SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Best Available Control Technology Guidelines

OVERVIEW

Part A: Policy and Procedures for Major Polluting Facilities

Part B: LAER/BACT Determinations for Major Polluting Facilities

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

Part D: BACT Guidelines for Non-Major Polluting Facilities

Part E: Policy and Procedures for Facilities Subject to Prevention of Significant Deterioration for Greenhouse Gases

Part F: BACT Determinations for Facilities Subject to Prevention of Significant Deterioration for Greenhouse Gases

August 17, 2000 (Revised June 6, 2003; December 5, 2003; July 9, 2004; July 14, 2006~~;~~ October 7, 2016)

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OVERVIEW

Chapter 1 - Introduction

The South Coast Air Quality Management District (SCAQMD) 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 ~~for~~ 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. SCAQMD 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. ~~Regulation XIII requires the Executive Officer to periodically publish BACT Guidelines that establish the procedures and the BACT requirements for commonly permitted equipment.~~ PSD BACT is incorporated into these BACT Guidelines. As of the publication date of these guidelines, there is currently not ~~a~~ requirement for SCAQMD to publish T-BACT guidelines and T-BACT must be established during the permitting process. ~~The BACT Guidelines were first published in May 1983, and later revised in October 1988.~~

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~~times~~ 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 P~~p~~art 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 SCAQMD permitting staff and others as well as information on new and emerging technologies. Part B of the SCAQMD BACT Guidelines now follows the same outline as the permit listings in the California Air Resources Board State BACT Clearinghouse D~~d~~atabase, which is managed under the direction of the California Air Pollution Control Officers Association's (CAPCOA) Engineering Managers Committee. ~~and coordinates the submittal of~~ In addition, BACT determinations made by ~~the districts~~SCAQMD are submitted to the U.S. Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse by ARB staff.~~California Air Pollution Control Officer Association (CAPCOA) BACT Clearinghouse and the United States Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse.~~ Further information on the ~~new~~ 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 ~~was also enhanced to~~ includes technical review and comments by a focused BACT Scientific Review Committee (BACT SRC) at periodic intervals, prior to the updates of the SCAQMD BACT Guidelines. ~~At the same time, t~~The Board established a 30-day notice period for the BACT SRC and interested persons to review and comment on SCAQMD BACT determinations that result in BACT requirements that are more stringent than previously imposed BACT.

As a result of amendments ~~being proposed~~ to SCAQMD's ~~New Source Review (~~NSR~~)~~ regulations in September 2000, the BACT Guidelines ~~was~~were~~ill be~~ 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 SCAQMD Board approval, ~~in view of cost~~ for consideration~~s~~ 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 SCAQMD 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 ~~major sources and BACT for minor~~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~~GHG~~ BACT for BACT at facilities subject to ~~PSD GHG~~ BACT requirements for criteria pollutants

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

South Coast Air Quality Management District
BACT Docket
Science and Technology Advancement
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 SCAQMD's web site at www.aqmd.gov/home/permits/bact. A hardcopy of t~~T~~he BACT Guidelines may be obtained for a fee by submitting a request to ~~contacting~~ Subscription Services at www.aqmd.gov/contact/subscription-services or ~~at the above address or~~by calling (909) 396-3720. Revisions to the ~~guidelines~~ Guidelines will be mailed to all persons that have purchased annual updates to the BACT Guidelines. ~~The BACT Guidelines are also available without charge from SCAQMD's Internet web site at http://www.aqmd.gov/home/permits/bact http://www.aqmd.gov/bact.~~

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 specifiedgiven in the CAA[1] based on the attainment or nonattainment status. Table 1 presentsshows those emission thresholds for each criteria air pollutant for each air basin in SCAQMD. The map in Figure 1 shows the location of the three air basins in SCAQMD. 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. Currently Although Table 1 is part of determining GHG BACT applicability, Table 1 does not include emission thresholds that trigger GHG BACT for SCAQMD Rule 1714 and 40 CFR 52.21. SubpPart 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 SCAQMD jurisdiction.

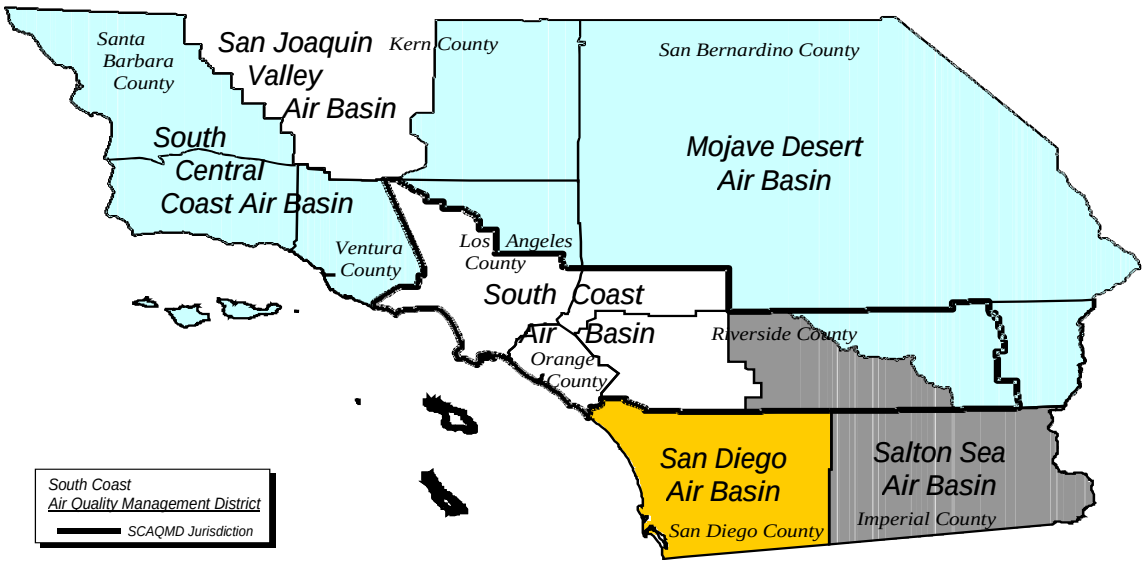
[1] The major source emission thresholds are higher for air basins that comply with the national ambient air quality standard and lower depending on how far an air basin is from compliance with the standard for a pollutant. The lowest thresholds apply to extreme non-attainment air basins, the only example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

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

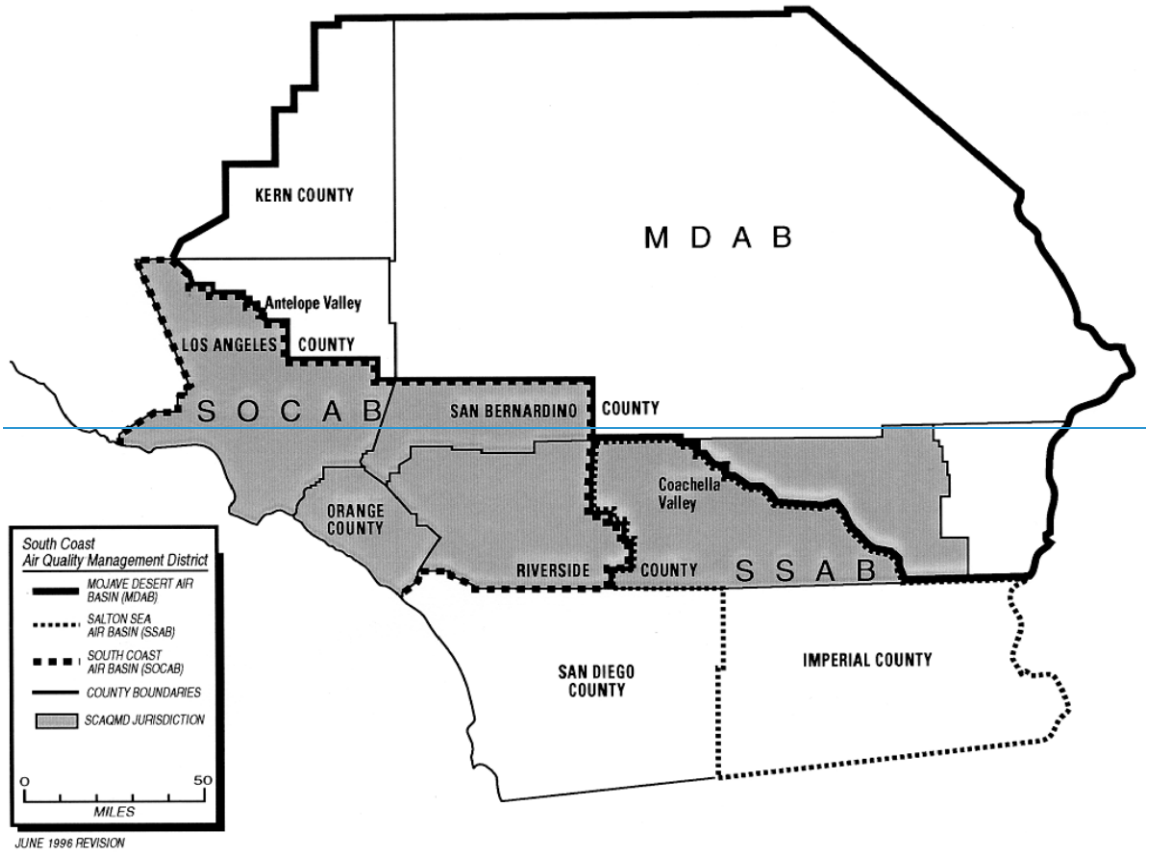
Table 1
Actual or Potential Emission Threshold Levels (Tons per Year)
for Major Polluting Facilities

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

Figure 1: Map of SCAQMD



[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 currently specifies 100 tons per year, which is in error, and is being corrected at the November 2016 Board Meeting.


KERN COUNTY
M D A B
Antelope Valley
LOS ANGELES COUNTY
S O C A B
SAN BERNARDINO COUNTY
Coachella Valley
ORANGE COUNTY
RIVERSIDE COUNTY
S S A B
SAN DIEGO COUNTY
IMPERIAL COUNTY
South Coast Air Quality Management District
MOJAVE DESERT AIR BASIN (MDAB)
SALTON SEA AIR BASIN (SSAB)
SOUTH COAST AIR BASIN (SOCAB)
COUNTY BOUNDARIES
SCAQMD JURISDICTION
0
50
MILES
JUNE 1996 REVISION

POTENTIAL TO EMIT

Potential to emit ~~(PTE)~~ 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 SCAQMD'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 SCAQMD 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~~, including ozone~~. The net result is that VOC, NOx, SOx, ~~and~~ PM_{10} and $PM_{2.5}$~~,~~ are subject to NSR in all of SCAQMD.

~~, while CO is only subject to NSR in the South Coast Air Basin (SOCAB).~~

The South Coast Air Basin has historically been ~~had a persistent~~designated nonattainment for CO ~~problem~~. 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 no longer a nonattainment pollutant, since the state standard for CO is the same as the federal.

The SCAQMD'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. ~~Similar to the Regulation XIII NSR requirements, precursors to attainment air contaminants, would also be treated as attainment air contaminants, unless they also qualify as a nonattainment air contaminant, or nonattainment precursor as well.~~ As explained in the SCAQMD Staff Report for Regulation XVII dated September 28, 19~~9~~88 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. ~~Although the SCAQMD~~

~~complies with the ambient air quality standards for lead (Pb),~~ 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 ~~or~~, 1420.1 or 1420.2, whichever is more stringent. ~~In addition, non-attainment pollutants include inorganic gases such as hydrogen chloride (HCl) and hydrogen fluoride (HF), which are precursors to PM_{10}, and hydrogen sulfide (H_2S), a precursor to SO_2.~~

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 SCAQMD that shows the location of the three air basins in SCAQMD.

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 (CFC-111) $C_2F_2Cl_4$ (CFC-112) C_3FCl_7 (CFC-211) $C_3F_2Cl_6$ (CFC-212) $C_3F_3Cl_5$ (CFC-213) $C_3F_4Cl_4$ (CFC-214) $C_3F_5Cl_3$ (CFC-215) $C_3F_6Cl_2$ (CFC-216) C_3F_7Cl (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 ~~H. Group VIII:~~ ~~CH_2BrCl~~ ~~(Chlorobromomethane)~~

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

Table 3
Applicability of NSR ~~and BACT~~ 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

SCAQMD'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 ~~paragraph (c)(3) of~~ *Rule 219 -Equipment Not Requiring a Written Permit Pursuant to Regulation II*~~, as amended May 19, 2000.~~

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 ~~has~~ 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 SCAQMD policy that BACT is required only for emission increases greater than or equal to one (1.0) pound per day.

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

[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.

and SOx pollutants from RECLAIM facilities ~~and~~ 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.[6]

For modifications subject to Regulation XIII, there are two possible cases[7]:

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.

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:

- ~~a)~~ maximum rated capacity; and
- ~~b)~~ the maximum daily hours of operation; and
- ~~c)~~ the physical characteristics of the materials processed.

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

Chapter 4 - What is BACT?

This chapter explains the definitions of BACT found in SCAQMD 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 SCAQMD. Federal LAER applies to major sources only. Although federal LAER applies to any emissions increase at a major stationary source of ozone precursors, SCAQMD has interpreted this provision as a 1.0 lb/day increase in emissions from all sources subject to NSR. According to SCAQMD'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 ~~nearly 400~~ RECLAIM facilities. While the definitions are not identical, they are essentially the same. Section (~~f~~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 District 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 SCAQMD and some other areas in California, and allows for more stringent controls than LAER.

Rule 1303(a)(2)~~, as proposed to adopted, will further~~ require~~s~~ 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 SCAQMD 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 SCAQMD proposes to make BACT more stringent than LAER or to establish BACT for non-major sources. This is because the CAA requires the SCAQMD 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 REQUIREMENTS

In January 1988, the SCAQMD 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 SCAQMD staff are subject to public notification requirements. In addition to allowing the public to comment on these items, the SCAQMD has established a BACT Scientific Review Committee (BACT SRC) to review and comment on technical matters of the proposals.

The SCAQMD 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 SCAQMD 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 SCAQMD Governing Board o~~i~~n 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 SCAQMD BACT Guidelines. A 30-day notice period applies for the BACT SRC and interested persons to review and comment on SCAQMD 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, SCAQMD seeks out an appropriate replacement to join the committee. A list of current BACT SRC members can be accessed at~~:~~

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

The overall purpose of the BACT Scientific Review Committee ~~(SRC)~~ 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 ~~Role~~ is to review and comment in writing on the appropriateness of new BACT determinations under 30-Day public review. During this comment period, SCAQMD, State, and Federal required permit issuance timelines are still in effect. SCAQMD 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. SCAQMD staff will respond in writing to preliminary comments about new BACT proposals within ~~two weeks~~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 SCAQMD staff to research the comments. SCAQMD Engineering ~~and Compliance~~ 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 SCAQMD Governing Board for approval.

MEETING WITH SCAQMD MANAGEMENT

SCAQMD management, starting with the Senior ~~Engineering~~ Manager of the permitting team, can consider unique and site-specific characteristics of an individual permit. The ~~allowance~~ flexibility for considering site-specific characteristics has been taken into account in these guidelines ~~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 authorized~~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~~. Ultimately, all permitting decisions are the responsibility of the Executive Officer.

THE BACT REVIEW COMMITTEE

Beyond meetings with SCAQMD 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 SCAQMD officials - the DEO of Public Affairs; the DEO of Science and Technology Advancement; the DEO of Engineering ~~and Compliance~~; the DEO of Planning, Rule Development and Area Sources; 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 SCAQMD HEARING BOARD

After the permit is issued or denied, the applicant can seek further independent review of an individual BACT determination through the SCAQMD 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 SCAQMD (once the permit is denied

or issued)[8]. The Hearing Board is an independent, quasi-judicial body composed of five members, who can review a permitting decision by the Executive Officer. In this venue, legal counsel represents the SCAQMD. Although not required, many petitioners choose to have legal counsel to represent their position.

TTHE SCAQMD GOVERNING BOARD

Any applicant may petition the SCAQMD Governing Board to review a pending application pursuant to SCAQMD Regulation XII and Health and Safety Code Section 40509. While tThe 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.

~~but this circumstance is extremely rare and cases has only agreed to consider two pending permit applications in the last sixteen yearsare typically handled during the prior stages of review.~~

[8] 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.

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[9] and the process for updating Part B of the BACT Guidelines for major polluting facilities.

CRITERIA FOR DETERMINING LAER FOR MAJOR POLLUTING FACILITIES

SCAQMD 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 that is:

- found in a state implementation plan (SIP), or
- achieved in practice (AIP), or
- is technologically feasible and cost effective.

For practical purposes, at this time, nearly all SCAQMD LAER determinations will be based on AIP LAER because it is generally more stringent than LAER based on SIP, and because state law constrains SCAQMD ~~from~~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 SCAQMD 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[10], 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.

[9] 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.

[10] 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:

- SCAQMD 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 SCAQMD or other agencies

However, staff will check with the permitting authority (other than SCAQMD) 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 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:

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 SCAQMD, 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 SCAQMD 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, ~~10~~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[11]:

Nitrogen oxides: 40 tons per year

Sulfur dioxide: 40 tons per year

$PM_{2.5}$: 10 tons per year

Ammonia: 40 tons per year[12]

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 SCAQMD Rule 1325 for specific requirements.

[11] SCAQMD Rule 1325(b)(12), as amended on December 5, 2014

[12] Ammonia is being added to Rule 1325 as a precursor to $PM_{2.5}$ pursuant to EPA's 2016 $PM_{2.5}$ SIP implementation Rule. PAR 1325, scheduled for hearing in November 2016, would set a significance threshold of 40 tons per year for ammonia.

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. SCAQMD rules implement both state BACT and federal LAER requirements simultaneously, and furthermore specify that SCAQMD 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 SCAQMD management for consideration as described in Overview, Chapter 6.

~~Clean Fuel Requirements~~

~~In January 1988, the SCAQMD 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 methanol, liquid petroleum gas (LPG), and hydrogen. 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 SCAQMD 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 SCAQMD has allowed the use of fuel oil as a standby fuel in boilers and heaters, and for emergency standby generators. The use of these fuels must meet the requirements of SCAQMD rules limiting NO_x and sulfur emissions.~~

Special Permitting Considerations

Although the most stringent, AIP LAER for a source category will most likely be the required LAER, SCAQMD 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 SCAQMD permitting engineer for consideration.

Case-Specific Situations

SCAQMD 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 ~~i~~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 ~~"achieved in practice"~~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. SCAQMD 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 ~~Clean~~ Compliant Materials

SCAQMD will accept the use of super ~~clean~~ compliant materials in lieu of an add-on control device controlling volatile organic compound (VOC) emissions from coating operations. For example~~ at this time~~, if a permit applicant uses only surface coatings that ~~contain less than 5% VOC by weight~~meet the super compliant material definition in SCAQMD 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. 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[13]. 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 include, but not be limited to:

- 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~~implemented~~ during the permitting process.

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

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 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 SCAQMD 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", SCAQMD'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 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

SCAQMD 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, SCAQMD staff will reevaluate the LAER requirements for the CEP upon ~~annual~~ renewal of the Title V permit.~~CEP by the equipment manufacturer.~~

LAER UPDATE PROCESS

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

When SCAQMD permitting staff makes a LAER determination that is no more stringent than previous SCAQMD LAER determinations, the permitting team will issue the permit and forward information regarding this LAER determination to the BACT~~/NSR~~ Team.[14] The BACT~~/NSR~~ 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 SCAQMD has previously required as LAER, the permit to construct may be subject to a public review. In any event depending on Rule 212, ~~T~~the permitting team will forward the preliminary LAER determination to the BACT~~/NSR~~ 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[15] 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 ~~quarterly~~ periodic basis, the SCAQMD BACT~~/NSR~~ Team will provide standing status reports to the SCAQMD Governing Board's Stationary Source Committee and to the Governing Board.

In summary, as technology advances, many categories in the SCAQMD'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.

[14] To reduce the burden on SCAQMD 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.

[15] The requirements of the Permit Streamlining Act are also found in SCAQMD's Rule 210.

CLEAN FUEL REQUIREMENTS

In January 1988, the SCAQMD 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 ~~methanol,~~ liquid petroleum gas (LPG), electricity, and hydrogen. ~~Industrial electrification (e.g., replacement of I.C. Engines, etc.) is~~ Utilization of zero and near-zero emission technologies are also integrated in 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 SCAQMD 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 SCAQMD 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 SCAQMD rules limiting NO_x and sulfur emissions.

