NEW SOURCE REVIEW REQUIREMENTS FOR BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

GUIDANCE DOCUMENT

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San Diego County
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OVERVIEW

The San Diego County Air Pollution Control District (District) New Source Review (NSR) Rules and Regulations apply to both Non-Major Stationary Sources (Rules 20.1, 20.2 and 20.4), as well as Major Stationary Sources (Rule 20.3) for new, relocated or modified stationary sources. The NSR rules apply to facilities which emit both Nonattainment and Attainment pollutants. Nonattainment pollutants are those for which the District exceeds the National Ambient Air Quality Standards (NAAQS) and their Precursors (Rule 20.1(c)(60)). Those include Volatile Organic Compounds (VOCs), Oxides of Nitrogen (NOx), Oxides of Sulfur (SOx) and Particulate Matter (PM_{10}). The District NSR rules referenced in this document include:

- Rule 20.1 – NSR General Provisions
- Rule 20.2 – NSR – Non-Major Stationary Sources
- Rule 20.3 – NSR – Major Stationary Sources and PSD Stationary Sources
- Rule 20.4 – NSR – Portable Emission Units

Best Available Control Technology (BACT) is the cornerstone of the NSR program. Prior to the construction of a new facility or relocation of a facility/equipment which releases air pollutant emissions, the installation of new equipment or modification of equipment which results in an increase of air pollutant emissions at an existing facility, or replacement of equipment at an existing facility, District Rules and Regulations (Rules 10) specify that the equipment must obtain an Authority to Construct and be evaluated in accordance with applicable NSR rules (Rules 20.1-20.4). If such new equipment or modification to an existing equipment will result in an emission increase and has a potential to emit of 10 or more pounds per day of any of certain criteria pollutants (including VOCs, NOx, SOx or PM_{10}), or is a replacement of equipment or relocation (greater than ten miles) of equipment which has a potential to emit of 10 or more pounds per day of any of such criteria pollutants it must use BACT to reduce emissions.

The purpose of this guidance document is to define the procedures to follow to help permit applicants and District staff to meet the District's NSR requirements for determining BACT for specific equipment. Definitions for most of the terms used in this guidance document may be found in District Rule 20.1 or Rule 2.

Section 1 provides a general overview of what BACT is and when BACT must be used. Section 1 also discusses how to calculate emissions to determine if BACT is required and provides sample calculations. If BACT is required, then resources provided in the Section 3 BACT Reference Determinations must be used.

Section 2 explains how to use the BACT Reference Determinations provided in Section 3 and provides two detailed examples using the BACT Reference Determinations. Section 2 also includes guidance on determining alternative BACT Control Options.

Section 3 contains the resources that can be used to help determine what BACT requirements are for each type of equipment. The resources include links to BACT/LAER Clearinghouses and BACT Guidelines available from US EPA, CARB and local districts.

Section 4 describes the step-by-step top-down BACT analysis process required to determine the applicable BACT for a specific piece of equipment. In such cases, the applicant must prepare a project-specific analysis to determine what BACT is for the equipment or process being proposed.
As part of the pre-application meeting, the District can assists the applicant in determining whether BACT is required.

Section 5 describes what the NSR requirements are for new or modified Major Polluting Facilities for Attainment Pollutants under the Prevention of Significant Determinations (PSD) and for Non-Attainment Pollutants and discusses what the Lowest Achievable Emission Rate (LAER) is and when LAER is required.

Section 6 describes the procedures for determining the Greenhouse Gas (GHG) BACT requirements for new or modified Major Polluting Facilities which are already subject to the PSD program.

Applicants are encouraged to use these guidelines to ensure consistent and expeditious processing of permit applications where BACT is required. For questions or concerns regarding BACT requirements or this document, please contact the engineer assigned to your application or if you have not filed your application yet, or your application has not yet been assigned to an engineer or you don't know who the assigned engineer is, please contact the District's Engineering Division at (858) 586-2600 or at APCDEngineering@sdapcd.org.

SECTION 1

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) APPLICABILITY

The purpose of this section is to help determine if the use of Best Available Control Technology (BACT) is required for the proposed equipment.

1.1 WHAT IS BACT?

Best Available Control Technology (BACT) is the level of air contaminant emission control or reduction required by federal, state and District New Source Review (NSR) laws, rules and regulations for new, modified, relocated, and replacement emission sources. BACT is intended to reduce emissions to the maximum extent possible considering technological and economic feasibility.

According to District Rule 20.1 Section (c)(12), BACT is defined as:

"(i) the lowest emitting of any of the following:

(A) the most stringent emission limitation, or the most effective emission control device or control technique, or combination thereof, which has been proven in field application and which is cost-effective for such class or category of emission unit, unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitation, device, control technique or combination thereof is not technologically feasible, or

(B) any emission control device, emission limitation or control technique, or combination thereof, which has been demonstrated but not necessarily proven in field application and which is cost-effective for such class or category of emission unit, as determined by the Air Pollution Control Officer, unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitation, device, control technique or combination thereof is not technologically feasible, or

(C) any emission control device, emission limitation or control equipment, process modifications, changes in raw material including alternate fuels, and substitution of equipment or processes with any equipment or processes, or any combination of these, determined by the Air Pollution Control Officer on a case-by-case basis to be technologically feasible and cost-effective, including transfers of technology from another category of source, or

(D) the most stringent emission limitation, or the most effective emission control device or control technique, or combination thereof, contained in any State Implementation Plan (SIP) approved by the federal EPA for such class or category of emission unit unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitation or technique has not been proven in field application, that it is not technologically feasible or that it is not cost-effective for such class or category of emission unit.

District Rule 20.1(c)(12) also specifies that,

"(ii) In determining BACT, the Air Pollution Control Officer may also consider lower-emitting alternatives to a proposed new emission unit or process.

(iii) For modified emission units, not including any relocated or replacement emission units, the entire emission unit's post-project potential to emit shall be subject to BACT, except that BACT shall apply to the emissions increase associated with the modification and not the emission unit's entire potential to emit if:

(A) control technology, and emission limit or other emission controls meeting BACT was previously applied to the unit; and
(B) the emissions increase associated with the modification is less than 25 percent of the emission unit's pre-project potential to emit; and
(C) the project's emission increase is less than the major modification thresholds of Table 20.1-6a.

(iv) In no event shall application of BACT result in the emission of any air contaminant which would exceed the emission allowed by any District rule or regulation, or by any applicable standard under 40 CFR Part 60 (New Source Performance Standards) or 40 CFR Part 63 (National Emission Standards for Hazardous [Air] Pollutants)."

(v) Whenever feasible, the Air Pollution Control Officer may stipulate an emission limit as BACT instead of specifying control equipment.

(vi) In making a BACT determination, the Air Pollution Control Officer shall take into account those environmental and energy impacts identified by the applicant.

(vii) In the case of a project consisting of multiple new, modified, relocated or replacement emission units subject to BACT under these Rules 20.1-20.4, BACT shall be determined for each such emission unit. The Air Pollution Control Officer may also require BACT be evaluated for combinations of such emission units. The Air Pollution Control Officer may determine that BACT for the project is the lowest emitting, technologically feasible combination of emission limitations, control devices, control techniques, or process modifications applied to individual emission units and/or combinations of such emission units. BACT applied to a combination of emission units shall not result in less stringent BACT for any emission unit in the combination than BACT determined for that emission unit individually."

BACT is usually determined based on specific equipment categories such as diesel engines, utility boilers, or turbines and can consider case-by-case factors. The control device, technique or emission limitation chosen as BACT must be proven in field application and must be cost-effective based on the equipment's potential to emit. These terms are defined in Rule 20.1 (c)(18) and (c)(56).

This definition also allows the District to require the consideration of alternatives to the basic process – for example, the District may ask that a facility proposing a simple cycle gas turbine to consider a combined cycle gas turbine or renewable power generation, or a facility proposing use of a diesel generator to power aggregate equipment to consider electrification of the equipment. These

technologies should be reviewed similarly to any other BACT determination from a technical feasibility and cost effectiveness perspective.

Additionally, the District can require consideration of BACT requirements for multiple emission units installed as part of a project – for example, a facility installing four identical boilers that each emit 8 lbs NOx/day may be required to comply with BACT, since the total emissions from all four boilers exceed 10 lbs NOx/day. Similarly, a facility installing multiple coating process lines could be evaluated together.

Finally, to clarify section (iii), a facility must have installed emission controls in order to qualify as having previously complied with BACT. For example, a facility that installed an engine equipped with SCR to control NOx emissions and applies to increase the annual operating hours needs only look at the emission increase from the additional hours. However, if that same facility initially used cost effectiveness to demonstrate that SCR was not cost effective and applied for an increase in operating hours, the entire PTE of the proposed modification would be subject to cost effectiveness calculations.

1.2 WHEN IS BACT REQUIRED?[1]

BACT is required for any new, modified, relocated, or replacement emission unit which is required to obtain an Authority to Construct and/or Permit to Operate pursuant to District Rule 10, which will result in an increased potential to emit, and which has a post-project potential to emit of 10 or more pounds per day of the pollutant for which emissions are being increased. *(Potential to Emit is discussed in greater detail in Section 1.5.)* BACT must be applied for each of the following pollutants with emissions equal to or exceeding 10 pounds per day:

- inhalable particulates (PM_{10})
- oxides of nitrogen (NOx)
- volatile organic compounds (VOC)
- oxides of sulfur (SOx).

Replacement emission units are required to use BACT if the unit's potential to emit is equal to or greater than 10 pounds per day. Relocated emission units which are moved more than 10 miles from the original source or which have an increase in emissions are required to apply BACT if the unit's potential to emit is equal to or greater than 10 pounds per day.

Please note that if the equipment or modification is specifically exempt from permits pursuant to Rule 11, or is registered under District Rules 12 or 12.1 or the Statewide Portable Equipment Registration Program (PERP), the New Source Review rules do not apply (i.e. the BACT requirements do not apply).

Equipment or processes with a maximum potential to emit of less than 10 pounds per day for each of the listed pollutants are not required to apply BACT. However, the permit applicant is required to provide documentation showing that the emission unit's maximum potential to emit is less than 10 pounds per day. *(Potential to Emit is discussed in greater detail in Section 1.5.)*

Alternatively, the applicant may choose a limiting permit condition to ensure that the emissions from the equipment or process does not equal or exceed 10 pounds per day. Examples of

[1] Rule References: Rule 20.2 (b) and (d) and Rule 20.3 (b) and (d).

limiting conditions include operating time limits, fuel limits, throughput limits and production limits. The District may require ongoing record keeping to ensure that emissions from these units are below 10 pounds per day in actual operation.

BACT is also applicable to new, relocated or modified sources subject to Prevention of Significant Deterioration (PSD) permits, as specified in District Rule 20.3 – NSR Review – Major Stationary Sources and PSD Stationary Sources.

1.3 HOW DOES BACT APPLY TO MODIFIED EMISSION UNITS?

BACT may be required for all of the emissions from a modified emission unit, or only for the increased emissions that result from the modification. This depends on the nature of the modification and the level of emission controls previously required for the equipment. Rule 20.1 Section (c)(11) specifies that:

"(ii) For modified emission units, the entire emission unit's post-project potential to emit shall be subject to BACT, except as follows. The provisions of this Subsection (c)(11)(ii) shall not apply to relocated or replacement emission units.

