Public Notice
Ohio Environmental Protection Agency
Draft State Implementation Plan
Source-Specific VOC Reasonably Available Control Technology (RACT)
for Alterra Energy LLC (Facility ID 1677011258)

Summit County

Notice is hereby given that the Director of the Ohio Environmental Protection Agency, (Ohio EPA) is submitting to the United States Environmental Protection Agency (U.S. EPA) Reasonably Available Control Technology (RACT) for Alterra Energy LLC (Facility ID 1677011258) for approval into Ohio's state implementation plan (SIP) for the 2015 ozone National Ambient Air Quality Standard (NAAQS).

On March 17, 2025, Ohio submitted a revision to Ohio's SIP to address RACT requirements for the 2015 8-hour ozone NAAQS. As noted in this submittal, OAC rule 3745-21-11(B) requires facilities that have the potential to emit of fifty tons per year or more, but less than one hundred tons per year of volatile organic compounds (VOC) and are located in nonattainment counties to submit a RACT study for sources not controlled by Ohio's CTG regulations in OAC Chapter 3745-21 or by categorical non-CTG RACT in OAC rules 3745-21-12, 3745-21-14, 3745-21-16, 3745-21-21 and 3745-21-25.

Ohio is now submitting source-specific VOC RACT for Alterra Energy LLC (Facility ID 1677011258) for approval into Ohio's SIP. This facility is located in the Cleveland 2015 ozone maintenance area and has no prior existing source-specific RACT established in OAC rule 3745-21-09.

The RACT Study was submitted per OAC rule 3745-21-11(B). Ohio has determined that the RACT study is sufficient to justify employment of an enclosed vapor combustion unit with a control efficiency of not less than 98%, by weight, for VOC, proposed by the facility to act as RACT under the 2015 ozone standard.

Ohio EPA is now requesting approval of the proposed RACT for Alterra Energy LLC into Ohio's SIP.

Ohio EPA is seeking public comment to satisfy U.S. EPA requirements for public involvement in SIP related activities in accordance with 40 CFR 51.102.

The public comment period will run until September 18, 2026. Written comments should be submitted at: https://ohioepa.commentinput.com - Search by entering the Facility Name (Alterra) in the "Search Projects" search box.

A public hearing on this action may be requested by contacting Kathryn Jobe at 614-728-0671 or kathryn.jobe@epa.ohio.gov no later than 30 days from the draft public notice. If a public hearing is requested, a new notification will be published to identify the time and location of the public hearing. The public hearing will be held at least 30 days after the date of the new notification.

All interested persons are entitled to comment on these changes. All comments submitted to the above address by the close of business September 18, 2026 will be considered by Ohio EPA prior to final action on this action. Written statements submitted after this time period may be considered as time and circumstances permit but will not be part of the official record.

Questions or comments about this document should be directed to Kathryn Jobe at 614-728-0671 or kathryn.jobe@epa.ohio.gov.

Ohio Environmental Protection Agency

EPA.Ohio.gov

Mike DeWine, *Governor* **Jon Husted,** *Lt. Governor* **Anne M. Vogel,** *Director*

<Date>

Ms. Anne Vogel
Regional Administrator
U.S. EPA, Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

Re: Revision to Ohio's Reasonably Available Control Technology (RACT) State Implementation Plan for the 2015 Ozone National Ambient Air Quality Standards – Source-Specific VOC RACT for Alterra Energy LLC (Facility ID 1677011258)

Dear Administrator Vogel:

On March 17, 2025, Ohio submitted a revision to Ohio's State Implementation Plan (SIP) to address Reasonably Available Control Technology (RACT) requirements for the 2015 8-hour ozone National Ambient Air Quality Standards (NAAQS) for areas classified as serious. As noted in this submittal, Ohio EPA adopted requirements in Ohio Administrative Code (OAC) rule 3745-21-11 for facilities in the nonattainment areas that emit fifty tons per year or more, but less than one hundred tons per year of volatile organic compounds (VOC) from sources not controlled by Ohio's CTG regulations in OAC Chapter 3745-21 or by categorical non-CTG RACT in OAC rules 3745-21-12, 3745-21-14, 3745-21-16, 3745-21-21 and 3745-21-25 to submit an updated RACT study within one year of the effective date of the rule. Upon review of the RACT study, Ohio EPA evaluated if the RACT proposed by the facility is appropriate to satisfy RACT requirements under the 2015 ozone standard.

Ohio is now submitting source-specific RACT for Alterra Energy LLC (Facility ID 1677011258) for approval into Ohio's SIP. This facility is located in the Cleveland 2015 ozone maintenance area and has no prior existing source-specific RACT established in OAC rule 3745-21-09.

