HIGHLANDS	SITE SPECIFIC	0.0	0.0
5347	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	1 WATER ST	SACRAMENTO	SITE SPECIFIC	0.0	0.0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
5612	VERIZON WIRELESS	4925 DEWEY DR	FAIR OAKS	SITE SPECIFIC	0.0	0.0
5655	VERIZON WIRELESS	7576 STOCKTON BLVD	SACRAMENTO	SITE SPECIFIC	0.0	0.0
6472	VERIZON WIRELESS	1755 CREEKSIDE DR	FOLSOM	SITE SPECIFIC	0.0	0.0
6894	POWERSCHOOL GROUP LLC	150 PARKSHORE DRIVE	FOLSOM	SITE SPECIFIC	0.0	0.0
5034	VERIZON WIRELESS	9660 E. STOCKTON BLVD	ELK GROVE	SITE SPECIFIC	0.0	0.0
5178	AT & T CORP.	1214 BIDWELL ST	FOLSOM	SITE SPECIFIC	0.0	0.0
5570	VERIZON WIRELESS	7145 FILBERT AVE	ORANGEVALE	SITE SPECIFIC	0.0	0.0
5834	VERIZON WIRELESS	4360 BRAHMIN WY	MATHER	SITE SPECIFIC	0.0	0.0
6449	VERIZON WIRELESS	8864 ELDER CREEK RD	SACRAMENTO	SITE SPECIFIC	0.0	0.0
6537	VERIZON WIRELESS	600 COOLIDGE DR	FOLSOM	SITE SPECIFIC	0.0	0.0
6791	ZAYO GROUP	ALTA MESA RD	HERALD	SITE SPECIFIC	0.0	0.0
7337	CFT NV DEVELOPMENTS, LLC	10600 WHITE ROCK RD	RANCHO CORDOVA	SITE SPECIFIC	0.0	0.0
1468	WESTERN AREA POWER ADMINISTRATION	114 PARKSHORE DR	FOLSOM	RNO	0	0
1578	STATE OF CALIF - CAPITOL HISTORIC REGION	11TH & CAPITOL MALL	SACRAMENTO	RNO	0	0
1607	STATE OF CALIF DEPT OF GENERAL SVCS	1416 9TH ST	SACRAMENTO	RNO	0	0
2421	HEARST ARGYLE STATIONS INC	3 TELEVISION CIR	SACRAMENTO	RNO	0	0
2638	RIO LINDA WATER DISTRICT	5900 MARYSVILLE BLVD	RIO LINDA	RNO	0	0
3666	CITY OF SAC., DEPT OF UTILITIES – ORG #3323	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3788	CALIFORNIA AMERICAN WATER CO.	VARIOUS LOCATIONS	SACRAMENTO	RNO	0	0
3985	SACRAMENTO SUBURBAN WATER DISTRICT	WATT AVE & NAVAHO DR	MCCLELLAN	RNO	0	0

FAC. NO.	FACILITY NAME	ADDRESS	CITY	MODELING METHOD (A)	CANCER RISK (B)	CHRONIC HAZARD INDEX (C)
4046	COUNTY OF SACRAMENTO DEPT OF WATER QUALITY	SE OF POWER INN & AUBERRY	SACRAMENTO	RNO	0	0
4408	VERIZON WIRELESS	9001 HIGH TECH COURT	ELK GROVE	RNO	0	0
4807	VERIZON WIRELESS	950 E BRANNAN ISLAND RD	ISLETON	RNO	0	0
4871	VERIZON WIRELESS	1655 PRAIRIE CITY RD	FOLSOM	RNO	0	0
4920	RUBICON PROPERTY MANAGEMENT	1107 9TH ST	SACRAMENTO	RNO	0	0
5308	TWIN RIVERS UNIFIED SCHOOL DIST	5921 EAST LEVEE RD	SACRAMENTO	RNO	0	0
5989	VERIZON WIRELESS	4401 AUBURN BLVD	SACRAMENTO	RNO	0	0
6293	VERIZON WIRELESS	4718 ENGLE RD	CARMICHAEL	RNO	0	0
6302	1108 R ST. INVESTORS, L.P.	1108 R ST	SACRAMENTO	RNO	0	0
6436	VERIZON WIRELESS	3350 WATT AVE	SACRAMENTO	RNO	0	0
6652	LT SACRAMENTO MF, LLC DBA LINQ MIDTOWN	3111 S ST	SACRAMENTO	RNO	0	0
6984	ETHAN CONRAD PROPERTIES, INC.	4249 ELVERTA RD	ANTELOPE	RNO	0	0

(A) Modeling Methods:
  (1) San Joaquin Valley Hazard Assessment and Reporting Program Tool (SHARP Tool): Health conservative screening tool was used to estimate risk based on the most recently available data year.
  (2) Site Specific: Facility was initially screened >10.0 in a million residential cancer risk, so a site-specific HRA was performed, and the results listed herein.
  (3) Reported No Operation (RNO): Facility reported 0 hours/year of maintenance operation.

(B) Cancer Risk is expressed as lifetime excess cancer risk in chances per million.

(C) Hazard Index (HI) is the ratio of the concentration to the reference exposure level. Note: while a chronic reference exposure level has been established for Diesel Particular Matter, an acute reference exposure level has not; therefore, only a chronic HI has been calculated here.

(D) Since the SMAQMD's site-specific HRA resulted in a cancer risk >10.0 in a million, the facility will be notified to perform a refined site-specific HRA.

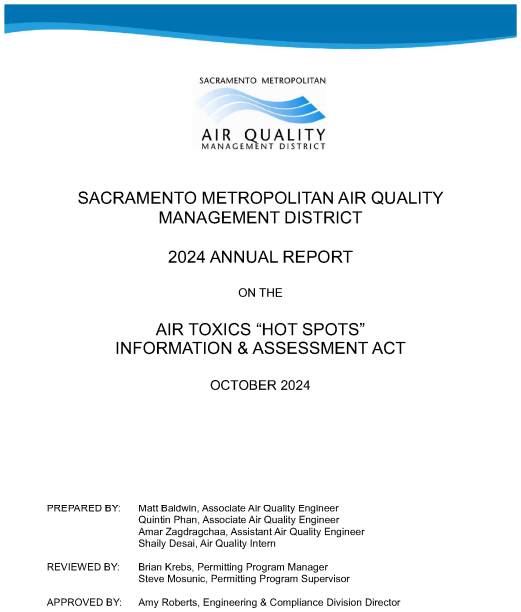
2024 Air Toxics Hot Spots Annual Report

Board Meeting

October 24, 2024

Presenter: Matt Baldwin
Associate Air Quality Engineer

2024 Hot Spots Program Annual Report Needs & Requirements



SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

2024 ANNUAL REPORT

ON THE

AIR TOXICS "HOT SPOTS" INFORMATION & ASSESSMENT ACT

OCTOBER 2024

PREPARED BY: Matt Baldwin, Associate Air Quality Engineer
Quintin Phan, Associate Air Quality Engineer
Amar Zagdragchaa, Assistant Air Quality Engineer
Shaily Desai, Air Quality Intern

REVIEWED BY: Brian Krebs, Permitting Program Manager
Steve Mosunic, Permitting Program Supervisor

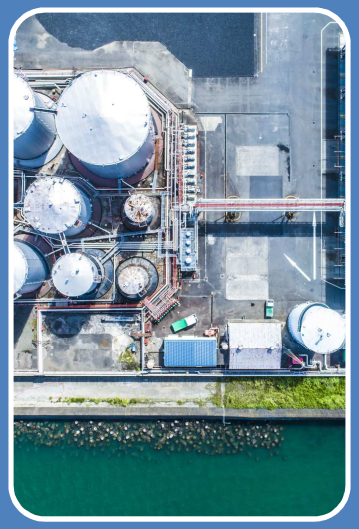
APPROVED BY: Amy Roberts, Engineering & Compliance Division Director

Annual Report

- Required by Health & Safety Code § 44363
- Present Report Findings at a Public Hearing (Sac Metro Board)
- Disseminate to County Board, City Councils, County Public Health Officer and CARB

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Air Toxics Background
Why Do We Care About Air Toxics?



