BOARD MEETING DATE: September 2, 2022 AGENDA NO. 30

PROPOSAL: Determine That Proposed Amendments to BACT Guidelines Are Exempt from CEQA and Amend BACT Guidelines

SYNOPSIS: This item is to add new and amended listings to South Coast AQMD's BACT Guidelines. Periodically, after consultation with stakeholders through the BACT Scientific Review Committee, staff proposes amendments to the BACT Guidelines to make them consistent with recent changes to South Coast AQMD rules and regulations as well as state requirements. Staff is proposing to add new and amended listings to Part B: Lowest Achievable Emission Rate Determinations for Major Polluting Facilities, Part D: BACT Determinations for Non-Major Polluting Facilities and to update the Overview, Parts A and C: Policy for Major and Non-Major Polluting Facilities, respectively.

COMMITTEE: Stationary Source, June 17, 2022; Recommended for Approval

RECOMMENDED ACTIONS:
1. Determine the proposed amendments to the BACT Guidelines are exempt from the requirements of the California Environmental Quality Act; and
2. Amend the BACT Guidelines.

Wayne Nastri
Executive Officer

JA:JW:BC:BF

Background

Under Regulation XIII – New Source Review BACT is required for new, relocated, and modifications to existing permitted sources that may result in an emission increase of any nonattainment air contaminant or any ozone depleting compound. Regulation XIII also requires the Executive Officer to periodically publish BACT Guidelines that establish the procedures and the requirements for applying BACT to commonly permitted equipment.

The BACT Guidelines include an Overview, which provides an introduction to the BACT Guidelines and a summary of how BACT and LAER are implemented in the South Coast AQMD, and a technical portion separated into three parts: major polluting facilities (Parts A and B), non-major polluting facilities (Parts C and D), and facilities subject to prevention of significant deterioration (PSD) for GHGs (Parts E and F). A facility is a major polluting facility if it emits, or has the potential to emit, a criteria air pollutant at a level that equals or exceeds the emission thresholds in South Coast AQMD's Regulation XXX – Title V Permits. Major polluting facilities that are subject to NSR are required by the federal Clean Air Act (CAA) to have the Lowest Achievable Emission Rate (LAER). South Coast AQMD implements the federal CAA requirement for LAER using BACT determinations that are incorporated in the BACT Guidelines.

In accordance with Health and Safety Code Section 40440.11, in updating Part D with new, more stringent minor source BACT (MSBACT), South Coast AQMD must follow a more rigorous process than for major polluting facilities, including a cost-effectiveness analysis, notification to the public, presentation at the BACT Scientific Review Committee (SRC) meeting, and Board approval. GHG BACT applies to new or modified facilities subject to PSD requirements for GHG. In general, GHG BACT determinations are project specific with a focus on options that improve energy efficiency.

Proposed Amendments to the BACT Guidelines

The proposed amendments are to update the Overview, Parts A, B, C, and D of the BACT Guidelines and to maintain consistency with recent changes to South Coast AQMD rules and state requirements. No amendments are proposed to Parts E and F.

Staff is proposing to add a section to Overview, Part A, and Part C describing the November 2021 amendments to Rule 1304 - Exemptions which provided a limited BACT exemption for new or modified permit unit located at RECLAIM or former RECLAIM facilities for PM10 and SOx emission increases associated with the installation or modification of add-on air pollution control equipment for controlling NOx emissions to comply with BARCT emission limits for NOx.

In accordance with the BACT Guidelines policy, staff is proposing to update the Maximum Cost-Effectiveness values consistent with the second quarter 2022 Marshall and Swift equipment index. Details regarding the proposed amendments to the Overview, Part A and Part C is included in Attachment A and the complete proposed amended Overview, Part A and Part C is included in Attachment B, C and E, respectively.

The proposed LAER determinations for Major Polluting Facilities (Part B) are summarized in Table 1 below with the complete proposed determinations included in Attachment D. The other portions of Part B are not included in this Board package because they are not being updated at this time.

Table 1 – Summary of Proposed Part B LAER Determinations

Equipment Category	Current LAER Limit	Proposed LAER Limit
Boiler, Fire-Tube, Natural Gas Fired <20 MMBTU/HR	NOx: 12 ppmv @ 3% O_2 dry	NOx: 7 ppmv @ 3% O_2 dry
Rotary Dryer, Aggregate Facility	NOx: 33 ppmv @ 3% O_2 dry	NOx: 33 ppmv @ 3% O_2 dry
Roller Coater – Paper and Film, with RTO	RTO overall control eff.: 95%	RTO overall control eff.: 97%
I.C. Engine – Stationary, Non-Emergency with SCR, NG Fired	Not established	Ammonia Slip: 10 ppm @ 15% O_2
Fumigation – Methyl Bromide Fumigation Chamber ≥ 100,000 lbs CH_3Br/year	Not established	Carbon Adsorption and Chemical Scrubber overall control eff.: 86%
I.C. Engine – Compression Ignition ≥1,000 BHP, Stationary Emergency	U.S. EPA' s Tier 2 emissions standards	U.S. EPA' s Tier 4 Final emissions standards

The proposed BACT Determinations for Non-Major Polluting Facilities (Part D) are summarized in Table 2 below with the complete proposed determinations included in Attachment F. All proposed Part D amendments and updates, except for the proposed new I.C. Engine – Stationary, Non-Emergency listing, will not result in more stringent requirements than would otherwise occur through current SIP-approved rule compliance, which constitutes MSBACT under Part C – Policy Guidance. The proposed amendments comply with the requirements of Health and Safety Code Section 40440.11.

Table 2 – Summary of Proposed Part D BACT Determinations

Equipment Category	Current BACT Limit	Proposed BACT Limit
I.C. Engine – Stationary, Non-Emergency, Electrical with SCR, NG Fired	Not established	Ammonia Slip: 10 ppm @ 15% O_2
Updated Listings		
Composting	Relist the applicability of BACT based on the annual capacity of the unit	
I.C. Engine, Stationary, Emergency	Add the diesel PM requirement for a sensitive receptor	
Open Process Tanks: Chemical Milling (Etching) and Plating	Relist "Chemical Milling Tanks" which was omitted in the last revision	
Printing (Graphic Arts)	Add “Compliance with BACT requirements for Other Dryers and Ovens” for NOx emissions	

Health and Safety Code Section 40440.11
In amending the BACT Guidelines for non-major polluting facilities to be more stringent, South Coast AQMD must comply with Health and Safety Code Section 40440.11 for the proposed new BACT determination for I.C. Engine – Stationary, Non-Emergency, Electrical with SCR, Natural Gas Fired. The proposed new BACT determination complies with the Health and Safety Code because:

- Installing a SCR system which reduces NOx emissions is a commercially viable achieved in practice control alternative that constitutes BACT;
- A Stationary, Non-Emergency, I.C. engine with SCR that can meet a 10 ppm ammonia limit has been commercially available for several years; and
- The results of the cost-effectiveness analysis performed to assess the incremental equipment and operating cost of the SCR show that the proposed control technology is cost effective. More details are included in Attachment A and cost-effectiveness calculations are included in Attachment G.

Public Process
The BACT SRC was established as a standing committee by the Board to enhance the public participation process with technical review and comments by a focused committee at periodic intervals, prior to updating the BACT Guidelines. The BACT SRC meetings included a variety of stakeholders such as affected facilities, industry associations, equipment vendors, public agencies, and environmental and community groups. The proposed amendments to the BACT Guidelines were presented to the BACT SRC on June 24, 2021, November 3, 2021 and February 23, 2022. A 30-day comment period was provided to the BACT SRC and general public to review and submit comments. Comments by BACT SRC members and the general public along with staff responses are included in Attachment H. As part of this BACT determination process, staff had individual meetings with affected stakeholders and industry groups.

Key Issues
Through the BACT determination process, staff has worked with stakeholders to address and resolve all issues. There was a concern over source testing requirements for non-Certified Tier 4 Final emergency engines. Although source testing is not a component of the BACT determination, source testing of the non-Certified Tier 4 Final engine is needed to ensure compliance with the emissions limits. Therefore, staff is finalizing permitting guidance for non-Certified Tier 4 Final engines to address source testing concerns, while ensuring compliance with the emission standards. Staff is not aware of any other remaining key issues.

California Environmental Quality Act
Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Sections 15061(b)(3) and 15308. Further, there is no substantial evidence indicating that any of the exceptions set forth in CEQA Guidelines Section 15300.2 apply to the proposed project. A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and is included as Attachment I to this Board letter. If

the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

Socioeconomic Analysis
The proposed amendments to the BACT Guidelines are to update the BACT Guidelines and to maintain consistency with recent changes to South Coast AQMD rules and state requirements. These proposed amendments represent achieved in practice emission control equipment and/or processes in addition to other amendments which are administrative in nature and will therefore not result in more stringent requirements than would otherwise occur and would not result in significant socioeconomic impacts.

Benefits to South Coast AQMD
Emission reductions realized through new, modified and relocated permitted sources that apply the latest BACT will benefit air quality, achieve emissions reductions needed to attain state and federal air quality standards and help improve public health in the South Coast AQMD's jurisdiction. In addition, the successful implementation of BACT for permitted stationary sources will contribute towards achieving the air quality objectives of South Coast AQMD's Air Quality Management Plan.

Resource Impacts
Existing South Coast AQMD resources will be sufficient to implement the proposed changes to the BACT Guidelines.

Recommendation
Staff recommends that the Board determine that the proposed amendments to the BACT Guidelines are exempt from the requirements of CEQA and approve the proposed amendments to Overview, Parts A, B, C, and D.

The updated BACT Guidelines with these proposed amendments will be made available at South Coast AQMD's website after Governing Board approval.

Attachments
A. Overview of Proposed Amendments to BACT Guidelines
B. Proposed Amended BACT Guidelines, Overview
C. Proposed Amended BACT Guidelines, Part A
D. Proposed Amended BACT Guidelines, Part B
E. Proposed Amended BACT Guidelines, Part C
F. Proposed Amended BACT Guidelines, Part D
G. Cost-effectiveness Calculations
H. Comments and Responses
I. Notice of Exemption from CEQA
J. Board Presentation

ATTACHMENT A

OVERVIEW OF PROPOSED AMENDMENTS TO BACT GUIDELINES

Background

South Coast AQMD's Regulation XIII – New Source Review, requires permit applicants to use BACT for new sources, relocated sources and modifications to existing sources that may result in an emission increase of any nonattainment air contaminant, any ozone depleting compound. Regulation XIII also requires the Executive Officer to periodically publish BACT Guidelines that establish the procedures and the requirements for applying BACT to commonly permitted equipment.

The BACT Guidelines include an Overview, which provides an introduction to the BACT Guidelines and a summary of how BACT and LAER are implemented in the South Coast AQMD, and a technical portion separated into three parts: major polluting facilities (Parts A and B), non-major polluting facilities (Parts C and D), and facilities subject to prevention of significant deterioration (PSD) for GHGs (Parts E and F). A facility is a major polluting facility if it emits, or has the potential to emit, a criteria air pollutant at a level that equals or exceeds the emission thresholds in South Coast AQMD's Regulation XXX – Title V Permits. Major polluting facilities that are subject to NSR are required by the federal Clean Air Act (CAA) to have the Lowest Achievable Emission Rate (LAER). South Coast AQMD implement the federal CAA requirement for LAER using BACT determinations that are incorporated in the BACT Guidelines. The Part B LAER determinations for major polluting facilities are only examples of past determinations that help in determining LAER for new permit applications. At the state level, Health and Safety Code Section 40405 defines BACT in a similar manner to federal LAER and requires the application of BACT for all new and modified permitted sources subject to NSR.

For non-major polluting facilities, minor source BACT (MSBACT) is as specified in Part D of the BACT Guidelines and determined in accordance with Health and Safety Code Section 40440.11 at the time an application is deemed complete. In updating Part D with new, more stringent MSBACT, South Coast AQMD must follow a more rigorous process than for major polluting facilities, including a cost-effectiveness analysis, notification to the public, presentation at the BACT Scientific Review Committee (SRC) meeting, and Board approval. GHG BACT applies to new or modified facilities subject to PSD requirements for GHG. Requirements for determining applicability of new or modified sources are promulgated in Chapter 40 of the Code of Federal Regulations Section 52.21. In general, GHG BACT determinations are project specific with a focus on options that improve energy efficiency.

The BACT SRC was established as a standing committee by the Board to enhance the public participation process with technical review and comments by a focused committee at periodic intervals, prior to updating the BACT Guidelines.

Proposed Amendments to the BACT Guidelines

The proposed amendments are to update the Overview, Parts A, B, C, and D of the BACT Guidelines and to maintain consistency with recent changes to South Coast AQMD rules and state requirements. No amendments are proposed to Parts E and F. The BACT SRC and other interested parties were provided with detailed descriptions of the proposed amendments to the BACT Guidelines at three scheduled publicly noticed meetings. The proposed amendments to the BACT Guidelines were posted on South Coast AQMD's website and a 30-day public comment period was provided after the third public meeting. Comments by BACT SRC members, the public, and staff responses are included in Attachment H.

Overview

The Overview provides an introduction to the BACT Guidelines and a summary of how BACT and LAER are implemented in the South Coast AQMD.

In September 2021, the Board approved the move of the BACT team from the Science and Technology Advancement division to the Engineering and Permitting division to streamline communication and information sharing. Consistent with this change, amendments to the entire BACT Guidelines to reflect this change from Science and Technology Advancement to Engineering and Permitting are proposed.

The proposed amendments to the Overview include adding a section describing the November 2021 amendments to Rule 1304 which provided a limited BACT exemption for new or modified permit unit located at RECLAIM or former RECLAIM facilities for PM10 and SOx emission increases associated with the installation or modification of add-on air pollution control equipment for controlling nitrogen oxide (NOx) emissions to comply with BARCT emission limits for NOx.

The hyperlink to the list of current BACT SRC members was updated.

The complete proposed amended Overview section is included in Attachment B.

Part A – Policy and Procedures for Major Polluting Facilities

Part A describes the policy and procedures for major polluting facilities and explains what LAER is, why it is required, when it is required, and how it is determined for major polluting facilities.

The proposed amendment to Part A is to include the same section added to Overview to address the limited BACT exemption for new or modified permit unit located at a RECLAIM or former RECLAIM facilities in Rule 1304 - Exemptions. A summary of the proposed Part A amendments is included in Attachment A with the complete proposed amended Part A included in Attachment C.

New and Updated Listings, Part B – LAER Determinations for Major Polluting Facilities

Part B consists of three sections: Section I contains listings of LAER determinations made by South Coast AQMD; Section II contains listings of LAER determinations in other air districts; and Section III contains listings of emerging technologies which have been in operation with an air quality permit but do not yet qualify as LAER. The proposed Part B LAER determinations of Sections I are summarized below with the complete proposed determinations included in Attachment D.

The other portions of Sections I, II, and III are not included in this Board package because they are not being updated at this time.

Section I – South Coast AQMD LAER/BACT Determinations

Three updated listings and one new listing are proposed, as summarized below.

Boiler, Fire-tube, Natural Gas Fired (update)

The current boiler category is being updated with a Group III unit fire-tube boiler with maximum heat input rate of 8.4 mmBTU/hr which is fired on natural gas and equipped with a low NOx burner. The boiler has been permitted at 7 parts per million (ppm) NOx and 50 ppm CO on a dry basis corrected to 3 percent oxygen (O_2). The existing LAER/BACT limit for NOx is 12 ppm and will be replaced by the updated determination at 7 ppm NOx at 3 percent O_2. The boiler has been operating since April 2020 and demonstrated compliance with permit emission limits through source testing.

Rotary Dryer-Aggregate Facility, Natural Gas Fired (update)

Aggregate rotary dryers have been used to reduce or minimize the moisture content from various aggregate materials such as recycled asphalt, recycled concrete, and gravel. Since the existing listing was established in 2003, staff updated the current LAER/BACT listing with a most recent achieved in practice case with 33 ppm NOx limit at 3 percent O_2. This rotary dryer has been in operation for several years. The dryer is equipped with a low NOx burner fired on natural gas at maximum heat input rate of 135 mmBTU/hr. In order to remove moisture, raw aggregate is fed into the rotary dryer and is heated to temperature per specification. Asphalt oil is fed directly into the dryer and mixed with raw aggregate. The asphaltic concrete is discharged into an incline slat conveyor which feeds silo loading batches via a series of drag slat conveyors. The exhaust

from the dryer and conveyor is vented to a hot baghouse. It has been source tested in 2016 and has been operating in compliance.

Roller Coater – Paper and Film, with Regenerative Thermal Oxidizer (RTO) for VOC Control (update)

The current "Roller Coater" category is being updated with an achieved in practice case. The manufacturing process involves casting of a vinyl film and application of the adhesive on the film. Coatings are applied in a permanent total enclosure (PTE) meeting the requirements of U.S. EPA's Method 204. The PTEs, one around each coating head and roller coaters, are vented to the RTO. The RTO burner is used to pre-heat the ceramic beds to establish an initial temperature of 1500 degrees Fahrenheit (°F) and it has 97% overall control efficiency. The equipment has been in operation for five years and showed compliance with permitted limits through source test results.

Internal Combustion (I.C.) Engine– Stationary, Non-Emergency with Selective Catalytic Reduction (SCR), Natural Gas Fired (new)

This listing is to bring guidance to ammonia emissions generated from SCR on Stationary, Non-Emergency I.C. Engine. The SCR system chemically reduces NOx emissions from a prime engine (an engine providing a primary source of electricity) by injecting urea into the engine exhaust. Unreacted ammonia resulting from incomplete reaction of the NOx and the urea is called ammonia slip. Current SCR serving prime engines have a permit condition to limit the ammonia slip to 10 ppm. The achieved in practice case is an I.C. engine, lean-burn with SCR. The engine is rated at 1,573 brake horsepower (BHP) and driving an electrical generator. Source test results confirm compliance with 10 ppm ammonia permit limit corrected to 15 percent O_2.

Section II – Other LAER/BACT Determinations

One new and one updated listing are proposed, as summarized below.

Fumigation - Methyl Bromide (CH_3Br) Fumigation Chamber Greater than or Equal to (≥) 100,000 pounds per year (lbs/yr) of CH_3Br (new)

This listing is a new entry to establish a new LAER/BACT determination based on a *CH_3Br* fumigation facility located in San Luis Obispo County Air Pollution Control District (APCD). The facility fumigates vegetables with methyl bromide prior to cooling and shipping. A carbon adsorption control device with onsite reactivation using a chemical scrubber is utilized to control VOC emissions. After completing the fumigation cycle the carbon bed is re-activated in a chemical scrubber. The facility has been operating the carbon adsorption control device since 2014. The source test results confirm the 86% capture and control efficiency for carbon adsorption and chemical scrubber.

I.C. Engine-Compression Ignition ≥1,000 BHP, Stationary Emergency including Non-Agricultural and Non-Direct Drive Fire Pump (new)

Bay Area AQMD, Sacramento Metropolitan AQMD, and San Joaquin Valley APCD have established LAER Guidance that requires the stationary emergency I.C. engines to meet the U.S. EPA Tier 4 Final emissions standards. The update to the LAER/BACT listing is based on Tier 4 compliant engines at a Microsoft MWH Datacenter in Quincy, which have been in operation since 2019. The engines are equipped with SCR and catalyzed diesel particulate filter to meet the emission requirements of U.S. EPA Tier 4 Final certified engines. The results of source tests performed on three engines with capacity of 1.0, 1.5 and 3.0 megawatts show compliance with Tier 4 Final emission standards. Tests have been performed at each of the five engine torque load levels (10%, 25%, 50%, 75%, and 100%) and data was reduced to a single-weighted average value. Proposed LAER/BACT applies to stationary emergency diesel engines ≥1,000 BHP located in Major Source facilities. Compliance can be achieved through installing a Tier 4 Final certified or Tier 4 Final compliant I.C. engine.

Part C – Policy and Procedures for Non-Major Polluting Facilities

Part C describes the policy and procedures for non-major polluting facilities and explains what BACT is, why it is required, when it is required and how it is determined for non-major polluting facilities.

To be consistent with the update to Overview and Part A, staff is proposing to add a new section to include the Rule 1304 limited BACT exemption for new or modified permit unit located at a RECLAIM or former RECLAIM facilities.

Staff is proposing to update the Maximum Cost-Effectiveness Values on Table 5 consistent with the second quarter 2022 Marshall and Swift equipment index in accordance with the BACT Guidelines policy. A summary of the proposed Part C amendments is included in Attachment A with the complete proposed amended Part C included in Attachment E.

Proposed Amendments to Part D BACT Determinations for Non-Major Polluting Facilities

Part D consists of BACT determinations for minor sources which are established in accordance with state law at the time an application is deemed complete.

The proposed new and updated amendments to Part D are for equipment and processes which have been achieved in practice and to maintain consistency with recent changes to South Coast AQMD rules and state requirements. All proposed Part D amendments and updates, except for the proposed new I.C. Engine – Stationary, Non-Emergency listing, will not result in more stringent requirements than would otherwise occur through current SIP-approved rule compliance, which constitutes MSBACT under Part

C – Policy Guidance. In addition, staff has concluded through the implementation of these SIP-approved rules that these MSBACT determinations are achieved in practice and cost effective. The proposed amendments comply with the requirements of Health and Safety Code Section 40440.11. The proposed amended Part D BACT determinations are summarized below with the complete proposed amended Part D included in Attachment F.

Composting

--Current Language

Footnote (b) for VOC and inorganic emissions from co-composting is missing in the last two revisions of the guidelines.

--Proposal

Staff is proposing to relist footnote (b) which defines the applicability of BACT based on the annual capacity of the unit: "Not required for design capacity of less than (<) 1,000 tons per year"

I.C. Engine, Stationary, Emergency

--Current Language

There is no reference to sensitive receptors for particulate matter (PM) emissions.

--Proposal

To ensure the I.C. Engine located at a sensitive receptor or 50 meters or less from a sensitive receptor meets the diesel PM standard required in Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines, staff is proposing to add a new footnote to highlight this requirement in the BACT Guidelines as: "BACT PM emission standard requirement for new Stationary Emergency Standby Diesel-Fueled I.C. Engines located at a sensitive receptor or 50 meters or less from a sensitive receptor."

I.C. Engine– Stationary, Non-Emergency, Electrical with SCR, NG Fired (new)

--Current Language

There is no ammonia slip limit in the BACT Guidelines for this category.

--Proposal

The goal is to formalize the existing permitted ammonia limit and list it in the BACT Guidelines. The achieved in practice case is an internal combustion engine has been described in Part B. Source test results confirm compliance with 10 ppm ammonia permit limit corrected to 15 percent O_2. If too much ammonia is injected, the unreacted ammonia results in ammonia slip downstream of the catalyst and forms ammonium sulfate. Ammonium sulfate is a precursor for PM2.5 and used for cost effectiveness evaluation. Cost for additional catalyst layer to reduce ammonia slip from 20 ppm baseline to 10 ppm was provided by catalyst manufacturer with no change on the maintenance costs. A cost-effectiveness analysis was done to assess the incremental capital and operating

costs in accordance with Health and Safety Code 40440.11, which is further discussed in the "Compliance with the Health and Safety Code" section. The cost effectiveness evaluation shows installing SCR on Stationary, Non-Emergency I.C. engine is cost effective. Staff is proposing to add 10 ppmv ammonia limit corrected to 15 percent O_2 for I.C. engines greater than (>) 50 BHP.

Open Process Tanks: Chemical Milling (Etching) and Plating

--Current Language

"Chemical Milling Tanks" category left out inadvertently in the previous revision.

--Proposal

Staff is proposing to relist "Chemical Milling Tanks" which was left out in the last revision. This category addresses aluminum and magnesium as well as nickel alloys, stainless steel, and titanium subcategories. There are no proposed changes from the previous listing.

Printing (Graphic Arts)

--Current Language

For "Lithographic or Offset, Heatset" subcategory, the emissions of NOx from oven need to comply with BACT requirements listed under "Other Dryers and Ovens" category.

--Proposal

For clarification, staff is proposing to modify the table for NOx emissions by adding "Compliance with BACT requirements for Other Dryers and Ovens".

Compliance with the Health and Safety Code

In amending the BACT Guidelines for non-major polluting facilities to be more stringent, South Coast AQMD must comply with Health and Safety Code Section 40440.11. Staff is proposing new BACT determination in Part D for I.C. Engine– Stationary, Non-Emergency, Electrical with SCR, Natural Gas Fired. The following paragraphs identify the applicable requirements in Health and Safety Code Section 40440.11 and demonstrate compliance with each requirement:

(c)(1) Identify one or more potential control alternatives that may constitute the Best Available Control Technology as defined in Health and Safety Code Section 40405.
I.C. Engine– Stationary, Non-Emergency, Electrical with SCR, Natural Gas Fired
Commercially viable achieved in practice control alternatives that may constitute BACT would be installing a SCR system which chemically reduces NOx emissions from a prime engine by injecting urea into the engine exhaust.

(c)(2) Determine that the proposed emission limitation has been met by production equipment, control equipment, or a process that is commercially available for sale, and has achieved the best available control technology in practice on a comparable

commercial operation for at least one year, or a period longer than one year if a longer period is reasonably necessary to demonstrate the operating and maintenance reliability, and costs, for an operating cycle of the production or control equipment, or process.

Stationary, Non-Emergency, I.C. engine with SCR that can meet a 10 ppm ammonia limit has been commercially available for several years. Staff has included in Attachment F proposed BACT determinations citing applications of SCR controlling NOx emissions. This equipment has been in commercial operation for over one year, source tested, and verified compliance with the 10 ppm ammonia corrected to 15 percent O_2. The cost-effectiveness analysis also has been conducted based on the cost data provided by the catalyst manufacturer.

(c)(3) Review the information developed to assess the cost-effectiveness (annual cost of control divided by annual emission reduction potential) of each potential control alternative.

A cost-effectiveness analysis was performed to assess the incremental equipment and operating cost of the SCR for additional catalyst layer to achieve 10 ppm ammonia versus 20 ppm ammonia, both corrected to 15 percent O_2. Staff reviewed source test data to calculate ammonia mass emission reduction and reviewed the manufacturer's cost data to assess the cost-effectiveness of installing additional layer of catalyst. See calculations spreadsheet in Attachment G.

(c)(4) Calculate the incremental cost-effectiveness for each potential control option (difference in cost divided by difference in emissions for each progressively more stringent control option)

The incremental cost-effectiveness analysis included calculations of incremental cost per ton of PM10 reduced using additional layer of catalyst in SCR. The results show that the proposed control technology is cost effective. See calculations spreadsheet in Attachment G.

(c)(5) Place the Best Available Control Technology revision proposed on the calendar of a regular meeting agenda of the South Coast AQMD Governing Board for its acceptance or further action as the board determines.
The proposed revisions to the BACT Guidelines were placed on the agenda of the September 2, 2022 meeting of the South Coast AQMD Governing Board.

OVERVIEW

Chapter 1 - Introduction

The South Coast Air Quality Management District (South Coast AQMD) Regulation XIII – New Source Review (NSR) and Regulation XX – RECLAIM, require applicants to use Best Available Control Technology (BACT) for new sources, relocated sources, and modifications to existing sources that may result in an emission increase of any nonattainment air contaminant, any ozone depleting compound (ODC), or ammonia. Regulation XIII requires the Executive Officer to periodically publish BACT Guidelines that establish the procedures and the BACT requirements for commonly permitted equipment.

South Coast AQMD Regulation XIV – Toxics and Other Non-Criteria Pollutants, requires applicants to use Best Available Control Technology for Toxics (T-BACT) for new, relocated or modified permit units that result in a cumulative increase in Maximum Individual Cancer Risk (MICR) of greater than one in a million (1.0×10^{-6}) at any receptor location. Additionally, Regulation XVII – Prevention of Significant Deterioration (PSD) also sets forth BACT requirements for new sources, relocated sources and modifications to existing sources that emit attainment air contaminants. PSD BACT is incorporated into these BACT Guidelines. As of the publication date of these guidelines, there is currently no requirement for South Coast AQMD to publish T-BACT guidelines and T-BACT must be established during the permitting process.

Historically, the BACT Guidelines were first published in May 1983, and later revised in October 1988. The Guidelines consisted of two parts: Part A – Policy and Procedures, and Part B – BACT Determinations. Part A provided an overview and general guidance while Part B contained specific BACT information by source category and pollutant. Since the October 1988 revision, Part A was amended once in 1995, and Part B was updated with six LAER determinations between 1997 and 1998.

On December 11, 1998, the Governing Board approved a new format for listing BACT determinations in Part B of the Guidelines. While the previous Part B of the BACT Guidelines specified BACT requirements and set out source category determinations which could be interpreted as definitive, the new format simply provides listings of recent BACT determinations by South Coast AQMD permitting staff and others as well as information on new and emerging technologies. Part B of the South Coast AQMD BACT Guidelines now follows the same outline as the permit listings in the California Air Resources Board State BACT Clearinghouse Database, which is managed under the direction of the California Air Pollution Control Officers Association's (CAPCOA) Engineering Managers Committee. In addition, BACT determinations made by South Coast AQMD are submitted to the U.S. Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse by ARB staff. Further information on the format of the Guidelines, including reasons for the change in direction, may be found in Board Letters presented at the October 1998 Board Meeting, Agenda No. 41, and the December 1998 Board Meeting, Agenda No. 28.

The public participation process includes technical review and comments by a focused BACT Scientific Review Committee (BACT SRC) at periodic intervals, prior to the updates of the South Coast AQMD BACT Guidelines. The Board established a 30-day notice period for the BACT SRC and interested persons to review and comment

on South Coast AQMD BACT determinations that result in BACT requirements that are more stringent than previously imposed BACT.

As a result of amendments to South Coast AQMD's NSR regulations in September 2000, the BACT Guidelines were separated into two sections: one for major polluting facilities and another for non-major (minor) polluting facilities. (See Chapter 2 in the Overview for how to determine if a facility is major or minor).

The BACT Guidelines for major polluting facilities include:

- Part A: Policy and Procedures for Major Polluting facilities; and
- Part B: LAER/BACT Determinations for Major Polluting Facilities.

The BACT Guidelines for non-major polluting facilities include:

- Part C: Policy and Procedures for Non-Major Polluting Facilities; and
- Part D: BACT Guidelines for Non-Major Polluting Facilities.

Both the format of the guidelines and the process for determining BACT are significantly different between major and non-major polluting facilities. Major polluting facilities that are subject to NSR are required by the Clean Air Act to have the Lowest Achievable Emission Rate (LAER). LAER is determined at the time the permit is issued, with little regard for cost, and pursuant to USEPA's LAER policy as to what is achieved in practice. The Part B BACT and LAER determinations for major polluting facilities are only examples of past determinations that help in determining LAER for new permit applications.

For non-major polluting facilities, BACT will be determined in accordance with state law at the time an application is deemed complete unless a more stringent rule requirement becomes applicable prior to permit issuance. For the most part, it will be as specified in Part D of the BACT Guidelines. Changes to Part D for minor source BACT (MSBACT) to make them more stringent will be subject to public review and South Coast AQMD Board approval, for consideration of cost.

For the 2016 amendment to the Guidelines, additional parts have been added to address PSD requirements for greenhouse gas (GHG) emissions established by U.S. EPA in 40 CFR 52.21 in 2011. The requirements are incorporated by reference in South Coast AQMD Rule 1714. The BACT Guidelines for GHG requirements include:

- Part E: Policy and Procedures for Facilities Subject to Prevention of Significant Deterioration for Greenhouse Gases; and
- Part F: BACT Determinations for Facilities Subject to Prevention of Significant Deterioration for Greenhouse Gases.

In order to distinguish between BACT for various sources, this document will use the following nomenclature for BACT:

LAER for BACT at major polluting facilities

MSBACT for BACT at non-major polluting facilities

PSD BACT for BACT at facilities subject to BACT requirements for criteria pollutants

Written comments about the BACT Guidelines are welcome at any time and will be evaluated by South Coast AQMD staff and included in the BACT Docket at the South Coast AQMD library. These comments should be addressed to:

South Coast Air Quality Management District
BACT ~~Docket~~Team
~~Science and Technology Advancement~~ Engineering and Permitting
21865 Copley Dr.
Diamond Bar, CA 91765-0934

Comments may also be submitted via email to BACTTeam@aqmd.gov, and should include BACT Docket in the subject line.

The BACT Guidelines are available without charge from South Coast AQMD's web site at www.aqmd.gov/home/permits/bact. A hardcopy of the BACT Guidelines may be obtained for a fee by submitting a request to Subscription Services at www.aqmd.gov/contact/subscription-services or by calling (909) 396-3720. Revisions to the Guidelines will be mailed to all persons that have purchased annual updates to the BACT Guidelines.

Chapter 2 – Applicability Determination

This chapter explains how to determine whether a facility is a major or minor polluting facility, and how a facility can become a minor polluting facility.

MAJOR POLLUTING FACILITY EMISSION THRESHOLDS

A facility is a major polluting facility (or a major stationary source as it is called in the federal Clean Air Act [CAA]) if it emits, or has the potential to emit (PTE), a criteria air pollutant at a level that equals or exceeds emission thresholds specified in the CAA[1] based on the attainment or nonattainment status. Table 1 presents those emission thresholds for each criteria air pollutant for each air basin in South Coast AQMD. The map in Figure 1 shows the location of the three air basins in South Coast AQMD. If a threshold for any one criteria pollutant is equaled or exceeded, the facility is a major polluting facility, and will be subject to LAER for all pollutants subject to NSR. Table 1 does not include emission thresholds that trigger GHG BACT for South Coast AQMD Rule 1714 and 40 CFR 52.21. Part E of the BACT Guidelines should be referenced for a detailed explanation of how GHG BACT emission thresholds are determined.

A facility includes all sources located within contiguous properties owned or operated by the same person, or persons under common control. Contiguous means in actual contact or separated only by a public roadway or other public right-of-way. However, on-shore crude oil and gas production facilities under the same ownership or use entitlement must be included with offshore crude oil and gas production facilities located in Southern California Coastal or Outer Continental Shelf waters.

The following mobile source emissions are also considered as part of the facility[2]:

1. Emissions from in-plant vehicles; and
2. All emissions from ships during the loading or unloading of cargo and while at berth where the cargo is loaded or unloaded; and
3. Non-propulsion ship emissions within Coastal Waters under South Coast AQMD jurisdiction.

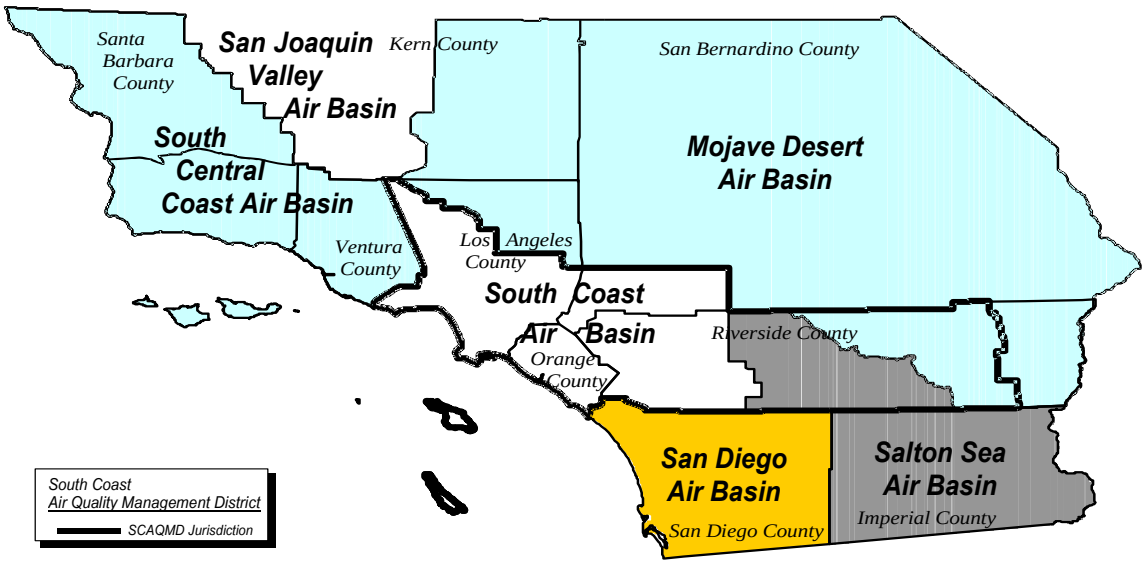
[1] The major source emission thresholds are higher for air basins that comply with the national ambient air quality standard and lower depending on how far an air basin is from compliance with the standard for a pollutant. The lowest thresholds apply to extreme non-attainment air basins, the only ones which are the South Coast Air Basin and San Joaquin Valley Air Basin for ozone (VOC and NOx).

[2] In accordance with Rule 1306(g).

Table 1
Actual or Potential Emission Threshold Levels (Tons per Year)
for Major Polluting Facilities

Pollutant	South Coast Air Basin	Riverside County Portion of Salton Sea Air Basin	Non-Palo Verde, Riverside County Portion of Mojave Desert Air Basin
VOC	10	25	100
NOx	10	25	100
SOx[3]	70	70	100
CO	50	100	100
PM_{10}	70	70	100
$PM_{2.5}$	70	---	---

Figure 1: Map of South Coast AQMD



[3] The threshold for SOx, as a precursor for PM, is 70 tons per year for serious PM_{10} areas, which the SCAB previously was, and 70 tons per year for serious $PM_{2.5}$ areas, which the SCAB currently is. Rule 1302 previously specified 100 tons per year, which was in error, and was changed at the November 2016 Board Meeting.

POTENTIAL TO EMIT

Potential to emit is based on permit conditions that limit emissions or throughput. If there are no such permit conditions, PTE is based on:

- the maximum rated capacity; and
- the maximum daily hours of operation; and
- physical characteristics of the materials processed.

The PTE must include fugitive emissions associated with the source. RECLAIM emission allocations are not considered emission limits because RECLAIM facilities may purchase RTCs and increase their emissions without modifying their permit. For PSD purposes, as well as Rule 1325 for $PM_{2.5}$, which incorporates federal requirements, fugitive emissions are included only for major source categories specifically identified in 40 CFR 52.21.

