

**Attachment B**

**DEP Analysis of RACT BACT LAER Clearing House**

**for RACT Technology**

**Bureau of Air Quality**

**Department of Environmental Protection**

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**Introduction**

The Pennsylvania Department of Environmental Protection (DEP) searched the US Environmental Protection Agency (EPA) RACT BACT LAER Clearinghouse (RBLC) database in order identify Reasonably Available Control Technology (RACT) controls being used in other states for volatile organic compounds (VOC) pollutants. Specifically, PA DEP wanted to identify any emergent cost effective RACT technology that with more stringent control measures than current VOC RACT in our current rules and regulations. The searches of the all the Control Technologies for VOC pollutant can be performed on the “Combined RBLC Search Results” spreadsheet. See Attachment B2

**Methodology**

PA DEP staff conducted a search of the EPA’s RACT/BACT/LAER Clearinghouse (RBLC) database[[1]](#footnote-1).

The RACT/BACT/LAER Clearinghouse site states:

**“RACT, or Reasonably Available Control Technology**, is required on existing sources in areas that are not meeting national ambient air quality standards (i.e., non-attainment areas).

**BACT, or Best Available Control Technology**, is required on major new or modified sources in clean areas (i.e., attainment areas).

**LAER, or Lowest Achievable Emission Rate**, is required on major new or modified sources in non-attainment areas.

BACT and LAER (and sometimes RACT) are determined on a case-by-case basis, usually by State or local permitting agencies. EPA established the RACT/BACT/LAER Clearinghouse, or RBLC, to provide a central data base of air pollution technology information (including past RACT, BACT, and LAER decisions contained in NSR permits) to promote the sharing of information among permitting agencies and to aid in future case-by-case determinations. However, data in the RBLC are not limited to sources subject to RACT, BACT, and LAER requirements. Noteworthy prevention and control technology decisions and information are included even if they are not related to past RACT, BACT, or LAER decisions.

**Permit Data Base**

The RBLC permit data base contains approximately 8,000 determinations that can help you identify appropriate technologies to mitigate most air pollutant emission streams. The RBLC permit data base was designed to help permit applicants and reviewers make pollution prevention and control technology decisions for stationary air pollution sources, and includes data submitted by several U.S. territories and all 50 States on over 200 different air pollutants and 1,000 industrial processes.

You can search the RBLC permit data base on-line. You choose what you want to see by making selections in a search routine or typing in search criteria. The result is a subset of data that you can either view, print, or downloaded to your PC.”

EPA has consistently defined ‘‘**RACT**’’ as the lowest emission limit that a particular source is capable of meeting by the application of the control technology that is reasonably available considering technological and economic feasibility. See 89 FR 43359; May 17 2024.

**Best available control technology (BACT)** is defined in Section 169(3) of the CAA. The term "best available control technology" means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of "best available control technology" result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 7411 or 7412 of this title. Emissions from any source utilizing clean fuels, or any other means, to comply with this paragraph shall not be allowed to increase above levels that would have been required under this paragraph as it existed prior to November 15, 1990.[[2]](#footnote-2)

**Best Available Control Technology (BACT)**—determining the emissions limitation that will achieve the maximum degree of emissions reductions through application of production processes and available methods, systems, and techniques, taking into consideration energy, environmental and economic impacts.[[3]](#footnote-3)

**Lowest achievable emission rate (LAER)** is defined in Section 171(3) of the CAA. The term "lowest achievable emission rate" means for any source, that rate of emissions which reflects—

(A) the most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or

(B) the most stringent emission limitation which is achieved in practice by such class or category of source, whichever is more stringent.[[4]](#footnote-4)