Toxic air pollutants pose risks to health depending on the pollutant, including:

- Cancer
- Harm to the nervous and cardiovascular systems
- Irritation to the eyes, nose and throat
- Coughing and wheezing
- Reduced fertility
- Birth defects

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Air Toxics Background
Identifying and Measuring Health Risks

Toxic Air Contaminant: Substance emitted into the air that may **affect human health** (cancer or other acute/chronic health issues)

Cancer Risk: Probability of a person developing cancer as a result of a **lifetime exposure** to a carcinogen (chances per million persons)

Hazard Index: A way to gauge whether exposure to a toxic may result in adverse health issues, based on either Acute (1-hour) or Chronic (lifetime) exposures

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Air Toxics Background
Toxics Risk Management – Public Agency Roles

EPA

- Identification of Hazardous Air Pollutants
- Establish Federal Regulations and Standards for Hazardous Air Pollutants

California Air Resources Board

- Identification of Toxic Air Contaminants
- Airborne Toxic Control Measures
- Hot Spots Program Oversite
- Air Toxic Inventory & Modeling

Sacramento Metropolitan Air Quality Management District

- Permitting Program
- School Public Notification
- Hot Spots Program

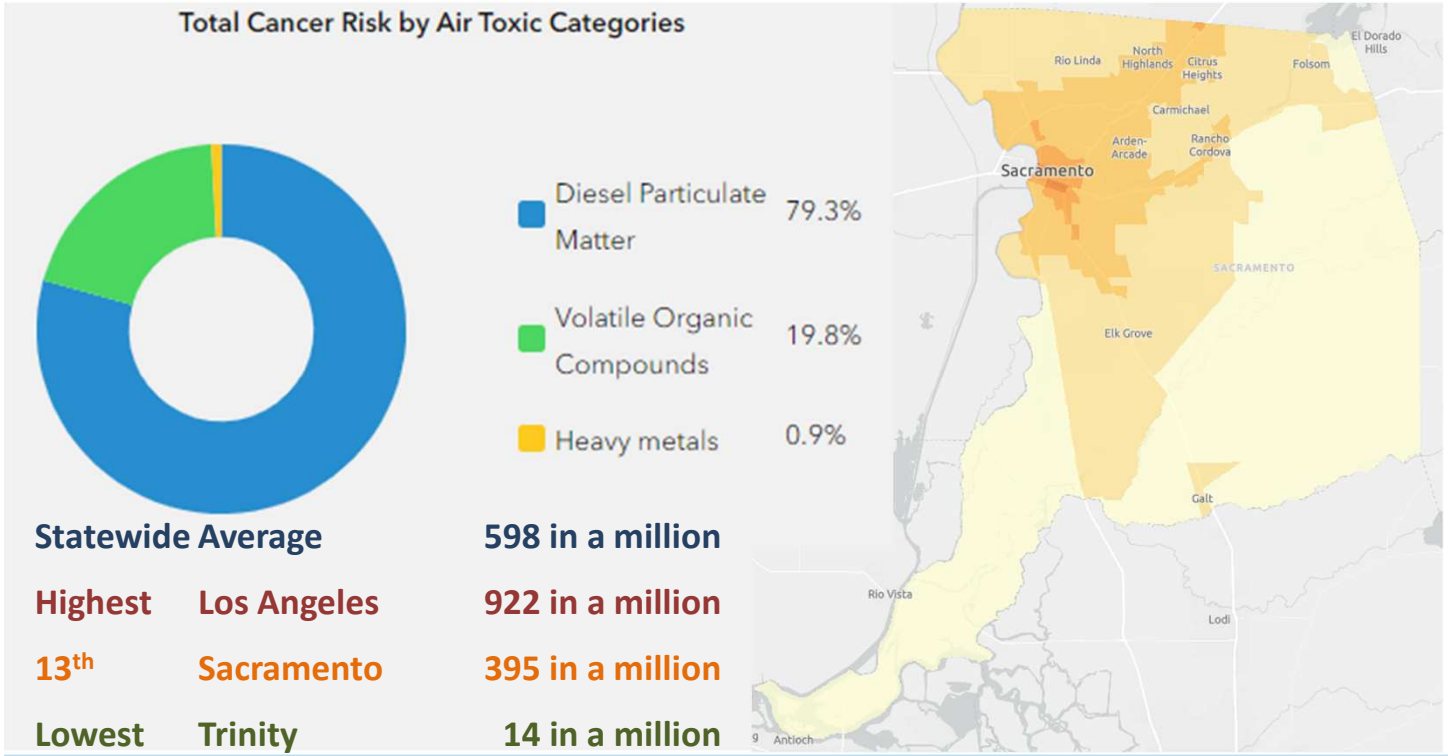
Sacramento Metropolitan Air Quality Management District

Health Risk Management Programs for Existing, Modified and New Stationary Sources

March 2016

Sacramento Metropolitan Air Quality Management District

Air Toxics Background
Air Toxic Levels in Sacramento County



- Sacramento County cancer risk from air toxics is lower vs. state average
- Since 2012, cancer risk from air toxics ***reduced by more than 40%***

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588, Connelly, 1987)

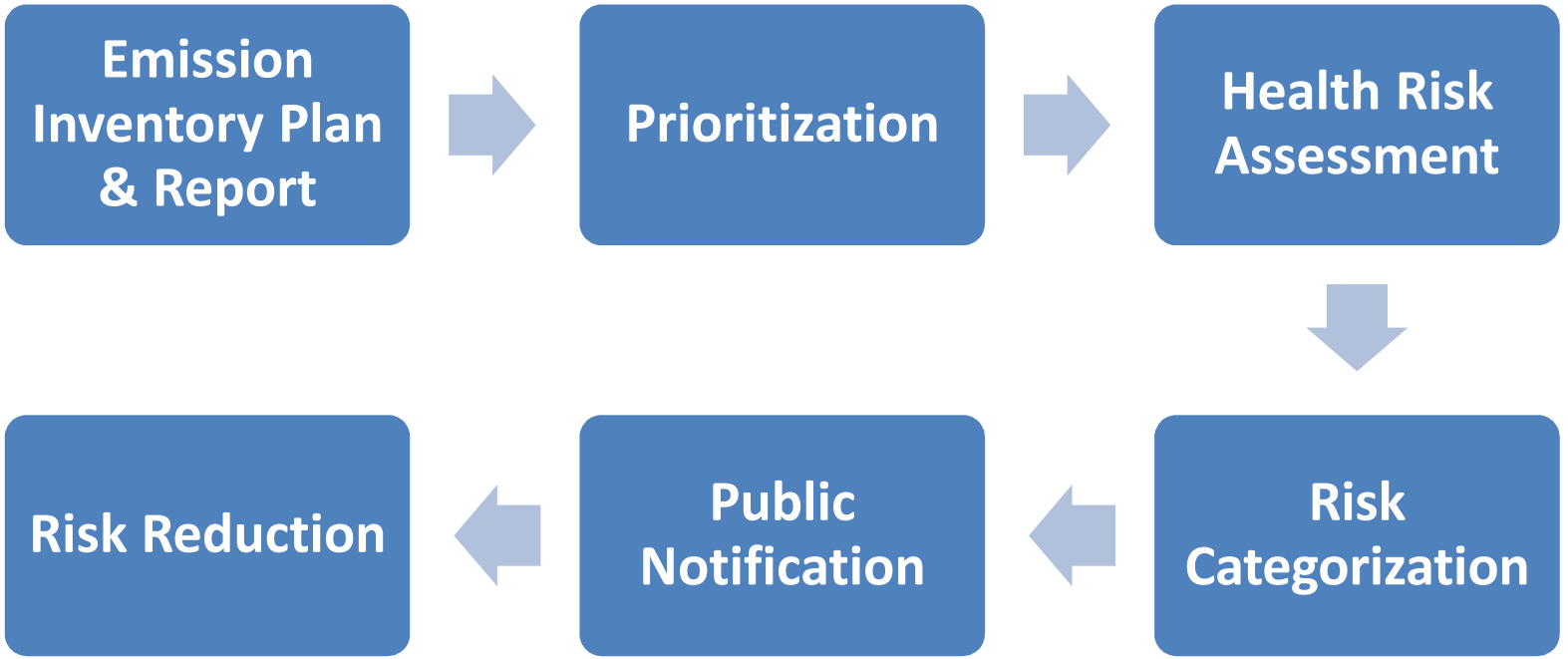
Assess Health Impact
- Inventory
- Prioritization
- Health Risk Assessment