The ***VOC*** RACT Study was submitted per OAC rule 3745-21-11. Ohio has determined that the RACT study is sufficient to justify employment of an enclosed vapor combustion unit with a control efficiency of not less than 98%, by weight, for VOC, proposed by the facility to act as RACT under the 2015 ozone standard. The RACT study is provided in Appendix A, and Director Final Findings and Orders (DFFO) that incorporated RACT is provided as Appendix B.

Ohio held a public comment period on Ohio's RACT determination from *August 17, 2026* to *September 18, 2026*. Appendix C contains the public notice. ***[Ohio's response to comments received***

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during the public comment period is in Appendix D|No comments were received during the public comment period].

This SIP does not include the relaxation of any existing requirements and therefore will not interfere with the attainment or maintenance of the NAAQS in accordance with section 110(l) of the CAA.

Ohio EPA is now requesting approval of the proposed RACT for Alterra Energy LLC into Ohio's SIP.

Ohio EPA is submitting this SIP via U.S. EPA's State Planning Electronic Collaboration System (SPeCS). If you have questions, please contact Jennifer Van Vlerah in our Division of Air Pollution Control at (614) 644-3696.

Sincerely,

John Logue
Director

Cc: Bob Hodanbosi, Chief, Division of Air Pollution Control, Ohio EPA

Enclosures

BEFORE THE

OHIO ENVIRONMENTAL PROTECTION AGENCY

In the Matter of:

Alterra Energy, LLC	:	**<u>Director's Final Findings</u>**
1200 East Waterloo Road	:	**<u>and Orders</u>**
Akron, Ohio, 44306	:	
	:	

PREAMBLE

It is agreed by the parties hereto as follows:

I. JURISDICTION

These Director's Final Findings and Orders ("Orders") are issued to Alterra Energy, LLC ("Respondent") pursuant to the authority vested in the Director of the Ohio Environmental Protection Agency ("Ohio EPA") under Ohio Revised Code ("ORC") §§ 3704.03 and 3745.01.

II. PARTIES BOUND

These Orders shall apply to and be binding upon Respondent and successors in interest liable under Ohio law. No change in ownership of Respondent or of the facilities (as hereinafter defined) shall in any way alter each Respondent's obligations under these Orders.

III. DEFINITIONS

Unless otherwise stated, all terms used in these Orders shall have the same meaning as defined in ORC Chapter 3704 and the rules promulgated thereunder.

IV. FINDINGS

The Director of Ohio EPA makes the following findings:

1. Respondent owns and operates the Alterra Energy, LLC facility located at 1200 East Waterloo Road, Akron, Summit County, Ohio ("Facility"). The Facility employs an indirect fired pyrolysis kiln to convert hard-to-recycle plastics into raw petrochemical feedstock and is identified by Ohio EPA facility ID 1677011258. Emissions unit ("EU") P001 is the subject of these Orders and is subject to Ohio EPA rules and regulations.

2. EU P001 is a plastics recycling unit.

3. Effective April 1, 2025, Ohio EPA amended Ohio Administrative Code

("OAC") Rule 3745-21-11 which requires establishing Reasonably Available Control Technology ("RACT") requirements, in the form of emissions requirements for volatile organic compounds ("VOC").

4. OAC Rule 3745-21-11(A)(2) requires any source located in Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, or Summit county that has the potential to emit, fifty tons or more of VOC emissions from sources which are not controlled by Ohio's CTG regulations in this chapter or by categorical non-CTG RACT contained in rules 3745-21-12, 3745-21-14, 3745-21-16, 3745-21-21 and 3745-21-25 of the Administrative Code to submit a RACT study within one year of the effective date of the rule (i.e., by April 1, 2026).

5. The Respondent submitted a RACT study to Ohio EPA on March 30, 2026 and submitted a revision on April 14, 2026.

6. ORC § 3704.03(R) authorizes the Director of Ohio EPA to "issue, modify, or revoke orders requiring abatement of or prohibiting emissions that violate applicable emission standards or other requirements of this chapter and rules adopted thereunder, or requiring emission control devices or measures in order to comply with applicable emission standards or other requirements of this chapter and rules adopted thereunder."

7. The Director has given consideration to, and based his determination on, evidence relating to the technical feasibility and economic reasonableness of complying with the following Orders and their relation to benefits to the people of the State to be derived from such compliance.

V. <u>ORDERS</u>

The Director hereby issues the following Orders:

1. By no later than ninety days after the effective date of these Orders, Respondent shall operate an enclosed vapor recovery unit (VCU) with a control efficiency of not less than ninety eight percent (98%), by weight, for control of VOC emissions from EU P001.