LIMITING POTENTIAL TO EMIT

A facility's PTE can be capped by an enforceable permit condition that limits emissions. This condition will likely involve monitoring, recordkeeping and reporting to ensure that emissions remain below the permit limit.

Chapter 3 - When is BACT Required?

This chapter explains when BACT is required by identifying the air pollutants subject to BACT, the permit actions that trigger BACT review, and the calculation procedures to determine emission increases.

POLLUTANTS SUBJECT TO NSR, PSD AND BACT

The South Coast AQMD's New Source Review (NSR) programs include *Regulation XIII - New Source Review* and *Rule 2005 - New Source Review for RECLAIM*. Rule 2005 applies only to NOx and SOx emissions from RECLAIM facilities, while Regulation XIII applies to other non-attainment air pollutants from RECLAIM facilities, all non-attainment air pollutants from all other facilities, and ammonia and ozone-depleting compound (ODC) emissions from all facilities. ODCs are defined as Class I substances listed in 40 CFR, Part 82, Appendix A, Subpart A, and are listed in Table 2. Rule 1325 specifically applies to $PM_{2.5}$.

Although the South Coast AQMD is in attainment with the ambient air quality standards for SO_2 and NO_2, NOx is a precursor to ozone, and both SOx and NOx are precursors to PM_{10} and $PM_{2.5}$, which are non-attainment air pollutants. Therefore, SOx and NOx are treated as non-attainment air pollutants as well. The net result is that VOC, NOx, SOx, PM_{10} and $PM_{2.5}$ are subject to NSR in all of South Coast AQMD.

The South Coast Air Basin has historically been designated nonattainment for CO. However, there has been considerable improvement in CO air quality in the Basin from 1976 to 2005. In 2001, the Basin met both the federal and state 8-hour CO standards for the first time at all monitoring stations. The 2003 AQMP revision to the CO plan served a dual purpose; it replaced the 1997 attainment demonstration that lapsed at the end of 2000, and it provided the basis for a CO maintenance plan in the future. The Basin was designated as attainment for CO in 2007. Therefore, CO is in attainment with state and federal ambient air quality standards.

The South Coast AQMD's Regulation XVII – Prevention of Significant Deterioration sets forth BACT requirements for stationary sources that emit attainment air contaminants. The BACT requirement applies to any net emission increase of a criteria pollutant from a permit unit at any source. As explained in the South Coast AQMD Staff Report for Regulation XVII dated September 28, 1988 for the October 7, 1988 Board meeting, the PSD BACT requirement is applicable to all permit units regardless if the source is classified as a minor or major facility.

Lead (Pb) is a criteria air pollutant and is subject to BACT in areas of non-attainment, or is subject to PSD in areas of attainment. Pb can be a component of a source's PM_{10} emissions and is therefore subject to BACT for PM_{10}. BACT for Pb will be BACT for PM_{10} or compliance with Rules 1420, 1420.1 or 1420.2, whichever is more stringent.

The applicability of the various pollutants to NSR in the various air basins is summarized in Table 3. See Figure 1 in the previous chapter for a map of South Coast AQMD that shows the location of the three air basins in South Coast AQMD.

Table 2
Class I Substances (ODCs)*

A. Group I:
$CFCl_3$ Trichlorofluoromethane (CFC-11)
CF_2Cl_2 Dichlorodifluoromethane (CFC-12)
$C_2F_3Cl_3$ Trichlorotrifluoroethane (CFC-113)
$C_2F_4Cl_2$ Dichlorotetrafluoroethane (CFC-114)
C_2F_5Cl Monochloropentafluoroethane (CFC-115)
All isomers of the above chemicals

B. Group II:
CF_2ClBr Bromochlorodifluoromethane (Halon-1211)
CF_3Br Bromotrifluoromethane (Halon-1301)
$C_2F_4Br_2$ Dibromotetrafluoroethane (Halon-2402)
All isomers of the above chemicals

C. Group III:
CF_3Cl Chlorotrifluoromethane (CFC-13)
C_2FCl_5 Pentachlorofluoroethane (CFC-111)
$C_2F_2Cl_4$ Tetrachlorodifluoroethane (CFC-112)
C_3FCl_7 Heptachlorofluoropropane (CFC-211)
$C_3F_2Cl_6$ Hexachlorodifluoropropane (CFC-212)
$C_3F_3Cl_5$ Pentachlorotrifluoropropane (CFC-213)
$C_3F_4Cl_4$ Tetrachlorotetrafluoropropane (CFC-214)
$C_3F_5Cl_3$ Trichloropentafluoropropane (CFC-215)
$C_3F_6Cl_2$ Dichlorohexafluoropropane (CFC-216)
C_3F_7Cl Chloroheptafluoropropane (CFC-217)
All isomers of the above chemicals

D. Group IV:
CCl_4 Carbon Tetrachloride

E. Group V:
$C_2H_3Cl_3$ 1,1,1 Trichloroethane (Methyl chloroform)
All isomers of the above chemical except 1,1,2-trichloroethane

F. Group VI:
CH_3Br Bromomethane (Methyl Bromide)

H. Group VIII:
CH_2BrCl (Chlorobromomethane)

G. Group VII:
$CHFBr_2$
CHF_2Br (HBFC-2201)
CH_2FBr
C_2HFBr_4
$C_2HF_2Br_3$
$C_2HF_3Br_2$
C_2HF_4Br
$C_2H_2FBr_3$
$C_2H_2F_2Br_2$
$C_2H_2F_3Br$
$C_2H_2FBr_2$
$C_2H_3F_2Br$
C_2H_4FBr
C_3HFBr_6
$C_3HF_2Br_5$
$C_3HF_3Br_4$
$C_3HF_4Br_3$
$C_3HF_5Br_2$
C_3HF_6Br
$C_3H_2FBr_5$
$C_3H_2F_2Br_4$
$C_3H_2F_3Br_3$
$C_3H_2F_4Br_2$
$C_3H_2F_5Br$
$C_3H_3FBr_4$
$C_3H_3F_2Br_3$
$C_3H_3F_3Br_2$
$C_3H_3F_4Br$
$C_3H_4FBr_3$
$C_3H_4F_2Br_2$
$C_3H_4F_3Br$
$C_3H_5FBr_2$
$C_3H_5F_2Br$
C_3H_6FBr

* 40 CFR, Part 82, Appendix A, Subpart A

Table 3
Applicability of NSR to Various Pollutants in
South Coast Air Basin (SOCAB), Salton Sea Air Basin (SSAB),
and Mojave Desert Air Basin (MDAB)

Air Basin	VOC	NOx	SOx	CO	PM_{10}	$PM_{2.5}$	NH_3	Pb	ODC
SOCAB	√	√	√		√	√	√	√	√
SSAB	√	√	√		√		√	√	√
MDAB	√	√	√		√		√	√	√

PERMIT ACTIONS SUBJECT TO NSR, PSD AND BACT

South Coast AQMD's NSR and PSD regulations are preconstruction permit review programs that require the Executive Officer to deny a permit to construct unless the proposed equipment includes BACT when:

- new equipment is installed;
- existing stationary permitted equipment is relocated; or
- existing permitted equipment is modified such that there is an emission increase.

If the new equipment is to replace the same kind of equipment, NSR[4] still requires BACT unless it is an identical replacement, which does not require a new permit according to *Rule 219 -Equipment Not Requiring a Written Permit Pursuant to Regulation II.*

BACT is not required for a change of operator, provided the facility is a continuing operation at the same location, without modification or change in operating conditions.

In case of relocation of a non-major facility, the facility operator may opt out of installing MSBACT, provided that the owner/operator meets the conditions specified in Rule 1302 (ai) and Rule 1306 (d)(3).[5]

PSD applies to GHG if the source is otherwise subject to PSD for another regulated NSR pollutant and the source is new with a GHG PTE ≥ 75,000 tons per year CO_2e, or an existing source with a modification resulting in a similar GHG emissions increase.

It is South Coast AQMD policy that BACT is required only for emission increases greater than or equal to one (1.0) pound per day.

In accordance with policy established by South Coast AQMD's Engineering and Permitting division in June 2018, for the purpose of preventing circumvention of triggering a BACT requirement, a period of 5 years prior to the date of application submittal shall be used to accumulate all previous permitting actions allowing emission increases for that specific permit unit to determine if emission increases exceed or

[4] See Rules 1303(a) and 1304(a).

[5] USEPA has expressed concerns with this provision of the NSR Rules for minor polluting facilities as of September 2000. Staff will continue to work with USEPA to resolve this issue.

equal 1.0 pound per day for any nonattainment air contaminant, any ozone depleting compound, or ammonia.

LIMITED BACT EXEMPTION

Rule 1304 (Exemptions) was amended in November 2021 to add subdivision (f) to include a limited BACT exemption for RECLAIM and former RECLAIM facilities. This limited BACT exemption is available to new or modified permit unit located at a RECLAIM or former RECLAIM facility, for PM10 and SOx emission increases associated with the installation or modification of add-on air pollution control equipment for controlling NOx emissions to comply with NOx Best Available Retrofit Control Technology (BARCT) emission limits. The objective of the proposed narrow BACT exemption is to address the co-pollutant issue associated with the installation or modification of add-on air pollution controls and the replacement of equipment that is combined with an installation or modification of add-on air pollution control required to transition NOx RECLAIM facilities. This limited BACT exemption is available only to projects at qualified facilities that meet all the requirements listed under Rule 1304 subparagraphs (f)(1)(A) through (E) [6].

CALCULATION PROCEDURES FOR EMISSION INCREASES

The calculation procedures for determining whether there is an increase in emissions from an equipment modification that triggers BACT are different for NOx and SOx pollutants from RECLAIM facilities than for all other cases. In general, the calculation procedures for RECLAIM facilities are less likely to result in an emission increase that requires BACT.

For NOx and SOx emissions from a source at a RECLAIM facility, there is an emission increase if the maximum hourly potential to emit is greater after the modification than it was before the modification.[7]

For modifications subject to Regulation XIII, there are two possible cases[8]:

1. If the equipment was previously subject to NSR, an emission increase occurs if the new potential to emit in one day is greater than the previous potential to emit in one day.
2. If the equipment was never previously subject to NSR, an emission increase occurs if the new potential to emit in one day exceeds the actual average daily emissions over the two-year period, or other appropriate period, prior to the permit application date. However, for the installation of air pollution controls on any source constructed prior to the adoption of the NSR on October 8, 1976 for the sole purpose of reducing emissions, Rule 1306(f) allows the emission change to be calculated as the post-modification potential to emit minus the pre-modification potential to emit.

[6] See Rule 1304 (f).
[7] See Rule 2005(d).
[8] See Rule 1306(d)(2).

The potential to emit is based on permit conditions that directly limit the emissions, or, if there are none, then the potential to emit is based on:

- maximum rated capacity; and
- the maximum daily hours of operation; and
- the physical characteristics of the materials processed.

Chapter 4 - What is BACT?

This chapter explains the definitions of BACT found in South Coast AQMD rules, state law and federal law.

NSR RULES (REGULATION XIII)

New sources, relocations, and modifications of existing sources that increase nonattainment air contaminant emissions are subject to New Source Review (NSR) regulations which require BACT, among other requirements. Both federal and state laws require this strategy. The federal Clean Air Act (CAA) requirement for Lowest Achievable Emission Rate (LAER) is implemented through BACT in the South Coast AQMD. Federal LAER applies to major sources only. Although federal LAER applies to any emissions increase at a major stationary source of ozone precursors, South Coast AQMD has interpreted this provision as a 1.0 lb/day increase in emissions from all sources subject to NSR. According to South Coast AQMD's rules, BACT requirements may not be less stringent than federal LAER for major polluting facilities. The California Health & Safety Code (H&SC) Section 40405 defines state BACT similar to federal LAER and requires the application of BACT for all new and modified permitted sources subject to NSR.

PSD RULES (REGULATION XVII)

New sources, relocations, and modifications of existing sources that emit attainment air contaminant emissions and certain other specified pollutants are subject to Prevention of Significant Deterioration (PSD) regulations, which require BACT. Pursuant to Rule 1701, the BACT requirement applies to a net emission increase from a permit unit located at minor and major stationary sources. The intention of the PSD requirement is to implement a similar requirement as Regulation XIII to maintain national ambient air quality standards for attainment air contaminants.

DEFINITION OF BACT

Definitions of BACT are found in: Rule *1302 -Definitions* of *Regulation XIII - New Source Review*, which applies to all cases in general, except for *Rule 1702 – Definitions*, which applies only to attainment air contaminants, and *Rule 2000 - General*, which applies to NOx and SOx emissions from RECLAIM facilities. While the definitions are not identical, they are essentially the same. Section (h) of *Rule 1302 - Definitions* defines BACT as:

> *BEST AVAILABLE CONTROL TECHNOLOGY (BACT) means the most stringent emission limitation or control technique which:*
>
> *(1) has been achieved in practice for such category or class of source; or*
> *(2) is contained in any state implementation plan (SIP) approved by the United States Environmental Protection Agency (EPA) for such category or class of source. A specific limitation or control technique shall not apply if the owner or operator of the proposed source*

demonstrates to the satisfaction of the Executive Officer or designee that such limitation or control technique is not presently achievable; or

(3) is any other emission limitation or control technique, found by the Executive Officer or designee to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as compared to measures as listed in the Air Quality Management Plan (AQMP) or rules adopted by the South Coast AQMD Governing Board.

The first two requirements in the BACT definition are required by federal law, as LAER for major sources. The third part of the definition is unique to South Coast AQMD and some other areas in California, and allows for more stringent controls than LAER.

Rule 1303(a)(2) requires that economic and technical feasibility be considered in establishing the class or category of sources and the BACT requirements for non-major polluting facilities.

REQUIREMENTS OF HEALTH & SAFETY CODE SECTION 40440.11

Senate Bill 456 (Kelley) was chaptered into state law in 1995 and became effective in 1996. H&SC Section 40440.11 specifies the criteria and process that must be followed by the South Coast AQMD to update its BACT Guidelines to establish more stringent BACT limits for listed source categories. After consultation with the affected industry, the CARB, and the U.S. EPA, and considerable legal review and analysis, staff concluded that the process specified in SB 456 to update the BACT Guidelines should be interpreted to apply only if the South Coast AQMD proposes to make BACT more stringent than LAER or to establish BACT for non-major sources. This is because the CAA requires the South Coast AQMD staff to apply current LAER for major polluting facilities, even if the proposed LAER determination has not gone through the SB456 process. Therefore, the SB 456 requirements do apply to BACT requirements for non-major polluting facilities, but do not apply to federal LAER determinations for major polluting facilities.

CLEAN FUEL GUIDELINES

In January 1988, the South Coast AQMD Governing Board adopted a Clean Fuels Policy that included a requirement to use clean fuels as part of BACT. The implementation of this policy is further described in Parts A and C of these guidelines.

Chapter 5 - Review of Staff BACT Determinations

New BACT determinations and guideline updates proposed by South Coast AQMD staff are subject to public notification requirements. In addition to allowing the public to comment on these items, the South Coast AQMD has established a BACT Scientific Review Committee (BACT SRC) to review and comment on technical matters of the proposals.

The South Coast AQMD has included provisions for an applicant to request a review of particular circumstances regarding a permit application and reconsideration of the BACT determination. Additional avenues are available to permit applicants for further review of staff BACT determinations through South Coast AQMD management, BACT Review Committee, Hearing Board, and the Governing Board.

BACT SCIENTIFIC REVIEW COMMITTEE (BACT SRC)

The BACT SRC was established as a standing committee by action of the South Coast AQMD Governing Board on September 8, 1995 to enhance the public participation process and include technical review and comments by a focused committee at periodic intervals, prior to the updates of the South Coast AQMD BACT Guidelines. A 30-day notice period applies for the BACT SRC and interested persons to review and comment on South Coast AQMD BACT determinations that result in BACT requirements that are more stringent than previously imposed. BACT SRC members, include but are not limited to, representatives from CARB, U.S. EPA, neighboring Air Pollution Control Districts (APCD), with the balance of the committee created by invitation of recognized experts from industry, public utilities, suppliers of air pollution control equipment and advocacy groups. Whenever a committee member resigns or is no longer able to serve, South Coast AQMD seeks out an appropriate replacement to join the committee. A list of current BACT SRC members can be accessed at

http://www.aqmd.gov/home/permits/bact/scientific-review-committee
~~www.aqmd.gov/home/permits/bact/scientific-review-committee/src-members~~.

The overall purpose of the BACT Scientific Review Committee is to:

- Comment on proposed new and more stringent BACT determinations in permit applications under 30-day public review.
- Comment on proposed BACT listings for all parts of the BACT Guidelines.

Except for the above, the BACT SRC's purpose is not to comment on past permitting decisions or change them. Specifically, the role of the BACT SRC is to review and comment in writing on the appropriateness of new BACT determinations under 30-Day public review. During this comment period, South Coast AQMD, State, and Federal required permit issuance timelines are still in effect. South Coast AQMD BACT staff will commit to sending the BACT SRC newly proposed BACT listings at least seven days prior to the next scheduled BACT SRC meeting. Meetings will typically consist of a presentation by BACT Team (BACTTeam@aqmd.gov) staff of new BACT forms and technical data and a general discussion of the proposed BACT listings, as well as addressing any preliminary written comments received from the public and BACT SRC

prior to the meeting. South Coast AQMD staff will respond in writing to preliminary comments about new BACT proposals within thirty days of the subject BACT SRC meeting. New issues raised during the BACT SRC meetings regarding newly proposed BACT listings will be addressed at the subsequent BACT SRC meeting to allow time for South Coast AQMD staff to research the comments. South Coast AQMD Engineering staff may also respond to specific issues raised at the following BACT SRC meeting.

In addition to newly proposed BACT listings, the BACT SRC will be tasked with reviewing and commenting on updates to the policy and procedure sections of the BACT Guidelines prior to the guidelines being presented to the South Coast AQMD Governing Board for approval.

MEETING WITH SOUTH COAST AQMD MANAGEMENT

South Coast AQMD management, starting with the Senior Engineering Manager of the permitting team, can consider unique and site-specific characteristics of an individual permit. The allowance for site-specific characteristics has been designed into the guidelines and can be reviewed with the manager of the section processing the permit. It is also possible to request review at the next level, with the Assistant Deputy Executive Officer of Engineering and Compliance. The Senior Engineering Managers and the Assistant Deputy Executive Officers are empowered to make case-by-case decisions on an individual permit. Further review can be obtained through a meeting with the Deputy Executive Officer (DEO) of Engineering and ~~Compliance~~Permitting. Ultimately, all permitting decisions are the responsibility of the Executive Officer.

THE BACT REVIEW COMMITTEE

Beyond meetings with South Coast AQMD management, an applicant may also request, prior to permit issuance or denial, that the proposed BACT for an individual permit be reviewed by the BACT Review Committee (BRC). The BRC is composed of five senior-level South Coast AQMD officials - the DEO of Legislative, Public Affairs/Media Office; the DEO of Science and Technology Advancement; the DEO of Engineering and Permitting; the DEO of Planning, Rule Development and ~~Area Sources~~Implementation; and General Counsel. This committee can review pending individual applications and decide if the BACT determination is appropriate. The BRC can be accessed without any fee or legal representation, and will meet upon demand.

THE SOUTH COAST AQMD HEARING BOARD

After the permit is issued or denied, the applicant can seek further independent review of an individual BACT determination through the South Coast AQMD Hearing Board. In order to access this venue, the permit applicant would need to submit a petition and fee to appeal the final BACT determination by South Coast AQMD (once the permit is denied or issued)[9]. The Hearing Board is an independent, quasi-judicial body composed of five members, who can review a permitting decision by the Executive

[9] Applicants must file an appeal petition with the Hearing Board within thirty days of the receipt of the permit or the notification of permit denial. See Rule 216 - *Appeals*, Regulation V - *Procedure Before the Hearing Board*, and Rule 303 - *Hearing Board Fees* for more information.

Officer. In this venue, legal counsel represents the South Coast AQMD. Although not required, many petitioners choose to have legal counsel to represent their position.

THE SOUTH COAST AQMD GOVERNING BOARD

Any applicant may petition the South Coast AQMD Governing Board to review a pending application pursuant to South Coast AQMD Regulation XII and Health and Safety Code Section 40509. While the Governing Board has the authority to hear and consider any pending permit application, it has rarely done so. It is important to note that this action must be taken while the permit application is pending with staff. Once staff reaches its decision, the only avenue of appeal is through the Hearing Board and ultimately to court.

PART A - POLICY AND PROCEDURES FOR MAJOR POLLUTING FACILITIES

Chapter 1 - How is LAER Determined for Major Polluting Facilities?

This chapter explains the criteria used for determining LAER[1] and the process for updating Part B of the BACT Guidelines for major polluting facilities.

CRITERIA FOR DETERMINING LAER FOR MAJOR POLLUTING FACILITIES

South Coast AQMD staff determines LAER requirements on a permit-by-permit basis based on the definition of LAER. In essence, LAER is the most stringent emission limit or control technology for a class or category of source that is:

- found in a state implementation plan (SIP) pursuant to Health and Safety Code Section 40405(a)(1), or
- achieved in practice (AIP), or
- is technologically feasible and cost effective.

For practical purposes, at this time, nearly all South Coast AQMD LAER determinations will be based on AIP LAER because it is generally more stringent than LAER based on SIP, and because state law constrains South Coast AQMD in using the third approach, as such a determination must go through the SB456 process, which may take more time than allowed for the permit decision.

Based on Governing Board policy, LAER also includes a requirement for the use of clean fuels. Terms such as “achieved in practice” and “technologically feasible” have not been defined in the rule, so the purpose of this section is to explain the criteria South Coast AQMD permitting staff uses to make a LAER determination.

LAER Based on a SIP

The most stringent emission limit found in an approved state implementation plan (SIP) might be the basis for LAER. This means that the most stringent emission limit adopted by any state as a rule, regulation or permit[2], and approved by USEPA, is eligible as a LAER requirement. No other parameters are required to be evaluated when this category is chosen. This does not include future emission limits that have not yet been implemented.

[1] In order to distinguish between BACT for major polluting facilities and BACT for minor polluting facilities, this document uses the term LAER when referring to BACT for major polluting facilities.

[2] Some states incorporate individual permits into their SIP as case-by-case Reasonably Available Control Technology requirements.

Achieved in Practice LAER

Regulatory Documents

An emission limit or control technology may be considered achieved in practice (AIP) for a category or class of source if it exists in any of the following regulatory documents or programs:

- South Coast AQMD BACT Guidelines
- CAPCOA BACT Clearinghouse
- USEPA RACT/BACT/LAER Clearinghouse
- Other districts' and states' BACT Guidelines
- BACT/LAER requirements in New Source Review permits issued by South Coast AQMD or other agencies

However, staff will check with the permitting authority (other than South Coast AQMD) on the status of the BACT or LAER requirement. If it is found that an emission limit is not being achieved or a control technology is not performing as expected in the equipment referenced in any of the above sources or in other equipment used as the basis for the BACT or LAER determination, then it will not be considered as AIP.

New Technologies/Emission Levels

New technologies and innovations of existing technologies occasionally evolve without a regulatory requirement, but still deserve consideration. They may have been voluntarily installed to reduce emissions, and may or may not be subject to an air quality permit or an emission limit. Therefore, in addition to the above means of being determined as AIP, a control technology or emission limit may also be considered as AIP if it meets all the following criteria:

Commercial Availability

At least one vendor must offer this equipment for regular or full-scale operation in the United States. A performance warranty or guaranty must be available with the purchase of the control technology, as well as parts and service.

Reliability

All control technologies must have been installed and operated reliably for at least six months. If the operator did not require the basic equipment to operate daily, then the equipment must have at least 183 cumulative days of operation. During this period, the basic and/or control equipment must have operated: 1) at a minimum of 50% design capacity; or 2) in a manner that is typical of the equipment in order to provide an expectation of continued reliability of the control technology.

Effectiveness

The control technology must be verified to perform effectively over the range of operation expected for that type of equipment. If the control technology will be allowed to operate at lesser effectiveness during certain modes of operation, then those modes of operation must be identified. The verification shall be based on a performance test or tests deemed to be acceptable by South Coast AQMD, when possible, or other performance data.

Technology Transfer

LAER is based on what is AIP for a category or class of source. However, USEPA guidelines require that technology that is determined to be AIP for one category of source be considered for transfer to other source categories. There are two types of potentially transferable control technologies: 1) exhaust stream controls, and 2) process controls and modifications. For the first type, technology transfer must be considered between source categories that produce similar exhaust streams. For the second type, technology transfer must be considered between source categories with similar processes.

Federal $PM_{2.5}$ New Source Review and South Coast AQMD Rule 1325

$PM_{2.5}$ NSR applies to a new major polluting facility, major modifications to a major polluting facility, and any modification to an existing facility that would constitute a major polluting facility. A major polluting facility would be a facility located in areas federally designated pursuant to 40 CFR 81.305 as non-attainment for $PM_{2.5}$ for the South Coast Air Basin (SOCAB) which has actual emissions of, or the potential to emit, 70 tons or more per year of $PM_{2.5}$, or its precursors for serious areas. For major modifications, LAER applies on a pollutant-specific basis to emissions of $PM_{2.5}$ and its precursors, for which (1) the source is major, (2) the modification results in a significant increase, and (3) the modification results in a significant net emissions increase.

Significant means in reference to a net emissions increase or the potential of a source to emit any of the following pollutants, a rate of emissions that would equal or exceed any of the following rates[3]:

Nitrogen oxides:	40 tons per year
Sulfur dioxide:	40 tons per year
Volatile organic compound (VOC):	40 tons per year[4]
$PM_{2.5}$:	10 tons per year
Ammonia:	40 tons per year[5]

A facility subject to the Federal $PM_{2.5}$ NSR will be required to comply with the following:

- Lowest Achievable Emission Rate (LAER)
- Emission increases offset
- Certification of compliance with Clean Air Act; and
- Analysis conducted of benefits of the proposed project outweigh the environmental and social costs associated with that project.

Please refer to South Coast AQMD Rule 1325 for specific requirements.

[3] South Coast AQMD Rule 1325(b)(12), as amended on January 4, 2019
[4] VOC was added to Rule 1325 as a precursor to $PM_{2.5}$ pursuant to EPA's 2016 $PM_{2.5}$ SIP implementation Rule
[5] Ammonia was added to Rule 1325 as a precursor to $PM_{2.5}$ pursuant to EPA's 2016 $PM_{2.5}$ SIP implementation Rule.

LIMITED BACT EXEMPTION

Rule 1304 - Exemptions was amended in November 2021 to add subdivision (f) to include a limited BACT exemption for RECLAIM and former RECLAIM facilities. This limited BACT exemption is available to new or modified permit unit located at a RECLAIM or former RECLAIM facilities, for PM10 and SOx emission increases associated with the installation or modification of add-on air pollution control equipment for controlling NOx emissions to comply with NOx Best Available Retrofit Control Technology (BARCT) emission limits. The objective of the proposed narrow BACT exemption is to address the co-pollutant issue associated with the installation or modification of add-on air pollution controls and the replacement of equipment that is combined with an installation or modification of add-on air pollution control required to transition NOx RECLAIM facilities. This limited BACT exemption is available only to projects at qualified facilities that meet all the requirements listed under Rule 1304 subparagraphs (f)(1)(A) through (E) [6].

Cost in LAER Determinations

USEPA guidelines do not allow for routine consideration of the cost of control in LAER determinations. However, USEPA guidelines say that LAER is not considered achievable if the cost of control is so great that a new source could not be built or operated with a particular control technology. If a facility in the same or comparable industry already uses the control technology, then such use constitutes evidence that the cost to the industry is not prohibitive.

State law (H&SC 40405) also defines BACT as the lowest achievable emission rate, which is the more stringent of either (i) the most stringent emission limitation contained in the SIP, or (ii) the most stringent emission limitation that is achieved in practice. There is no explicit reference or prohibition to cost considerations, and the applicability extends to all permitted sources. South Coast AQMD rules implement both state BACT and federal LAER requirements simultaneously, and furthermore specify that South Coast AQMD BACT must meet federal LAER requirements for major polluting facilities.

If a proposed LAER determination results in extraordinary costs to a facility, the applicant may bring the matter to South Coast AQMD management for consideration as described in Overview, Chapter 6.

Special Permitting Considerations

Although the most stringent, AIP LAER for a source category will most likely be the required LAER, South Coast AQMD staff may consider special technical circumstances that apply to the proposed equipment which may allow deviation from that LAER. The permit applicant should bring any pertinent facts to the attention of the South Coast AQMD permitting engineer for consideration.

[6] See Rule 1304 (f).

Case-Specific Situations

South Coast AQMD staff may consider unusual equipment-specific and site-specific characteristics of the proposed project that would warrant a reconsideration of the LAER requirement for new equipment. Here are some examples of what may be considered.

Technical infeasibility of the control technology

A particular control technology may not be required as LAER if the applicant demonstrates that it is not technically feasible to install and operate it to meet a specific LAER emission limitation in a specific permitting situation.

Operating schedule and project length

If the equipment will operate much fewer hours per year than what is typical, or for a much shorter project length, it can affect what is considered AIP.

Availability of fuel or electricity

Some LAER determinations may not be feasible if a project will be located in an area where natural gas or electricity is not available.

Process requirements

Some LAER determinations specify a particular type of process equipment. South Coast AQMD staff may consider requirements of the proposed process equipment that would make the LAER determination not technically feasible.

Equivalency

The permit applicant may propose alternative means to achieve the same emission reduction as required by LAER. For example, if LAER requires a certain emission limit or control efficiency to be achieved, the applicant may choose any control technology, process modification, or combination thereof that can meet the same emission limit or control efficiency.

Super Compliant Materials

South Coast AQMD will accept the use of super compliant materials in lieu of an add-on control device controlling VOC emissions from coating operations. For example, if a permit applicant uses only surface coatings that meet the super compliant material definition in South Coast AQMD Rule 109, an add-on control device would not be required for VOC LAER. This policy does not preclude any other LAER requirements for other contaminants.

Equipment Modifications

As a general rule, it is more difficult to retrofit existing equipment with LAER as a result of NSR modification when compared to a new source. The equipment being modified may not be compatible with some past LAER determinations that specify a particular process type. There may also be space restrictions that prevent installation of some add-on control technology.

Other Considerations

Although multiple process and control options may be available during the LAER determination process, considerations should be made for options that reduce the formation of air contaminants from the process, as well as ensuring that emissions are properly handled. In addition to evaluating the efficiency of the control stage, these additional considerations are needed to ensure that the system is capable of reducing or eliminating emissions from the facility on a consistent basis during the operational life of the equipment.

Pollution Prevention

The Pollution Prevention Act of 1990 (42 U.S.C. §§13101-13109) established a national policy that pollution should be prevented or reduced at the source whenever feasible. In many cases, air pollution control is a process that evaluates contaminants at the exhaust of the system. Pollution prevention is the reduction or elimination of waste at the source by the modification of the production process. Pollution prevention measures may consist of the use of alternate or reformulated materials, a modification of technology or equipment, or improvement of energy efficiency changes that result in an emissions reduction. These measures should be considered as part of the LAER determination process if the measures will result in the elimination or reduction of emissions, but are not required to include projects which are considered to fundamentally redefine the source. New and different emissions created by a process or material change will also need to be considered as part of the LAER determination process, in contrast to the overall emissions reductions from the implementation of pollution prevention measures. U.S. EPA policy defined pollution prevention as source reduction and other practices that reduce or eliminate the creation of pollutants through increased efficiency in the use of raw materials, energy, water, or other resources, and protection of natural resources by conservation[7]. U.S. EPA further specifies that pollution prevention does not include recycling (except in-process recycling), energy recovery, treatment or disposal. For purposes of these BACT Guidelines, and to be consistent with federal definitions, source reduction and pollution prevention may include, but not be limited to, a consideration of the feasibility of:

- equipment or technology modifications,
- process or procedure modifications,
- reformulation or redesign of products,
- substitution of raw materials, or
- improvements in housekeeping, maintenance or inventory control,

that reduce the amount of air contaminants entering any waste stream or otherwise released into the environment, including fugitive emissions.

Monitoring and Testing

In order to ensure that LAER determinations continue to meet their initial emission and efficiency standards, periodic or continuous parameter monitoring and testing requirements may be required during the permitting process. Equipment and processes may experience some change over time, due to aging or operational methods of the

[7] U.S. EPA Pollution Prevention Law and Policies (www.epa.gov/p2/pollution-prevention-law-and-policies#define)

equipment, which may affect emission rates or control efficiencies. In addition to other rule requirements, additional monitoring and testing requirements may need to focus on aspects directly related to the BACT determination, and may be made enforceable by permit conditions. Monitoring and testing requirements should be specific to characterize operating conditions (e.g. temperatures, pressures, flows, production rates) and measurement techniques when LAER is established to ensure clarity and consistency with the standard.

Capture Efficiency

An integral part of controlling air pollutants emitted from a process with add-on air pollution control equipment is capturing those emissions and directing them to the air pollution control device. Emissions which are designed to be collected by an exhaust system but are vented uncontrolled into the atmosphere can have a much greater impact than controlled emissions. When applicable, the evaluation of a process and its associated control equipment should address the qualification and quantification of capture efficiency. By addressing capture efficiency during LAER determinations, a standard can be established to evaluate the capture efficiency of other systems, as well as ensure that the capture efficiency is maintained consistently over time.

If applicable, LAER determinations may include the percentage capture efficiency and the methods and measurements (e.g. EPA Method 204, capture velocity measurements, design using ACGIH's Industrial Ventilation, static pressures) used to determine and verify it. For various circumstances, several South Coast AQMD rules (Table 4) already require an assessment of collection efficiency of an emission control system following EPA Method 204, EPA's "Guidelines for Determining Capture Efficiency", South Coast AQMD's "," or other methods approved by the Executive Officer, and are appropriate to include as LAER requirements. The capture efficiency for any LAER Determination shall be no less stringent than any applicable rule requirement. Other considerations that may affect capture, such as cross-drafts, thermal drafts and the volume of combustion products, should also be addressed during this process.

Table 4
South Coast AQMD Regulation XI and XIV Rules with Capture Efficiency Requirements or Considerations

- 1103
- 1104
- 1106
- 1107
- 1115
- 1122
- 1124
- 1125
- 1126
- 1128
- 1130
- 1130.1
- 1131
- 1132
- 1136
- 1141
- 1141.2
- 1144
- 1145
- 1155
- 1156
- 1162
- 1164
- 1171
- 1175
- 1178
- 1407
- 1420
- 1420.1
- 1420.2
- 1425
- 1469
- 1469.1

LAER APPLICATION CUT-OFF DATES

For applications submitted by major polluting facilities, LAER requirements will be determined based on information available up to the date the permit to construct is issued. This requirement allows interested parties to comment on possible technologies that could provide lower emissions.

Applications for a Registration Permit for equipment issued a valid Certified Equipment Permit (CEP), which is valid for one year, will only be required to comply with LAER as determined at the time the CEP was issued. However, South Coast AQMD staff will reevaluate the LAER requirements for the CEP upon renewal of the Title V permit.

LAER UPDATE PROCESS

South Coast AQMD will update Section I – South Coast AQMD LAER/BACT Determinations of Part B of the BACT Guidelines on an ongoing basis with actual LAER determinations for South Coast AQMD permits issued to major polluting facilities. The process will depend on whether or not the LAER requirement is more stringent than previous South Coast AQMD LAER determinations for the same equipment category.

When South Coast AQMD permitting staff makes a LAER determination that is no more stringent than previous South Coast AQMD LAER determinations, the permitting team will issue the permit and forward information regarding this LAER determination to the BACT Team.[8] The BACT Team will review this LAER determination with the BACT SRC prior to listing in the BACT Guidelines.

Whenever permitting staff makes a LAER determination that is more stringent than what South Coast AQMD has previously required as LAER, the permit to construct may be subject to a public review. In any event depending on Rule 212, the permitting team will forward the preliminary LAER determination to the BACT Team, who will prepare and send a public notice of the preliminary determination to the BACT SRC, potentially interested persons, and anyone else requesting the information. Staff will consider all comments filed during the 30-day review period before making a permit decision. Staff will make every effort to conduct the public review consistent with the requirements of state law. However, if the 30-day review period conflicts with the deadline of the Permit Streamlining Act[9] for issuing the permit, the permit will be issued in accordance with state law. The 30-day public review may also be done in parallel with other public reviews mandated by *Rule 212 - Standards for Approving Permits and Issuing Public Notice* or *Regulation XXX - Title V Permits* in applicable cases.

On a periodic basis, the South Coast AQMD BACT Team will provide standing status reports to the South Coast AQMD Governing Board's Stationary Source Committee and to the Governing Board.

In summary, as technology advances, many categories in the South Coast AQMD's BACT Guidelines will be updated with new listings. This on-going process will reflect new lower emitting technologies not previously identified in the Guidelines.

CLEAN FUEL GUIDELINES

In January 1988, the South Coast AQMD Governing Board adopted a Clean Fuels Policy that included a requirement to use clean fuels as part of BACT/LAER. A clean fuel is one that produces air emissions equivalent to or lower than natural gas for NO_x, SO_x, ROG, and fine respirable particulate matter (PM_{10}). Besides natural gas, other clean fuels are liquid petroleum gas (LPG), hydrogen and electricity. Utilization of zero and near-zero emission technologies are also integrated into the Clean Fuels Policy. The burning of

[8] To reduce the burden on South Coast AQMD of preparing hundreds of LAER Determination Forms each month, forms will not be prepared for routine LAER determinations after Part B, Section I of the guidelines has sufficient entries to demonstrate typical LAER requirements.

[9] The requirements of the Permit Streamlining Act are also found in South Coast AQMD's Rule 210.

landfill, digester, refinery and other by-product gases is not subject to the clean fuels requirement. However, the combustion of these fuels must comply with other South Coast AQMD rules, including the sulfur content of the fuel.