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 SCAQMD 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 ~~Index~~ 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 – SCAQMD LAER/BACT Determinations, contains information on LAER/BACT determinations contained in permits issued by SCAQMD, 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 but are not reflected in a permit limit, and information on emerging technologies or emission limits which have not yet been achieved in practice ~~(i.e., do not qualify as LAER)~~. All three sections are subdivided based on the attached ~~Index~~ 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 ~~subdivided into the following six sections~~:

- Basic Equipment[16]

This provides information on the type, model, style, manufacturer, function, and cost of the basic equipment. It also lists applicable SCAQMD Regulation XI rules. Cost data are generally obtained from the SCAQMD application forms, manufacturer or owner/operator, and are not verified.

- Basic Equipment Rating/Size

This identifies the size, dimensions, capacity, or rating of the basic equipment. It also provides additional information such as fuel type for combustion equipment, 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.

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

- 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 SCAQMD 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. It provides technical, performance, and cost data on the control technology used to achieve the permit limit and the LAER/BACT requirements.

- Comment

This provides additional information relevant to basic equipment and control technology assessment, or further explains or clarifies the LAER/BACT determination.

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

The LAER requirements usually found in ~~section 5A of~~ 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 SCAQMD 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.

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 SCAQMD website www.aqmd.gov/home/permits/bact ~~http://www.aqmd.gov/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 SCAQMD BACT Guidelines. Finally, the SCAQMD 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 SCAQMD permitting engineer any special permitting considerations that may affect the LAER determination.

PART B - LAER/BACT DETERMINATIONS FOR MAJOR POLLUTING FACILITIES

Part B of the BACT Guidelines is maintained on the SCAQMD Internet website at http://www.aqmd.gov/home/permits/bact/guidelines ~~http://www.aqmd.gov/bact.~~

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 SCAQMD 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.

~~INITIALIZATION OF~~ 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~~The initial listings in Part D of the MSBACT Guidelines reflect~~ed~~ the current BACT determinations at the time for sources at non-major polluting facilities as of April 2000. ~~This~~ These ~~initialization does~~ did not represent new requirements but rather ~~memorializes~~ memorialized ~~current~~ BACT determinations and emission levels at that time. This initialization ~~is~~ was necessary to benchmark the transition from federal LAER to MSBACT for non-major polluting facilities. The control technologies and emission levels identified ~~initially will apply~~applied to any non-major source subject to NSR until the Guideline ~~is~~ was updated or ~~becomes~~ 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].

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 that is:

- found in a state implementation plan (SIP), or
- achieved in practice (AIP), or
- is technologically feasible and cost effective.

For practical purposes, nearly all SCAQMD 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 SCAQMD 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] SCAQMD Rule 1303(a)(3)

section is to explain the criteria SCAQMD 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) might be the basis for MSBACT. This means that the most stringent emission limit adopted by any state as a rule, regulation or permit[18] 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 also be based on 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. SCAQMD permitting engineers will review the following sources to determine ~~what is~~ 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 SCAQMD 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

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

those modes must be identified. The verification shall be based on a District-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 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.

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 SCAQMD 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 SCAQMD's established cost-effectiveness criteria;
- Putting BACT Guideline revisions on a regular meeting agenda of the SCAQMD 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)

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 SCAQMD 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 SCAQMD ~~the 1999~~ 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~~*~~] 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 45, are based on a DCF analysis with a 4% real interest rate.

Table 45: Maximum Cost Effectiveness Criteria ~~(Second Quarter 2003)~~(1~~st~~2nd Quarter 2016)

Pollutant	Average (Maximum $ per Ton)	Incremental (Maximum $ per Ton)
ROG	28,370460~~20,200~~	85,100380~~60,600~~
NOx	26,820910~~19,100~~	80,320590~~57,200~~
SOx	14,180230~~10,100~~	42,550690~~30,300~~

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

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

Pollutant	Average (Maximum $ per Ton)	Incremental (Maximum $ per Ton)
PM_{10}	6,3240~~4,500~~	18,828~~013,400~~
CO	560~~400~~	1,620~~1,150~~

The cost criteria are based on those adopted by the SCAQMD Governing Board in the 1995 BACT Guidelines, adjusted to ~~first~~ second quarter 2016 ~~2003~~ 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.~~, which is published monthly in Chemical Engineering.~~

Top-Down Cost Methodology

The SCAQMD uses the top-down approach for evaluating BACT 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~~ly~~ potential control technologies to be evaluated. As part of the permitting process, the applicant is responsible for preparing the BACT 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 BACT 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 BACT

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

~~The SCAQMD uses the top-down approach for evaluating 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.~~

~~AQMD staff will calculate both incremental and average cost effectiveness. The new MSBACT must be cost effective based on both analyses.~~

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 ~~5~~6. Methodologies for determining these values are given in documents prepared by USEPA through their Office of Air Quality Planning and Standards (~~OAQPS~~ EPA Air Pollution Control Cost Manual, ~~4th~~ Sixth Edition, 2002, ~~US~~EPA ~~450~~452/~~3~~B-~~90~~02-~~006~~ 001~~and Supplements~~).

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 ~~5~~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 REQUIREMENTS

In January 1988, the SCAQMD 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 ~~methanol,~~ liquid petroleum gas (LPG), electricity, and hydrogen. ~~Industrial electrification (e.g., replacement of I.C. Engines, etc.) is~~ Utilization of zero and near-zero emission technologies are also integrated in the Clean Fuels Policy. The burning of landfill, digester, refinery and other by-product gases is not subject to the

clean fuels requirement ~~as they are considered industry~~. However, the combustion of these fuels must comply with other SCAQMD rules, including the sulfur content of the fuel.

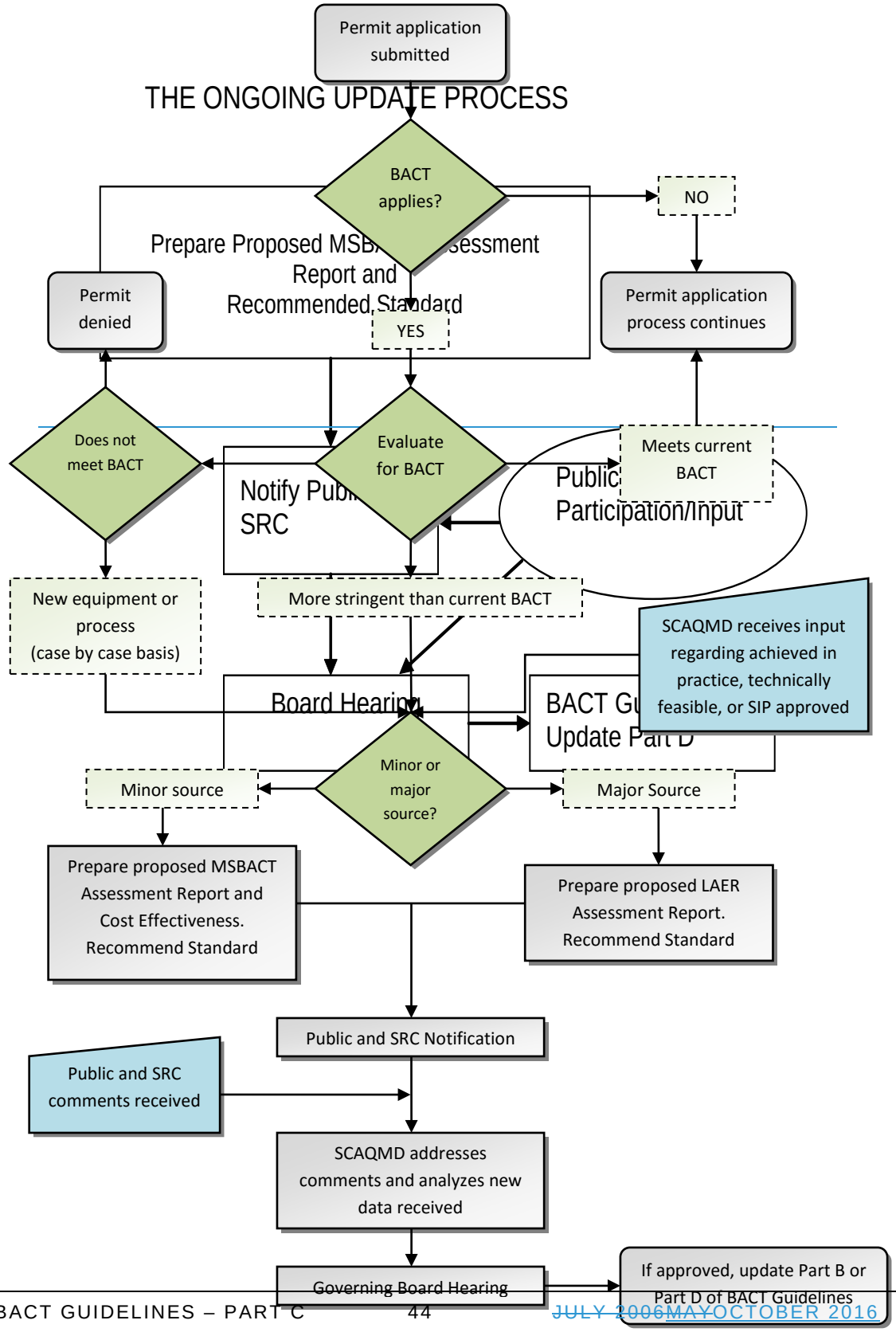
The requirement of a clean fuel is based on engineering feasibility. Engineering feasibility considers the availability of a clean fuel and safety concerns associated with that fuel. Some state and local safety requirements limit the types of fuel, which can be used for emergency standby purposes. Some 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 SCAQMD 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 SCAQMD 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

BACT UPDATE PROCESS

As technology advances, the SCAQMD'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 ~~(SRC)~~ 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 SCAQMD. 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 SCAQMD 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 SCAQMD 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, SCAQMD 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 SCAQMD permitting engineer for consideration.

Case-Specific Situations

SCAQMD 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 ~~i~~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. SCAQMD 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 ~~Clean~~ Compliant Materials

SCAQMD will accept the use of super ~~clean~~ compliant materials in lieu of an add-on control device controlling volatile organic compound (VOC) emissions from coating operations. For example~~ at this time~~, if a permit applicant uses only surface coatings that meet the super compliant material definition in SCAQMD Rule 109~~contain less than 5% VOC by weight~~, 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. 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]. 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 include, but not be limited to:

- 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,

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

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 MSBACT determinations continue to meet their initial emission and efficiency standards, periodic or continuous parameter monitoring and testing requirements may be ~~implemented~~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 SCAQMD 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", SCAQMD'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.

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.

BACT APPLICATION CUT-OFF DATES

These guidelines apply to all non-major polluting facility applications deemed complete subsequent to SCAQMD 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, SCAQMD staff will reevaluate the MSBACT requirements for the CEP upon annual renewal of the CEP by the equipment manufacturer.

PART D - BACT GUIDELINES FOR NON-MAJOR POLLUTING FACILITIES

Part D of the BACT Guidelines is published as a separate document.

PART E – POLICY AND PROCEDURES FOR FACILITIES SUBJECT TO PREVENTION OF SIGNIFICANT DETERIORATION FOR GREENHOUSE GASES

Chapter 1 - GHG BACT

This chapter explains the requirements of greenhouse gases (GHG) BACT regulations according to EPA, describes the Top-Down Process, shows how to calculate GHG emissions and explains the Prevention of Significant Deterioration (PSD) Applicability for GHGs for new sources as well as modified sources. ~~Currently, the Tailoring Rule is undergoing a revision to address the U.S. Supreme Court decision in *Utility Air Regulatory Group v. Environmental Protection Agency, 134 S. Ct. 2427 (2014)*[21].~~ The guidance in this chapter is applicable to the EPA requirements in place as of the date of these guidelines, and takes into consideration the U.S. Supreme Court decision in *Utility Air Regulatory Group v. Environmental Protection Agency, 134 S. Ct. 2427 (2014)*[22] ~~.as well as SCAQMD Rule 1714.~~

BACKGROUND

EPA has found that GHG, made of up of six combined compounds, constitute air pollution that endanger public health and welfare. EPA's adopted requirements for GHG under 40 CFR 52.21 ~~Tailoring Rule was issued~~ in May 2010, which were revised in October 2015, to establish~~ing~~ a way to permit GHG emissions under PSD and Title V. Through this rule, permitting focused on the major industrial sources, which emit nearly 70 percent of the greenhouse gas pollution from stationary sources. At this time, smaller businesses and sources are not be subject to these requirements.

The requirements of this rule apply only to GHG as defined by EPA as a total group of six GHG which are: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). All other attainment air contaminants, as defined in SCAQMD Rule 1702 subdivision (a), shall be regulated for the purpose of PSD. ~~PSD is not applicable to air contaminants designated as nonattainment status.~~

PERMITTING GUIDANCE FOR GHG

EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases" provides the basic information that permit writers and applicants need to address GHG emissions in permits. Although this guidance was issued prior to the revision of 40 CFR 52.21 in 2015, there are parts still applicable to the current requirements. The applicable parts of the guidance document are summarized in these Guidelines. The guidance:

- applies long-standing PSD and Title V permitting requirements and processes to GHG;
- reiterates that BACT determinations will continue to be a state, and project specific decision;
- does not prescribe GHG BACT for any source type;

[21] ~~The UARG v. EPA decision limited the scope originally envisioned by the Tailoring Rule, and now only "anyway sources" are subject to GHG BACT.~~

[22] The UARG v. EPA decision limited the scope originally envisioned by the Tailoring Rule, and now only "anyway sources" are subject to GHG BACT.

- emphasizes the importance of BACT options that improve energy efficiency;
- points out that Carbon Capture and Sequestration (CCS) is a promising technology in the early stage of demonstration and commercialization (it should be identified as an available control measure in the first step of BACT, it is currently an expensive technology and unlikely to be selected as BACT in most cases);
- ~~clarifies that EPA does not intend to require GHG to be addressed in permits issued before January 2, 2011 that do not become effective until after this date;~~
- notes that biomass could be considered BACT after taking into account environmental, energy, and economic considerations and state and federal policies that promote biomass for energy-independence and environmental reasons. In its memorandum[23] dated November 19, 2014, EPA states that it is still assessing and monitoring biogenic feedstocks and will provide further guidance. Further updates can be found at EPA's webpage "CO2 Emissions Associated with Biomass Use at Stationary Sources."
- provides flow charts and examples that illustrate the key points of the traditional five-step process for determining BACT for GHG; and
- identifies technical resources related to GHG emissions and controls.

FEDERAL PSD APPLICABILITY FOR GHG

Beginning January 2, 2011, ~~GHG are regulated as a NSR contaminant.~~ GHG BACT applies when a new or modified facility is subject to PSD requirements for GHG. The first step for PSD applicability determination for new or modified sources is listed in the Tables 7 and 8 below that address the ~~Tailoring Rule~~ requirements in 40 CFR 52.21. A second step for PSD applicability is contemporaneous netting. For detailed guidance on this topic, EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases" (March 2011) should be referenced, but should be used in accordance with EPA's clarifying documents regarding the U.S. Supreme Court decision in *Utility Air Regulatory Group v. Environmental Protection Agency*[24] and the current requirements under 40 CFR 52.21.

In determining PSD applicability, a differentiation between GHG CO_2e and mass basis must be made. GHG mass basis is simply the sum of all six GHG compound mass emissions. However, to obtain GHG CO_2e, the mass emissions of each individual GHG compound must be multiplied by its 100-year Global Warming Potential (GWP). The individual GHG CO_2e are then summed to obtain the total CO_2e for the source. Current GWP factors should be obtained from EPA's website when performing these calculations.

[23] EPA Memo: "Addressing Biogenic Carbon Dioxide Emissions from Stationary Sources, (2014 November 9)

[24] EPA Memo: Next Steps and Preliminary Views on the Application of Clean Air Act Permitting Programs to Greenhouse Gases Following the Supreme Court's Decision, (2014, July 24)

Table 7
GHG PSD Applicability for New Sources

PSD applies to GHG if:
1. The source is otherwise subject to PSD for another regulated NSR pollutant, **AND** 2. The source has a GHG PTE ≥ 75,000 tons per year (TPY) CO_2e;

Table 8
GHG PSD Applicability for Modified Sources

PSD applies to GHG if:
1. The modification is otherwise subject to PSD for another regulated NSR pollutant, **AND** 2. The modification results in a GHG emissions increase ~~or~~and net emissions increase: a. ~~PTE ≥~~ 75,000 TPY CO_2e, **AND** b. > zero TPY mass basis

Contemporaneous Netting

Contemporaneous netting is the process of considering all of the creditable emission increases and decreases that have occurred during the period beginning five years before the proposed construction of the modification through the date that the emission increase from the modification occurs. When calculating the net emissions increase in Table 8 above for PSD applicability, it must include all emission increases and decreases during this period.

SCAQMD PSD APPLICABILITY FOR GHG

SCAQMD adopted Rule 1714 in 2010 to implement the PSD GHG requirements set forth by 40 CFR 52.21. SCAQMD Rule 1714 incorporates the provisions of 40 CFR 52.21 by reference, excluding the sections listed under SCAQMD Rule 1714 (c)(1). SCAQMD PSD applicability should be determined following the applicable sections of the Code of Federal Regulation identified in the rule.

TOP-DOWN BACT PROCESS

EPA recommends that permitting authorities continue to use the EPA's five-step "Top-Down" BACT process to determine BACT for GHG (U.S. EPA, 2011)[25]. While this section summarizes the steps in the process, further details for each of the steps can be referenced in EPA's guidance document.

BACT Step 1 – Identify All Available Control Options

The first step in the top-down BACT process is to identify all "available" control options. Available control options are those air pollution control technologies or techniques (including lower-emitting processes and practices) that have the potential for practical application to the emissions unit and the regulated pollutant under evaluation.

Permit applicants and permitting authorities should identify all "available" GHG control options that have the potential for practical application to the source under consideration.

The application of BACT to GHG does not affect the discretion of a permitting authority to exclude options that would fundamentally redefine a proposed source. GHG control technologies are likely to vary based on the type of facility, processes involved, and GHG being addressed. EPA has emphasized the importance of energy efficiency improvements. ~~The first category of energy efficiency improvement options includes technologies or processes that maximize the efficiency of the individual emissions unit. The second category of energy efficiency improvements includes the options that could reduce emissions from a new greenfield facility by improving utilization of thermal energy and electricity that is generated and used on site.~~

For the purposes of a BACT analysis for GHG, EPA classifies CCS as an add-on pollution control technology that is "available" for large CO_2-emitting facilities including fossil fuel-fired power plants and industrial facilities with high-purity CO_2 streams (*e.g.,* hydrogen production, ammonia production, natural gas processing, ethanol production, ethylene oxide production, cement production, and iron and steel manufacturing).

BACT Step 2 – Eliminate Technically Infeasible Options

Under the second step of the top-down BACT analysis, a potentially applicable control technique listed in Step 1 may be eliminated from further consideration if it is not technically feasible for the specific source under review. EPA generally considers a technology to be technically feasible if it has been successfully operated on the same type of source under review, or is available and applicable to the source under review.

Assuming CCS has been included in Step 1 of the top-down BACT process for such sources, it now must be evaluated for technical feasibility in Step 2. CCS is composed of three main components: CO_2 capture and/or compression, transport, and storage. CCS may be eliminated from a BACT analysis in Step 2 if it can be shown that there are significant differences pertinent to the successful operation for any~~each~~ of these three main components from what has already

[25] U.S. EPA (2011). PSD and Title V Permitting Guidance for Greenhouse Gases

been applied to a differing source type. For example, the temperature, pressure, pollutant concentration, or volume of the gas stream to be controlled, may differ so significantly from previous applications that it is uncertain the control device will work in the situation currently undergoing review. CCS may be eliminated from a BACT analysis in Step 2 if the three components working together are deemed technically infeasible for the proposed source, taking into account the integration of the CCS components with the base facility and site-specific considerations (*e.g.,* space for CO_2 capture equipment at an existing facility, right-of-ways to build a pipeline or access to an existing pipeline, access to suitable geologic reservoirs for sequestration, or other storage options).

BACT Step 3 – Ranking of Controls

After the list of all available controls is winnowed down to a list of the technically feasible control technologies in Step 2, Step 3 of the top-down BACT process calls for the remaining control technologies to be listed in order of overall control effectiveness for the regulated NSR pollutant under review. The most effective control alternative (*i.e.,* the option that achieves the lowest emissions level) should be listed at the top and the remaining technologies ranked in descending order of control effectiveness. The ranking of control options in Step 3 determines where to start the top-down BACT selection process in Step 4.

The options considered in a BACT analysis for GHG emissions will likely include, but not necessarily be limited to, control options that result in energy efficiency measures to achieve the lowest possible emission level. Where plant-wide measures to reduce emissions are being considered as GHG control techniques, the concept of overall control effectiveness will need to be refined to ensure the suite of measures with the lowest net emissions from the facility is the top-ranked measure. Ranking control options based on their net output-based emissions ensures that the thermal efficiency of the control option, as well as the power demand of that control measure, is fully considered when comparing options in Step 3 of the BACT analysis. Finally, to best reflect the impact on the environment, the ranking of control options should be based on the total CO_2e rather than total mass or, mass for the individual GHG.