2. Within one year of the effective date of these Orders, Respondent shall perform emissions testing to demonstrate compliance with the 98%, by weight control efficiency.

3. All captured VOC emissions and process gas generated by EPU P001, excluding VOC emissions from the process heater, shall be vented to the enclosed VCU. The process gas produced shall not be vented directly into the atmosphere except in the event of a malfunction in accordance with OAC Rule 3745-15-06(B).

4. Within sixty days of the effective date of these Orders, Respondent shall

properly install, operate, and maintain a device to continuously monitor the pilot flame when EU P001 is in operation. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

5. A pilot flame shall be maintained at all times in the VCU's pilot light burner. The presence of the pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame.

6. Within sixty days of the effective date of these Orders, Respondent shall submit a detailed monitoring and recordkeeping plan to Ohio EPA for approval. The plan shall include detailed flare monitoring parameters and calculation methodologies in order to determine both the flare exit velocity and net heating value of the stack gas. In addition the record keeping plan shall include all periods of time during which there was no pilot flame or the flare was inoperable.

VI. TERMINATION

These Orders shall terminate after both (i) U.S. EPA approves Ohio's this determination of RACT in Ohio's SIP, and (ii) the emissions limitations and associated monitoring, reporting, and recordkeeping are subsequently incorporated into Respondent's permit-to-install and operate, permit-to-install, and/or Title V operating permit.

VII. OTHER CLAIMS

Nothing in these Orders shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership or corporation, not a party to these Orders, for any liability arising from, or related to, operations by Respondent.

VIII. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to these Orders shall be undertaken in accordance with the requirements of all applicable local, state and federal laws and regulations. These Orders do not waive or compromise the applicability and enforcement of any other statutes or regulations applicable to the Respondent.

IX. MODIFICATIONS

These Orders may be modified by agreement of the parties hereto. Modifications shall be in writing and shall be effective on the date entered in the journal of the Director of Ohio EPA. Modifications shall be in writing and shall be effective for the State on the date entered in the journal of the Director of Ohio EPA, and will be submitted to U.S. EPA for incorporation into the SIP.

X. NOTICE

All documents required to be submitted by Respondent pursuant to these Orders shall be submitted through the Ohio EPA's eBusiness Center: Air Services web service and emailed to Jennifer Van Vlerah, Ohio EPA, Division of Air Pollution Control, at Jennifer.VanVlerah@epa.ohio.gov or to such persons and addresses as may hereafter be otherwise specified in writing by Ohio EPA.

XI. RESERVATION OF RIGHTS

Ohio EPA and Respondent each reserve all rights, privileges and causes of action, except as specifically waived in Section XII of these Orders.

XII. WAIVER

Without admission of fact, violation or liability, Respondent consents to the issuance of these Orders and agrees to comply with these Orders.

Respondent hereby waive the right to appeal the issuance, terms and conditions, and service of these Orders and Respondent hereby waives any and all rights Respondent may have to seek administrative or judicial review of these Orders either in law or equity.

Notwithstanding the preceding, Ohio EPA and Respondent agree that if these Orders are appealed by any other party to the Environmental Review Appeals Commission, or any court, Respondent retains the right to intervene and participate in such appeal. In such an event, Respondent shall continue to comply with these Orders notwithstanding such appeal and intervention unless these Orders are stayed, vacated or modified.

XIII. EFFECTIVE DATE

The effective date of these Orders is the date these Orders are entered into the Ohio EPA Director's journal.

XIV. SIGNATORY AUTHORITY

Each undersigned representative of a party to these Orders certifies that he or she is fully authorized to enter into these Orders and to legally bind such party to these Orders.

ORDERED AND AGREED:

Ohio Environmental Protection Agency

______________________________ ______________________________
John Logue   Date
Director

AGREED:

Alterra Energy, LLC

______________________________ ______________________________
Signature   Date

____
Printed or Typed Name and Title

VOC RACT Engineering Study

Akron Regional Air Quality Management District

March 24, 2026

Prepared for:

Alterra Energy, LLC
1200 E. Waterloo Rd.
Akron, OH 44306

Public Copy – Redacted

Prepared by:

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Attachments

1. Introduction

1.1 Background

Alterra Energy LLC (Alterra) owns and operates a plastics recycling facility that converts hard-to-recycle plastics into raw petrochemical feedstock (pyrolysis oil). The facility is located at 1200 East Waterloo Road, in Akron, Summit County, Ohio. Alterra currently operates under permits-to-install and operate (PTIO) P0122408 for the plastics recycling line (Plastics Recycling Unit 1, P001) and P0137038 for loading operations (Loading Operations Line 1 and 2, J001 and J002). PTIO P0122408 expired on October 16, 2022. Alterra submitted a PTIO renewal application A0072225 on October 15, 2022, with application amendments submitted in 2024. Because a complete renewal application was submitted prior to the expiration date of PTIO P0122408, Alterra is authorized to continue to operate P001 in accordance with the terms and conditions of the expired permit until final action is taken by the Ohio Environmental Protection Agency (EPA) on the renewal application.