(E) BACT applies to the emissions increase associated with the modification and not the emission unit's entire potential to emit, if control technology, an emission limit or other emission controls meeting the BACT definition was previously applied to the unit and if the project's emission increase is less than the major modification thresholds of Table 20.1-5.

(F) BACT applies to the emission unit's entire potential to emit, if the emission unit was previously subject to BACT but BACT was determined to not be cost-effective, technologically feasible or proven in field application.

(G) BACT applies to the emissions increase associated with the emission unit and not the emission unit's entire potential to emit if the emissions increase associated with the modification is less than 25 percent of the emission unit's preproject potential to emit and if the project's emission increase is less than the major modification thresholds of Table 20.1-5."

1.4 WHAT EQUIPMENT IS TYPICALLY REQUIRED TO USE BACT?

The following are examples of emission units typically required to apply BACT (having potential to emit equal to or greater than 10 lbs/day of PM10, NOx, VOC, or SOx). Similar equipment with similar control technology may vary significantly in emission rates depending on materials used, type and amount of fuels used, operating hours, production levels, etc. Therefore, these are only examples. BACT determination should be based upon equipment-specific emissions data before determining whether or not, or what BACT is required for the project.

- A 200 brake horsepower diesel-fired engine operated more than 4 hours per day would be required to use BACT to minimize NOx emissions. In general, the higher the BHP rating, the fewer hours such equipment may be operated before emissions exceeding the BACT threshold will occur.

- An auto-refinishing operation using 4 gallons per day of coatings with a volatile organic compound (VOC) content of 4.5 pounds per gallon has a VOC emission rate of 18 pounds per day and would be required to use BACT to minimize VOC emissions.

- A gasoline station that dispenses 4,000 gallons per day (1.15 million gallons per year) has a VOC emission rate of 12 pounds per day and would be required to use BACT to minimize VOC emissions (gasoline vapors).

- Prime diesel fired and large natural gas-fired engines would be required to use BACT to

minimize NOx and sometimes VOC or PM10 emissions.

- Sand and gravel (aggregate) production plants, except for some very small plants that don't include crushers or unpaved haul roads, are required to implement BACT to minimize PM10 emissions both from process equipment and associated fugitive emissions (haul roads, quarrying, material storage)

- Coating application (painting) processes are required to implement BACT for VOC emissions which can range from use of rule-compliant materials and application techniques to installation of VOC controls such as thermal oxidizers depending on the level of material usage and uncontrolled emissions.

1.5 POTENTIAL TO EMIT CALCULATIONS[2]

BACT applies if a new or modified emission unit has the 'potential to emit' 10 or more pounds per day of certain air contaminants. The maximum daily potential to emit (pounds per day) of each air contaminant emitted by the emission unit must be calculated to determine whether BACT is required. Example potential to emit calculations for projects where BACT may be required are provided in Section 1.6. Emission rates are calculated using District approved emissions estimation techniques. Emission data is usually obtained from equipment manufacturers, emission source tests, or District-approved Air Resources Board (ARB) or Environmental Protection Agency (EPA) emission factors.

Unless the applicant proposes or agrees to permit conditions that limit emissions, potential to emit calculations are based upon the maximum design capacity of the emission unit or other operating conditions which reflect the maximum potential emissions (such as horsepower rating of an engine, heat input rating of boilers, etc.). Operation is assumed to be 24 hours per day and 365 days per year unless otherwise limited, as proposed by the applicant. Any such limitation proposed by the applicant shall also be imposed as permit conditions on the final permit. Emissions from stacks and fugitive emissions from the emission unit must be included in calculating potential emissions for BACT determinations.

An emission unit's potential to emit cannot be greater than its physical ability to generate emissions given the equipment's physical and operational constraints. As noted above, an applicant can agree to permit conditions that limit emissions such as fuel usage limits, limits on throughputs, production or operating hours, or VOC content limits. If the District agrees that these conditions are enforceable and they are imposed as limitations on the permit, then these limits can be used to calculate the emission unit's potential to emit.

Also, note that for purposes of determining potential to emit for existing emission units that are not subject to enforceable limitations and for equipment located at major sources in order to calculate emission increases for modifications and replacements, pre-project potential to emit typically must be evaluated as actual emissions as specified in Rule 20.1.

[2] Rule References: Rule 20.1 (d)(1)(i)(A) & (B).

1.6 EXAMPLES OF POTENTIAL TO EMIT CALCULATIONS

Example 1 -- New Diesel Engine with No Operational Limits

Equipment/Given Information:

A new 240 horse power (hp) stationary diesel fuel engine with a NOx emission factor of 8.7 grams/hp-hour. The unit has the ability to operate 24 hours per day. No limiting permit conditions were proposed.

Maximum Potential to Emit (PTE) Emission Calculation:

PTE Emission Rate (lbs/day)

$$= \text{Engine Size (hp)} \times \frac{(\text{Emission Rate (grams/hp-hour)})}{(453.6 \text{ grams/lb})} \times \text{Operating Hours (hours/day)}$$

$$= 240 \text{ hp} \times \frac{(8.7 \text{ grams/hp-hour})}{(453.6 \text{ grams/lb})} \times 24 \text{ hours/day}$$

$$= 110.5 \text{ lbs NOx/day}$$

Conclusion:

The maximum calculated PTE emission rate of 110.5 pounds NOx per day exceeds the 10 pounds or greater per day BACT threshold. Therefore, BACT is required.

Example 2 -- New Diesel Engine with Operational Limits

Equipment/Given Information:

A 350 horse power (hp) stationary diesel fuel engine with a PM_{10} emission factor of 0.8 grams/hp-hour. The applicant has proposed to limit operation of the engine to no more than 10 hours per day.

Maximum Potential to Emit (PTE) Emission Calculation:

PTE Emission Rate (lbs/day)

$$= \text{Engine Size (hp)} \times \frac{(\text{Emission Rate (grams/hp-hour)})}{(453.6 \text{ grams/lb})} \times \text{Operating Hours (hours/day)}$$

$$= 350 \text{ hp} \times \frac{(0.8 \text{ grams/hp-hour})}{(453.6 \text{ grams/lb})} \times 10 \text{ hours/day}$$

$$= 6.2 \text{ lbs PM10/day}$$

Conclusion:

The maximum calculated PTE emission rate of 6.2 pounds PM_{10} per day is less than the 10 pounds per day BACT threshold. Therefore, BACT is not required for the PM_{10} emissions, but the applicant must accept a permit condition limiting operation of the engine to a maximum of, or no more than 10 hours per day.

Example 3 -- New Coating Operation with No Operational Limits

Equipment/Given Information:

A continuous feed roller coating operation will use 1.0 gallons per hour of a coating with a VOC content of 2.8 pounds per gallon. The unit has the ability to operate 24 hours per day. No limiting permit conditions were proposed.

Maximum Potential to Emit (PTE) Emission Calculation:

PTE Emission Rate (lbs/day)

= Usage (gallons/hour) x Operating Hours (hrs/day) x VOC Content (lbs/gallon)

= (1.0 gallons/hr) x (24 hrs/day) x (2.8 lbs/gallon)

= 67.2 lbs VOC/day

Conclusion:

The maximum calculated PTE emission rate of 67.2 pounds VOC per day is greater than the 10 pounds per day BACT threshold. Therefore, BACT is required.

Example 4 -- New Metal Parts Coating Operation with Operational Limits

Equipment/Given Information:

A metal parts coating operation uses 4 gallons of coating per 8-hour shift with a VOC content of 1.2 pound per gallon. The operation has the ability to operate 24 hours per day. The applicant has proposed to limit operations to 2 shifts (16 hours) per day and therefore coating usage will be limited to 8 gallons per day.

Maximum Potential to Emit (PTE) Emission Calculation:

PTE Emission Rate (lbs/day)

= Usage (gals/shift) x Operating Hours (shifts/day) x VOC Content (lbs/gal)

= (4.0 gallons/shift) x (2 shifts/day) x (1.2 lbs/gallon)

= 9.6 lbs VOC/day

Conclusion:

The maximum calculated PTE emission rate of 9.6 pounds VOC per day is less than the 10 pounds per day BACT threshold. Therefore, BACT is not required provided the applicant agrees to permit conditions limiting coating material usage to 8 gallons per day, the VOC content to 1.2 pounds per gallon, and daily usage records. As an alternative, the applicant may propose a permit condition limiting emissions to less than 10 pounds per day and maintain usage and VOC content records to demonstrate that actual daily emissions are below this limit.[3]

[3] In this example, the extremely low VOC content of the coating may be acceptable as BACT. If the coating is found to represent BACT, emissions would not need to be limited to 10 pounds VOC/ day.

Example 5 -- Modified Metal Parts Coating Operation with Operational Limits

Equipment/Given Information:

An existing metal parts coating operation uses 3 gallons of coating per 24 hour day with a VOC content of 2.8 pounds per gallon.
A BACT determination was not made for the original application.
The coating complies with Rule 67.3 VOC limits.
The pre-project potential emissions are 8.4 pounds per day.
The applicant has proposed adding a new paint spray booth and increasing coating usage to 10 gallons per 24 hour day.

Maximum Potential to Emit (PTE) Emission Calculation:

PTE Emission Rate (lbs/day)

= Usage (gallons/24 hour day) x VOC Content (lbs/gallon)

= (10.0 gallons/24 hour day) x (2.8 lbs/gallon)

= 28.0 lbs VOC/day

Emission Increase:

Post-project potential minus pre-project potential emissions

= 28.0 lbs VOC/day - 8.4 lbs VOC/day = 19.6 lbs VOC/day

Conclusion:

The maximum calculated PTE emission rate of 28.0 pounds VOC per day is greater than the 10 pounds per day BACT threshold. Therefore, BACT is required. Since BACT was not applied in the original application, and the emission increase is greater than 25% of the pre-project potential emissions, BACT must be applied to the total post-project emissions from this operation.

1.7 WHEN IS T-BACT REQUIRED?

The District requires applicants to apply Toxics Best Available Control Technology (T-BACT) to any project for which all new, relocated, or modified emission units that increase maximum incremental cancer risk at every receptor location of more than one in one million, as described in Regulation XII, Rule 1200 Toxic Air Contaminants – New Source Review. T-BACT, if applicable, in general would require the use of LAER using the same resource references provided in Section 3, since T-BACT does not require consideration of cost-effectiveness. Any proposed T-BACT will be evaluated by the District during the application evaluation.

SECTION 2

USING BACT Clearinghouses Reference Data & TABLES TO DETERMINE BACT

2.1 INTRODUCTION

This section provides background and support information regarding the BACT Clearinghouses Reference Data & Tables found in Section 3. The BACT Clearinghouses Reference Data & Tables provide listings of representative emission control/reduction measures such as emission limits, process modifications or the use of control equipment that can be proposed to meet BACT requirements.

The Clearinghouses Reference Data & Tables may be used to locate a specific equipment category and the appropriate BACT control/reduction measure. Section 3.1 contains a list of BACT/LAER Clearinghouse Resources that should be used to obtain information about the latest BACT determinations. In addition, as a minimum Appendix A contains an alphabetical list by equipment type (by capacity) of the available BACT determinations previously developed by the District, however, this table has not been updated so should only be used as a starting point, but actual BACT determinations must be made based on Clearinghouses Reference Data. Applicants should review these resources to determine what BACT determinations are available for the specific equipment or process. If no BACT determination is available, or if the applicant chooses not to propose a listed BACT control/reduction measure or an alternative measure that meets the stated BACT Emission Rate, then the applicant must perform a "top-down" BACT analysis as described in Section 4. Additionally, the District may be aware of recent permit decisions which established more stringent BACT requirements which may be required to be considered in the BACT evaluation.