Reduce Risk
- Public Awareness
- Risk Reduction Plan

Inform the Public
- Mail Notices
- Annual Report & Public Hearing

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Air Toxics "Hot Spots" Information and Assessment Act
Hot Spots Process



SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Air Toxics "Hot Spots" Information and Assessment Act Facility Types

Core Facilities

- 34 Total

Industrywide Facilities

- 1167 Total

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Hot Spots Program – Core Facilities Identification & Prioritization

High Priority

- Blue Diamond Growers
- ConFab Manufacturing
- L and D Landfill
- Lopez Agricultural Services

Intermediate Priority

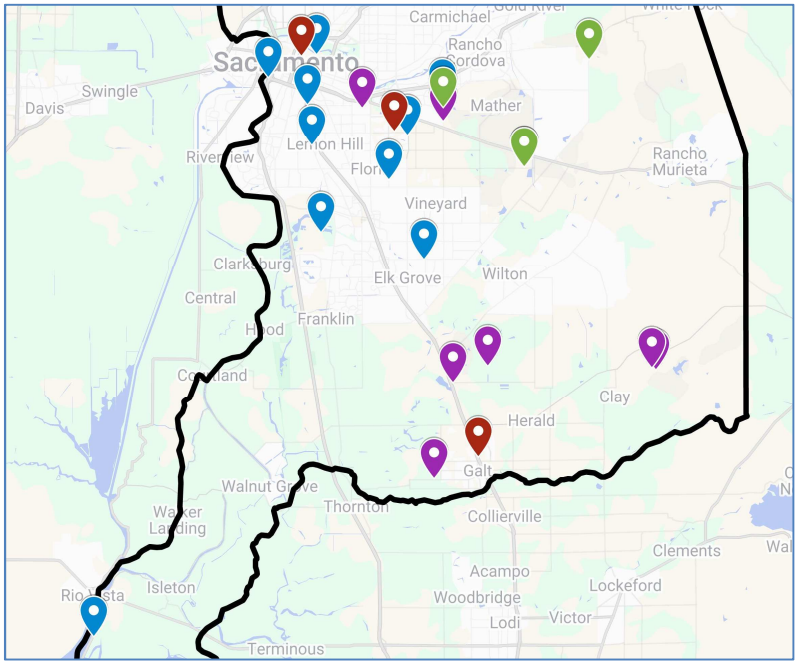
- Bimbo Bakeries
- Big Brannan (CRC)
- Chevron Terminal
- D&T Fiberglass
- Granite (4001 Bradshaw)
- Kiefer Landfill
- Sac City Landfill
- Sac Regional Sanitation District
- Silgan Can Company

Low Priority

- Teichert (Grantline)
- Granite (4291 Bradshaw)
- Triangle Rock

Pending Priority

- B&J Dairy
- Cal Denier Dairy
- SMUD – Cosumnes
- West Coast Grape
- Pabco Clay Products
- Sezter Forest Products
- Siemens



SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

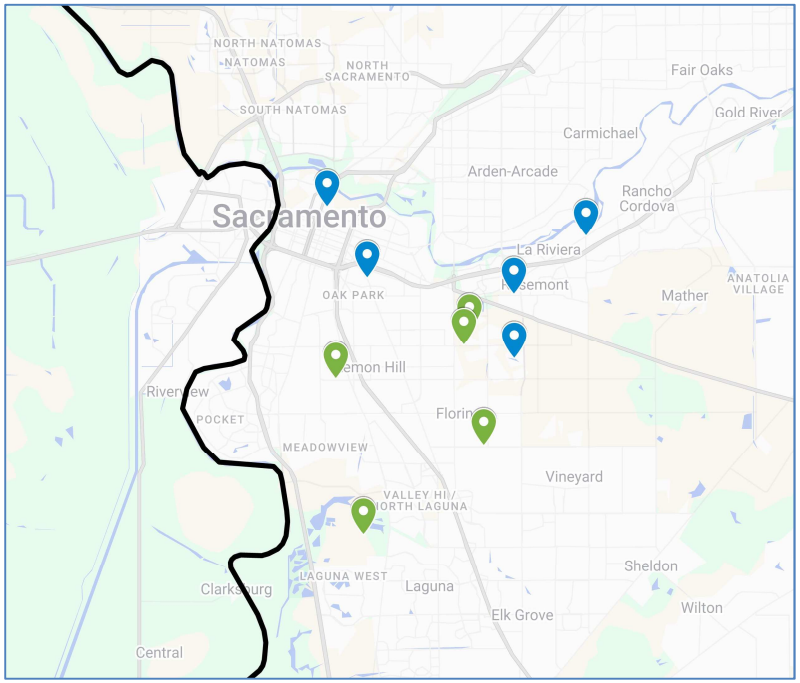
Hot Spots Program – Core Facilities
Risk Characterization

Intermediate Risk

- UCD Med Center
- SFPP, LP
- Teichert (Perkins Plant)
- Mitsubishi Rayon
- Blue Diamond Growers

Low Risk

- Huhtamaki Foodservice
- Carson Cogen
- Sacramento Cogen Authority
- Sacramento Power Authority
- Procter & Gamble

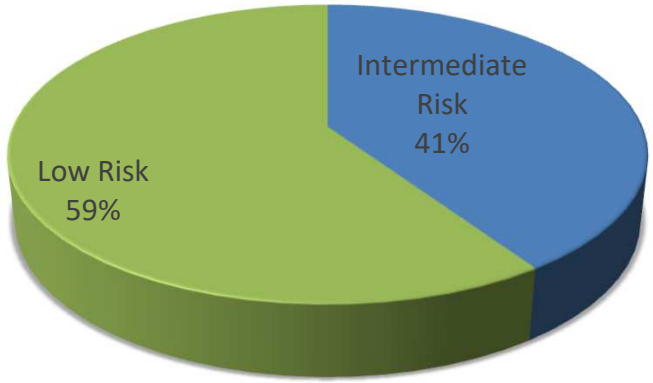


SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Industrywide Facilities: Gas Stations

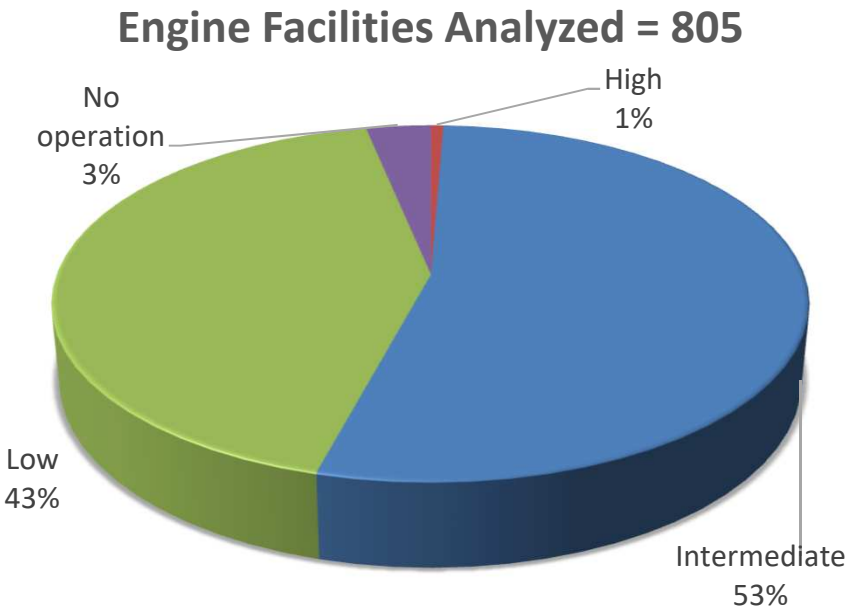
Stations Analyzed = 360

No high risk facilities identified



SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Industrywide Facilities:
Health Risk Assessment – Engine Only Facilities



SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Industrywide Facilities: Other Facilities

Chrome Platers

- 1 Intermediate Category
- 1 Low Category
- 1 uses trivalent chrome (non-carcinogenic)

Dry Cleaners

- Perchloroethylene phased out

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Hot Spots Program
Ongoing & Future Goals

Ongoing

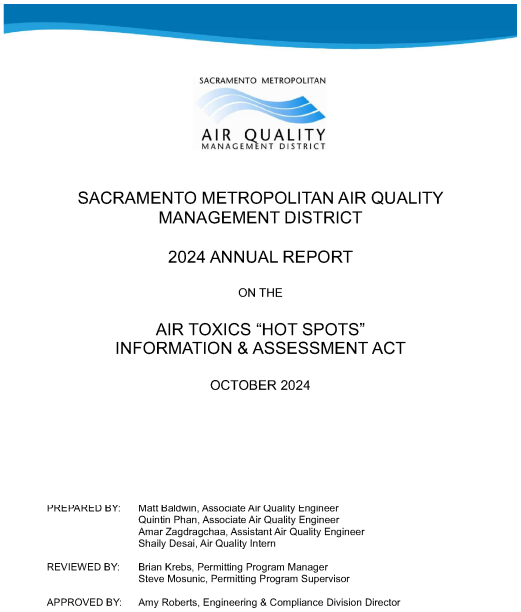
- Updating facility inventories
- Continual processing of existing core facilities
- Screening risks from diesel engines and gas stations
- Reviewing inventory for new facilities or reinstatement
- Prepare Annual Report

Future

- Integrating Online Services for annual reporting requirements
- Providing high category facilities assistance for risk assessment and reduction
- Review updated guidelines (EICG) for new applicable source types

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

2024 Hot Spots Program Annual Report Public Hearing



SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

2024 ANNUAL REPORT

ON THE

AIR TOXICS "HOT SPOTS" INFORMATION & ASSESSMENT ACT

OCTOBER 2024

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REVIEWED BY: Brian Krebs, Permitting Program Manager
Steve Mosunic, Permitting Program Supervisor

APPROVED BY: Amy Roberts, Engineering & Compliance Division Director

Annual Report

- Published Sept. 25
- Noticed on website
- Noticed through listserv
- Request Board to open public hearing
  - Public Comment

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Thank You

Meeting Date: 10/24/2024
Report Type: DISCUSSION / INFORMATION
Report ID: 2024-1024-10.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT 10.

Title: Greenfield Development in the Context of Achieving Air Quality and Climate Goals

Recommendation: Receive and file a presentation on greenfield development in the context of achieving air quality and climate goals.

Rationale for Recommendation: As the Sacramento region continues to grow, it is critical to ensure that development aligns with both air quality and climate goals. This presentation by staff from the Sac Metro Air District and the Sacramento Area Council of Governments (SACOG) will provide key insights into how the region can accommodate future growth while reducing vehicle miles traveled (VMT) and emissions. Understanding the challenges and opportunities associated with greenfield development and sustainable transportation planning will help guide the Board in making informed decisions that support air quality and climate mandates.

Contact: Paul Philley, AICP, Program Manager, Transportation & Climate Change, (279) 207-1122

Presentation: Yes

ATTACHMENTS:

Presentation: Greenfield Development in the Context of Achieving Air Quality & Climate Goals

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Approvals/Acknowledgements

Executive Director or Designee: Alberto Ayala, Report Approved 10/14/2024

District Counsel or Designee: Kathrine Pittard, Approved as to Form 10/14/2024

Discussion / Justification: The California Legislature has recognized that achieving and maintaining air quality standards and protecting public health requires the maximum feasible reduction or mitigation of emissions resulting from population growth. This also necessitates greater coordination between land use and transportation planning to meet air quality goals (CA H&SC section 40950(e)(f)).

While electrification of the state fleet continues, reducing vehicle miles traveled (VMT) remains essential for meeting California's climate goals, and supporting regional air quality goals. Through the land use entitlement process, development projects that are expected to exceed air quality thresholds typically create air quality mitigation plans (AQMPs) to reduce emissions during buildout. However, in areas with lower locational efficiency, typically greenfield areas, these mitigation plans tend to be less effective during early stages of development, and their final implementation may reduce effectiveness of VMT reductions.

The ability to include AQMP measures that reduce emissions but not VMT also complicates regional efforts to meet state-mandated VMT targets. Staff encourages local land use authorities to consider phasing entitlement, focusing development around sustainable transportation investments and including contingencies to ensure new growth areas are also low-VMT communities as market conditions change.

Greenfield Development in the Context of Achieving Air Quality & Climate Goals

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

SACOG Sacramento Area Council of Governments

Board of Directors Meeting

October 24, 2024

Presenters: Dov Kadin, Senior Planner, SACOG

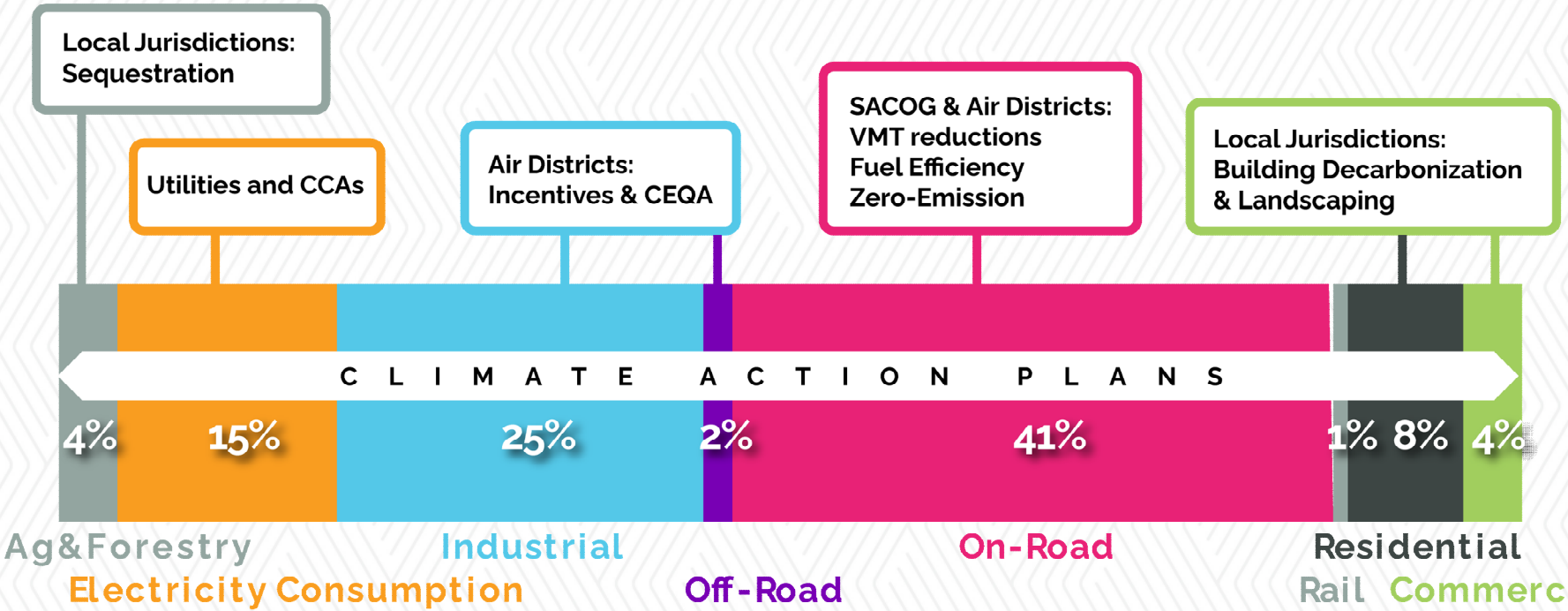
Paul Philley, AICP, Program Manager, TCC

