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

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LIST OF ABBREVIATIONS

AIP	Achieved in Practice
APCD	Air Pollution Control District
AQMP	Air Quality Management Plan
BACT	Best available control technology
BRC	BACT Review Committee, AQMD
CAA	Clean Air Act
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEP	Certified Equipment Permit
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CO	Carbon monoxide
DEO	Deputy Executive Officer
H&SC	Health and Safety Code, California State
LAER	Lowest achievable emission rate
LPG	Liquefied petroleum gas
MDAB	Mojave Desert Air Basin
MSBACT	Minor Source BACT
NO_2	Nitrogen dioxide
NOx	Oxides of nitrogen
NSR	New Source Review
ODC	Ozone depleting compounds
PM10	Particulate matter less than 10 microns in diameter
RACT	Reasonably available control technology
RECLAIM	Regional Clean Air Incentives Market
ROG	Reactive organic gas
South Coast ~~SC~~AQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SOCAB	South Coast Air Basin
SOx	Oxides of sulfur
SRC	Scientific Review Committee
SSAB	Salton Sea Air Basin
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound

INDEX OF EQUIPMENT CATEGORIES

A

Abrasive Blasting
Absorption Chiller
Air Start Unit
Air Stripper - Ground Water Treatment
Aluminum Melting Furnace - Crucible or Pot (All Charge)
Aluminum Melting Furnace - Crucible or Pot, Ingot and/or Clean Scrap Charge Only
Aluminum Melting Furnace - Reverberatory, Non-Sweating, Ingot or Contaminated Scrap Charge
Aluminum Melting Furnace - Reverberatory, Non-Sweating, Ingot or non-Contaminated Scrap Charge
Aluminum Melting Furnace - Reverberatory, Sweating, Ingot or Contaminated Scrap Charge
Aluminum Melting Furnace - Rotary, Sweating, Ingot or Contaminated Scrap Charge
Ammonium Bisulfate and Thiosulfate Production
Animal Feed Manufacturing - Dry Material Handling (see Bulk Solid Material Handling)
Asbestos Machining Equipment
Asphalt Batch Plant
Asphalt Roofing Line
Asphalt Storage Tank (see Storage Tank – Liquid)
Asphalt Day Tanker
Autobody Shredder

B

Ball Mill
Beryllium Machining Equipment
Blender (see Mixer)
Boiler
Boiler - Refinery Gas Fired
Boiler, CO - Refinery
Boiler - Agricultural Waste (Biomass) Fired
Boiler - Landfill or Digester Gas fired
Boiler - Municipal Solid Waste (MSW) Fired
Boiler - Wood Fired
Brake Pad Grinder
Brakeshoe Debonder
Brass Melting Furnace - Crucible
Brass Melting Furnace - Cupola
Brass Melting Furnace - Reverberatory, Non-Sweating

Brass Melting Furnace - Reverberatory, Sweating
Brass Melting Furnace - Rotary, Non-Sweating
Brass Melting Furnace - Rotary, Sweating
Brass Melting Furnace - Tilting Induction
Bulk Cement - Ship Unloading
Bulk Solid Material Handling
Bulk Solid Material - Ship Loading - Non-White Commodities
Bulk Solid Material - Ship Loading - White Commodities
Bulk Solid Material Ship Unloading - Except Cement
Bulk Solid Material Storage - Non-White Commodities
Bulk Solid Material Storage - White Commodities
Burnoff or Burnout Furnace (Excluding Wax Burnoff)

C

Calcined Petroleum Coke Handling
Calcined Petroleum Coke Truck Loading and Unloading
Calciner
Calciner - Petroleum Coke
Calciner - Portland Cement
Carpet Beating and Shearing
Carpet Oven (see Dryer or Oven)
Catalyst Manufacturing - Reactor
Catalyst Manufacturing - Rotary Dryer
Catalyst Manufacturing - Spray Dryer
Catalyst Regeneration - Fluidized Catalyst Cracking Unit
Catalyst Regeneration - Hydrocarbon Removal
Catalyst Regeneration and Manufacturing Calcining
Cement Handling (see Bulk Cement – Ship Unloading)
Charbroiler, Chain-driven (Conveyorized)
Chemical Milling Tank - Aluminum and Magnesium
Chemical Milling Tank - Nickel Alloys, Stainless Steel and Titanium
Chip Dryer
Chrome Plating - Decorative Chrome
Chrome Plating - Hard Chrome
Circuit Board Etcher - Batch Immersion Type, Subtractive Process
Circuit Board Etcher - Conveyorized Spray Type, Subtractive Process
Circuit Board Photoresist Developer
Clay, Ceramic, and Refractories Handling (Except Mixing) (see Bulk Solid Material Handling)
Cleaning Compound Blender
CO2 Plant
Coal, Coke and Sulfur Handling and Storage (see Bulk Solid Material Handling and Bulk Solid Material Storage)
Coffee Roasting
Coffee Roasting – Handling Equipment
Commodities Handling and Storage (see Bulk Solid Material Handling and Bulk Solid Material Storage)
Composting
Compressors (see Fugitive Emission Sources)
Connectors - Gas/Vapor and Light Liquid (see Fugitive Emission Sources)
Concrete Batch Plant - Central Mixed