The requirement of a clean fuel is based on engineering feasibility. Engineering feasibility considers the availability of a clean fuel and safety concerns associated with that fuel. Some state and local safety requirements limit the types of fuel, which can be used for emergency standby purposes. Some fire departments or fire marshals do not allow the storage of LPG near occupied buildings. Fire officials have, in some cases, vetoed the use of methanol in hospitals. If special handling or safety considerations preclude the use of the clean fuel, the South Coast AQMD has allowed the use of fuel oil as a standby fuel in boilers and heaters, fire suppressant pump engines and for emergency standby generators. The use of these fuels must meet the requirements of South Coast AQMD rules limiting NO_x and sulfur emissions.

AIR QUALITY-RELATED ENERGY POLICY

In September 2011, the South Coast AQMD Governing Board adopted an air quality-related energy policy to help guide a unified approach to reducing air pollution while addressing other key environmental concerns including environmental justice, climate change and energy independence. The air quality-related energy policy outlines 10 policies and 10 action steps to help meet federal health-based standards for air quality in the South Coast Air Basin while also promoting the development of zero- and near-zero emission technologies.

Policy 7 is to require any new/repowered in-Basin fossil-fueled generation power plant to incorporate BACT/LAER as required by South Coast AQMD rules, considering energy efficiency for the application. These power plants will need to comply with any requirements adopted by the California Air Resources Board, California Energy Commission, Public Utilities Commission, California Independent System Operator, or the governing board of a publicly-owned electric utility, as well as state law under the California Environmental Quality Act. In recognizing that fossil fuel electric generation will still be needed in the Basin to complement projected increased use of renewable energy sources, this policy ensures that all fossil-fueled plants will meet existing BACT/LAER requirements and South Coast AQMD's BACT/LAER determinations will also take into consideration generating efficiency in setting the emission limits. Parts E and F of the BACT Guidelines complement and support this policy.

Chapter 2 - How to Use Part B of the BACT Guidelines

This chapter explains the LAER information found in Part B - LAER/BACT Determinations for Major Polluting Facilities. Part B is a listing of LAER/BACT determinations for major polluting facilities contained in South Coast AQMD and other air pollution control agencies' permits, and data on new and emerging technologies. These LAER/BACT determinations and data are guides and will be used, along with other information, to determine LAER as outlined in Chapter 1. For a listing of equipment types, refer to the List of Equipment Categories. LAER determination for equipment not found in Part B of the BACT Guidelines is done according to the process outlined in Chapter 1.

GENERAL

Part B is divided into three sections. Section I – South Coast AQMD LAER/BACT Determinations, contains information on LAER/BACT determinations contained in permits issued by South Coast AQMD, with permit limits based on achieved in practice technology. Section II – Non-AQMD LAER/BACT Determinations, lists LAER/BACT determinations contained in other air pollution control agencies' permits or BACT Guidelines, with permit limits based on achieved in practice technology. Section III – Other Technologies, consists of information on technologies which have been achieved in practice and may be reflected in a permit limit, information on emerging technologies or emission limits which have not yet been achieved in practice but overall have not met all the criteria for achieved in practice. All three sections are subdivided based on the attached List of Equipment Categories. Within each category, the LAER/BACT determinations will be listed in order of stringency.

Each listing includes the following information, in addition to other information detailing the description and operation of the equipment:

- Equipment Information

This provides information on the manufacturer, model, description, function, size/dimensions/capacity, combustion sources, and cost of the equipment. Cost data are generally obtained from the South Coast AQMD application forms, manufacturer or owner/operator, and are not verified. It also provides additional information such as fuel type for combustion equipment and equipment information comments that can provide weight of parts cleaned per load for degreasers and the number and size of blowers for spray booths.

- Company Information

This identifies the contact person and owner/operator of the equipment, along with telephone numbers.

- Permit Information

This identifies the permitting agency and the name and telephone number of the agency's contact person. It also provides information on Permits to Construct/Operate. The South Coast AQMD is always the issuing agency for LAER determinations listed in Section I.

- Emission Information

This identifies the actual permit limits and LAER/BACT requirements set forth by the issuing agency for the equipment being evaluated, concise description of the BACT requirements for each regulated contaminant, and basis of the BACT/LAER determination.

- Control Technology

This provides information on the manufacturer, model, description, size/dimensions/capacity, permit information and required control efficiencies on the control technology used to achieve the permit limit and the LAER/BACT requirements.

- Demonstration of Compliance

This provides information such as source test or other method that was used to demonstrate compliance and any monitoring or testing requirements.

- Additional South Coast AQMD Reference Data

This identifies the BCAT (for basic equipment[10]), CCAT (for control equipment), RECLAIM and Title V facilities, and source test ID. It also lists applicable South Coast AQMD Regulation XI rules. Additionally, it provides health risk data for the permit unit.

The above information will enable permit applicants to assess the applicability of each LAER/BACT determination to their particular equipment.

The LAER requirements usually found in the LAER Determination listings are in the form of:

- an emission limit;
- a control technology;
- equipment requirements; or
- a combination of the last two

If the requirement is an emission limit, the applicant may choose any control technology to achieve the emission limit. The South Coast AQMD prefers to set an emission limit as LAER because it allows an applicant the most flexibility in reducing emissions. If control technology and/or equipment requirements are the only specified LAER, then either emissions from the equipment are difficult to measure or it was not possible to specify an emission limit that applies to all equipment within the category. Where possible, an emission limit or control efficiency condition will be specified on the permit along with the control technology or equipment requirements to ensure that the equipment is properly operated with the lowest emissions achievable.

[10] Basic equipment is the process or equipment, which emits the air contaminant for which BACT is being determined.

HOW TO DETERMINE LAER

The Part B LAER determinations are only examples of LAER determinations for equipment that have been issued permits or that have been demonstrated in practice. As described in Chapter 1, LAER is determined on a case-by-case basis. To find out what LAER is likely to be for a particular equipment, the applicant should review the Part B LAER determinations found at the South Coast AQMD website www.aqmd.gov/home/permits/bact. The CAPCOA Clearinghouse maintained by the California Air Resources Board and the USEPA RACT/BACT/LAER Clearinghouse should also be reviewed. These compendiums contain information from other districts, local agencies, and states that may not be included in the South Coast AQMD BACT Guidelines. Finally, the South Coast AQMD permitting staff may be contacted to discuss LAER prior to submitting a permit application.

As described in Chapter 1, the permit applicant should bring to the attention of the South Coast AQMD permitting engineer any special permitting considerations that may affect the LAER determination.

ATTACHMENT D

Section I – South Coast AQMD LAER/BACT Determination

Source Type: **Major/LAER**

Application No.: **615085**

Equipment Category: **Boiler < 20 MMBTU/HR**

Equipment Subcategory: **Fire-tube, Natural Gas Fired**

Date: **September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Williams and Davis	B. MODEL: WDNP2-G-840
C. DESCRIPTION: Boiler, Fire-tube Type, with a Low NOx Burner	
D. FUNCTION: Mizkan America, Inc. manufacturers a variety of vinegars (5 – 15% acetic acid). The facility has inactivated two of their older 3.985 MMBtu/hr boilers from service and has replaced them with this larger one. This boiler is currently used to produce steam to heat up their process water.	
E. SIZE/DIMENSIONS/CAPACITY: 8.4 MMBtu/hr	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: 8.4 MMBTU/hr	
G. BURNER INFORMATION:	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
Low NOx Burner	8.4 MMBtu/hr	one

H. PRIMARY FUEL: Natural Gas	I. OTHER FUEL: N/A
J. OPERATING SCHEDULE: Hours 24 HRS//DAY 7 DAYS/WEEK 52 WKS/YR	
K. EQUIPMENT COST: N/A	
L. EQUIPMENT INFORMATION COMMENTS: Boiler with 10 HP Combustion Air Blower. Per Rule 1146, this boiler is considered a Group III Unit (5 MMBtu/hr – 20 MMBtu/hr) boiler.	

2. COMPANY INFORMATION

A. COMPANY: Mizkan America, Inc.	B. FAC ID: 39855
C. ADDRESS: 10037 E. 8th Street CITY: Rancho Cucamonga STATE: CA ZIP: 91730	D. NAICS CODE: 2099
E. CONTACT PERSON: Wayne Musselman	F. TITLE: Maintenance Manager
G. PHONE NO.: 909-989-4211	H. EMAIL: Wayne.Musselman@mizkan.com

3. PERMIT INFORMATION

A. AGENCY: South Coast AQMD	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Christopher Gill	
D. PERMIT INFORMATION: P/O NO.: G61375	PC ISSUANCE DATE: N/A (PO no PC) PO ISSUANCE DATE: 4/21/2020
E. START-UP DATE: 2020	
F. OPERATIONAL TIME: > 2 years	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission limits, including facility limits, on the permit(s) that affects the equipment. Include units, averaging times and corrections (%O_2, %CO_2, dry, etc). For VOC, values must include if the concentration is reported as methane, hexane or any other compound. VOC mass emissions should include the molecular weight-to-carbon ratio, if applicable.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit		7 PPMV	*	50 PPMV	*	
Averaging Time		15 MIN**		15 MIN**		
Correction		3 % O_2		3 % O_2		

B. OTHER BACT REQUIREMENTS:

* Using Natural Gas

** Per condition (5)(d), the sampling times shall be at least 15 consecutive minutes for maximum and minimum loads and at least one hour for normal operating load.

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS: This equipment is subject to the applicable NOx requirements of Rule 1146.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: William and Davis	B. MODEL: WDNP2-G-840

C. DESCRIPTION: Low NOx burner

D. SIZE/DIMENSIONS/CAPACITY: 8.4 MMBTU

E. CONTROL EQUIPMENT PERMIT INFORMATION: See Section 3

APPLICATION NO.: PC ISSUANCE DATE: Click here to enter a date.

PO NO.: PO ISSUANCE DATE: Click here to enter a date.

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS: N/A

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source test

B. DATE(S) OF SOURCE TEST: September 5, 2020

C. COLLECTION EFFICIENCY METHOD: N/A

D. COLLECTION EFFICIENCY PARAMETERS: N/A

E. SOURCE TEST/PERFORMANCE DATA:

Parameter	Units	Minimum	Average	Maximum	Limit	Rule/ Regulation
NO_x	ppm @ 3% O_2	3.75	5.04	5.70	7	Condition 10
	lb/hr	0.0165	0.0347	0.0507		
CO	ppm @ 3% O_2	0.566	0.187	0.0	50	
	lb/hr	0.00152	0.000783	0.0		
O_2	%	9.02	8.27	8.03		

F. TEST OPERATING PARAMETERS AND CONDITIONS: The boiler was tested at three loads: minimum, average, and maximum.

G. TEST METHODS (SPECIFY AGENCY): SCAQMD 100.1 for NOx, CO, O_2 and CO_2.

H. MONITORING AND TESTING REQUIREMENTS: Condition (5) The owner or operator of this equipment shall conduct an initial source test and subsequent source test every five years. Condition (7) The operator shall conduct periodic monitoring of NOx and CO emissions pursuant to the schedule in Rule 1146 with a portable NOx, CO and Oxygen analyzer according to the Protocol for the Periodic Monitoring of Nitrogen Oxides, Carbon Monoxide, and Oxygen from Units Subject to South Coast AQMD Rule 1146.
I. DEMONSTRATION OF COMPLIANCE COMMENTS: Unit has shown compliance from source test.

b

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 011003	B. CCAT: 81	C. APPLICATION TYPE CODE: 30
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): PR 20291
G. SCAQMD SOURCE SPECIFIC RULES: Rule 1146		
H. HEALTH RISK FOR PERMIT UNIT		

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

Section I – South Coast AQMD LAER/BACT Determination

Source Type: **Major/LAER**

Application No.: **584656**

Equipment Category: **Dryer – Aggregate Facility**

Equipment Subcategory: **Rotary Dryer, Natural Gas Fired**

Date: **September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Gencor	B. MODEL: N/A
C. DESCRIPTION: Rotary Dryer, Drum/Mixer, with a Gencor Equinox Natural Gas Fired Burner	
D. FUNCTION: The facility is in the business of producing asphaltic concrete. The raw aggregate, recycled asphalt product and recycled asphalt shingles are fed into a rotary dryer from an on-site cold feed system. The material is heated to temperature under specification to remove moisture. Asphalt oil is fed directly into the dryer and mixed with raw aggregate. The asphaltic concrete is discharged into an incline slat conveyor which feeds silo loading batches via a series of drag slat conveyors. The exhaust from the dryer and conveyor is vented to a hot baghouse.	
E. SIZE/DIMENSIONS/CAPACITY: 135 MMBtu/hr	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: 135 MMBTU/hr	
G. BURNER INFORMATION:	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
Low NOx Burner	135 MMBtu/hr	one

H. PRIMARY FUEL: Natural Gas	I. OTHER FUEL: N/A
J. OPERATING SCHEDULE: Hours 24 HRS//DAY 7 DAYS/WEEK 52 WKS/YR	
K. EQUIPMENT COST: N/A	
L. EQUIPMENT INFORMATION COMMENTS: Two combustion air blowers, 155 HP total.	

2. COMPANY INFORMATION

A. COMPANY: Granite Construction Co.	B. FAC ID: 178534
C. ADDRESS: 35100 Dillon Rd. CITY: Indio STATE: CA ZIP: 92203	D. NAICS CODE: 324121
E. CONTACT PERSON: Jayne Powell	F. TITLE: Environmental Manager
G. PHONE NO.: 760-775-7500	H. EMAIL: Jayne.Powell@gcinc.com

3. PERMIT INFORMATION

A. AGENCY: South Coast AQMD	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Marilyn Potter	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 5/5/2016 P/O NO.: G44681 PO ISSUANCE DATE: 1/30/2017	
E. START-UP DATE: 2017	
F. OPERATIONAL TIME: 5 years	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission limits, including facility limits, on the permit(s) that affects the equipment. Include units, averaging times and corrections (%O_2, %CO_2, dry, etc). For VOC, values must include if the concentration is reported as methane, hexane or any other compound. VOC mass emissions should include the molecular weight-to-carbon ratio, if applicable.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit		33 PPMV				
Averaging Time		-				
Correction		3 % O_2				

B. OTHER BACT REQUIREMENTS: N/A

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS: The manufacturer provided an emission guarantee for 33 ppm. The source test showed an average of 29 ppm @ 3% O_2, demonstrating compliance with Rule 1147.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: -	B. MODEL: -
C. DESCRIPTION: Low NOx burner	
D. SIZE/DIMENSIONS/CAPACITY: 135 MMBTU/hr	
E. CONTROL EQUIPMENT PERMIT INFORMATION: See Section 3 APPLICATION NO.: PC ISSUANCE DATE: Click here to enter a date. PO NO.: PO ISSUANCE DATE: Click here to enter a date.	

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS: N/A

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source test

B. DATE(S) OF SOURCE TEST: September 7, 2016

C. COLLECTION EFFICIENCY METHOD: N/A

D. COLLECTION EFFICIENCY PARAMETERS: N/A

E. SOURCE TEST/PERFORMANCE DATA:

Parameter	Units	Run #1	Run #2	Run #3	Limit	Rule/Regulation
NOx	ppm @ 3% O_2	27.7	29.6	29.8	33	Condition 4
	lb/MMBtu	0.034	0.036	0.037		
CO	ppm @ 3% O_2	763	815	398	2000	
	lb/MMBtu	0.572	0.611	0.299		
O_2	%	13.5	13.8	12.9		

F. TEST OPERATING PARAMETERS AND CONDITIONS: N/A

G. TEST METHODS (SPECIFY AGENCY): SCAQMD Method 100.1 for NOx, CO, O_2 and CO_2.

I. MONITORING AND TESTING REQUIREMENTS:
Permit to Construct - Condition (12): The owner or operator of this equipment shall conduct an initial source test.

I. DEMONSTRATION OF COMPLIANCE COMMENTS: Rotary Dryer has shown compliance with SCAQMD Rule 1147 through the source test.

b

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 000293	B. CCAT: .	C. APPLICATION TYPE CODE: 10	
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): PR 16172A	
G. SCAQMD SOURCE SPECIFIC RULES: Rule 1147			
H. HEALTH RISK FOR PERMIT UNIT			
H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

Section I – South Coast AQMD LAER/BACT Determination

Source Type:	**Major/LAER**
Application No.:	**557373, 563695, 556097, and 555096**
Equipment Category:	**Flow Coater with Regenerative Thermal Oxidizer**
Equipment Subcategory:	**Paper and Film**
Date:	**September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Faustel		B. MODEL: N/A
C. DESCRIPTION: Arlon produces adhesive and decorative films. All four production lines are vented along with their mixing rooms to a regenerative thermal oxidizer (RTO) to control emissions of VOC. Four permanent total enclosures (PTEs), one around each coating head, are vented to the RTO.		
D. FUNCTION: Casting of paper and vinyl film and application of an adhesive on to the film		
E. SIZE/DIMENSIONS/CAPACITY: N/A		
COMBUSTION SOURCES		
F. MAXIMUM HEAT INPUT: N/A		
G. BURNER INFORMATION		

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: N/A	I. OTHER FUEL: N/A
J. OPERATING SCHEDULE: 24 HRS/DAY 7 DAYS/WEEK 52 WKS/YR	
K. EQUIPMENT COST: N/A	
L. EQUIPMENT INFORMATION COMMENTS: Knife-over-roll type	

2. COMPANY INFORMATION

A. COMPANY: Arlon Graphics LLC	B. FAC ID: 174406
C. ADDRESS: 200 Boysenberry Lane CITY: Placentia STATE: CA ZIP:92870	D. NAICS CODE: 322222
E. CONTACT PERSON: Robert Nicholson	F. TITLE: Engineering Manager
G. PHONE NO.: 714-431-4221	H. EMAIL: rnicholson@arlon.com

3. PERMIT INFORMATION

A. AGENCY: South Coast AQMD	B. APPLICATION TYPE: OTHER
C. SCAQMD ENGINEER: Jeanne Pendes Villacorte	
D. PERMIT INFORMATION: P/O NO.: G51869	PC ISSUANCE DATE: 1/7/15 PO ISSUANCE DATE: 12/2/2016
E. START-UP DATE: 2016	
F. OPERATIONAL TIME: 6 years	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES:

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit						
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: N/A

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS: N/A

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Adwest Technologies, Inc.	B. MODEL: 50.0 RTO-97

C. DESCRIPTION: Regenerative thermal oxidizer with a Maxon low-NOx burner

D. SIZE/DIMENSIONS/CAPACITY: 14.45 MMBtu/hr low-NOx natural gas burner

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. 587507 PC ISSUANCE DATE: Click here to enter a date.

PO NO.: G51846 PO ISSUANCE DATE: 4/18/2018

F. REQUIRED CONTROL EFFICIENCIES: Minimum efficiencies of the system control equipment as required by permit, or the most stringent rule requirement. The control or destruction efficiency is determined across the control device (e.g. inlet-outlet). Collection or capture efficiency is based at each point of contaminant collection in the system. Enter each contaminant that applies. Add rows as needed.

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	97%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS : The operation of the RTO to control VOC emissions is in compliance with requirements of South Coast AQMD Rules 1128 and 1171. The RTO burner is only used to pre-heat the ceramic beds to establish an initial temperature of 1500F.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: April 20, 2016

C. COLLECTION EFFICIENCY METHOD: The VOC destruction efficiency was determined at the inlet and outlet of the RTO, simultaneously, by SCAQMD Methods 25.1/25.3. The enclosures were certified as PTEs for 100% capture of the VOC by EPA Method 204.

D. COLLECTION EFFICIENCY PARAMETERS: See Part C

E. SOURCE TEST/PERFORMANCE DATA: VOC destruction efficiency for the oxidizer is 98.9%. Use of PTEs yielded a collection efficiency of 100% and therefore the overall control efficiency is 98.9%.

F. TEST OPERATING PARAMETERS AND CONDITIONS: List any important operating conditions maintained during the source test or normal operations. Examples include, but may not be limited to, pressure differentials across control devices, feed rates, firing rates, temperatures, flow rates, or other parameters used to evaluate the level of operation of the equipment during the test or operations that may affect emissions from the equipment.
G. TEST METHODS (SPECIFY AGENCY): South Coast AQMD Methods 25.1/25.3
J. MONITORING AND TESTING REQUIREMENTS: Source test was conducted with all four coating lines operating.
I. DEMONSTRATION OF COMPLIANCE COMMENTS: The permit requires source testing on the RTO to verify that the overall control efficiency is a minimum of 97%.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 000211	B. CCAT: N/A	C. APPLICATION TYPE CODE: 60
D. RECLAIM FAC? YES ☒ NO ☐	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): PR15245A
G. SCAQMD SOURCE SPECIFIC RULES: Click here to enter text.		
H. HEALTH RISK FOR PERMIT UNIT		

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

Section II - Other LAER/BACT Determination

Source Type: **Major/LAER**

Application No.: **5299**

Equipment Category: **Fumigation Chamber**

Equipment Subcategory: **Methyl Bromide**

Date: **September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Custom	B. MODEL: Custom
C. DESCRIPTION: Methyl Bromide fumigation and control system consisting of carbon adsorption control device with onsite reactivation using a chemical scrubber.	
D. FUNCTION: Guadalupe Cooling is a produce cooling facility for vegetables, including broccoli, lettuce, cauliflower and celery, and berries. The produce is fumigated with methyl bromide prior to export overseas.	
E. SIZE/DIMENSIONS/CAPACITY: One 10,097 cu. ft. and two 19,189 cu. ft. in volume fumigation chambers. One methyl bromide volitizer and injection system. one USDA-APHIS-approved methyl bromide monitor and control room with methyl bromide cylinder storage.	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: N/A	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: N/A	I. OTHER FUEL: N/A
J. OPERATING SCHEDULE: Hours 8 Days 7 Weeks 46	
K. EQUIPMENT COST: N/A	
L. EQUIPMENT INFORMATION COMMENTS: N/A	

2. COMPANY INFORMATION

A. COMPANY: Guadalupe Cooling Company	B. FAC ID: 2825
C. ADDRESS: 2040 Guadalupe Road CITY: Nipomo STATE: CA ZIP: 93444	D. NAICS CODE: 561710
E. CONTACT PERSON: Danny Vincent	F. TITLE: Representative
G. PHONE NO.: (805) 343-2331 ext 108	H. EMAIL: sales@freshkist.com

3. PERMIT INFORMATION

A. AGENCY: San Luis Obispo County APCD	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: PLR from SLOCAPCD	
D. PERMIT INFORMATION:	PC ISSUANCE DATE: 8/24/10
P/O NO.: 1713-2	PO ISSUANCE DATE: 2/18/2014
E. START-UP DATE: N/A	
F. OPERATIONAL TIME: 8 years	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES:

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit						
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: 86% overall control efficiency (capture and control) on carbon adsorption system.

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS: N/A

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Custom	B. MODEL: Custom

C. DESCRIPTION: Methyl Bromide fumigation and control system consisting of carbon adsorption control device with onsite reactivation using a chemical scrubber.

D. SIZE/DIMENSIONS/CAPACITY: One carbon adsorption bed with 15.6" inner diameter exhaust stack, 40 ft. from ground level and 5,350 cubic feet per minute exhaust blower. One chemical scrubber, 15,229 gallon tank with 2.54" inner diameter exhaust stack, 50 ft. from ground level with minimum 250 cfm. desorption blower.

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. 5299 PC ISSUANCE DATE: 8/18/10

PO NO.: 1713-2 PO ISSUANCE DATE: 2/18/2014

F. REQUIRED CONTROL EFFICIENCIES: 86% overall control efficiency (capture and control) on carbon adsorption system.

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	86%	___%	___%
NOx	--%	___%	___%
SOx	--%	___%	___%
CO	--%	___%	___%
PM	--%	___%	___%
PM_{10}	--%	___%	___%
INORGANIC	--%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS: The overall control efficiency was established and conditioned based on source testing conducted at the facility.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Tests conduction every 24 months since 2013

B. DATE(S) OF SOURCE TEST: Every 24 months since 2013

C. COLLECTION EFFICIENCY METHOD: See EPA Method below

D. COLLECTION EFFICIENCY PARAMETERS: See EPA Method below

E. SOURCE TEST/PERFORMANCE DATA: Demonstrate 86% overall control efficiency from carbon adsorption system.

F. TEST OPERATING PARAMETERS AND CONDITIONS: During venting of fumigation chambers. Sampling ports and access for source testing shall be provided in accordance with the provisions of SJVAPCD Rule 209 -Provision for Sampling and Testing Facilities.

G. TEST METHODS (SPECIFY AGENCY): EPA Method 2, 2A, or 2D for flow rate and Method 25, 25A, 25B, or 25D for measuring total gaseous organic concentrations at the inlet and outlet of the control device.

K. MONITORING AND TESTING REQUIREMENTS: (USDA-APHIS)-approved methyl bromide monitors on the inlet and outlet of both the carbon bed and chemical scrubber shall be installed, operated and maintained in accordance with the procedure listed in EPA Test Method 1 or 1A. USDA-APHIS-approved methyl bromide monitors shall be operated and maintained to demonstrate compliance with hourly, daily, and annual emission limits, and control efficiencies of the carbon bed and scrubber system. Each monitor shall be calibrated at least once every twelve (12)-months. Source testing required at least once every twenty-four (24) months.
I. DEMONSTRATION OF COMPLIANCE COMMENTS: N/A

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: Click here to enter text.	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE:Click here to enter text.
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☐ NO ☐	F. SOURCE TEST ID(S): Click here to enter text.
G. SCAQMD SOURCE SPECIFIC RULES: Click here to enter text.		
H. HEALTH RISK FOR PERMIT UNIT		

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

Section II - Other LAER/BACT Determination

Source Type:	**Major/LAER**
Application No.:	Approval Order 20AQ-E005
Equipment Category:	**Diesel Internal Combustion Engine**
Equipment Subcategory:	**Stationary, Emergency ICE ≥1,000 BHP**
Date:	**September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Caterpillar	B. MODEL: C175-16
C. DESCRIPTION: Diesel powered electric emergency generator	
D. FUNCTION: The emergency engine generators approved for operation by this size were installed at Microsoft Data Center in Quincy, Washington to provide backup/standby electrical power in case of emergency and loss of grid power.	
E. SIZE/DIMENSIONS/CAPACITY: 3.0 MWe (4,277 BHP)	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: 26.51 MMBtu/hr	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: DIESEL	I. OTHER FUEL: Supplementary or standby fuels
J. OPERATING SCHEDULE: Hours HRS/DAY DAYS/WEEK WKS/YR	
K. EQUIPMENT COST: Enter sum of all Cost Factors in Table 6 of SCAQMD BACT Guidelines	
L. EQUIPMENT INFORMATION COMMENTS: Under the State of Washington permit, each engine shall not exceed 86 hours per year of operation averaged across all generators in service over a 12-month rolling average.	

2. COMPANY INFORMATION

A. COMPANY: Microsoft Corporation (MWH Data Center)	B. FAC ID:
C. ADDRESS: 1515 Port Industrial Pkwy CITY: Quincy STATE: WA ZIP: 98848	D. NAICS CODE: 511210
E. CONTACT PERSON: Jaymes Kirkham	F. TITLE: Data Center Operations Manager
G. PHONE NO.: (509) 237-3633	H. EMAIL: jayki@microsoft.com

3. PERMIT INFORMATION

A. AGENCY: State of Washington -Department of Ecology	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Jenny Filipy	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 2/27/20 P/O NO.: 20AQ-E005 PO ISSUANCE DATE: 2/27/2020 Approval Order No. 20AQ-E005: Microsoft MWH Data Center (wa.gov)	
E. START-UP DATE: 9/29/2020	
F. OPERATIONAL TIME: > 1 year	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission limits, including facility limits, on the permit(s) that affects the equipment. Include units, averaging times and corrections ($\%O_2$, $\%CO_2$, dry, etc). For VOC, values must include if the concentration is reported as methane, hexane or any other compound. VOC mass emissions should include the molecular weight-to-carbon ratio, if applicable.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit	0.19 gr/kW-hr*	0.67 gr/kW-hr		3.5 gr/kW-hr	0.03 gr/kW-hr	
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: Concise description of the BACT requirements for each regulated contaminant from the equipment, other than the requirements list in Section 4(A).

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS:
According to the permit, for the five load tests, testing shall be performed at each of the five engine torque load levels described in Table 2 of Appendix B to Subpart E of 40 CFR Part 89, and data shall be reduced to a single-weighted average value using the weighting factors specified in Table 2.

*NMHC/VOC

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Caterpillar	B. MODEL: Model name and number

C. DESCRIPTION: All generators are Tier 2-ertified and each engine was equipped with urea-based selective catalytic reduction (SCR) and catalyzed diesel particulate filter (DPF) controls to meet the emission requirements of EPA Tier 4 Final engines.

D. SIZE/DIMENSIONS/CAPACITY: An appropriate size parameter such as rated heat input, usable volume, rated filter efficiency, and/or one more characteristic dimensions.

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. PC ISSUANCE DATE: 2/27/20

PO NO.: 20AQ-E005 PO ISSUANCE DATE: 2/27/2020

F. REQUIRED CONTROL EFFICIENCIES: N/A

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS :

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: September 29, 2020

C. COLLECTION EFFICIENCY METHOD:

D. COLLECTION EFFICIENCY PARAMETERS: The quantitative parameters used to verify the method or procedures in Section 6(C). Examples include static pressure measurements, anemometer measurements, and mass balance results.

E. SOURCE TEST/PERFORMANCE DATA:

Pollutants: Test Results	Emission Limits
Filterable PM: 0.006 g/kWm-hr	0.03 g/kWm-hr
CO: 0.10 g/kWm-hr	3.5 g/kWm-hr
NOx: 0.47 g/kWm-hr	0.67 g/kWm-hr
NMHC: 0.004 g/kWm-hr	0.19 g/kWm-hr
NH3: 0.17* lb/hr	0.95 lb/hr

Engine brake mechanical output (kWm)

* Arithmetic average of three runs reported for ammonia emissions, not weighted average

F. TEST OPERATING PARAMETERS AND CONDITIONS:

Emission tests were performed while the source/units and air pollution control devices were operating at the conditions required by the permit. The units were tested when operating within 2% of the following target load values: 100%, 75%, 50%, 25%, and 10% load. The load was based on mechanical load. For the five load tests, testing was performed at each of the five engine torque load levels. Three test runs were conducted for each engine, except as allowed by the sampling protocol from 40 CFR 1065.

Each engine was equipped with a properly installed and maintained non-resettable meter that records total operating hours.

Each engine wase connected to a properly installed and maintained fuel flow monitoring system (either certified physical or generator manufacturer provided software) that records the amount of fuel consumed by the engine.

G. TEST METHODS (SPECIFY AGENCY):

Parameter	Load Test	Test Methods
Filterable PM	Five-load weighted average	40 CFR 1065
CO	Five-load weighted average	ASTM D-6348
NOx	Five-load weighted average	ASTM D-6348
NMHC	Five-load weighted average	EPA 25A
NH3	100%-load (±2%)	ASTM D-6348

L. MONITORING AND TESTING REQUIREMENTS: Every 60 months after initial source testing, Microsoft shall test at least one engine, including the engine with the most operating hours as long as it is a different engine from that which was tested during the previous 60 month interval testing

I. DEMONSTRATION OF COMPLIANCE COMMENTS: AIP established through source test and over one year of operation of the engines.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: Click here to enter text.	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE: Click here to enter text.
D. RECLAIM FAC? YES ☐ NO ☐	E. TITLE V FAC: YES ☐ NO ☐	F. SOURCE TEST ID(S): W021AS-698877-RT-1155

G. SCAQMD SOURCE SPECIFIC RULES: Click here to enter text.

H. HEALTH RISK FOR PERMIT UNIT

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

Section II - Other LAER/BACT Determination

Source Type:	**Major/LAER**
Application No.:	Approval Order 20AQ-E005
Equipment Category:	**Diesel Internal Combustion Engine**
Equipment Subcategory:	**Stationary, Emergency ICE ≥ 1,000 BHP**
Date:	**September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Caterpillar	B. MODEL: 3512C	
C. DESCRIPTION: Diesel powered electric emergency generator		
D. FUNCTION: The emergency engine generators approved for operation by this order were installed at Microsoft Data Center in Quincy, Washington to provide backup/standby electrical power in case of emergency and loss of grid power.		
E. SIZE/DIMENSIONS/CAPACITY: 1.5 MWe (2,104 BHP)		
COMBUSTION SOURCES		
F. MAXIMUM HEAT INPUT: 14.20 MMBtu/hr		
G. BURNER INFORMATION		

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: DIESEL	I. OTHER FUEL: Supplementary or standby fuels
J. OPERATING SCHEDULE: Hours HRS/DAY DAYS/WEEK WKS/YR	
K. EQUIPMENT COST: Enter sum of all Cost Factors in Table 6 of SCAQMD BACT Guidelines	
L. EQUIPMENT INFORMATION COMMENTS: Under the State of Washington permit, each engine shall not exceed 86 hours per year of operation averaged across all generators in service over a 12-month rolling average.	

2. COMPANY INFORMATION

A. COMPANY: Microsoft Corporation (MWH Data Center)	B. FAC ID:
C. ADDRESS: 1515 Port Industrial Pkwy CITY: Quincy STATE: WA ZIP: 98848	D. NAICS CODE: 511210
E. CONTACT PERSON: Jaymes Kirkham	F. TITLE: Data Center Operations Manager
G. PHONE NO.: (509) 237-3633	H. EMAIL: jayki@microsoft.com

3. PERMIT INFORMATION

A. AGENCY: State of Washington -Department of Ecology	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Jenny Filipy	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 2/27/20 P/O NO.: 20AQ-E005 PO ISSUANCE DATE: 2/27/2020 Approval Order No. 20AQ-E005: Microsoft MWH Data Center (wa.gov)	
E. START-UP DATE: 9/29/2020	
F. OPERATIONAL TIME: > 1 year	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission limits, including facility limits, on the permit(s) that affects the equipment. Include units, averaging times and corrections ($\%O_2$, $\%CO_2$, dry, etc). For VOC, values must include if the concentration is reported as methane, hexane or any other compound. VOC mass emissions should include the molecular weight-to-carbon ratio, if applicable.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit	0.19 gr/kW-hr*	0.67 gr/kW-hr		3.5 gr/kW-hr	0.03 gr/kW-hr	
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: Concise description of the BACT requirements for each regulated contaminant from the equipment, other than the requirements list in Section 4(A).

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS:
According to the permit, for the five load tests, testing was performed at each of the five engine torque load levels described in Table 2 of Appendix B to Subpart E of 40 CFR Part 89, and data shall be reduced to a single-weighted average value using the weighting factors specified in Table 2.

*NMHC/VOC

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Caterpillar	B. MODEL: Model name and number

C. DESCRIPTION: All engines are Tier 2 certified, and each engine is equipped with urea-based selective catalytic reduction (SCR) and catalyzed diesel particulate filter (DPF) controls to meet the emission requirements of EPA Tier 4 engines.

D. SIZE/DIMENSIONS/CAPACITY: An appropriate size parameter such as rated heat input, usable volume, rated filter efficiency, and/or one more characteristic dimensions.

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. PC ISSUANCE DATE: 2/27/20
PO NO.: 20AQ-E005 PO ISSUANCE DATE: 2/27/2020

F. REQUIRED CONTROL EFFICIENCIES: N/A

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS :

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: June 2, 2021

C. COLLECTION EFFICIENCY METHOD:

D. COLLECTION EFFICIENCY PARAMETERS: The quantitative parameters used to verify the method or procedures in Section 6(C). Examples include static pressure measurements, anemometer measurements, and mass balance results.

E. SOURCE TEST/PERFORMANCE DATA:

Pollutants: Test Results	Emission Limits
Filterable PM: 0.0007 g/kWm-hr	0.03 g/kWm-hr
CO: 0.014 g/kWm-hr	3.5 g/kWm-hr
NOx: 0.40 g/kWm-hr	0.67 g/kWm-hr
NMHC: 0.065 g/kWm-hr	0.19 g/kWm-hr
NH3: 0.16* lb/hr	0.50 lb/hr

Engine brake mechanical output (kWm)
* Arithmetic average of three runs reported for ammonia emissions, not weighted average

F. TEST OPERATING PARAMETERS AND CONDITIONS:

Emission tests were performed while the source/units and air pollution control devices were operating at the conditions required by the permit. The units were tested when operating within 2% of the following target load values: 100%, 75%, 50%, 25%, and 10% load. The load was based on mechanical load. For the five load tests, testing was performed at each of the five engine torque load levels. Three test runs were conducted for each engine, except as allowed by the sampling protocol from 40 CFR 1065.

Each engine shall be equipped with a properly installed and maintained non-resettable meter that records total operating hours.

Each engine shall be connected to a properly installed and maintained fuel flow monitoring system (either certified physical or generator manufacturer provided software) that records the amount of fuel consumed by the engine.

G. TEST METHODS (SPECIFY AGENCY):

Parameter	Load Test	Test Methods
Filterable PM	Five-load weighted average	40 CFR 1065
CO	Five-load weighted average	ASTM D-6348
NOx	Five-load weighted average	ASTM D-6348
NMHC	Five-load weighted average	EPA 25A
NH3	100%-load (±2%)	ASTM D-6348

The method used to determine collection efficiency of the system (e.g., EPA Method 204, mass balance), if applicable. A brief description of the collection efficiency test may be included if there is no applicable method (e.g., OVA measurements, smoke tests)

M. MONITORING AND TESTING REQUIREMENTS: Include any monitoring or testing requirements and their frequency that will be enforced to maintain emission levels reported for the BACT Determination.