2.2 HOW TO USE THE BACT CLEARINGHOUSE REFERENCE DATA & TABLES WHEN ONLY ONE BACT OPTION IS LISTED

To determine an acceptable control measure from a BACT Clearinghouse Reference Data & Table when only one BACT Control Option is provided, find the appropriate Reference Data or Table for the equipment being proposed for installation or modification. Select the BACT Control Option listed and reference the Section 3 BACT Clearinghouse Reference Data & Table in the permit application. An applicant may instead propose an alternative BACT Control Option as outlined in Section 2.6 or perform a "top- down" BACT analysis as described in Section 4.

NOTE: A number of examples are provided in the following subsections 2.2 – 2.4 to illustrate how to evaluate and determine BACT requirements when only one or multiple BACT options are identified or when cost effectiveness is being used. However, please note that these are strictly examples and are not intended to specify what present BACT requirements are for the type of equipment listed in these examples.

EXAMPLE 2.2: When Only One BACT Control Option is Listed

A small 15 MM Btu/hr natural gas-fired boiler emits 12 pounds of NOx per day and therefore will need to apply BACT. The applicant locates the appropriate BACT Clearinghouse Reference Data & Table, "Boilers (<50 MM Btu/hr) -- Fee Schedule 13A," and reviews the BACT Emission Rate and BACT Control Option listed for Natural Gas operation under the NOx and PM headings (See example Table 2.2 below). The listed BACT Emission Rates are 9 ppmv NOx (corrected to 3% O_2) and 0.10 gr/dscf for PM emissions. The BACT Clearinghouse Reference Data & Table only provides one BACT Control Option for this type of equipment. The BACT Control Option row specifies a combination of natural gas as the fuel, a low NOx burner, flue gas recirculation, and oxygen controller to meet BACT requirements.

TABLE 2.2 - BACT Clearinghouse Reference Data & Table for Example 2.2

BOILERS (<50 MM BTU/HR) -- Fee Schedule 13A

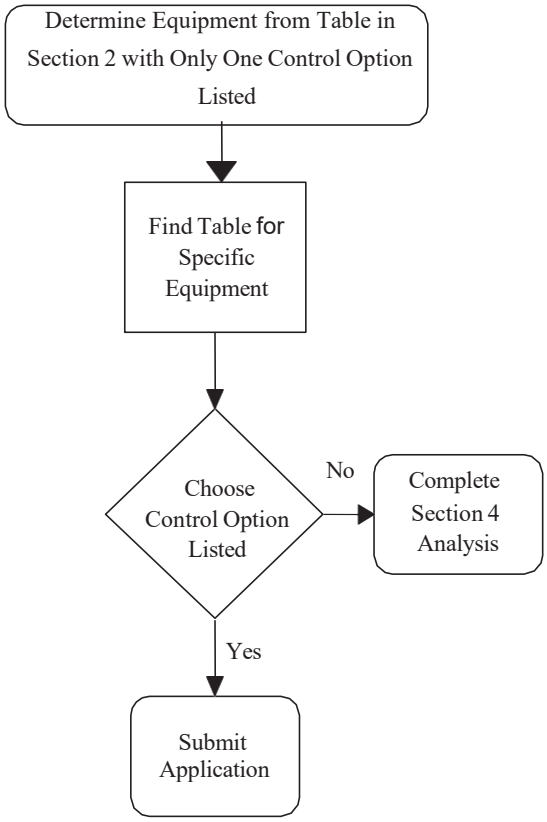
	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	9 ppm corrected to 3% O_2 NG or LPG	Not Determined	0.10 gr/dscf†
BACT Control Option (Using NG or LPG fuel only.)	NG or LPG fuel (A/P)	Low NOx Burner, FGR, and oxygen controller. NG or LPG (A/P)	NG or LPG fuel (A/P)	NG or LPG fuel (A/P)
BACT Control Option (Using No. 2 oil as backup fuel.)	(N/A)	Low NOx Burner, FGR, and oxygen controller. (A/P)	No. 2 fuel oil with < 0.05% sulfur content (A/P)	Low ash fuel (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

FGR - Flue Gas Recirculation
LPG - Liquefied Petroleum Gas
NG - Natural Gas
† The District has determined that the use of Natural Gas ensures compliance with the PM BACT Emission Rate of 0.1 gr/dscf. No further analysis is required for this pollutant.

The applicant proposes the use of all these technologies as part of the boiler application submitted to the District and references the Section 3 BACT Clearinghouse Reference Data & Table. The applicant must provide information demonstrating that the specific controls selected will meet the listed NOx BACT Emission Rates. By specifying the listed BACT Control Option and providing the required supporting information, the applicant has satisfied the BACT requirement. No further BACT analysis is required. (See Figure 2.2 for a flowchart of this process.) If the applicant chooses not to propose the BACT Control Option specified in the BACT Clearinghouse Reference Data & Table, they may propose an alternative BACT Control Option as outlined in Section 2.6 or perform a “top-down” BACT analysis as described in Section 4.

Figure 2.2 -- Flowchart of Example 2.2 (only one BACT Control Option)



2.3 HOW TO USE THE BACT Clearinghouse Reference Data & TABLES WHEN MORE THAN ONE BACT OPTION IS LISTED

To determine an acceptable control/reduction measure from a BACT Clearinghouse Reference Data & Table when more than one BACT Control Option is provided, find the appropriate Clearinghouse Reference Data or Table for the equipment being proposed for installation or modification. Typically the possible BACT Control Options are listed in descending order of stringency. If an applicant chooses the top-listed Control Option, no further BACT analysis is required and the applicant only needs to reference the Section 3 BACT Clearinghouse Reference Data & Table in their application. If the applicant does not choose the top-listed Control Option, the applicant must perform an analysis to determine the cost-effectiveness of each control technology that is technologically feasible until a cost-effective control option is found. (A control/reduction measure is generally labeled technologically feasible (T/F) if it is technologically feasible and has been demonstrated but not necessarily proven in field application.) The analysis should include the uncontrolled potential to emit for the proposed equipment and the cost-effective calculations for each of the more stringent BACT Control Options not chosen, as well as the (T/F) option chosen.

The first control/reduction measure which is determined to be cost-effective will be considered BACT. If none of the technologically feasible control/reduction measures are

found to be cost-effective, the applicant must then propose the control/reduction measure which is achieved in practice, propose an alternative BACT Control Option as outlined in Section 2.6 or perform a "top-down" BACT analysis as described in Section 4. (A technology is typically labeled Achieved in Practice (A/P) if it has been achieved in practice or demonstrated in use for the specific equipment category.) If the final BACT Control Option chosen is a (A/P) option, then cost-effectiveness calculations are not required for that option, but are required for any (T/F) option not chosen.

These procedures are intended to reduce the applicant's time and effort in preparing a permit application as well as the cost of application review by the District. The analysis required when the BACT Clearinghouse Reference Data & Tables are used is significantly less than when a full top-down BACT analysis is performed. However, an applicant may always choose to perform a project- specific full top-down BACT analysis as described in Section 4.

EXAMPLE 2.3: When More Than One BACT Control Option is Listed

A 50 MM Btu/hr natural gas-fired boiler has the potential to emit 120 pounds of NOx per day and therefore will need to use BACT. The facility is a major source for NOx since they currently emit 55 tons of NOx per year (which is more than the Major Source Threshold of 25 tons of NOx per year) from existing equipment. The applicant locates the appropriate BACT Clearinghouse Reference Data & Table, "Boilers (>50 MM Btu/hr) -- Fee Schedule 13B," and reviews the BACT Emission Rate and BACT Control Options listed for Natural Gas operation under the NOx and PM headings (See example Table 2.3 below). The listed BACT Emission Rates are 5 ppmv NOx (corrected to 3% O_2) and 0.10 gr/dscf for PM emissions. The Table provides more than one BACT Control Option for this type of equipment. The first BACT Control Option row specifies the use of Selective Catalytic Reduction (SCR) to meet the NOx BACT requirements. The applicant may choose to propose the first BACT Control Option or may perform a cost-effectiveness analysis to determine if the technologically feasible control/reduction measure is also cost-effective. (See Figure 2.3 for a flowchart of this process.)

TABLE 2.3 - BACT Clearinghouse Reference Data &Table for Example 2.3

BOILERS (50 to <250 MM BTU/HR) -- Fee Schedule 13B

	VOC	NOx	SOx	PM
BACT Control Option	NG or LPG fuel (A/P)	SCR on NG or LPG fuel (duct burner may be required) (T/F) **BACT Emission Rate Limit** – 5 PPM corrected to 3% O_2/NG or LPG	NG or LPG fuel (A/P)	NG or LPG fuel (A/P) **BACT Emission Rate Limit** - 0.10 grain/dscf†
BACT Control Option (Using NG or LPG fuel only)	NG or LPG fuel (A/P)	Low NOx burner, FGR, and oxygen controller. NG or LPG (A/P) **BACT Emission Rate Limit** – 9 PPM corrected to 3% O_2/NG or LPG.	NG or LPG fuel (A/P)	NG or LPG fuel (A/P) **BACT Emission Rate Limit** - 0.10 grain/dscf†
BACT Control Option (Using No. 2 oil as backup fuel.)	(N/A)	Low NOx burner, FGR, and oxygen controller. No. 2 fuel oil (A/P) **BACT Emission Rate Limit** – 9 PPM corrected to 3% O_2 on NG or LPG. Lowest achievable but no greater than 170 PPM corrected to 3% O_2 on No. 2 fuel oil backup	No. 2 fuel oil with < 0.05% sulfur content (A/P)	Low ash fuel (A/P) **BACT Emission Rate Limit** - 0.10 grain/dscf†

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

NOTES:

FGR - Flue Gas Recirculation
LPG - Liquefied Petroleum Gas
NG - Natural Gas
SCR-Selective Catalytic Reduction

† The District has determined that the use of Natural Gas ensures compliance with the PM BACT Emission Rate Limit of 0.1 gr/dscf. No further analysis is required for this pollutant.

The applicant elects not to propose SCR and calculates the cost-effectiveness value using the method outlined below in Example 2.5 and Figure 2.5.