Concrete Batch Plant - Transit-Mixed
Concrete Blocks and Forms Manufacturing
Cotton Gin
Crematory

D

Degreaser - Batch-Loaded or Conveyorized Cold Cleaners
Degreaser - Conveyorized Vapor, Volatile Organic Compounds Degreaser - Vapor Cleaning, Volatile Organic Compounds
Degreaser - Other
Detergent Manufacturing - Solids Handling
Detergent Manufacturing - Spray Dryer
Diaphragm (see Fugitive Emission Sources)
Diesel Engine (see I.C. Engine – Compression Ignition)
Drum Reclamation Furnace
Dry Cleaning - Perchloroethylene
Dry Cleaning - Petroleum Solvent
Dry Material Handling (see Bulk Solid Material Handling)
Dryer - Kiln
Dryer - Rotary, Spray and Flash
Dryer – Tenter Frame, Fabric
Dryer - Tray, Agitated Pan, and Rotary Vacuum
Dryer or Oven - Direct and Indirect Fired

E

Electric Furnace - Pyrolizing, Carbonizing and Graphitizing
Electrical Wire Reclamation - Insulation Burnoff Furnace
Ethylene Oxide Sterilization - Quarantine Storage
Ethylene Oxide Sterilization/Aeration
Expanded Polystyrene Manufacturing, Using Blowing Agent (see Polymeric Cellular [Foam] Product Manufacturing)
Extrusion (see Plastic or Resin Extrusion)

F

Fatty Acid - Fat Hydrolyzing and Fractionation
Fatty Alcohol
Feed and Grain Handling (see Bulk Solid Material Handling)
Fermentation - Beer and Wine
Fertilizer Handling (see Bulk Solid Material Handling)
Fiber Impregnation
Fiberglass Fabrication (see Polyester Resin Operations)
Film Cleaning Machine (see Degreaser)
Fish Cooker - Edible
Fish Reduction - Cooker
Fish Reduction - Digester, Evaporator and Acidulation Tank
Fish Reduction - Dryer
Fish Reduction - Meal Handling
Fish Rendering - Presses, Centrifuges, Separators, Tank, etc.
Fittings (see Fugitive Emission Sources)
Flare - Digester Gas or Landfill Gas from Non-Hazardous Waste Landfill

Flare - Landfill Gas from Hazardous Waste Landfill
Flare - Refinery, Non-Emergency
Flexographic Printing (see Printing)
Flow Coater, Dip Tank and Roller Coater
Fluidized Catalytic Cracking Unit
Foundry Sand Mold - Cold Cure Process
Fryer - Deep Fat
Fugitive Emission Sources at Natural Gas Plants and Oil and Gas Production Fields
Fugitive Emission Sources at Organic Liquid Bulk Loading Facilities
Fugitive Emission Sources, Other facilities
Fuming Sulfuric Acid Storage Tank (see Storage Tank – Fuming Sulfuric Acid)

G

Galvanizing Furnace - Batch Operations
Galvanizing Furnace - Continuous Sheet Metal Operations
Galvanizing Furnace - Continuous Wire Operations
Garnetting Equipment
Gas Turbine – Combined Cycle/Cogeneration
Gas Turbine - Emergency
Gas Turbine - Landfill or Digester Gas Fired
Gas Turbine – Simple Cycle
Glass Melting Furnace - Container Manufacturing
Glass Melting Furnace - Decorator Glass
Glass Melting Furnace - Flat Glass
Graphic Arts (see Printing)
Greenhouse Gas
Green Petroleum Coke Handling (see Bulk Solid Material Handling)
Green Petroleum Coke Truck Loading or Unloading (see Bulk Solid Material Handling)