I. DEMONSTRATION OF COMPLIANCE COMMENTS: AIP established through source test and over one year of operation of the engines.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: Click here to enter text.	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE: Click here to enter text.
D. RECLAIM FAC? YES ☐ NO ☐	E. TITLE V FAC: YES ☐ NO ☐	F. SOURCE TEST ID(S): W021AS-698877-RT-1155
G. SCAQMD SOURCE SPECIFIC RULES: Click here to enter text.		
H. HEALTH RISK FOR PERMIT UNIT		

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

Section II - Other LAER/BACT Determination

Source Type:	**Major/LAER**
Application No.:	Approval Order 20AQ-E005
Equipment Category:	**Diesel Internal Combustion Engine**
Equipment Subcategory:	**Stationary, Emergency ICE ≥ 1,000 BHP**
Date:	**September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Caterpillar	B. MODEL: C18	
C. DESCRIPTION: Diesel powered electric emergency generator		
D. FUNCTION: The emergency engine generators approved for operation by this order were installed at Microsoft Data Center in Quincy, Washington to provide backup/standby electrical power in case of emergency and loss of grid power.		
E. SIZE/DIMENSIONS/CAPACITY: 1.0 MWe (1,391 BHP)		
COMBUSTION SOURCES		
F. MAXIMUM HEAT INPUT: 9.66 MMBtu/hr		
G. BURNER INFORMATION		

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: DIESEL	I. OTHER FUEL: Supplementary or standby fuels
J. OPERATING SCHEDULE: Hours HRS/DAY DAYS/WEEK WKS/YR	
K. EQUIPMENT COST: Enter sum of all Cost Factors in Table 6 of SCAQMD BACT Guidelines	
L. EQUIPMENT INFORMATION COMMENTS: Under the State of Washington permit, each engine shall not exceed 86 hours per year of operation averaged across all generators in service over a 12-month rolling average.	

2. COMPANY INFORMATION

A. COMPANY: Microsoft Corporation (MWH Data Center)	B. FAC ID:
C. ADDRESS: 1515 Port Industrial Pkwy CITY: Quincy STATE: WA ZIP: 98848	D. NAICS CODE: 511210
E. CONTACT PERSON: Jaymes Kirkham	F. TITLE: Data Center Operations Manager
G. PHONE NO.: (509) 237-3633	H. EMAIL: jayki@microsoft.com

3. PERMIT INFORMATION

A. AGENCY: State of Washington -Department of Ecology	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Jenny Filipy	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 2/27/20 P/O NO.: 20AQ-E005 PO ISSUANCE DATE: 2/27/2020 Approval Order No. 20AQ-E005: Microsoft MWH Data Center (wa.gov)	
E. START-UP DATE: 9/29/2020	
F. OPERATIONAL TIME: > 1 year	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission limits, including facility limits, on the permit(s) that affects the equipment. Include units, averaging times and corrections ($\%O_2$, $\%CO_2$, dry, etc). For VOC, values must include if the concentration is reported as methane, hexane or any other compound. VOC mass emissions should include the molecular weight-to-carbon ratio, if applicable.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit	0.19 gr/kW-hr*	0.67 gr/kW-hr		3.5 gr/kW-hr	0.03 gr/kW-hr	
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: Concise description of the BACT requirements for each regulated contaminant from the equipment, other than the requirements list in Section 4(A).

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS:
According to the permit, for the five load tests, testing was performed at each of the five engine torque load levels described in Table 2 of Appendix B to Subpart E of 40 CFR Part 89, and data shall be reduced to a single-weighted average value using the weighting factors specified in Table 2.

*NMHC/VOC

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Caterpillar	B. MODEL: Model name and number

C. DESCRIPTION: All engines are Tier 2 certified, and each engine is equipped with urea-based selective catalytic reduction (SCR) and catalyzed diesel particulate filter (DPF) controls to meet the emission requirements of EPA Tier 4 engines.

D. SIZE/DIMENSIONS/CAPACITY: An appropriate size parameter such as rated heat input, usable volume, rated filter efficiency, and/or one more characteristic dimensions.

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. PC ISSUANCE DATE: 2/27/20
PO NO.: 20AQ-E005 PO ISSUANCE DATE: 2/27/2020

F. REQUIRED CONTROL EFFICIENCIES: N/A

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS :

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: September 30, 2020

C. COLLECTION EFFICIENCY METHOD:

D. COLLECTION EFFICIENCY PARAMETERS: The quantitative parameters used to verify the method or procedures in Section 6(C). Examples include static pressure measurements, anemometer measurements, and mass balance results.

E. SOURCE TEST/PERFORMANCE DATA:

Pollutants: Test Results	Emission Limits
Filterable PM: 0.004 g/kWm-hr	0.03 g/kWm-hr
CO: 0.02 g/kWm-hr	3.5 g/kWm-hr
NOx: 0.64 g/kWm-hr	0.67 g/kWm-hr
NMHC: 0.005 g/kWm-hr	0.19 g/kWm-hr
NH3: 0.14* lb/hr	0.19 lb/hr

Engine brake mechanical output (kWm)

* Arithmetic average of three runs reported for ammonia emissions, not weighted average

F. TEST OPERATING PARAMETERS AND CONDITIONS:

Emission tests were performed while the source/units and air pollution control devices were operating at the conditions required by the permit. The units were tested when operating within 2% of the following target load values: 100%, 75%, 50%, 25%, and 10% load. The load was based on mechanical load. For the five load tests, testing was performed at each of the five engine torque load levels. Three test runs were conducted for each engine, except as allowed by the sampling protocol from 40 CFR 1065.

Each engine shall be equipped with a properly installed and maintained non-resettable meter that records total operating hours.

Each engine shall be connected to a properly installed and maintained fuel flow monitoring system (either certified physical or generator manufacturer provided software) that records the amount of fuel consumed by the engine.

G. TEST METHODS (SPECIFY AGENCY):

Parameter	Load Test	Test Methods
Filterable PM	Five-load weighted average	40 CFR 1065
CO	Five-load weighted average	ASTM D-6348
NOx	Five-load weighted average	ASTM D-6348
NMHC	Five-load weighted average	EPA 25A
NH3	100%-load (±2%)	ASTM D-6348

Identify the primary source test methods used and identify the agency (e.g., CARB Method 425).

N. MONITORING AND TESTING REQUIREMENTS: Include any monitoring or testing requirements and their frequency that will be enforced to maintain emission levels reported for the BACT Determination.

I. DEMONSTRATION OF COMPLIANCE COMMENTS: AIP established through source test and over one year of operation of the engines.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: Click here to enter text.	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE: Click here to enter text.
D. RECLAIM FAC? YES ☐ NO ☐	E. TITLE V FAC: YES ☐ NO ☐	F. SOURCE TEST ID(S): W021AS-698877-RT-1155

G. SCAQMD SOURCE SPECIFIC RULES: Click here to enter text.

H. HEALTH RISK FOR PERMIT UNIT

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

Section I – South Coast AQMD LAER/BACT Determination

Source Type: **Major/LAER**

Application No.: **625401(ICE) and 613081 (SCR)**

Equipment Category: **I.C. Engine**

Equipment Subcategory: **Stationary, Non-Emergency, Electrical Generator with SCR**

Date: **September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Miratech	B. MODEL: SP-EM35-120-18
C. DESCRIPTION: Selective Catalytic Reduction (SCR) emission control system with urea injection for prime natural gas fired electrical generation lean-burn engine	
D. FUNCTION: SCR system controls exhaust emissions from a prime operation engine used by the City of Palm Springs to generate electricity for one of their municipal facilities. Waste heat from the engine is used to heat water and provide heat to absorption chiller.	
E. SIZE/DIMENSIONS/CAPACITY: 1573 BHP, GE Jenbacher, model JMS416B86, natural gas, lean burn, turbocharged and aftercooled, 16 cylinders, four-cycle driving a 1MW electrical generator.	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: N/A	
G. BURNER INFORMATION: N/A	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: Natural Gas	I. OTHER FUEL: N/A
J. OPERATING SCHEDULE: Hours 24 Days 7 Weeks 52	
K. EQUIPMENT COST: N/A	
L. EQUIPMENT INFORMATION COMMENTS: N/A	

2. COMPANY INFORMATION

A. COMPANY: City of Palm Springs	B. FAC ID: 42218
C. ADDRESS: 425 N. Civic Drive CITY: Palm Springs STATE: CA ZIP: 92262	D. NAICS CODE: 921190
E. CONTACT PERSON: Staci A. Schafer	F. TITLE: Director Maintenance and Facilities
G. PHONE NO.: (760) 323-8170	H. EMAIL: staci.schafer@palmspringca.gov

3. PERMIT INFORMATION

A. AGENCY: SCAQMD	B. APPLICATION TYPE: MODIFICATION
C. SCAQMD ENGINEER: Arnold Peneda	
D. PERMIT INFORMATION: P/O NO.: G63569	PC ISSUANCE DATE: 8/26/19 PO ISSUANCE DATE: 11/21/2020
E. START-UP DATE: 8/26/2019	
F. OPERATIONAL TIME: 2 years. Originally started in 11/18/15 with subsequent troubleshooting.	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES:

	VOC (lbs/MW-hr)	**NOx** (lbs/MW-hr)	**SOx** (lbs/MW-hr)	**CO** (lbs/MW-hr)	**PM OR PM_{10}** (lbs/MW-hr)	**INORGANIC**
BACT Limit	0.17*	0.12*		0.34*		10 ppm NH_3
Averaging Time	15 min	15 min		15 min		60 min
Correction	**	15% O_2		15% O_2		15% O_2

B. OTHER BACT REQUIREMENTS: Ammonia slip tested at least once per year and once every 3 months for the first year of operation.

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS:

* The limits are in compliance with the Rule 1110.2 electrical energy factor.

** Time Required for VOC sampling.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Miratech	B. MODEL: SP-EM35-120-18

C. DESCRIPTION: Selective Catalytic Reduction module with a honeycomb type catalyst bed with a urea/air injector, automatic urea injection control and a 1,000 gallon capacity urea storage tank.

D. SIZE/DIMENSIONS/CAPACITY: Minimum 3 layers of catalyst, with a minimum total of 105 blocks and with a minimum volume of 26.25 cubic feet.

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. 613081 PC ISSUANCE DATE:8/26/19

PO NO.: G58644 PO ISSUANCE DATE: 8/26/2019

F. REQUIRED CONTROL EFFICIENCIES: Shall not exceed 10 ppm ammonia slip limit measured by volume on a dry basis at 15% oxygen over a 60 minute average.

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
Sox	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS: Maximum inlet temperature of SCR bed shall not exceed 887°F and outlet temperature shall be maintained at 572°F or greater once startup is achieved, not to exceed one hour.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: 12/18/19

C. COLLECTION EFFICIENCY METHOD: N/A

D. COLLECTION EFFICIENCY PARAMETERS: N/A

E. SOURCE TEST/PERFORMANCE DATA: Maximum ammonia slip 0.10 ppm @ 15% O_2.

F. TEST OPERATING PARAMETERS AND CONDITIONS:

G. TEST METHODS (SPECIFY AGENCY): South Coast AQMD Method 207.1 (Determination of Ammonia Emissions from Stationary Sources)

O. MONITORING AND TESTING REQUIREMENTS: Ammonia slip tested at least once per year and once every 3 months for the first year of operation.

I. DEMONSTRATION OF COMPLIANCE COMMENTS: N/A

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 040002	B. CCAT: 81	C. APPLICATION TYPE CODE: 60	
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☐ NO ☒	F. SOURCE TEST ID(S): R20059	
G. SCAQMD SOURCE SPECIFIC RULES: Rule 1110.2			
H. HEALTH RISK FOR PERMIT UNIT			
H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

PART C - POLICY AND PROCEDURES FOR NON-MAJOR POLLUTING FACILITIES

Chapter 1 - How Is MSBACT Determined for Minor Polluting Facilities?

This chapter explains the definitions of BACT for non-major polluting facilities (minor source BACT or MSBACT) found in South Coast AQMD rules and state law and how they are interpreted. It also explains the criteria used for initializing the Part D MSBACT Guidelines and the process for updating the MSBACT Guidelines.

PART D OF THE MSBACT GUIDELINES

Part D of the MSBACT Guidelines specifies the MSBACT requirements for all of the commonly permitted categories of equipment (See Chapter 2 for a full explanation of Part D).

The initial listings in Part D of the MSBACT Guidelines reflected the current BACT determinations at the time for sources at non-major polluting facilities as of April 2000. These did not represent new requirements but rather memorialized BACT determinations and emission levels at that time. This initialization was necessary to benchmark the transition from federal LAER to MSBACT for non-major polluting facilities. The control technologies and emission levels identified applied to any non-major source subject to NSR until the Guideline was updated or became out of date. The dates listed on the BACT determinations in Part D refer to the date of adoption of the determination. The dates listed do not grandfather the equipment from complying with any new requirements or limits that are implemented after the approval of a BACT determination~~17~~[1].

CRITERIA FOR NEW MSBACT AND UPDATING PART D

MSBACT requirements are determined for each source category based on the definition of MSBACT. In essence, MSBACT is the most stringent emission limit or control technology for a class or category of source that is:

- found in a state implementation plan (SIP) pursuant to Health and Safety Code section 40405(a)(1), or
- achieved in practice (AIP), or
- is technologically feasible and cost effective.

For practical purposes, nearly all South Coast AQMD MSBACT determinations will be based on AIP BACT because it is generally more stringent than MSBACT based on SIP, and because state law contains some constraints on South Coast AQMD from using the third approach. For minor polluting facilities, MSBACT will also take economic feasibility into account.

Based on Governing Board policy, MSBACT also includes a requirement for the use of clean fuels.

Terms such as “achieved in practice” and “technologically feasible” (including technology transfer) have not been defined in the rule, so one of the purposes of this

~~17~~[1] South Coast AQMD Rule 1303(a)(3)

section is to explain the criteria South Coast AQMD permitting staff uses to make a MSBACT determination.

MSBACT Based on a SIP

The most stringent emission limit found in an approved state implementation plan (SIP) may be an option for establishing MSBACT. This means that the most stringent emission limit adopted by any state as a rule, regulation or permit[~~182~~] and approved by USEPA is eligible as a MSBACT requirement. This does not include future emission limits that have not yet been implemented.

Achieved in Practice MSBACT

MSBACT may be an option for establishing the most stringent control technology or emission limit that has been achieved in practice (AIP) for a category or class of source. AIP control technology may be in operation in the United States or any other part of the world. South Coast AQMD permitting engineers will review the following sources to determine the most stringent AIP MSBACT:

- LAER/BACT determinations in Part B of the BACT Guidelines
- CAPCOA BACT Clearinghouse
- USEPA RACT/BACT/LAER Clearinghouse
- Other districts' and states' BACT Guidelines
- Permits to operate issued by South Coast AQMD or other agencies
- Any other source for which the requirements of AIP can be demonstrated

Achieved in Practice Criteria

A control technology or emission limit found in any of the references above may be considered as AIP if it meets all of the following criteria:

Commercial Availability

At least one vendor must offer this equipment for regular or full-scale operation in the United States. A performance warranty or guaranty must be available with the purchase of the control technology, as well as parts and service.

Reliability

The control technology must have been installed and operated reliably for at least twelve months on a comparable commercial operation. If the operator did not require the basic equipment to operate continuously, such as only eight hours per day and 5 days per week, then the control technology must have operated whenever the basic equipment was in operation during the twelve months.

Effectiveness

The control technology must be verified to perform effectively over the range of operation expected for that type of equipment. If the control technology will be allowed to operate at lesser effectiveness during certain modes of operation, then those modes must be identified. The verification shall be based on a South Coast AQMD-approved performance test or tests, when possible, or other performance data.

Cost Effectiveness

The control technology or emission rate must be cost effective for a substantial number

[~~182~~] Some states incorporate individual permits into their SIP as case-by-case Reasonably Available Control Technology requirements.

of sources within the class or category. Cost effectiveness criteria are described in detail in a later section. Cost criteria are not applicable to an individual permit but rather to a class or category of source.

Technology Transfer

MSBACT is based on what is AIP for a category or class of source. However, technology transfer must also be considered across source categories, in view of the other AIP criteria. There are two types of potentially transferable control technologies: 1) exhaust stream controls, and 2) process controls and modifications. For the first type, technology transfer must be considered between source categories that produce similar exhaust streams. For the second type, process similarity governs the technology.

LIMITED BACT EXEMPTION

Rule 1304 - Exemptions was amended in November 2021 to add subdivision (f) to include a limited BACT exemption for RECLAIM and former RECLAIM facilities. This limited BACT exemption is available to new or modified permit unit located at a RECLAIM or former RECLAIM facilities, for PM10 and SOx emission increases associated with the installation or modification of add-on air pollution control equipment for controlling NOx emissions to comply with NOx Best Available Retrofit Control Technology (BARCT) emission limits. The objective of the proposed narrow BACT exemption is to address the co-pollutant issue associated with the installation or modification of add-on air pollution controls and the replacement of equipment that is combined with an installation or modification of add-on air pollution control required to transition NOx RECLAIM facilities. This limited BACT exemption is available only to project at qualified facilities that meet all the requirements listed under Rule 1304 subparagraphs (f)(1)(A) through (E)[3].

Requirements of Health & Safety Code Section 40440.11

Senate Bill 456 (Kelley) was chartered into state law in 1995 and became effective in 1996. H&SC Section 40440.11 specifies the criteria and process that must be followed by the South Coast AQMD to establish new MSBACT limits for source categories listed in the MSBACT Guidelines. In general, the provisions require:

- Considering only control options or emission limits to be applied to the basic production or process equipment;
- Evaluating cost to control secondary pollutants;
- Determining the control technology is commercially available;
- Determining the control technology has been demonstrated for at least one year on a comparable commercial operation;
- Calculating total and incremental cost-effectiveness;
- Determining that the incremental cost-effectiveness is less than South Coast AQMD's established cost-effectiveness criteria;
- Putting BACT Guideline revisions on a regular meeting agenda of the South Coast AQMD Governing Board;
- Holding a Board public hearing prior to revising maximum incremental cost-effectiveness values;
- Keeping a BACT determination made for a particular application unchanged for at least one year from the application deemed complete date; and
- Considering a longer period for a major capital project (> $10,000,000)

[3] See Rule 1304 (f).

After consultation with the affected industry, the CARB, and the U.S. EPA, and considerable legal review and analysis, staff concluded that the process specified in SB 456 to update the BACT Guidelines should be interpreted to apply only if the South Coast AQMD proposes to make BACT more stringent than LAER or where LAER is inapplicable (e.g. in establishing minor source BACT). Staff intends to incorporate the spirit and intent of the SB 456 provisions into the MSBACT update process, as explained below, because non-major polluting facilities are no longer subject to federal LAER, according to Regulation XIII. Therefore, MSBACT may consider cost as specified herein.

COST EFFECTIVENESS METHODOLOGY

Cost effectiveness is measured in terms of control costs (dollars) per air emissions reduced (tons). If the cost per ton of emissions reduced is less than the maximum required cost effectiveness, then the control method is considered to be cost effective. This section also discusses the updated maximum cost effectiveness values, and those costs, which can be included in the cost effectiveness evaluation.

There are two types of cost effectiveness: average and incremental. Average cost effectiveness considers the difference in cost and emissions between a proposed MSBACT and an uncontrolled case. On the other hand, incremental cost effectiveness looks at the difference in cost and emissions between the proposed MSBACT and alternative control options.

Applicants may also conduct a cost effectiveness evaluation to support their case for the special permit considerations discussed in Chapter 2.

Discounted Cash Flow Method

The discounted cash flow method (DCF) is used in the MSBACT Guidelines. This is also the method used in South Coast AQMD Air Quality Management Plan. The DCF method calculates the present value of the control costs over the life of the equipment by adding the capital cost to the present value of all annual costs and other periodic costs over the life of the equipment. A real interest rate[~~19~~4] of four percent, and a 10-year equipment life is used. The cost effectiveness is determined by dividing the total present value of the control costs by the total emission reductions in tons over the same 10-year equipment life.

Maximum Cost Effectiveness Values

The MSBACT maximum cost effectiveness values, shown in Table 5, are based on a DCF analysis with a 4% real interest rate.

[~~19~~4] The real interest rate is the difference between market interest rates and inflation, which typically remains constant at four percent.

Table 5: Maximum Cost Effectiveness Criteria (~~3rd~~ 2nd Quarter ~~2020~~2022)

Pollutant	Average (Maximum $ per Ton)	Incremental (Maximum $ per Ton)
ROG	~~31,432~~ 40,797	~~94,297~~ 122,390
NOx	~~29,721~~ 38,575	~~89,007~~ 115,523
SOx	~~15,716~~ 20,398	~~47,149~~ 61,195
PM_{10}	~~7,002~~ 9,088	~~20,851~~ 27,063
CO	~~622~~ 808	~~1,789~~ 2,323

The cost criteria are based on those adopted by the South Coast AQMD Governing Board in the 1995 BACT Guidelines, adjusted to ~~third~~ second quarter ~~2020~~ 2022 dollars using the Marshall and Swift Equipment Cost Index. Cost effectiveness analyses should use these figures adjusted to the latest Marshall and Swift Equipment Cost Index. Contact the BACT Team for current figures.

Top-Down Cost Methodology

The South Coast AQMD uses the top-down approach for evaluating MSBACT and cost effectiveness. This means that the best control method, with the highest emission reduction, is first analyzed. If it is not cost effective, then the second-best control method is evaluated for cost effectiveness. The process continues until a control method is found to be cost-effective. This process provides a mechanism for all practical and potential control technologies to be evaluated. As part of the permitting process, the applicant is responsible for preparing the MSBACT analysis, and submitting it to the District for review and approval.

The top-down process consists of five steps:

1. Identify all control technologies

Identify all possible air pollution control options for the emissions unit. In addition to add-on control, control options may include production process methods and techniques. Innovative, transferable technologies, and LAER technologies should also be identified.

2. Eliminate technically infeasible options

The technologies identified in Step 1 should be evaluated for technical feasibility. Elimination of any of the technologies identified in Step 1 should be well-documented and based on physical, chemical and engineering principles.

3. Rank remaining control technologies

Based on overall control effectiveness, all remaining technically feasible control options should be ranked for the pollutants under review. A list should be generated for each pollutant subject to the MSBACT analysis. This list should include control efficiencies, emission rates, emission reductions, environmental impacts and energy impacts. Environmental impacts may include multimedia impacts and the impacts of the control option on toxic emissions.

4. Evaluation

Evaluate the most effective controls and document the results. For each option, the applicant is responsible for objectively discussing each of the beneficial and adverse impacts. Typically, the analysis should focus on the direct impacts. Calculations for both incremental and average cost effectiveness should be completed during this step. The MSBACT option must be cost effective for both analyses. In the event that the top option from Step 4 is ruled out after the impacts and cost effectiveness are evaluated, the decision and reasoning should be fully documented. The next most stringent alternative from Step 4, should then be evaluated.

5. Select MSBACT

The most effective control option not eliminated in Step 4 is proposed as MSBACT for the pollutant and permit unit and presented to the South Coast AQMD for review and approval.

Costs to Include in a Cost Effectiveness Analysis

Cost effectiveness evaluations consider both capital and operating costs. Capital cost includes not only the price of the equipment, but the cost for shipping, engineering and installation. Operating or annual costs include expenditures associated with utilities, labor and replacement costs. Finally, costs are reduced if any of the materials or energy created by the process result in cost savings. These cost items are shown in Table 6. Methodologies for determining these values are given in documents prepared by USEPA through their Office of Air Quality Planning and Standards (EPA Air Pollution Control Cost Manual, Sixth Edition, 2002, EPA 452/B-02-001).

The cost of land will not be considered because 1) add-on control equipment usually takes up very little space, 2) add-on control equipment does not usually require the purchase of additional land, and 3) land is non-depreciable and has value at the end of the project. In addition, the cost of controlling secondary emissions and cross-media pollutants caused by the primary MSBACT requirement should be included in any required cost effectiveness evaluation of the primary MSBACT requirement.

Table 6: Cost Factors

Total Capital Investment

Purchased Equipment Cost
- Control Device
- Ancillary (including duct work)
- Instrumentation
- Taxes
- Freight

Direct Installation Cost
- Foundations and Supports
- Handling and Erection
- Electrical
- Piping
- Insulation
- Painting

Indirect Installation Costs
- Engineering
- Construction and Field Expenses
- Start-Up
- Performance Tests
- Contingencies

Total Annual Cost

Direct Costs
- Raw Materials
- Utilities
  - Electricity
  - Fuel
  - Steam
  - Water
  - Compressed Air
- Waste Treatment/Disposal
- Labor
  - Operating
  - Supervisory
  - Maintenance
- Maintenance Materials
- Replacement Parts

Indirect Costs
- Overhead
- Property Taxes
- Insurance
- Administrative Charges

Recovery Credits
- Materials
- Energy

CLEAN FUEL GUIDELINES

In January 1988, the South Coast AQMD Governing Board adopted a Clean Fuels Policy that included a requirement to use clean fuels as part of BACT. A clean fuel is one that produces air emissions equivalent to or lower than natural gas for NO_X, SO_X, ROG, and fine respirable particulate matter (PM_{10}). Besides natural gas, other clean fuels are liquid petroleum gas (LPG), hydrogen and electricity. Utilization of zero and near- zero emission technologies are also integrated into the Clean Fuels Policy. The burning of landfill, digester, refinery and other by-product gases is not subject to the clean fuels requirement. However, the combustion of these fuels must comply with other South Coast AQMD rules, including the sulfur content of the fuel.

The requirement of a clean fuel is based on engineering feasibility. Engineering feasibility considers the availability of a clean fuel and safety concerns associated with that fuel. Some state and local safety requirements limit the types of fuel, which can be used for emergency standby purposes. Some fire departments or fire marshals do not allow the storage of LPG near occupied buildings. Fire officials have, in some cases, vetoed the use of methanol in hospitals. If special handling or safety considerations preclude the use of the clean fuel, the South Coast AQMD has allowed the use of fuel oil as a standby fuel in boilers and heaters, fire suppressant pump engines and for emergency standby generators. The use of these fuels must meet the requirements of South Coast AQMD rules limiting NO_X and sulfur emissions. In addition, the Clean Fuel requirements for MSBACT are subject to the provisions of California Health and Safety Code Section 40440.11.

AIR QUALITY-RELATED ENERGY POLICY

In September 2011, the South Coast AQMD Governing Board adopted an air quality-related energy policy to help guide a unified approach to reducing air pollution while addressing other key environmental concerns including environmental justice, climate change and energy independence. The air quality-related energy policy outlines 10 policies and 10 action steps to help meet federal health-based standards for air quality in the South Coast Air Basin while also promoting the development of zero- and near-zero emission technologies.

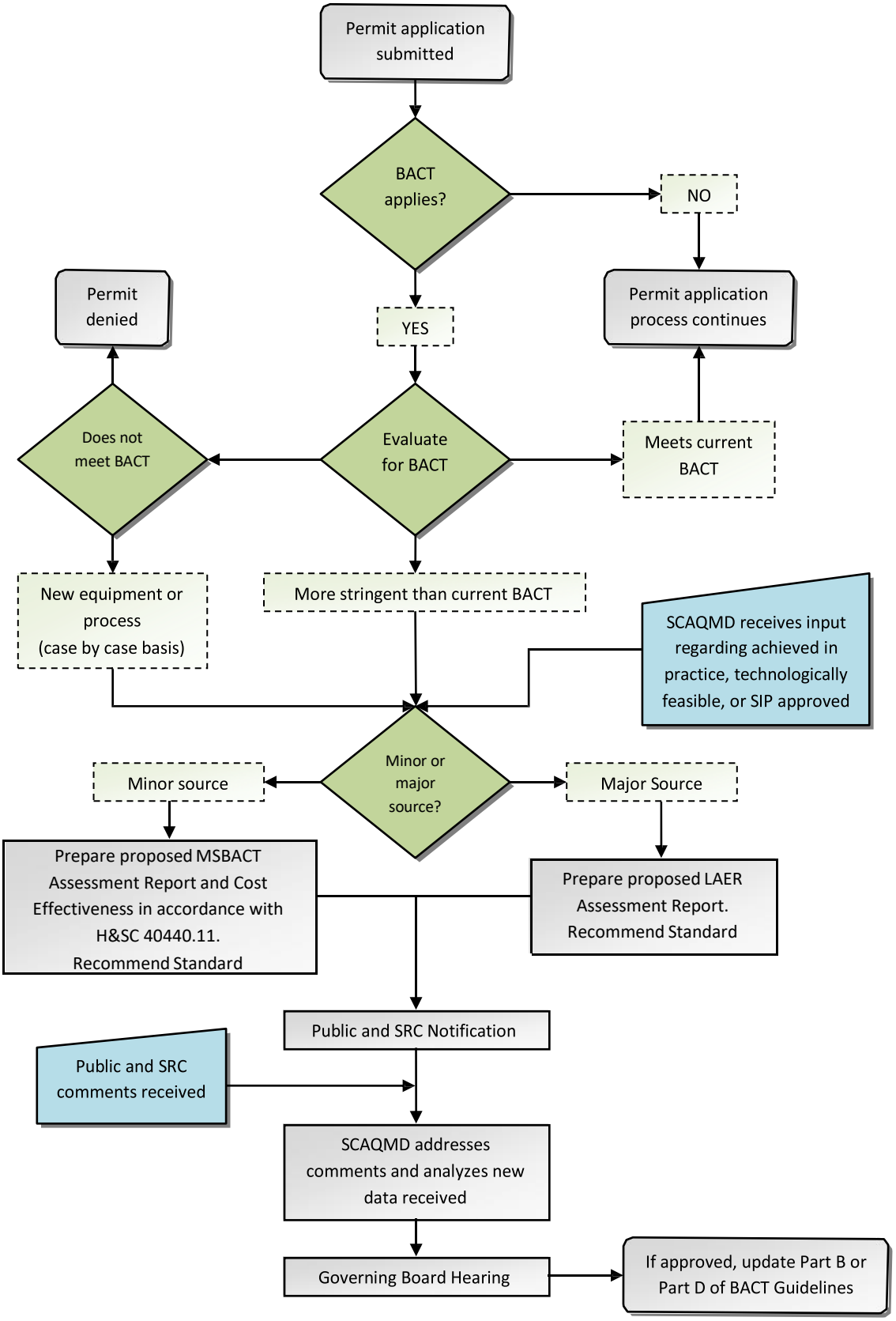
Policy 7 is to require any new/repowered in-Basin fossil-fueled generation power plant to incorporate BACT/LAER as required by District rules, considering energy efficiency for the application. These power plants will need to comply with any requirements adopted by the California Air Resources Board, California Energy Commission, Public Utilities Commission, California Independent System Operator, or the governing board of a publicly-owned electric utility, as well as state law under the California Environmental Quality Act. In recognizing that fossil fuel electric generation will still be needed in the Basin to complement projected increased use of renewable energy sources, this policy ensures that all fossil-fueled plants will meet existing BACT/LAER requirements and South Coast AQMD's BACT/LAER determinations will also take into consideration generating efficiency in setting the emission limits. Parts E and F of the BACT Guidelines complement and support this policy.

MSBACT UPDATE PROCESS

As technology advances, the South Coast AQMD's MSBACT Part D Guidelines will be updated. Updates will include revisions to the guidelines for existing equipment categories, as well as new guidelines for new categories.

The MSBACT Guidelines will be revised based on the criteria outlined in the previous sections. Once a more stringent emission limit or control technology has been reviewed by staff and is determined to meet the criteria for MSBACT, it will be reviewed through a public process. The process is shown schematically in Figure 2. The public will be notified and the BACT Scientific Review Committee will have an opportunity to comment. Following the public process and comment period, the guidelines will be presented to the Governing Board for approval at a public hearing, prior to updates of the MSBACT Guidelines, Part D.

Figure 2: The Ongoing BACT Update Process



Chapter 2 - How to Use Part D of the MSBACT Guidelines

This chapter explains the MSBACT information found in Part D - MSBACT Guidelines. The Guidelines in Part D should be used to determine MSBACT for non-major polluting facilities. For a listing of equipment, refer to the Part D Table of Contents. Determination of MSBACT for equipment not found in Part D of the MSBACT Guidelines is also explained.

GENERAL

Part D includes MSBACT Guidelines for more than 100 categories of equipment commonly processed by South Coast AQMD. Some guidelines are further subdivided by equipment size, rating, type or the material used, as appropriate.

The MSBACT requirements are in the form of:

1) an emission limit;
2) a control technology;
3) equipment requirements; or
4) a combination of the last two.

If the requirement is an emission limit, the applicant may choose any control technology to achieve the emission limit. The South Coast AQMD prefers to set an emission limit as MSBACT because it allows an applicant the most flexibility in reducing emissions.

If a control technology and/or equipment requirements are the only specified MSBACT, then either emissions from the equipment are difficult to measure or it was not possible to specify an emission limit that applies to all equipment within the category. Where possible, an emission limit or control efficiency condition will be specified in the permit along with the control technology or equipment requirements to ensure that the equipment is properly operated with the lowest emissions achievable. An applicant may still propose to use other ways to achieve the same or better emission reduction than the specified MSBACT.

MSBACT is the control technology or emission limit given in Part D for the basic equipment or process being evaluated, unless the guideline is out of date, or there are special permitting conditions, or the equipment is not identified in Part D. In those cases, the procedures described in the following sections will be used to determine MSBACT. Applicants or other interested parties are encouraged to contact the South Coast AQMD permitting staff if there are any questions about MSBACT.

SPECIAL PERMITTING CONSIDERATIONS

Although the most stringent, AIP BACT for a source category will most likely be the required MSBACT, South Coast AQMD staff may consider special technical circumstances that apply to the proposed equipment which may allow deviation from that MSBACT. The permit applicant should bring any pertinent facts to the attention of the South Coast AQMD permitting engineer for consideration.

Case-Specific Situations

South Coast AQMD staff may consider unusual equipment-specific and site-specific characteristics of the proposed project that would warrant a reconsideration of the MSBACT requirement for new equipment.

Technical infeasibility of the control technology

A particular control technology may not be required as MSBACT if the applicant demonstrates that it is not technically feasible to install and operate it to meet a specific MSBACT emission limitation in a specific permitting situation.

Operating schedule and project length

If the equipment will operate much fewer hours per year than what is typical, or for a much shorter project length, it can affect what is considered AIP.

Availability of fuel or electricity

Some MSBACT determinations may not be feasible if a project will be located in an area where natural gas or electricity is not available.

Process requirements

Some MSBACT determinations specify a particular type of process equipment. South Coast AQMD staff may consider requirements of the proposed process equipment that would make the MSBACT determination not technically feasible.

Equivalency

The permit applicant may propose alternative means to achieve the same emission reduction as required by BACT. For example, if BACT requires a certain emission limit or control efficiency to be achieved, the applicant may choose any control technology, process modification, or combination thereof that can meet the same emission limit or control efficiency.

Super Compliant Materials

South Coast AQMD will accept the use of super compliant materials in lieu of an add-on control device controlling volatile organic compound (VOC) emissions from coating operations. For example, if a permit applicant uses only surface coatings that meet the super compliant material definition in South Coast AQMD Rule 109, it may qualify as VOC MSBACT. This policy does not preclude any other MSBACT requirement for other contaminants.

Equipment Modifications

As a general rule, it is more difficult to retrofit existing equipment with MSBACT as a result of NSR modification when compared to a new source. The equipment being modified may not be compatible with some past MSBACT determinations that specify a particular process type. There may also be space restrictions that prevent installation of some add-on control technology.

Other Considerations

Although multiple process and control options may be available during the MSBACT determination process, considerations should be made for options that reduce the formation of air contaminants from the process, as well as ensuring that emissions are properly handled. In addition to evaluating the efficiency of the control stage, these additional considerations are needed to ensure that the system is capable of reducing or eliminating emissions from the facility on a consistent basis during the operational life of the equipment. Measures listed in this section for MSBACT are subject to the requirements of California Health and Safety Code Section 40440.11.

Pollution Prevention

The Pollution Prevention Act of 1990 (42 U.S.C. §§13101-13109) established a national policy that pollution should be prevented or reduced at the source whenever feasible. In many cases, air pollution control is a process that evaluates contaminants at the exhaust of the system. Pollution prevention is the reduction or elimination of waste at the source by the modification of the production process. Pollution prevention measures may consist of the use of alternate or reformulated materials, a modification of technology or equipment, or improvement of energy efficiency changes that result in an emissions reduction. These measures should be considered as part of the MSBACT determination process if the measures will result in the elimination or reduction of emissions, but are not required to include projects which are considered to fundamentally redefine the source. New and different emissions created by a process or material change will also need to be considered as part of the MSBACT determination process, in contrast to the overall emissions reductions from the implementation of pollution prevention measures.

U.S. EPA policy defined pollution prevention as source reduction and other practices that reduce or eliminate the creation of pollutants through increased efficiency in the use of raw materials, energy, water, or other resources, and protection of natural resources by conservation[~~20~~5]. U.S. EPA further specifies that pollution prevention does not include recycling (except in-process recycling), energy recovery, treatment or disposal. For purposes of these BACT Guidelines, and to be consistent with federal definitions, source reduction and pollution prevention shall may include, but not be limited to, consideration of the feasibility of:

- equipment or technology modifications,
- process or procedure modifications,
- reformulation or redesign of products,
- substitution of raw materials, or
- improvements in housekeeping, maintenance or inventory control,

that reduce the amount of air contaminants entering any waste stream or otherwise released into the environment, including fugitive emissions.

[~~20~~5] U.S. EPA Pollution Prevention Law and Policies (www.epa.gov/p2/pollution-prevention-law-and-policies#define)

Monitoring and Testing

In order to ensure that MSBACT determinations continue to meet their initial emission and efficiency standards, periodic or continuous parameter monitoring and testing requirements may be required during the permitting process. Equipment and processes may experience some change over time, due to aging or operational methods of the equipment, which may affect emission rates or control efficiencies. In addition to other rule requirements, additional monitoring and testing requirements may need to focus on aspects directly related to the MSBACT determination, and may be made enforceable by permit conditions. Monitoring and testing requirements should be specific to characterize operating conditions (e.g. temperatures, pressures, flows, production rates) and measurement techniques when MSBACT is established to ensure clarity and consistency with the standard.

Capture Efficiency

An integral part of controlling air pollutants emitted from a process with add-on air pollution control equipment is capturing those emissions and directing them to the air pollution control device. Emissions which are designed to be collected by an exhaust system but are vented uncontrolled into the atmosphere can have a much greater impact than controlled emissions. When applicable, the evaluation of a process and its associated control equipment should address the qualification and quantification of capture efficiency. By addressing capture efficiency during MSBACT determinations, a standard can be established to evaluate the capture efficiency of other systems, as well as ensure that the capture efficiency is maintained consistently over time.