Summit County is one of seven Ohio counties that comprise the Cleveland nonattainment area for the 2015 ozone standard. Based on certified ozone monitoring data for 2021, 2022, and 2023, this area failed to meet the ozone standard by the August 3, 2024, attainment date and was reclassified to serious nonattainment by U.S. EPA in accordance with the Clean Air Act (CAA) effective January 16, 2025. Reclassification to serious nonattainment has triggered additional Clean Air Act (CAA) requirements for major stationary sources located in the serious nonattainment area including evaluation and potential implementation of Reasonably Available Control Technology (RACT).

As a result of the reclassification to serious nonattainment, the Ohio EPA finalized revisions to Ohio Administrative Code (OAC) Chapter 3745-21, "Carbon Monoxide, Ozone, Hydrocarbon Air Quality Standards, and Related Emission Requirements" on April 1, 2025, as part of the RACT State Implementation Plan (SIP). These revisions included, among other changes, lowering the RACT threshold in Rule 3745-21-11 from 100 tons/year potential to emit of volatile organic compounds (VOC) to 50 tons/year for VOC emissions from sources located in one of seven Ohio counties that comprise the Cleveland nonattainment area.

While the definition of potential to emit in Rule 3745-21-01 allows for the inclusion of federally enforceable operational limits, including air pollution control equipment, Alterra was notified by Ohio EPA that U.S. EPA's position on the potential to emit for RACT studies is that sources can only use controlled emissions provided they also have federally enforceable restrictions on operations of the source (i.e., limit on production, capacity, or hours of operation) and not solely on an emissions limit. PTIO P0122408 does not include a federally enforceable limit on the operations of the source; therefore, Alterra is subject to the RACT study requirements in Rule 3745-21-11(B) as their uncontrolled potential to emit VOCs is greater than 50 tons/year.

1.2 RACT Study Requirements

Under Rule 3745-21-11, a full RACT engineering study must include the following information:

- General information on the owner/operator, contact information, and standard industrial classification code and source classification code.

- General information for each affected source including company identification and Ohio EPA emissions unit identification number, source description, installation date, normal operating schedule, annual production rates, average and maximum daily production rates, and type of control equipment employed and the date installed.
- A plot plan which shows the general layout of the facility and the affected sources.
- Emissions data for each affected source including average daily VOC emissions, maximum daily VOC emissions, annual VOC emissions, general composition of the VOC emissions, documentation of the efficiency of the existing control equipment, and documentation of any emissions testing which has been performed.
- A detailed discussion of the technical feasibility of employing each of the following types of control measures for each affected source (or combination of sources) including carbon adsorber, thermal incinerator, catalytic incinerator , condenser, scrubber, and any other such RACT alternatives that may be applicable to an affected source.
- For each type of control measure that is determined to be technically feasible, an estimate of the control efficiency that can be achieved.
- A detailed discussion of the technical feasibility of modifying or replacing the source in order to minimize or eliminate the VOC emissions.
- A quantification of the VOC emission reductions that could be achieved, at the production rates for the calendar year, by each control option that is determined to be technically feasible.
- For each control option that is determined to be technically feasible, an estimate of the capital cost, annualized cost (including capital and operating costs), and the cost-effectiveness (annual dollars per ton of VOC removed annually).
- A comparison and discussion of the advantages and disadvantages of control options that are determined to be technically feasible.
- A recommended definition of RACT for the source, including one or more of the following: enforceable production limitations, emissions limitations, control efficiencies, and operating requirements.
- An expeditious schedule for implementing the recommended definition of RACT, including milestones for awarding contracts, initiating construction, completing construction, and performing emissions testing, if necessary, to demonstrate compliance with the approved definition of RACT.
- Clean and detailed documentation of all calculations of the VOC emissions, including all assumptions made.
- Capital and operating costs and cost-effectiveness estimates calculated in a manner consistent with the most recent edition of the "United States environmental protection agency air pollution control cost manual."