H

Hatches (see Fugitive Emission Sources)
Hazardous Waste Incineration (see Incinerator – Hazardous Waste)
Heater (see Process Heater)

I

I.C. Engine - Emergency, Compression Ignition
I.C. Engine - Emergency, Spark Ignition
I.C. Engine - Fire Pump
I.C. Engine - Portable, Compression Ignition
I.C. Engine - Portable, Spark Ignition
I.C. Engine - Stationary, Non-Emergency
I.C. Engine - Landfill or Digester Gas Fired
Incinerator – Hazardous Waste
Incinerator - Infectious Waste
Incinerator - Non-Infectious, Non-Hazardous Waste
Ink Jet Printing
Iron Melting Furnace - Cupola
Iron Melting Furnace - Induction
Iron Melting Furnace - Reverberatory

J

Jet Engine Test Facility - Experimental Jet Engine, High Altitude Testing
Jet Engine Test Facility - Experimental Jet Engine, Sea Level (Low Altitude) Testing
Jet Engine Test Facility - Jet engine Performance Testing

L

Laminator with Corona Transfer
Landfill Gas Gathering System
Latex Manufacturing - Reaction
Lead Melting Furnace - Cupola, Secondary Melting Operations
Lead Melting Furnace - Pot or Crucible, Non-Refining Operations
Lead Melting Furnace - Pot or Crucible, Refining Operations
Lead Melting Furnace - Reverberatory, Secondary Melting Operations
Lead Oxide Manufacturing - Reaction Pot Barton Process
Letterpress Printing (see Printing)
Liquid Transfer and Handling - Container Filling
Liquid Transfer and Handling - Marine, Loading
Liquid Transfer and Handling - Marine, Unloading
Liquid Transfer and Handling - Tank Truck and Rail Car Bulk Loading, Class A (SCAQMD's Rule 462)
Liquid Transfer and Handling - Tank Truck and Rail Car Bulk Loading, Class B (SCAQMD's Rule 462)
Liquid Transfer and Handling - Tank Truck and Rail Car Bulk Loading, Class C (SCAQMD's Rule 462)
Lithographic Printing Heatset (see Printing)
Lithographic Printing - Non-Heatset (see Printing)

M

Meat Broiler and Barbecue Oven
Metal Forging Furnace
Metal Heating Furnace
Metallizing Spray Gun
Meters (see Fugitive Emission Sources)
Mixer or Blender - Wet
Mixer, Blender, or Mill - Dry

N

Natural Fertilizer Handling (see Bulk Solid Material Handling)
Natural Gas Plants (see Fugitive Emission Sources)
Nitric Acid Manufacturing
Non-Metallic Mineral Processing - Except Rock and Aggregate
Nut Roasting - Handling Equipment
Nut Roasting

O

Offset Printing (see Lithographic Printing)
Oil and Gas Production - Combined Tankage
Oil and Gas Production - Wellhead

Oil and Gas Production Fields (see Fugitive Emission Sources)
Oil/Water Separator (see Wastewater System)
Open Spraying - Spray Gun
Open-ended Valves or Lines (see Fugitive Emission Sources)
Organic Liquid Bulk Loading Facilities (see Fugitive Emission Sources)
Oven (see Dryer or Oven)

P

Paper and Fiber Handling (see Bulk Solid Material Handling)
Perlite Manufacturing System
Petroleum Coke Calciner (see Calciner – Petroleum Coke)
Pharmaceutical Manufacturing
Pharmaceutical - Operations Involving Solvents
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
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

Railcar Dumper (see Bulk Solid Material Handling)
Railcar Loading/Unloading, Liquid (see Liquid Transfer and Handling)
Reactor with Atmospheric Vent
Rendering - Crax Pressing, filtering and Centrifuging Operations
Rendering - Evaporators, Cookers and Dryers
Rendering - Grease and Blood Processing
Rendering - Metal Grinding and Handling System
Rendering - Tanks and Miscellaneous Equipment
Resin Manufacturing
Rock - Aggregate Processing
Rocket Engine Test Cell
Rolling Mill
Rotogravure Printing - Publication and Packaging (see Printing)
Rubber Compounding - Banbury Type Mixer
Rubber Compounding – Roll Mill