If applicable, MSBACT determinations may include the percentage capture efficiency and the methods and measurements (e.g. EPA Method 204, capture velocity measurements, design using ACGIH's Industrial Ventilation, static pressures) used to determine and verify it. For various circumstances, several South Coast AQMD rules (see Table 5, Part A, Chapter 1) already require an assessment of collection efficiency of an emission control system following EPA Method 204, EPA's "Guidelines for Determining Capture Efficiency", South Coast AQMD's "Protocol for Determination of Volatile Organic Compounds (VOC) Capture Efficiency," or other methods approved by the Executive Officer, and are appropriate to include as BACT requirements. The capture efficiency for any MSBACT Determination shall be no less stringent than any applicable rule requirement. Other considerations that may affect capture, such as cross-drafts, thermal drafts and the volume of combustion products, should also be addressed during this process.

Equipment Not Identified in the MSBACT Guidelines

Although the BACT Guidelines contains an extensive listing of practically everything the South Coast AQMD permits, occasionally applications will be received for equipment not identified in the Guidelines. As required by Rule 1303, MSBACT for equipment category not listed in the MSBACT Guidelines must be determined on a case-by-case basis using the definition of BACT in Rule 1302 and the general procedures in these MSBACT Guidelines, as shown in Chapter 1 and the previous sections of this chapter.

Applicants whose equipment is not listed in Part D of the MSBACT Guidelines should contact the South Coast AQMD and arrange a pre-application conference. MSBACT issues can be discussed in the conference for leading to a MSBACT determination. Applicants are not required to conduct the MSBACT evaluation but the application may be processed more quickly if the applicant provides a MSBACT evaluation with the application for a permit to construct.

MSBACT Determinations Should the Guidelines Become Out of Date

Should the MSBACT Guideline Part D become out of date with state BACT requirements or permits issued for similar equipment in other parts of the state, staff will evaluate permits consistent with the definition of BACT considering technical and economic criteria as required by Rule 1303 (a) and Health & Safety Code Section 40405. The technical and economic factors to be considered are those identified in Chapter 1.

MSBACT APPLICATION CUT-OFF DATES

These guidelines apply to all non-major polluting facility applications deemed complete subsequent to South Coast AQMD Governing Board adoption of the Regulation XIII amendments in 2000.

Applications for a Registration Permit for equipment issued a valid Certified Equipment Permit (CEP), which is valid for one year, will only be required to comply with MSBACT as determined at the time the CEP was issued. However, South Coast AQMD staff will reevaluate the MSBACT requirements for the CEP upon annual renewal of the CEP by the equipment manufacturer.

ATTACHMENT F

Part D – South Coast AQMD BACT Determination

Source Type: **Minor**

Application No.: **625401(ICE) and 613081 (SCR)**

Equipment Category: **I.C. Engine**

Equipment Subcategory: **Stationary, Non-Emergency, Electrical Generator with SCR**

Date: **September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Miratech	B. MODEL: SP-EM35-120-18
C. DESCRIPTION: Selective Catalytic Reduction (SCR) emission control system with urea injection for prime natural gas fired electrical generation lean-burn engine	
D. FUNCTION: SCR system controls exhaust emissions from a prime operation engine used by the City of Palm Springs to generate electricity for one of their municipal facilities. Waste heat from the engine is used to heat water and provide heat to absorption chiller.	
E. SIZE/DIMENSIONS/CAPACITY: 1573 BHP, GE Jenbacher, model JMS416B86, natural gas, lean burn, turbocharged and aftercooled, 16 cylinders, four-cycle driving a 1MW electrical generator.	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: N/A	
G. BURNER INFORMATION: N/A	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: Natural Gas	I. OTHER FUEL: N/A
J. OPERATING SCHEDULE: Hours 24 Days 7 Weeks 52	
K. EQUIPMENT COST: N/A	
L. EQUIPMENT INFORMATION COMMENTS: N/A	

2. COMPANY INFORMATION

A. COMPANY: City of Palm Springs	B. FAC ID: 42218
C. ADDRESS: 425 N. Civic Drive CITY: Palm Springs STATE: CA ZIP: 92262	D. NAICS CODE: 921190
E. CONTACT PERSON: Staci A. Schafer	F. TITLE: Director Maintenance and Facilities
G. PHONE NO.: (760) 323-8170	H. EMAIL: staci.schafer@palmspringca.gov

3. PERMIT INFORMATION

A. AGENCY: SCAQMD	B. APPLICATION TYPE: MODIFICATION
C. SCAQMD ENGINEER: Arnold Peneda	
D. PERMIT INFORMATION: P/O NO.: G63569	PC ISSUANCE DATE: 8/26/19 PO ISSUANCE DATE: 11/21/2020
E. START-UP DATE: 8/26/2019	
F. OPERATIONAL TIME: 2+ years. Originally started in 11/18/15 with subsequent troubleshooting.	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES:

	VOC (lbs/MW-hr)	**NOx** (lbs/MW-hr)	**SOx** (lbs/MW-hr)	**CO** (lbs/MW-hr)	**PM OR PM_{10}** (lbs/MW-hr)	**INORGANIC**
BACT Limit	0.17*	0.12*		0.34*		10 ppm NH_3
Averaging Time	15 min	15 min		15 min		60 min
Correction	**	15% O_2		15% O_2		15% O_2

B. OTHER BACT REQUIREMENTS: Ammonia slip tested at least once per year and once every 3 months for the first year of operation.

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS:

* The limits are in compliance with the Rule 1110.2 electrical energy factor.

** Time Required for VOC sampling.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Miratech	B. MODEL: SP-EM35-120-18

C. DESCRIPTION: Selective Catalytic Reduction module with a honeycomb type catalyst bed with a urea/air injector, automatic urea injection control and a 1,000 gallon capacity urea storage tank.

D. SIZE/DIMENSIONS/CAPACITY: Minimum 3 layers of catalyst, with a minimum total of 105 blocks and with a minimum volume of 26.25 cubic feet.

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. 613081 PC ISSUANCE DATE:8/26/19

PO NO.: G58644 PO ISSUANCE DATE: 8/26/2019

F. REQUIRED CONTROL EFFICIENCIES: Shall not exceed 10 ppm ammonia slip limit measured by volume on a dry basis at 15% oxygen over a 60 minute average.

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
Sox	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS: Maximum inlet temperature of SCR bed shall not exceed 887°F and outlet temperature shall be maintained at 572°F or greater once startup is achieved, not to exceed one hour.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: 12/18/19

C. COLLECTION EFFICIENCY METHOD: N/A

D. COLLECTION EFFICIENCY PARAMETERS: N/A

E. SOURCE TEST/PERFORMANCE DATA: Maximum ammonia slip 0.10 ppm @ 15% O_2.

F. TEST OPERATING PARAMETERS AND CONDITIONS:

G. TEST METHODS (SPECIFY AGENCY): South Coast AQMD Method 207.1 (Determination of Ammonia Emissions from Stationary Sources)

H. MONITORING AND TESTING REQUIREMENTS: Ammonia slip tested at least once per year and once every 3 months for the first year of operation.

I. DEMONSTRATION OF COMPLIANCE COMMENTS: N/A

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 040002	B. CCAT: 81	C. APPLICATION TYPE CODE: 60
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☐ NO ☒	F. SOURCE TEST ID(S): R20059
G. SCAQMD SOURCE SPECIFIC RULES: Rule 1110.2		
H. HEALTH RISK FOR PERMIT UNIT		

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.

ATTACHMENT F

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Best Available Control Technology Guidelines

Part D: BACT Guidelines for Non-Major Polluting Facilities

October 20, 2000 (Revised June 6, 2003; December 5, 2003; July 9, 2004; December 3, 2004; July 14, 2006; October 3, 2008; December 2, 2016; February 2, 2018; February 1, 2019; February 5, 2021; September 2, 2022)

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Abrasive Blasting – Enclosed

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse; or Cartridge Dust Collector (07-11-97)	

* Means those facilities that are minor facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Absorption Chiller

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		≤ 20 ppmv dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	≤50 ppmv for firetube type, ≤ 100 ppmv for watertube type, dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	

* Means those facilities that are minor facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Air Stripper – Ground Water Treatment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Carbon Adsorber, Thermal Oxidizer, or Catalytic Oxidizer (10-20-2000)					

* Means those facilities that are minor facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0
2-1-2019 Rev 1

Equipment or Process: Aluminum Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible or Pot		≤60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (07-11-97)		Natural Gas with Ingots or Non-contaminated Scrap Charge, or Baghouse (10-20-2000)	
Reverberatory, Non-Sweating < 5 MM BTU/HR		≤60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Same as above. (10-20-2000)	
Reverberatory, Non-Sweating ≥ 5 MM BTU/HR		Natural Gas with Low NOx Burner ≤ 60 ppmvd @ 3% O_2 (10-20-2000)	Natural Gas (1990)		Same as above. (10-20-2000)	
Reverberatory or Rotary, Sweating < 5 MM BTU/HR	Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F) or Secondary Combustion Chamber (1990)	≤60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas with Baghouse and: - Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F); or - Secondary Combustion Chamber (1990)	
Reverberatory or Rotary, Sweating ≥ 5 MM BTU/HR	Same as Above (1990)	Natural Gas with Low NOx Burner ≤ 60 ppmvd @ 3% O_2 (10-20-2000)	Natural Gas (1990)		Same as above. (1990)	

Note: Some of this equipment may also subject to 40 CFR 63, Subpart RRR – National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production

* Means those facilities that are minor facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Ammonium Bisulfate and Thiosulfate Production

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Packed Column Scrubber with Heat Exchanger and Mist Eliminator (1990)	Packed Column Scrubber for NH3 (1990)

* Means those facilities that are minor facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Asbestos Machining Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Air Cleaning Equipment (40 CFR Part 61 Subpart M) (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Asphalt Batch Plant

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner ≤ 33 ppmvd @ 3% O_2 (10-20-2000)			Baghouse (1990)	

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10-20-2000 Rev. 0

Equipment or Process: Asphalt Roofing Line

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas (1990)	Natural Gas (1990)		Natural Gas with High Velocity Filter and Mist Eliminator (1990)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Asphaltic Day Tanker

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Fiberglass or Steel Wool Filter (07-11-97)	

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10-20-2000 Rev. 0

Equipment or Process: Auto Body Shredder

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse with Water Sprays in Hammermill (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Ball Mill

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Beryllium Machining Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					High Efficiency Particulate Air Filter and Compliance with 40CFR Part 61, Subpart D (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0; 10-03-2008 Rev. 1; 12-02-2016 Rev. 2

2-1-2019 Rev. 3

Equipment or Process: Boiler

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx[1]**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas Fired, > 2 and < 20 MMBtu/HR		Compliance with Rules 1146 or 1146.1[2] (12-02-2016)	Natural Gas (10-20-2000)	≤50 ppmvd for firetube type, ≤ 100 ppmvd for watertube type, corrected to 3% O_2 (04-10-98)	Natural Gas (04-10-98)	
Propane Fired, > 2 and < 20 MMBtu/HR		≤ 12 ppmvd corrected to 3% O_2[2] (10-20-2000)		≤50 ppmvd for firetube type, ≤ 100 ppmvd for watertube type, corrected to 3% O_2 (04-10-98)		
Natural Gas or Propane Fired, ≥ 20 and < 75 MMBtu/HR		Compliance with Rule 1146 (2-1-2019)	Natural Gas (10-20-2000)	Same as above. (04-10-98)	Natural Gas (04-10-98)	With Add-On Controls: ≤ 5 ppmvd NH_3, corrected to 3% O_2 ≤ 1 ppmvd ozone, corrected to 3% O_2 (10-20-2000)
Natural Gas or Propane Fired, ≥ 75 MM Btu/HR		Compliance with Rule 1146 (12-02-2016)	Natural Gas (10-20-2000)	Same as above. (04-10-98)	Natural Gas (04-10-98)	With Add-On Controls: ≤ 5 ppmvd NH_3, corrected to 3% O_2 ≤ 1 ppmvd ozone, corrected to 3% O_2 (10-20-2000)

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx[1]**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Oil Fired[3]		Compliance with Rule 1146 or 1146.1 (10-20-2000)	Fuel Sulfur Content ≤ 0.0015% by weight (10-03-2008)	≤ 50 ppmvd for firetube type ≤ 100 ppmvd for watertube type, corrected to 3% O_2 (04-10-98)		
Atmospheric Unit, ≥ 2 and ≤ 10 MMBtu/HR		Compliance with Rules 1146 and 1146.1 (12-02-2016)		Compliance with Rules 1146 and 1146.1 (12-02-2016)		
Landfill Gas Fired, < 75 MMBTU/Hr		Compliance with Rules 1146 and 1146.1 (12-02-2016)		≤ 100 ppmvd at 3% O_2 dry. (04-10-98)	≤ 0.1 gr/scf at 12% CO_2 (Rule 409) (04-10-98)	
Digester Gas Fired, < 75 MMBTU/Hr		Compliance with Rules 1146 and 1146.1 (12-02-2016)		≤ 100 ppmvd at 3% O_2 dry. (04-10-98)	≤ 0.1 gr/scf at 12% CO_2 (Rule 409) (04-10-98)	

1) Electric utility boilers, refinery boilers rated >40 MMBtu/hr and sulfur plant reaction boilers rated ≥5 MMBtu/hr are excluded; and there are exceptions for low-use boilers and boilers that met a 12-ppm limit prior to 9/5/08. Applicants are advised to review these rules for further details.

2) A higher NOx limit may be allowed for facilities required to have a standby fuel, where use of a clean standby fuel is not possible and an ultra low-NOx burner is not available.

3) See Clean Fuels Policy in Part C of the BACT Guidelines. Oil firing is only allowed as a standby fuel, and where use of a clean standby fuel is not possible.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Brakeshoe Debonder

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner or Secondary Combustion Chamber with ≥ 0.3 Second Retention Time at ≥1400°F Achieved within 15 Minutes of Primary Burner Ignition (07-11-97)	Natural Gas (07-11-97)	Natural Gas (07-11-97)		Natural Gas (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-1-2019 Rev 1

Equipment or Process: Brass Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible, ≤ 300 Lbs/Hr Process Rate		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas, Charge Clean Metal Only and Maintain Slag Cover Over Entire Melt Surface (1990)	
Crucible, > 300 Lbs/Hr Process Rate		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas, with Baghouse (1990)	
Reverberatory or Rotary, Non-Sweating		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas with Baghouse (1990)	
Reverberatory or Rotary, Sweating	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1990)	60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1990)	Natural Gas with Baghouse (1990)	
Tilting Induction, ≤ 300 Lbs/Hr Process Rate					Charge Clean Metal Only and Slag Cover Maintained Over Entire Melt Surface (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

Equipment or Process: Brass Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Tilting Induction, > 300 Lbs/Hr Process Rate					Baghouse (7-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Bulk Solid Material Handling – Other

	Criteria Pollutants					
Subcategory[3)]/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Animal Feed Mfg. – Dry Material Handling					Baghouse (07-11-97)	
Clay, Ceramics and Refractories Handling (Except Mixing)					Baghouse (1988)	
Coal, Coke and Sulfur Handling					Compliance with Rule 1158 (10-20-2000)	
Feed and Grain Handling					Baghouse (1988)	
Natural Fertilizer Handling [1)]					Baghouse or Equivalent Material Moisture (07-11-97)	
Paper and Fiber Handling					High Efficiency Cyclone with Baghouse (10-20-2000)	
Pneumatic Conveying, Except Paper and Fiber					Baghouse (1988)	
Railcar Dumper					Enclosed Dump Station and Water Spray for Wet Material (1988)	
Other Dry Materials Handling [2)]					Enclosed Conveyors and Baghouse (7-11-97)	
Other Wet Materials Handling [2)]					Water Spray or Adequate Material Moisture (1988)	

1. Includes conveying, size reduction, classification and packaging.
2. Includes conveying, size reduction and classification.
3. Also see Catalyst Manufacturing, Coffee Roasting, Non-Metallic Mineral Processing, Nut Roasting, Rendering, Pharmaceutical Operations, and Rock-Aggregate Processing for other bulk solid material handling.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Bulk Solid Material Ship Loading

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Non-White Commodities					Enclosed Conveyor and - Water Spray; or - Adequate Material Moisture (1988)	
White Commodities					Enclosed Conveyor and Baghouse Venting Ship Holds and Transfer Points (07-11-97)	

Notes:
1. Non-White commodities include coal, copper concentrate, sulfur, iron slag, iron ore, iron pellets, green petroleum coke and other wet commodities
2. White commodities include soda ash, salt cake, potash and other dry commodities.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Bulk Solid Material Ship Unloading

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Bulk Cement		Shore Utility Power (1988)	Shore Utility Power (1988)		Enclosed, Self-Unloading Ship (1988)	
Other Bulk Solid Materials					Enclosed Hold and Baghouse; or Material Moisture Equivalent to an Enclosed Hold and Baghouse (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Bulk Solid Material Storage

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Coal, Petroleum Coke, Sulfur					Enclosed Storage in Compliance with Rule 1158 (10-20-2000)	
Other Non-White Commodities					Water Spray and Chemical Additives or Charged Fog Spray (1988)	
White Commodities					Enclosed Storage and Baghouse (1988)	
Storage Tanks and Silos					Baghouse or Filtered Vent for Dry Material; Water Spray or Adequate Moisture for Wet Material (07-11-97)	
Other Open Storage					Water with Chemical Additives (1988)	

Notes:
1. Other non-white commodities include copper concentrate, iron slag, iron ore, and iron pellets.
2. White commodities include cement, gypsum, lime, soda ash, borax and flour.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-1-2019 Rev 1

Equipment or Process: Burnoff or Burnout Furnace (Excluding Wax Furnace)

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner or Secondary Combustion Chamber with ≥ 0.3 Second Retention Time at ≥1400°F Achieved within 15 Minutes of Primary Burner Ignition (07-11-97)	Compliance with Rule 1147 (2-1-2019)	Natural Gas (07-11-97)		Natural Gas (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-1-2019 Rev 1

Equipment or Process: Calciner

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Petroleum Coke	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	Compliance with Rule 1147 (2-1-2019)	Natural Gas with Flue Gas Desulfurization (> 90% Removal Efficiency) (1988)	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	0.005 gr/dscf Corrected to 3% O_2 (1988)	
Other		Compliance with Rule 1147 (2-1-2019)	Natural Gas (1988)		Natural Gas with Baghouse (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Carpet Beating and Shearing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Catalyst Manufacturing and Regeneration

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Calcining		Three-Stage NOx Reduction Scrubber (1990)	Natural Gas (1990)		Baghouse (10-20-2000)	
Reactor		NOx Scrubber (07-11-97)				
Rotary or Spray Dryer					Baghouse (07-11-97)	
Regeneration, Hydrocarbon Removal	Flare, Firebox, or Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (07-11-97)					
Catalyst Solids Handling					Baghouse (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Charbroiler, Chain-driven (conveyorized)

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Catalytic Oxidizer (12-12-97)				Catalytic Oxidizer (12-12-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Chip Dryer

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400°F) (10-20-2000)	Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1989)		Natural Gas with: - Baghouse and Limestone Filter Coating; or - Baghouse and Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400°F) (1989)	

Note: This equipment may also subject to 40 CFR 63, Subpart RRR – National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
10-20-2000 Rev. 0

Equipment or Process: Circuit Board Etcher

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch Immersion Type, Subtractive Process					Packed Water Scrubber and Etchant Solution Temperature Control (10-20-2000)	
Conveyorized Spray Type, Subtractive Process					Packed Water Scrubber and Etchant Solution Temperature Control (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Cleaning Compound Blender

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse or Wet Centrifugal Collector or Cyclone (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-1-2019 Rev. 1
2-5-2021 Rev. 2

Equipment or Process: Coffee Roasting

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Roaster < 110,000 BTU/Hr			Natural Gas (1988)		Natural Gas (1988)	
Roaster ≥ 110,000 BTU/Hr	Afterburner [1] (0.3 Sec Retention Time at 1200 °F) (1990)		Natural Gas (1990)		Natural Gas with Cyclone and Afterburner (≥ 0.3 Second Retention Time at ≥ 1200 °F) (1990)	
Handling Equipment, < 1,590 Lbs/Hr All[2]						
Handling Equipment, ≥ 1,590 Lbs/Hr All					Cyclone (1990)	

1) Gaseous process emissions from roasting operations which are ducted to a thermal oxidizer or catalytic oxidizer as control technology will be subject to the NOx requirements of thermal oxidizer or catalytic oxidizer BACT listing in Part D. (2-5-2021)
2) At the date of the last revision for this category, there was no Achieved In Practice BACT Determination for this subcategory. Technologically Feasible options listed in historic South Coast AQMD BACT Guidelines for this subcategory require cost effective analyses before they can be listed in these current Guidelines.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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12-5-2003 Rev. 0
2-1-2019 Rev. 1

Equipment or Process: Composting

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic (Ammonia)**
Co-composting[a)]	Compliance with Rule 1133.2[b)] (12-5-2003)					Compliance with Rule 1133.2[b)] (12-5-2003)
Greenwaste composting	Compliance with Rule 1133.3 (2-1-2019)					Compliance with Rule 1133.3 (2-1-2019)

a) Co-composting is composting where biosolids and/or manure are mixed with bulking agents to produce compost.

b) Not required for design capacity < 1,000 tons per year.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Concrete Batch Plant

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Central Mixed, < 5 Cubic Yards/Batch					Water Spray (1988)	
Central Mixed, ≥ 5 Cubic Yards/Batch					Baghouse for Cement Handling and Adequate Moisture in Aggregate (1988)	
Transit-Mixed					Baghouse Venting the Cement Weigh Hopper and the Mixer Truck Loading Station; and Adequate Aggregate Moisture (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Concrete Blocks and Forms Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Cotton Gin

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Rotary Drum Filter and Cyclone (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-1-2019 Rev. 1

Equipment or Process: Crematory

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Secondary Combustion Chamber, ≥ 1500 °F (1990)	60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas with Secondary Combustion Chamber, ≥ 1500 °F (1990)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Degreaser – Other

	Criteria Pollutants					
Rating/Size	**VOC/ODC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch-Loaded or Conveyorized Cold Cleaners	Use of solvents containing 50 grams of VOC or less per liter of material (12-12-97)					
Film Cleaning Machine	Carbon Adsorber (10-20-2000)					
Solvent Spraying[1)], 1,1,1 Trichloroethane	Carbon Adsorber (1990) and Compliance with 40 CFR 63, Subpart T – National Emission Standards for Halogenated Solvent Cleaning (10-20-2000)					
Solvent Spraying[1)], Other VOCs	Compliance with Rule 1171 (10-20-2000)					

Note: Use of certain halogenated solvents is also subject to 40 CFR 63, Subpart T – National Emission Standards for Halogenated Solvent Cleaning

1) This subcategory includes solvent spray booths and remote reservoir cleaners.

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Degreaser –Vapor Cleaning, Volatile Organic Compounds

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch	Tier 1: Use of an automatically operated airtight or airless cleaning system that emits no more than [4.3 x $V^{0.6}$] lb/month of VOCs, where V is the cleaning chamber volume in cubic feet. Use of alternative equipment is allowed provided such equipment is subject to the same emissions limitation (lb/month of VOCs) as calculated above. Tier 2: Use of equipment that does not exceed [22 x A] lb/month of VOCs, where A is the solvent surface area in square feet, provided it is technically infeasible to use Tier 1 equipment because of part deformation, inherent part pressure, part type or geometry, soil type or amount, cleanliness sensitivity, or other reasons. (4-10-98)					
Conveyorized	Use of a conveyorized vapor degreaser that does not exceed [17 x A] lb/month of VOCs, where, A is the solvent surface area in square feet (04-10-98)					

Notes:

1. Use of certain halogenated solvents is also subject to 40 CFR 63, Subpart T – National Emission Standards for Halogenated Solvent Cleaning
2. Use of VOCs not subject to the above-described NESHAP is also subject to Rule 1122.
3. Any permit applicant may demonstrate that the Tier 1 BACT may not be technologically feasible for the applicant's permit unit. For batch-loaded vapor degreasing equipment, South Coast AQMD will consider the following three factors taken together as a whole, as well as any other technical factors presented by the applicant: a) Part Type and Geometry – In that different parts and part geometries lend themselves to different cleaning methods that may be acceptable to achieve proper cleanliness, South Coast AQMD will consider information presented by the applicant regarding the type and geometry of the part(s) proposed to be cleaned in determining what cleaning technologies are available for the part(s) in questions; b) Soil Type and Amount – In that different types and quantities of soils being cleaned from parts lend themselves to different cleaning methods, South Coast AQMD will consider information presented by the applicant regarding the soil type and soil quantity of the part(s) proposed to be cleaned in determining what cleaning technologies are available for the part(s) in question; c) Cleanliness Sensitivity – In that (i) different parts have different levels of sensitivity to cleanliness (e.g., medical and high technology device parts may need to achieve an extremely high level of cleanliness, whereas standard plumbing supplies may tolerate a lower level of cleanliness), and (ii) the integrity of certain parts may be compromised by exposure to the reduced pressure environment of airless cleaning systems; South Coast AQMD will consider information presented by the applicant regarding the cleanliness sensitivity of the part(s) proposed to be cleaned in determining what cleaning technologies are available for the part(s) in question.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Detergent Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Solids Handling					Cyclone and Baghouse (07-11-97)	
Spray Dryer		Natural Gas with Low-NOx Burner (1988)	Natural Gas (1988)		Natural Gas with: - Cyclone and Baghouse; or - Cyclone, Scrubber and Electrostatic Precipitator (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Drum Reclamation Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Sec. Retention time at ≥ 1400 °F) (1990)	Natural Gas (1990)	Natural Gas (1990)		Natural Gas with Afterburner (> 0.3 Sec. Retention Time at ≥ 1400 °F) and Baghouse (1990)	

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10-20-2000 Rev. 0
7-9-2004 Rev. 1

Equipment or Process: Dry Cleaning

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC/ODC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Perchloroethylene	Delisted as a VOC. See Rule 1421 – Control of Perchloroethylene Dry Cleaning Operations[1] (06-13-97)					
Petroleum Solvent[2]	Closed Loop, Dry-to-Dry Machine with a Refrigerated Condenser (10-20-2000) or Evaporatively Cooled Condenser (7-9-2004)					

[1] Rule 1421 implements the federal National Emission Standard for Hazardous Air Pollutant for Perchloroethylene Dry Cleaning Facilities (40 Code of Federal Regulations [CFR] 63.320, *et seq*) and the state Airborne Toxic Control Measure (ATCM) for Emissions of Perchloroethylene from Dry Cleaning Operations (17 California of Regulation [CCR] 93109, *et seq*).

[2] This Equipment may also be subject to AQMD Rule 1102 – Dry Cleaners Using Solvent Other Than Perchloroethylene.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-1-2019 Rev 1

Equipment or Process: Dryer – Kiln

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All[1]		Compliance with Rule 1147 (2-1-2019)	Natural Gas (1988)		Natural Gas (1988)	

[1]Does not include digester gas or landfill gas fired units.

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10-20-2000 Rev. 0
2-2-2018 Rev. 1
2-1-2019 Rev. 2

Equipment or Process: Dryer or Oven

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Carpet Oven		30 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas (1990)	
Rotary, Spray and Flash Dryers[1)]		Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas with Baghouse (1990)	
Tray, Agitated Pan, and Rotary Vacuum Dryers		Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas (1990)	
Tenter Frame Fabric Dryer		30 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	
Other Dryers and Ovens – Direct and Indirect Fired[2, 3]		30 ppmvd corrected to 3% O_2 (04-10-98)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	

1. Dryers for foodstuff, pharmaceuticals, aggregate & chemicals.
2. Does not include food or bakery ovens. See listing for "Food Oven."
3. Does not include digester gas or landfill gas units.

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10-20-2000 Rev. 0

Equipment or Process: Electric Furnace – Pyrolyzing, Carbonizing and Graphitizing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (1988)					

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Electrical Wire Reclamation – Insulation Burn-Off Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F); Or Secondary Combustion Chamber (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	Natural Gas (1988)	Natural Gas (1988)		Natural Gas with Baghouse and: - Afterburner ((≥ 0.3 Second Retention Time at ≥ 1400 °F) or - Secondary Combustion Chamber (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Ethylene Oxide Sterilization

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Aeration	Recirculation Vacuum Pump-Seal Fluid with Fluid Reservoir Vented to: Chemical Scrubber; or Afterburner (≥ 0.3 second retention time at ≥ 1400°F); or Catalytic Afterburner (at ≥ 280°F) (07-11-97)					
Quarantine Storage	Unvented Enclosure with Internal Circulation Through Activated Carbon Impregnated with Sulfuric Acid (1989)					

Note: Ethylene Oxide Sterilization may also be Subject to 40 CFR 63, Subpart O – Emission Standards for Ethylene Oxide Sterilization Facilities.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Expanded Polystyrene Manufacturing Using Blowing Agent

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	For VOC Emissions: Incineration (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (1990)					

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Fatty Acid – Fat Hydrolyzing and Fractionation

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Condenser or Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1300 °F) (10-20-2000)					

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Fatty Alcohol

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 second retention time at ≥ 1400°F) (07-11-97)					

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-5-2021 Rev. 2

Equipment or Process: Fermentation, Beer and Wine

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All Closed Systems	Carbon Adsorber (10-20-2000)					
All Open Systems	Scrubber with Approved Liquid Waste Disposal (10-20-2000)					
Wine Fermentation Tanks: Closed-Top ≤ 30,000 gallons capacity of each tank in system (2-5-2021)	Water Scrubber or Chiller Condenser with 67.0% combined capture and control efficiency averaged over length of fermentation season (mass balance basis)					

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10-20-2000 Rev. 0
2-1-2019 Rev. 1
2-5-2021 Rev. 2

Equipment or Process: Fish Reduction

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Cooker	Scrubber with Chlorinated Solution (≤ 20 ppmv Cl^- Outlet Conc., ≥ 0.6 Sec. Retention Time and ≤ 200 °F Outlet Temp.) (1988)					
Digestor, Evaporator and Acidulation Tank	Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1200 °F) (1990)				Natural Gas with Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1200 °F) (1990)	
Dryer	Scrubber with Chlorinated Solution (≤ 20 ppmv Cl^- Outlet Conc., ≥ 0.6 Sec. Retention Time and ≤ 200 °F Outlet Temp.) (1990)				Natural Gas and Scrubber with Chlorinated Solution (≤ 20 ppmv Cl^- Outlet Conc., ≥ 0.6 Sec. Retention Time and ≤ 200 °F Outlet Temp.) (1990)	
Meal Handling[1]						
Rendering – Presses, Centrifuges, Separators, Tanks, Etc.	Water Condenser and Vent to Dryer Firebox (1988)					

1) At the date of the last revision for this category, there was no Achieved In Practice BACT Determination for this subcategory. Technologically Feasible options listed in historic South Coast AQMD BACT Guidelines for this subcategory require cost effective analyses before they can be listed in these current Guidelines.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-5-2021 Rev. 1

Equipment or Process: Flare

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Digester Gas or Landfill Gas from Non-Hazardous Waste Landfill	Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1400 °F, Auto Combustion Air Control, Automatic Shutoff Gas Valve and Automatic Re-Start System (1988) Compliance with Rule 1118.1 (Landfill gas only) (2-5-2021)	0.06 lbs/MM Btu (1988) Compliance with Rule 1118.1 (2-5-2021)		Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1400 °F, and Auto Combustion Air Control (1988) Compliance with Rule 1118.1 (Landfill gas only) (2-5-2021)	Knockout Vessel (1988)	
Landfill Gas from Hazardous Waste Landfill	Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1500 °F, Auto Combustion Air Control, Automatic Shutoff Gas Valve and Automatic Re-Start System (1988) Compliance with Rule 1118.1	0.06 lbs/MM Btu (2020) Compliance with Rule 1118.1 (2-5-2021)		Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1500 °F, and Auto Combustion Air Control (1988) Compliance with Rule 1118.1 (2-5-2021)	Knockout Vessel (1988)	
Produced Gas (2-5-2021)	Compliance with Rule 1118.1	Compliance with Rule 1118.1		Compliance with Rule 1118.1		
Organic Liquid Storage (2-5-2021)		Compliance with Rule 1118.1		Compliance with Rule 1118.1		
Organic Liquid Loading (2-5-2021)		Compliance with Rule 1118.1		Compliance with Rule 1118.1		
Other Flare Gas (2-5-2021)		Compliance with Rule 1118.1				

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10-20-2000 Rev. 0

Equipment or Process: Flow Coater, Dip Tank and Roller Coater

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
< 36 lbs/day VOC	Compliance with Regulation XI (10-20-2000)					
≥ 36 lbs/day VOC	Coating with Lower VOC Content than Required by Applicable Rules, and Emissions from Coating Area, Flash Off Area, Drying Area, and Oven Vented to Control Device Achieving ≥ 90% Overall Efficiency (1988) Or Super Compliant Materials with ≤ 5% VOC by Weight (10-20-2000)					

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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2-2-2018 Rev. 0

Equipment or Process: Food Oven

		Criteria Pollutants					
Subcategory[1]	**Rating/ Size**	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Ribbon Burner	> 500°F		60 ppmvd @ 3% O_2 (2-2-2018)	Natural Gas (2-2-2018)	Compliance with applicable Rules 407 or 1153.1 (2-2-2018)	Natural Gas (2-2-2018)	
	≤ 500°F		30 ppmvd @ 3% O_2 (2-2-2018)	Same as above	Same as above	Same as above	
Other Direct Fired Burner			30 ppmvd @ 3% O_2 (2-2-2018)				
Infrared Burner			30 ppmvd @ 3% O_2 (2-2-2018)				
Add-on Control for Bakery Oven processing yeast leavened products with emissions ≥ 30 lb VOC/day		Catalytic oxidizer with 95% overall control efficiency (mass basis); catalyst inlet temperature ≥ 600°F; ceramic prefilter (2-2-2018)	Compliance with Rule 1147 at the time of applicability (2-2-2018)				

[1]Indirect Fired units may be subject to Rules 1146 and 1146.1 and BACT for Process Heater.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Foundry Sand Mold – Cold Cure Process

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All			Packed Column Scrubber with pH of Solution Maintained at a Minimum of 8.0 (1988)			

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10-20-2000 Rev. 0
2-1-2019 Rev 1

Equipment or Process: Fryer – Deep Fat

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Integrated Afterburner/Oil Heater < 2 MM Btu/hr	≥ 0.3 Sec. Retention Time at ≥ 1400 °F (2-1-2019)	Natural Gas (1990)	Natural Gas (1990)		≥ 0.3 Sec. Retention Time at ≥ 1400 °F	
Integrated Afterburner/Oil Heater ≥ 2 MM Btu/hr	≥ 0.3 Sec. Retention Time at ≥ 1400 °F (2-1-2019)	Natural Gas (1990)	Natural Gas (1990)		≥ 0.3 Sec. Retention Time at ≥ 1400 °F, and Electrostatic Precipitator or High Efficiency Mist Eliminator ~~(10-20-2000)~~ (2-1-2019)	
Non-Integrated Direct and In-Direct Oil Heater (Steam, Thermal Fluid Heater and burner exhaust gases)		60 ppm Compliance with Rule 1147 (2-1-2019)				

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10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Fugitive Emission Sources at Natural Gas Plants and Oil and Gas Production Fields

	Criteria Pollutants					
Subcategory/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Compressors, Centrifugal Type	Seal System with a Higher Pressure Barrier Fluid (04-10-98); and Compliance with Rule 1173 (12-5-2003)					
Compressors, Rotary Type	Enclosed Seal System Connected to Closed Vent System (04-10-98); and Compliance with Rule 1173					
Pressure Relief Valves	Connected to Closed Vent System or Equipped with Rupture Disc if Applicable (4-10-98); and Compliance with Rule 1173 (12-5-2003)					
Pumps – In Heavy Liquid Service	Single Mechanical (4-10-1998); and Compliance with Rule 1173 (12-5-2003)					
Pumps – In Light Liquid Service	Sealless Type if Available and Compatible; or Double or Tandem Seals, and Vented to Closed Vent System (4-10-98); and Compliance with Rule 1173 (12-5-2003)					
Sampling Connections	Closed-Purge, Closed-Loop, or Closed-Vent System (4-10-98); and Compliance with Rule 1173 (12-5-2003)					
Valves, Fittings, Diaphragms, Hatches, Sight-Glasses, Open-Ended Pipes and Meters in VOC Service	Compliance with Rule 1173 (12-5-2003)					
Compressors, Centrifugal Type	Seal System with a Higher Pressure Barrier Fluid; < 500 ppmv by USEPA Method 21 with Quarterly I&M Program[1)] (04-10-98)					

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10-20-2000 Rev. 0; 12-5-2003 Rev. 1

Equipment or Process: Fugitive Emission Sources at Organic Liquid Bulk Loading Facilities

	Criteria Pollutants					
Subcategory/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Compressors, Rotary Type	Enclosed Seal System Connected to Closed Vent System; < 500 ppmv by USEPA Method 21 with Quarterly I&M Program[1)] (04-10-98)					
Connectors[2)] in Gas, Vapor or Light Liquid VOC Service	< 500 ppmv by USEPA Method 21 with Quarterly I&M Program[1)] (04-10-98)					
Open Ended Valves and Pipes	Compliance with Rule 1173 where Applicable (10-20-2000)					
Pressure Relief Valves	Connected to Closed Vent System or Equipped with Rupture Disc if Applicable (4-10-98); and Compliance with AQMD Rule 1173 (10-20-2000)					
Process Valves – Gate, Globe and Ball	Compliance with AQMD Rule 1173, where Applicable (10-20-2000)					
Pumps – In Heavy Liquid Service	Single Mechanical; < 1000 ppmv by USEPA Method 21 with Quarterly I&M (4-10-1998)					
Pumps – In Light Liquid Service	1. Sealless Type if Available and Compatible, or 2. Double or Tandem Seals and Vented to Closed Vent System; < 1000 ppmv by USEPA Method 21 with Approved South Coast AQMD I&M; <1000 ppmv by USEPA Method 21 with Approved South Coast AQMD I&M (4-10-98)					
Sampling Connections	Closed-Purge, Closed-Loop, or Closed-Vent System (4-10-98)					

1) Quarterly I&M shall be consistent with Rule 1173 and other applicable requirements except that leaks between 500 and 1000 ppmv must be repaired within 14 days after detection.
2) Connectors include flanges, screwed or other joined fittings

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10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Fugitive Emission Sources, Other Facilities

	Criteria Pollutants					
Subcategory/Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
Compressors, Fittings, Open Ended Pipes, Pressure Relief Devices, , Valves, Pumps, Sampling Connections, Diaphragms, Hatches, Sight-Glasses and Meters in VOC Service	Compliance with Rule 1173, where Applicable by Rule (12-5-2003)					

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10-20-2000 Rev. 0

Equipment or Process: Galvanizing Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Batch Operations		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas with Baghouse with Lime Coating (1988)	
Continuous Sheet Metal Operations		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas with Packed Column Scrubber Serving the Caustic, Acid Pickling Tanks and/or Metal Preparation Tanks (1988, 2000)	
Continuous Wire Operations		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas with Noncombustible Covering on Molten Metal Surface, Baghouse, and Packed Column Scrubber Serving the Metal Preparation Tanks (1988, 2000)	

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10-20-2000 Rev. 0

Equipment or Process: Garnetting Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse or Rotary Drum Filter (1988)	

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10-20-2000 Rev. 0
12-3-2004 Rev. 1

Equipment or Process: Gas Turbine

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas Fired, < 3 MWe		9 ppmvd @ 15% O_2 (10-20-2000)		10 ppmvd @ 15% O_2 (10-20-2000)		With Add-On Controls: 9 ppmvd ammonia @ 15% O_2 (10-20-2000)
Natural Gas Fired, ≥ 3 MWe and < 50 MWe		2.5 ppmvd @ 15% O_2 x efficiency (%)[1)] / 34% (6-12-98)		10 ppmvd @ 15% O_2 (6-12-98)		With Add-On Controls: 5.0 ppmvd ammonia @ 15% O_2 (10-20-2000)
Natural Gas Fired, ≥ 50 MWe	2.0 ppmvd (as methane) @ 15% O_2, 1-hour avg. OR 0.0027 lbs/MMBtu (higher heating value) (10-20-2000)	2.5 ppmvd @ 15% O_2, 1-hour rolling avg. OR 2.0 ppmvd @ 15 %O_2, 3-hour rolling avg. x efficiency (%)[1)] / 34% (10-20-2000)		6.0 ppmvd @ 15% O_2, 3-hour rolling avg. (10-20-2000)		With Add-On Controls: 5.0 ppmvd ammonia @ 15% O_2 (10-20-2000)
Emergency		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	

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Landfill or Digester Gas Fired		25 ppmv, dry, corrected to 15 $\%O_2$ (1990)	Compliance with Rule 431.1 (10-20-2000)	130 ppmv, dry, corrected to 15 $\%O_2$ (10-20-2000)	Fuel Gas Treatment for Particulate Removal (1990)	

Notes: 1) The turbine efficiency correction for NOx is limited to 1.0 as a minimum. The turbine efficiency is the demonstrated percent efficiency at full load (corrected to the higher heating value of the fuel) without consideration of any downstream heat recovery (12-3-2004).