The DEP used the RBLC database’s basic search feature to search for emerging RACT technologies based upon the permit records and information states input into EPA’s database. The basic search criteria used was “Permit Dates” between 1/1/2006 and 5/31/2024 and “Pollutant Name” of Volatile Organic Compounds (VOC). The search returned 1380 facilities with 5,227 processes and 23,518 rows of data when combined into one spreadsheet from 10 separate individual spreadsheets that required 10 separate downloads. The Department set up the Column headings with the “Sort and Filter” feature in excel. After the filter, 41 rows were found to have compromised/unaligned data. The DEP removed the compromised data to the “RBLC Data did not align at download” spreadsheet. The compromised data was reviewed and found not to be useful. The RBLC Combined Searches Spreadsheet was re-filtered for Volatile Organic Compounds resulting in 5,231 rows of data. The DEP then did a direct search for RACT by filtering RACT in the Case-By-Case row heading dropdown. The result was 11 rows of data out of 23,477 records. Upon review 9 out of the 11 records were from Pennsylvania inputs into the RBLC database. The other facilities had no relationship to any RACT related VOC sources in Pennsylvania. Based upon the Analysis of the RACT standard in the RCLB database there are no RACT technologies that the DEP needs to evaluate for its RACT CTG regulations or control measures for 2008 NAAQS or the 2015 NAAQS.

There was a “Other Case-by-Case” category listed in the drop down at the Case-by-Case Column Title. A search of that category resulted in 414 rows of data. DEP reviewed the information under the “POLLUTANT\_COMPLIANCE\_NOTES” column heading for the processes identified but most of them were discussing BACT. Many units were using thermal oxidizers and flares to control VOC. Some of the comments were discussing permit limits to limit emissions below permitting thresholds. There was a plastic coating process with a coating standard of 6.8 lbs./gallon of coating which is the same as DEP’s requirement for the same coating. After reviewing all the processes under the Other Case-By Case Category DEP did not note any standards that needed to be considered for RACT purposes.

In another Case-By-Case category in the drop down there was a category listed as “N/A.” The search on this category identified 83 rows of process data. The primary make-up of processes in this category was primarily combustion units which have no connection to CTG RACT VOC categories in Pennsylvania.

The next Case-by-Case category filtered in the drop down was listed as “BAT” in the state of Ohio. The search identified 4 records to include turbines, two Synthetic Organic Chemical Manufacturing Industry (SOCMI)processes and combustion turbines. The processes listed as SOCMI processes are controlled with incinerators at 98% control efficiency. This is the same standard DEP applied to its distillation, reactor, and air oxidation processes for its RACT rule in its recently submitted SOCMI Rule. BAT is not RACT, thus Pennsylvania’s SOCMI control measures or its rules are not impacted by this control technology.

The maximum available control technology (MACT) category in the Case-By-Case drop down was the next filter used on the data. It only returned 5 rows of data. MACT is more stringent than RACT and thus will not be considered for comparison with any of DEP’s CTG VOC RACT requirements.

The next category used to filter data in the Case-By-Case column drop down was LAER or the Lowest Available Emission Rate. LAER is more stringent than RACT as it is used to address new major or modified sources in nonattainment areas. The search identified 523 LAER records. The Department focused on dates for LAER technology that was installed before 2012. Existing sources were required to meet RACT for the 2008 NAAQS rule if they existed prior to this year. There were 58 records for LAER technology last updated prior to 2012. None of the processes or control technology reviewed showed an emerging CTG RACT based technology that the DEP should consider using in an update to any of its VOC CTG RACT based regulations. LAER installed after 2012 would represent control technology that is designed for new units and would be more stringent than RACT and thus was not considered technology that could be applied to existing VOC CTG source categories. Many of sources subject to LAER combust VOCs with flares and incinerators due to their high emission rates prior to control.

BACT is Best Available Control Technology. It is more stringent than RACT in that the emission limitation is based on the maximum degree of reduction, Though it is a more stringent standard DEP reviewed it to see if any technologies were available and appropriate to be included in presumptive RACT in Pennsylvania. The last category DEP filtered for its RACT search of the Case-by-Case Column heading was BACT-PSD. Of the 5231 records pre-filter records initially identified for all CASE-BY-CASE control categories, the BACT-PSD category when filtered was the largest and returned 4,177 records.

DEP searched the Process “PROCESS\_NAME” column heading for the term “coating” in text filters using the condition “contains” for the search box. The search returned 88 records. DEP reviewed the records and determined there were too few records listing VOC contents for coatings at surface coating operations in the BACT-PSD requirements for it to justify any individual coating as an an emerging RACT technology. Many of the records also included the use of a thermal oxidizer for control of VOC emissions.