S

Sampling Connections (see Fugitive Emission Sources)
Sand Handling System with Shakeout and/or Muller in System
Screen Printing and Drying (see Printing)
Sewage Treatment Plants
Sight Glass (see Fugitive Emission Sources)
Silo (see Bulk Solid Material Storage)
Smokehouse
Solder Leveling - Hot Oil or Hot Air
Solid Material Handling –(see Bulk Solid Material Handling)
Solid Material Storage –(see Bulk Solid Material Storage)
Solid Material Unloading - Railcar Dumper (see Bulk Solid Material Handling)
Solids Handling Catalyst (see Catalyst Manufacturing and Regeneration)
Solids Handling Pharmaceutical (see Pharmaceutical Manufacturing)
Solvent Reclamation
Spray Booth
Steam Generator - Oil field
Steel Melting Furnace - Basic Oxygen Process
Steel Melting Furnace - Electric Arc
Steel Melting Furnace - Induction
Steel Melting Furnace - Open Hearth
Storage Tank (see also Bulk Solid Material Storage)
Storage Tank - External Floating Roof, and VP <= 11 psia
Storage Tank - Fixed Roof
Storage Tank - Fuming Sulfuric Acid
Storage Tank - Grease or Tallow Storage Tank - Internal Floating Roof
Storage Tank – Liquid
Storage Tank - Spent Sulfuric Acid
Storage Tank - Underground
Sulfur Handling and Storage (see Bulk Solid Material Handling and Bulk Solid Material Storage)
Sulfur Pelletizing and Prilling
Sulfur Recovery Plant

Sulfuric Acid Storage (see Storage Tank – Liquid)
Surfactant Manufacturing

T

Tank Degassing
Tank - Grease or Tallow Processing
Tank Truck Loading/Unloading (see Liquid Transfer and Handling)
Tire Buffer
Tunnel Washer

V

Vegetable Oil Purification
Vinegar Manufacturing

W

Wastewater System
Wastewater System – Air Stripper
Wastewater System – Oil/Water Separator
Wastewater System - Sour Water Stripping
Wax Burnoff Furnace
Wet Material Handling (see Bulk Solid Material Handling)
Wood Processing Equipment
Woodworking

Z

Zinc Melting Furnace - Crucible or Pot
Zinc Melting Furnace - Reverberatory, Non-Sweating Operations
Zinc Melting Furnace - Reverberatory, Sweating Operations
Zinc Melting Furnace - Rotary, Sweating Operations

OVERVIEW

Chapter 1 - Introduction

The South Coast Air Quality Management District (South Coast AQMD) Regulation XIII – New Source Review (NSR) and Regulation XX – RECLAIM, require applicants to use Best Available Control Technology (BACT) for new sources, relocated sources, and modifications to existing sources that may result in an emission increase of any nonattainment air contaminant, any ozone depleting compound (ODC), or ammonia. Regulation XIII requires the Executive Officer to periodically publish BACT Guidelines that establish the procedures and the BACT requirements for commonly permitted equipment. ~~SCAQMD~~South Coast AQMD Regulation XIV – Toxics and Other Non-Criteria Pollutants, requires applicants to use Best Available Control Technology for Toxics (T-BACT) for new, relocated or modified permit units that result in a cumulative increase in Maximum Individual Cancer Risk (MICR) of greater than one in a million (1.0×10^{-6}) at any receptor location. Additionally, Regulation XVII – Prevention of Significant Deterioration (PSD) also sets forth BACT requirements for new sources, relocated sources and modifications to existing sources that emit attainment air contaminants. PSD BACT is incorporated into these BACT Guidelines. As of the publication date of these guidelines, there is currently no requirement for ~~SCAQMD~~South Coast AQMD to publish T-BACT guidelines and T-BACT must be established during the permitting process.

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

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

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

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

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

The BACT Guidelines for major polluting facilities include:

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

The BACT Guidelines for non-major polluting facilities include:

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

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

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

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

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

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

LAER for BACT at major polluting facilities

MSBACT for BACT at non-major polluting facilities

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

Written comments about the BACT Guidelines are welcome at any time and will be evaluated by ~~SCAQMD~~South Coast AQMD staff and included in the BACT Docket at the ~~SCAQMD~~South Coast AQMD 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~~South Coast AQMD's web site at www.aqmd.gov/home/permits/bact. A hardcopy of the BACT Guidelines may be obtained for a fee by submitting a request to Subscription Services at www.aqmd.gov/contact/subscription-services or by calling (909) 396-3720. Revisions to the Guidelines will be mailed to all persons that have purchased annual updates to the BACT Guidelines.