2. Facility Information

The main operating process at the Alterra facility includes a single plastics recycling line (Plastics Recycling Unit 1, P001) that uses an [redacted] to convert the hard-to-recycle plastics, that otherwise would be disposed of in landfills or incinerators, into raw petrochemical feedstock (pyrolysis oil). Pyrolysis is a process that involves the thermal decomposition of organic materials in the absence of oxygen. The petrochemical feedstock is supplied to other chemical manufacturers for use as a raw material to create a variety of products, including brand new plastics, waxes, and other petrochemical products. Process equipment that supports the plastics recycling line includes an [redacted]. Non-condensable gas from the process is vented to an enclosed vapor combustion unit (VCU) for control of volatile organic compounds (VOC) and organic hazardous air pollutants (HAPs). The pyrolysis oil is transferred to one of four 10,000-gallon storage tanks that temporarily hold the product until the oil is loaded to tank trucks via one of two loading lines (J001 and J002).

This facility also includes the following permit exempt sources: paved roadways (F001), raw material unloading (F002), raw material feed line 1 (F005), char handling systems line 1 and line 2 (F009 and F010), ground calcium oxide hopper (F011), ground calcium oxide silo 1 (F012), and four storage tanks (T001 – T004). There also is an emergency electric generator (P004) at the facility that is covered by a permit by rule. Alterra's uncontrolled potential to emit for nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO_2), and particulate emissions (PE) and the controlled potential to emit for VOC, any individual HAP, and combined HAPs are less than the major source threshold for Title V permitting.

2.1 General Facility Information

Table 1 provides the general facility information required in Rule 3745-21-11(B)(1) through (4).

Table 1: General Facility Information

Information Requirement	Facility Information
Facility Name	Alterra Energy, LLC
Ohio EPA Facility Identification Number	1677011258
Facility Address	1200 East Waterloo Rd, Akron OH 44306
Alterra RACT Study Contact Person	Gabrielle Rees, EHS Manager 1200 East Waterloo Rd, Akron OH 44306 [redacted]
Responsible Official	Jeremy DeBenedictis, COO 1200 East Waterloo Rd, Akron OH 44306 [redacted]
Standard Industrial Code (SIC)	2899 - Chemicals and Chemical Preparations, Not Elsewhere Classified
North American Industry Classification System (NAICS)	325998 – All Other Miscellaneous Chemical Product and Preparation Manufacturing

Note: Source classification code numbers are provided in Table 2 for the applicable affected source.

2.2 RACT Affected Source Determination

RACT applicability and analysis applies to air contaminant sources, as defined in OAC 3745-15-05(A)(3), that are subject to Ohio EPA air regulations. As such, Alterra must complete a RACT study in accordance with OAC rule 3745-21-11(B) that includes all air contaminant sources subject to Ohio EPA regulations that are not controlled by Ohio's Control Technology Guideline (CTG) regulations in Chapter 21.

Table 2 summarizes the air contaminant sources (i.e., emission units [EU]) installed at the facility and identifies their current permitting status, exemption status, if applicable, and VOC potential to emit.

Table 2: Facility-Wide Summary of Permitting Status and VOC PTE for Each Source

EU ID	EU Description	Permit Status	Exemption Status	VOC PTE (ton/year)
J001	Loading Operations Line 1	Active PTIO	NA	1.94 (combined)
J002	Loading Operations Line 2	Active PTIO	NA	
P001	Plastics Recycling Unit 1	Extended PTIO	NA	34.5
B002	10.4 MMBtu/hour natural gas-fueled process heater	None	NA	0.25
F001	Paved Roadways	None	De minimis	0
F002	Raw Material Unloading	None	De minimis	0
F005	Raw Material Feed Line 1	None	De minimis	0
F009	Char Handling System Line 1	None	De minimis	0
F010	Char Handling System Line 2	None	De minimis	0
F011	Ground Calcium Oxide Hopper 1	None	De minimis	0
F012	Ground Calcium Oxide Silo 1	None	De minimis	0
T001	10,000-gallon Pyrolysis Oil Tank 1 (TK-43-01) equipped with submerged fill pipe	None	Permit Exempt	Negligible
T002	10,000-gallon Pyrolysis Oil Tank 2 (TK-43-02) equipped with submerged fill pipe	None	Permit Exempt	Negligible
T003	10,000-gallon Pyrolysis Oil Tank 3 (TK-93-01) equipped with submerged fill pipe	None	Permit Exempt	Negligible
T004	10,000-gallon Pyrolysis Oil Tank 4 (TK-93-02) equipped with submerged fill pipe	None	Permit Exempt	Negligible
P004	500 KW (670.5 HP) Diesel-fueled Emergency Generator	Permit-By-Rule	NA	0.4