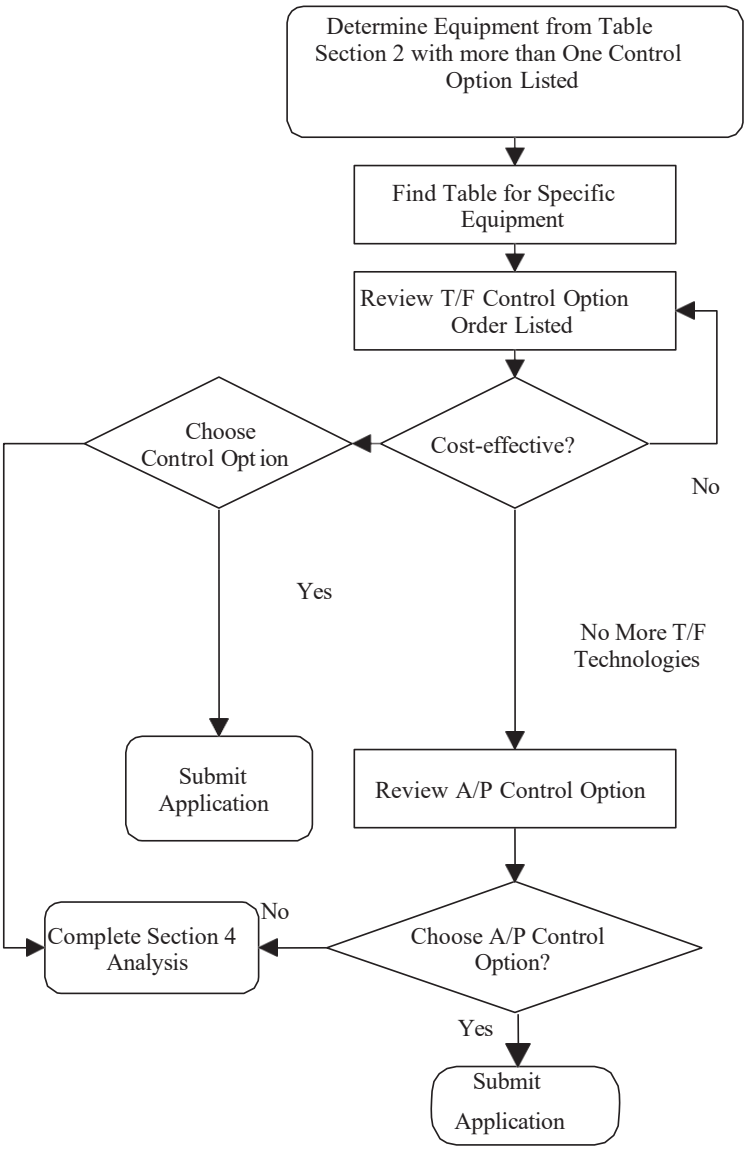
T/F Control/reduction Measures	**Cost-effectiveness**
Selective Catalytic Reduction	$10.18 per lb of NOx controlled

The applicant compares the calculated cost-effectiveness value with the reference cost-effectiveness values contained in Table 2.4. For a source emitting more than 15 tons per year of NOx, the cost-effectiveness threshold is whatever the District has specified at the time of submitting the application, but as an example it presently is $9.00 per pound of NOx controlled. For this example, the listed (T/F) technology is not cost-effective. A copy of the cost-effectiveness analysis must be submitted with the permit application.

The applicant continues by reviewing the BACT Control Option listed as (A/P). The applicant proposes the use of all the listed (A/P) technologies as part of the boiler permit application submitted to the District and references the Section 3 BACT Clearinghouse Reference Data & Table. The applicant must submit documentation showing that each of the (T/F) technologies were not cost-effective for the suggested control equipment and provide information

demonstrating that the specific (A/P) controls selected meet the listed NOx BACT emission rates. By specifying the equipment listed as a BACT Control Option and providing the required supporting information, the applicant has satisfied the BACT requirement. No further BACT analysis is required, subject to District review and approval. If the applicant chooses not to propose any of the BACT Control Options specified in the BACT Clearinghouse Reference Data & Table, the applicant can propose an alternative BACT Control Option as outlined in Section 2.6 or perform a "top- down" BACT analysis as described in Section 4.

Figure 2.3 -- Flowchart of Example 2.3 (more than one BACT Control Option)



2.4 COST-EFFECTIVENESS

When an applicant proposes to use a BACT control option other than the top-listed BACT control option or is performing a top-down BACT analysis, the applicant must evaluate the cost-effectiveness of emission controls. The cost-effectiveness analysis must be performed for each (T/F) control option in the order listed in the BACT Clearinghouse Reference Data & Tables until a control option is determined to be cost-effective or the (A/P) control option is reached. A control/reduction measure is considered cost-effective if the annualized cost of its implementation is equal to or less than the District defined cost-effectiveness value for the same pollutant contained in Table 2.4 below.

Table 2.4 - BACT Cost-Effectiveness Values[4]

	Cost-Effectiveness, $ per Pound of Pollutant Controlled*				
Stationary Source's Post Project PTE	BACT Multiplier	VOC	NO_X	SO_X	PM
Cost-effective Bench Mark		$ 6.00	$ 6.00	$ 6.00	$ 3.33
<15 tons per year	1.1	$ 6.60	$ 6.60	$ 6.60	$ 3.66
≥15 tons per year	1.5	$ 9.00	$ 9.00	$ 9.00	$ 5.00

*Cost-effectiveness values may change for various pollutants by the District in the future. The values in the above Table are based on the Cost-Effectiveness values in effect at this time, as per District Rule 20.1(c)(18).

2.5 COST-EFFECTIVENESS CALCULATIONS

Cost-effectiveness is defined as the **annualized cost of the control option** divided by the **annual emission reductions from the control option**. The following information is required to calculate the cost-effectiveness of a proposed control option: (1) the capital cost of purchasing and installing the control equipment or making a process modification, (2) the annual operating costs of the control option and (3) an estimate of the emissions before and after application of the control option.

The capital costs of purchasing the control option should be determined using actual vendor price quotes for each proposed control option. Installation costs should also be based on vendor price quotes. If vendor price quotes are unavailable, elements of the installation cost may be estimated by the applicant based on accepted cost estimation methodology.[5] Total capital costs may include the following:

[4] The BACT cost-effectiveness reference values contained in this table were calculated based on the highest cost per pound of pollutant controlled associated with RACT and BARCT rules for a particular pollutant. These values are revised as rules with higher costs are adopted and implemented. Therefore, these BACT cost-effectiveness reference values will change over time. The applicant should confirm the current cost-effectiveness reference values with District staff.

[5] Some helpful references include:
"Estimating Costs of Air Pollution Control," William M. Vatavuk, Lewis Publishers 1991. "OAQPS Control Cost Manual, 5th edition" Emissions Standards Division of the Office of Air Quality Planning and Standards, U.S. EPA, December 1995.

Purchased Equipment Costs
- Control Device (or modified equip)
- Ancillary (including duct work)
- Instrumentation
- Taxes
- Freight

Direct Installation Costs
- Foundations and Supports
- Handling and Erection
- Electrical
- Piping
- Painting

Indirect Installation Costs
- Engineering
- Construction and Field Expenses
- Permitting
- Start-Up
- Performance Tests (Including Compliance Source Testing)
- Contingencies

When the total capital costs have been determined, they are annualized by the use of a capital recovery factor. The capital recovery factor is calculated using the following equation:

$$\text{Capital recovery factor (CRF)} = \frac{i(1+i)^n}{(1+i)^n - 1}$$

Where i = interest rate of the loan and
n = number of years in amortization period (Useful life of equipment)

If performing the BACT calculation in Microsoft Excel, annualized capital cost can also be determined using the formula =-PMT(i, n, Capital Cost).

The annual operating costs should be determined using actual costs when the data is available. Reasonable estimates may also be used when data is not available. Total operating costs may include the following:

Direct Costs
- Raw Materials
- Utilities (electricity, water, fuel)
- Waste Treatment/Disposal
- Labor
- Maintenance Materials
- Replacement Parts

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

Recovery Cost Credits
- Materials
- Energy

Emission reductions are the last piece of information that must be determined prior to calculating the cost-effectiveness. When add-on controls are utilized, the maximum emissions before and after the application of a control option should be calculated based on what an operation is capable of emitting considering physical or operational limitations, including permit conditions limiting potential emissions. (Such as those limiting throughput or hours of operation.) The emission reduction is the difference between the total emissions before and after application of the control equipment. Both the capture and destruction

efficiencies of the control device should be considered when determining the maximum emissions after installation of the control device.

For control options based on process modifications such as product substitution, the emission reduction is the difference between the maximum emissions from a modified process and the unmodified process. Physical or operational limitations should also be considered when determining emissions in this case.

EXAMPLE 2.5: Cost-Effectiveness Calculation

For a 50 MM Btu boiler at 100% of operating capacity, the following information was determined for the purposes of calculating the Cost-effectiveness of installing Selective Catalytic Reduction as a control option. The facility is already a major source of NOx emissions (i.e. emissions are > 50 tons per year).

Given:

Capital Cost of Control Option = $1,500,000
Capital Recovery Factor (CFR) = .1627 (assuming 10% interest for 10 years)
Annual Operating and Maintenance Costs = $98,000
Uncontrolled emissions = 21 tons of NOx per year
Capture Efficiency = 100%
Control Efficiency = 80%

Equations:

$$\text{Cost-Effectiveness (\$/lb)} = \frac{\text{Annualized Costs}}{\text{Pounds of Pollutant Reduced}}$$

Annualized Costs ($) = (Capital Cost x CFR) + Annual Operating Costs

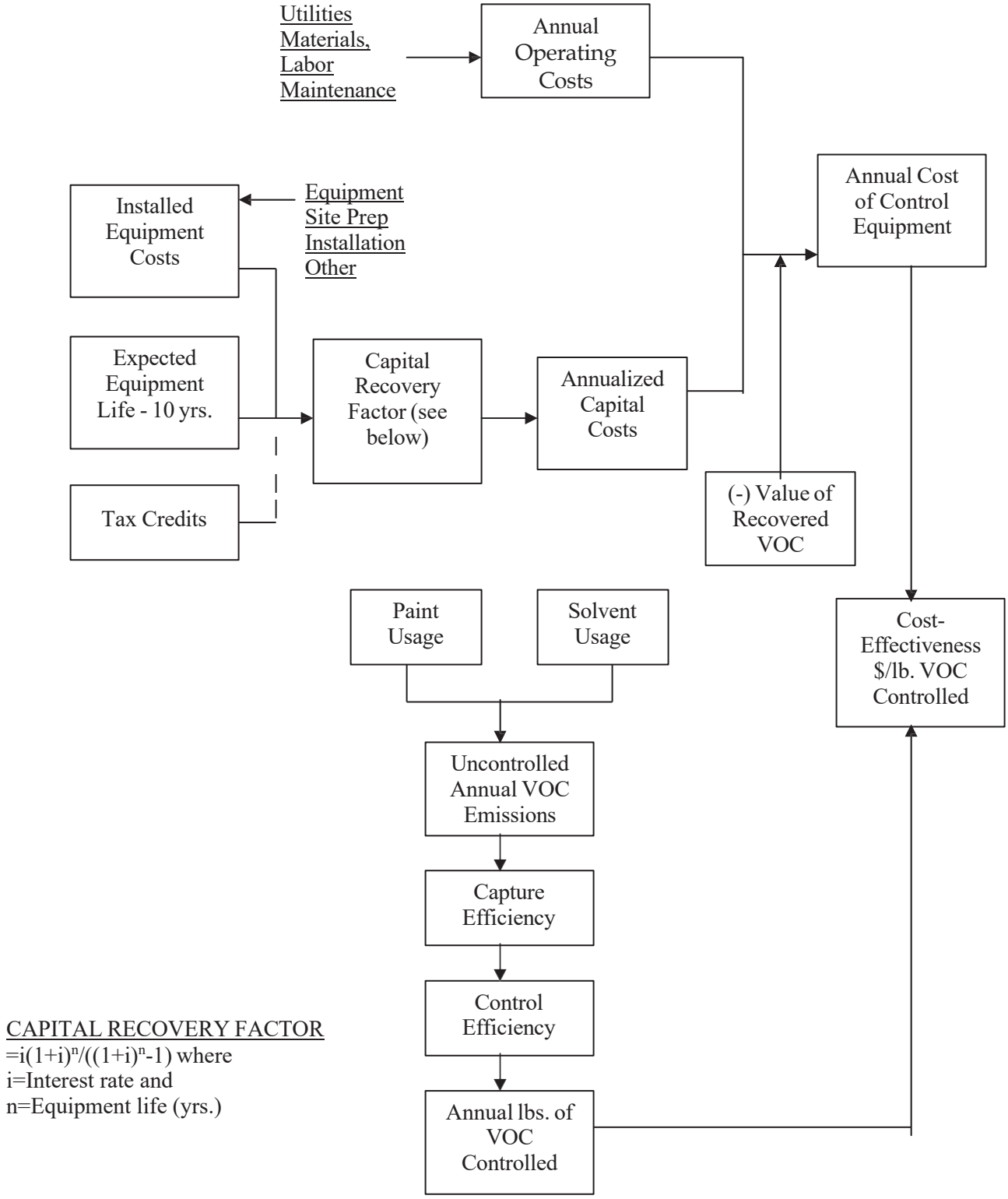
Pollutant Reduced (lbs) = (Uncontrolled Emissions x Capture Efficiency x Control Efficiency) x (2000 lbs/ton)

$$\text{Cost-Effectiveness} = \frac{\$1500000x.1627 + \$98000}{21\ ton\ x\ 1.0x.80x2000\ lbs\ /\ ton} = \$10.18 \text{ per pound}$$