BACT Step 4 – Economic, Energy, and Environmental Impacts

Under Step 4 of the top-down BACT analysis, permitting authorities must consider the economic, energy, and environmental impacts arising from each option remaining under consideration. Accordingly, after all available and technically feasible control options have been ranked in terms of control effectiveness (BACT Step 3), the permitting authority should consider any specific energy, environmental, and economic impacts identified with those technologies to either confirm that the top control alternative is appropriate or determine it to be inappropriate.

There are compelling public health and welfare reasons for BACT to require all GHG reductions that are achievable, considering economic impacts and the other listed statutory factors. As a key step in the process of making GHG a regulated pollutant, EPA has considered scientific literature on impacts of GHG emissions and has made a final determination that emissions of six GHG endanger both the public health and the public welfare of current and future

generations. Potential impacts that may be considered in this step based on the EPA's January 2010 Endangerment Finding[26] are detailed in EPA's guidance document. ~~Among the public health impacts and risks that EPA cited are anticipated increases in ambient ozone and serious ozone-related health effects, increased likelihood of heat waves affecting mortality and morbidity, risk of increased intensity of hurricanes and floods, and increased severity of coastal storm events due to rising sea levels. With respect to public welfare, EPA cited numerous and far-ranging risks to food production and agriculture, forestry, water resources, sea level rise and coastal areas, energy, infrastructure, and settlements, and ecosystems and wildlife. The potentially serious adverse impacts of extreme events such as wildfires, flooding, drought and extreme weather conditions also supported EPA's finding.~~

When conducting a BACT analysis for GHG, the environmental impact analysis should continue to concentrate on impacts other than the direct impacts due to emissions of the regulated pollutant in question. Where GHG control strategies affect emissions of other regulated pollutants, applicants and permitting authorities should consider the potential trade-offs of selecting particular GHG control strategies.

BACT Step 5 – Selecting BACT

In Step 5 of the BACT determination process, the most effective control option not eliminated in Step 4 should be selected as BACT for the pollutant and emissions unit under review and included in the permit. For energy-producing sources, one way to incorporate the energy efficiency of a process unit into the BACT analysis is to compare control effectiveness in BACT Step 3 based on output-based emissions of each of the control options. Establishing an output-based BACT emissions limit, or a combination of output- and input-based limits, wherever feasible and appropriate to ensure that BACT is complied with at all levels of operation should be considered.

GHG CONTROL MEASURES WHITE PAPERS

EPA has a series of technical "white papers" that summarize readily available information on control techniques and measures to reduce GHG emissions from specific industrial sectors. These papers provide basic technical information which may be useful in a BACT analysis, but they do not define BACT for each sector. The industrial sectors covered include:

- Electric Generating Units (PDF) (48pp, 805k)
  EPA Contact: Christian Fellner (919-541-4003 or fellner.christian@epa.gov)
- Large Industrial/Commercial/Institutional Boilers (PDF) (39pp, 337k)
  EPA Contact: Jim Eddinger (919-541-5426 or eddinger.jim@epa.gov)
- Pulp and Paper (PDF) (62pp, 421k)
  EPA Contact: Bill Schrock (919-541-5032 or schrock.bill@epa.gov)

[26] https://www3.epa.gov/climatechange/endangerment/

- Cement (PDF) (48pp, 220k)
  EPA Contact: Keith Barnett (919-541-5605 or barnett.keith@epa.gov)
- Iron and Steel Industry (PDF) (78pp, 620k)
  EPA Contact: Donna Lee Jones (919-541-5251 or jones.donnalee@epa.gov)
- Refineries (PDF) (42pp, 707k)
  EPA Contact: Brenda Shine (919-541-3608 or shine.brenda@epa.gov)
- Nitric Acid Plants (PDF) (31pp, 544k)
  EPA Contact: Nathan Topham (919-541-0483 or topham.nathan@epa.gov)
- Landfills (PDF) (28pp, 250k)
  EPA Contact: Hillary Ward (919-541-3154 or ward.hillary@epa.gov)

PART F – BACT DETERMINATIONS FOR FACILITIES SUBJECT TO PREVENTION OF SIGNIFICANT DETERIORATION FOR GREENHOUSE GASES

(This section is currently under development)

LIST OF ABBREVIATIONS

AIP	Achieved in Practice
APCD	~~Air Pollution Control District~~ Air Pollution Control District
~~**AQMD**~~	~~South Coast Air Quality Management District~~
AQMP	Air Quality Management Plan
BACT	Best available control technology
BRC	BACT Review Committee, SCAQMD
CAA	Clean Air Act
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCS	Carbon Capture and Sequestration
CEP	Certified Equipment Permit
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DCF	Discounted Cash Flow Method
DEO	Deputy Executive Officer
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
H&SC	Health and Safety Code, California State
LAER	Lowest achievable emission rate
LPG	Liquefied petroleum gas
MDAB	Mojave Desert Air Basin
MICR	Maximum Individual Cancer Risk
MSBACT	Minor Source BACT
NO_2	Nitrogen dioxide
NOx	Oxides of nitrogen
NSR	New Source Review
ODC	Ozone depleting compounds
Pb	Lead
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RACT	Reasonably available control technology
RECLAIM	Regional Clean Air Incentives Market
ROG	Reactive organic gas
RTC	RECLAIM trading credit
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SOCAB	South Coast Air Basin

SOx	Oxides of sulfur
SRC	BACT Scientific Review Committee
SSAB	Salton Sea Air Basin
T-BACT	Best available control technology for toxics
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound

LIST~~INDEX~~ OF EQUIPMENT CATEGORIES

A

B

C

D

E

F

G

M

N

O

Oven (see Dryer or Oven)

P

Perlite Manufacturing System
~~Petroleum Coke Calciner (see Calciner – Petroleum Coke)~~
Pharmaceutical Manufacturing
___~~Pharmaceutical -~~ Operations Involving Solvents
___Solids Handling
___Solids Storage Tanks
Phosphoric Acid - Thermal Process
Phthalic Anhydride
~~Pipe – Open Ended (see Fugitive Emission Sources)~~
Plasma Arc Metal Cutting Torch, Electrical Input Rating
Plastic or Resin Extrusion
~~Pneumatic Conveying - Except Paper and Fibers (see Bulk Solid Material Handling)~~
Polyester Resin Operations~~ -~~
___Molding and Casting
___~~Polyester Resin Operations –~~ Fiberglass Fabrication, Hand and Spray Layup
___~~Polyester Resin Operations –~~ Fiberglass Fabrication, Panel Manufacturing
___~~Polyester Resin Operations –~~ Fiberglass Fabrication, Pultrusion
~~Polyethylene Manufacturing (see Resin Manufacturing)~~
Polymeric Cellular (Foam) Product Manufacturing
~~Polypropylene Manufacturing (see Resin Manufacturing)~~
~~Polystyrene Extrusion (see Plastic or Resin Extrusion)~~
~~Polystyrene Foam Product Manufacturing (see Polymeric Cellular [Foam] Product Manufacturing)~~
~~Polystyrene Foam Product Manufacturing, Using Blowing Agent (see Polymeric Cellular [Foam] Product Manufacturing)~~
Polystyrene Manufacturing ~~(see Resin Manufacturing)~~
Polyurethane Tube Manufacturing~~Mfg.~~
Powder Coating Booth
Precious Metal Reclamation
___~~–~~ Incineration
___~~Precious Metals Recovery -~~ Chemical Recovery and Chemical Reactions
~~Pressure Relief Valve (see Fugitive Emission Sources)~~
Printing (Graphic Arts)~~–~~
___Flexographic
___~~Printing (Graphic Arts) –~~ Letterpress
___~~Printing (Graphic Arts) –~~ Lithographic, Heatset
___~~Printing (Graphic Arts) –~~ Lithographic, Non-Heatset
___~~Printing (Graphic Arts) –~~ Rotogravure or Gravure – Publication and Packaging
___~~Printing (Graphic Arts) –~~ Screen Printing and Drying

~~Process Drains (see Wastewater System)~~
Process Heater~~–~~
___Non-Refinery
___~~Process Heater -~~ Refinery
~~Process Valves (see Fugitive Emission Sources)~~
~~Pultrusion (see Polyester Resin Operations)~~
~~Pumps (see Fugitive Emission Sources)~~

R

S

Proposed Part B LAER Determinations

(existing Part B Determinations are located on BACT webpage)

SCAQMD BACT Determination

Source Type:	Major/LAER
Application No.:	516409
Equipment Category:	I.C. Engine - Emergency, Compression Ignition
Equipment Subcategory:	PM Filter
Date:	**December 10, 2015**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Caterpillar	B. MODEL: C9
C. DESCRIPTION: Diesel fuel, six cylinders, turbocharged and aftercooled,	
D. FUNCTION: Drives an emergency electricity generator located at building 304	
E. SIZE/DIMENSIONS/CAPACITY: 374 BHP	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: Gross heat input in btu per hour at the higher heating value of the fuel	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
Make and model of burner	Rated heat input of single burner, in btu/hr	Number of burners
Enter additional burner types, as needed, add extra rows		

H. PRIMARY FUEL: DIESEL	I. OTHER FUEL: Supplementary or standby fuels
J. OPERATING SCHEDULE: <1 HRS/DAY 1 DAYS/WEEK 26 WKS/YR	
K. EQUIPMENT INFORMATION COMMENTS: Diesel particulate filter installed	

2. COMPANY INFORMATION

A. COMPANY: US Gov't VA Medical Center	B. FAC ID: 014966
C. ADDRESS: 11301 Wilshire Blvd CITY: ~~West~~ Los~~t~~ Angeles STATE: CA ZIP: 90073	D. NAICS CODE: 8060
E. CONTACT PERSON: Robert Benkeser	F. TITLE: Director, Facilities Management
G. PHONE NO.: 310-268-4677	H. EMAIL: robert.benkeser@va.gov

3. PERMIT INFORMATION

A. AGENCY: SCAQMD	B. APPLICATION TYPE: ~~PO NO PC~~NEW CONSTRUCTION
C. SCAQMD ENGINEER: Roy Olivares	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 6/29/11 P/O NO.: 6/29/11 PO ISSUANCE DATE: 6/29/2011	
E. START-UP DATE: 6/29/2011	
F. OPERATIONAL TIME: Intermittent--for engine readiness test. Limited to 200 hrs/year which includes no more than 50 hours/year and 4.2 hour/month for maintenance and testing. Engine shall not be operated in idle mode for more than 240 consecutive minutes.	

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+VOC	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit		3 g/bhp-hr		2.6 g/bhp-hr	0.15 g/bhp-hr	
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: The filter was required to reduce toxic risk from diesel particulate emissions, but also reduces PM10, VOC and CO.

C. BASIS OF THE BACT/LAER DETERMINATION: ~~Acheived in Practice~~Achieved in Practice

D. EMISSION INFORMATION COMMENTS: Compliance with rule 404 and Rule 1470. Engine meets applicable Tier 3 BACT limits. The values in Part A are EPA certification standards based on EPA certification test methods.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Clean Air Systems	B. MODEL: FCA225

C. DESCRIPTION: Diesel Particulate Filter with hiback data logging and alarm system to automatically shut down engine or switch it to power de-rating when backpressure exceeds setting specified by manufacturer. CARB certified.

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

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	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	85%	___%
PM_{10}	___%	___%	___%
Inorganic	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS Permit condition to regenerate PM filter after every 24 cold engine start-ups or HiBack alarm signal, whichever occurs first. For regeneration run engine until exhaust temp exceeds 572 Deg. F and normal backpressure reading. Engine exhaust temp at inlet to PM filter ≥ 572 Deg. F except during cold engine start-up, not to exceed 10 minutes.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Certified Tier 3 engine with CARB verified DPF.

B. DATE(S) OF SOURCE TEST: Not applicable

C. COLLECTION EFFICIENCY METHOD: 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)

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: Enter source test results for each criteria contaminant or precursor (mass emissions, concentrations or efficiencies) if they differ from the requirements previously listed. As previously requested in Section 4, identify any corrections or averaging times

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): EPA Nonroad Engine Certification Test Methods
H. MONITORING AND TESTING REQUIREMENTS: Every 5000 hours inspect integrity of PM filter and if necessary replace
I. DEMONSTRATION OF COMPLIANCE COMMENTS: Enter comments for additional information for Demonstration of Compliance.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 43902	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE: 10
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): N/A
G. SCAQMD SOURCE SPECIFIC RULES: 1470, 431.2		
H. HEALTH RISK FOR PERMIT UNIT:		

H1. MICR: 2.86 x 10-8	H2. MICR DATE: 11/24/10	H3. CANCER BURDEN: 4.84x10-3	H4. CB DATE: 11/24/10
H5: HIA: N/A	H6. HIA DATE: Click here to enter a date.	H7. HIC: 1.8x10-5	H8. HIC DATE: 11/24/10

SCAQMD BACT Determination

Source Type:	Major/LAER
Application No.:	516708
Equipment Category:	I.C. Engine - Emergency, Compression Ignition
Equipment Subcategory:	PM Filter
Date:	**December 10, 2015**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Cummins	B. MODEL: QSK50-g4
C. DESCRIPTION: Diesel fuel, 16 cylinders, turbocharged and aftercooled,	
D. FUNCTION: Drives an emergency electricity generator	
E. SIZE/DIMENSIONS/CAPACITY: 2220 BHP	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: Gross heat input in btu per hour at the higher heating value of the fuel	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
Make and model of burner	Rated heat input of single burner, in btu/hr	Number of burners
Enter additional burner types, as needed, add extra rows		

H. PRIMARY FUEL: DIESEL	I. OTHER FUEL: Supplementary or standby fuels
J. OPERATING SCHEDULE: <1 HRS/DAY 1 DAYS/WEEK 26 WKS/YR	
K. EQUIPMENT INFORMATION COMMENTS: Diesel particulate filter installed	

2. COMPANY INFORMATION

A. COMPANY: Los Angeles County Sheriff's Department	B. FAC ID: 068181
C. ADDRESS: 28380 The Old Road CITY: Saugus STATE: CA ZIP: 91350	D. NAICS CODE: 92214
E. CONTACT PERSON: Daniel Maloney	F. TITLE: Crafts Operations Manager
G. PHONE NO.: 661-295-8025	H. EMAIL: E-mail address of contact person

3. PERMIT INFORMATION

A. AGENCY: SCAQMD	B. APPLICATION TYPE: ~~PO NO PC~~NEW CONSTRUCTION
C. SCAQMD ENGINEER: Roy Olivares	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 11/15/11 P/O NO.:G15795 PO ISSUANCE DATE: 11/15/2011	
E. START-UP DATE: 11/15/2011	
F. OPERATIONAL TIME: Intermittent--for engine readiness test. Limited to 200 hrs/year which includes no more than 50 hours/year and 4.2 hour/month for maintenance and testing.	

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+VOC	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit		4.8 g/bhp-hr		2.6 g/bhp-hr	0.15 g/bhp-hr	
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: The filter was required to reduce toxic risk from diesel particulate emissions, but also reduces PM10, VOC and CO.

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

D. EMISSION INFORMATION COMMENTS: Compliance with rule 404 and Rule 1470. Engine meets applicable Tier 2 BACT limits. The values in Part A are EPA certification standards based on EPA certification test methods.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Johnson Matthey	B. MODEL: CRT(+)12-C-BIEO-CS-24-RT

C. DESCRIPTION: Diesel Particulate Filter with CRTDM diagnostic module, data logging and alarm system to automatically shut down engine or switch it to power de-rating when backpressure exceeds setting specified by manufacturer. CARB certified.

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

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	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	85%	___%
PM_{10}	___%	___%	___%
Inorganic	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS Permit condition to regenerate PM filter whenever warning signal is received from alarm system. For regeneration run engine until exhaust temp exceeds 464 Deg. F and normal backpressure reading. Engine exhaust temp at inlet to PM filter ≥ 464 Deg. F except during cold engine start-up.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Certified Tier 2 engine with CARB verified DPF.

B. DATE(S) OF SOURCE TEST: Not applicable

C. COLLECTION EFFICIENCY METHOD: 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)

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: Enter source test results for each criteria contaminant or precursor (mass emissions, concentrations or efficiencies) if they differ from the requirements previously listed. As previously requested in Section 4, identify any corrections or averaging times

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): EPA Nonroad Engine Certification Test Methods
I. MONITORING AND TESTING REQUIREMENTS: Every six months inspect integrity of PM filter and if necessary replaceInclude 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: Enter comments for additional information for Demonstration of Compliance.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 43902	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE: 10
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): N/A
G. SCAQMD SOURCE SPECIFIC RULES: 1470, 431.2		
H. HEALTH RISK FOR PERMIT UNIT:		

H1. MICR: 6.3x10-8	H2. MICR DATE: 6/23/11	H3. CANCER BURDEN: 1.06x10-2	H4. CB DATE: 6/23/11
H5: HIA: N/A	H6. HIA DATE: Click here to enter a date.	H7. HIC: 3.95x10-5	H8. HIC DATE: 6/23/11

SCAQMD BACT Determination

Source Type:	Major/LAER
Application No.:	558397
Equipment Category:	I.C. Engine - Emergency, Compression Ignition
Equipment Subcategory:	PM Filter
Date:	**December 10, 2015**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Cummins	B. MODEL: QSX15-G9
C. DESCRIPTION: Diesel fuel, six cylinders, turbocharged and aftercooled,	
D. FUNCTION: Drives an emergency electricity generator	
E. SIZE/DIMENSIONS/CAPACITY: 755 BHP	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: Gross heat input in btu per hour at the higher heating value of the fuel	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
Make and model of burner	Rated heat input of single burner, in btu/hr	Number of burners
Enter additional burner types, as needed, add extra rows		

H. PRIMARY FUEL: DIESEL	I. OTHER FUEL: Supplementary or standby fuels
J. OPERATING SCHEDULE: <1 HRS/DAY 1 DAYS/WEEK 26 WKS/YR	
K. EQUIPMENT INFORMATION COMMENTS: Diesel particulate filter installed	

2. COMPANY INFORMATION

A. COMPANY: University of Southern California	B. FAC ID: 800265
C. ADDRESS: McClintock W 34th Childs Street CITY: Lost Angeles STATE: CA ZIP: 90089	D. NAICS CODE: 61131
E. CONTACT PERSON: Angel Burgos	F. TITLE: Environmental Manager
G. PHONE NO.: 626-318-7475	H. EMAIL: aburgos@usc.edu

3. PERMIT INFORMATION

A. AGENCY: SCAQMD	B. APPLICATION TYPE: ~~PO NO PC~~NEW CONSTRUCTION
C. SCAQMD ENGINEER: Ken Coats (Laird)	
D. PERMIT INFORMATION: PC ISSUANCE DATE: Click here to enter a date. P/O NO.:G30438 PO ISSUANCE DATE: 3/21/2014	
E. START-UP DATE: 3/21/2014	
F. OPERATIONAL TIME: Intermittent--for engine readiness test. Limited to 200 hrs/year which includes no more than 50 hours/year and 4.2 hour/month for maintenance and testing.	

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+VOC	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit		~~3~~ 4.8 g/bhp-hr		2.6 g/bhp-hr	0.01~~5~~ g/bhp-hr	
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: The filter was required to reduce toxic risk from diesel particulate emissions, but also reduces PM10, VOC and CO.

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

D. EMISSION INFORMATION COMMENTS: Compliance with rule 404 and Rule 1470. Engine meets applicable Tier 2 BACT limits. The values in Part A are EPA certification standards based on EPA certification test methods.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Rypos	B. MODEL: RH-410-L

C. DESCRIPTION: Diesel Particulate Filter with hiback data logging and alarm system to automatically shut down engine or switch it to power de-rating when backpressure exceeds setting specified by manufacturer. CARB certified.

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

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	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	85%	___%
PM_{10}	___%	___%	___%
Inorganic	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS Permit condition to regenerate PM filter after every 24 cold engine start-ups or HiBack alarm signal, whichever occurs first. For regeneration run engine until exhaust temp exceeds 572 Deg. F and normal backpressure reading. Engine exhaust temp at inlet to PM filter ≥ 572 Deg. F except during cold engine start-up, not to exceed 10 minutes.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Certified Tier 2 engine with CARB verified DPF.

B. DATE(S) OF SOURCE TEST: An appropriate size parameter such as rated product throughput, usable volume, and/or one more characteristic dimensions.