AGENDA

- Climate Strategies and the role of transportation
- Greenfield Development in the context of SB375
- Greenfields in the broader context of achieving climate goals
- Lessons from the last two decades of development
- Recommendations for future planning efforts

Climate Action in our Region

2019 Sacramento-Roseville CSA GHG Emissions by Sector and Mobile Subsectors

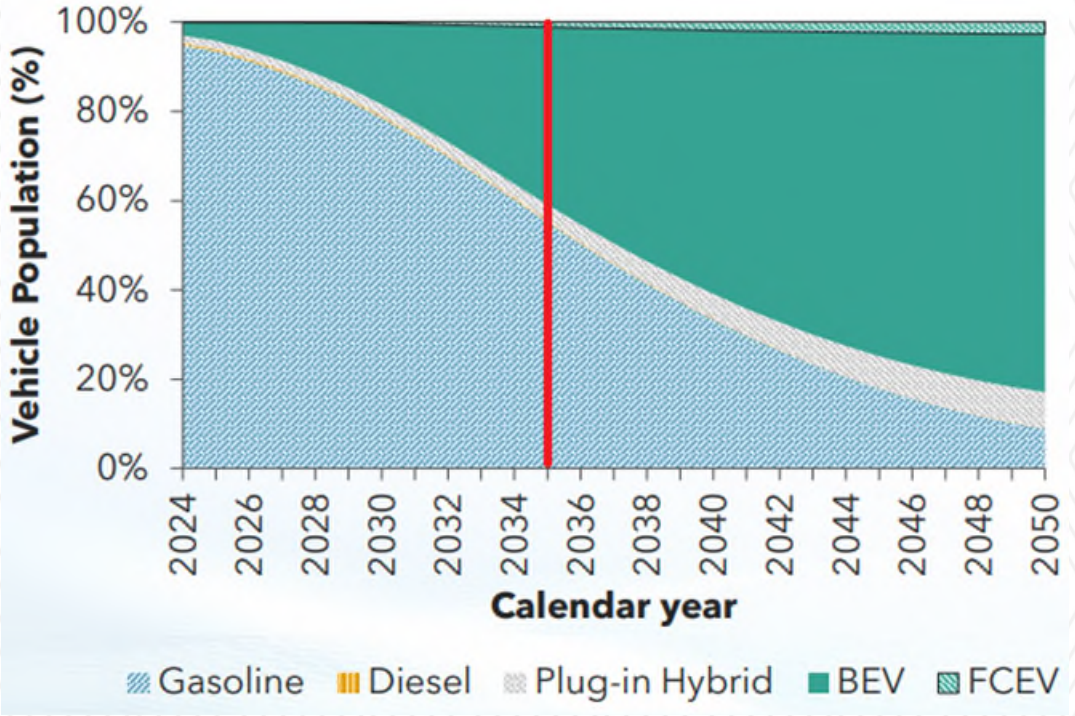


Transportation Emissions

Internal combustion vehicles will remain majority of the fleet through 2035.

While ZEV do reduce emissions, increases in Vehicle Miles Traveled (VMT) over time erode some of these benefits.

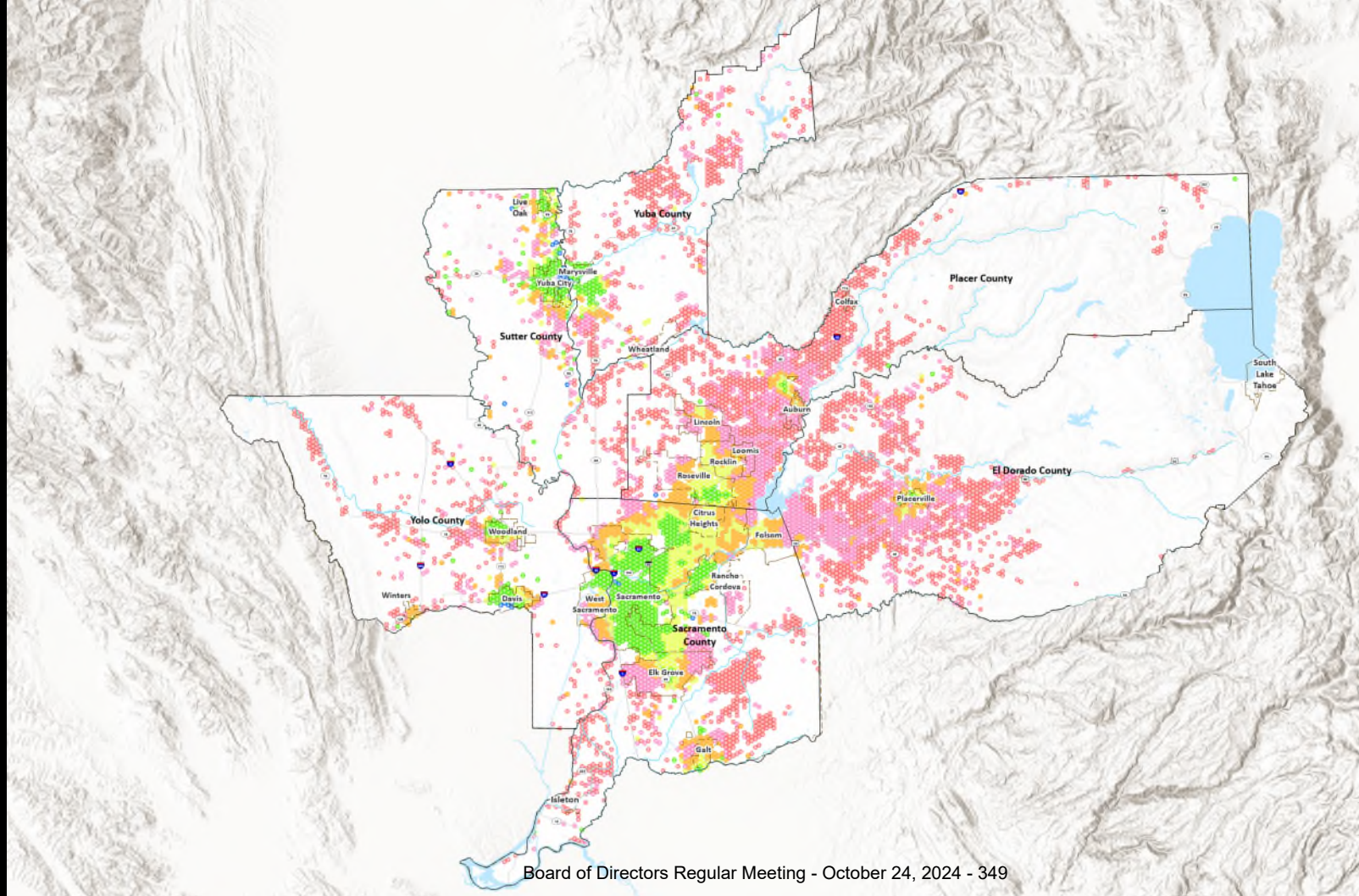
SACOG's per capita target is intended to work with the state's transition to ZEVs to accelerate the path toward carbon neutrality.