2.2.1 Exempt and Excluded Emissions Units

Under Rule 3745-15-05(B), air contaminant sources that have a *de minimis* level of emissions are exempt from Ohio's air regulations, and therefore not subject to RACT requirements in OAC rule 3745-21-11. Additionally, current Ohio EPA guidance is that emissions units that are insignificant activities, *de minimis*, or permanently exempt can be excluded from a RACT Study. Insignificant activities are defined in OAC 3745-77-1 as any of the following:

- All source categories excluded from the requirements to obtain installation permits or operating permits under section 3704.011 of the Revised Code or Chapter 3745-15 or 3745-31 of the Administrative Code.
- All source categories specifically exempted under 40 CFR Part 70.
- Any emissions unit with uncontrolled potential emissions of five tons or less per year of any regulated air pollutant other than a hazardous air pollutant and not more than twenty percent of an applicable major source threshold under the act.
- Any research and development source that is by itself not a major source.

Based on this guidance, the EUs identified in Table 1 as *de minimis* or permit exempt are not subject to RACT study requirements and are not addressed further herein. (The four 10,000-gallon Pyrolysis Oil Tanks are equipped with submerge fill and are permit exempt based on the permanent exemption for storage tanks in OAC rule 3745-31-03[B][1][l][iv].)

EU B002 is a 10.4 million Btu per hour (MMBtu/hr) natural gas-fired process heater [redacted]. While the maximum heat input capacity of the heater exceeds the 10 MMBtu/hr permanent permit exemption in OAC rule 3745-31-03(B)(1)(a), the uncontrolled VOC potential emissions are only 1.35 pound/day (lb/day) and 0.25 ton/year, which is below the 10 lb/day *de minimis* emissions threshold in OAC 3745-15-05(B) and meets the definition of insignificant activity (i.e., 5 ton/year or less) in OAC 3745-77-1(I). Therefore, while the emission unit does not qualify for the *de minimis* permit exemption due to NOx and CO emissions, the *de minimis* level of VOC emissions demonstrates that add-on control for VOC emissions would not be feasible.

Similarly, EU P004 is an emergency generator equipped with a 670.5 HP compression ignition engine that is authorized to operate under a permit-by-rule in OAC Rule 3745-31-30(C)(2)(a) for emergency electrical generators. This emergency generator has the potential to emit less than 0.5 ton of VOCs per year based on the 500 hours per rolling twelve-month period limit in the permit-by-rule. Additionally, the emergency generator is limited to no more than 100 hours per year of operation for maintenance checks and readiness testing and up to 50 hours per year in non-emergency situations, which must be counted as part of the 100 hours per year limit for maintenance checks and readiness testing (40 CFR 60.4211[f][2] and [3]).

Finally, the Loading Operations Lines 1 and 2 (J001 and J002) have a combined VOC allowable emission limit of 1.94 ton/year based on the maximum allowable annual loading rate of 4,516,875 gallons combined, which is a federally enforceable operational restriction of PTIO P0137038 (Condition C.1.[c][1]). The uncontrolled emission rate for the loading operations is a result of the low vapor pressure of the pyrolysis oil at the loading temperature. With uncontrolled potential VOC emissions of less than 5 ton/year, the loading operations meet the definition of an insignificant activity and are not subject to the RACT study requirements.

Based on the negligible potential VOC emissions for EUs B002, P004, J001 and J002, controlling VOC emissions using any add-on control device is not technologically and/or economically feasible. As such, Alterra will continue to implement good combustion practices for the process heater and emergency generator through routine maintenance and operating in accordance with manufacturer recommendations and maintain the maximum annual throughput of pyrolysis oil for emissions units J001 and J002, combined, to less than 4,516,875 gallons.

2.2.2 RACT Affected Sources

The only EU identified in Table 1 that is not permit exempt or excluded from the RACT study requirements as discussed above is the Plastics Recycling Unit 1 (P001). VOC emissions from the Plastics Recycling Unit include non-condensable VOCs that remain in the gas stream and are routed to the VCU for control. Fugitive VOC emissions that may occur from equipment leaks also are included in the VOC potential to emit for P001. Fugitive VOC emissions are limited to 0.55 ton/month as a rolling 12-month average.

Table 3 provides the general information on the Plastics Recycling Unit required by OAC 3745-21-11(B)(5).