Chapter 2 – Applicability Determination

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

MAJOR POLLUTING FACILITY EMISSION THRESHOLDS

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

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

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

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

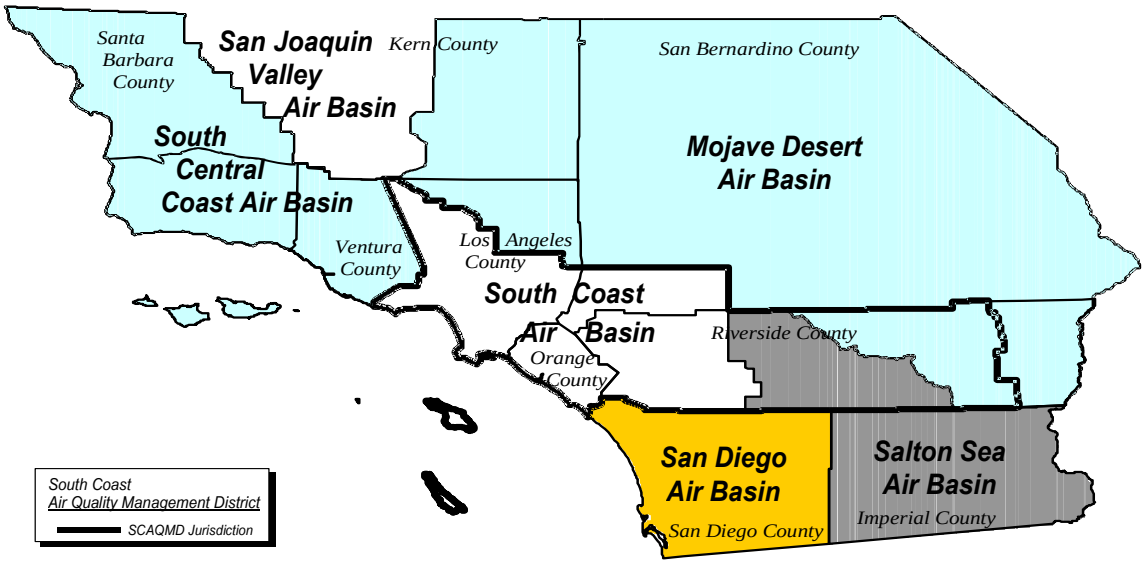
[1] The major source emission thresholds are higher for air basins that comply with the national ambient air quality standard and lower depending on how far an air basin is from compliance with the standard for a pollutant. The lowest thresholds apply to extreme non-attainment air basins, the only ones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

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

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

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

Figure 1: Map of ~~SCAQMD~~South Coast AQMD



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

POTENTIAL TO EMIT

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

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

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

LIMITING POTENTIAL TO EMIT

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

Chapter 3 - When is BACT Required?

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

POLLUTANTS SUBJECT TO NSR, PSD AND BACT

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

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

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

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

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

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

Table 2
Class I Substances (ODCs)*

A. Group I: $CFCl_3$ Trichlorofluoromethane (CFC-11) CF_2Cl_2 dDichlorodifluoromethane (CFC-12) $C_2F_3Cl_3$ Trichlorotrifluoroethane (CFC-113) $C_2F_4Cl_2$ Dichlorotetrafluoroethane (CFC-114) C_2F_5Cl Monochloropentafluoroethane (CFC-115) All isomers of the above chemicals B. Group II: CF_2ClBr Bromochlorodifluoromethane (Halon-1211) CF_3Br Bromotrifluoromethane (Halon-1301) $C_2F_4Br_2$ Dibromotetrafluoroethane (Halon-2402) All isomers of the above chemicals C. Group III: CF_3Cl Chlorotrifluoromethane (CFC-13) C_2FCl_5 Pentachlorofluoroethane (CFC-111) $C_2F_2Cl_4$ Tetrachlorodifluoroethane (CFC-112) C_3FCl_7 Heptachlorofluoropropane (CFC-211) $C_3F_2Cl_6$ Hexachlorodifluoropropane (CFC-212) $C_3F_3Cl_5$ Pentachlorotrifluoropropane (CFC-213) $C_3F_4Cl_4$ Tetrachlorotetrafluoropropane (CFC-214) $C_3F_5Cl_3$ Trichloropentafluoropropane (CFC-215) $C_3F_6Cl_2$ Dichlorohexafluoropropane (CFC-216) C_3F_7Cl Chloroheptafluoropropane (CFC-217) All isomers of the above chemicals D. Group IV: CCl_4 Carbon Tetrachloride E. Group V: $C_2H_3Cl_3$ 1,1,1 Trichloroethane (Methyl chloroform) All isomers of the above chemical except 1,1,2-trichloroethane F. Group VI: CH_3Br Bromomethane (Methyl Bromide) H. Group VIII: CH_2BrCl (Chlorobromomethane)	G. Group VII: $CHFBr_2$ CHF_2Br (HBFC-2201) CH_2FBr C_2HFBr_4 $C_2HF_2Br_3$ $C_2HF_3Br_2$ C_2HF_4Br $C_2H_2FBr_3$ $C_2H_2F_2Br_2$ $C_2H_2F_3Br$ $C_2H_2FBr_2$ $C_2H_3F_2Br$ C_2H_4FBr C_3HFBr_6 $C_3HF_2Br_5$ $C_3HF_3Br_4$ $C_3HF_4Br_3$ $C_3HF_5Br_2$ C_3HF_6Br $C_3H_2FBr_5$ $C_3H_2F_2Br_4$ $C_3H_2F_3Br_3$ $C_3H_2F_4Br_2$ $C_3H_2F_5Br$ $C_3H_3FBr_4$ $C_3H_3F_2Br_3$ $C_3H_3F_3Br_2$ $C_3H_3F_4Br$ $C_3H_4FBr_3$ $C_3H_4F_2Br_2$ $C_3H_4F_3Br$ $C_3H_5FBr_2$ $C_3H_5F_2Br$ C_3H_6FBr