DEP searched the Process “PROCESS\_NAME” column heading for the term contains “tank” in text filters using the condition “contains” for the search box. The search returned 620 records. DEP looked at the BACT-PSD tank “CONTROL\_METHOD\_DESCRIPTION” and search “float” producing 140 records for floating roofs. DEP’s RACT rules for storage tanks require all its internal and external floating roof tanks to have floating roofs. DEP looked at the BACT-PSD tank “CONTROL\_METHOD\_DESCRIPTION” and searched “fix” producing 89 records for floating roofs. Submerged fill pipes were the most common BACT-PSD requirement. DEP has a RACT requirement on gasoline petroleum storage tanks in stage 1 controls which make up the majority of existing fixed tanks. DEP also requires pressure relief value requirement on all VOC storage tanks greater than 2000 gallons. One state indicated that pressure relief values with condensate recovery is BACT. DEP also has an Organic liquid cargo vessel loading and ballasting rule in Delaware and Philadelphia counties covering VOCs and not just gasoline. There is no indication that there is an emerging BACT technology that can be applied to existing units as RACT.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “refine” producing 11 records for refineries. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “refinish” or “repair” producing 11 records but none for auto repair or refinish coatings. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “aero” producing 6 records none for aerospace operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “boat” producing 2 records none for fiberglass boat operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “ship” producing 7 records none for ship building operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “gasoline” producing 56 records for bulk gasoline terminals and related. Gasoline loading and unloading operations and gasoline storage tank process were retrieved. Very similar to tanks search previously. There were no BACT-PSD records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “stage” producing 4 records none for stage 1 vapor recovery operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “solvents” producing 2 records none for industrial cleaning solvents operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “degrease” producing 2 records none for degreasing operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “leak” producing 35 records for operations regarding vapor leak monitoring procedures and other requirements for small gasoline storage tank emission control. DEP reviewed “FACILITY\_DESCRIPTION” column information and found no match facility types. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “dry” producing and also searched “FACILITY\_DESCRIPTION” with “clean” producing 4 records for large petroleum dry cleaning operations. None of the records were dry cleaning facilities. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “cutback” producing no records for cutback asphalt operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “asphalt” producing 8 records for cutback asphalt operations. These activities were primarily loading asphalt loading operations with asphalt storage tanks. None of the processes provided in the BACT-PSD records indicate an emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “ethylene” producing 36 records for Ethylene Production Plant operations. Pennsylvania has no existing ethylene production facilities. Any new facilities would need to meet BACT-PSD These activities were primarily loading asphalt loading operations with asphalt storage tanks. None of the processes provided BACT-PSD or LAER requirements if installed. BACT or LAER requirements should be reviewed for RACT if any new facility is in progress or will be installed in the future. IT does not impact DEP RACT currently.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “tire” producing 19 records for Manufacture of pneumatic rubber tires operations. The manufacturing operations found from the search are all new facilities last updated since 2016 and are subject to higher BACT-PSD control technology using a thermal oxidizer with control efficiencies of between 95% to 98 % efficiency. Existing units would not be subject to these tighter standards. None of the processes provided in the BACT-PSD records indicate emerging BACT technology is appropriate to apply to existing sources as RACT by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “art” or contains “graphic” producing 26 records for graphic arts operations. Most of the presses were last updated from 2016 to present and are thus new units requiring 100%VOC capture from full enclosure and a 98% overall control efficiency required by BACT-PSD. This does not represent RACT for existing graphic arts operations whose construction and installation were not specifically designed to meet the new standards. The BACT-PSD requirements are not RACT for existing graphic art and flexographic printing operations. None of the processes provide in the BACT-PSD records indicate an emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “letter” producing no records for letterpress printing operations. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “litho” producing 1 record for lithographic printing operations. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “offset” producing no record for offset lithographic printing presses and letterpress printing operations. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “pharmaceutical” producing no records for manufacture of synthesized pharmaceutical products operations. There were no BACT-PSD records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “polymer” producing 12 records for Manufacture of pneumatic rubber tires operations. The manufacturing operations are subject BACT-PSD control technology using a thermal oxidizer or flare with control efficiencies of between 98% to 99 % efficiency. Existing units for polymer would be subject to these tighter standards. None of the processes provided in the BACT-PSD records indicate emerging BACT technology is appropriate to apply to existing sources as RACT by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “surface” and contains “active” producing no record for surface active agents’ operations. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP. DEP’s currently has no Surface Active Agent manufacturing facilities in Pennsylvania and will need to evaluate using BACT as RACT for any new facility installed.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “chemical” producing 25 records for Synthetic Organic Chemical Manufacturing operations. There were no BACT-PSD Records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP. However, the BACT level of control indicated by a recent updated determination is 98 % control efficiency for the incinerator. This is DEP’s current SOCMI air oxidation, reactors and distillation processes control efficiency submitted in its recent SOCMI rule to EPA for this RACT CTG Source category.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “air oxidizer” producing no records for Synthetic Organic Chemical Manufacturing operations. There were no BACT-PSD records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “air oxidization” producing 16 records for Synthetic Organic Chemical Manufacturing operations. There were no BACT-PSD records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “distillation” producing 14 records for Synthetic Organic Chemical Manufacturing operations. There were no BACT-PSD records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP. However, the BACT level of control indicated by recent updated determinations is 98%- 99% control efficiency for the incinerators. This is DEP’s current SOCMI air oxidation, reactors and distillation processes control efficiency submitted in its recent SOCMI rule to EPA for this RACT CTG Source category.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “reactors” producing 88 records for Synthetic Organic Chemical Manufacturing operations. There were no BACT-PSD records that provided any indication of emerging BACT technology that should be considered for RACT evaluation by DEP. The units must be under construction as there were no control efficiency details associated with the processes.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “adhesive” producing 13 records for adhesives operations related to the control of emissions from the use or application of adhesives, sealants, primers and solvents. There were no BACT-PSD records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “sealant” producing no records for sealants operations related to the control of emissions from the use or application of adhesives, sealants, primers and solvents. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “solvent” producing 25 records for solvent operations related to the control of emissions from the use or application of adhesives, sealants, primers and solvents. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “solvent” producing 9 records for primer operations related to the control of emissions from the use or application of adhesives, sealants, primers and solvents. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “wood” producing 38 records for wood furniture manufacturing operations. Most of the 38 records returned covered wood fired boiler operations and processes. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched contains “furniture” producing 2 records for wood furniture manufacturing operations. The two new processes were not installed, and the record had no actual control measures reported There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCESS\_NAME” and searched various terms and partial terms associated with Oil and gas process facilities related to EPA’s October 2016 Control Techniques Guidelines for the Oil and Natural Gas Industry. The various searches did not yield any success at returning relevant records. DEP recently submitted its oil and gas rules to address the source category covered by EPA’s 2016 Oil and Gas CTG. There were no BACT-PSD Records that provide any indication of emerging BACT technology that should be considered for RACT evaluation by DEP.