CARB EMFAC202Y Light Duty Fleet Mix projections

Average vehicle life is 16 years

VMT 2012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Placer County
Colfax
Sutter County
Wheatland
South Lake Tahoe
Auburn
Lincoln
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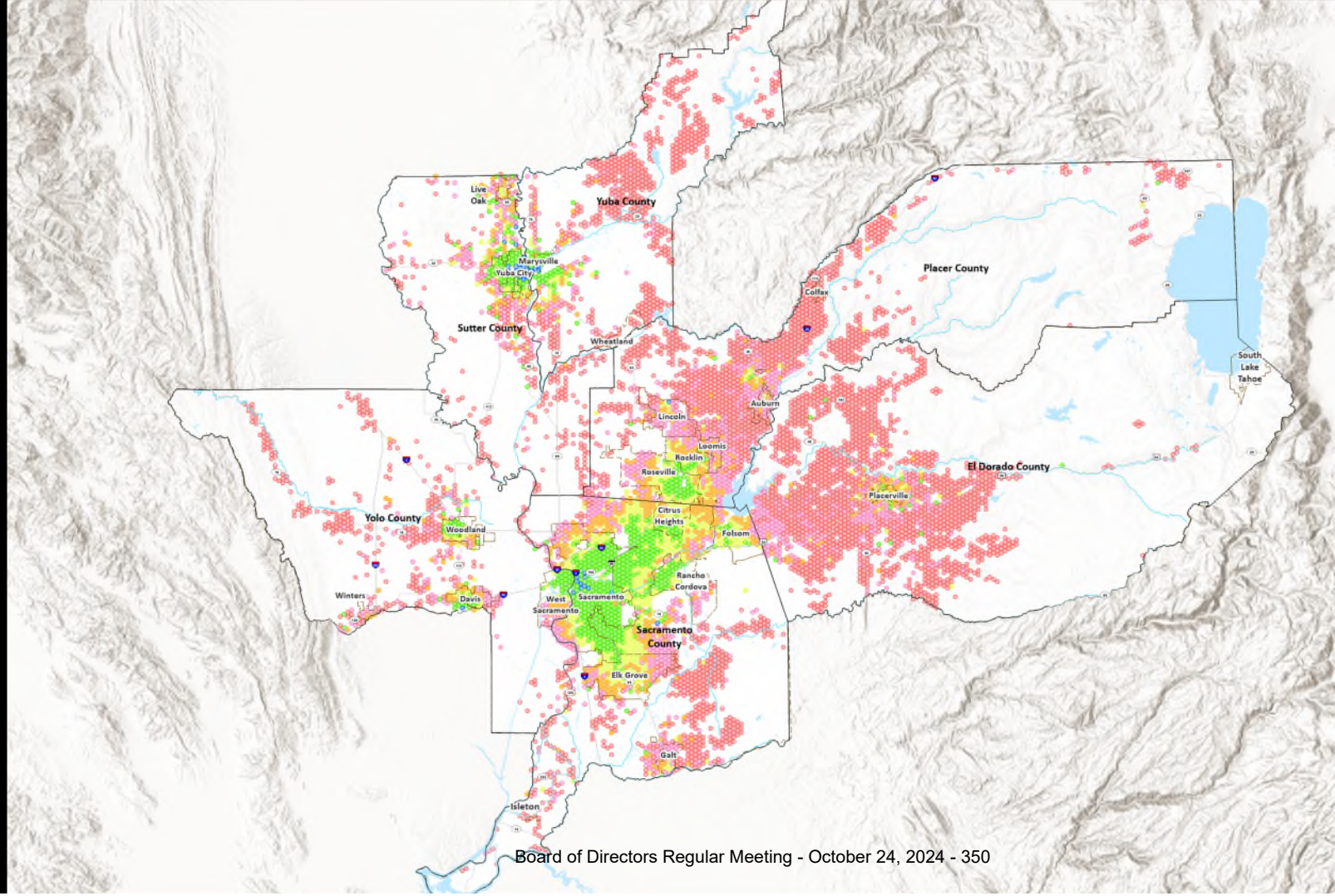
Rocklin
Roseville
El Dorado County
Placerville
Citrus Heights
Yolo County
Woodland
Folsom
Rancho Cordova
Winters
Davis
West Sacramento
Sacramento
Sacramento County
Elk Grove
Galt
Isleton