The calculated cost-effectiveness for this proposed control option would then be compared to the cost-effective values determined by the District in Table 2.4. Since the calculated cost-effectiveness value of $10.18 is higher than the $9.00 value in the table for sources emitting > 15 tpy, this control option would not be considered cost-effective. The applicant would repeat this process for each of the remaining control options until a cost-effective option is determined, or the applied in practice (A/P) control option is the only option remaining.

Figure 2.5 provides an example flowchart of the cost-effectiveness calculation method for a VOC source.

FIGURE 2.5
BACT COST-EFFECTIVENESS PROCESS FLOWCHART



2.6 DETERMINING ALTERNATIVE BACT CONTROL OPTIONS

There are various ways in which an applicant may propose an alternative control/reduction measure as BACT for their operation. This section outlines the specific circumstances and requirements for determining alternative BACT requirements.

Equivalent BACT Control Options

- If the Clearinghouse Reference Data & Table contains BACT Emission Rates, then the applicant may propose an alternative control/reduction measure which will achieve the same emissions as the BACT Emission Rate. *(Can be pollutant specific.)*

- If the Clearinghouse Reference Data & Table does not contain BACT Emission Rates, then the applicant may propose an alternative control/reduction measure which is demonstrated by the applicant to be equally as effective as the BACT Control Option identified in the Clearinghouse Reference Data &Table.

In both cases, the applicant must submit with their permit application sufficient documentation showing that the alternative control/reduction measure meets the stated BACT Emission Rate or that it will reduce emissions to the same level as the listed BACT Control Option. A top-down BACT analysis is not required if the proposed alternative is at least as stringent as the listed BACT Control Option (i.e., meets the BACT Emission Rate or achieves equivalent reductions).

Less Stringent BACT Control Options

In those specific cases when the applicant has demonstrated the Clearinghouse Reference Data &Table options are not cost-effective or not technologically feasible, the applicant must submit with their permit application sufficient documentation showing that the proposed alternative control/reduction measure is BACT:

- If the Clearinghouse Reference Data &Table contains a BACT Emission Rate, and the applicant wants to propose an alternative control/reduction measure that does not meet the specified BACT Emission Rate, then the applicant must perform a top-down BACT analysis as outlined in Section 4. The top-down analysis must clearly support the proposed alternative. The applicant may be asked to supply supporting information regarding the technical and economic feasibility of the alternative control/reduction measure. The District will review the submitted top-down BACT analysis to determine whether the proposed technology is BACT.

- If the Clearinghouse Reference Data & Table does not contain a BACT Emission Rate, and the applicant proposes an alternative control/reduction measure which provides less control than the listed BACT Control Option, then the applicant must demonstrate that potential emissions have been reduced to the greatest extent possible considering technical and economic feasibility.

  This alternative demonstration is a modified top-down BACT analysis that starts with the last listed BACT Control Option, then analyzes the next most effective control/reduction measure until a cost-effective measure is determined. (Cost- effectiveness calculations must be submitted with the application for Control Options not chosen.) The District will review the alternative BACT analysis and determine whether the proposed technology is BACT. The applicant may be asked to supply supporting information regarding the technical and economic feasibility of the alternative control option.

SECTION 3

BACT REFERENCE DETERMINATIONS

In order to determine what BACT or LAER is for a specific piece of equipment the following references and resources are available as a guide for determining what controls or BACT/LAER levels have been considered or required by other air pollution control agencies. The United States Environmental Protection Agency (US EPA) keeps a RACT/BACT/LAER Clearinghouse where they list information related to all fifty (50) states BACT/LAER determinations for new and modified equipment. California Air Resources Board (CARB) has its own Technology Clearinghouse Tools that include BACT Guidelines and BACT Determinations for the state of California. Also some of the largest air pollution control districts in California, including South Coast Air Quality Management District (SCAQMD), Bay Area Air Quality Management District (BAAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD) and Sacramento Metro Air Quality Management District (SMAQMD) have information related to BACT Guidelines and BACT Determinations. These BACT/LAER resources provide information related to the latest BACT/LAER determinations which need to be considered in order to determine the appropriate level of controls used for similar equipment at other agencies and to help conduct a Top-Down BACT analysis (see Section 4 of this document). Below is a listing to the links to each one of these clearinghouses:

- **United States Environmental Protection Agency (US EPA)** RACT/BACT/LAER Clearinghouse (RBLC):
  https://cfpub.epa.gov/rblc/index.cfm?action=Home.Home

- **California Air Resources Board (CARB)** Technology Clearinghouse (BACT Guidelines/BACT Determinations:
  https://ww2.arb.ca.gov/our-work/programs/technology-clearinghouse?frm=rptpara.htm

- **South Coast Air Quality Management District (SCAQMD)** BACT Determinations for Non-Major Sources, Part D of SCAQMD BACT Guidelines Document: Guidelines (aqmd.gov)
- **Bay Area Air Quality Management District (BAAQMD)** BACT/TBACT Workbook:
  https://www.baaqmd.gov/permits/permitting-manuals/bact-tbact-workbook

- **San Joaquin Valley Air Pollution Control District (SJVAPCD)** BACT Clearinghouse:
  San Joaquin: https://www.valleyair.org/busind/pto/bact/bactchidx.htm

- **Sacramento Metro Air Quality Management District (SMAQMD)** BACT Clearinghouse:
  Sac Metro: https://www.airquality.org/StationarySources/Documents/BACT%20Clearinghouse.pdf

Also San Diego County Air Pollution Control District (District) had previously created a listing of BACT Look-Up Tables for various equipment (see Appendix A). However, this listing is not up to date and should only be considered as a starting point and as a minimum BACT requirement for specific types of equipment. BACT/LAER determinations must include consideration of the latest BACT/LAER determinations based on the above clearinghouse and BACT Guidelines resources and using a Top-Down BACT analysis as discussed in Section 4 of this document.

SECTION 4

TOP-DOWN BACT ANALYSIS

4.1 INTRODUCTION

This section presents an alternate procedure for determining the BACT Emission Rate and/or BACT Control Option when:

1) no applicable BACT listing is available in Section 3, or
2) the applicant elects to propose a less stringent BACT Emission Rate than the value provided in the applicable BACT listing Table, or
3) the applicant elects to propose a less stringent BACT Control Option than the options listed in the applicable BACT listing, or
4) the applicant elects not to use limiting permit conditions to meet the required BACT Emission Rate.

Any permit application which proposes an emissions increase for a new, modified, relocated, or replacement emission unit which emits or has the potential to emit 10 lbs/day or more, must conduct a BACT analysis. If a Section 3 BACT Control Option or equivalent control/reduction measure is not proposed, a top-down BACT analysis is required to determine an acceptable BACT Control Option.

A top-down BACT analysis requires a comprehensive listing and evaluation of all available emission control technologies to determine which technologies will meet the BACT requirement. This requires more documentation and effort from both the applicant and District to evaluate, but allows for consideration of project-specific factors. The top-down analysis and requirements for supporting documentation are discussed in the pre-application meeting. This analysis should not be performed without first consulting the District Engineering Division at (858) 586-2600.

The case-by-case top-down BACT analysis described in this Section is generally performed by the applicant or a consultant. For each case-by-case BACT analysis, the quantity of reduced emissions and the costs associated with each control technology is evaluated by the applicant to determine the most effective control method which is cost-effective. The District will review the BACT analysis and provide a formal BACT determination for each application.

Based on the top-down BACT analysis, the District specifies an emission limitation, performance requirement or some other appropriate limitation for the emission unit. These limitations reflect the maximum degree of emission reduction achievable for each pollutant subject to BACT. A technology cannot be approved if it would violate any District rule, regulation or applicable standard of performance under 40 CFR Part 60 (New Source Performance Standards) or Part 61 and Part 63 (National Emission Standards for Hazardous Air Pollutants).

In brief, a top-down BACT analysis requires the identification of all available emission control technologies for each pollutant to which BACT is applicable. To be considered BACT, a control technology does not have to be proven in field application. The control technologies are then ranked in descending order of control efficiency and evaluated for technological feasibility. Starting with the most stringent control that is technologically feasible, the cost-effectiveness of

the control is calculated. The most stringent, or "top" control technology which is technologically feasible and cost-effective (as defined in Table 2.3) will be considered BACT.

4.2 SUMMARY OF TOP-DOWN BACT ANALYSIS PROCESS

This section is intended to be a summary only. The EPA Technology Transfer Network is one source of the detailed top-down BACT analysis process. Alternatively, the applicant can contact the District's Engineering Division.

Step 1: Identify All Control Technologies

The first step in a top-down BACT analysis is to identify all of the control options available for the emissions unit, process or activity. These include air pollution control technologies or techniques that can be obtained through commercial channels, such as the application of production processes or available methods, systems and techniques, including fuel cleaning/treatment or innovative fuel combustion techniques for control of a specific pollutant. This includes technologies employed outside of the United States. In some cases, lower-polluting processes may also be considered an available control option for BACT. The control options evaluated should also include controls applied to similar source categories or gas streams, and innovative control technologies. Technologies required under lowest achievable emission rate (LAER) must also be included as control alternatives. LAER technologies usually represent the most stringent emission control alternatives. References to LAER technology determinations are available at the District. However, the cost-effectiveness criteria for BACT is still applied to all control alternatives.

If the applicant chooses the "top" control option, it is not necessary to provide information on other alternatives. In this event, the applicant should simply document that the option chosen is the most stringent.

As the BACT analysis proceeds, options may be eliminated from consideration if they are demonstrated to be technically infeasible (including unacceptable energy or environmental impacts which make the control option infeasible) or not cost-effective on a case-by-case basis. However, all control options for the emissions unit under review should initially be identified.

Step 2: Eliminate Technically Infeasible Options

In the second step, the applicant should evaluate the technical feasibility of the control options identified in Step 1. Technically infeasible control options are eliminated from further consideration in the BACT analysis. For a control option to be deemed technically infeasible, the applicant must provide clear documentation of the technical difficulties based on physical, chemical and good engineering principles. Unacceptable and unmitigable energy and environmental impacts may also be considered in determining whether a control option is technically feasible.