C. COLLECTION EFFICIENCY METHOD: 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)

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: Enter source test results for each criteria contaminant or precursor (mass emissions, concentrations or efficiencies) if they differ from the requirements previously listed. As previously requested in Section 4, identify any corrections or averaging times

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): EPA Nonroad Engine Certification Test Methods
J. MONITORING AND TESTING REQUIREMENTS: Every 5000 hours inspect integrity of PM filter and if necessary replaceInclude 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: Enter comments for additional information for Demonstration of Compliance.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: 43902	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE: 10
D. RECLAIM FAC? YES ☐ NO ☒	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): N/A
G. SCAQMD SOURCE SPECIFIC RULES: 1470, 431.2		
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.

SCAQMD BACT Determination

Source Type:	Major/LAER
Application No.:	538706
Equipment Category:	Flare
Equipment Subcategory:	Oil and Gas Operations
Date:	**December 10, 2015**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Flare Industries/Bekaert CEB	B. MODEL: CEB 800
C. DESCRIPTION: Enclosed ground flare with Clean Enclosed Burner	
D. FUNCTION: Process gas disposal	
E. SIZE/DIMENSIONS/CAPACITY: 24'H x 7'-9"L x 7'-9"W	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: 27 MMBtu/hr	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
NIT mesh knitted metal fiber enclosed burner	Rated heat input of single burner, in btu/hr	1
Enter additional burner types, as needed, add extra rows		

H. PRIMARY FUEL: Process gas from Oil and Gas Operations	I. OTHER FUEL: natural gas
J. OPERATING SCHEDULE: 24 HRS/DAY 7 DAYS/WEEK 52 WKS/YR	
K. EQUIPMENT INFORMATION COMMENTS: Continuous pilot burner with thermocouple for flame detection. Propane storage provides fuel for pilot burner.	

2. COMPANY INFORMATION

A. COMPANY: Linn Operating, Inc.	B. FAC ID: 151532
C. ADDRESS: Brea-Olinda Oilfield, 2000 Tonner Canyon CITY: Brea STATE: CA ZIP: 92821	D. NAICS CODE: Click "NAICS" for link
E. CONTACT PERSON: Vince VanDelden	F. TITLE: EH&S Representative
G. PHONE NO.: 714-257-1604	H. EMAIL: vvwandelden@linnenergy.com

3. PERMIT INFORMATION

A. AGENCY: SCAQMD	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Maria Vibal	
D. PERMIT INFORMATION: PC ISSUANCE DATE: 1/8/13 P/O NO.:G34773 PO ISSUANCE DATE: 2/24/2015	
E. START-UP DATE: 3/25/2013	
F. OPERATIONAL TIME: The flare will be operational at all times for disposal of process gas from Oil and Gas Operations at the site.	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: All at 3% O_2, one hour averaging time.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit	10 ppmv	15 ppmv		10 ppmv		
Averaging Time	1 HR	1 HR		1 HR		
Correction	3% O2	3% O2		3% O2		

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

D. EMISSION INFORMATION COMMENTS: Similar flare model CEB 500, 17 MMBtu/hr operating at Oil and Gas operations in Santa Barbara APCD has been included in CARB BACT Clearinghouse with same emission limits. 99.9+% destruction for VOC and BTEX.

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Manufacturer of the equipment	B. MODEL: Model name and number

C. DESCRIPTION: Additional description of the operation and functions of the control equipment.

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

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	___%	~~__~~99.9%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___ %	___%
PM_{10}	___%	___%	___%
Inorganic	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS Enter comments for additional information regarding Control Technology.

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: 3/25-26/13 & 4/19/13

C. COLLECTION EFFICIENCY METHOD: N/A

D. COLLECTION EFFICIENCY PARAMETERS: N/A

E. SOURCE TEST/PERFORMANCE DATA: NOx= 9.87ppmvd; CO=6.15ppmvd; VOC=3.93ppmvd, all at 3% O2

F. TEST OPERATING PARAMETERS AND CONDITIONS: Fired on process gas @ approx. 21.73 MMBtu/hr, Process Gas HHV 913 Btu/scf

G. TEST METHODS (SPECIFY AGENCY): ASTM D-1945 & D-3588; SCAQMD 25.3, 10.1, 100.1, 307, 5.1, 4.1, 2.1; CARB 410

K. 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: ~~on.~~

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: Click here to enter text.	B. CCAT: 08	C. APPLICATION TYPE CODE: 10
D. RECLAIM FAC? YES ☒ NO ☐	E. TITLE V FAC: YES ☒ NO ☐	F. SOURCE TEST ID(S): PR12635
G. SCAQMD SOURCE SPECIFIC RULES: 1148.1		
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.

Proposed BACT Guidelines Part D

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;, ~~**DRAFT**~~ October 7, 2016)

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Table of Contents

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 ~~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: Absorption Chiller

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		≤ 20 ppmv dry corrected to 3% O2 (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)	

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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: 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)					

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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: Aluminum Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible or Pot		Natural Gas (07-11-97)	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		Natural Gas (1990)	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)	Natural Gas (1990)	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

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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: 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)

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

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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
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

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 ≤ 36 ppmvd @ 3% O_2 (10-20-2000)			Baghouse (1990)	

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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: 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
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

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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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: 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
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

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
~~XX~~10-0~~XX~~7-2016 Rev. 2

Equipment or Process: Boiler

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx[1]**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas ~~or Propane~~ Fired, > 2 and < 20 MM Btu/HR		Compliance with SCAQMD Rules 1146 or 1146.1~~≤ 912 ppmv dry d corrected to 3% O_2~~[2] (~~10-20-2000~~X10-~~XX~~07-2015~~6)~~	Natural Gas (10-20-2000)	≤50 ppmvd for firetube type, ≤ 100 ppmvd for watertube type, ~~dry~~ 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 MM Btu/HR		With Low-NOx Burner: ≤ 9 ppmv dry corrected to 3% O_2 With Add-On Controls: ≤ 7 ppmv dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	Same as above. (04-10-98)	Natural Gas (04-10-98)	With Add-On Controls: ≤ 5 ppmvd NH3, corrected to 3% O2 ≤ 1 ppmvd ozone, corrected to 3% O2 (10-20-2000)
Natural Gas or Propane Fired, ≥ 75 MM Btu/HR		Compliance with SCAQMD~~≤ 5 ppmv dryd corrected to 3% O_2~~ Rule 1146 (~~X~~10-	Natural Gas (10-20-2000)	Same as above. (04-10-98)	Natural Gas (04-10-98)	With Add-On Controls: ≤ 5 ppmvd NH3, corrected to 3% O2

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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**
		~~XX~~07-201~~5~~6)				≤ 1 ppmvd ozone, corrected to 3% O2 (10-20-2000)

(Continued on next page)

Oil Fired[3]		Compliance with SCAQMD Rule 1146 or 1146.1 (10-20-2000)	Fuel Sulfur Content ≤ ~~0.05% by Weight (10-20-2000) or~~ 0.0015% by weight ~~if purchased after May 31, 2004~~ (10-03-2008)	≤ 50 ppmvd for firetube type ~~,~~ ≤ 100 ppmvd for watertube type, ~~dry~~ corrected to 3% O_2 (04-10-98)		
Atmospheric Unit, ≥ 2 and ≤ 10 MMBtu/HR		Compliance with ~~≤ 12 ppmvd dry corrected to 3% O_2~~ SCAQMD Rules 1146 and 1146.1 (~~REVISION DATE~~10-07-2016)		Compliance with SCAQMD Rules 1146 and 1146.1 (~~REVISION DATE~~10-07-2016)		
Landfill ~~or Digester~~ Gas Fired, < 75 MMBTU/Hr		~~≤ 30 25 ppmvd at 3% O_2 dry.~~ Compliance with SCAQMD Rules 1146 and 1146.1 (~~REVISION DATE~~10-07-2016)~~(04-10-98)~~		≤ 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		~~15 ppmvd at 3% O_2 dry.~~		≤ 100 ppmvd at 3% O_2 dry. (04-10-98)	≤ 0.1 gr/scf at 12% CO_2 (Rule 409)	

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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**
		Compliance with SCAQMD Rules 1146 and 1146.1 (~~REVISION DATE~~10-07-2016)			(04-10-98)	

1) ~~Rules 1146 and 1146.1 require that boilers rated >2 and <75 MMBtu/hr meet 9 ppm NOx beginning 1/1/2012 for some categories, that natural gas-fired boilers rated at ≥75 MMBtu/hr meet 5 ppm by 1/1/2015 (except boilers at schools and universities), that natural-draft boilers rated >2 and ≤10 MMBtu/hr with unsealed combustion chambers meet 12 ppm by 1/1/2014, and that boilers firing landfill or digester gas meet 25 or 15 ppm, respectively, by 1/1/15 (all ppm are dry, corrected to 3% O2).~~ 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.

* Means those facilities that are minor ~~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: 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 ≥1,400°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)	

* 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: Brass Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible, ≤ 300 Lbs/Hr Process Rate		Natural Gas (1990)	Natural Gas (1990)		Natural Gas, Charge Clean Metal Only and Maintain Slag Cover Over Entire Melt Surface (1990)	
Crucible, > 300 Lbs/Hr Process Rate		Low-NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas, with Baghouse (1990)	
Reverberatory or Rotary, Non-Sweating		Natural Gas and Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas with Baghouse (1990)	
Reverberatory or Rotary, Sweating	Afterburner (≥ 0.3 Second Retention Time at ≥ 1400 °F) (1990)	Natural Gas with Low NOx Burner (1990)	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)	
Tilting Induction, > 300 Lbs/Hr Process Rate					Baghouse (7-11-97)	

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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: 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 SCAQMD 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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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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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 SCAQMD 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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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 ≥1,400°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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10-20-2000 Rev. 0

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)	44 ppmv, Dry, Corrected to 3% 0_2 (1988)	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% 0_2 (1988)	
Other		45 ppmv, Dry, Corrected to 3% 0_2 (1988)	Natural Gas (1988)		Natural Gas with Baghouse (1988)	

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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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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		NO_x 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 ≥ 1,400 °F) (07-11-97)					
Catalyst Solids Handling					Baghouse (07-11-97)	

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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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10-20-2000 Rev. 0

Equipment or Process: Chemical Milling Tanks

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Aluminum and Magnesium[1]						
Nickel Alloys, Stainless Steel and Titanium		Packed Chemical Scrubber (10-20-2000)			High Efficiency Mist Eliminator (10-20-2000)	

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 SCAQMD 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: 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

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10-20-2000 Rev. 0

Equipment or Process: Chrome Plating

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Decorative Chrome					Packed Scrubber and Mist Suppressant (1988) Compliance with SCAQMD Rule 1469 (10-20-2000)	
Hard Chrome					Packed Scrubber and Mist Suppressant (1988) Compliance with SCAQMD Rule 1469 (10-20-2000)	

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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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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

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)		Natural Gas (1988)	
Roaster, ≥ 110,000 BTU/Hr	Afterburner (0.3 Sec Retention Time at 1200 °F) (1990)	Natural Gas, with Heat Recovery on Afterburner Exhaust to Reduce Fuel Consumption (10-20-2000)	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[1]						
Handling Equipment, ≥ 1,590 Lbs/Hr All					Cyclone (1990)	

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 SCAQMD BACT Guidelines for this subcategory require cost effective analyses before they can be listed in these current Guidelines.

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12-5-2003 Rev. 0

Equipment or Process: Composting

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

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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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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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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10-20-2000 Rev. 0

Equipment or Process: Crematory

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Secondary Combustion Chamber, ≥ 1500 °F (1990)	Natural Gas (1990)	Natural Gas (1990)		Natural Gas with Secondary Combustion Chamber, ≥ 1500 °F (1990)	

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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 SCAQMD 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.

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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 SCAQMD 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, SCAQMD 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, SCAQMD 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, SCAQMD 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; SCAQMD 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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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 After-burner (> 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 SCAQMD 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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10-20-2000 Rev. 0

Equipment or Process: Dryer – Kiln

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1988)		Natural Gas (1988)	

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10-20-2000 Rev. 0

Equipment or Process: Dryer or Oven

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Carpet Oven		80 ppmvd, corrected to 3% O_2 (10-20-2000)	Natural Gas (1990)		Natural Gas (1990)	
Rotary, Spray and Flash Dryers[1)]		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas with Baghouse (1990)	
Tray, Agitated Pan, and Rotary Vacuum Dryers		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas (1990)	
Tenter Frame Fabric Dryer		60 ppmvd Corrected to 3% O_2~~02~~ (10-20-2000)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	
Other Dryers and Ovens – Direct and Indirect Fired		30 ppmvd corrected to 3% O_2~~02~~ (04-10-98)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	

1. Dryers for foodstuff, pharmaceuticals, aggregate & chemicals.

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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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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 ≥ 1,400°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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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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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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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 ≥ 1,400°F) (07-11-97)					

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10-20-2000 Rev. 0

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)					

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10-20-2000 Rev. 0

Equipment or Process: Fiberglass Operations

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Fabrication – Hand and Spray Layup	Compliance with SCAQMD Rule 1162 (10-20-2000)				Airless Spray Equipment and Spray Booth with Mesh Type Filter (1988)	
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 SCAQMD Rule 1162 (10-20-2000)					

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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: 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 SCAQMD 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: Flare

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
~~Digestor~~ 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)	0.06 lbs/MM Btu (1988)		Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1400 °F, and Auto Combustion Air Control (1988)	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)	0.06 lbs/MM Btu (1988)		Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1500 °F, and Auto Combustion Air Control (1988)	Knockout Vessel (1988)	

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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 ~~Clean~~ Compliant Materials with ≤ 5% VOC by Weight (10-20-2000)					

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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

Equipment or Process: Fryer – Deep Fat

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
< 2 MM Btu/hr	Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	Natural Gas (1990)	Natural Gas (1990)		Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	
≥ 2 MM Btu/hr	Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	Natural Gas (1990)	Natural Gas (1990)		Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F), and Electrostatic Precipitator or High Efficiency Mist Eliminator (10-20-2000)	

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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 SCAQMD Rule 1173 (12-5-2003)					
Compressors, Rotary Type	Enclosed Seal System Connected to Closed Vent System (04-10-98); and Compliance with SCAQMD Rule 1173					
Pressure Relief Valves	Connected to Closed Vent System or Equipped with Rupture Disc if Applicable (4-10-98); and Compliance with SCAQMD Rule 1173 (12-5-2003)					
Pumps – In Heavy Liquid Service	Single Mechanical (4-10-1998); and Compliance with SCAQMD 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 SCAQMD Rule 1173 (12-5-2003)					
Sampling Connections	Closed-Purge, Closed-Loop, or Closed-Vent System (4-10-98); and Compliance with SCAQMD Rule 1173 (12-5-2003)					
Valves, Fittings, Diaphragms, Hatches, Sight-Glasses, Open-Ended Pipes and Meters in VOC Service	Compliance with SCAQMD Rule 1173 (12-5-2003)					

* 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
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, 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)					
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 SCAQMD 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 SCAQMD Rule 1173 (10-20-2000)					
Process Valves – Gate, Globe and Ball	Compliance with SCAQMD 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 SCAQMD I&M; <1000 ppmv by USEPA Method 21 with Approved SCAQMD 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 SCAQMD 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)		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)		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)		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)	
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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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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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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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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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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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
7-14-2006 Rev. 1
~~X~~10-~~XX~~07-2016 Rev. 2

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

		Criteria Pollutants					
Subcategory~~/~~	**Rating/Size**	**VOC**	**NOx**	**NOx + ~~NMHC~~[1]NMHC[2)]**	**SOx**	**CO**	**PM**
Compression-~~Ignition~~[2]Ignition[3)]	50 ≤ HP < 75~~100~~			~~Tier 2:~~ ~~7.5 grams/kW-hr (5.6 grams/bhp-hr)~~ Tier ~~4 Final: 3 (After 12/31/2007):~~ 4.7 grams/kW-hr (3.5 grams/bhp-hr) (~~7~~X10-~~14~~XX07-~~2006~~20XX16)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	Tier ~~4 Final2 or Tier 3~~: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (~~7~~X10-~~14~~XX07-~~2006~~20XX16)	Tier ~~4 Final2 or Tier 3~~: 0.03 ~~0.40~~ grams/kW-hr (0.02~~2~~ ~~0.30~~ grams/bhp-hr) and CARB ATCM for portable diesel ~~engines~~[3]engines[4)] (~~7~~X10-~~14~~XX07-~~2006~~20XX16)
	~~75~~100 ~~≤~~ HP < 175 [5]		Tier 4 ~~Final~~Interim: ~~0~~3.4 grams/kW-hr (~~0.3~~2.5 grams/bhp-hr) (~~X~~10-~~XX~~07-20XX16)	Tier ~~4 Final~~Interim~~2~~: -NMHC only: 0.19 ~~6.6~~ grams/kW-hr (0.16~~4~~ ~~4.9~~ grams/bhp-hr) ~~Tier 3 (After 12-31-2006): -(X10-XX07-20XX16)NOx: 0.44.0 grams/kW-hr (0.33.0 grams/bhp-hr) (7-14-2006)~~		Tier 4 ~~Final~~Interim~~2 or Tier 3~~: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (~~7~~X10-~~14~~XX07-~~2006~~20XX16)	Tier 4 ~~Final~~Interim~~2 or Tier 3~~: 0.02 ~~0.30~~ grams/kW-hr (~~0.22~~0.015 grams/bhp-hr) and CARB ATCM for portable diesel ~~engines~~[3]engines[4)] (~~7~~X10-~~14~~XX07-~~2006~~20XX16)

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		Criteria Pollutants					
Subcategory~~/~~	**Rating/Size**	**VOC**	**NOx**	**NOx + ~~NMHC~~[1]NMHC[2)]**	**SOx**	**CO**	**PM**
	175 ≤ HP < 750		Tier 4 Final: 0.40 grams/kW-hr (0.30 grams/bhp-hr) (~~X~~10-~~XX~~07-20~~XX~~16)	Tier ~~-~~4 Final~~3~~: NMHC only: 0.19 ~~4.0~~ grams/kW-hr (0.1~~6~~4 ~~3.0~~ grams/bhp-hr)~~:~~ (~~X~~10-~~XX~~07-20~~XX~~16)~~NOx: 0.4grams/kW-hr (0.3grams/bhp-hr) (7-14-2006)~~		Tier 4 Final~~3~~: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (~~X~~10-~~XX~~07-20~~XX~~16) ~~(7-14-2006)~~	Tier ~~-~~4 Final~~3~~: 0.02-~~0.20~~ grams/kW-hr (0.015 ~~0.15~~ grams/bhp-hr) and CARB ATCM for portable diesel ~~engines~~[3]engines[4)] (~~X~~10-~~XX~~07-20~~XX~~16) ~~(7-14-2006)~~
Compression-Ignition[23]	≥750 HP [5]~~All~~	~~1.5 grams/bhp-hr, or 240 ppmvd as methane @ 15% O2 (4-10-1998)~~	Tier 4 ~~Final~~Interim: **For Generator Sets > 1200 HP:** 0.67 grams/kW-hr (0.50 grams/bhp-hr) **For All Engines Except "Generator Ssets > 1200 HP":** 3.5 grams/kW-hr (2.6 grams/bhp-hr) (~~X~~10-~~XX~~07-20~~XX~~16)~~1.5 grams/bhp-hr, or 80 ppmvd @ 15% O2 (4-10-1998)~~	Tier 4 ~~Final~~Interim: NMHC only: 0.~~19~~4 grams/kW-hr (0.~~16~~30 grams/bhp-hr) (~~X~~10-~~XX~~07-20~~XX~~16)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	Tier 4 ~~Final~~Interim: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (~~X~~10-~~XX~~07-20~~XX~~16)~~2.0 grams/bhp-hr, or 176 ppmvd @ 15% O2 (4-10-1998)~~	Tier 4 ~~Final~~Interim: **~~For Generator Sets:~~** 0.0~~3~~10 grams/kW-hr (0.0~~22~~7 grams/bhp-hr) **~~For All Engines Except Gensets:~~** ~~0.04 grams/kW-hr (0.03 grams/bhp-hr)~~ and CARB ATCM for portable diesel engines[34] (~~X~~10-~~XX~~07-20~~XX~~16)

(Continued on Next Page)

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

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		Criteria Pollutants					
Subcategory~~/~~	**Rating/Size**	**VOC**	**NOx**	**NOx + ~~NMHC[1]~~NMHC[2)]**	**SOx**	**CO**	**PM**
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.

~~1)~~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.

~~2)~~3) ~~Limits with an associated "after" date are required for an engine for which the application is deemed complete after that date. Limits without an associated "after" date are required now.~~ The engine must be certified by U.S. EPA or CARB to meet the Tier ~~2 or 3~~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 ~~2 or 3~~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, t~~T~~he CARB Airborne Toxic Control Measure (ATCM) for Portable Diesel Engines (see ~~http://~~www.arb.ca.gov/diesel/peatcm/peatcm.htm) requires in-use portable diesel engines to be certified to Tier 1, 2, 3 or ~~3~~ 4 by ~~1/1/2010~~their respective deadlines, all of which have passed. All exceptions allowed in the ATCM are also allowed in this guideline.