DEP looked at the BACT-PSD “PROCCESS\_TYPE” for 64.000 SYNTHETIC ORGANIC CHEMICAL MANUFACTURING INDUSTRY (SOCMI) and searched greater than or equal to “64.001 ” and less than or equal “64.006” to producing 88 records for Synthetic Organic Chemical Manufacturing operations. Only 8 pre-2013 records were identified. The results indicated the process applied control technology in and after 2016 which would impact new units or processes rather than existing units. The BACT-PSD records did not provide emerging BACT technology that should be considered for RACT evaluation by DEP for existing processes.

DEP looked at the BACT-PSD “PROCCESS\_TYPE” for 64.000 SYNTHETIC ORGANIC CHEMICAL MANUFACTURING INDUSTRY (SOCMI) and searched “64.999” producing 461 records for Synthetic Organic Chemical Manufacturing operations. There were 20 records returned that were pre-2013. A review of those records did not provide any indication that there is any technology that could be evaluated as RACT. The remaining results indicated the process applied control technology in and after 2016 which would impact new units or processes rather than existing units. The BACT-PSD records did not provide emerging BACT technology that should be considered for RACT evaluation by DEP for existing processes.

DEP looked at the BACT-PSD “PROCCESS\_TYPE” for 69.000 OTHER CHEMICAL MANUFACTURING (except 61, 62, 63, 64 & 65) and searched greater than or equal to “69.001” and less than or equal “69.999” producing 35 records for Other Chemical Manufacturing operations. This does process type does not match up with any of DEP’s VOC CTG RACT categories but was looked at in case there was any overlapping applicability. Only 4 records were returned for dates prior to 2012. The remaining records were for processes updated after 2015. The limited number of processes impacted in 2015 and later would indicate the technology was applied to new units or processes rather than existing units. The BACT-PSD records did not provide an emerging technology that should be considered for RACT evaluation by DEP for any existing processes.

DEP looked at the BACT-PSD “PROCCESS\_TYPE” for 65.000 SYNTHETIC FIBERS PRODUCTION and searched greater than or equal to “65.001” and less than or equal “65.999” producing 11 records for Synthetic Fibers Production operations. This process type does not match up with any of DEP’s VOC CTG RACT categories but was looked at in case there was any overlapping applicability. Records returned were last updated in October of 2012 and later. The results indicated the process applied BACT control technology at the end of 2012. The limited number of processes impacted would indicate it was a technology applied to new units or processes rather than existing units in 2012. The BACT-PSD records did not provide emerging technology that should be considered for RACT evaluation by DEP for any existing processes.

DEP looked at the BACT-PSD “PROCCESS\_TYPE” for 63.000 POLYMER AND RESIN PRODUCTION and searched greater than or equal to “65.001” and less than or equal “65.999” producing 121 records for Polymer and Resin Production operations. This process type does not match up with any of DEP’s VOC CTG RACT categories but was looked at in case there was any overlapping applicability. There were 13 records identified as last updated prior to 2012. The remaining records returned were last updated in and after 2016. The BACT technology provided in the record for two processes report a thermal oxidizer efficiency of 95%. This is consistent and supports DEP’s permit language for its existing oxidization process of 95% at Geo Specialties Chemical submitted as RACT for the 2008 NAAQS. The RBLC database records of 95% efficiency is less than the 98% efficiency required as RACT for any other existing unit in Pennsylvania. The BACT-PSD records support DEP’s 98% control efficiency in its new SOCMI rule. The BACT-PSD records do not provide emerging technology that should be considered for additional RACT evaluation by DEP for any of its existing processes.