Table 3: General Information for Plastics Recycling Unit 1 (P001)

Ohio EPA EU identification number	P001
Source description	Plastics Recycling Unit 1 is an advanced recycling process that converts hard-to-recycle plastics, otherwise disposed of in landfills or incinerators, into raw petrochemical feedstock that is supplied to other chemical manufacturers for use as a feedstock to create a variety of products, including brand new plastics, waxes, and other petrochemical products. The process equipment includes an extruder feeding a reactor and condensers. The non-condensable process gas is vented to a vapor combustor unit (VCU) for complete destruction.
Source classification code numbers	3-06-009-04, Industrial Processes, Petroleum Industry, Flares, Process Gas
Current Ohio EPA permit number	P0122408 – Extended Active PTIO P0133062 – Draft PTIO Renewal
Current Ohio EPA application number	A0072225 – initial renewal application A0076962 – correction based on recent stack test results A0077887 – correction with updated emissions calculations
Month and year installed	Initial installation: August 3, 2015; modification: January 1, 2017
Normal operating schedule	24 hours a day, 7 days per week, 52 weeks per year
Annual feedstock throughput rates:	
2025	[redacted]
2024	[redacted]
2023	[redacted]
Daily maximum feedstock throughputs:	
2025	120,000 pounds/day
2024	120,000 pounds/day
2023	120,000 pounds/day
Daily average feedstock throughputs:	
2025	[redacted]
2024	[redacted]
2023	[redacted]
Type of Control Equipment	Enclosed Vapor Combustion Unit (VCU) installed January 1, 2017

Pursuant to OAC 3745-21-11(B)(6), a plot plan showing the general layout of the facility and the location of permitted emission units is presented in Attachment A.

2.3 VOC Emissions from Affected Sources

Table 4 provides the average daily, maximum daily, and annual VOC emissions for the Plastics Recycling Unit, pursuant to OAC 3745-21-11(B)(7). The emission rates identified in Table 4 were derived from completing a mass balance on P001 to calculate the mass-flow of process syngas to the inlet of the control device. A destruction efficiency of 99.6%, which was measured during the December 2023 supplemental stack test, was applied to the stream to generate emission rates. Process syngas is comprised of both VOC and non-VOC components, and Table 4 conservatively assumes the composition of the process syngas to be 100% VOCs. The average and maximum daily VOC emissions (lb/day) are based on the highest average and maximum daily process syngas rates for each of the three full calendar years preceding the submittal date of this study. The annual VOC emissions (ton/year) are based on the total process syngas rates for 2023, 2024, and 2025. Attachment C provides the data used to calculate the emissions in Table 4.

Table 4: Plastic Recycling Unit VOC Emissions

EU ID	EU Description	Average Daily VOC Emissions (lb/day)			Maximum Daily VOC Emissions (lb/day)			Annual VOC Emissions (ton/yr)		
		2023	2024	2025	2023	2024	2025	2023	2024	2025
P001	Plastics Recycling Unit	72.4	95.2	103.2	79.9	116.0	114.1	3.9	9.8	13.5

Note: Average daily, maximum daily, and annual VOC emissions were conservatively calculated assuming the process syngas composition was 100% VOCs

2.4 Control Equipment for RACT Affected Source

In accordance with the federally enforceable terms and conditions of PTIO P0122408 and draft PTIO renewal P0133062, the recovered non-condensable process gas that is generated by the plastics recycling line is vented to the enclosed VCU for thermal destruction of VOCs and organic HAPs.

The current active PTIO P0122408 sets Best Available Technology (BAT) limits for VOC emissions from P001 as follows: "install a VCU designed to reduce emissions of VOC which meets the requirements of 40 CFR 65.142(b)." Additionally, P001 is subject to the control requirements of the Consolidated Federal Air Rule in 40 CFR 65, Subpart 65 for Group 1 process vents, which requires emissions of regulated material or total organic compounds (TOC) vented to the VCU to be reduced by at least 98% by weight or to a concentration of less than 20 parts per million by volume on a dry basis (ppmvd) or to meet the flare compliance demonstration requirements under 40 CFR Part 65.147. Alterra demonstrated compliance with both compliance standard options by passing a flare compliance demonstration as part of the initial compliance tests for the facility and then also demonstrating 99.6% destruction efficiency in a December 2023 supplemental stack testing, as discussed in the following section.