~~3)~~ 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.

4)

5) CARB has extended the Tier 4 Final requirements deadline "until further notice" for Portable, Compression-Ignition Engines for 75 ≤ HP < 175 and 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
~~XX~~10-~~XX~~07-2016 Rev. 5

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, ~~7~~]	50 ≤ HP < 100			Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-~~2015~~2016) ~~Tier 2:~~ ~~7.5 grams/kW-hr (5.6 grams/bhp-hr)~~ Tier 3~~ (After 12/31/2010)~~: 4.7 grams/kW-hr (3.5 grams/bhp-hr) (10-03-2008)	Diesel fuel ~~sulfur content ≤ 0.05% by weight (4-10-98) On or after June 1, 2004 the user may only purchase diesel fuel~~ with a sulfur content no greater than 0.0015% by weight (SCAQMD Rule 431.2). (6-6-2003)	Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-~~2015~~6) Tier ~~2 or Tier~~ 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	Compliance with SCAQMD Rule 1470 (12-3-2004) Tier ~~2 or Tier~~ 3: 0.40 grams/kW-hr (0.30 grams/bhp-hr) (10-03-2008)
	100 ≤ HP < 175			Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-~~2015~~6) ~~Tier 2:~~ ~~6.6 grams/kW-hr (4.9 grams/bhp-hr)~~ Tier 3~~ (After 12/31/2009)~~: 4.0 grams/kW-hr		Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-~~2015~~6) Tier ~~2 or Tier~~ 3: 5.0 grams/kW-hr (3.7 grams/bhp-	Compliance with SCAQMD Rule 1470 (12-3-2004) Tier ~~2 or Tier~~ 3: 0.30 grams/kW-hr (0.22 grams/bhp-hr) (10-03-2008)

* 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
				(3.0 grams/bhp-hr) (10-03-2008)		hr) (10-03-2008)	
(Continued on next page)							
Compression Ignition, Fire Pump [3, 4] (continued)	175 ≤ HP < 750			Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) ~~Tier 2: 6.6 grams/kW-hr (4.9 grams/bhp-hr)~~ Tier 3 ~~(After 12/31/2009)~~: 4.0 grams/kW-hr (3.0 grams/bhp-hr): (10-03-2008)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (SCAQMD Rule 431.2). (6-6-2003)	Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier ~~2 or Tier~~ 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Compliance with SCAQMD Rule 1470 (12-3-2004) Tier ~~2 or Tier~~ 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
	≥750 HP			Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 2: 6.4 grams/kW-hr (4.8 grams/bhp-hr) (10-03-2008)	~~Same as above~~	Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 2: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 2: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
Compression-Ignition, Other[3,~~) 4) 7)~~	50 ≤ HP < 100			Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 3: 4.7 grams/kW-hr	~~Same as above~~	Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6)	Compliance with SCAQMD Rule 1470 (12-3-2004) Tier 3:

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		Criteria Pollutants					
Subcategory	Rating/Size	NMHC or VOC	NOx	NOx + NMHC[2]	SOx	CO	PM
				(3.5 grams/bhp-hr) (10-03-2008)		Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	0.20 ~~0.40~~ grams/kW-hr (~~0~~.15 ~~0.30~~ grams/bhp-hr) (10-03-2008)
				(Continued on next page)			
Compression-Ignition, Other[3, 4, ~~7~~] (continued)	100 ≤ HP < 175			Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (10-03-2008)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 3: 5.0 grams/kW-hr (3.7 grams/bhp-hr) (10-03-2008)	Compliance with SCAQMD Rule 1470 (12-3-2004) Tier 3: 0.30 grams/kW-hr (0.22 grams/bhp-hr) (10-03-2008)
	175≤ HP < 300			Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 3: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (10-03-2008)		Compliance with SCAQMD Rule 1470 (~~XX~~10-~~XX~~07-201~~5~~6) Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Compliance with SCAQMD Rule 1470 (12-3-2004) Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
	300≤ HP < 750			Compliance with SCAQMD Rule 1470		Compliance with SCAQMD Rule	Compliance with SCAQMD Rule

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		Criteria Pollutants					
Subcategory	Rating/Size	NMHC or VOC	NOx	NOx + NMHC[2]	SOx	CO	PM
				(XX10-XX07-2015[6]) Tier 3[5]: 4.0 grams/kW-hr (3.0 grams/bhp-hr) (7-14-2006)		1470 (XX10-XX07-2015[6]) Tier 3: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (7-14-2006)	1470 (12-3-2004) Tier 3: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (7-14-2006)
				(Continued on next page)			
Compression-Ignition, Other[3, 4] (continued)	≥750 HP			Compliance with SCAQMD Rule 1470 (XX10-XX07-2015[6]) Tier 2: 6.4 grams/kW-hr (4.8 grams/bhp-hr) (10-03-2008)	Diesel fuel with a sulfur content no greater than 0.0015% by weight (Rule 431.2). (6-6-2003)	Compliance with SCAQMD Rule 1470 (XX10-XX07-2015[6]) Tier 2: 3.5 grams/kW-hr (2.6 grams/bhp-hr) (10-03-2008)	Compliance with SCAQMD Rule 1470 (12-3-2004) Tier 2: 0.20 grams/kW-hr (0.15 grams/bhp-hr) (10-03-2008)
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)
	≥ 130 HP	VOC: 1.0 grams/bhp-hr[6] (X10-XX07-2015[6]) ~~VOC: 1.5~~	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
		~~grams/bhp-hr (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) SCAQMD 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. ~~A new stationary compression-ignition engine will also be subject to a proposed federal New Source Performance Standard - Title 40, Part 60, Subpart IIII of the Code of Federal Regulations.~~

4) ~~Limits with an associated "after" date are required for an engine for which the application is deemed complete after that date. Limits without an associated "after" date are required now.~~ 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) A USEPA settlement with certain engine manufacturers caused Tier 3 engines to become available one year earlier than the date specified in Part 89 for engines in the 300 hp to <750 hp size range.~~

~~6)~~ ~~65)~~ ~~———~~SCAQMD 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. ~~For emergency spark-ignition engines used to drive standby generators, operation beyond 50 hours per year for maintenance and testing is allowed only during emergencies resulting in an interruption of service of the primary power supply or during Stage II or III electrical emergencies declared by the electrical grid operator. Operators are allowed to use emergency spark-ignition engines as part of an interruptible electric service program. An interruptible electric service program is a program in which the facility receives payment or reduced rates in return for a requirement to reduce its electric load on the grid when requested to do so by the utility, the grid operator, or other organization.~~

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~~7)~~ 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

~~8)~~

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

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Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0
7-9-2004 Rev. 1
12-3-2004 Rev. 2

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

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
< 2064 bhp	0.15 grams/bhp-hr (4-10-98)	0.15 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000)	0.60 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (10-20-2000) Compliance with Rule 1470. (12-3-2004)	
≥ 2064 bhp	25 ppm @ 15% O_2 (7-9-2004)	9 ppmvd @ 15% O_2 (7-9-2004)	Same as Above (10-20-2000)	33 ppmvd @ 15% O_2 (5-8-98)	Same as Above (7-9-2004)	Ammonia: 10 ppmvd @ 15% O_2 (7-9-2004)
Landfill or Digester Gas Fired	0.8 grams/bhp-hr (4-10-98)	0.60 grams/bhp-hr (4-10-98)	Compliance with Rule 431.1 (10-20-2000)	2.5 grams/bhp-hr (4-10-98)		

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XX10-XX07-2016 Rev. 0

Equipment or Process: I.C. Engine, Stationary, Non-Emergency, Non--Electrical Generators1 [1]

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
> 50 bhp< 2064 bhp	30 ppmvd @15% O_2, cCompliance with SCAQMD Rule 1110.2 (X10-XX07-20156)0.15 grams/bhp-hr (4-10-98)	11 ppmvd @15% O_2, Ccompliance with SCAQMD Rule 1110.2 (X10-XX07-20156)0.15 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (X10-XX07-20156)(10-20-2000)	70 ppmvd, @15% O_2, cCompliance with SCAQMD Rule 1110.2 (X10-XX07-20156)0.60 grams/bhp-hr (4-10-98)	See Clean Fuels Policy in Part C of the BACT Guidelines (X10-XX07-20156)(10-20-2000) Compliance with Rule 1470. (X10-XX07-20156)(12-3-2004)	
Landfill or Digester Gas Fired[2]≥ 2064 bhp	30 ppmvd0.8 grams/bhp-hr (X10-XX07-20156)Compliance with SCAQMD Rule 1110.2(4-10-98)25 ppm @ 15% O_2 (7-9-2004)	11 ppmvd Compliance with SCAQMD Rule 1110.20.60 grams/bhp-hr (X10-XX07-20156)(4-10-98)9 ppmvd @ 15% O_2 (7-9-2004)	Compliance with SCAQMD Rule 431.1 ((X10-XX07-20156)10-20-2000)Same as Above (10-20-2000)	250 ppmvd Compliance with SCAQMD Rule 1110.2.5 grams/bhp-hr (X10-XX07-20156) 33 ppmvd @ 15% O_2 (5-8-98)	Same as Above (7-9-2004)	Ammonia: 10 ppmvd @ 15% O_2 (7-9-2004)

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1) This BACT listing was adapted from the "I.C. Engine, Stationary, Non-Emergency." An additional listing for "I.C. Engine, Stationary, Non-Emergency, Electrical Generators," is currently under development. Until the amendment is developed, Stationary, Non-Emergency,- Electrical Generators will be subject to "I.C. Engine, Stationary, Non-Emergency."

2) 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.

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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 SCAQMD 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 SCAQMD 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

Equipment or Process: Lead Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Pot or Crucible, Non-Refining Operations		Natural Gas (1990)	Natural Gas (1990)		Natural Gas and Melt only Sows, Pigs, Ingots or Clean Scrap (1990)	
Pot or Crucible, Refining Operations		Natural Gas (1990)	Natural Gas with Scrubber; or Natural Gas with Sulfur Free Refining Agents (1990)		Natural Gas with Baghouse (1990)	
Reverberatory, Secondary Melting Operations		Natural Gas with Low NOx Burner (10-20-2000)	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
~~X~~10-~~XX~~07-2016 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 (SCAQMD Rule 462)	Compliance with SCAQMD 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 (SCAQMD 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 SCAQMD Rule 462 (10-20-2000)					Same as Above
Gasoline Transfer and Dispensing	Compliance with Rule 461 (10-07-2016)					

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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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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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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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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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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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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 ≥ 1,400°F) (10-20-2000)	
Handling Equipment					Baghouse (10-20-2000)	

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10-20-2000 Rev. 0
~~X~~10-~~XX~~07-2016 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 SCAQMD Rules 1148 and 1148.1 (~~X~~10-~~XX~~07-2015~~6~~)					
Wellhead	All Wellheads Vented to: - Vacuum Gas Gathering System; or - Positive Pressure Gas Gathering System; or - Incinerator or Firebox (10-20-2000) Compliance with SCAQMD Rules 1148 and 1148.1 (~~X~~10-~~XX~~07-2015~~6~~)					

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

10-20-2000 Rev. 0

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)*	

* The open spraying must be conducted in a spray booth where feasible.

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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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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 ≥1,400°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 SCAQMD 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
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

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
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

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 ≥1,400°F) or Water Cooled Condenser (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: 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
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Polyester Resin Operations - Molding and Casting

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Compliance with SCAQMD's Rule 1162 and Use of Aqueous Emulsion Cleaner or Acetone for Clean-Up to Maximum Extent Possible (1988/10-20-2000)					

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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

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					Powder Recovery System with a Cyclone Followed by a Baghouse or Cartridge Dust Collector or HEPA Filters (≥ 99% efficiency) (1988/10-20-2000)	

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

Equipment or Process: 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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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
7-14-2006 Rev 2

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) Compliance with SCAQMD Rules 1130 and 1171 (12-5-2003)					
Letterpress	Compliance with SCAQMD Rules 1130 and 1171 (12-5-2003)					
Lithographic or Offset, Heatset	Low VOC Fountain Solution (≤ 8% by Vol. VOC); Low Vapor Pressure (≤ 10 mm Hg VOC Composite Partial Pressure[1)]) or Low VOC (≤ 100 g/l) Blanket and Roller Washes; Oil-Based or UV-Curable Inks; and Compliance with SCAQMD Rules 1130 and 1171 (7-14-2006)				Oven Venting to an Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 ^{0}F; 95% Overall Efficiency) (10-20-2000)	
Lithographic or Offset, Non-Heatset	Same As Above					
Rotogravure or Gravure—Publication and Packaging	Compliance with SCAQMD Rules 1130 and 1171 (10-20-2000)					
Screen Printing and Drying	Compliance with SCAQMD Rules 1130.1 and 1171 (12-5-2003)					

(Continued on Next Page)

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

1) VOC COMPOSITE PARTIAL PRESSURE is the sum of the partial pressures of the compounds defined as VOCs. VOC Composite Partial Pressure is calculated as follows:

$$PPc = \sum_{i=1}^{n} \frac{\frac{(Wi)(VPi)}{MWi}}{\frac{Ww}{MWw} + \frac{We}{MWe} + \sum_{i=1}^{n} \frac{Wi}{MWi}}$$

Where:	PPc	=	VOC composite partial pressure at 20°C in mm Hg
	Wi	=	Weight of the "i"th VOC compound in grams
	MWi	=	Molecular weight of "i"th VOC compound in grams per gram-mole
	VPi	=	Vapor pressure of the "i"th VOC compound at 20°C in mm Hg
	Ww	=	Weight of water in grams
	MWw	=	Molecular weight of water in grams per gram-mole
	We	=	Weight of exempt compound in grams
	MWe	=	Molecular weight of exempt compound in grams per gram-mole

For multiple exempt compounds: $We / MWe = \sum_{j=1}^{n} Wej / MWej$

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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
~~XX~~10-~~XX~~07-2016 Rev. 2

Equipment or Process: Process Heater – Non-Refinery

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx** [1)]	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas or Propane Fired, < 20 MM Btu/h~~n~~r		~~≤ 20 ppmv dry corrected to 3% O_2 [2)] (10-20-2000)~~ Compliance with SCAQMD Rules 1146 ~~and~~or 1146.1 (10-07-2016)	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		~~With Low-NOx Burner: ≤ 9 ppmv dry corrected to 3% O_2 With SCR or LTO: ≤ 7 ppmv dry corrected to 3% O_2 (10-20-2000)~~ Compliance with SCAQMD Rules 1146 ~~and~~or 1146.1 (10-07-2016)	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)

1) Rules 1146 and 1146.1 require that boilers rated >2 and <75 MMBtu/hr meet 9 ppm NOx beginning 1/1/2012 for some categories, that natural gas-fired boilers rated at ≥75 MMBtu/hr meet 5 ppm by 1/1/2015 (except boilers at schools and universities), that natural-draft boilers rated >2 and ≤10 MMBtu/hr with unsealed combustion chambers meet 12 ppm by 1/1/2014, and that boilers firing landfill or digester gas meet 25 or 15 ppm, respectively, by 1/1/15 (all ppm are dry, corrected to 3% O2). Electric utility boilers, refinery boilers rated >40 MMBtu/hr and sulfur

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

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.

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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
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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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: 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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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: Resin Manufacturing

	Criteria Pollutants					
Subcategory	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Continuous Polystyrene Process	Compliance with SCAQMD 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 SCAQMD 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 SCAQMD 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 SCAQMD 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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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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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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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: 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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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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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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~~Sand Handling System with Shakeout and/or Muller in System~~

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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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___Sand Handling System with Shakeout and/or Muller in System

~~Sand Handling System with Shakeout and/or Muller in System~~

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: 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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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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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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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: 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

Equipment or Process: Spray Booth

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Automotive, Down-Draft Type, < 660 Lbs/Month of VOC Emissions	Compliance with Applicable SCAQMD Regulation XI Rules (10-20-2000)				Dry Filters or Waterwash (1990)	
Other Types, < 1170 Lbs/Month of VOC Emissions	Compliance with Applicable SCAQMD Regulation XI Rules (10-20-2000)				Same as Above (1990)	
Automotive, Down-Draft Type, ≥ 22 Lbs/Day of VOC Emissions	- Compliance with Applicable SCAQMD Regulation XI Rules, and VOC Control System with ≥ 90% Collection Efficiency and ≥ 95% Destruction Efficiency, or - Use of Super ~~Clean~~ Compliant Materials (< 5% VOC by weight): or - Use of Low-VOC Materials Resulting in an Equivalent Emission Reduction (10-20-2000)				Same as Above (1990)	
Other Types, ≥ 1170 Lbs/Month of VOC Emissions	Same as Above (10-20-2000)				Same as Above (1990)	

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.

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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)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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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)					

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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 SCAQMD 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.

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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)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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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)	

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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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)					

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10-20-2000 Rev. 0

Equipment or Process: Vinegar Manufacturing

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All	Scrubber with SCAQMD- and Sanitation District-Approved Liquid Disposal (1988)					

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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 SCAQMD Rule 1176 (12-5-2003)					
Other Equipment	Compliance with SCAQMD Rule 1176 if Applicable by Rule[a)] (12-5-2003)					

a) Not required for sanitary sewer system.

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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)	

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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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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 SCAQMD 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.

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10-20-2000 Rev. 0

Equipment or Process: Zinc Melting Furnace

	Criteria Pollutants					
Subcategory/ Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Crucible or Pot		Natural Gas (1990)	Natural Gas (1990)		Natural Gas with Ingot and/or Clean Scrap Charge Only, or Baghouse (1988/2000)	
Reverberatory, Non-Sweating Operations		Natural Gas (1990)	Natural Gas (1990)		Same as Above (10-20-2000)	
Reverberatory, Sweating Operations		Natural Gas (1990)	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		Natural Gas (1990)	Natural Gas (1990)		Same as Above (1990)	

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ATTACHMENT G

COMMENTS AND RESPONSES TO PROPOSED AMENDMENTS OF THE BACT GUIDELINES

A public meeting was held on May 11, 2016 with the BACT Scientific Review Committee to present and discuss the proposed amendments to the BACT Guidelines. The following comments and questions, and staff responses, are from letters and e-mails received as well as comments made at the BACT SRC meeting:

Overview

Comment O1:
Page 1, Recommend that AQMD differentiate between state vs federal requirements in this overview. (LADWP– BACT SRC member)

Response O1:
The Overview section is designed to provide an introduction to the BACT Guidelines and a summary of how BACT is implemented in the SCAQMD. Applicable state and federal requirements are addressed within the respective five chapters of the Overview.

Comment O2:
Page 2, Chapter 1-Introduction, Paragraph 1.
"The South Coast Air Quality Management District (SCAQMD) 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 for modifications to existing sources that may result in an emission increase of any nonattainment air contaminant, any ozone depleting compound (ODC), or ammonia."

Do these guidelines apply to RECLAIM facilities? If not, I suggest deleting it. (OCSD– BACT SRC member)

Response O2:
Yes, SCAQMD Rule 2005 – New Source Review for RECLAIM sets forth pre-construction New Source Review requirements for facilities subject to the RECLAIM program for new or modified sources which increase their allocations. BACT will apply to every emission source located at a RECLAIM facility.

Comment O3:
Page 3, Chapter 1-Introduction.
"During the (BACT SRC) meeting someone asked the question whether a BACT determination is at the time a permit is issued or at the same time the application is

determined complete. We had a situation in Region 9 that I thought I should pass along. An EPA Region 9 permit was vacated because the source was not required to demonstrate compliance with a new NAAQS that became effective after Region 9 had determined the application was complete. (US 9th Circuit Court of Appeals case no. 11-73342). The federal statutory preconstruction permitting requirements for BACT and LAER are at sections 165(a)(4) and 173(a)(2) of the Clean Air Act."
(EPA Region 9- BACT SRC member)

Response O3:
~~Staff acknowledges comment~~In accordance with the BACT Guidelines, LAER is determined at the time the permit is issued and BACT is determined at the time the permit is deemed complete for a minor source.

Comment O4:
Page 2, Chapter 1-Introduction, Paragraph 1.
"PSD BACT is incorporated into these BACT Guidelines. As of the publication date of these guidelines, there is **not a** requirement for SCAQMD to publish T-BACT guidelines and T-BACT must be established during the permitting process. ~~The BACT Guidelines were first published in May 1983, and later revised in October 1988."~~

Change "not a" to "no" (OCSD– BACT SRC member)

Response O4:
Staff agrees and has made revision.

Comment O5:
Page 3, Chapter 1-Introduction, Paragraph 5.
"As a result of amendments ~~being proposed~~ to SCAQMD's ~~New Source Review~~ ~~(~~NSR~~)~~ regulations in September 2000, the BACT Guidelines ~~was~~were~~ill~~ ~~be~~ 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 use of different terms to describe a minor source (e.g. non-major, minor polluting facilities, minor source, etc.) should be avoided. (OCSD– BACT SRC member)

Response O5:
Non-major facility, minor polluting facility and minor source are used interchangeably in the BACT Guidelines.