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10-20-2000 Rev. 0

Equipment or Process: Glass Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Decorator Glass		Natural Gas with Low NOx Burner (10-20-2000); Cullet in Raw Material Charged > 80% (1988)			Baghouse (10-20-2000)	
Flat Glass		Natural Gas with Heating Modifications: - Excess Oxygen in Ports < 5% - Cullet in Raw Material Charged > 15% - Hot Spot Temperature < 2,700 °F (1988)	Process Modification: Sulfur Content of Batch Charged < 0.25% by Weight of Total Batch (1988)		Baghouse (10-20-2000)	

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2-5-2021 Rev. 0

Equipment or Process: Glass Screen Printing

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Flat Glass	Compliance with Rule 1145 or use of Rule 1145 compliant UV/EB or water-based coatings					

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Incinerator – Hazardous Waste

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Automatic Combustion Air Control, ≥ 2 Sec. Retention Time and ≥ 1800 °F (1988)	Natural Gas Supplemental Fuel with Selective Non-catalytic Reduction (1988)	Natural Gas Supplemental Fuel and Spray Dryer with Lime Injection (1988)	Automatic Combustion Air Control, ≥ 2 Sec. Retention Time and ≥ 1800 °F (1988)	0.002 gr/dscf at 12% CO_2 (1988)	

Note: The equipment may also be subject to 40 CFR 264, Subpart O--Incinerators

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Incinerator – Infectious Waste

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
≤ 300 lbs/hr	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)	Natural Gas as Auxiliary Fuel (1988)	Natural Gas as Auxiliary Fuel with Wet Scrubber (1988)	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)		
> 300 lbs/hr	Same as Above	Same as Above	Same as Above	Same as Above	0.04 gr/dscf Corrected to 12% CO_2, with Enclosed Automatic Feed and Ash Removal System (1988)	

Note: The equipment may also be subject to 40 CFR 60, Subpart Ec--Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction Is Commenced After June 20, 1996

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0
7-9-2004 Rev. 1

Equipment or Process: Incinerator – Non-Infectious, Non-Hazardous Waste

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
≤ 300 lbs/hr	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1600 °F} (1988)	Natural Gas as Auxiliary Fuel (1988)	Natural Gas as Auxiliary Fuel with Wet Scrubber (1988)	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1600 °F) (1988)	Natural Gas as Auxiliary Fuel with Enclosed Automatic Feed and Fly ash Removal System (1988)	
> 300 lbs/hr and < 750 lbs/hr	Same as Above	Same as Above	Same as Above	Same as Above	0.04 gr/dscf Corrected to 12% CO_2, with Enclosed Automatic Feed and Ash Removal System (1988)	
≥ 750 lbs/hr	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)	Same as Above	Same as Above	Multiple Chamber Starved Air Design (≥ 0.5 Sec. Retention Time at ≥ 1800 °F) (1988)	Same as Above	

Note: The equipment may also be subject to 40 CFR 60, Subpart CCCC--Standards of Performance for New Stationary Sources: Commercial and Industrial Solid Waste Incineration Units.

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10-20-2000 Rev. 0
6-6-2003 Rev. 1
7-14-2006 Rev. 2
12-02-2016 Rev. 3
2-2-2018 Rev. 4

Equipment or Process: I.C. Engine, Portable [1]

		Criteria Pollutants					
Subcategory	**Rating/Size**	**VOC**	**NOx**	**NOx + NMHC[2]**	**SOx**	**CO**	**PM**
Compression-Ignition[3]	50 ≤ HP < 75			Tier 4 Final: 4.7 grams/kW-hr (3.5 grams/bhp-hr) (12-02-2016)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	Tier 4 Final: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (12-02-2016)	Tier 4 Final: 0.03 grams/kW-hr (0.02 grams/bhp-hr) and CARB ATCM for portable diesel engines[4] (12-02-2016)
	75≤ HP < 175		Tier 4 Final: 0.40 grams/kW-hr (0.30 grams/bhp-hr) (2-2-2018)	Tier 4 Final: NMHC only: 0.19 grams/kW-hr (0.14 grams/bhp-hr) (2-2-2018)		Tier 4 Final: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (2-2-2018)	Tier 4 Final: 0.02 grams/kW-hr (0.01 grams/bhp-hr) and CARB ATCM for portable diesel engines[4] (2-2-2018)
	175 ≤ HP < 750		Tier 4 Final: 0.40 grams/kW-hr (0.30 grams/bhp-hr) (12-02-2016)	Tier 4 Final: NMHC only: 0.19 grams/kW-hr (0.14 grams/bhp-hr) (12-02-2016)		Tier 4 Final: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (12-02-2016)	Tier 4 Final: 0.02 grams/kW-hr (0.01 grams/bhp-hr) and CARB ATCM for portable diesel engines[4] (12-02-2016)

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

		Criteria Pollutants					
Subcategory	**Rating/Size**	**VOC**	**NOx**	**NOx + NMHC[2]**	**SOx**	**CO**	**PM**

(Continued on next page)

Compression-Ignition[3]	≥750 HP [5]		*Tier 4 Interim:* ***For Generator Sets > 1200 HP:*** *0.67 grams/kW-hr (0.50 grams/bhp-hr)* ***For All Engines Except "Generator Sets > 1200 HP":*** *3.5 grams/kW-hr (2.6 grams/bhp-hr) (12-02-2016)*	*Tier 4 Interim: NMHC only: 0.4 grams/kW-hr (0.30 grams/bhp-hr) (12-02-2016)*	*Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)*	*Tier 4 Interim: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (12-02-2016)*	*Tier 4 Interim: 0.10 grams/kW-hr (0.07 grams/bhp-hr)and CARB ATCM for portable diesel engines[4] (12-02-2016)*
Spark Ignition	All	1.5 grams/bhp-hr, or 240 ppmvd as methane @ 15% O2 (4-10-1998)	1.5 grams/bhp-hr, or 80 ppmvd @ 15% O2 (4-10-1998)			2.0 grams/bhp-hr, or 176 ppmvd @ 15% O2 (4-10-1998)	

Notes:

1) BACT for "I.C. Engine, Portable" is determined by deemed complete date of permit application not date of manufacture or installation.
2) NMHC + NOx means the sum of non-methane hydrocarbons and oxides of nitrogen emissions, unless specified as "NMHC only", which only includes NMHC emissions.
3) The engine must be certified by U.S. EPA or CARB to meet the Tier 4 emission requirements of 40 CFR Part 89 – Control of Emissions from New and In-use Nonroad Compression-Ignition Engines shown in the table– or otherwise demonstrate that it meets the Tier 4 emission limits. If, because of the averaging, banking, and trading program, there is no new engine from any manufacturer that meets the above standards, then the engine must meet the family emission limits established by the manufacturer and approved by U.S. EPA. Based on the model year, the CARB Airborne Toxic Control Measure (ATCM) for Portable Diesel Engines (see www.arb.ca.gov/diesel/peatcm/peatcm.htm) requires in-use portable

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diesel engines to be certified to Tier 1, 2, 3 or 4 by their respective deadlines, all of which have passed. All exceptions allowed in the ATCM are also allowed in this guideline.

4) The CARB ATCM also requires in-use portable diesel engines to meet fleet-average PM standards beginning 1/1/2013. The PM limits in the table apply only to filterable PM.
5) CARB has extended the Tier 4 Final requirements deadline "until further notice" for Portable, Compression-Ignition Engines for HP ≥ 750.

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10-20-2000 Rev. 0
6-6-2003 Rev. 1
12-3-2004 Rev. 2
7-14-2006 Rev. 3
10-3-2008 Rev. 4
12-2-2016 Rev. 5
2-1-2019 Rev. 6
9-2-2022 Rev. 7

Equipment or Process: I.C. Engine, Stationary, Emergency [1]

		Criteria Pollutants					
Subcategory	**Rating/Size**	**NMHC or VOC**	**NOx**	**NOx + NMHC[2]**	**SOx**	**CO**	**PM**
Compression Ignition, Fire Pump [3, 4]	50 ≤ HP < 100			~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 4.7 grams/kW-hr (3.5 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	~~Compliance with Rule 1470 (12-3-2004)~~ Tier 3: 0.40 grams/kW-hr (0.30 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-3-2004)[7]
	100 ≤ HP < 175			~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (10-03-2008)		~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	~~Compliance with Rule 1470 (12-3-2004)~~ Tier 3: 0.30 grams/kW-hr (0.22 grams/bhp-hr) (10-03-2008)

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		Criteria Pollutants					
Subcategory	**Rating/Size**	**NMHC or VOC**	**NOx**	**NOx + NMHC[2]**	**SOx**	**CO**	**PM**
				Compliance with Rule 1470 (12-02-2016)		Compliance with Rule 1470 (12-02-2016)	Compliance with Rule 1470 (12-3-2004)[7]
Compression Ignition, Fire Pump [3, 4] (continued)	175 ≤ HP < 750			~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr): (10-03-2008) Compliance with Rule 1470 (12-02-2016)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	~~Compliance with Rule 1470 (12-3-2004)~~ Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-3-2004)[7]
	≥750 HP			~~Compliance with Rule 1470 (12-02-2016)~~ Tier 2: 6.4 grams/kW-hr (4.8 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)		~~Compliance with Rule 1470 (12-02-2016)~~ Tier 2: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	~~Compliance with Rule 1470 (12-02-2016)~~ Tier 2: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)[7]
Compression-Ignition, Other[3, 4]	50 ≤ HP < 100			~~Compliance with Rule 1470 (12-02-2016)~~		~~Compliance with Rule 1470 (12-02-2016)~~	~~Compliance with Rule 1470 (12-3-2004)~~

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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		Criteria Pollutants					
Subcategory	**Rating/Size**	**NMHC or VOC**	**NOx**	**NOx + NMHC[2]**	**SOx**	**CO**	**PM**
				Tier 3: 4.7 grams/kW-hr (3.5 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)		Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-3-2004)[7]
Compression-Ignition, Other[3, 4] (continued)	100 ≤ HP < 175			~~Compliance with Rule 1470~~ ~~(12-02-2016)~~ Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	~~Compliance with Rule 1470~~ ~~(12-02-2016)~~ Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	~~Compliance with Rule 1470~~ ~~(12-3-2004)~~ Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (2-01-2019) Compliance with Rule 1470 (12-3-2004)[7]
	175≤ HP < 300			~~Compliance with Rule 1470~~ ~~(12-02-2016)~~ Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)		Compliance with Rule 1470 (12-02-2016) Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	~~Compliance with Rule 1470~~ ~~(12-3-2004)~~ Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-3-2004)[7]

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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		Criteria Pollutants					
Subcategory	**Rating/Size**	**NMHC or VOC**	**NOx**	**NOx + NMHC[2]**	**SOx**	**CO**	**PM**
	300≤ HP < 750			~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (7-14-2006) Compliance with Rule 1470 (12-02-2016)		~~Compliance with Rule 1470 (12-02-2016)~~ Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (7-14-2006) Compliance with Rule 1470 (12-02-2016)	~~Compliance with Rule 1470 (12-3-2004)~~ Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (7-14-2006) Compliance with Rule 1470 (12-3-2004)[7]
Compression-Ignition, Other[3, 4] (continued)	≥750 HP			~~Compliance with Rule 1470 (12-02-2016)~~ Tier 2: 6.4 grams/kW-hr (4.8 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	~~Compliance with Rule 1470 (12-02-2016)~~ Tier 2: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-02-2016)	~~Compliance with Rule 1470 (12-3-2004)~~ Tier 2: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008) Compliance with Rule 1470 (12-3-2004)[7]
Spark Ignition[5]	< 130 HP	VOC: 1.5 grams/bhp-hr (10-20-2000)	1.5 grams/bhp-hr (10-20-2000)		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	2.0 grams/bhp-hr (10-20-2000)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)

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		Criteria Pollutants					
Subcategory	**Rating/Size**	**NMHC or VOC**	**NOx**	**NOx + NMHC[2]**	**SOx**	**CO**	**PM**
	≥ 130 HP	VOC: 1.0 grams/bhp-hr[6] (12-02-2016)	1.5 grams/bhp-hr (10-20-2000)		See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	2.0 grams/bhp-hr (10-20-2000)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)

1) An emergency engine is an engine which operates as a temporary replacement for primary mechanical or electrical power sources during periods of fuel or energy shortage or while a primary power source is under repair. This includes fire pumps, emergency electrical generation and other emergency uses.

2) NMHC + NOx means the sum of non-methane hydrocarbons and oxides of nitrogen emissions.

3) South Coast AQMD restricts operation of emergency compression-ignition engines to 50 hours per year, or less if required by Rule 1470, for maintenance and testing and a maximum of 200 hours per year total operation. For engines used to drive standby generators, operation beyond 50 hours per year for maintenance and testing is allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage provided that the electrical grid operator or electric utility has ordered rotating outages in the control area where the engine is located or has indicated that it expects to issue such an order at a certain time, and the engine is located in a control area that is subject to the rotating outage.

4) The engine must be certified by U.S. EPA or CARB to meet the Tier 1, 2 or 3 emission requirements of 40 CFR Part 89 – Control of Emissions from New and In-use Nonroad Compression-Ignition Engines shown in the table– or otherwise demonstrate that it meets the Tier 1, 2 or 3 emission limits. If, because of the averaging, banking, and trading program, there is no new engine from any manufacturer that meets the above standards, then the engine must meet the family emission limits established by the manufacturer and approved by U.S. EPA. The PM limits apply only to filterable PM.

5) South Coast AQMD restricts operation of emergency spark-ignition engines to 50 hours per year for maintenance and testing and a maximum of 200 hours per year total operation. Emergency spark-ignition engines may be used in a Demand Response Program, however the engine will require additional evaluation and may be subject to more stringent regulatory requirements. Since some requirements are based upon the California Airborne Toxic Control Measure for Stationary Compression Ignition Engines, applicants are referred to Title 17, Section 93115.3 of the California Code of Regulations for possible exemptions.

6) VOC limit is based on the requirement listed in Table 1 of 40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

7) BACT PM emission standard requirement for new Stationary Emergency Standby Diesel-Fueled CI Engines located at a sensitive receptor or 50 meters or less from a sensitive receptor. (9-2-2022)

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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12-02-2016 Rev. 0
2-2-2018 Rev. 1

Equipment or Process: I.C. Engine, Stationary, Non-Emergency, Non-Electrical Generators

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
> 50 bhp	Compliance with Rule 1110.2 (12-02-2016)	Compliance with Rule 1110.2 (12-02-2016)	See Clean Fuels Policy in Part C of the BACT Guidelines (12-02-2016)	Compliance with Rule 1110.2 (12-02-2016)	See Clean Fuels Policy in Part C of the BACT Guidelines (12-02-2016) Compliance with Rule 1470 (12-02-2016)	
Landfill or Digester Gas Fired[1]	Compliance with Rule 1110.2 (2-2-2018)	Compliance with Rule 1110.2 (2-2-2018)	Compliance with Rule 431.1 (12-02-2016)	Compliance with Rule 1110.2 (2-2-2018)		

1) For the adoption of this new listing, the requirements for this subcategory were transferred directly from the existing requirements under "I.C. Engine, Stationary, Non-Emergency." The requirements are not new, but the date listed was updated to reflect the date of adoption of the new listing.

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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2-2-2018 Rev. 0
9-2-2022 Rev. 1

Equipment or Process: I.C. Engine, Stationary, Non-Emergency, Electrical Generators ~~1~~

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
> 50 bhp	Compliance with Rule 1110.2 (2-2-2018)	Compliance with Rule 1110.2 (2-2-2018)	See Clean Fuels Policy in Part C of the BACT Guidelines (2-2-2018)	Compliance with Rule 1110.2 (2-2-2018)	See Clean Fuels Policy in Part C of the BACT Guidelines (2-2-2018) Compliance with Rule 1470 (2-2-2018)	With Add-On Controls: 10 ppmvd ammonia @ 15% O_2 (9-2-2022)
Landfill or Digester Gas Fired	Compliance with Rule 1110.2 (2-2-2018)	Compliance with Rule 1110.2 (2-2-2018)	Compliance with Rule 431.1 (2-2-2018)	Compliance with Rule 1110.2 (2-2-2018)		

~~1) This BACT listing was adapted from the previous "I.C. Engine, Stationary, Non-Emergency," Part D BACT listing.~~

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

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10-20-2000 Rev. 0

Equipment or Process: Jet Engine Test Facility

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Experimental High Altitude Testing					Venturi Scrubber with Water Spray in Exhaust (1988)	
Experimental Sea Level (Low Altitude) Testing[1]						
Performance Testing[1]						

1) At the date of the last revision for this category, there was no Achieved In Practice BACT Determination for this subcategory. Technologically Feasible options listed in historic South Coast AQMD BACT Guidelines for this subcategory require cost effective analyses before they can be listed in these current Guidelines.

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10-20-2000 Rev. 0

Equipment or Process: Landfill Gas Gathering System

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with Rule 1150.1 - Control of Gaseous Emissions from Municipal Solid Waste Landfills (10-20-2000)					

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10-20-2000 Rev. 0

Equipment or Process: Latex Manufacturing - Reaction

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Catalytic Incinerator and Caustic Scrubber (1988)					

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10-20-2000 Rev. 0
2-1-2019 Rev. 1

Equipment or Process: Lead Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Pot or Crucible, Non-Refining Operations		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas and Melt only Sows, Pigs, Ingots or Clean Scrap (1990)	
Pot or Crucible, Refining Operations		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas with Scrubber; or Natural Gas with Sulfur Free Refining Agents (1990)		Natural Gas with Baghouse (1990)	
Reverberatory, Secondary Melting Operations		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas with Scrubber (1990)		Natural Gas with Baghouse (1990)	

Note: Some secondary lead smelting operations must also comply with the National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63, Subpart X.

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10-20-2000 Rev. 0

Equipment or Process: Lead Oxide Manufacturing – Reaction Pot Barton Process

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas (1988)	Natural Gas (1988)		Natural Gas with Baghouse (1988)	

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10-20-2000 Rev. 0
12-02-2016 Rev.1

Equipment or Process: Liquid Transfer and Handling

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Marine, Loading	For VOC Emissions: Vapor Collection System Vented to Incinerator (1990)					
Tank Truck and Rail Car Bulk Loading, Class A (Rule 462)	Compliance with Rule 462 (0.08 Lbs/1000 Gals) (10-20-2000)					For Ammonia: Bottom Loading with Vapor Collection System Vented to Packed Column Scrubber (10-20-2000)
Tank Truck and Rail Car Bulk Loading, Classes B and C (Rule 462)	Bottom Loading with Vapor Collection System Vented to: - Incinerator; or - Compression/absorption with Tail Gas Vented to Incinerator; or - Refrigeration System; or - Carbon Adsorption system and Compliance with Rule 462 (10-20-2000)					Same as Above
Gasoline Transfer and Dispensing	Compliance with Rule 461 (12-02-2016)					

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Metal Heating Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner ≤ 50 ppmvd at 3% O_2, dry. (10-20-2000)	Natural Gas (1990)			Natural Gas (1990)

Note: This category includes metal aging, annealing, forging, heat treating, and homogenizing.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Metallizing Spray Gun

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Water Wash Spray Booth or Scrubber (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Mixer, Blender or Mill

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Dry					Baghouse (07-11-97)	
Wet	Carbon Adsorber; or Refrigerated Condenser; or Afterburner (VOC Emissions Only); or Vapor Recovery (07-11-97)				Baghouse if Dry Ingredients are Added (07-11-97)	Packed Column Scrubber (07-11-97)

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Nitric Acid Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Catalytic Reduction Furnace (07-11-97)				

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Non-Metallic Mineral Processing – Except Rock or Aggregate

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse for Enclosed Operations Water Fog Spray for Open Operations (1988)	

Notes:
1. Non-metallic Minerals are minerals such as rock salt, sodium compounds, pumice, gilsonite, talc and pyrophyllite, boron, barite, fluorspar, feldspar, diatomite, perlite, vermiculite, mica, carbon black, silicon and kyanite.
2. This category includes conveying, size reduction and classification.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Nut Roasting

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Roaster		Natural Gas (1988)			Afterburner (≥ 0.3 second Retention Time at ≥ 1400°F) (10-20-2000)	
Handling Equipment					Baghouse (10-20-2000)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
12-02-2016 Rev. 1

Equipment or Process: Oil and Gas Production

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Combined Tankage	All Tanks Vented to: - Vacuum Gas Gathering System; or - Positive Pressure Gas Gathering System; or - Incinerator or Firebox (1988) Compliance with Rules 1148 and 1148.1 (12-02-2016)					
Wellhead	All Wellheads Vented to: - Vacuum Gas Gathering System; or - Positive Pressure Gas Gathering System; or - Incinerator or Firebox (10-20-2000) Compliance with Rules 1148 and 1148.1 (12-02-2016)					

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10-20-2000 Rev. 0
2-5-2021 Rev. 1
9-2-2022 Rev. 2

Equipment or Process: Open Process Tanks: Chemical Milling (Etching) and Plating

		Criteria Pollutants					
Subcategory/ Rating/Size		**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Chemical Milling (9-2-2022)	Aluminum and Magnesium [1]						
	Nickel Alloys, Stainless Steel and Titanium		Packed Chemical Scrubber (10-20-2000)			High Efficiency Mist Eliminator (10-20-2000)	
Plating	Decorative Chrome					Compliance with Rule 1469 (2-5-2021)	
	Hard Chrome					Compliance with Rule 1469 (2-5-2021)	

1) At the date of the last revision for this category, there was no Achieved In Practice BACT Determination for this subcategory. Technologically Feasible options listed in historic South Coast AQMD BACT Guidelines for this subcategory require cost effective analyses before they can be listed in these current Guidelines.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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Equipment or Process: Open Spraying – Spray Gun**

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with Regulation XI (10-20-2000)				Compliance with Regulation XI (10-20-2000)*[1]	

**[1] The open spraying must be conducted in a spray booth where feasible.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Perlite Manufacturing System

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (10-20-2000)		Baghouse (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
7-9-2004 Rev. 1

Equipment or Process: Pharmaceutical Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Operations Involving Solvents	Afterburner (≥0.3 second Retention Time at ≥1400°F), Refrigerated Condenser, or Carbon Adsorber (07-11-97)					
Solids Handling					Baghouse (07-11-97)	
Solids Storage Tanks					Baghouse or Vent Filter (07-11-97)	

Note: This equipment may also be subject to Rule 1103 and 40 CFR 63 Subpart GGG – National Emission Standards Pharmaceuticals Production. (7-9-2004)

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Phosphoric Acid - Thermal Process

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Fiber Mist Filter, Electrostatic Precipitator, or Packed Scrubber with Mist Eliminator (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Phthalic Anhydride

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Afterburner (≥0.3 Second Retention Time at ≥1400°F) or Water Cooled Condenser (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Plasma Arc Metal Cutting Torch

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
> 30 KVA Electrical Input					Water Table and Nozzle Water Shroud; or Electrostatic Precipitator (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-5-2021 Rev. 1

Equipment or Process: Polyester Resin Operations

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Fabrication – Hand and Spray Layup	Compliance with Rule 1162 (10-20-2000)				Airless Spray Equipment and Spray Booth with Mesh Type Filter (1988)	
Molding and Casting	Compliance with Rule 1162 and Use of Aqueous Emulsion Cleaner or Acetone for Clean-Up to Maximum Extent Possible (1988/10-20-2000)					
Panel Manufacturing	Curing Oven, Impregnation Tables and Mixing Tanks Vented to an Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 °F). Storage and Holding Tanks Vented to a Carbon Adsorber (1988)	Natural Gas Fired Curing Oven, Electrically Heated Cellophane Oven and Laminating Table (1988)	Natural Gas (10-20-2000)		Natural Gas Fired Curing Ovens, Cellophane Ovens Vented to an Electrostatic Precipitator and Panel Cutting Saw Vented to Baghouse (1988)	
Pultrusion	Styrene Suppressed Resin (1988), and Compliance with Rule 1162 (10-20-2000)					

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Polystyrene Extruder

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Electrostatic Precipitator or Fiber Mist Filter (07-11-97)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Polystyrene Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Water Cooled Condenser (07-11-97)					

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0
2-5-2021 Rev. 1

Equipment or Process: Powder Coating Booth

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
≤ 37 Lbs/Day Throughput					Pocket or Bag-Type Filters (10-20-2000)	
> 37 Lbs/Day Throughput					1. Baghouse (≥99% efficiency); or 2. Cartridge Filters (≥99% efficiency); or 3. HEPA Filters (≥99.97% efficiency) (1988/10-20-2000) (2-5-2021)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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10-20-2000 Rev. 0

Equipment or Process: Precious Metal Reclamation

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Incineration		Natural Gas (1988)	Natural Gas (1988)		Natural Gas with Baghouse and: - Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F); or -Secondary Combustion Chamber (≥ 0.3 sec. Retention Time at ≥ 1400° F) (1988)	
Chemical Recovery and Chemical Reactions		3-Stage NOx Reduction Scrubber (07-11-97)				

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10-20-2000 Rev. 0
12-5-2003 Rev. 1
7-14-2006 Rev. 2
2-2-2018 Rev. 3
2-1-2019 Rev. 4
9-2-2022 Rev. 5

Equipment or Process: Printing (Graphic Arts)

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Flexographic	Inks with ≤ 1.5 Lbs VOC/Gal, Less Water and Less Exempt Compounds (1990); or use of UV/EB or water-based inks/coatings ≤ 180 g VOC/L. Compliance with Rules 1130 and 1171 (2-2-2018)					
Alternatively	For add-on control required by Rule 1130(c)(5) or other South Coast AQMD requirement: EPA M. 204 Permanent Total Enclosure (100% collection) vented to thermal oxidizer with 95% overall control efficiency; Combustion Chamber: Temp ≥ 1500°F[1], Retention Time > 0.3 seconds (2-2-2018)	Compliance with BACT requirements for Thermal Oxidizer ~~BACT requirements~~		Compliance with BACT requirements for Thermal Oxidizer ~~BACT requirements~~		
Letterpress	Compliance with Rules 1130 and 1171 (12-5-2003)					
Lithographic or Offset, Heatset	Low VOC Fountain Solution (≤ 8% by Vol. VOC); Low VOC (≤ 100 g/l) Blanket and Roller Washes; Oil-Based or UV-Curable Inks; and Compliance with Rules 1130 and 1171 (2-2-18) Oven Vented to a thermal oxidizer (≥ 0.3 Sec. Retention Time at ≥ 1400 ^{0}F; 95% Overall Efficiency)	Compliance with BACT requirements		Compliance with BACT requirements	Venting to a thermal oxidizer (≥ 0.3 sec. Retention Time at ≥ 1400 ^{0}F) (10-20-2000) (2-1-2019)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
	(10-20-2000)	for Thermal Oxidizer ~~BACT requirements~~ Compliance with BACT requirements for Other Dryers and Ovens (9-2-2022)		for Thermal Oxidizer ~~BACT requirements~~		
Lithographic or Offset, Non-Heatset	Low VOC Fountain Solution (≤ 8% by Vol. VOC); Low VOC (≤ 100 g/l) Blanket and Roller Washes; Oil-Based or UV-Curable Inks; and Compliance with Rules 1130 and 1171. (2-1-2019)					
Rotogravure or Gravure—Publication and Packaging	Compliance with Rules 1130 and 1171 (10-20-2000)					
Screen Printing and Drying	Compliance with Rules 1130.1 and 1171; or use of Rule 1130.1 and 1171 compliant UV/EB or water-based inks/coatings. (2-2-2018).					

1) or temperature demonstrating equivalent overall control efficiency in a South Coast AQMD-approved source test.

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10-20-2000 Rev. 0
10-03-2008 Rev. 1
12-02-2016 Rev. 2
2-1-2019 Rev. 3

Equipment or Process: Process Heater – Non-Refinery

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas or Propane Fired, >2 and < 20 MM Btu/hr		Compliance with Rules 1146 or 1146.1 (12-02-2016)	Natural Gas (10-20-2000)	≤50 ppmv for firetube type, ≤ 100 ppmv for watertube type, dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	
Natural Gas or Propane Fired, ≥ 20 MM Btu/hr		Compliance with Rules 1146 (2-1-2019)	Natural Gas (10-20-2000)	Same as above. (10-20-2000)	Natural Gas (10-20-2000)	With SCR: ≤ 5 ppmvd NH3, corrected to 3% O2 With LTO: ≤ 1 ppmvd ozone, corrected to 3% O2 (10-20-2000)

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10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Reactor with Atmospheric Vent [a)]

	Criteria Pollutants					
Rating/Size	**VOC/ODC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	- Carbon Adsorber; or - Afterburner (VOC Only); or - Refrigerated Condenser; or - Scrubber with Approved Liquid Waste Disposal (VOC only) (1990)					

a) Also see "Resin Manufacturing" and "Surfactant Manufacturing". (12-5-2003)

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10-20-2000 Rev. 0

Equipment or Process: Rendering

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Processing Equipment[1)]					Vent to Afterburner or Boiler Fire Box (≥ 0.3 sec. Retention Time at ≥ 1200 °F) (1988)	
Meal Grinding and Handling System					Enclosed Grinding and Screening Operation with Mechanical Conveyors Transporting Meal (1988)	
Tanks and Miscellaneous Equipment					Maintain Internal Temperature Below 140 °F (1988)	

1) Processing equipment includes crax pressing, filtering, centrifuging, evaporators, cookers, dryers, and grease and blood processing.

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12-5-2003 Rev. 0

Equipment or Process: Resin Manufacturing

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Continuous Polystyrene Process	Compliance with Rule 1141: ≤0.12 Pounds VOC per 1000 Pounds Completed Resin Product from Vacuum Devolatilizer and Styrene Recovery Systems (12-5-2003)					
Liquid-Phase, High-Density Polyethylene Slurry Process	Compliance with Rule 1141: ≥98% Reduction from Reactors, Recycle Treaters, Thinning Tanks, Blending Tanks and Product Finishing Section (12-5-2003)					
Liquid-Phase Polypropylene Process	Compliance with Rule 1141: ≥98% Reduction from Organic Resin Reactors, Slurry Vacuum Filter System, Diluent Recovery Section and Product Finishing Section (12-5-2003)					
Other Resin Manufacturing	Compliance with Rule 1141: ≤0.5 Pounds VOC per 1000 Pounds Completed Resin Product, or ≥95% Reduction from Resin Reactors, Thinning Tanks and Blending Tanks (12-5-2003)					

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10-20-2000 Rev. 0

Equipment or Process: Rock – Aggregate Processing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse Venting Jaw Crushers, Cone Crushers, and Material Transfer Points Adjacent to and after these Items; and Water Sprays at Other Material Transfer Points (1990)	

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10-20-2000 Rev. 0

Equipment or Process: Rocket Engine Test Cell

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Chemical Packed Scrubber (1988)			Chemical Packed Scrubber and Water Spray in Exhaust with Steam Ejectors (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Rubber Compounding – Banbury Type Mixer

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Sand Handling System with Shakeout and/or Muller in System

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Sewage Treatment Plants

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Carbon Adsorber or Scrubbing System, Covers for Primary Raw Sewage Processing, and Digester Gas Incineration or Recovery (1988)		Ferrous Chloride Injection and Caustic Scrubber for Hydrogen Sulfide Removal (1988)			

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10-20-2000 Rev. 0

Equipment or Process: Smokehouse

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1990)	Steam Heated Smokehouse and Electrically Heated Smoke Generator (1990)		Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1990)	Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1990)	

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2-1-2019 Rev. 0

Equipment or Process: Soil Vapor Extraction – Thermal/Catalytic Oxidation (Natural Gas – burner only)

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	.	Compliance with Rule 1147.				

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10-20-2000 Rev. 0

Equipment or Process: Solder Leveling –Hot Oil or Hot Air

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Electrostatic Precipitator (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Solvent Reclamation

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Refrigerated or Water Cooled Condenser (07-11-97)					

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10-20-2000 Rev. 0
2-1-2019 Rev 1
2-5-2021 Rev. 2

Equipment or Process: Spray Booth

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Fully-enclosed, Down-Draft Type, < 667 Lbs/Month of VOC Emissions (2-5-2021)	Compliance with Applicable Regulation XI Rules (10-20-2000)	If booth has a Make-up Air Unit or a Heater; Compliance with Rule 1147 (2-5-2021)			Dry Filters or Waterwash (1990)	
Other Types, < 1170 Lbs/Month of VOC Emissions	Compliance with Applicable Regulation XI Rules (10-20-2000)	If booth has a Make-up Air Unit or a Heater; Compliance with Rule 1147 (2-5-2021)			Same as Above (1990)	
Fully-enclosed, Down-Draft Type, ≥ 22 Lbs/Day of VOC Emissions (2-5-2021)	- Compliance with Applicable Regulation XI Rules, and VOC Control System with ≥ 90% Collection Efficiency and ≥ 95% Destruction Efficiency, or - Use of Super Compliant Materials (<50 grams of VOC per liter of material): or - Use of Low-VOC Materials Resulting in an Equivalent Emission Reduction (10-20-2000)	If booth has a Make-up Air Unit or a Heater; Compliance with Rule 1147 (2-5-2021)			Same as Above (1990)	
Other Types,	- Compliance with Applicable	If booth has a			Same as Above	

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≥ 1170 Lbs/Month of VOC Emissions	Regulation XI Rules, and VOC Control System with ≥ 90% Collection Efficiency and ≥ 95% Destruction Efficiency, or - Use of Super Compliant Materials (<50 grams of VOC per liter of material): or - Use of Low-VOC Materials Resulting in an Equivalent Emission Reduction (10-20-2000)	Make-up Air Unit or a Heater; Compliance with Rule 1147 (2-5-2021)			(1990)	
Enclosed with automated spray nozzles for wood cabinets, < 1170 Lbs/Month of VOC Emissions (2-5-2021)	Compliance with Rule 1136 or use of Rule 1136 compliant UV/EB or water-based coatings.	If booth has a Make-up Air Unit or a Heater; Compliance with Rule 1147				

Note: The sum of all VOC emissions from all spray booths within the same subcategory applied for in the previous two years at the same facility are considered toward the emission threshold.

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Steel Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Electric Arc					Baghouse (1988)	
Induction, ≤ 300 Lb. Capacity					Charge Only Ingots or Clean Returns, or Baghouse (10-20-2000)	
Induction, > 300 Lb. Capacity					Baghouse (07-11-97)	

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Storage Tanks - Liquid

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Asphalt					Cool Gases to < 120 °F and Vent to a Fiberglass or Steel Wool Filter. (07-11-97)	
External Floating Roof, VP ≤ 11 psia	Category A Tank Seals and Compliance with Rule 463 (10-20-2000)					
Fixed Roof	Vapor Recovery System with an Overall System Efficiency of ≥ 95% (7-11-97)					
Fuming Sulfuric Acid					Scrubber Followed by Fiber Mist Filter; or Water Spray Followed by Fiber Mist Filter (1988)	
Grease or Tallow					Maintain Temperature ≤ 140 °F (1988)	
Internal Floating Roof	Category A Tank Seals and Compliance with Rule 463 (10-20-2000)					
Sulfuric Acid			Caustic Scrubber and Mist Eliminator (1988)			
Underground, > 250 Gallons	≥ 95% Removal Efficiency for VOC (1990)					

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

12-5-2003 Rev. 0

Equipment or Process: Surfactant Manufacturing

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with Rule 1141.2[a)]: ≤ 0.5 Pounds per 1000 Pounds of Surfactant Product, or ≥ 95% (Wt.) Reduction From All Surfactant Manufacturing Equipment Vented to Atmosphere (12-5-2003)					

a) Does not apply to soap manufacturing operations or facilities that only blend and package surfactants.