**50.000 PETROLEUM/NATURAL GAS PRODUCTION AND REFINING**

DEP looked at the BACT-PSD “PROCCESS\_TYPE” for 50.000 PETROLEUM/NATURAL GAS PRODUCTION AND REFINING and searched greater than or equal to “50.001” and less than or equal “50.999” producing 259 records for Petroleum/Natural Gas Production and Refining operations. DEP has updated its Natural Gas and Petroleum Processing requirements to meet EPA’s 2016 Natural Gas and Petroleum Processing CTG and has submitted its rule for SIP approval as RACT to EPA. To better evaluate the various operations and processes DEP filtered the results under the 50.000 PETROLEUM/NATURAL GAS PRODUCTION AND REFINING category, further. The first filter was Process type 50.001 - Oil and Gas Field Services. This produced 6 records. There is no indication that the technology provided in the records should be considered for further RACT evaluation. The next process type filtered was 50.002 - Natural Gas/Gasoline Processing Plants. The filter produced 36 records. The processes and control measures in the records reviewed were last updated in and after 2016. Further RACT evaluations were determined not to not necessary as DEP submitted its updated RACT rule to EPA in December of 2022 to address EPA’s 2016 Natural gas processing CTG. The next set of records reviewed were those under the category for 50.003 Petroleum Refining Conversion Processes (cracking, CO boilers, reforming, alkylation, polymerization, isomerization, coking) operations. The filter produced 29 records. The BACT-PSD records do not provide emerging technology that should be considered for additional RACT evaluation by DEP for any of its existing processes. The next set of records reviewed were those under the category for 50.004 Petroleum Refining Feedstock (blending, loading and unloading) operations. The filter produced 36 records. The BACT-PSD records do not provide emerging technology that should be considered for additional RACT evaluation by DEP for any of its existing processes. The next set of records reviewed were those under the category for 50.007 Petroleum Refining Equipment Leaks/Fugitive Emissions. The filter produced 59 records. There were seven records that were last updated before 2012 while the remaining records were last updated in or after 2016. The BACT-PSD control methods described were predominantly LDAR and MACT. LDAR is a Best Practices requirement and is required under Pennsylvania’s new Natural Gas Processing rule. The BACT-PSD records do not provide emerging RACT technology that should be considered for additional RACT evaluation by DEP for any of its existing processes. The next set of records reviewed were those under the category for 50.005 Petroleum Refining Separation Processes (distillation and light ends recovery). The filter produced 5 records. The records were all last updated in or after 2016. The BACT-PSD records do not provide emerging RACT technology that should be considered for additional RACT evaluation by DEP for any of its existing processes. The next set of records reviewed were those under the category for 50.008 Petroleum Refining Flares and Incinerators (except acid gas/sulfur recovery unit incinerators - 50.006). The filter produced 22 records. The BACT-PSD records do not provide emerging RACT technology that should be considered for additional RACT evaluation by DEP for any of its existing processes. The next set of records reviewed were those under the category for 50.006 Petroleum Refining Treating Processes (hydrodesulfurization, hydrotreating, chemical sweetening, acid gas removal, deasphalting, sulfur recovery units, acid gas/sulfur recovery unit incinerators). The filter produced 13 records. The BACT-PSD records do not provide emerging RACT technology that should be considered for additional RACT evaluation by DEP for any of its existing processes. The next set of records reviewed were those under the category for 50.999 Other Petroleum/Natural Gas Production & Refining Sources (except 50.001-010 & 42.000). The filter produced 40 records. The BACT-PSD records do not provide an indication emerging RACT technology that should be considered for additional RACT evaluation by DEP for any of its existing processes.

**49.000** **ORGANIC EVAPORATIVE LOSSES (except all 41.000 & 42.000 process codes)**

DEP looked at the BACT-PSD 49.000 ORGANIC EVAPORATIVE LOSSES (except all 41.000 & 42.000 process codes) and searched greater than or equal to “49.001 ” and less than or equal “49.999” to produce 27 records Organic Evaporative Losses operations. Only 4 pre-2013 records were identified. The results indicated the process applied control technology in and after 2016 which would impact new units or processes rather than existing units. Many of the processes also used control devices like incinerators. The BACT-PSD records did not provide emerging BACT technology that should be considered for RACT evaluation by DEP for existing processes.

**42.000** **LIQUID MARKETING (PETROLEUM PRODUCTS, GASOLINE, VOL)**

DEP looked at the BACT-PSD 42.000 LIQUID MARKETING (PETROLEUM PRODUCTS, GASOLINE, VOL) and searched greater than or equal to “42.001 ” and less than or equal “42.999” to produce 337 records for Liquid Marketing (Petroleum Products, Gasoline, Vol). The results show for pre-2013 the technology applied was consistently internal floating roofs. This is technology employed on existing PA sources. After 2012 other types of newer BACT control technologies begin to be applied to new tanks and processes. Since the BACT is being applied to new units, BACT-PSD is not evaluated by DEP for existing processes as RACT.

**41.000** **SURFACE COATING/PRINTING/GRAPHIC ARTS**

DEP looked at the BACT-PSD 41.000 SURFACE COATING/PRINTING/GRAPHIC ARTS and searched greater than or equal to “41.001” and less than or equal “41.999” to produce 217 records for Surface Coating/Printing/Graphic Arts. DEP will focus on the 30 records that were last updated prior to 2013. The results show for pre-2013 the technology. Of the 32 records reviewed control measures include 13 thermal oxidizers from 76% to 98 % efficient, 7 VOC adjustments to coating or coating limits, 3 work/good practice standard coating, 1 paint arrestor, 3 unlisted, 1 powder coating, 2 proper spraying techniques and use of high solids, 1 washer inherent design, and 1 compliance with 40 CFR PART 63. This mix of controls does not indicate new RACT technology for any coatings or graphic arts processes. The newer BACT requirements for controls of VOC’s for updates to control technology occurring after 2012 are a mix of RTO’s good work practices use of low VOC materials, as well. The BACT-PSD records do not provide an indication emerging RACT technology that should be considered for additional RACT evaluation by DEP for any of its existing processes.