Comment O6:
Page 4, Chapter 1- Introduction, Paragraph 1.
"In order to distinguish between BACT for ~~major sources and BACT for minor~~ **various** sources, this document will use the following nomenclature for BACT:"
Explain what this means. (OCSD– BACT SRC member)

Response O6:
This statement clarifies definitions for LAER, minor source BACT (MSBACT) and greenhouse gas BACT (GHG BACT). The definitions are dependent on the type and amount of emissions.

Comment O7:
Page 4, Chapter 1- Introduction.
"LAER for BACT at major polluting facilities"

Also need PSD BACT for BACT at Major Sources. (Sierra Research– BACT SRC member)

Response O7:
PSD BACT has been addressed in Chapter 1, page 1 of the Overview section.

Comment O8:
Page 5, Chapter 2, Major Polluting Facility Emission Thresholds, Paragraph 1.
"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** ~~given~~ in the CAA **based on the attainment or nonattainment status.** ·Table 1 **presents** ~~shows~~ those emission thresholds for each criteria air pollutant for each air basin in the SCAQMD."
Recommend edits as shown. (WSPA– BACT SRC member)

Response O8:
Staff agrees and has made revisions.

Comment O9:
Page 5, Chapter 2, Major Polluting Facility Emission Thresholds, Paragraph 1.
"Although Table 1 is part of determining GHG BACT applicability, Table 1 does not include emission thresholds that trigger GHG BACT for SCAQMD Rule 1714 and 40 CFR 52.21. Subpart E of the Guidelines should be referenced for a detailed explanation of how GHG BACT emission thresholds are determined."

The first Part of the statement is not correct; Table 1 shows non-attainment new source review (NANSR) thresholds, and not PSD thresholds. The latter are related to GHG PSD applicability, but not the former. In addition, should you be adding $PM_{2.5}$ thresholds to Table 1? (Sierra Research – BACT SRC member, OCSD– BACT SRC member)

Response O9:
Staff agrees and has made revisions. To be consistent with federal requirements staff has also updated the threshold levels for SOx to 70 tons/year for the SCAB and Riverside County Portion of Salton Sea Air Basin.

Comment O10:
Page 5, Chapter 2, Major Polluting Facility Emission Thresholds, Paragraph 2.
"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 entitlement must be included with offshore crude oil and gas production facilities located in Southern California Coastal or Outer Continental Shelf waters."
Similar to my previous comment, I recommend that the guidelines be structured to differentiate between SCAQMD policy, State, and federal requirements.
(LADWP– BACT SRC member)

Response O10:
The Overview section is designed to provide an introduction to the BACT Guidelines and a summary of how BACT is implemented in the SCAQMD. Applicable SCAQMD, State and federal requirements are addressed within the respective five chapters of the Overview.

Comment O11:
Page 6, Chapter 2, Table 1.
Add $PM_{2.5}$ thresholds here. (LADWP)
Table 1 should be revised to include $PM_{2.5}$. (WSPA– BACT SRC member)

Response O11:
Staff agrees and has included revisions. To be consistent with federal requirements staff has also updated the threshold levels for SOx to 70 tons/year for the SCAB and Riverside County Portion of Salton Sea Air Basin.

Comment O12:
Page 8, Chapter 2, Potential to Emit.
"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 the permit."

This statement is not universally correct for PSD applicability. For PSD purposes, fugitive emissions are included only for source categories specifically identified in (40CFR) 52.21. (Sierra Research– BACT SRC member)

Response O12:
Staff agrees and has included revisions for major sources.

Comment O13:
Page 8, Chapter 2, Potential to Emit.
Do these guidelines apply to RECLAIM facilities? If not, I suggest deleting this.

(OCSD– BACT SRC member)

Response O13:
Yes, Rule 2005 sets forth pre-construction New Source Review requirements for facilities subject to the RECLAIM program for new or modifications which increase their allocations. BACT will apply to every emission source located at a RECLAIM facility.

Comment O14:
Page 9, Chapter 3, "Pollutants Subject to NSR, PSD and BACT".
"AND BACT" should be deleted. (OCSD– BACT SRC member)

Response O14:
Under this section references are made to pollutants that are subject to BACT, therefore the text "and BACT" will be remain for consistency.

Comment O15:
Page 9, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 2.
"Therefore, SOx, and NOx are treated as non-attainment air pollutants as well, **including ozone."**

This phrase doesn't add anything to this sentence. Suggest deleting it. (Sierra Research– BACT SRC member)
Suggest deletion of "including ozone." (LADWP– BACT SRC member)
This does not belong here. (WSPA)

Response O15:
Staff agrees and has included revisions.

Comment O16:
Page 9, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 2.
The net results is that **VOC, NOx, SOx, and PM_{10},** are subject to NSR in all of SCAQMD, while **CO** is only subject to NSR in the South Coast Air Basin (SOCAB).

$PM_{2.5}$? (LADWP– BACT SRC member)

Response O16:
Staff agrees and has included revision to add $PM_{2.5}$. During review of this comment, staff also realized that the statement "CO is only subject to NSR in the South Coast Air Basin," is no longer applicable since CO is now in attainment. This phrase has been removed. CO is now subject to the PSD requirements. NSR applicability for CO has also been removed from Table 3 in Chapter 3 of the Overview section. To be consistent with federal requirements staff has also updated the threshold levels for SOx to 70 tons/year for the SCAB and Riverside County Portion of Salton Sea Air Basin.

Comment O17:
Page 9, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 2.

Should CO be only subject to PSD as CO is in attainment of the standard? (LADWP– BACT SRC member)

Response O17:
Staff is in agreement and has made the revisions discussed in Response O16.

Comment O18:
Page 9, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 3:
"The South Coast Basin has historically had a persistent CO problem."

Suggest rewording the sentence to read, "The South Coast Air Basin has historically been designated nonattainment for CO". (LADWP– BACT SRC member)

Response O18:
Staff agrees and has included revisions.

Comment O19:
Page 9, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 4.
"Similar to the Regulation XIII NSR requirements, precursors to attainment air contaminants, would also be treated as attainment air contaminants, **unless they also qualify as a nonattainment air contaminant, or nonattainment precursor as well. As explained in the SCAQMD Staff Report for Regulation XVII dated September 28, 1988."**

This is not consistent with federal PSD rules. For example, in an ozone nonattainment area, NOx may be regulated under NANSR (Non-Attainment New Source Review) as an ozone precursor, and under PSD as a Precursor to the attainment pollutant NO_2. (Sierra Research– BACT SRC member)

Response O19:
Staff agrees and has made revision.

Comment O20:
Page 9, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 4.
"As explained in the SCAQMD Staff Report for Regulation XVII dated September 28, 1988, **the PSD BACT requirement is applicable to all permit units regardless if the source is classified as a minor or major facility."**

This is not quite correct; the BACT requirement applies to new major sources, significant increases at existing major sources, and specified modifications that are not significant increases. (See Rule 1701(b).) (Sierra Research– BACT SRC member)

Response O20:
In accordance with ~~The applicability of Rule 1701 has three criteria. First, for BACT~~ Rule 1701(b)(1), ~~states~~ "The BACT requirement applies to a net emission increase of a criteria air contaminant from a permit unit at any stationary source." ~~Second, applicability of PSD for stationary sources and thirdly definition of a major stationary~~

~~source with a significant increase.~~ In addition, the BACT requirement which applies to any permit unit is further clarified in the staff report dated 8/25/88 for the 9/28/88 Board adoption of Regulation XVII. It states that "Except for the BACT requirement, which applies to any permit unit, this regulation is only applicable to new or existing major stationary sources."

Comment O21:
Page 9, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 4.
BACT for minor sources would be different from BACT for major sources so this sentence could cause confusion. Perhaps this statement can be clarified. (LADWP)

Response O21:
Please see response O20.

Comment O22:
Page 10, Chapter 3, Pollutants Subject to NSR, PSD and BACT, Paragraph 5.
"BACT for Pb will be BACT for PM_{10} or compliance with Rules 1420 or, 1420.1, or1401.2, whichever is more stringent."

Why is this declaration being made here? Such guidance would be saved for the source specific guidelines or case-by-case determinations of BACT. (WSPA– BACT SRC member)

Response O22:
This language is part of Chapter 3 of the Overview to clarify the relation between lead (Pb) and PM_{10} BACT. Pb is a criteria pollutant that is a particulate and is typically controlled in a similar manner to PM_{10}.

Comment O23:
Page 12, Chapter 3, Table 3.
"Applicability of NSR and BACT to Various Pollutants in South Coast Air Basin (SOCAB), Salton SEA Air Basin (SSAB), and Mojave Desert Air Basin (MDAB)"

This table has gotten confusing with the addition of PSD requirements to the Guideline. I'd suggest having two tables- one showing NANSR (of NSR) applicability, you also need to add GHGs to these tables, (Not applicable to NANSR; applicable to certain PSD projects. (Sierra Research– BACT SRC member)

Response O23:
$PM_{2.5}$ column was added to Table 3. Staff has also included clarifying language regarding PSD and GHG applicability.

Comment O24:
Page 12, Chapter 3, Permit Actions Subject to NSR, PSD and BACT.

BACT and LAER applicability are determined within NSR and PSD. No need to list it here. (WSPA– BACT SRC member)

Response O24:
As part of the Overview, a brief summary of BACT and LAER applicability was deemed appropriate by staff.

Comment O25:
Page 12, Chapter 3, Permit Actions Subject to NSR, PSD and BACT, Paragraph 5.
"It is SCAQMD policy that BACT is required only for **emission increases greater than or equal to one (1.0) pound per day."**

For sake of clarity, should state "uncontrolled" emission increase. (OCSD– BACT SRC member)

Response O25:
Uncontrolled emission increase would apply only to new sources or modified sources without control equipment. BACT applicability for emission increases from new or modified sources is determined in accordance with Rule 1306(d).

Comment O26:
Page 12, Chapter 3, Calculation Procedures for Emission Increases, Paragraph 1.
"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 ~~and~~ 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."

See my previous comments regarding the BACT guidelines' applicability to RECLAIM facilities. (OCSD– BACT SRC member)

Response O26:
SCAQMD Rule 2005 sets forth pre-construction New Source Review requirements for facilities subject to the RECLAIM program for new sources or modified sources which increase their allocations. BACT will apply to every emission source located at a RECLAIM facility.

Comment O27:
Page 14, Chapter 4, NSR Rules.

Each of these sections (i.e. NSR Rules, etc.) should start with an explicit reference to the applicable rule in the SCAQMD Rules and Regulations and direct the reader to that Rule for details. These summaries run the risk of oversimplifying or conflicting with the adopted rule language especially as those rules are amended from time to time. (WSPA– BACT SRC member)

Response O27:

Staff agrees and has included revisions.

Comment O28:
Page 14, Chapter 4, PSD Rules.
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 requirements is to implement a similar requirement as Regulation XIII to maintain national ambient air quality standards for attainment air contaminants.

This is not correct; Rule 1701 limits applicability to federal major sources, and specified modifications to federal major sources. (Sierra Research – BACT SRC member)

Rule 1701 appears to apply to major stationary sources only. With respect to the last sentence, NSR rules apply to nonattainment emissions so recommend this sentence be clarified. (LADWP– BACT SRC member)
This is incorrect. Rule 1701 limits applicability to federal major sources, and specified modifications to federal major sources. (WSPA– BACT SRC member)

Response O28:
Please see response O20.

Comment O29:
Page 16, Chapter 5, Scientific Review Committee (SRC).
"The overall purpose of the Scientific Review Committee (SRC) is to:

- Comment on proposed new ~~&~~and more stringent BACT determination in permit applications under 30-day public review."

Is this a new step in the process? Will the SRC be tasked to review permit applications during the 30-day public review? (LADWP– BACT SRC member)

Response O29:
No, this is not a new step in the process for review of new and more stringent BACT determinations. From time to time the BACT SRC has traditionally been tasked with reviewing BACT determinations which have been based on achieved in practice permitted equipment with the permit application as supporting documentation.

Comment O30:
Page 17. Chapter 5, Meeting with SCAQMD Management.
"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. Ultimately, all permitting decisions are the responsibility of the Executive Officer."

Suggest replacing "empowered" with "authorized" (OCSD– BACT SRC member)

Response O30:
Staff agrees and has included revision.

Comment O31:
Page 18, Chapter 5, The SCAQMD Governing Board.
"Any applicant may petition the SCAQMD Governing Board to review a pending application pursuant to SCAQMD Regulation XII and Health and Safety Code Section 40509. **While the Governing Board had the authority to hear and consider any pending permit application, it has rarely done so.~~but this circumstance is extremely rare and cases has only agreed to consider two pending permit applications in the last sixteen years are typically handled during the prior stages."~~**

What's the purpose of this statement? I suggest deleting it. (??)

Response O31:
Staff agrees and has included revision.

Comment O32:
Page 4. Chapter 1, Introduction
"GHG BACT for BACT at facilities subject to PSD GHG requirements"

While you indicated that BACT for PSD is addressed on page 2 (and it is), there remains potential confusion regarding terminology in the list of shorthand notations you create at pp. 3-4.

Suggest the following: PSD~~GHG~~ BACT for BACT at facilities subject to ~~PSD GHG~~ BACT requirements for criteria pollutants

(Sierra Research– BACT SRC member)

Response O32:
Staff agrees and has included revision.

Comment O33:
Page 6. Chapter 2, Table 1

Page 6, Table 1: should the threshold for PM2.5 be 70 tpy instead of 100 tpy? (See footnote 3 on that page.) (Sierra Research– BACT SRC member)

Response O33:
Staff agrees and has included revision.

Part A

Comment (BACT SRC Meeting) A1:
A committee member mentioned that for major source LAER determination cost is not a consideration but facilities still have to do cost-effective analysis, which the guidelines don't specify. Can facilities use the minor source guidelines for cost effectiveness. (Ramboll-Environ – Public member; OCSD, Sierra Research-BACT SRC members)

Response A1:
Staff stated that in accordance with the BACT Guidelines, U.S. EPA guidelines do not allow for routine consideration of the cost of control in LAER determinations. However, the guidelines state 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 major polluting facility needs to perform a cost effectiveness analysis for informational or other purposes, the minor source guidance can be useful tool to conduct the analysis. However, a different analysis may be needed to demonstrate the limited cost-exception to LAER.

Comment (BACT SRC Meeting) A2:
A public member stated that when the technology changes right before you get your permit, what are the options? (Member of the public)

Response A2:
Staff stated that in accordance with the BACT Guidelines, once a minor source BACT determination is made at the time ~~for~~ an application is deemed complete,~~at the time of completion of a permit to construct~~ it cannot be changed for a year. However, for major sources, federal LAER is determined at the time of permit issuance. Refer to the discussion in Comment O3 for LAER requirements. It is also true that requirements for a new or modified mayor source under applicable rules could change between the time the application is deemed complete and the permit decision.

Comment A3:
Page 21, Chapter 1, 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:

- SCAQMD 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 SCAQMD or other agencies"

These documents are not easily accessible and the completeness is questionable. The complete documents should be easily accessible for facilities to include them in their engineering design process before the application submittal. Ultimately, who is responsible for determining what is BACT? (OCSD- BACT SRC member)

Response A3:

These documents and programs represent the traditionally referenced sources for achieved in practice BACT which are readily available on line on the SCAQMD BACT webpage. In the SCAQMD, BACT is determined in accordance with the BACT Guidelines which includes case-by-case BACT determinations by permit engineering.

Comment A4:
Page 21, Chapter 1, New Technologies/Emission Levels; 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."

This could potentially trigger a sole source procurement which for public agencies require strict justification. (OCSD- BACT SRC member)

Response A4:
For our agency, as well as other public agencies, it is common to have a procurement policy which provides and allows for justification when the desired services are available from only a sole source.

Comment A5:
Page 21, Chapter 1, New Technologies/Emission Levels; 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."

The reliability analysis should also consider the effect of the control technology on the reliability of the basic equipment. (OCSD- BACT SRC member)

Response A5:
Staff agrees.

Comment A6:
Page 22, Chapter 1, Federal $PM_{2.5}$ New Source Review and SCAQMD Rule 1325.
"A major polluting facility would be a facility located in areas federally designated pursuant to 40 CFR 81.305 as non-**attainment** for the South Coast Air Basin (SOCAB) which has actual emissions of, or the potential to emit, 100 tons or more per year of $PM_{2.5}$, or its precursors."

"as non-attainment for $PM_{2.5}$". (Sierra Research- BACT SRC member)

Response A6:
Staff agrees and has included revision. To be consistent with federal requirements staff has also updated the threshold levels for SOx to 70 tons/year for the SCAB and Riverside County Portion of Salton Sea Air Basin. In addition, the future $PM_{2.5}$ major source

threshold level is planned to be lowered to 70 tons/year to be consistent with federal standards.

Comment A7:
Page 24, Chapter 1, 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."

Suggested addition: "Furthermore, EPA has recognized that a control technology may not be required if it would fundamentally redefine a source proposed to meet a specific business objective". (WSPA- BACT SRC member)

Response A7:
Staff believes current language adequately addresses technical infeasibility of control technology as LAER.

Comment A8:
Page 24, Chapter 1, Process Requirements.
"Some LAER determinations specify a particular type of process equipment. SCAQMD staff may consider requirements of the proposed process equipment that would make the LAER determinations not technically feasible."

This sentence is confusing. LAER must be technically feasible. (WSPA- BACT SRC member)

Response A8:
Staff believes current language adequately addresses the requirement for process equipment to be technically feasible.

Comment A9:
Page 25, Chapter 1, 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."

Suggested addition: "This policy is subject to the provisions of H&SC 40440.11." This provision precludes the adoption of LAER that would require a change to the "basic production or process equipment." The same caveat applies to the "Pollution Prevention" discussion in the next paragraphs. (Sierra Research- BACT SRC member)

Suggested addition: “This policy is subject to the provisions of Health & Safety Code section 40440.11. (WSPA- BACT SRC member)

Response A9:
In accordance with the discussion of H&SC Section 40440.11 in Chapter 1 of Part C of the BACT Guidelines, the requirements of this section are incorporated into establishing new minor source BACT determinations where federal LAER is no longer applicable. H&SC 40440.11 applicability to a section under Part A- Policy and Procedures for Major Polluting Facilities would not be in line with federal requirements in establishing LAER for major polluting facilities.

Comment A10:
Page 25, Chapter 1, Pollution Prevention.
“improvements in housekeeping, maintenance or inventory control,
that reduce the amount of air contaminants entering any waste stream of otherwise released into the environment, including fugitive emissions.”

Suggested addition: “This policy is subject to the provisions of Health & Safety Code section 40440.11. (WSPA- BACT SRC member)

Response A10:
See Response A9.

Comment A11:
Page 26, Chapter 1, 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 **implemented** during the permitting process.”

“required,” not “implemented”. (Sierra Research- BACT SRC member, WSPA- BACT SRC member)

Response A11:
Staff agrees and has included revision.

Comment A12:
Page 27, Chapter 1, LAER Update Process, Paragraph 3.
“Whenever permitting staff makes a LAER determination that is more stringent than what SCAQMD has previously required as LAER, the permit to construct **may be** subject to a public review.”

What “may” trigger the public review? (OCSD- BACT SRC member)

Response A12:
A permit to contruct may be subject to a public review per Rule 212(c) for being located near a school, increase health risk or emission increases exceeding the thresholds in Rule 212(g)~~In accordance with the BACT Guidelines, the permit to construct for equipment or~~

~~process that is implementing a more stringent LAER determination than what was previously required by SCAQMD.~~

Comment A13:
Page 28, Chapter 1, Clean Fuel Requirements, Paragraph 1.

Clean Fuel Requirements – Electrification should not be included in this section until it has been demonstrated as BACT for specific categories of equipment and industries. Additionally. This policy is subject to the provisions of Health & Safety Code section 40440.11. (WSPA- BACT SRC member)

Response A13:
Natural gas was included in the BACT Guidelines as a clean fuel option to diesel as originally identified in the Clean Fuels Policy. Similarly, as part of the original Clean Fuels Policy electrification was also identified, and as result, Industrial Electrification is being included by staff, subject to engineering feasibility and the major source BACT/LAER determination criteria in Part A, Chapter1 of the BACT Guidelines. For minor source BACT please refer to response C6.

Regarding the applicability of Health and Safety Code 40440.11 to the Clean Fuel Requirements section of Part A, please refer to Response A9.