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

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

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

PERMIT ACTIONS SUBJECT TO NSR, PSD AND BACT

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

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

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

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

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

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

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

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

[4] See Rules 1303(a) and 1304(a).
[5] USEPA has expressed concerns with this provision of the NSR Rules for minor polluting facilities as of September 2000. Staff will continue to work with USEPA to resolve this issue.

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

CALCULATION PROCEDURES FOR EMISSION INCREASES

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

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

- maximum rated capacity; and
- the maximum daily hours of operation; and
- 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~~South Coast AQMD rules, state law and federal law.

NSR RULES (REGULATION XIII)

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

PSD RULES (REGULATION XVII)

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

DEFINITION OF BACT

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

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

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

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

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

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

REQUIREMENTS OF HEALTH & SAFETY CODE SECTION 40440.11

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

CLEAN FUEL GUIDELINES

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

Chapter 5 - Review of Staff BACT Determinations

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

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

BACT SCIENTIFIC REVIEW COMMITTEE (BACT SRC)

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

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

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

and technical data and a general discussion of the proposed BACT listings, as well as addressing any preliminary written comments received from the public and BACT SRC prior to the meeting. ~~SCAQMD~~South Coast AQMD staff will respond in writing to preliminary comments about new BACT proposals within thirty days of the subject BACT SRC meeting. New issues raised during the BACT SRC meetings regarding newly proposed BACT listings will be addressed at the subsequent BACT SRC meeting to allow time for ~~SCAQMD~~South Coast AQMD staff to research the comments. ~~SCAQMD~~South Coast AQMD Engineering staff may also respond to specific issues raised at the following BACT SRC meeting.

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

MEETING WITH ~~SCAQMD~~SOUTH COAST AQMD MANAGEMENTT

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

THE BACT REVIEW COMMITTEE

Beyond meetings with South Coast AQMD management, an applicant may also request, prior to permit issuance or denial, that the proposed BACT for an individual permit be reviewed by the BACT Review Committee (BRC). The BRC is composed of five senior-level ~~SCAQMD~~South Coast AQMD officials - the DEO of ~~Public Affairs~~Legislative, Public Affairs/Media Office; the DEO of Science and Technology Advancement; the DEO of Engineering an Permitting; 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 SOUTH COAST AQMD HEARING BOARD

After the permit is issued or denied, the applicant can seek further independent review of an individual BACT determination through the ~~SCAQMD~~South Coast AQMD Hearing Board. In order to access this venue, the permit applicant would need to submit a petition and fee to appeal the final BACT determination by ~~SCAQMD~~South Coast AQMD (once the permit is denied or issued)[8]. The Hearing Board is an independent, quasi-judicial body composed of five members, who can

[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.

review a permitting decision by the Executive Officer. In this venue, legal counsel represents the ~~SCAQMD~~South Coast AQMD. Although not required, many petitioners choose to have legal counsel to represent their position.

THE S~~OUTH~~ C~~OAST~~ AQMD GOVERNING BOARD

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