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Tank – Grease or Tallow Processing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Water Cooled or Atmospheric Condenser and Afterburner (≥ 0.3 sec. Retention Time at ≥ 1200 °F) (1990)	

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

2-1-2019 Rev. 0
2-5-2021 Rev. 1

Equipment or Process: Thermal Oxidizer (Afterburner, Regenerative Thermal Oxidizer, and Thermal Recuperative Oxidizer) and Catalytic Oxidizer – Natural Gas Fired**

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Regenerative Thermal Oxidizer (2-5-2021)		30 ppmvd @ 3% O_2 (Burner emissions only		400 ppmvd @ 3% O_2 (Burner emissions only)		
Other Types		30 ppmvd @ 3% O_2 (Burner emissions only)				

** Does not include tank degassing, soil vapor extraction, and vapor incinerators where vapors are directed into the burner or into a combustion chamber.

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Tire Buffer

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Cyclone and Water Spray at Rasp (07-11-97)	

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Vegetable Oil Purification

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Scrubber and Barometric Condenser (1988)					

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Vinegar Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Scrubber with South Coast AQMD- and Sanitation District-Approved Liquid Disposal (1988)					

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0
12-5-2003 Rev. 1

Equipment or Process: Wastewater System

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Oil/Water Separator	Cover and Vent to Vapor Disposal System (1988); and Compliance with Rule 1176 (12-5-2003)					
Other Equipment	Compliance with Rule 1176 if Applicable by Rule[a)] (12-5-2003)					

a) Not required for sanitary sewer system.

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Wax Burnoff Furnace

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner (1988)]	Natural Gas (1988)		Natural Gas with Afterburner or Secondary Combustion Chamber (≥ 0.3 sec. Retention Time at ≥ 1200° F) (1988)	

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Wood Processing Equipment

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All					Baghouse (1988)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

12-5-2003 Rev. 0

Equipment or Process: Woodworking

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Pneumatic Conveyance System					Compliance with Rule 1137[a]: Baghouse with No Visible Emissions Except During Startup and Shutdown (12-5-2003)	

a) Not required if system vents solely to stand-alone control device or into a closed room.

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0
2-1-2019 Rev 1

Equipment or Process: Zinc Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible or Pot		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas with Ingot and/or Clean Scrap Charge Only, or Baghouse (1988/2000)	
Reverberatory, Non-Sweating Operations		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Same as Above (10-20-2000)	
Reverberatory, Sweating Operations		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Natural Gas with Baghouse and: Afterburner (≥ 0.3 sec. Retention Time at ≥ 1400° F); or Secondary Combustion (≥ 0.3 sec. Retention Time at ≥ 1400° F); (1990)	
Rotary, Sweating Operations		60 ppm Compliance with Rule 1147 (2-1-2019)	Natural Gas (1990)		Same as Above (1990)	

* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions

ATTACHMENT G

I.C. Engine – Stationary, Non-Emergency, Electrical with SCR, Natural Gas

ICE-SCR Ammonia slip 20 ppm to 10 ppm Cost Effectiveness Analysis

Control Technology		SCR with additional catalyst layer		
Operation Schedule:	24 hr/day	365 days/yr		
SCR Life	10 years			
Interest rate:	4 %			
Capital Cost				
Equipment (SCR with additonal catalyst layer)			$ 30,000	
Direct & Indirect Installation				
Total Capital			$ 30,000	
Operating Cost			0.0	
Direct & Indirect			$ -	Per SCR manufacturer, negligible additonal O&M costs.
Total Average Annual			$ -	
PVF			8.11	
Present Value of Capital Costs			$ 30,000	
Present Value of Annual Costs (10 years @ 4%)			$ -	
Total 10-Year Capital Cost			$ 30,000	
NH_3 (PM contribution) Emissions reduction (lbs/day)			13.0	
NH_3 (PM contribution) Emissions reduction (tons/year)			2.4	
NH_3 (PM contribution) Emissions reduction (tons/10-year life)			23.7	
Cost per ton of PM reduced			**1267.6**	
MSBACT maximum cost effectiveness PM10 ($/ton)			**$ 20,687**	**INCREMENTAL 4th Qtr 2019**
			COST EFFECTIVE	
			$ 6,947	**AVERAGE 4th Qtr 2019**

Notes:

- NH_3 will form $(NH_4)_2SO_4$ in the presence of SO_3 and H_2SO_3. Therefore, based on chemical reaction 1 ton of NH_3 can be equivalent to 1/2 ton of directly emitted $PM_{2.5}$ as $(NH_4)_2SO_4$.
- For the SCR exhaust stream consider PM_{10} and $PM_{2.5}$ as the same.
- Maximum allowed cost effectiveness was based on PM_{10} Average/Incremental value in Table 5, Part C of the BACT Guidelines
- Cost for additional catalyst layer to achieve 10 ppm NH3 slip was provided by catalyst manufacturer with no change on the mintenance costs.

I.C. Engine – Stationary, Non-Emergency, Electrical with SCR, Natural Gas

BASIS

NH_3 will form $(NH_4)_2SO_4$ in the presence of SO_3 and H_2SO_3. Therefore, based on chemical reaction 1 ton of NH_3 can be equivalent to 1/2 ton of directly emitted $PM_{2.5}$ as $(NH_4)_2SO_4$.

For most combustion sources, consider PM_{10} and $PM_{2.5}$ as the same.

SCR with urea solution as reductant source installed on 1,573 BHP natural gas engine driving an electrical generator.

Data and Parameters			**Notes**
Baseline NH3 Emission Limit	**20**	**ppmv @ 15% O_2**	Past historical permitted limit on SCR
Proposed BACT NH3 Emission Limit	**10**	**ppmv @ 15% O_2**	Current achieved in practice and proposed limit
Reference O_2 Level	15	%	Standard
O_2 Standard Concentration	20.9	%	Standard
Source Test exhaust volume flow rate	2,835	dscfm @ 9.99% O_2	12/18/19 Source Test
Engine Hp	1573	Hp	From Permit
Operating Hours	8,760	Hrs/yr	From Permit
Operating Hours	24	hours/day	From Permit
F-Factor (Fd)	8710	dscf/MMBtu	40 CFR 60 App A, Method 19
HHV Natural Gas	1050	Btu/scf	Standard
Molar Volume	385	scf/lb-mol	Standard
Molecular Weight (MW) NH_3	17.031	lbs/lb-mol	Standard
Molecular Weight (MW) $(NH_4)_2SO_4$	132.14	lbs/lb-mol	Standard
Conversion	2000	lbs/ton	Standard
SCFM	5,242.35	dscfm corrected to 15% O_2	corrected to 15% O_2 from source test

$$2NH_3 + SO_3 + H_2O \rightarrow (NH_4)_2SO_4$$

$$H_2SO_3 + 2NH_3 \rightarrow (NH_4)_2SO_4$$

$$\text{Emissions lbs/hr } (NH_4)_2SO_4 = \frac{\text{ppm } NH_3 \times MW_{((NH_4)_2SO_4)} \times \text{Stack Gas dscfm} \times 60}{385 \text{ scf/lb-mole} \times 10^6 \times 2}$$

Pollutant	SCR Ammonia Limit (ppm)	lbs/hr	lbs/day	tons/year
Particulate Matter as $(NH_4)_2SO_4$	20	1.08	25.91	4.73
Particulate Matter as $(NH_4)_2SO_4$	10	0.54	12.95	2.36
PM reduction			12.95	2.36

Notes:

City of Palm Springs, Source Test R20059, 12/18/19, 1573 BHP, SCR and OxiCat, 2835 dscfm @ 9.99% O_2

ATTACHMENT H

Comments and Responses to Proposed Amendments to BACT Guidelines

Public meetings were held on June 24, 2021, November 3, 2021, and February 23, 2022 with the BACT Scientific Review Committee to present and discuss the proposed amendments to the BACT Guidelines. The following written comments, questions, and staff responses are from letters received after the first meeting as well as during the 30-day comment period starting February 23, 2022.

A. Comment Letter A – Mr. Steve Jepsen, Southern California Alliance of Publicly Owned Treatment Works (SCAP)
B. Comment Letter B – Mr. Karl Lany, Montrose Environmental Solutions / BACT SRC member
C. Comment Letter C – Mr. Timothy A. French, Truck & Engine Manufacturers Association (EMA)
D. Comment Letter D – Dr. Wayne Miller, CE-CERT / BACT SRC member

Comment Letter A (SCAP)

SCAP
SOUTHERN CALIFORNIA ALLIANCE OF PUBLICLY OWNED TREATMENT WORKS

REUSE
BRINGING WATER FULL CIRCLE
WASTE
TREATMENT

March 24, 2022

Sent via email to: Al Baez abaez@aqmd.gov
BACT Program Supervisor
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: LAER/BACT Determination Proposed New Listing 11 I.C. Engine-Compression Ignition ≥1,000 BHP, Stationary Emergency

Dear Mr. Baez:

The Southern California Alliance of Publicly Owned Treatment Works (SCAP) appreciates the opportunity to comment on the proposed LAER/BACT determination for compression ignition stationary emergency generators over 1,000 BHP.

SCAP represents over 80 public water/wastewater agencies in Southern California. SCAP members provide essential water supply and wastewater treatment for approximately 20 million people in Los Angeles, Orange, San Diego, Santa Barbara, Riverside, San Bernardino, and Ventura counties. SCAP's wastewater members provide environmentally sound, cost-effective management of more than two billion gallons of wastewater each day and, in the process, convert wastewater into resources for beneficial uses such as recycled water and renewable energy.

Comment A1

SCAP members rely on compression ignition emergency generators to maintain essential public wastewater conveyance and treatment during power outages. These generators must start and provide power within seconds of a power outage. Our responsibility to the public and water quality related permits have zero allowance for power outages. We must always protect public health and the environment from sewer overflows and comply with water quality permit conditions regardless of the status of grid power.

As discussed during the February 23, 2022 BACT SRC meeting, our members are troubled that EPA certified final Tier 4 generators include an inducement feature to derate and shutdown, if any one of a variety of sensors detects an anomaly with operating parameters. Once a generator is shutdown, it cannot be restarted until a factory service representative physically resets the inducement feature. This process could take hours or days depending on the service representative's availability. This is an untenable scenario for wastewater conveyance and treatment essential for protecting public health and the environment.

Comment A2

We understand that SCAQMD would allow compliant final Tier 4 generators to be used if source testing requirements are included in the stationary source permit. While we appreciate this option,

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SCAP
SOUTHERN CALIFORNIA ALLIANCE OF PUBLICLY OWNED TREATMENT WORKS

REUSE
BRINGING WATER FULL CIRCLE
WASTE
TREATMENT

the required source testing would likely exceed maintenance and testing limitations as contained in SCAQMD Rule 1470. We believe such source testing requirements would be duplicative of testing performed by manufacturers for the same certified generators and would needlessly increase emissions. The proposed LAER/BACT determination should provide for a viable compliance pathway moving forward without being required to install emergency generators with inducement features that will severely undermine our ability to provide a reliable essential public service.

While we understand that LAER/BACT determinations are not required to address permitting nuances, we believe this is a unique situation that must be resolved prior to the adoption of this LAER/BACT determination. We respectfully request that compliant source testing options be identified, such that compliant final Tier 4 generators can be used by essential public services, before the proposed LAER/BACT determination is adopted by SCAQMD.

If there are any questions regarding these comments, please contact me directly at (760) 415-4332 or sjepsen@scap1.org

Sincerely,

Steve Jepsen

Executive Director - SCAP

cc: Jason Aspell (SCAQMD)
Bhaskar Chandan (SCAQMD)
SCAP Air Quality Committee

P.O Box 231565
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Response to Comment Letter A (SCAP)

South Coast
Air Quality Management District
South Coast AQMD 21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

June 14, 2022

Mr. Steve Jepsen
Executive Director
Southern California Alliance of
Publicly Owned Treatment Works (SCAP)
605 Third Street
Encinitas, CA 92024

Re: Proposed New/Updates to Part B, Major Polluting Facilities – Section II of the BACT Guidelines for I.C. Engine-Compression Ignition ≥ 1,000 BHP, Stationary Emergency

Dear Mr. Jepsen:

Thank you for your letter dated March 24, 2022, regarding the Proposed New/Updates to Part B, Major Polluting Facilities for Emergency Diesel IC Engines ≥ 1000 HP. We appreciate your participation at the February 23, 2022 Scientific Review Committee (SRC) meeting.

South Coast AQMD has reviewed your comment letter and providing responses below to address your concerns on the proposal to establish a Lowest Achievable Emission Rate (LAER) determination of Tier 4 Final standards for IC Engine-Compression Ignition≥ 1000 BHP: Stationary Emergency, Non-Agricultural, non-direct drive fire Pump.

Comment #1: Concern about reliability of Tier 4 Final certified generators to maintain essential public wastewater conveyance and treatment during power outages: Inducement feature on certified Tier 4 Final engines can result in generators de-rating/shutdown in response to an anomaly with operating parameters. If the engine shutdown occurs due to inducement, a factory service representative has to visit the site to physically reset the inducement feature which can take hours or days and is a major concern for SCAP members.

Response A1

Response #1: We understand your concerns regarding providing reliable essential public service. It is for this reason that we had spent considerable time at the February 23, 2022 SRC meeting to discuss this issue in extensive details, and had also provided comments from an engine vendor to address concerns regarding the inducement feature on certified engines. The inducement feature imposes limitations on engine operation when it runs out of DEF, has poor quality DEF, or when tampering occurs to the SCR system. The inducement feature generally allows a predetermined

time period (typically 4 hours) for the operator to fix problems with the SCR system before derating, and ultimately shutting down the engine if the problems with SCR system are not fixed. Therefore, the operator will receive advance warning to avoid engine derating or shutdown.

As you have noted in your comment letter, and as was discussed at the SRC meeting, the South Coast AQMD will allow the use of compliant Tier 4 Final engines as acceptable pathways to comply with proposed BACT/LAER Tier 4 Final emission standards. The compliant Tier 4 Final engines do not have the inducement feature that is inherent on the certified Tier 4 Final engines, thus allowing the facility to operate these engines without shutting down due to anomaly with SCR system. Using compliant Tier 4 Final engines would provide assurance to your members that reliable essential public service can be maintained.

Comment #2: Likelihood of exceeding the maximum allowed hours of maintenance and testing: Conducting 5-mode test cycle (also referred to as the ISO D2 test) on a Tier 4 Final compliant engine would likely exceed the permitted maintenance and testing hours and Rule 1470 limitations. It would be duplicative of testing performed by manufacturers and also results in emissions increase.

Response A2

Response #2: Although we agree with your comment regarding the testing requirements, please note that unlike the rigorous ISO D2 testing requirement for the certified Tier 4 final engines, the compliant engines are not required to be tested for compliance with the emissions standards either by the manufacturer or the end user. Thus, testing the compliant Tier 4 Final engine is needed to assure compliance with the emissions limits, and periodic long-term testing is needed to assure proper operation of the engines and control equipment, as well as ensuring continued compliance with the emissions limits. Staff understands that the ISO D2 testing requirement would be burdensome on the facilities and could result in an increase in emissions due to the operation of the engine solely for testing purposes. We are open to working with the facilities to minimizing the impact of the testing requirements for compliant Tier 4 Final engines. Staff is drafting an engine testing guidance policy memorandum to address industry's concern, while at the same time assuring compliance with the emissions standards. We are in the process of meeting with the engine manufacturers, source testing companies, and affected facilities to draft the guidance memorandum.

However, it is important to note that the proposed LAER listing for Tier 4 Final standards for I.C. Engine-Compression Ignition $\geq$ 1000 BHP does not contain testing requirements. The topic of source test requirements has been discussed in past SRC meetings to not be an integral part of the BACT/LAER determinations, however the testing is an important item to discuss as it provides the basis of compliance with the BACT/LAER standard. Additionally, it is important to utilize similar testing procedures as the LAER standard to ensure consistency of the compliance demonstration. The testing requirements for the compliant Tier 4 Final engines would be determined during the permitting based on the source testing guidance memorandum described above. Therefore, we plan on proceeding with this and other LAER/BACT listing proposed at the February 23, 2022 SRC meeting. As the next step in this process, we will present the proposed BACT/LAER listings to the Stationary Source Committee on June 17, 2022. During this meeting, staff plans to present their progress with developing the source testing guidance memorandum.

Staff appreciates SCAP's time and consideration in submitting comments to our proposed LAER determination for Tier 4 Final emergency ICEs ≥1000 BHP. Should you have further questions or comments please contact Bahareh Farahani at 909-396-2353 or me at 909-396-3902 or bchandan@aqmd.gov.

Sincerely,

Bhaskar Chandan, P.E., QEP
Senior Air Quality Engineering Manager
Refinery Permitting and BACT Team

Cc: Jason Aspell, Deputy Executive Officer, Engineering & Permitting (jaspell@aqmd.gov)
Jillian Wong, Assistant Deputy Executive Officer, Engineering & Permitting (jwong1@aqmd.gov)
Bill Welch, Source Testing Manager, Science & Technology Advancement (bwelch@aqmd.gov)

Comment Letter B (Montrose Environmental Solutions)

MONTROSE ENVIRONMENTAL

March 24, 2022

Mr. Bhaskar Chandan
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 92865

Via e-mail: bchandan@aqmd.gov

Subject: Proposed LAER Determination for Emergency Engines Rated Above 1,000 bhp

Dear Mr. Chandan:

Montrose Environmental Solutions (Montrose) appreciates the opportunity to present comments regarding SCAQMD's proposed Lowest Achievable Emission Rate (LAER) determination for large emergency engines. Montrose provides permitting and compliance management services to clients in a variety of industries, including clients with operations regulated by the SCAQMD. I am submitting these comments as a member of the SCAQMD BACT Scientific Review Committee.

My comments are directed toward the relative effectiveness of selective catalytic reduction technology (SCR) in emergency engine applications as well as implications for compliance demonstrations, should SCAQMD enforce its proposed LAER determination through emission testing programs.

Comment B1

Effectiveness of SCR Technology in Emergency Engine Applications

Like several engine manufacturers, Montrose continues to question the effectiveness of SCR in emergency engine applications. LAER guidelines should reflect the effectiveness of technology in normal engine operations. While SCR is undoubtedly effective high-utilization applications, it is generally dependent upon two conditions that are not often met in emergency engine applications. First, catalyst temperature must meet minimum thresholds that are not often achieved within the first 20-30 minutes of engine operation or during extended low-load operations. Second, relative environmental benefits are achieved only when annual engine utilization is significant. Neither of these conditions are typically met in emergency engine applications that we see in Southern California.

Montrose recently evaluated records for approximately 200 emergency engines in commercial operations for the year 2020. The data shows that even in the PSPS environment that exists today, on average emergency engines continue to be tested for less than 15 hours per year. In most commercial operations, National Fire Protection Association (NFPA) guidelines can be met by conducting tests for less than 30 minutes and at low loads. Many operators test their engines at levels at or below NFPA guidelines and under conditions that do not allow SCR to be effective. As such, SCR effectiveness is only achieved when the engine is operated to serve building load during an extended emergency or during times when load is artificially induced. Based upon the analysis of commercial applications, however, approximately 24% of engines have no emergency operations at all in a given year. This finding appears consistent with statements made by other stakeholders. Furthermore, approximately 38% of engines operate less than 10 hours in a given year for emergencies. Only 10% of engines

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operate for a combined total of 50 or more hours per year (testing plus emergency operations), even during years when PSPS events occurred. Montrose conducted a similar analysis of engines operated in the SCAQMD in 2016 and the results of that earlier analysis are consistent with the analysis that was conducted for 2020 operations.

Admittedly, an overview of commercial facilities may not fully represent those facilities that are most likely to operate larger engines such as hospitals, data centers and government facilities that may also be inclined to carry out more robust testing operations. In the SCAQMD, however, those larger facilities appear less likely to be subject to grid power interruptions than many of small operations that may be located in more remote areas.

During the most recent SCR meeting, SCAQMD appeared to agree that the primary benefit of SCR would indeed be achieved during power failures, rather than testing and maintenance operations. One SRC member suggested that because of the many ways in which SCAQMD BACT/LAER guidelines are used, SCAQMD should clearly state its expectation that the benefits of SCR would generally be limited to loaded emergency operations. Montrose agrees with the commentor and recommends that SCAQMD include such qualifying language in its proposed LAER guideline.

Comment B2

Testing for LAER Compliance

SCAQMD is considering circumstances that would result in the need for facility operators to demonstrate LAER compliance upon commissioning and periodically thereafter. SCAQMD is also considering the ways in which such tests would be conducted. Specifically, SCAQMD is weighing the benefits of testing under the five-load D2 duty cycle (i.e., ISO 8178) that engine manufacturers use to certify engines to Tier 4 emission standards, relative to the simplicity of testing at a single load.

SCAQMD's proposed LAER determination would apply Tier 4 engine standards to all criteria pollutants, rather than only those pollutants that trigger major source status. As such a project that triggers LAER for NOx, would also trigger LAER for particulate matter (PM). To meet LAER for PM, the engine would typically be equipped with a PM filter. SCAQMD has required the use of PM filters for several years in certain applications including major source facilities, but has also recognized the passive nature and reliable performance of diesel particulate filter technology and has not required emission tests to demonstrate filter effectiveness.

Testing for low-concentration PM emissions presents challenges and costs that do not exist for NOx or other gaseous pollutants. Based upon traditional in-field test methods (EPA5) conducting triplicate tests at a single operating load can take a full day. Conducting a five-load test can therefore take up to five days to complete. One must remember that many of the engines subject to the proposed LAER guideline consume over 170 gallons of fuel per hour at full load. Because of the high level of fuel consumption, a five-load test using traditional methods is neither cost effective, nor environmentally sound. The environmental impact of a single test program can easily exceed the impact of normal annual operations.

A five-load test to demonstrate LAER compliance may also be unwarranted from a technical perspective. A five-load test may demonstrate equivalency to, or compliance with, Tier 4 emission standards, but that absolute demonstration is not the point. If SCAQMD recognizes that SRC effectiveness is not expected to be met at low operating loads (testing and maintenance operations), then the value of a five-load emission test is lost. Several engine manufacturers have also advised California regulators that for the purpose of demonstrating LAER compliance for emergency engines, a single-load test is suitable.

To ensure that test programs are both cost effective and environmentally sound, Montrose recommends that SCAQMD consider the following alternatives as it develops its LAER guideline:

- Continue to recognize the demonstrated reliability of PM filter technology and continue to waive in-field PM testing requirements.
- For any pollutants that would otherwise be tested, allow a single-load test. This approach would be similar to BAAQMD's test program for emergency engines.
- Should SCAQMD determine that the need for a five-load PM test exists, allow for the use of a dilution system similar to what is used in the engine certification program. Doing so will reduce the test duration, save fuel and minimize the environmental impacts of testing.

In addition to minimizing the duration of test programs, SCAQMD can take other steps to reduce operator costs and environmental impacts. Montrose suggests that SCAQMD consider the following strategies that are also being considered or implemented by other agencies. These strategies rely upon compliance assurance programs that are already in place as well as the limited engine/SCR configurations in the market.

- Waive commissioning and periodic testing of EPA-certified Tier 4 engines and CARB-verified aftermarket solutions.
- Allow surrogate demonstrations for identical engine/SCR configurations.
- If periodic testing is required, allow five-year test intervals and allow for rotations of identical engine/SCR configurations.

I welcome the opportunity to discuss the concerns presented in this letter with SCAQMD and am happy to once again bring Montrose emission testing professionals into the conversation. You can contact me at (714) 376-6531 or by email klany@montrose-env.com.

Sincerely,
Montrose Environmental Solutions

Karl Lany
Principal, Western District Manager
Environmental Permitting and Compliance Services

cc: Dipankar Sarkar
Bahareh Farahani

Response to Comment Letter B

South Coast
Air Quality Management District
South Coast AQMD 21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

June 7, 2022

Mr. Karl Lany
Montrose Environmental Solutions
1631 East Saint Andrew Place
Santa Ana, California 92705

Re: Proposed New/Updates to Part B, Major Polluting Facilities – Section II of the BACT Guidelines for I.C. Engine-Compression Ignition ≥ 1000 BHP, Stationary Emergency

Dear Mr. Lany:

Thank you for your letter dated March 24, 2022, regarding the Proposed New/Updates to Part B, Major Polluting Facilities for Emergency Diesel I.C. Engines ≥ 1000 HP. We appreciate your participation at the February 23, 2022 Scientific Review Committee (SRC) meeting.

Staff has reviewed your comment letter and providing responses below to address your concerns on the proposal to establish a Lowest Achievable Emission Rate (LAER) determination of Tier 4 Final standards for I.C. Engine-Compression Ignition≥ 1000 BHP: Stationary Emergency, Non-Agricultural, non-direct drive fire Pump.

Comment #1: Concern about effectiveness of SCR technology in emergency engine applications: Catalyst operating temperature are not often achieved within the first 20-30 minutes of engine operation or during extended low-load operations. Clarify in the BACT/LAER guidelines that the benefit of SCR would be limited to loaded emergency operations.

Response B1

Response #1: One of the Tier 4 engine suppliers has informed us that their engines can be equipped with an integrated load bank technology. The integrated load bank, which is activated at generator startup, can bring the engine to SCR operating temperature in under 10 mins, thereby significantly reducing the typical time of 20-30 minutes for engaging the SCR. The integrated load bank can also be activated manually in order to use for exercising the generator per National Fire Protection Association (NFPA) guidelines. The integrated load bank is not included as a requirement of the proposed LAER listing but can be used as a strategy for fuel savings and potential further emission reductions. Additionally, during start up the NOx

emissions are comparable to the current Tier 2 engine LAER listing and any operation past the startup period of the Tier 4 engine SCR will result in substantially lower NOx emissions.

It is important to note that although the SCR may take up to 10 minutes to reach the operating temperature, the DPF would still be fully operational during the entire startup period resulting in reducing the PM emissions by as much as 87%. We understand that during low-load operation the SCR would not be as effective as during medium and high-load operations. But based on a survey conducted by BAAQMD, more than 80% of these engines operate at loads > 10% when the SCR is effective.

There are over 260 permitted diesel emergency I.C. engines rated 1000 BHP or greater located at about 60 facilities in South Coast. Our survey of 57 engines located at 5 facilities including essential public services and facilities with high number of engines, shows that emergency use of these engines increased in 2021 as compared to 2020. Emergencies, like PSPS (Public Safety Power Shutoffs) events, can last anywhere from hours to a few days. Therefore, emergency use of these engines may be expected to increase in the coming years due to PSPS events. Additionally, South Coast AQMD has recently amended Rule 1470 to allow for testing and maintenance considerations for conditions leading to PSPS events indicating their increasing impact on the region and the potential for increased NOx emissions from PSPS events.

If all diesel emergency engines rated 1000 BHP or greater permitted in the South Coast AQMD were Tier 4 Final engines, it would result in a reduction of 38.8 tons/year of NOx and 1.6 tons/year of PM emissions. A Tier 4 Final engine emits 87% less NOx and 89% less PM as compared to a Tier 2 engine. Thus, the overall emissions reductions that can be attained by this proposed LAER are not trivial. For clarity, the proposed LAER listing will only apply to new engines in the same class and category that will be installed at major sources, or any similar engines that will be modified with an increase in emissions.

Comment #2: Recognize the demonstrated reliability of PM filter technology and waive in-field PM testing requirements. Allow a single-load test for any pollutants that would otherwise be tested. Allow for the use of a dilution system to reduce the test duration, save fuel and minimize the environmental impacts.

Response B2

Response #2: Staff understands that the ISO D2 testing requirement would be burdensome on the facilities and could result in an increase in emissions due to the operation of the engine solely for testing purposes. In addition, fuel usage from testing requirements also needs to be considered. We are open to working with the facilities to minimizing the impact of the testing requirements for compliant Tier 4 Final engines. Staff is drafting an engine testing guidance policy memorandum to address industry's concern, while at the same time assuring compliance with the emissions standards. We are in the process of meeting with the engine manufacturers, source testing companies, and affected facilities to draft the guidance memorandum.

However, it is important to note that the proposed LAER listing for Tier 4 Final standards for I.C. Engine-Compression Ignition ≥ 1000 BHP does not contain testing requirements. The topic of source test requirements has been discussed in past SRC meetings to not be an integral part of the BACT/LAER determinations, however the testing is an important item to discuss as it provides the basis of compliance with the BACT/LAER standard. Additionally, it is important to utilize similar testing procedures as the LAER standard to ensure consistency of the compliance demonstration. The testing requirements for the compliant Tier 4 Final engines would be determined during the permitting based on the source testing guidance memorandum described above. Therefore, we plan on proceeding with this and other LAER/BACT listing proposed at the February 23, 2022 SRC meeting. As the next step in this process, we will present the proposed BACT/LAER listings to the Stationary Source Committee on June 17, 2022. During this meeting, staff plans to present their progress with developing the source testing guidance memorandum.

Staff appreciates your significant time and consideration in submitting comments to our proposed LAER determination for Tier 4 Final emergency I.C. Engines ≥1000 BHP. The SRC's efforts are vital to ensure BACT/LAER listings receive a robust analysis. Should you have further questions or comments please contact Bahareh Farahani at 909-396-2353 or me at 909-396-3902 or bchandan@aqmd.gov.

Sincerely,

Bhaskar Chandan, P.E., QEP
Senior Air Quality Engineering Manager
Refinery Permitting and BACT Team

Cc: Jason Aspell, Deputy Executive Officer, Engineering & Permitting (jaspell@aqmd.gov)
Jillian Wong, Assistant Deputy Executive Officer, Engineering & Permitting (jwong1@aqmd.gov)
Bill Welch, Source Testing Manager, Science & Technology Advancement (bwelch@aqmd.gov)

Comment Letter C (EMA)

Truck & Engine Manufacturers Association®
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June 18, 2021

VIA E-MAIL (abaez@aqmd.gov)

Al Baez
BACT Program Supervisor
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Re: Proposed New/Updates to Part B, Major Polluting Facilities for Emergency Diesel IC Engines > 1,000 HP

Dear Mr. Baez:

I am writing on behalf of the Truck and Engine Manufacturers Association ("EMA") regarding the South Coast Air Quality Management District's (SCAQMD) Scientific Review Committee (SRC) meeting agenda item, on June 24, 2021, for "I.C. Engines - Stationary, Emergency, > 1,000 BHP."

By way of background, EMA is the trade association that represents the world's leading manufacturers of internal combustion engines used in all applications other than passenger cars and aircraft. Included among the wide array of engine products manufactured by EMA members are all power ranges of stationary engines, including Emergency Diesel Engines. EMA regularly represents its members in developing and commenting on federal, state and local regulations relating to engine-emissions standards, and, as a result, EMA has a direct and significant interest in this matter.

An Emergency Diesel Engine frequently is just a small component of a larger construction project and, consequently, the end-users of Emergency Diesel Engines may not be aware of the full ramifications of a proposed revised BACT determination until after the fact when a construction project is underway. Engine manufacturers are better-suited and positioned to appreciate how revised BACT requirements can impact the broad range of applications for Emergency Diesel Engines, the primary purpose of which is to support and maintain life and safety when emergencies arise. EMA members manufacture and sell both Tier 4 and emergency-use only engines. Accordingly, EMA's goal in submitting these comments is not at all to repudiate Tier 4 standards, but rather solely to try to ensure that end-users retain the ability to specify and select the appropriate emergency engines equipped with the appropriate emissions controls.

While we have yet to learn what the SCAQMD's intent is for this agenda item, we are concerned that its basis may be the Bay Area AQMD's (BAAQMD) recent adoption of a Tier 4 Final emissions requirement for Emergency Diesel Engines 1,000 HP and greater. The stated

Comment C1

premise for the BAAQMD's revised BACT is that Tier 4 technologies have been deployed for Emergency Diesel Engines at various sites in the U.S., and thus, Tier 4 standards have been "achieved in practice." But that is not actually the case. The fact that SCR and DPF systems have been installed on certain specific Emergency Diesel Engines in the field does not mean that those engines actually and consistently **achieve** Tier 4 emission limits while in operation. To the contrary, the limited operating times, loads and exhaust temperatures that are inherent to how Emergency Diesel Engines typically operate – e.g., during very brief start-up and maintenance tests – necessarily means that the exhaust streams from those engines likely will not reach the high NO_x-conversion rates and light-off temperatures required to actually achieve emissions performance reflective of actual Tier 4 emission limits. Consequently, it has **not** been established that Tier 4 standards – as opposed to the installation of Tier 4 aftertreatment systems – have been "achieved in practice."

Comment C2

SCAQMD BACT Guidelines establish the relevant criteria for determining BACT, and include three alternatives: (a) BACT reflects the most effective emission reduction devices and "which has been achieved in practice for such category or class of source;" (b) BACT "is contained in any state implementation plan (SIP)…," but "shall not apply if…such limitation or control technique is not presently achievable;" or (c) BACT constitutes an alternative emission-control device or technique that is determined "to be technologically feasible" and "cost-effective." In this case, the first of the alternative definitions of BACT was not met by the BAAQMD because, as noted, the BAAQMD has not established that Emergency Diesel Engines consistently **meet** the Tier 4 standards during their expected patterns of operation. Accordingly, the SCAQMD should not be relying on the first BACT alternative in its Guidelines. The third alternative definition of BACT is equally problematic, since there is no basis for assuming that a BACT requirement for Tier 4 aftertreatment-equipped Emergency Diesel Engines — engines which operate, on average, less than 40 hours per year — could ever meet the BACT cost-effectiveness thresholds. As for the second alternative, mandates for Tier 4 technologies for emergency backup engines are not contained in the current SIPs.

Moreover, the BACT determinations made by the BAAQMD are not appropriate benchmarks, since, again, the operating loads and temperatures at the referenced installations generally are not sufficient to achieve the targeted NO_x conversion rates and catalyst regenerations required to reduce emissions to Tier 4 levels during the typical duty cycle of Diesel Emergency Engines. The net result is that even if the emergency engines at those referenced locations were equipped with SCR and DPF systems, those engines likely did not actually achieve Tier 4 emission levels "in practice." Indeed, we are not aware of any consistent site testing of emergency engines that establishes that the Tier 4 emission limits are met during all maintenance testing and other short-term operation of emergency engines which, as noted, represents the majority use of these engines.

In addition, the BAAQMD's reliance on the D2 (5-Step) mode testing with a 15-minute warm-up period, which was used as one installation's source test to establish "achieved in practice," is not representative of a Diesel Emergency Engine's typical operation because it ignores the engine's NO_x levels during the typical lightly-loaded 15 to 30 minute exercise/maintenance periods for emergency engines. Thus, the D2 testing did not (and cannot) demonstrate "achieved in practice" for Diesel Emergency Engines.

This is a significant issue, since EPA Region IX has stated that "the successful operation of a new control technology [i.e., in a manner that successfully meets the targeted BACT emission standards] **for six months** constitutes achieved in practice." (See CAPCOA BACT Clearinghouse Manual, Section B.) (Emphasis added.) No such "achieved in practice" determination can be made for Emergency Diesel Engines.

Significant as well, the principal cited example from the BAQMD is not a typical Emergency Diesel Engine installation, but rather represents a unique siting problem that triggered "fenceline" air toxics concerns – not criteria pollutant issues – and that was resolved, presumably in agreement with the impacted community, through the installation of Tier 4 aftertreatment systems. Accordingly, that installation does not establish that it is appropriate to require that **all** Emergency Diesel Engines utilize Tier 4 aftertreatment technologies, without regard to cost-effectiveness or whether the applicable Tier 4 emission limits are actually achieved in practice by emergency engines that operate for such limited amounts of time.

Comment C3

In recognition of the foregoing issues, EPA's New Source Performance Standards (NSPS) expressly provide that the Agency's Tier 2 standards apply to emergency IC engines above 750 hp, and that the Tier 3 standards apply to emergency IC engines rated at 75-750 hp. Similarly, CARB's stationary engine ATCM, as well as various other District stationary engine rules, specifically exempt Emergency Diesel Engines from having to meet EPA's Tier 4 standards, provided that the emergency engines are used exclusively to preserve or protect property, human life, or public health during an emergency power outage, and further provided that the emergency engines are limited to operate no more than 50 hours per year in non-emergency situations, such as during required periodic engine testing. Thus, the SCAQMD's BACT determination should continue to conform with the relevant NSPS, and State and local regulations pertaining to Emergency Diesel Engines.

We understand that the SRC agenda item is focused on emissions at major sources, and we are aware that the Lowest Achievable Emissions Rate (LAER) for Emergency Diesel Engines at major sources requires a diesel particulate filter (DPF) to control PM. That requirement can be met by installing a CARB-verified after-market DPF. However, no LAER NO_x level lower than EPA's NSPS, or CARB's stationary engine ATCM has been established for Emergency Diesel Engines because no technology has been, or can be, demonstrated as achieved in practice for the normal operation of emergency engines.

There are multiple other compelling reasons for not requiring that major source Emergency Diesel Engines meet EPA's final Tier 4 emission standard for NO_x. As noted, those standards require the use of expensive diesel particulate filters (DPF) to control PM, and selective catalytic reduction (SCR) systems to reduce NO_x emissions. That is a significant concern in the context of certified emergency engines, however, since there is the potential that the SCR systems can cause those engines to derate or even shutdown in the event of a system malfunction or a lack of DEF fluid, which could raise a number of concerns, particularly during an actual emergency. Additionally, the inherently limited use of emergency engines, which usually only operate for just minutes at a time during routine readiness testing, means (again) that those engines typically will not achieve the exhaust and catalyst temperatures required for the effective operation of SCR systems. In that regard, a significant load on an SCR-equipped engine is necessary to get the NO_x catalyst up to a high enough temperature to begin controlling NO_x in an effective and efficient

manner. But emergency engines generally are only run during periodic maintenance tests, and even then only for 15 – 30 minutes at very light loads, which means that the SCR temperatures will be too low for effective NO_x control. A white paper prepared by Caterpillar explains these technical points in additional detail, and is attached hereto.