Comment A14:
Page 28, Chapter 1, Clean Fuel Requirements, Paragraph 1.
In the proposed Clean Fuel Requirements, the District has copied verbatim the phrase "Industrial electrification (e.g. replacement of I.C Engines etc.)"from the December 15,1987 Governing Board document titled "Recommendation to Adopt a Five-Year Clean Fuels Program" and inserted into the May 4, 2016 draft revised BACT Guidelines without providing any analysis regarding this language/amendment and how of why it is pertinent of applicable now (versus back in 1987-88). Industrial electrification, as discussed within the 1987 document, was part of the 1987-88 District's Clean Fuels Program strategy to replace conventional petroleum fuels, particularly diesel fuel, with alternative fuels for (particularly) mobile and stationary sources. As the basin's air quality is much improved today, air quality challenges are much different now than in the late 80's and 90's, with the advent of greenhouse gas and climate change programs in California, it seems prudent that this proposed inclusion of "Industrial Electrification be evaluated under today's challenges and air quality programs and strategies, and the District's position regarding fuel neutrality.

While electrification has always been an option for consideration by the District and the regulated community, SoCalGas believes the current proposal to insert "Industrial Electrification" into the existing BACT Clean Fuel Requirements, and verbatim from a nearly 30 year old document, deserves some analysis and discussion, including its pertinence today and the specific language of the proposed amendment. While SoCalGas

understands the District's goal to have these current BACT updates, including the update of the BACT Guidelines Clean Fuels Requirements, go before the Governing Board as early as July. SoCalGas believes it would be prudent for staff to take the time necessary to provide both the opportunity for public discussion for this proposed amendment and adequate analysis and data to support such discussion. As staff has noted that there will be additional BACT updates in the near future, SoCalGas believes there will be ample opportunity for the District to propose a future amendment to the BACT Guidelines Clean Fuel Requirements should this amendment not be included in the current BACT update. (Southern California Gas Company- BACT SRC member)

Response A14:
Natural gas was included in the BACT Guidelines as a clean fuel option to diesel as originally identified in the Clean Fuels Policy. Similarly, as part of the original Clean Fuels Policy electrification was also identified, and as result, Industrial Electrification is being included by staff, subject to engineering feasibility and the major source BACT/LAER determination criteria in Part A, Chapter1 of the BACT Guidelines. For minor source BACT please refer to response C6.

Comment A15:
Page 28, Chapter 1, Clean Fuel Requirements, Paragraph 1.
Additionally, SoCalGas Requests that the District provide discussion and analysis regarding whether this proposal is exempt from, of otherwise does not require, an analysis under the California Environmental Quality Act (CEQA). As proposed, the amendment to the Clean Fuel Requirements in the BACT Guidelines specifically calls out the industrial equipment as one example that could be targeted. SoCalGas believes that the District should provide input to the public and regulated community regarding whether this proposed amendment could be significant or not (or is otherwise exempt) under CEQA). (Southern California Gas Company- BACT SRC member)

Response A15:
Industrial electrification was part of the original 1989 Clean Fuels Policy (CFP) that was previously adopted into the BACT Guidelines. However, a review of the original document indicated that industrial electrification was a component of the CFP that was not included in the original Clean Fuel Requirements section of the BACT Guidelines. The proposed addition of the statement regarding industrial electrification into the Clean Fuels Requirements section of the BACT Guidelines will correct this omission and maintain consistency with state and federal requirements. Since the proposed amendments are only updating the BACT Guidelines with current, already existing requirements, it can be seen with certainty that the proposed project has no potential to adversely impact air quality or any other environmental topic area. As such, the proposed project is statutorily exempt from CEQA pursuant to CEQA Guidelines §15061(b)(3) ~~and categorically exempt from CEQA pursuant to CEQA Guidelines §15308~~.

Comment A16:
Page 28, Chapter 1, Clean Fuel Requirements, Paragraph 2.
"The use of these fuels must meet the requirements of SCAQMD rules limiting NOx and sulfur emissions."

Suggested addition: This policy is also subject to the provisions of Health & Safety Code section 40440.11. (WSPA- BACT SRC member)

Response A16:
Refer to Response A9.

Comment A17:
Page 30, Chapter 2.
"The above ~~six sections~~information will enable permit applicants to assess the applicability of each LAER/BACT determination to their particular equipment.
The LAER requirements usually found in section 5A of the LAER Determination listings are in the form of:

- An emission limit;
- A control technology;
- Equipment; or
- A combination of the last two."

Please add a bullet for work practice requirements. (LADWP- BACT SRC member)

Response A17:
Staff agrees that work practice requirements are considered to be part of LAER/BACT requirements, but it is currently considered part of the "Control Technology Comments~~equipment requirements~~" category. Staff is in the process of developing a new BACT Determination Form and will be addressing this topic in the Form, and will consider adding work practice requirements to this list in future updates.

Comment A18:
Page 28, Chapter 1, Clean Fuel Requirements, Paragraph 1.

Proposed the following language: "Besides natural gas, other clean fuels are ~~methanol,~~ liquid petroleum gas (LPG), electricity, and hydrogen. ~~Industrial electrification (e.g., replacement of I.C. Engines, etc.) is~~ Utilization of zero and near-zero emission technologies are also integrated in the Clean Fuels Policy.
(Southern California Gas Company- BACT SRC member)

Response A18:
Staff agrees and has included revision.

Part B

Comment B1:
Page 2, I.C. Engine – Emergency Compression Engine (A/N: 516409), Section 4, Part A "BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission 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 ration, if applicable."

Should clarify that these values are EPA certification values (or standards) based on EPA certification test methods. These values may not be achieved during a single-mode field test. (Sierra Research- BACT SRC member)

Response B1:
Staff agrees and has made revision.

Comment B2:
Page 2, I.C. Engine - Emergency, Compression Ignition (A/N 516409), Section 4, Part C "BASIS OF THE BACT/LAER DETERMINATION: ~~Acheived~~ Achieved in Practice" (WSPA- BACT SRC member)

Response B2:
Staff agrees and has made revision.

Comment B3:
Page 2, I.C. Engine – Emergency, Compression Ignition (A/N 516409), Section 4, Part D EPA certification levels are based on EPA certification test methods. Thus, actual performance in the field may vary. These values should not be used as limits for a compliance source test under conditions varied from that of the EPA certification test protocol. (WSPA- BACT SRC member)

Response B3:
Staff agrees and has made revision.

Comment B4:
Page 3, I.C. Engine–Emergency, Compression Ignition (A/N: 516409), Section 5, Part G "CONTROL TECHNOLOGY COMMENTS: Permit conditions to regenerate PM filter after every 24 cold engine start-ups of HiBack alarm signal, whichever occurs first. For regeneration run engine until exhaust temp exceeds 57 Deg. F and normal backpressure reading, Engine exhaust temp at inlet to PM filter ≥ 572 Deg. F except during cold engine start-up, not to exceed 10 minutes."

Has the District calculated or accounted for the increased emissions associated with regeneration as compared with the emissions reduced by the DPF?
(Sierra Research- BACT SRC member)

Response B4:
The District has not conducted specific studies on emissions associated with regeneration of DPFs however, CARB has conducted studies on emissions from both active and parked regeneration of a diesel particulate filter from heavy duty trucks. CARB has determined that more information is needed concerning the nature and a clearer understanding of the particulate matter composition, toxicity and exposure potential to better understand possible impacts.

Comment B5:
Page 3, I.C. Engine–Emergency, Compression Ignition (A/N: 516409), Section 6, Part A "COMPLIANCE DEMONSTRATED BY: Source test or other method that was used to demonstrate compliance"

Should indicate that compliance is demonstrated through the use of a certified Tier 3, engine in combination with a CARB-verified DPF. (Sierra Research- BACT SRC member)

Response B5:
Staff agrees and has made revision.

Comment B6:
Page 2, I.C. Engine–Emergency, Compression Ignition (A/N: 516708), Section 4, Part A "BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission 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 ration, if applicable."

Should clarify that these values are EPA certification values (or standards) based on EPA certification test methods. These values may not be achieved during a single-mode field test. (Sierra Research- BACT SRC member)

Response B6:
Staff agrees and has made revision.

Comment B7:
Page 3, I.C. Engine–Emergency, Compression Ignition (A/N: 516708), Section 5, Part G "CONTROL TECHNOLOGY COMMENTS: Permit condition to regenerate PM filter whenever warning signal is received from alarm system. For regeneration run engine until exhaust tem exceeds 464 Deg. F and normal backpressure reading. Engine exhaust temp at inlet to PM filter ≥464 Deg. F except during cold engine star-up."

Has the district calculated and accounted for the increased emissions associated with regeneration as compared with the emissions reduced by the DPF?
(Sierra Research- BACT SRC member)

Response B7:
Please see response B4.

Comment B8:
Page 3, I.C. Engine–Emergency, Compression Ignition (A/N: 516708), Section 6, Part A "COMPLIANCE DEMONSTRATED BY: Source test or other method that was used to demonstrate compliance"

Should indicate that compliance is demonstrated through the use of a certified Tier 2 engine in combination with a CARB-verified DPF. (Sierra Research- BACT SRC member)

Response B8:
Staff agrees and has made revision.

Comment B9:
Page 2, Flare, Oil and Gas Operations (A/N538706), Section 4, Part C.
"BASIS OF THE BACT/LAER DETERMINATION: ~~Acheived~~ **Achieved"**

(WSPA- BACT SRC member)

Response B9:
Staff agrees and has made revision.

Comment B10:
Page 3, Flare, Oil and Gas Operations (A/N: 538706), Section 6, Part D.
"COLLECTION EFFICIENCY PARAMETERS: 99.9+% **destruction** for VOC and BTEX"

Line 6D is for collection efficiency, not destruction efficient. The BACT limit is stated as the concentrations in Section 4, and not as a destruction efficiency.
(Sierra Research- BACT SRC member)

Collection efficiency is not destruction efficiency. (WSPA- BACT SRC member)

Response B10:
Staff agrees and has made revision.

Comment B11:
Page 2, I.C. Engine–Emergency, Compression Ignition (A.N: 558397), Section 4, Part C
"BASIS OF THE BACT/LAER DETERMINATION: ~~Acheived~~ **Achieved"**
(WSPA- BACT SRC member)

Response B11:
Staff agrees and has made revision.

Comment B12:

Page 2, I.C. Engine–Emergency, Compression Ignition (A.N: 558397), Section 4, Part A "BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission 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 ration, if applicable."

Should clarify that these values are EPA certification values (or standards) based on EPA certification test methods. These values may not be achieved during a single-mode field test. (Sierra Research- BACT SRC member)

Response B12:
Staff agrees and has made revision. Staff also made a correction to the values in this section to be consistent with Permit Condition No. 14 in Permit G30438 (Application No. 558397). The values are now:

NOx+VOC	CO	PM OR PM_{10}
4.8 g/bhp-hr	2.6 g/bhp-hr	0.01 g/bhp-hr

Comment B13:
Page 3, I.C. Engine–Emergency, Compression Ignition (A/N: 558 97), Section 5, Part G "CONTROL TECHNOLOGY COMMENTS: Permit condition to regenerate PM filter whenever warning signal is received from alarm system. For regeneration run engine until exhaust tem exceeds 464 Deg. F and normal backpressure reading. Engine exhaust temp at inlet to PM filter ≥464 Deg. F except during cold engine star-up."

Has the district calculated and accounted for the increased emissions associated with regeneration as compared with the emissions reduced by the DPF?
(Sierra Research- BACT SRC member)

Response B13:
Please see response B4.

Comment B14:
Page 3, I.C. Engine–Emergency, Compression Ignition (A/N 558397), Section 6, Part A "COMPLIANCE DEMONSTRATED BY: Source test or other method that was used to demonstrate compliance"

Should indicate that compliance is demonstrated through the use of a certified Tier 2 engine in combination with a CARB-verified DPF. (Sierra Research- BACT SRC member)

Response B14:
Staff agrees and has made revision.

Part C

Comment C1:

Page 34, 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 SCAQMD 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.

Recommend providing more of an overview focusing on the difference between LAER and BACT requirements. (LADWP- BACT SRC Member)

Response C1:
Chapter 2 of the Overview section of the BACT Guidelines titled "Applicability Determination" discusses how to determine if a facility is a major polluting facility and subject to LAER or MSBACT. Part A and Part C discuss the details of LAER and MSBACT respectively. In addition, the proposed updated Figure 2 "The Ongoing BACT Update" has two branches for minor source and major source.

Comment C2:
Page 34, Chapter 1, Part D of the MSBACT Guidelines, Paragraph 2:
The ~~initial~~ listings in Part D of the MSBACT Guidelines **reflect current BACT determinations for sources at non-major polluting facilities as of April 2000. This initialization does not represent new requirements but rather memorializes current BACT determinations and emission levels.**

Having the words "current" is somewhat confusing. The BACT determinations which have been replaced with new determinations should be clearly indicated to be no longer "current."(OCSD- BACT SRC member)

Response C2:
Staff agrees and has included the revision.

Comment C3:
Page 37, Chapter 1, Table 5:
The heading for the nonincremental cost-effectiveness threshold is "Average." It might be clearer to label it "Regular" or something similar since "Average" might imply there are several different thresholds being averaged. (SDAPCD-BACT SRC Member)

Response C3:

Average Cost Effectiveness ratio is referenced according to its economic definition, which is defined as the total cost of a project divided by the effectiveness of the project in comparison to doing nothing.

Comment C4:

Page 37, Chapter 1:

When cost effectiveness is a consideration for a BACT determination, it would be useful to make the detailed cost-effectiveness analysis readily available (i.e., posted online). Other districts may have different cost effectiveness methodologies, cost effectiveness thresholds, or be determining BACT for a slightly different source category. Making the detailed cost-effectiveness analysis available would provide other districts with information, including itemized equipment and operating costs, to make appropriate adjustments when addressing BACT. (San Diego APCD, BACT SRC Member)

Response C4:

The cost effectiveness procedures applicable to minor source BACT in Part D under California Health and Safety Code 40440.11 are triggered for a BACT Determination that is more stringent than the existing BACT Guidelines. For this update, all Part D listings are being updated to be consistent with current requirements already in effect by either federal, State or SCAQMD requirements. Therefore, cost effectiveness analyses were not required for these Part D updates. Further details about these requirements can be obtained from the applicable staff reports for each rule or regulation. When required by H&SC 40440.11, staff intends to provide and present to the BACT SRC a detailed cost effectiveness analysis for each minor source BACT Determination that is new or more stringent than the current BACT Guidelines. Posting of detailed cost-effectiveness analysis online is being considered for future development.

Comment C5:

Page 39, Chapter 1, Costs to Include in a Cost Effectiveness Analysis, Paragraph 1:

Methodologies for determining these values are given in documents prepared by USEPA through their Office of Air Quality Planning and Standards (~~OAQPS~~ EPA Air Pollution Control Cost Manual, 4~~th~~ Sixth Edition, 2002, USEPA through ~~450~~452/~~3~~B-~~90~~02-006 001~~and Supplements~~).

You may want to change the link to https://www3.epa.gov/ttn/ecas/cost_manual.html so as to capture any updates. Since this link just addresses the methodology for cost estimation, rather than identifying specific costs of technology conclusions, I think you can use a live link here. (Sierra Research - BACT SRC Member)

Change link to https://www3.epa.gov/ttn/ecas/cost_manual.html
(WSPA - BACT SRC Member)

Response C5:
Staff agrees and has included revision.

Comment C6
Page 40, Chapter 1, Clean Fuel Requirements, Paragraph 1:
Clean Fuel Requirements – Electrification should not be included in this section until it has been demonstrated as BACT for specific categories of equipment and industries. Additionally. This policy is subject to the provisions of Health & Safety Code section 40440.11. (WSPA- BACT SRC Member)

Response C6
Natural gas was included in the BACT Guidelines as a clean fuel option to diesel as originally identified in the Clean Fuels Policy. Similarly, as also identified by the original Clean Fuels Policy Industrial Electrification is being included by staff, subject to engineering feasibility and compliance with California Health and Safety Code section 40440.11 in establishing minor source BACT.

Comment C7:
Page 41, Chapter 1, Clean Fuel Requirements, Paragraph 2:
The use of these fuels must meet the requirements of SCAQMD rules limiting NOx and sulfur emissions. Suggested addition: "This policy is subject to the provisions of Health & Safety Code section 40440.11. (WSPA – BACT SRC Member)

Response C7:
The current section in Chapter 1 of Part C already states that the new determinations under MSBACT are subject to the provisions of H&SC 40440.11, and staff agrees to provide additional clarification that the Clean Fuels Policy for MSBACT is subject those provisions.

Comment C8:
Page 44, Chapter 1, Figure 2:
Is the updated flow chart the one on top? (LADWP - BACT)

Response C8:
Correct, the updated flowchart is on top with the first cell titled "Permit Application Submitted."

Comment C9:
Page 45, Chapter 2, General:
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.

Add a bullet for work practice standards requirements. (LADWP – BACT SRC Member)

Response C9:
Staff agrees that work practice requirements are considered to be part of MSBACT requirements, but it is currently considered part of the "equipment requirements" category. Staff is in the process of developing a new BACT Determination Form and will be addressing this topic in the Form, and will consider adding work practice requirements to this list in future updates.

Comment C10:
Page 47, Chapter 2, 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. Same caveat as above w/re H&SC 40440.11 (Sierra Research – BACT SRC Member)

Response C10:
The current section in Chapter 1 of Part C already states that the new determinations under MSBACT are subject to the provisions of H&SC 40440.11, and staff agrees to provide additional clarification that this section for MSBACT is subject those provisions for BACT considerations.

Comment C11:
Page 47, Chapter 2, Pollution Prevention:

- 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.

Suggested addition: "This policy is subject to the provisions of Health & Safety Code section 40440.11. (WSPA – BACT SRC Member)

Response C11:
Staff agrees and has included revision.

Comment C12:
Page 40, Chapter 1, Clean Fuel Requirements, Paragraph 1.

Proposed the following language: "Besides natural gas, other clean fuels are ~~methanol,~~ liquid petroleum gas (LPG), electricity, and hydrogen. ~~Industrial electrification (e.g.,~~

~~replacement of I.C. Engines, etc.) is~~ Utilization of zero and near-zero emission technologies are also integrated in the Clean Fuels Policy.
(Southern California Gas Company- BACT SRC member)

Response C12:
Staff agrees and has included revision.

Part D

Comment D1:
Page 68, Part D, I.C Engine, Portable BACT Determination

BACT SRC committee member stated it might be appropriate for the BACT Guidelines to specify that it is also applicable to prime portable engines. Anticipates that there are a lot of portable engines brought ~~in~~ in an emergency capacity but still subject to South Coast permitting rather than PERP (Portable Equipment Registration Program) program. It doesn't seem these standards should be more stringent than what you would be applying to stationary engines in the same application. Suggested it be worded ICE portable prime power. (Montrose Environmental; Sierra Research- BACT SRC Members)

Response D1:
BACT requirements for an engine whether portable or emergency would be determined based on the permit it is operating under. A portable ICE that is being operated as a prime power ICE and requires a permit will no longer be considered a portable ICE and will be subject to the stationary ICE BACT requirements. Under PERP and Portable ATCM, there are allowances for short term operation of portable engines providing prime power. However, once the portable engine is no longer eligible for PERP registration it will be subject to stationary non-emergency engine requirements of Rule 1110.2.

Comment D2:
Page 68, Part D, I.C Engine, Portable BACT Determination
BACT SRC committee members stated there are plenty of applications and instances where an engine is operating and registered in PERP which might still be portable engine but possibly require local permit. Those engines today operating in PERP program – Tier 2 or 3 engines - but that technology should be allowed temporarily in the basin short term for emergency applications, and for that should specify subject to only prime power. More concerned about application of this BACT standard to a portable engine brought into the South Coast Basin and subject to a South Coast permit but the portable engine is only being used in emergency applications. SCAQMD's BACT guidelines

specify Tier 2 or 3, but now current proposed update is making it more stringent than the emergency requirements. (Montrose Environmental; Sierra Research)

Response D2:
Please see response D1.

Comment D3:
Page 68 & 71, Part D, I.C Engine, Portable and Stationary Emergency BACT Determination
BACT SRC committee members asked if SCAQMD regulations allow fleet averaging. If SCAQMD's BACT for portable and stationary emergency engines is mirroring CARB's requirements does SCAQMD accept a legally manufactured flexed engine? (Montrose Environmental; OCSD – BACT SRC Members)

Response D3:
SCAQMD BACT does not allow for fleet averaging and just looks at the engine itself.

Comment D4:
Part D Listing
Where applicable, add emissions averaging times to the Part D BACT Guideline table. This is consistent with the information provided on the Part B BACT form (section 4) that requests averaging times. (Sue Gornick, WSPA)

Response D4:
Staff agrees. This is demonstrated by the current Part D listing for Gas Turbines that indicates averaging times. However, in the case where the Part D listing references a rule or regulation, the Part D listing will defer to the rule language for averaging time.