VMT 2016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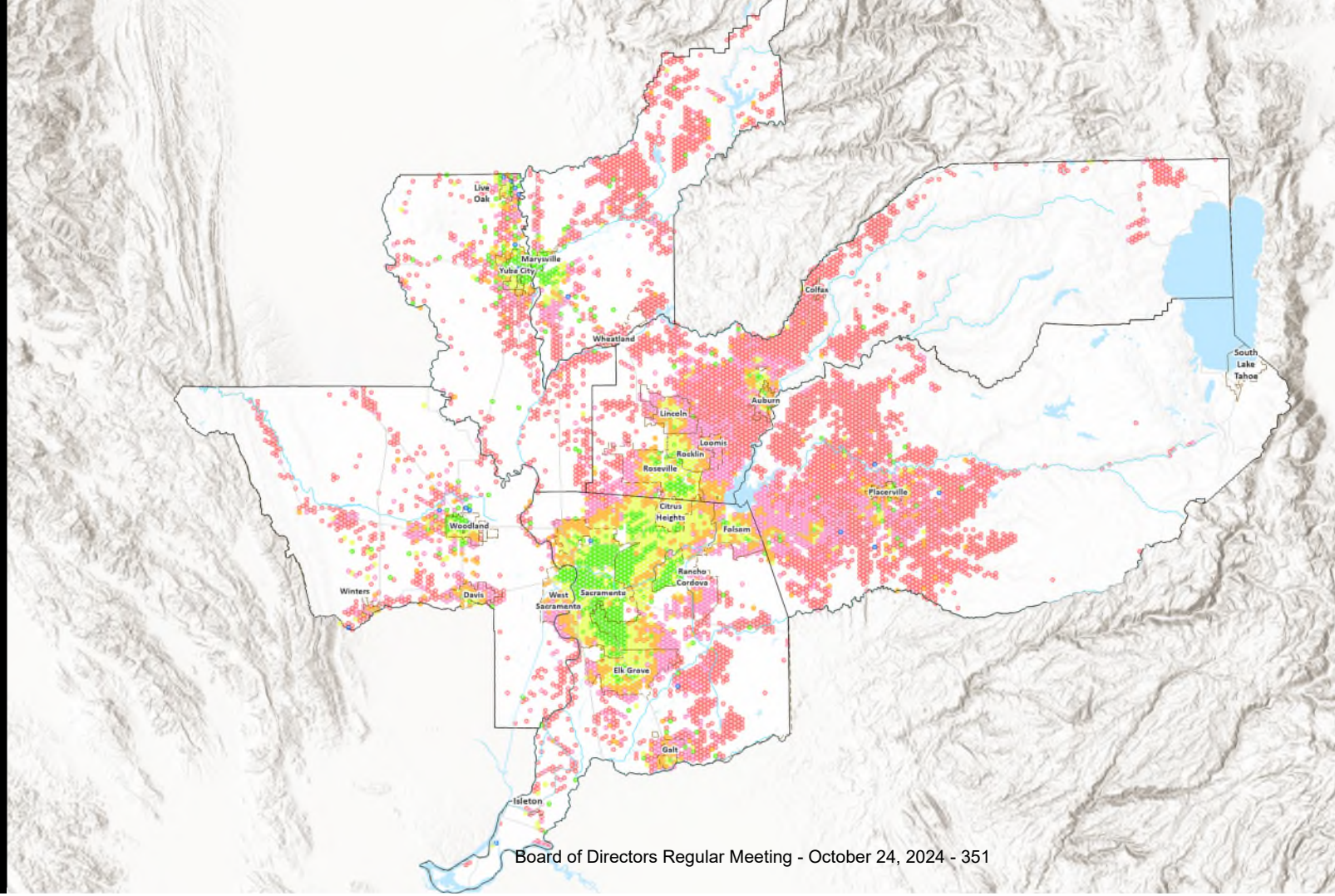
VMT 2020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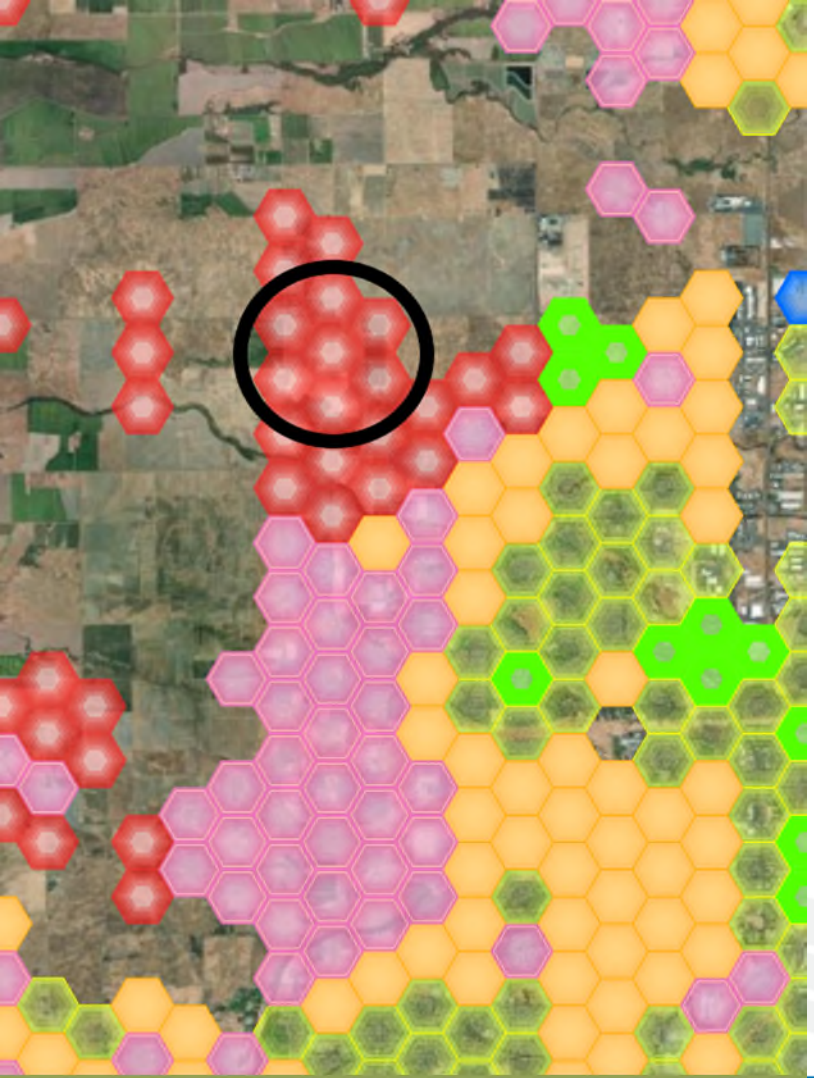
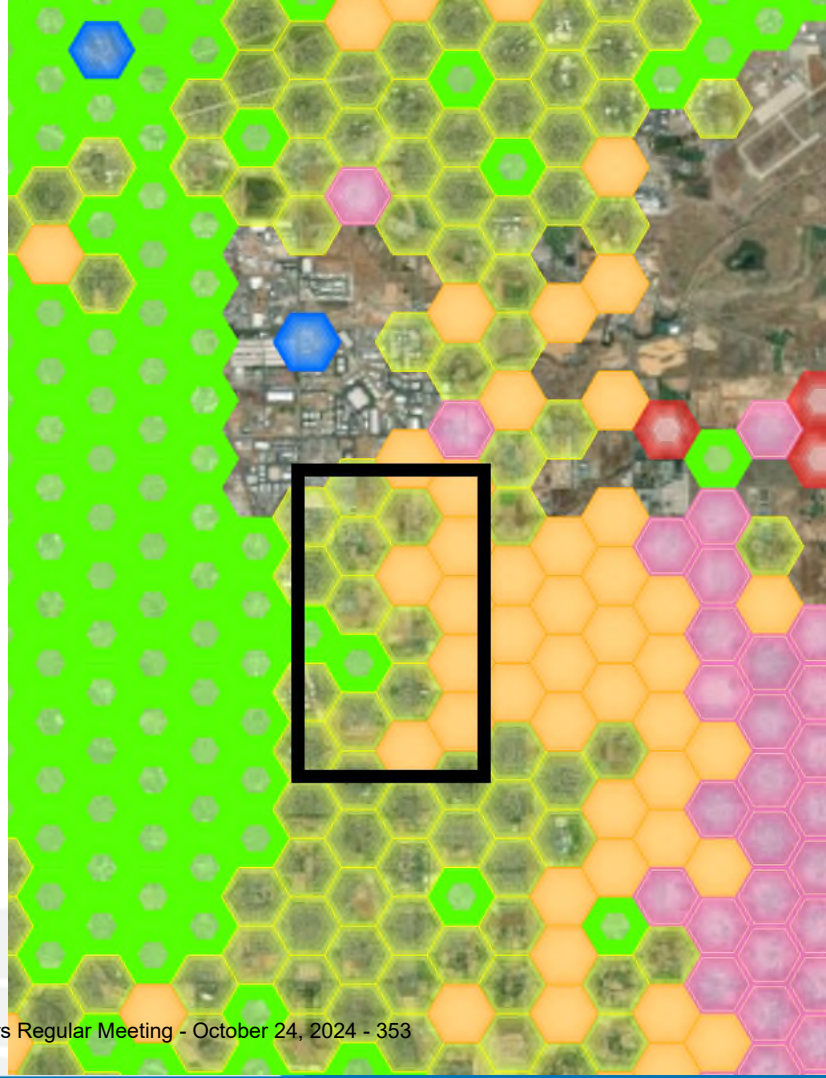
Location Matters

VMT Comparison





2050 Vehicle Miles Traveled (VMT)/Capita

- <= 50% of Regional Average
- <= 50-85% of Regional Average
- <= 85-100% of Regional Average
- <=100-115% of Regional Average
- <=115-150% of Regional Average
- >= 150% of Regional Average

TRANSPORTATION CHOICES

HOUSING CHOICES

COMPACT DEVELOPMENT

USE EXISTING ASSETS

MIXED LAND USES

NATURAL RESOURCES CONSERVATION

QUALITY DESIGN

SACRAMENTO REGION Blueprint TRANSPORTATION + LAND USE PLAN

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Lessons from Sacramento County Development

Circa 2002-2024

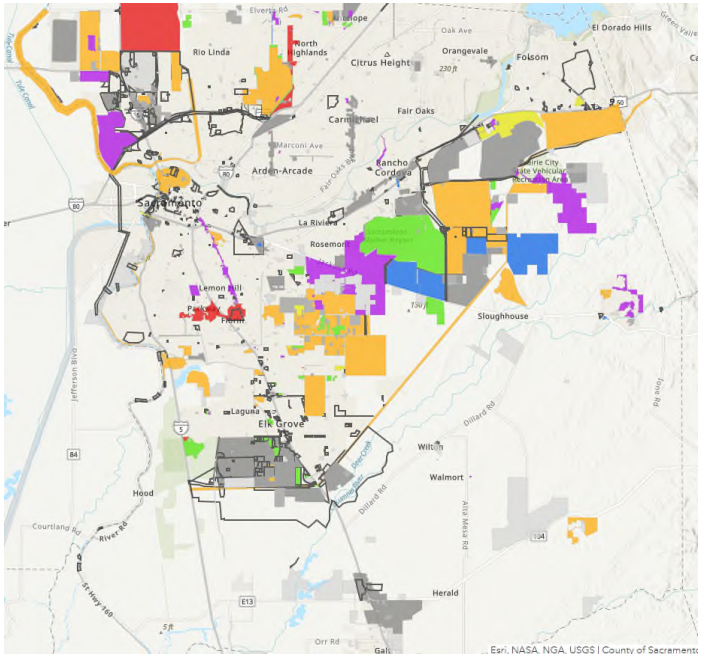
The Sac Metro Air District and development in Sac County

Sacramento County 1993 General Plan

- Air Quality Mitigation Plans required for significant projects

Air Quality Mitigation Plans & Greenhouse Gas Reduction Plans

- Proponent Created
- Air District Verified
- Local Jurisdiction Approved



SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Development takes a long time