**SUMMARY OF RACT ANALYSIS**

The EPA defines Reasonably Available Control Technology (RACT) as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available and economically feasible. DEP downloaded the RBLC Records from the RBLC Clearinghouse Data base and sorted them buy VOC and then by each Control Technology Category. The RACT search returned 11records that were reviewed for RACT technology that might indicate DEP needs review its RACT rules. The search and evaluation of the RACT control technology category did not provide any indication of existing or emerging RACT technology that should be considered for RACT evaluation by DEP.

**SUMMARY OF LAER ANALYSIS**

LAER is Lowest Achievable Best Emission Rate. It is the most stringent emission reduction requirement and is required on major new or modified sources in nonattainment areas. Like BACT DEP staff reviewed it to see if there were any technologies were available and appropriate to be included in presumptive RACT in Pennsylvania. The search under the LAER technology category returned 523 LAER records. LAER being the most stringent technology. DEP looked at older LAER records for potential emerging RACT. LAER sems to rely on incineration of VOC. The LAER control technology did not provide results that showed it should be considered for existing or emerging RACT technology. LAER technology in the RBLC data base was not considered for RACT evaluation by DEP.

**SUMMARY OF BACT ANALALYSIS**

BACT is Best Available Control Technology. It is more stringent than RACT in that the emission limitation is based on the maximum degree of reduction, Though it is a more stringent standard DEP reviewed it to see if any technologies were available and appropriate to be included in presumptive RACT in Pennsylvania. The BACT search returned more than 4000 records that DEP reviewed by searching for keywords associated with each of the Department’s CTG VOC based rules. DEP looked at the records returned by keywords to determine if there was BACT technology that might indicate DEP needs review its RACT rules. As this was the largest technology-based category DEP also reviewed the data based on “Process ID.” The Process ID numbers can be found at <https://www.epa.gov/sites/default/files/2020-07/documents/rblc_user_manual_vol_3-c_final_ptc_listaccessible.pdf>. It is part of the RBLC user manual found at EPA’s website [User's Manual for the RACT/BACT/LAER Clearinghouse (RBLC) Web | US EPA](https://www.epa.gov/catc/users-manual-ractbactlaer-clearinghouse-rblc-web). The review of each category under BACT was to evaluate if it the BACT technology should be evaluated as a new RACT control technology. None of the categories covered by existing DEP rules indicated BACT technology should be considered for RACT evaluation by DEP.

**Conclusion**

After reviewing the RBLC Clearinghouse there were a very limited number of RACT entries outside of Pennsylvania. Control methods used in other jurisdictions are consistent with those used in Pennsylvania. BACT and LAER requirements were generally more stringent and in other cases consistent to Pennsylvania RACT requirements. BACT and LAER technologies are employed for new units. The stringency of controls for new units would not be able to be achieved by existing sources because older units were not built to achieve the BACT and LAER levels of control. Based upon the review of the control measures identified and reviewed in the RRBLC database DEP contends its current VOC regulations for EPA CTG source categories continue to represent RACT.

1. US Environmental Protection Agency. (n.d.). RACT/BACT/LAER Clearinghouse (RBLC) Basic Information. https://www.epa.gov/catc/ractbactlaer-clearinghouse-rblc-basic-information [↑](#footnote-ref-1)
2. ### Section 169 (3) Clean Air Act 42 U.S.C. §7479 (3)

   [↑](#footnote-ref-2)
3. Congressional Research Service. (2010, November 22). *EPA’s BACT Guidance for Greenhouse Gases from Stationary Sources*. Congressional Research Service . https://crsreports.congress.gov/ [↑](#footnote-ref-3)
4. ### Section 171(3) Clean Air Act 42 U.S.C. §7501(3)

   [↑](#footnote-ref-4)