Comment D5 (BACT SRC meeting):
Part D Listing
As discussed in the meeting, referencing rules for the BACT Standards rather than the actual standard may be suitable in many cases and may be necessary in some cases (e.g., coating categories). However, it would be helpful to state the actual BACT standard (e.g., 5.0 ppmvd at 3% O2) whenever feasible. The BACT tables are much more transparent to use without the need to continually look-up, read, and interpret one or more rules. In some cases, the interpretation of a rule may be clear to SCAQMD practitioner but not to someone in another district that is not familiar with SCAQMD rules. (San Diego APCD – BACT SRC Member)

Response D5:
Multiple responses have been received from the public preferring the rule to be referenced in the Guidelines if it qualifies as BACT. This topic was also discussed in the BACT SRC meeting on May 11, 2016. A case was made that as a rule changes, BACT will change with it if the rule is identified in the listing, whereas stating a specific rule emission limit may become outdated. Staff agrees with referencing the rule in the listing

to provide the BACT Guidelines more flexibility. If an emission rate or control technology is ever found to be more stringent than the rule, then the listing will be updated with that new limit.

Comment D6:
Page 13, Boiler BACT Determination Form
What are the bases for these proposed changes? We typically see the individual BACT determinations supporting Part D revisions. (Sierra Research – BACT SRC Member)
Include references to individual BACT determinations supporting Part D revisions. (WSPA – BACT SRC Member)

Response D6:
When a more stringent BACT Listing for Part D was proposed for BACT, staff provides examples of permitted equipment that demonstrated the BACT requirements can be met, as well as demonstrating cost effectiveness and reliability pursuant to H&SC 40440.11. For this update, the proposed Part D listings are becoming current with existing rule requirements and there are no proposals that are more stringent than would otherwise be required by existing federal, State and SCAQMD rules and regulations. As previously mention in Response D4, where feasible the rule will be cited in the listing which will clarify the bases of the listings.

Comment D7:
Page 68, I.C. Engine Portable BACT Determination Form
The proposed guidelines are appropriate for new prime power portable engines that would enter the District, but some portable engines are operated strictly as emergency unit. As such, "Prime Power" should be incorporated into the title of this guidelines. Doing so allows the same engine technology that is allowed for stationary emergency engines to also be allowed for temporary, portable emergency engines.
(Montrose Environmental- BACT SRC member)

Response D7:
Please see response D1.

Comment D8:
Page 71, I.C. Engine, Stationary, Emergency BACT Determination Form
Delete references to Tier 2 under CO and PM for engine sizes where the NOx+ NMHC determination requires Tier 3, engines. (Sierra Research – BACT SRC member)
Eliminate inconsistencies, between Tier 3 and 2. Higher tier will govern. (WSPA – BACT SRC member)

Response D8:
Staff agrees and has included revision.

Comment D9:

Page 71, I.C. Engine, Stationary, Emergency BACT Determination Form
In keeping with NSPS standards for emergency engines, SCAQMD proposes to delete provisions that allow spark ignition emergency engines from being used in demand response programs. However, rich burn engines permitted by SCAQMD for emergency applications generally meet NSPS standards for prime power engines. It seems that instead of deleting the DRP allowance entirely, SCAQMD should revise Footnote #5 to this guideline to specify that spark ignition engines permitted SCAQMD for emergency can be used in DRP applications only if the engine meets NSPS emission, reporting and compliance demonstration standards of 40 CFR 60, Subpart JJJJ for prime power engines. (Montrose Environmental – BACT SRC member)

Response D9:
Allowing engines that are permitted as stationary emergency spark ignition to be used in DRP applications would be contrary to Title 40, Part 60, Subpart JJJJ~~current federal law~~. Also, s~~S~~tationary Prime power engines for electrical generation which are permitted by SCAQMD are required to comply with applicable Rule 1110.2 emission standards which are more stringent than NSPS standards.

Comment D10:
Page 68&71, I.C. Engine Portable BACT & I.C. Engine, Stationary, Emergency BACT Determination Forms
It is not clear how BACT is addressed for portable and emergency engines that are relocated or modified rather than new. Although the District would consider Tier 4 the appropriate BACT for new engines, the District could potentially determine that BACT to be Tier 3 or Tier 2 based on cost-effectiveness considerations for a relocated or modified engine or for an existing PERP engine needing a District permit. (SDAPCD – BACT SRC Member)

Response D10:
Please see response D1.

Comment D11:
Page 74, I.C. Engine, Stationary, Emergency BACT Determination Form, Spark Ignition ≥ 130 HP

VOC: 1.0 grams/bhp-hr **(X-XX-2015)** VOC: 1.5 grams/bhp-hr (10-20-2000)

I don't believe the SRC has seen this determination. (Sierra Research – BACT SRC Member)

Response D11:
This listing is based on the requirement listed in Table 1 in 40 CFR 60 Subpart JJJJ for Stationary Emergency Spark Ignition Engines with a horsepower rating of greater than or equal to 130 HP.

Comment D12:
Page 75, Footnote 4
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 the 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, 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.**

While I understand that this language is not proposed for change, since ABT engines meet the applicable Subpart IIII requirements, why shouldn't they also meet the District BACT requirements? (Sierra Research – BACT SRC Member)

Response D12:
For this update, staff is focusing on bringing the Guidelines current with existing rule requirements. Any proposal under Part D that will be considered more stringent will need to be further evaluated in accordance with H&SC 40440.11. Staff is continually evaluating new technologies and will research this item to determine if more stringent emissions limits have been achieved.

Comment D13:
Page 76, I.C. Engine, Stationary, Non-Emergency BACT Determination Form
The biogas engine emission standards of Rule 1110.2 that will become effective in 2017 for existing engines are likely already implemented as BACT for new engines. SCAQMD should consider incorporating those standards into the proposed guidelines, rather than the existing Part D guidelines. (ES Engineering Services – BACT SRC Member)

Response D13:
The focus of this amendment of the BACT Guidelines is to make them consistent with recent changes to SCAQMD rules and regulations as well as state and federal requirements. Staff will research this category for the subsequent amendment to the BACT Guidelines if it is expected to occur before the Rule 1110.2 deadline for these engines.

Comment D14:
Page 77, I.C. Engine, Stationary, Non-Emergency, Non-Electrical Generator BACT Determination Form

These determinations sometimes, but not always, match the requirements of Rule 1110.2. Suggest replacing the numeric limits with a requirement to comply with Rule 1110.2. If the Staff's intention is to impose more stringent requirements than those established in Rule 1110.2, I don't believe the SRC has seen the BACT determinations supporting this guideline change. (Sierra Research, BACT SRC member)

Replace the numeric limits with a requirement to comply with Rule 1110.2. (WSPA, BACT SRC Member)

Response D14:
Staff agrees with referencing the rule in the listing to provide the BACT Guidelines more flexibility.

Comment D15:
SCAQMD also suggests in Footnote 1 of this guideline that until guidelines are established for stationary power generating engines, those engines will be subject to the standards for stationary emergency engines. (I believe SCAQMD intended to reference "stationary, Non-Emergency, Non-electrical Generators") Regardless, the distributed generation standards of Rule 1110.2 have been in effect for new installations since the year 2008 and should be incorporated into the guidelines.
(ES Engineering Services – BACT SRC Member)

Response D15:
Staff is currently analyzing multiple permit units under this future proposed listing to ensure the proper emission limit or rule reference is adopted. Staff is committed to addressing this listing in the subsequent amendment of these Guidelines.
Staff has corrected the reference in the footnote to "Stationary, Non-Emergency, Non-Electrical Generators."

Comment D16:
SCAQMD permitting staff commented regarding the values presented for Tier 4 Interim under the Part D listing for Portable Engines. For the Portable Compression Ignition categories for the ranges of 75-175 HP and greater than 750 HP, the Tier 4 Interim value of 0.19 grams/kW-hr is listed for NMHC emissions. The converted value of 0.16 grams/bhp-hr is incorrect however, and should be corrected to 0.14 grams/bhp-hr. range. (SCAQMD Permitting Staff)

Response D16:
Staff agrees and has included the revision in both horsepower ranges.

Part E

Comment E1:
Page 52, Chapter 1- GHG BACT:

This chapter explains the requirements of greenhouse gases (GHG) BACT regulations according to EPA, describes the Top-Down Process, shows how to calculate GHG emissions and **explains the Prevention of Significant Deterioration (PSD) Applicability for GHGs for new sources as well as modified sources.**

I don't believe you need to discuss PSD applicability in this document. You run the risk of inconsistencies with your rules, EPA rules, and/or Court decisions. PSD applicability is addressed directly in Rule 1714. (Sierra Research – BACT SRC member)

Instead of paraphrasing parts of EPA's PSD and Title V Permitting Guidance for GHGs, recommend attaching the entire document as an appendix. (LADWP – BACT SRC Member)

By attempting to discuss PSD applicability in this document it runs the risk of oversimplifying or being inconsistent with Rule 1714. (WSPA – BACT SRC Member)

Response E1:
Similar to the Applicability Determination section in Part A that describes major source thresholds for LAER, due to the unique applicability requirements of "Anyways Sources" and the history of the development of the requirements, staff feels it is important that this topic is discussed in the Guidelines specific to the requirements to determine BACT for PSD for GHG.

Comment E2:
Page 52, Chapter 1-GHG BACT:
The first paragraph suggest that EPA's Tailoring Rule is in the process of being revised to reflect the Supreme Court's Decision. However, this has already happened: https://www.federalregister.gov/articles/2015/08/19/2015-20501/prevention-of-significant-deterioration-and-title-v-permitting-for-greehouse-gases-removal-of. (EPA Region 9 - BACT SRC Member)

The guidance in this chapter is applicable to the EPA requirements in place as of the date of these guidelines, as well as SCAQMD Rule 1714.
EPA's rule is at OMB so this may have to be corrected. (LADWP - BACT SRC Member)

Response E2:
Staff agrees and has included revision.

Comment E3:
Page 52, Chapter 1, Background, Paragraph 2:
All other attainment air contaminants, as defined in SCAQMD Rule 1702 subdivision (a), shall be regulated for the purpose of PSD. **PSD is not applicable to air contaminants designated as nonattainment status.**

As discussed above, this statement is too broad, (e.g., NOx regulated as a nonattainment precursor to O_3 and as an attainment precursor to NO_2.) (Sierra Research – BACT SRC Member)

This is an oversimplification. NOx is an attainment pollutant which is also regulated as a nonattainment pollutant based on nonattainment precursor status.
(WSPA – BACT SRC Member)

Response E3:
Staff agrees and has included revision.

Comment E4:
Page 52, Chapter 1, Permitting Guidance for GHG:
EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases" provides the basic information that permit writers and applicants need to address GHG emissions in permits. The guidance:

- **Applies long-standing PSD** and Title V permitting requirements and processes to GHG;

The guidance pre-dates the UARG court decision; a reference to the guidance could suggest that the District intends to implement the pre-UARG Tailoring Rule. Suggest deleting the reference, or clarifying that to the extent the guidance is inconsistent with UARG or EPA's Tailoring Rule update, the provisions of those decisions/rules govern. (Sierra Research – BACT SRC Member)

This guidance pre-dates the Utility Air Regulatory Group (UARG) v. EPA court decision (No.12-1146, June 23, 2014); a reference to this guidance could suggest that the District intends to implement the pre-UARG Tailoring Rule, which was invalidated in the Supreme Court Decision. WSPA suggest deleting this reference, or clarifying that to the extent the guidance is inconsistent with the Supreme Court's UARG decision or EPA's Tailoring Rule update, the provisions of that decision and current rules govern. (WSPA – BACT SRC Member)

Response E4:
Staff has updated the language to clarify the requirements. The language is not intended to implement requirements that pre-dated the Supreme Court's UARG Decision that have since been removed. Some references to the Tailoring Rule will remain, but staff will include most PSD for GHG requirements in the Guidelines.

Comment E5:
Page 53, Chapter 1, Permitting Guidance for GHG, Bullet Point 7:

- Notes that biomass could be considered BACT after taking into account environmental, energy, and economic considerations and state and federal policies that promote biomass for energy-independence and environmental reasons.

EPA is reassessing the biomass issue so you may want to reword this so that the statement is not so definitive. (LADWP – BACT SRC Member)

Response E5:
Staff agrees and will add advisory language that EPA is considering revisions that will affect BACT determinations for these sources. A footnote will be added referencing U.S. EPA's memo dated November 19, 2014 regarding this topic (https://www3.epa.gov/climatechange/downloads/Biogenic-CO2-Emissions-Memo-111914.pdf).

Comment E6:
Page 53, Chapter 1, Federal PSD Applicability for GHG:
Beginning January 2, 2011, GHG regulated as a **NSR** contaminant.

Not quite correct; GHGs are regulated for PSD and Title V purposes, but not for all NSR purposes. (Sierra Research – BACT SRC Member)

This statement is not correct. GHG are regulated under PSD based on the endangerment finding. But GHG are not subject to PSD NSR the same way as criteria pollutants. (WSPA – BACT SRC Member)

Response E6:
Staff agrees and has included revision.

Comment E7:
Page 53, Chapter 1, Federal PSD Applicability for GHG, Paragraph 1:
The first step for PSD applicability determination for new or modified sources is listed in the Tables 7 and 8 below that address the Tailoring Rule Requirements.

This entire discussion needs to be revised. As noted above, the Tailoring Rule was vacated by the court. Under the court's decision, GHG PSD is not triggered unless PSD has been triggered for an attainment criteria pollutant. (WSPA – BACT SRC Member)

Response E7:
Staff agrees and has included revision.

Comment E8:
Page 53, Chapter 1, Federal PSD Applicability for GHG:
EPA is developing a proposed rule to address this issue. (LADWP – BACT SRC Member)

Response E8:
Staff is updating this section to be consistent the most recent amendment of 40 CFR 52.21 on August 19, 2015.

Comment E9:
Page 53, Chapter 1, Federal PSD Applicability for GHG, Paragraph 1:
GHG BACT applies when a new or modified facility is subject to **PSD requirements.**

"…PSD requirements for GHG." (Sierra Research – BACT SRC Member)

Response E9:
Staff agrees and has made the correction.

Comment E10:
Page 53, Chapter 1, Federal PSD Applicability for GHG:
A second step for PSD applicability is contemporaneous netting. **For detailed guidance on this topic, EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases" (March 2011) should be referenced, but should be used in accordance with EPA's clarifying documents regarding the U.S. Supreme Court decision in Utility Air Regulatory Group v. Environmental Protection Agency[20].**

This language addresses my concern above; should be used there as well.
(Sierra Research, BACT SRC Member)

Response E10:
Staff will update the remainder of Part E to be consistent with the UARG Court Decision and the recent amendment of 40 CFR 52.21 dated August 19, 2015.

Comment E11:
Page 54, Chapter 1, Table 8:
PSD applies GHG if:
2. The modification results in a GHG emissions increase **or** net emissions increase:

"and" not "or" (Sierra Research; WSPA – BACT SRC Members)

Response E11:
Staff agrees and has included revision.

Comment E12:
Page 54, Chapter 1, Table 8:
PSD applies GHG if:

2a. **PTE** ≥ 75,000 TPY CO2e, AND

Delete “PTE”. The terms “emissions increase” and “net emissions increase” are defined, and do not always reflect a PTE. (Sierra Research; WSPA – BACT SRC Members)

Response E12:
The term Potential to Emit (PTE) is used in the language in 40 CFR 52.21(j)(2) for applying BACT to a new major stationary source. In addition, Potential to Emit is used in the definition for major stationary source in 40 CFR 52.21(b)(1)(i). To stay consistent with federal guidance, staff will keep PTE in the applicability description in Table 7 for a new source. However, staff will remove PTE from the description for modified sources in Table 7, and only use the terms emissions increase or net emissions increase since the term PTE is not used to determine emissions from a modified source in this section.

Comment E13:
Page 54, Chapter 1, SCAQMD PSD Applicability for GHG:
SCAQMD PSD applicability should be determined following the applicable sections of the Code of Federal Regulation identified in this rule.

Yes. In fact most this preceding discussion could be eliminated in favor of this reference to the application regulations. That would minimize the potential for oversimplification and/or conflict. (WSPA – BACT SRC Member)

Response E13:
Proposed Part E was added to the Guidelines to summarize new BACT requirements for the PSD GHG program under 40 CFR 52.21 and SCAQMD Rule 1714. Proposed Part F is being introduced as the section that will contain the future GHG BACT listings that will be adopted following the procedures summarized in proposed Part E. The format extends the same practices that are used for LAER and MSBACT in Parts A, B, C and D of the Guidelines.

Comment E14:
Page 54, Chapter 1, Contemporaneous Netting:
Contemporaneous netting is the process of considering all of the creditable emission increases and decreases that have occurred during the period beginning five years **before the proposed construction of the modification through the date that the emission increase from the modification occurs. When calculating the net emissions in Table8 above for the PSD applicability, it must include all emission increases and decreases during this period.**

Use the phrase “net emissions increase”, not “net emissions”, to maintain parallel construction. (Sierra Research – BACT SRC Member)

Response E14:
Staff agrees and has included revision.

Comment E15:
Page 55, Chapter 1, BACT Step 1: Identify All Available Control Options, Paragraph 3:
EPA has emphasized the importance of energy efficiency improvements. **The first category of energy efficiency improvement options includes technologies of processes that maximize the efficiency of the individual emissions unit. The second category of energy efficiency improvements includes the options that could reduce emissions from a new greenfield facility by improving utilization of thermal energy and electricity that is generated and used on site.**

This is an accurate quote from EPA's guidance, but there is a lot of context missing. One has to be careful about crossing the line between establishing BACT for an emission unit, and using GHG emission reductions elsewhere at a facility to avoid (or lessen the stringency of) a BACT determination for an emission unit. I'd suggest deleting the highlighted language, and let uses review the complete EPA guidance.
(Sierra Research – BACT SRC Member)

Delete in favor of a reference to the actual EPA guidance.
(WSPA – BACT SRC Member)

Response E15:
Staff agrees to simplify the language to focus the discussion on the BACT determination procedure. A reference to the EPA Guidance will be inserted.

Comment E16:
Page 56, Chapter1, BACT Step 4—Economic, Energy, and Environmental Impacts, Paragraph 2:
There are compelling public health and welfare reasons for BACT to require all GHG reductions that are achievable, considering economic impacts and other listed statutory factors. As a key step in the process of making GHG a regulated pollutant, EPA has considered scientific literature on impacts of GHG emissions and has made a final determination that emissions of six GHG endanger both the public health and the public welfare of current and future generations. Among the public health impacts and risks that EPA cited are anticipated increases in ambient ozone and serious ozone-related health impacts and risks that EPA cited are anticipated increases in ambient ozone and serious ozone-related health effects, increased likelihood of heat waves affecting mortality and morbidity, risked of increased intensity of hurricanes and floods, and increased severity of coastal storm events due to rising sea levels. With respect to public welfare, EPA cited numerous and far-ranging risks to food production and agriculture, forestry, water resources, sea level rise and coastal areas, energy, infrastructure, and settlements, and ecosystems and wildlife. The potentially serious adverse impacts of extreme events such as wildfires, flooding, drought and extreme weather conditions also supported EPA's finding.

I'm not convinced the language is appropriate here. One can make similar statements about criteria pollutants, but consideration of the adverse health impacts of those pollutants is not a part of a top-down analysis. EPA's endangerment finding is the reason why a GHG BACT assessment is required; the discussion under Step 4 should address the environmental impacts of the candidate BACT options, and not the environment in which the source is proposed to be built. (Sierra Research – BACT SRC Member)

Recommend deletion of this paragraph as it seems it does not seem appropriate (LADWP – BACT SRC Member)

This opinion is out of place and does not belong in Step 4. EPA made an endangerment finding which is what triggers the potential consideration of GHG emissions under PSD. (WSPA – BACT SRC Member)

Response E16:
Staff has removed some of the detailed language in this section regarding adverse impacts, and staff has added a reference to the U.S. EPA's Endangerment Finding. The section will still include instructions to evaluate environmental impacts as part of Step 4 of the Top Down GHG BACT process, but will state that detailed impacts can be found through U.S. EPA's GHG website.

Comment E17:
Page 57, Chapter 1, GHG Control Measures White Papers:
EPA has a series of technical "white papers" that summarize readily available information on control techniques and measures to reduce GHG emissions from specific industrial sectors. These papers provide basic technical information which may be useful in a BACT analysis, but they do not define BACT for each sector. The industrial sectors covered include:

- **Electric Generating Units (PDF) (48pp, 805k) EPA Contact: Christian Fellner (919-541-4003**

Check all of the links below; they do not point to the BACT documents, but as a web page two levels higher. (Sierra Research – BACT SRC Member)

Response E17:
Staff agrees and has included revision.

Comments and Responses
from May 11, 2016 SRC Meeting
and Public Comment Period