For example, in cases where the control efficiency is not expected to be achieved in practice, supporting documentation showing why it is technically infeasible should be provided to eliminate that control efficiency (but not necessarily the technology) from further consideration. However, District specification of a certain technology or emission rate on a permit for a like emission unit may demonstrate that the specified control is technically feasible.

Step 3: Rank Remaining Technologies by Control Effectiveness
The applicant should rank the remaining technically feasible control alternatives by control efficiency, starting with the most stringent control alternative at the top of the list. A separate list is required for each pollutant and emission unit (or grouping of similar units) that is subject to a BACT analysis. The list should include the following information for each alternative:

- control efficiencies (percentage pollutant removed);
- expected emission rate (tons per year, pounds per hour);
- expected emissions reduction (tons per year);

Step 4: Determine the Cost-effective Values of the Most Efficient Controls
After identifying the technically feasible control options, the applicant should determine the cost-effectiveness of the most stringent control alternative. If the cost-effectiveness value is higher than the value found in Table 2.3, then the next most stringent control alternative is evaluated. This process proceeds until a cost-effective control technology is determined. The control technology which achieves the highest control efficiency and is cost-effective would be considered BACT.

Step 5: Select BACT
In the final step, the applicant proposes the most stringent remaining control option that has been evaluated as cost-effective for the pollutant and emission unit under review as BACT.

In the event that the most stringent control option which is technically feasible and cost-effective is not chosen, the applicant must justify this decision. The next most stringent alternative in the listing is then evaluated.

The applicant should submit the complete BACT analysis to the District for review. The analysis should include a list of all technologies that were considered, an explanation of why a control technology was determined to be technologically infeasible, the control efficiencies and cost-effectiveness (annualized dollars/tons per year of emissions reduced) of each technology evaluated, a statement proposing a specific technology as BACT and any other supporting documentation.

SECTION 5

LOWEST ACHIEVABLE EMISSION RATE (LAER) APPLICABILITY

The purpose of this section is to define Lowest Achievable Emission Rate (LAER) and help determine if the use of LAER is required for the proposed equipment.

5.1 WHAT IS LAER?

Lowest Achievable Emission Rate (LAER) is the level of air contaminant emission control or reduction required by federal law and District rules for new or relocated major sources, or for major modifications to existing major sources. LAER is intended to reduce emissions to the maximum extent possible considering technological feasibility and achieved in practice but does not include considerations for cost effectiveness or economic feasibility. LAER can be evaluated and determined using the same resources described in Section 3 of this document for BACT detereminations, except there should be no consideration given to cost effectiveness or economic feasibility.

According to District Rule 20.1 Section (c)(38), LAER is defined as:

"(i) the lowest emitting of any of the following:

(H) the most stringent emission limitation, or most effective emission control device or control technique, or combination thereof, contained in any SIP approved by the federal EPA for such class or category of emission unit, unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such emission limitation, device or technique is not achievable, or

(I) the most stringent emission limitation which is achieved in practice by such class or category of emission unit, or

(J) Best Available Control Technology (BACT)

(ii) For modified emission units subject to the LAER requirements of these rules, the entire emission unit's post-project potential to emit shall be subject to LAER.

(iii) In no event shall application of LAER result in the emission of any air contaminant which would exceed the emissions allowed by any District Rule or Regulation, or by any applicable standard under 40 CFR Part 60 (New Source Performance Standards) or 40 CFR Part 63 (National Emission Standards for Hazardous Air Pollutants)."

5.2 WHEN IS LAER REQUIRED?

As specified in District Rule 20.3(d)(1)(v), "…LAER shall be required for each new, modified, relocated or replacement emission unit and project which results in an emission increase which constitutes an new major stationary source, a new federal major stationary source, major modification, or federal major modification, as defined in District Rule 20.1(c)(41), (c)(30), (c)(39) or (c)(29), respectively. LAER shall be required only for those air contaminants and their precursors for which the stationary source is major and for which the District is classified as non-attainment for any national ambient air quality standard."

SECTION 6

GREENHOUSE GAS (GHG) BACT REQUIREMENTS FOR MAJOR POLLUTING FACILITIES SUBJECT TO PSD

The purpose of this section is to discuss the Greenhouse Gas (GHG) BACT requirements for new or modified Major Polluting Facilities which are already subject to the PSD program. This section explains the requirements of GHG BACT regulations according to EPA, explains the Prevention of Significant Deterioration (PSD) Applicability for GHGs for new sources as well as modified sources, shows how to calculate GHG emissions, discusses contemporaneous netting calculations, and describes the Top-Down Process. The guidance in this section 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)*[6].

6.1 Background

EPA has found that GHG, consisting of six combined compounds, constitute air pollution that endanger public health and welfare. EPA's adopted requirements for GHG under 40 CFR 52.21 in May 2010, which were revised in October 2015, to establish 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 subject to these requirements.

The requirements of the EPA rule apply only to GHG as defined by EPA as a total group of six GHG which are: carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF6). All other attainment air contaminants, as defined in South Coast AQMD Rule 1702 subdivision (a), shall be regulated for the purpose of PSD.

EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases" (https://www.epa.gov/nsr/clean-air-act-permitting-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, many parts of this document are still applicable to the current requirements.

6.2 GHG BACT Applicability for PSD Sources

Beginning January 2, 2011, GHG BACT applies when a new or modified facility is subject to PSD requirements for GHG.

New PSD Sources -The first step in determining GHG BACT applicability for new PSD sources, pursuant to 40 CFR 52.21, is that a new PSD source is subject to GHG BACT 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) CO2e

[6] The UARG v. EPA decision limited the scope originally envisioned by the Tailoring Rule, and now only "anyway sources" are subject to GHG BACT. On October 3, 2016, EPA proposed revising 40 CFR 52.21 to establish a Significant Emissions Rate for GHGs at the same threshold of 75,000 ton per year CO2e as Step 1 of the Tailoring Rule for "anyway" sources.

Modified PSD Sources – The first step for determining GHG BACT applicability for modified PSD sources, pursuant to 40 CFR 52.21, is that a modified PSD source is subject to GHG BACT if:

1) The modification is otherwise subject to PSD for another regulated NSR pollutant, **AND**
2) The modification results in a GHG emissions increase and net emissions increase:
   a) ≥ 75,000 TPY CO2e, **AND**
   b) > zero TPY mass basis

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***4** and the current requirements under 40 CFR 52.21.

6.3 GHG CO2e Emissions Calculations

In determining PSD applicability, a differentiation between GHG CO2e and mass basis must be made. GHG mass basis is simply the sum of all six GHG compound mass emissions. However, to obtain GHG CO2e, the mass emissions of each individual GHG compound must be multiplied by its 100-year Global Warming Potential (GWP). The individual GHG CO2e are then summed to obtain the total CO2e for the source. Current GWP factors should be obtained from EPA's website when performing these calculations.

6.4 Contemporaneous Netting for Modified PSD Sources

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 for PSD applicability, it must include all emission increases and decreases during this period.

6.5 GHG BACT Top-Down Analysis

The GHG BACT Top-Down Analysis should be conducted as described in Section 4.2 of this document and according to the EPA's five-step "Top-Down" BACT process to determine BACT for GHG as specified in the same EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases" (March 2011). These steps include the following:

1) BACT Step 1 – Identify All Available Control Options
2) BACT Step 2 – Eliminate Technically Infeasible Options
3) BACT Step 3 – Ranking of Controls
4) BACT Step 4 – Economic, Energy, and Environmental Impacts
5) BACT Step 5 – Selecting BACT

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)
- 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)

Also, EPA in 2022 issued a White Paper on Available and Emerging Technologies for Reducing GHG Emissions from Combustion Turbine Electric Generating Units, and in 2023 proposed a rule GHG Standards and Guidelines for Fossil-Fuel Fired Power Plants, which are available at the following links:
https://www.epa.gov/stationary-sources-air-pollution/white-paper-available-and-emerging-technologies-reducing
Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants | US EPA

APPENDIX A

References

- **United States Environmental Protection Agency (US EPA)** RACT/BACT/LAER Clearinghouse (RBLC): https://cfpub.epa.gov/rblc/index.cfm?action=Home.Home

- **California Air Resources Board (CARB)** Technology Clearinghouse (BACT Guidelines/BACT Determinations: https://ww2.arb.ca.gov/our-work/programs/technology-clearinghouse?frm=rptpara.htm

- **South Coast Air Quality Management District (SCAQMD)** BACT Determinations for Non-Major Sources, Part D of SCAQMD BACT Guidelines Document: Guidelines (aqmd.gov)

- **Bay Area Air Quality Management District (BAAQMD)** BACT/TBACT Workbook: https://www.baaqmd.gov/permits/permitting-manuals/bact-tbact-workbook

- **San Joaquin Valley Air Pollution Control District (SJVAPCD)** BACT Clearinghouse: San Joaquin: https://www.valleyair.org/busind/pto/bact/bactchidx.htm

- **Sacramento Metro Air Quality Management District (SMAQMD)** BACT Clearinghouse: Sac Metro: https://www.airquality.org/StationarySources/Documents/BACT%20Clearinghouse.pdf

Also, San Diego County Air Pollution Control District (SDAPCD) had previously created a listing of BACT Look-Up Tables for various equipment (see Section 3.1 below). However, this listing is not up to date and should only be considered as a starting point and as a minimum BACT requirement for specific types of equipment. Each BACT Look-up Table in the section below consist of two parts. The first part provides a maximum Emission Rate for each criteria pollutant (VOC, NOx, SOx, PM_{10}) in the row labeled "BACT Emission Rate." The second part consists of one or more rows labeled "BACT Control Option" which provide a list of equipment, materials, or methods that can be used to meet the stated BACT Emission Rate. Some Look-up Tables only contain BACT Control Options rather than specific BACT Emission Rates.

SDAPCD BACT EQUIPMENT LIST

Adhesive Material Application Operations (<10 gal/day)

Automotive Refinishing Operations (<5 gal/day)

Automotive Refinishing Operations

Boiler (<50 MM BTU/HR)

Boiler (50 to <250 MM BTU/HR)

Bulk Terminal Grain and Dry Chemical Transfer and Storage

Coffee Roasters

Concrete Batch Plants

Fiberglass Manufacturing Line (<10 tons/yr)

New Gasoline Service Station with Balance Phase II (>1,000,000 gal/yr) RESERVED

New Gasoline Service Station with Vacuum Assist Phase II (>1,000,000 gal/yr) RESERVED

General Surface Coating (<5 tons/yr) (No Specific Coating Category Rule Applies)

Graphics Arts Operations (<5 tons/yr)

Internal Combustion Engine - Non-Emerg. & Non-Cogen. Nat. Gas (Lean Burn) (≀2000 HP)

Internal Combustion Engine - Non-Emerg. & Non-Cogen. Nat. Gas (Rich Burn) (≀200 HP)

Internal Combustion Engine - Non-Emerg. & Non-Cogen. Diesel (200 HP – 750 HP)

Internal Combustion Engine - Non-Emerg. & Non-Cogen. Diesel (<200 HP)

Marine Coating Operations

Metal Parts & Products Coating (<10 gal/day

Pharmaceutical Manufacturing

Rock Crushers & Transfer Points

Sand, Rock & Aggregate Screens

Wood Products Coating (<10 gal/day)

ADHESIVE MATERIAL APPLICATION OPERATIONS (<10 gal/day)

Fee Schedules 27 U, V, & W

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	(N/A)	(N/A)	Not Determined
BACT Control Option	Compliance with Rule 67.21, Adhesive Material Application Operations (A/P)	(N/A)	(N/A)	Spray booth if used, shall be equipped with over spray filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement

(This table does not apply to operations applying, on average, 10 or more gallons of adhesive application materials per day.)