Comment C4

Since Emergency Diesel Engines do not and cannot actually and consistently achieve Tier 4 emission limits in practice, the third alternative definition of BACT comes into play, which raises the question of whether Tier 4 aftertreatment systems are technologically feasible and cost-effective for Emergency Diesel Engines. They are not. There is a very significant cost-premium for Tier 4 engine configurations, which can cost anywhere from 35% - 60% more compared to the non-Tier-4 emergency engines required under EPA's NSPS and CARB's stationary engine ATCM. That purchase-price cost-premium does not include the extra costs for increased engine-room size, added maintenance, DEF tank systems and fluid, plumbing, electrical alarms, and other aftertreatment-related expenses, all of which can add 25% - 40% more to the cost of the engine system. The total costs of the engine and installation premiums need to be included in any BACT cost-effectiveness analysis. Consequently, given emergency engines' inherently limited potential to emit (i.e., typically only during maintenance and start-up readiness tests), the significant cost differential for a Tier-4-compliant system precludes a determination that the Tier 4 standards should be BACT for all Emergency Diesel Engines.

For all the foregoing reasons, EMA respectfully requests that the District continue to clarify that Emergency Diesel Engines rated at or above 1,000 hp should meet EPA's Tier 2 standards, not EPA's Tier 4 standards. Only verified after-market DPFs should be required, as is currently the case, to satisfy LAER for PM at major sources.

Very truly yours,

Timothy A. French

cc: Matt Miyasato, Deputy Executive Officer, Science & Technology Advancement (mmiyasato@aqmd.gov)
Aaron Katzenstein, Asst. Deputy Executive Officer, Science & Technology Advancement (akatzenstein@aqmd.gov)
Joseph Impullitti, Technology Demonstration Manager (jimpullitti@aqmd.gov)
EMA Stationary Engine Committee

Attachment B

Caterpillar Justification Submitted for Consideration of Tier 4 Engine Use as Emergency Standby Applications

BACT Template Version 071315

Caterpillar Inc.

Emissions, Regulations & Conformance
PO Box 600, MOS 11
Mossville, IL 61552

Subject: Stationary Emergency Use Only Engine BACT Standards Should Align with US EPA Standards for Compression Ignition and Spark Ignition Engines

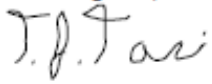
To Whom It May Concern:

Please find attached a white paper outlining recommendations for effective regulation of emissions from stationary engines in emergency power applications. This paper addresses the necessary exemption of Tier 4 Final product in standby emergency applications from Federal, California (CA) and other applicable local regulations. It recommends application of Tier 2 and Tier 3 standards in alignment with US EPA and CARB requirements. The paper is intended to explain why replication of prime power regulations is neither effective nor appropriate for emergency power applications and provide specific guidance for regulating those applications to achieve better air quality outcomes.

There is an immediate need for implementation of these recommendations as local air quality boards seek to achieve real improvements in air quality within their jurisdictions and may not fully understand the real-world implications of their policy decisions.

I am available for questions.

Kind Regards,



T.J. Tarabulski
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Recommendations for Effective Regulation of Emissions for Stationary Engines in Emergency Power Applications

T.J. Tarabulski, Caterpillar Inc.
July 2020

INTRODUCTION

This paper is intended to inform the actions of regulatory bodies so that regulations are aligned with the intended air quality improvement objectives. This paper provides specific recommendations on how to regulate engines used in emergency power applications to achieve better air quality outcomes than what is realized by simple replication of prime power regulations.

Stationary engines used for emergency power should be regulated differently than stationary engines used for prime power. Emergency engines operate very few hours per year and have distinct operating profiles that result in a much different environmental impact than prime power engines.

RECOMMENDATION AND BASIS

1. Best Available Control Technology (BACT) Standards for emergency diesel engines should remain at Tier 2 (emergency) above 560 bkW and at Tier 3 (emergency) at or below 560 bkW as Tier 4 (non-emergency) emissions levels will not be achieved in practice in significant portions of emergency engine operations; this request for ***emergency engine*** applications should not be misinterpreted to imply that Tier 4 engines are not effective in ***non-emergency engine*** applications that operate high hours per year where startup and shutdown are a small fraction of operating time.
2. Emergency gas engine levels should be set at 1.5 g/bhp-hr NOx and 2.0 g/bhp-hr CO for all horsepower ranges; VOC should be set at 1.5 g/bhp-hr for less than 130 hp, and 1.0 g/bhp-hr for greater than or equal to 130 hp. Such levels are achievable with a certified gas engine that is exempt from source test requirements under EPA's NSPS regulations.
3. It is important to note the above approaches would also minimize greenhouse gas (GHG) emissions from emergency applications.
4. Air permitting authorities, as an alternative to cost ineffective solutions, should limit emergency hours of operation (200 hours typical) with force majeure permit provisions for emergency engines in extraordinary grid-power outages to more accurately represent emergency engine impacts on an airshed.

BACKGROUND

U.S. EPA determined[1] that the use of aftertreatment devices such as Selective Catalytic Reduction (SCR) and Diesel Particulate Filters (DPF) were not justified based on cost effectiveness ($/ton reduced) for emergency diesel engines in both the NSPS regulations for new engines (40 CFR Part 60 Subpart IIII) and in the regulation of hazardous air pollutants from new and existing engines (NESHAP, 40 CFR 63 Subpart ZZZZ). These regulations require the engines to meet 2007 emissions standards (Tier 3 for 75 HP to 750 HP, and Tier 2 for engines > 750 HP).

In 2011, California Air Resources Board (CARB) Airborne Toxic Control Measure (ATCM) agreed with EPA's reasoning and aligned with EPA regulations to also allow this stationary emergency engine exemption, excepting CARB adopted a 0.15 g/bhp-hr PM for engines < 175 hp.

More stringent particulate matter (PM) emissions levels are required in California, such as the area under jurisdiction of South Coast Air Quality Management District (SCAQMD), to meet area-specific requirements ("sensitive receptor") or for major sources including Federal Title V facilities. None of these regional requirements mandates the use of Tier 4 certified engines.

SCAQMD limits emergency engines to 200 hours total /year which minimizes the modeled and realistic potential emissions in the airshed as an alternative to adding costly controls to engines that run on average < 50 hrs./year. Limiting testing and maintenance to non-ozone forming hours of the day will also mitigate emissions impact notwithstanding facility constraints that may apply.

Appendix A shows the steady state NOx concentration (ppm) for testing and maintenance conditions and full engine power output operation of a diesel engine. The EPA Tier 4 standard is reported in grams/bkW-hr based on a weighted average of 5 operating points and some of the

[1] US EPA June 2006 - Regulatory Impact Analysis of the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (PDF) page 61

operating conditions may be above the absolute value of the Tier 4 standard. The test cycle does not include the no load (note: zero bkW drives g/bkW-hr to infinity) high idle operating condition typical of testing and maintenance. Therefore, emissions are not at Tier 4 g/kW-hr levels for the no load testing and maintenance condition, but operation is the lowest mass flow rate possible for engine operation and the mass flow is small when compared to full load exhaust mass flow rates. At zero engine load operation, the required engine temperature for the SCR system to operate will not be achieved. Engines with lower ratings than the example shown would typically have lower engine operating temperatures, especially at less than full load, and thus the time needed to reach the operating temperature of the SCR will be longer. Emergency engines typically run between 0% and 60% load when tested and less than 60% load during emergencies. In other words, even a Tier 4 engine will not achieve Tier 4 in practice in an emergency application.

Several considerations exist when investigating the use of Tier 4 certified technology in stationary emergency diesel engine applications:

1. Certified Tier 4 engines must have safeguards (inducements) to prevent the operation of the engine with certain emissions related faults. For example, certified Tier 4 engines will derate and eventually shut off without diesel exhaust fluid (DEF). The engine can also shut down with high exhaust backpressure. These unexpected shutdowns subordinate the mission of an emergency engine to provide power during an emergency. The EPA does allow the SCR induced engine shutdown to be overridden during an emergency, but only up to 120 hours of operation after which the engine will shut down without a factory override reset. This 120-hour shutdown could occur during an extended emergency and thus could risk human life, public health and safety or critical services. The DPF cannot be bypassed by the operator so DPF backpressure risk cannot be eliminated.
2. SCR systems require high operating temperatures. Achieving optimum operating temperature profiles typically requires at least 20 to 30 minutes at typical emergency engine loads. Emergency standby engines typically have short operation sessions resulting in exhaust temperatures that are too cool for NOx reduction to occur. This limitation of SCR makes them ineffective during typical testing and maintenance operations. The result is Tier 4 emissions levels are not achieved in practice for these short duration events.
3. NOx reductions using SCR are also dependent upon demand load. A lightly loaded engine that is typically operated for short periods of time would not achieve the full NOx reduction potential of the SCR system (see attached). Most operating hours for emergency standby engines occur when performing maintenance and testing checks at low engine loads. Artificially increasing these testing and maintenance loads to elevate temperatures increases GHG emissions at a minimum.
4. SCR requires the use of DEF, a urea-based solution, for the catalytic reaction. This required fluid requires separate storage from the diesel tank. DEF has a limited shelf life and will also degrade over long periods of time. With low hour usage on emergency engines, unused fluids that degrade over time could require additional system maintenance. Additionally, these urea systems could increase the maintenance test frequency.
5. DPFs on emergency engines will also pose their own issues. DPFs typically require engines to operate at higher loads for longer periods or add heat to properly regenerate (burn carbon). This increases fuel consumption resulting in larger required tanks to satisfy minimum run time. This will also increase GHG emissions (CO_2). Some customers may request a bypass to assure the systems never interfere with normal operation. If misused, such bypasses may further reduce control effectiveness and may be considered a defeat device and or tampering if used as part of an EPA certified system.
6. Additional operating and maintenance time under loaded conditions will be required in order to assure proper functioning of the DPFs or to activate SCR dosing. With the already low limits on emergency engine operation (generally less than 200 hours per year total and often less than 50 hours per year including maintenance and repair) added time for maintenance will further limit the possible run time for actual emergencies.
7. Tier 4 engines with aftertreatment systems require more building space and floor loading considerations for engine, urea tank and control systems. Additional structural supports, plumbing, electrical and exhaust ducts may also be required. Load banks or supplemental exhaust heat may also be needed to ensure proper engine loading to prevent DPF plugging. This will increase fuel consumption and GHG emissions (CO_2).

8. Costs for Tier 4 diesel engine generators, installation of necessary additional design requirements, and increased maintenance requirements will run as much as 60% to over 100% more than the standard emergency Tier 2 above 560 bkW and Tier 3 at or below 560 bkW. These costs, for engines that typically operate far below stringent State or Federal hour limits, will far exceed cost-effectiveness ($/ton) basis for engine emission regulation to Tier 4 levels.

ADDITIONAL CONSIDERATIONS FOR SPARK IGNITION ENGINES

This analysis is also applicable to Spark-ignited engines, consistent with EPA NSPS standards. EPA NSPS is clear on source test requirements for a noncertified engine on initial installation and every 3 years thereafter. Certified engines do not require source testing per NSPS. There is no other state or local air district applicable regulation—it is a federally mandated minimum requirement. Manufacturers are only certifying to the emergency and prime gas engine NSPS standards of 2.0 g/bhp-hr NOx and 1.0 g/bhp-hr NOx respectively. Thus, by setting emergency gas engine BACT at 0.5 g/bhp-hr the air district has automatically imposed an expensive source test ($5K - $10K per engine) on initial installation and every 3 years thereafter on the end user.

EPA regulations place the "performance test" requirement on the end user, not on the manufacturer due to this being a site specific NSPS requirement. In most cases, the very low NOx engine will also require the installation of an oxidation catalyst to reduce the CO and VOC to the BACT levels set by authorities. Such regulations should allow manufacturers to voluntarily **certify** emergency gas engines so that end users are not forced into an expensive, on-going source testing requirement and additional oxidation catalysts for engines that are intended to operate infrequently and for limited hours. Removal of certified OEM engine emissions components/aftertreatment on certified engines to meet a different BACT standard than the US EPA NSPS requirements would be counterproductive for certified products and reintroduce the source test requirement.

CONCLUSION

For all of the foregoing reasons, BACT for emergency diesel engines should be aligned with EPA and CARB regulations which require Tier 2 above 560 bkW and Tier 3 below 560 bkW, as Tier 4 emissions levels will not be achieved in practice, are not cost effective and may compromise safety for stationary emergency diesel applications. Therefore, Tier 4 engine systems would be misapplied for emergency installations, notwithstanding Tier 4 systems are installed in facilities despite the recognition that Tier 4 levels are not achieved in practice in significant portions of **emergency** engine operations.

Emergency gas engine BACT should be maintained in alignment or revised to allow certified gas engines requirements to align with EPA NSPS' exemption to eliminate costly initial and on-going source testing. Emergency gas engine BACT must allow for certified engines to be used without modification.

In short, to achieve optimum air quality outcomes beyond what is realized by simple application of prime power regulations to emergency engines, stationary engines used for emergency power should be regulated differently than stationary engines used for prime power and aligned with existing EPA and CARB emergency engine regulations.

South Coast
Air Quality Management District
South Coast AQMD 21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

November 1, 2021

Mr. Timothy A. French
Truck & Engine Manufacturers Association
333 West Wacker Drive, Suite 810
Chicago, IL 60606

Re: Proposed New/Updates to Part B, Major Polluting Facilities of the BACT Guidelines for Emergency Diesel IC Engines ≥ 1000 BHP

Dear Mr. French:

Thank you for your letter dated June 18, 2021 regarding the Proposed New/Updates to Part B, Major Polluting Facilities for Emergency Diesel IC Engines > 1000 HP. South Coast AQMD staff have reviewed your comment letter and are providing responses to address your concerns on the proposal to establish a Lowest Achievable Emission Rate (LAER) Determination for IC Engine-Compression Ignition≥ 1000 BHP: Stationary Emergency, Non-Agricultural, non-direct drive fire Pump.

Response C1

South Coast AQMD's basis for proposed Tier 4 Final LAER for Emergency ICEs ≥ 1000 BHP

Staff acknowledges Bay Area Air Quality Management District (BAAQMD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) recent adoption of Tier 4 Final BACT for Emergency ICEs ≥1000 BHP. Staff is proposing to adopt a similar Tier 4 Final requirement for LAER that will apply to major sources in the South Coast AQMD which per US EPA guidelines do not allow for routine consideration of the cost of control. In accordance with the criteria in the BACT Guidelines, Part A: Policy and Procedures for Major Polluting Facilities, Chapter1 – How is LAER Determined for Major Polluting Facilities, achieved in practice (AIP) LAER will be the basis for the proposal to establish Tier 4 Final LAER for Internal Combustion Engine-Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump. The 104 permitted, conditioned, operational, tested and commercially available emergency engines at the Microsoft MWH Data Center in Quincy, Washington are being evaluated for LAER AIP. In addition to these 104 emergency engines staff has been identifying other ≥1000 BHP emergency engines equipped with Tier 4 Final certified or equivalent technology that have been permitted, installed, operational and tested in the South Coast AQMD and Bay Area AQMD.

Response C2

South Coast AQMD AIP LAER

An emission limit or control technology may be considered AIP LAER for a category or class of source if it exists in any of the following regulatory documents or programs:

- South Coast AQMD BACT Guidelines
- CAPCOA BACT Clearinghouse
- USEPA RACT/BACT/LAER Clearinghouse
- Other districts' and states' BACT Guidelines
- BACT/LAER requirements in New Source Review permits issued by South Coast AQMD or other agencies

In addition to the above means of determining AIP LAER, a control technology or emission limit may also be considered as AIP if it meets all of the following criteria:

- **Commercial Availability**: At least one vendor must offer this equipment for regular or full-scale operation in the United States.
- **Reliability**: All control technologies must have been installed and operated reliably for at least six months.
- **Effectiveness**: The control technology must be verified to perform effectively over the range of operation expected for that type of equipment.

Staff is in the process of identifying installed and operational emergency standby engines ≥1000 BHP equipped with Tier 4 certified or equivalent technology that meet the LAER AIP criteria and plans to present this information at an upcoming BACT Scientific Review Committee meeting scheduled for November 3, 2021.

Response C3

EPA NSPS and CARB ATCM Tier 2 requirement and Caterpillar's white paper on exemption of Tier 4 Final in standby emergency applications from Federal, California and other applicable local regulations

Current EPA and CARB standards for emergency standby engines were promulgated several years ago. Most all South Coast AQMD LAER determinations are based on AIP LAER because it is generally more stringent than LAER based on SIP. The BACT process is used in establishing LAER which recognizes newer and cleaner technology that updates current LAER. Our preliminary research has indicated that Tier 4 Final Emergency ICEs ≥1000 BHP have been installed and in operation at a variety of different industries (e.g., data centers, wastewater treatment plants, pumping stations, manufacturing, etc.). We are aware of two major manufacturers that have EPA certified engines of this type. So far, the information we have been discovering is providing a strong case for AIP LAER. For the reliability criteria of AIP, we are considering emergency engines which have successfully been in operation for at least six months from the date a permit to operate was issued. In regard to the low load start up conditions, the Tier 4 standards are based on the weighted average of a five-mode operational test. It is understood that an engine will periodically meet the Tier 4 NOx standard during operation as it relies on catalytic reactions that require proper temperature under specific load conditions as part

of the compliance certification test. The higher NOx emissions prior to full catalyst activation is a known occurrence in catalytic control of combustion emissions including on-road vehicles. Overall higher NOx emission reductions are expected to be achieved when engines reach proper temperatures during longer maintenance and operational runs.

In analyzing proposed LAER, it is more appropriate to compare the emissions from the current Tier 2 engine LAER to the startup emissions and normal operating emissions for the proposed Tier 4F LAER to evaluate emission reductions. South Coast AQMD acknowledges that many types of equipment and processes have higher emissions during start up than during their normal operations, however, as was done in Appendix A of Caterpillar's white paper, the analysis of a proposed LAER should not simply compare the startup and normal operating emissions of the same Tier4 F engine. The LAER analysis must include the current LAER Tier 2 emission profile.

Response C4

Tier 4 aftertreatment technologically feasible and cost-effective

In establishing LAER, the South Coast AQMD follows US EPA guidelines which do not allow for routine consideration of the cost of control. State law (H&SC 40405) defines BACT as the lowest achievable emission rate, which is the more stringent of either (i) the most stringent emission limitation contained in the SIP, or (ii) the most stringent emission limitation that is achieved in practice. There is no explicit reference or prohibition to cost considerations, and the applicability extends to all permitted sources. South Coast AQMD rules implement both state BACT and federal LAER requirements simultaneously, and furthermore specify that South Coast AQMD BACT must meet federal LAER requirements for major polluting Facilities.

Staff appreciates Truck & Engine Manufacturers Association's time and consideration in submitting comments to our preliminary LAER determination Tier 4 Final for emergency ICEs ≥1000 BHP. As I indicated above, staff has scheduled a BACT SRC meeting for November 3, 2021 that will be focused on this Tier 4 LAER proposal to present more information. Should you have further questions or comments please contact me at 909-396-2516 or abaez@aqmd.gov.

Sincerely,

Alfonso Baez
Program Supervisor
Best Available Control Technology

Comment Letter D (CE-CERT)

From: Wayne Miller
Sent: Thursday, June 24, 2021 8:33 PM
To: Bahareh Farahani <bfarahani@aqmd.gov>; Al Baez <abaez@aqmd.gov>
Cc: Jason Aspell <JAspell@aqmd.gov>
Subject: RE: BACT SRC meeting - Thursday, June 24, 2021 2pm - 4pm

Al and Bahareh ....well run meeting ... with some good meaty discussion. And TY for adding a timer to public speakers so all had equal opportunity

Comments ..

Comment D1

Slide 4 ....

1. CO emissions are not 0.0; they are below a value stated as the lower detection limit (LDL) for the current analytical method
2. Need to specify source of method is it AQMD Method 100.1?

Slide 8

D2

1. AQMD Method 207.1?? → same Agency ID missing throughout
2. Details on the averaging period and number of measurements needed for NH3; perhaps part of the method?
3. CEMS for NH3 will be quite useful.

Comment D3

Slide 11

1. Method should be consistent in units, either MW or BHP
2. Is the rated value with auxiliary power devices (like fan) or not?
3. What does low load mean? Lowest D2 load is 10% but idle is ~ 5% load so what is low load?
4. ***Info at today meeting is interesting but is for a Microsoft specific site that was tied down in litigation for years and not generally applicable to units in AQMD...much more discussion is needed My concern is there are over 4,000 BUGS permitted in AQMD and there may be a rush to apply Tier 4 to all of them .. I welcome Jason's suggestion that a meeting consistent with the Brown Act be held on BUGs in general as there are many stakeholders with BUGS.***
5. I was less concerned about the comments on source testing as CAT does give a letter of instruction to their owners on preconditioning their units prior to source testing. I have source tested BUGS for CEC and ARB and that was not a concern.
6. Agree, that source testing is expensive and a nuisance to owners.
7. UCR did massive BUGS study before; see CEC reports below. Data includes cold starts and operations at low loads.

D4

Slide 13

1. Language and text is fine; cation is not. NH3 slip/release in exhaust is precursor to PM as ammonium sulfate. It is not created mainly in the catalyst.

Best regards,
Wayne Miller
Adjunct Professor Chem & Envir Engr
Associate Director CE-CERT

Response to Comment Letter D (CE-CERT)

In response to Dr. Miller's comment letter, the slides revised accordingly to address the received comments:

Response D1

Slide #4

1. The term "non-detectable" is no longer used for emission reporting purposes. Instead, non-detectable results are reported with respect to the limit of detection of the analytical instrument or method. Since the results were less than 20% of the instrument range, therefore we added the detection limit of 10 ppm to the slide.
2. Added South Coast AQMD Method 100.1 to clarify the test method used for source testing.

Response D2

Slide # 8

1. Added South Coast AQMD Method 207.1 to clarify the test method used for source testing.
2. The ammonia concentration limit at the exit of SCR has a permit condition and is based on a 60-minute averaging time. It has been included in the LAER/BACT form, Section (4)(A).
3. Currently, we do not have any certification method for ammonia CEMS and only compliance is through SCAQMD method 207.1

Response D3

Slide # 11

1. Added the engine rating in brake horsepower for clarification:

   MW (BHP): 3.0 (4,277) 1.5 (2,104) 1.0 (1,391)
2. The rated value is based on the engine name plate rating.
3. Low load means 10% of the engine load and was based in mechanical load. Emissions are evaluated on a 5-mode, weighted test cycle average Per ISO 8178 D2 cycle.
4. The proposed BACT/LAER determinations apply to diesel emergency I.C. engines at or greater than 1000 BHP. In south coast AQMD, there are around 350 total major polluting facilities. Among them 62 have one or more emergency stationary I.C. engines installed. There are almost 260 diesel emergency I.C. engines at or greater than 1000 BHP located at these facilities.

   Consistent with the Brown Act, a public BACT SRC meeting focused on I.C. engines was held on November 3, 2021 to address the stakeholders' comments and questions.

5, 6, and 7. Staff are in the process of meeting with the engine manufacturers, source testing companies, and affected facilities to get more information on testing to draft an engine guidance policy memorandum to address industry' concern.

Response D4

Slide # 13

1. If too much ammonia is injected, the unreacted ammonia results in ammonia slip downstream of the catalyst. To reduce this effect, an ammonia slip catalyst (ASC) can be used but has not been installed on this engine.

ATTACHMENT I

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SUBJECT: **NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PROJECT TITLE: **PROPOSED AMENDMENTS TO THE BEST AVAILABLE CONTROL TECHNOLOGY (BACT) GUIDELINES**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The Notice of Exemption will also be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research for posting on their CEQAnet Web Portal which may be accessed via the following weblink: https://ceqanet.opr.ca.gov/search/recent. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2022.

NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

To:	County Clerks for the Counties of Los Angeles, Orange, Riverside and San Bernardino; and Governor's Office of Planning and Research – State Clearinghouse	**From:**	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Project Title: Proposed Amendments to the Best Available Control Technology (BACT) Guidelines

Project Location: The proposed project is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

Description of Nature, Purpose, and Beneficiaries of Project: Amendments to the BACT Guidelines are proposed that would update the Overview, plus Parts A, B, C, and D to maintain consistency with recent changes to South Coast AQMD rules and regulations and state requirements.

The following amendments are proposed: 1) update the Overview to change the name of the division overseeing the BACT Guidelines from "Science and Technology Advancement" to "Engineering and Permitting" in accordance with Governing Board direction; 2) update the hyperlink to the list of current BACT Scientific Review committee (SRC) members in the Overview; 3) add a section in the Overview, Part A – Policy and Procedures for Major Polluting Facilities, and Part C – Policy and Procedures for Non-Major Polluting Facilities, to address the limited BACT exemption in Rule 1304 – Exemptions, which is applicable to new or modified permit units located at any facility currently or formerly subject to Regulation XX – Regional Clean Air Incentives Market (RECLAIM), for emission increases of particulate matter sized 10 microns or less (PM10) and sulfur oxides (SOx) associated with the installation or modification of add-on air pollution control equipment for controlling nitrogen oxide (NOx) emissions to comply with NOx Best Available Retrofit Control Technology (BARCT) emission limits.

The following amendments to Part B – Lowest Achievable Emission Rate (LAER) Determinations for Major Polluting Facilities, are proposed: 1) revise Section I – South Coast AQMD LAER/BACT Determinations, to add one new listing for Internal Combustion (I.C.) Engine– Stationary, Non-Emergency with Selective Catalytic Reduction (SCR), Natural Gas (NG) Fired, and to update three listings for: a) Boiler, Fire-tube, NG Fired less than (<) 20 million British Thermal Unit per hour (mmBTU/hr), b) Rotary Dryer-Aggregate Facility, NG Fired, and c) Roller Coater – Paper and Film, with Regenerative Thermal Oxidizer (RTO) for Volatile Organic Compound (VOC) Control; and 2) revise Section II – Other LAER/BACT Determinations, to add one new listing for Fumigation - Methyl Bromide (CH_3Br) Fumigation Chamber greater than or equal to (≥) 100,000 pounds (lbs) of CH_3Br per year, and to update one listing for I.C. Engine-Compression Ignition ≥ 1,000 brake horsepower (BHP) - Stationary Emergency including Non-Agricultural and Non-Direct Drive Fire Pump.

In addition, an amendment to Part C is proposed that would make the Maximum Cost-Effectiveness Values in Table 5 consistent with the third quarter 2021 Marshall and Swift equipment index in accordance with BACT Guidelines policy.

The following amendments to Part D – BACT Determinations for Non-Major Polluting Facilities, are proposed that would reflect equipment and processes which have been achieved in practice and to maintain consistency with recent changes to South Coast AQMD rules and state requirements by: 1) adding one new listing for I.C. Engine– Stationary, Non-Emergency, Electrical with SCR, NG Fired; and 2) updating four listings for: a) Composting, b) I.C. Engine, Stationary, Emergency, c) Open Process Tanks: Chemical Milling (Etching) and Plating, and d) Printing (Graphic Arts).

Public Agency Approving Project:	**Agency Carrying Out Project:**
South Coast Air Quality Management District	South Coast Air Quality Management District

Exempt Status:
CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption
CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment

Reasons why project is exempt: South Coast AQMD, as Lead Agency, has reviewed the proposed project pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. Since the proposed project is comprised of new information and updates that reflect current practices of LAER/BACT determinations in the BACT Guidelines and the most current achieved-in-practice air pollution control equipment and/or processes, and makes administrative amendments without requiring physical modifications, it can be seen with certainty that there is no possibility that the proposed project may have a significant adverse effect on the environment. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. The proposed project is also categorically exempt from CEQA pursuant to CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, because the BACT Guidelines are designed to further protect or enhance the environment. Further, there is no substantial evidence indicating that any of the exceptions to the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, apply to the proposed project.

Date When Project Will Be Considered for Approval (subject to change):
South Coast AQMD Governing Board Public Hearing: September 2, 2022

CEQA Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Sina Taghvaee	(909) 396-2192	staghvaee@aqmd.gov	(909) 396-3982
BACT Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Bahareh Farahani	(909) 396-2353	bfarahani@aqmd.gov	(909) 396-3982

Date Received for Filing: _____ **Signature:** *(Signed and Dated Upon Board Approval)*
Barbara Radlein
Program Supervisor, CEQA
Planning, Rule Development, and
Implementation

PROPOSED UPDATES TO BACT GUIDELINES

Board Meeting

September 2, 2022

Background

- Best Available Control Technology (BACT) guidelines are periodically modified to reflect changes in technology
- Ensures new, modified, and relocated equipment meet BACT
- Implementation of BACT is required to meet state and federal requirements
- BACT Guidelines are published for commonly permitted equipment:
  - Based on category or class of source
  - Source is defined as an individual permit unit
    - Engine, boiler, spray booth, etc.
  - Technical feasibility considered for the class and category of source

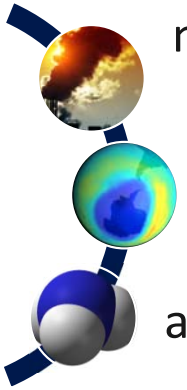
BACT is the most stringent emission limitation or control technique for a class and category of equipment that is:

- Achieved In Practice, or
- Contained In a State Implementation Plan (SIP), or
- Technologically Feasible and Cost-effective

When is BACT Required?

- BACT is a major element of Regulation XIII - New Source Review (NSR)
- During permitting, an NSR analysis is performed for all:
  - New sources
  - Relocated sources
  - Modifications to an existing source
- BACT is required if NSR analysis shows that:

There is an emissions increase ≥ 1.0 lb/day



nonattainment air contaminant (NOx, VOC, SOx, PM10)

ozone depleting compound

ammonia

Structure

BACT Guidelines

Overview

- Introduction
- Background
- Process

Major Source LAER/BACT

- Part A – Policies and Procedures
- Part B – Determinations

Non-Major (Minor) Source BACT

- Part C – Policies and Procedures
- Part D – Determinations

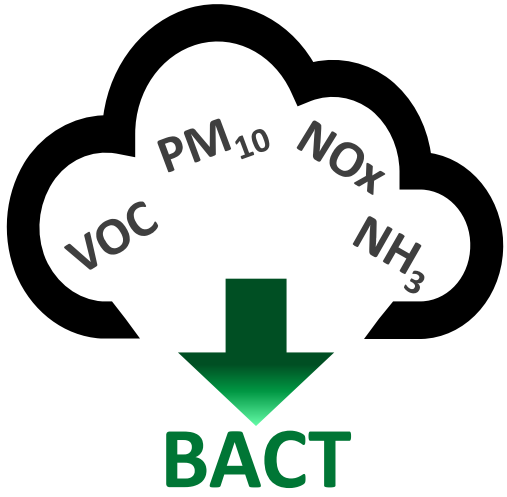
Prevention of Significant Deterioration (PSD)*

- Part E – Policies and Procedures
- Part F – Determinations

* Greenhouse Gases (GHG)

Proposal & Background

- Proposed changes to the BACT Guidelines:
  - New listings/clarifications and updates to existing listings
  - Add a limited BACT exemption for PM_{10} and SOx emissions to be consistent with amendments to Rule 1304
  - Update maximum incremental cost- effectiveness values
  - Other administrative changes
- New listings for Major and Non-Major Source:
  - Provide examples of achieved in practice; or
  - Result in emissions reductions for new or modified equipment as compared to current BACT/LAER
- Staff met with the Scientific Review Committee to discuss revisions to the BACT Guidelines



Summary of Proposed Updates to LAER/BACT Determinations

Equipment Category	Current LAER/BACT Limit	Proposed LAER/BACT Limit
Part B, Major Polluting Facilities		
Boiler, Fire-Tube, Natural Gas Fired <20 MMBTU/HR	NOx: 12 ppmv @ 3% O_2 dry	NOx: 7 ppmv @ 3% O_2 dry
Rotary Dryer, Aggregate Facility	NOx: 33 ppmv @ 3% O_2 dry	NOx: 33 ppmv @ 3% O_2 dry
Roller Coater – Paper and Film, with RTO for VOC Control	RTO overall control eff.: 95%	RTO overall control eff.: 97%
I.C. Engine – Stationary, Non-Emergency with SCR, NG Fired	Not established	Ammonia Slip: 10 ppm @ 15% O_2
Fumigation – Methyl Bromide Fumigation Chamber ≥ 100,000 lbs CH_3Br/year	Not established	Carbon Adsorption and Chemical Scrubber overall control eff.: 86%
I.C. Engine – Compression Ignition ≥1,000 BHP, Stationary Emergency	U.S. EPA' s Tier 2 emissions standards	U.S. EPA' s Tier 4 Final emissions standards
Part D, Non-Major Polluting Facilities		
I.C. Engine – Stationary, Non-Emergency, Electrical with SCR, NG Fired	Not established	Ammonia Slip: 10 ppm @ 15% O_2

Part B- LAER/BACT Determination for Major Polluting Facilities
Proposed New Listing

- **I.C. Engine – Compression Ignition ≥1,000 BHP, Stationary Emergency**
  - Achieved in practice case: I.C. engines at MWH Data Center, Quincy, WA
  - Each engine is equipped with Selective Catalytic Reduction (SCR) and Diesel Particulate Filter (DPF) control technologies to meet emission requirements of EPA- Certified Tier 4 Final engines

Compliance Options to meet Tier 4 Final I.C. Engine:

- EPA-Certified Tier 4 Final Engines
- EPA-Certified Tier 2 engines equipped with exhaust aftertreatment equipment to meet EPA Tier 4 Final emissions standard

Air Districts with established BACT Guidance	Effective Date of Tier 4 F
Bay Area AQMD	January 1, 2020
Sacramento Metropolitan AQMD	June 4, 2021
San Joaquin Valley APCD	April 29, 2022

Part B- LAER/BACT Determination for Major Polluting Facilities
Proposed New Listing (Cont'd)

- **I.C. Engine – Compression Ignition ≥1,000 BHP, Stationary Emergency (Cont'd)**

Key Written Comments	Responses
▪ Concern over testing requirements for Compliant Tier 4 Final engines	▪ Testing is not a component of the BACT determination, however testing of the Compliant Tier 4 Final engine is needed to ensure compliance with the emissions limits
▪ Allow a single-load test and the use of a dilution system to reduce the test duration to save fuel and minimize the environmental impacts	▪ Staff is finalizing permitting guidance to address testing concerns, while ensuring compliance with the emission standards ▪ Guidance considers impacts on permit limits for testing and maintenance hours and minimizing emissions from testing ▪ Allows for additional certification procedures ▪ Staff continuing to work with Scientific Review Committee (SRC) members and manufacturers

Part B- LAER/BACT Determination for Major Polluting Facilities
Proposed New Listing (Cont'd)

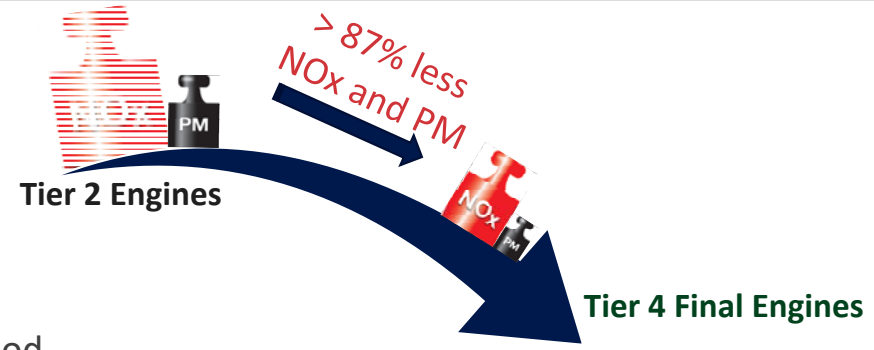
➢ **I.C. Engine – Compression Ignition ≥1,000 BHP, Stationary Emergency (Cont'd)**

Key Written Comments	Responses
▪ Concern about effectiveness of SCR technology during startup and low load operations; takes 20-30 minutes to reach temperatures for SCR to be effective for NOx reduction	▪ PM emissions are reduced by 87% whenever engine is operated ▪ 89% of NOx reductions achieved after the initial startup period of ~ 20 minutes ▪ NOx emissions during startup will be consistent with Tier 2 certified engines ▪ Faster startup period (<10 min) can be achieved with an integrated exhaust stream electrical load bank heater ▪ Based on a survey conducted by BAAQMD, ~ 80% of these engines operate at loads > 10% (when SCR is effective)

▪ **Comparison of EPA Standards:**

Pollutants	Tier 4 Final	Tier 2	% Reduction
NOx, g/bhp-hr	0.5	4.56	89%*
PM, g/bhp-hr	0.02	0.15	87%

*NOx reduction achieved after initial startup period



Part D- BACT Determination for Non-Major Polluting Facilities
Proposed New Listing

- **I.C. Engine – Stationary, Non-Emergency, Electrical with SCR, NG Fired**
  - Cogeneration unit, Lean Burn engine with Selective Catalytic Reduction (SCR) driving an electrical generator, rated at 1,573 BHP
  - 10 ppm Ammonia limit (15% O_2)
  - Found to be cost effective

California Environmental Quality Act (CEQA)

- **Proposed amendments to the BACT Guidelines qualify for a CEQA exemption because they are:**
  - Not expected to require physical modifications that would cause a significant adverse effect on the environment
  - Designed to protect the environment

Summary

- ✓ 6 Major Source LAER listings (Federal Title V facilities)
  - ✓ Tier 4 Final I.C. Engine BACT compliance options
  - ✓ Permitting guidance to support Tier 4 Final I.C. Engine testing
- ✓ 1 Non-Major Source BACT listing
- ✓ Update maximum incremental cost- effectiveness values
- ✓ Administrative updates to make consistent with rules and regulations

Recommended Actions

Determine that the proposed amendments to the BACT Guidelines are exempt from the requirements of the CEQA

Approve Proposed Amendments to the BACT Guidelines