5/2002

9/2024

Two Decades of Development

7/2004

7/2023

7/2004

5

1/2009

7

7/2016

2

2/2018

5

4/2023

-Mass Grading

-Backbone Infrastructure

-Drug store

-Northern Elementary

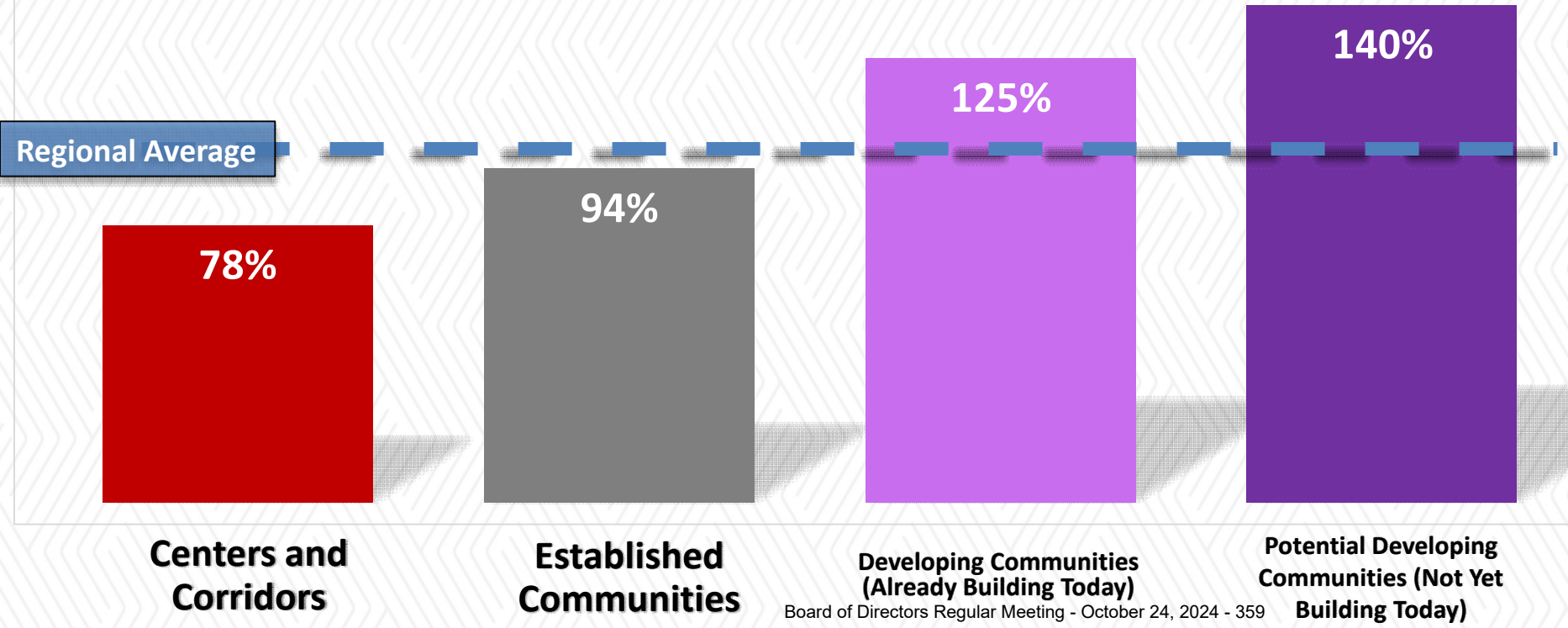
-Trail connecting developments

- Central Elementary
-Community Park
-Shopping Center

~12 miles to Middle/High Schools

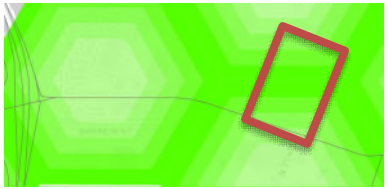
VMT reducing features typically added last

2035 VMT/Capita



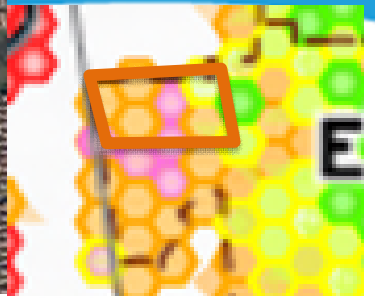
2007 Plan

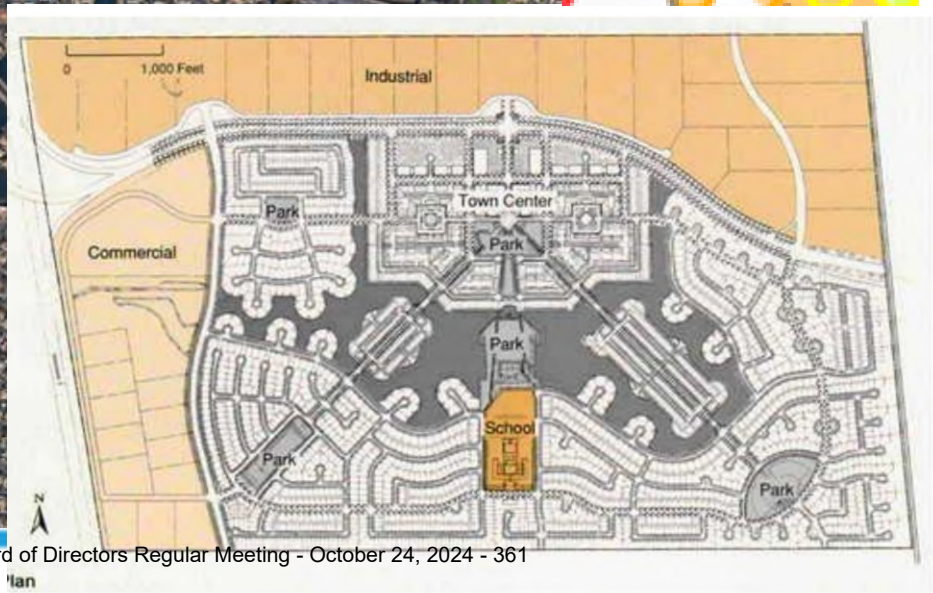
2024 Conditions



Infill projects typically rely on existing uses and are less likely to have periods of high VMT regardless of buildout speed

Locational Efficiency also matters – 1994 Plan vs 2024 conditions





New Growth Area (2012 Plan) – 3,048 dwelling units and ~8,230 people
Currently no Transportation Demand Mgmt. services or fixed-route transit

6.0 TRANSIT STATION PLAN

California Department of Transportation
Division of Transportation Planning

Sustainable Transportation Planning Grant Program

As Plans Change VMT Does Too

Bus/Transit

Bus service shall be coordinated with Regional Transit (RT) to assure reliable and timely connections to the rest of the regional transportation network. A future expansion of RT's light rail system to serve the North Natomas area will be accessible from, but not necessarily adjacent to Natomas Central.

2005 Plan

How can Greenfields reduce emissions?

Measure Type	Conventional Pollutants	Greenhouse Gases	Vehicle Miles Traveled
Transportation: Land Use, Transit, Trip Reduction, Pricing, School Programs, Neighborhood Design	Yes	Yes	Yes
Transportation: Fuels & Technology	Yes	Yes	No
Building Energy and Operations	Yes	Yes	No
Credits	Yes	Yes	No

Measures without VMT Benefit

- Combustion-Free Appliances
  - Space heating
  - Water heating
  - Hearths
  - Food Preparation
- Zero-Emission Technology
- Emission Reduction Credits
- Off-Site Mitigation

VERIFIED CARBON STANDARD

Original
2008 Plan

Revised
2024 Plan

Figure 1.5: Parks and Open Space Plan

Figure 20: No Gas Usage Optimization Exhibit

Pedestrian Bridges Removed

Replaced with no natural gas

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Summary of observations

- Development takes a long time, with buildout likely past key target dates.
- Greenfield developments will have higher VMT/capita during buildout than when finished
- Even complete greenfield developments frequently have VMT/capita higher than the regional average due to location
- Changes to plans and mitigation measures can degrade VMT and emissions reductions over time
- The process focused on emissions, not VMT, especially for changes to existing plans

Considerations for future land use decisions

- Phase project entitlement and development to complete existing communities before starting new ones.

- Ensure sustainable transportation investments match the footprint of new growth areas.

- Have contingency measures that address VMT if plan amendments are necessary.

Thank You