AUTOMOTIVE REFINISHING OPERATIONS (<5 gal/day)

Fee Schedule 27R

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	(N/A)	(N/A)	Not Determined
BACT Control Option	Compliance with Rule 67.20.1, Motor Vehicle and Mobile Equipment Refinishing Operations (A/P)	(N/A)	(N/A)	Spray booth equipped with overspray filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

(This table does not apply to operations applying, on average, 5 or more gallons of coating per day.)

AUTOMOTIVE REFINISHING OPERATIONS

Fee Schedule 27S

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

	VOC	NOx	SOx	PM
BACT Control Option	Collection System Vented to Carbon Adsorber or Afterburner with coatings complying with Rule 67.20.1, Motor Vehicle and Mobile Equipment Refinishing Operations (T/F) **BACT Emission Rate Limit -** emissions controlled to overall capture/ destruction efficiency :2 90% by weight	(N/A)	(N/A)	Spray booth equipped with overspray filters. (A/P)
BACT Control Option	Compliance with Rule 67.20.1, Motor Vehicle and Mobile Equipment Refinishing Operations (A/P)	(N/A)	(N/A)	Spray booth equipped with overspray filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

BOILER (<50 MM BTU/HR)

Fee Schedule 13A

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	9 PPM corrected to 3% O_2 NG or LPG	Not Determined	0.10 grain/dscf†
BACT Control Option (Using NG or LPG fuel only.)	NG or LPG fuel (A/P)	Low NOx burner, FGR, and oxygen controller. NG or LPG (A/P)	NG or LPG fuel (A/P)	NG or LPG fuel (A/P)
BACT Control Option (Using No. 2 oil as backup fuel.)	(N/A)	Low NOx burner, FGR, and oxygen controller. (A/P)	No. 2 fuel oil with <0.05% sulfur content (A/P)	Low ash fuel (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

NOTES:
FGR - Flue Gas Recirculation
LPG - Liquefied Petroleum Gas
NG - Natural Gas
† The District has determined that the use of Natural Gas ensures compliance with the PM BACT Emission Rate Limit of 0.1 gr/dscf. No further analysis is required for this pollutant.

***** The most recent determinations for BACT for NOx may be lower than this level depending on the size of the boiler

BOILER (50 to <250 MM BTU/HR)

Fee Schedule 13B

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

	VOC	NOx	SOx	PM
BACT Control Option	NG or LPG fuel (A/P)	SCR on NG or LPG fuel (duct burner may be required) (T/F) **BACT Emission Rate Limit** – 5 PPM corrected to 3% O_2/NG or LPG	NG or LPG fuel (A/P)	NG or LPG fuel (A/P) **BACT Emission Rate Limit** - 0.10 grain/dscf†
BACT Control Option (Using NG or LPG fuel only)	NG or LPG fuel (A/P)	Low NOx burner, FGR, and oxygen controller. NG or LPG (A/P) **BACT Emission Rate Limit** – 9 PPM corrected to 3% O_2/NG or LPG.	NG or LPG fuel (A/P)	NG or LPG fuel (A/P) **BACT Emission Rate Limit** - 0.10 grain/dscf†
BACT Control Option (Using No. 2 oil as backup fuel.)	(N/A)	Low NOx burner, FGR, and oxygen controller. No. 2 fuel oil (A/P) **BACT Emission Rate Limit** – 9 PPM corrected to 3% O_2 on NG or LPG. Lowest achievable but no greater than 170 PPM corrected to 3% O_2 on No. 2 fuel oil backup	No. 2 fuel oil with < 0.05% sulfur content (A/P)	Low ash fuel (A/P) **BACT Emission Rate Limit** - 0.10 grain/dscf†

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

NOTES:

FGR - Flue Gas Recirculation
LPG - Liquefied Petroleum Gas
NG - Natural Gas
SCR-Selective Catalytic Reduction

† The District has determined that the use of Natural Gas ensures compliance with the PM BACT Emission Rate Limit of 0.1 gr/dscf. No further analysis is required for this pollutant.

BULK TERMINAL GRAIN AND DRY CHEMICAL TRANSFER AND STORAGE

Fee Schedule 23 A & B

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM*
BACT Emission Rate Limit	(N/A)	(N/A)	(N/A)	< 0.01 grain/dscf (Subpart DD)
BACT Control Option	(N/A)	(N/A)	(N/A)	99% control, storage, conveyors, elevators all vented to Baghouse 0 percent opacity (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

* The BACT emission rate limit is based on TSP which is used as a surrogate for PM10.

COFFEE ROASTERS

Fee Schedule 50A

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	Not Determined	Not Determined	Not Determined
BACT Control Option	Afterburner (0.3 sec retention time at 1200 degrees F	Natural gas with heat recovery on afterburner exhaust to reduce fuel consumption (A/P)	Natural gas (A/P)	Natural gas with cyclone and afterburner (0.3 sec retention time at 1200 degrees F (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

CONCRETE BATCH PLANTS

Fee Schedule 08A

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM*
BACT Emission Rate Limit	(N/A)	(N/A)	(N/A)	<0.008 grain/dscf
BACT Control Option	(N/A)	(N/A)	(N/A)	99% efficient Fabric or Cartridge type vent filters on silos. Enclosed cement weigh hoppers, screw conveyors and concrete batcher vented to a 99% efficient fabric filter baghouse. Flexible shroud which seals to the truck along with a water sprinkler system used when dry products are mixed. Shroud vented to 99% efficient fabric filter baghouse Water spray system for sand and aggregate transfer points. Sand and aggregate storage piles adequately wet to maintain a minimum moisture content of 4% by weight. Open areas maintained adequately wet to prevent fugitive emissions in excess of 20 percent opacity or Ringlemann 1. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

* The BACT emission rate limit is based on TSP which is used as a surrogate for PM10.

FIBERGLASS MANUFACTURING LINE (<10 tons/yr)

Fee Schedule 27F

Fiberglass Fabrication - Hand & spray layup

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	(N/A)	(N/A)	Not Determined
BACT Control Option	Compliance with Rule 67.12, Polyester Resin Operations. (A/P)	(N/A)	(N/A)	Airless spray equipment & spray booth with mesh type filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

(This table does not apply to fiberglass operations which emit less than an average of five pounds of VOCs or greater than an average of 50 pounds of VOCs per operating day for each calendar month.)

NEW GASOLINE SERVICE STATIONS WITH BALANCE PHASE II SYSTEMS
(>1,000,000 gal/yr throughput)
Fee Schedule 26A

RESERVED

NEW GASOLINE SERVICE STATIONS WITH VACUUM ASSIST PHASE II SYSTEMS (>1,000,000 gal/yr throughput)

Fee Schedule 26F

RESERVED

GENERAL SURFACE COATING (<10 gallons of coating/day)
(No Specific Coating Category Rule Applies)
Fee Schedule 27D

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	(N/A)	(N/A)	Not Determined
BACT Control Option	Compliance with with Rule 66.1, Miscellaneous Surface Coating Operation and Other Processes Emitting Volatile Organic Compounds	(N/A)	(N/A)	Spray booth equipped with overspray filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

(This table does not apply to operations applying, on average, 10 or more gallons of coating per day.)

GRAPHIC ARTS OPERATDONS (< 5 tons/year)
Fee Schedule 27 N

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

	VOC	NOx	SOx	PM
BACT Control Option	1. Use of low VOC fountain solution (< 5% VOC by volume), 2. Capture & recycle blanket and roller tray wash, 3. Use of cleanup solvent which has either less than 100 grams VOC per liter or vapor pressure of less than 5 mm HG at 20ºC, 4. Use of metering roll cleanup solvent which has either less than 100 grams VOC per liter or vapor pressure of less than 5 mm HG at 20ºC, and 5. Use of inks which have a VOC content of less than 225 grams per liter (1.9 lb/gal). (T/F) BACT emission rate limit not determined.	(N/A)	(N/A)	(N/A)
BACT Control Option	1. Use of low VOC fountain solution (< 6% VOC by volume), 2. Capture & recycle blanket and roller tray wash, 3. Use of cleanup solvent which has either less than 200 grams VOC per liter or vapor pressure of less than 5 mm HG at 20ºC, and 4. Use of metering roll cleanup solvent which has either less than 100 grams VOC per liter or vapor pressure of less than 10 mm HG at 20ºC, and 5. Use of inks which have a VOC content of less than 300 grams per liter (2.5 lb/gal). (A/P) BACT emission rate limit not determined.	(N/A)	(N/A)	(N/A)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

INTERNAL COMBUSTION ENGINE, PISTON TYPE NON-EMERGENCY & NON-COGENERATION - NATURAL GAS FUEL (LEAN BURN) (>2000 H.P.)

Fee Schedule 34D

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

Natural Gas Fuel[1]:

	VOC	NOx	SOx	PM
BACT Control Option [2]	Lean burn technology (T/F) **BACT Emiss Rate Limit** – 0.6 grams/ bhp-hr	Lean burn with selective catalytic reduction (SCR) (T/F) **BACT Emission Rate Limit-** 0.07grams/ bhp-hr	Low Sulfur Fuel 10 grains/100 cf natural gas (A/P)	PCV filter, engine design (A/P) **BACT Emission Rate Limit** - 0.1 grams/ bhp-hr
BACT Control Option	Lean Burn Technology (A/P) **BACT Emission Rate Limit** – 1.0 grams/ bhp-hr	Lean Burn with selective catalytic reduction (SCR) (A/P) **BACT Emission Rate Limit** – 0.15 grams/ bhp-hr	Low Sulfur Fuel 10 grains/100 cf natural gas (A/P)	PCV filter, engine design (A/P) **BACT Emission Rate Limit** - 0.1 grams/ bhp-hr

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

[1] This table does not apply to gasoline-powered engines

[2] Electric motors need not be considered as a control option for:

(a) Engines at stationary sources located more than 1/2 mile from utility service lines,

(b) Engines located at any site and providing direct or electrical power for a non-repeating activity or process which requires no more than 3,000 hours of engine operation.

(c) Engines mounted on moving equipment, such as cranes or drills, which are required to move around the facility during each workday as a function of that equipments purpose.

INTERNAL COMBUSTION ENGINE, PISTON TYPE NON-EMERGENCY & NON-COGENERATION - NATURAL GAS FUEL (RICH BURN) (2 H.P.-200 H.P.)

Fee Schedule 34D

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

Natural Gas Fuel[1]:

	VOC	NOx	SOx	PM
BACT Control Option [2]	Rich burn with non-selective catalytic reduction (NSCR) (T/F) **BACT Emission Rate Limit** – 0.15 grams/ bhp-hr	Rich burn with non-selective catalytic reduction (NSCR) (T/F) **BACT Emission Rate Limit** – 0.07 grams/ bhp-hr	Low Sulfur Fuel 10 grains/100 cf natural gas (A/P)	PCV filter, engine design (A/P) **BACT Emissi Rate Limit** - 0.1 grams/ bhp-hr
BACT Control Option	All Rich Burn (A/P) **BACT Emission Rate Limit** – 0.15 grams/ bhp-hr	Rich Burn with non-selective catalytic reduction (NSCR) **BACT Emission Rate Limit** – 0.15 grams/ bhp-hr	Low Sulfur Fuel 10 grains/100 cf natural gas (A/P)	PCV filter, engine design (A/P) **BACT Emission Rate Limit** - 0.1 grams/bhp-hr

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

[1] This table does not apply to gasoline powered engines

[2] Electric motors need not be considered as a control option for:

(a) Engines at stationary sources located more than 1/2 mile from utility service lines,

(b) Engines located at any site and providing direct or electrical power for a non-repeating activity or process which requires no more than 3,000 hours of engine operation.

(c) Engines mounted on moving equipment, such as cranes or drills, which are required to move around the facility during each workday as a function of that equipments purpose.

INTERNAL COMBUSTION ENGINE, PISTON TYPE NON-EMERGENCY & NON-COGENERATION - DIESEL FUEL (200 H.P.-750 H.P.)

Fee Schedule 34D

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

Diesel:

	VOC	NOx	SOx	PM[4]
BACT Control Option [1,2]	Oxidation Catalyst (T/F)	California Clean diesel fuel and Selective Catalytic Reduction (SCR)[3] (T/F) **BACT Emission Rate Limit** – 90 % reduction	Low Sulfur Fuel (California Clean Diesel fuel) 0.05 % by weight (A/P)	Catalyst guard bed, PCV filter, engine design, diesel catalytic particulate filter (T/F) **BACT Emission Rate Limit** - 90 % reduction of uncontrolled particulate matter emission
BACT Control Option[2]	California Clean diesel fuel and EPA or ARB certified engine (A/P)	California Clean Diesel fuel and Turbocharger, Low Temperature Aftercooler, and Retardation of Fuel Injection Timing 4 Degrees from manufacturer's specification, EPA or ARB certified engine. (A/P) **BACT Emission Rate Limit** - 6.9 grams/ bhp-hr	Low Sulfur Fuel (California Clean Diesel fuel) 0.05 % by weight (A/P)	Low Sulfur Fuel (California Clean Diesel fuel) and PCV filter (A/P) **BACT Emission Rate Limit** - 0.1 grams/ bhp-hr

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

[1]Alternative controls for consideration include: gaseous fuel with NSCR or lean burn configuration or the use of electric motors using electricity from the serving utility.

Electric motors need not be considered as a control option for:

(a) Engines at stationary sources located more than 1/2 mile from utility service lines,

(b) Engines located at any site and providing direct or electrical power for a non repeating activity or process which requires no more than 3,000 hours of engine operation.

(c) Engines mounted on moving equipment, such as cranes or drills, which are required to move around the facility during each work day as a function of that equipments purpose.

[2] For engines from 300 to 600 bhp, the use of Tier II certified engine need not be considered as a control option if demonstrated not to be cost-effective.

[3]SCR may be cost-effective for units with an uncontrolled potential to emit greater than 10 tons per year

[4]This table addresses BACT. Further particulate controls may be required as T-BACT pursuant to Rule 1200 or a State Air Toxics Control Measure for Diesel Particulates.

INTERNAL COMBUSTION ENGINE, PISTON TYPE NON-EMERGENCY & NON-COGENERATION - DIESEL FUEL (<200 H.P.)

Fee Schedule 34G

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

Diesel:

	VOC	NOx	PM	SOx
BACT Emission Rate Limit	Latest EPA Tier Certification for horsepower range (A/P)	Latest EPA Tier Certification for horsepower range (A/P)	Latest EPA Tier Certification for horsepower range (A/P)	CARB Diesel (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

[1]Alternative controls for consideration include: gaseous fuel with NSCR or lean burn configuration or the use of electric motors using electricity from the serving utility.

Electric motors need not be considered as a control option for:

(a) Engines at stationary sources located more than 1/2 mile from utility service lines,

(b) Engines located at any site and providing direct or electrical power for a non repeating activity or process which requires no more than 3,000 hours of engine operation.

(c) Engines mounted on moving equipment, such as cranes or drills, which are required to move around the facility during each work day as a function of that equipment's purpose.

MARINE COATING OPERATIONS

Fee Schedules 27A, B, & C

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	**For operations 2:10 gallons/day and feasible to apply coatings in a paint spray booth:** Collection system vented to carbon adsorber or afterburner with coatings complying with Rule 67. 18 - Marine Coating Operations (T/F) **BACT Emission Rate Limit -** emissions controlled to overall capture/ destruction efficiency > 90% by weight.	(N/A)	(N/A)	Spray booth if used, shall be equipped with overspray filters. (A/P)
BACT Control Option	**For operations emitting <140 lbs of VOC emissions/day, and not feasible to apply coatings in a paint spray booth:** Compliance with Rule 67.18 - Marine Coating Operations, except for the VOC content of the following coating categories with mil spec requirements: **Coating Category** — **VOC Limit (g/L)** High Temperature Coating — 420 Low Activation Interior Coating — 340 (A/P)			High transfer efficiency application equipment where feasible and shrouding. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

(This table does not apply to operations emitting, on average, 140 or more pounds of VOC per day conducted outside of a paint spray booth.)

METAL PARTS & PRODUCTS COATING (<10 gal/day)

Fee Schedules 27J and 27K

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	(N/A)	(N/A)	Not Determined
BACT Control Option	Compliance with Rule 67.3, Metal Parts & Products Coating Operations. (A/P)	(N/A)	(N/A)	Spray booth equipped with overspray filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

(This table does not apply to operations applying, on average, 10 or more gallons of coating per day.)

PHARMACEUTICAL MANUFACTURING

Fee Schedule 54A

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

	VOC	NOx	SOx	PM
BACT Control Option	Collection System Vented to Carbon Adsorber or Afterburner (T/F) **BACT Emission Rate Limit -** emissions controlled to overall capture/ destruction efficiency :2 90% by weight	(N/A)	(N/A)	Baghouse or Vent Filters. (A/P)
BACT Control Option	Low VOC content materials (A/P)	(N/A)	(N/A)	Baghouse or Vent Filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

ROCK CRUSHERS & TRANSFER POINTS

Fee Schedule 07A & 07B

The BACT Control Options which have been determined to be technologically feasible (T/F - demonstrated but not necessarily proven in field application) or have achieved the BACT emission rate limits in practice (A/P - demonstrated in use for the specific equipment category) are listed below. The BACT Control Options are listed in descending order of control stringency. If the top-listed T/F control option is proposed, no further analysis is required. If the first T/F control option is not chosen, then the applicant must review and determine the cost-effectiveness of each T/F control option in the order listed. The first control option determined to be cost-effective must be installed to meet the BACT requirement. A control option is considered cost-effective if the annualized cost of implementing that control option is equal to or less than the reference cost-effectiveness value for the same pollutant shown in Table 2-4. If none of the T/F control options are determined to be cost-effective, the applicant must propose the A/P control option, propose an alternative technology that meets the BACT emission rate limit or perform a full Top-down BACT Analysis as described in Section 4. The applicant is responsible for ensuring that the installed equipment meets the specified BACT Emission Rate Limit. (See Section 2 for further guidance.)

	VOC	NOx	SOx	PM*
BACT Emission Rate Limit	(N/A)	(N/A)	(N/A)	< 0.014 grain/dscf
BACT Control Option	(N/A)	(N/A)	(N/A)	Charged fog sprays (T/F)
BACT Control Option	(N/A)	(N/A)	(N/A)	Covered screen, covered crusher, or covered transfer point vented to insertable or central fabric filter (A/P)
BACT Control Option	(N/A)	(N/A)	(N/A)	Covered screen, covered crusher, or covered transfer point with water spray system and surfactant added (A/P)
BACT Control Option	(N/A)	(N/A)	(N/A)	Water spray system with surfactant (A/P)
BACT Control Option	(N/A)	(N/A)	(N/A)	Water spray system (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

* The BACT emission rate limit is based on TSP which is used as a surrogate for PM10.

SAND, ROCK & AGGREGATE SCREENS

Fee Schedule 06A

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM*
BACT Emission Rate Limit	(N/A)	(N/A)	(N/A)	< 0.02 grain/dscf
BACT Control Option	(N/A)	(N/A)	(N/A)	Water spray system (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

* The BACT emission rate limit is based on TSP which is used as a surrogate for PM10.

WOOD PRODUCTS COATING (<10 gal/day)

Fee Schedules 27L, 27M and 27Q[1]

Review the BACT Control Option listed below. The applicant must propose the Control Option listed or perform a Top-down BACT Analysis as described in Section 4 to justify the selection of another Control Option. The applicant will be required to provide documentation that the Control Option selected meets the requirements listed in the table.

	VOC	NOx	SOx	PM
BACT Emission Rate Limit	Not Determined	(N/A)	(N/A)	Not Determined
BACT Control Option (A/P)	Use of water-based coatings when compatible with the operation and compliance with all other provisions of Rule 67.11, Wood Products Coating Operations for the rest of the operation. (A/P)	(N/A)	(N/A)	Spray booth equipped with overspray filters. (A/P)

The applicant may choose to limit the Potential to Emit (PTE) from the equipment to less than 10 pounds per day for each pollutant in lieu of meeting the stated BACT requirement.

(This table does not apply to operations applying, on average, 10 or more gallons of coating per day.)

[1] 27L (Sources/facilities <5 tons per year VOC emissions), 27M (Sources/facilities >5 tons per year VOC emissions), and 27Q (≤500 gallons per year)

APPENDIX B

List of Commonly Used Acronyms

A/C	Authority to Construct
A/P	Achieved in Practice
APCD	Air Pollution Control District
ARB	Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BTU	British Thermal Units
CAA	Clean Air Act
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CO	Carbon Monoxide
EPA	Environmental Protection Agency
FGR	Flue Gas Recirculation
GHG	Greenhouse Gases
I.C. Engine	Internal Combustion Engine
LAER	Lowest Achievable Emission Rate
NG	Natural Gas
NOx	Oxides of Nitrogen
NSR	New Source Review
PM	Particulate Matter
P/O	Permit to Operate
RACT	Reasonably Achievable Control Technology
RBLC	RACT/BACT/LAER Clearinghouse
SCAQMD	South Coast Air Quality Management District
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metro Air Quality Management District
SOx	Oxides of Sulfur
T/F	Technologically Feasible
US EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

APPENDIX C

Glossary of Terms

Emission Unit means any article, machine, equipment, contrivance, process or process line, which emit(s) or reduce(s) or may emit or reduce the emission of any air contaminant.

New Emission Unit means any of the following:

(i) Any emission unit not constructed or installed in San Diego County as of December 17, 1997, or which was constructed, installed or operated without a valid Authority to Construct or Permit to Operate from the District, except as provided for in Rule 20.1 Subsection (b)(1).

(ii) Any emission unit which was inactive for a one-year period or more and which did not hold a valid Permit to Operate during that period.

NSR Rules are the District New Source Review Rules, Rules 20.1 through 20.8.

Potential to Emit means the maximum quantity of air contaminant emissions, including fugitive emissions, that an emission unit is capable of emitting or permitted to emit, calculated pursuant to Rule 20.1 Section (d).