PTIO renewal application A0072225 requested the renewed permit specifically require 98% control efficiency, rather than the current reference to the multiple compliance options under 40 CFR 65.142(b). This specification will provide further certainty as to the precise extent to which the VOC emissions are limited as a matter of practicable enforceability, without the need to incorporate any outside research on flare efficiencies when calculating enforceable limitations on potential VOC emissions. Relatedly, Alterra requested that this BAT requirement (i.e., that all process syngas be routed to a VCU, which must have a destruction efficiency of 98%) be federally enforceable. Ohio EPA has issued draft renewal PTIO P0133062 that includes the following federally enforceable limits for P001:

- Install an enclosed VCU with a control efficiency of not less than 98%, by weight, for VOC.
- All captured VOC emissions from this EU, excluding VOC emissions from the process heater, shall be vented to a flare (i.e., an enclosed VCU).

In addition to the VOC control efficiency limit for the non-condensable process gases from the plastics recycling line, fugitive emissions (i.e., equipment leaks) from the plastics recycling line are limited to 0.55 ton/month as a rolling 12-month average. A leak detection and repair (LDAR) program consistent with the requirements of 40 CFR Part 65 (Consolidated Federal Air Rule) Subpart F - Equipment Leaks has been established for fugitive VOC emissions at Alterra to ensure ongoing compliance with the rolling 12-month VOC emission limitation.

2.5 Stack Testing Results

Alterra conducted stack testing of the VCU in May 2022 and December 2023. The May 2022 stack test demonstrated compliance with the flare standards in 40 CFR 65, Subpart G , while the December 2023 test was conducted at the request of the Akron Regional Air Quality Management District (ARAQMD) to provide supplemental information on the VCU for certain parameters which the facility had not previously been required to test as part of initial compliance testing under its air permit. The supplemental information included VOC destruction efficiency, VOC hourly emission rate, and HAP speciation.

The May 2022 stack test resulted in an exit velocity of 23 feet/second and a net heating value of 990 Btu/standard cubic feet (scf) of stack gas. These values demonstrated compliance with the flare standards of 40 CFR 65.147(a) (i.e., exit velocity less than 60 feet/second and net heating value greater than 200 Btu/scf). The December 2023 stack test results demonstrated compliance with the requirement in 40 CFR 65.63(a)(2) to reduce emissions of TOC by at least 98 weight-percent or to a concentration of less than 20 ppmvd, whichever is less stringent. The TOC destruction efficiency was determined to be 99.6%, [redacted]

The VOC destruction efficiency and hourly emission rate were determined based on EPA Reference Test Method 25A. This method measures total gaseous organic compound concentrations, reported as propane, which does not differentiate between VOCs and non-VOC hydrocarbons. As such, the VOC emission rates determined by Method 25A may overestimate the actual VOC emissions by accounting for non-VOC hydrocarbon emissions.

The December 2023 stack test also measured the concentrations of toxic organic compounds using EPA Method TO-15 at the inlet to the VCU (i.e., uncontrolled emissions). Table 5 presents emission rates as the average of the three one-hour test runs from the December 2023 stack test. This table provides the stack test results in lb/hr and ppmvd measured at the VCU inlet and the calculated controlled emission rates in lb/hr for detected constituents based on the 99.6% destruction efficiency measured during the stack test.

Table 5: Toxic Organic Compound Emission Rates Detected During December 2023 Stack Test

Toxic Organic Compound	Emissions at VCU Inlet (uncontrolled)	Controlled Emission based on 99.6% VCU DRE
Acetaldehyde	11.6 lb/hr (6,193 ppmvd)	0.046 lb/hr
Acrolein	ND	ND
Acrylonitrile	ND	ND
Benzene	3.3 lb/hr (983 ppmvd)	0.013 lb/hr
1,3-Butadiene	16.4 lb/hr (7,130 ppmvd)	0.066 lb/hr
Ethylbenzene	ND	ND
Hexane	3.6 lb/hr (976 ppmvd)	0.014 lb/hr
Isopropyl benzene	ND	ND
Naphthalene	ND	ND
Styrene	ND	ND
Toluene	0.47 lb/hr (120 ppmvd)	0.0019 lb/hr
2,2,4-Trimethylpentane	ND	ND
Vinyl acetate	ND	ND
Vinyl chloride	0.62 lb/hr (234 ppmvd)	0.0025 lb/hr
m- and p-Xylene	ND	ND
o-Xylene	ND	ND

ND - Not Detected at the Method Detection Limit.

3. VOC RACT Evaluation

U.S. EPA defines RACT as the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility[1]. U.S. EPA guidance on RACT studies indicates that the analysis may rely on past EPA guidance, such as Control Techniques Guidelines (CTG), for help and should also review other available information regarding the appropriate controls. With respect to using a Best Available Control Technology (BACT) "top-down" analysis, U.S. EPA indicates that BACT requires that new or modified sources adopt the best available controls and, as such, the BACT analysis first looks at the most stringent level of control available for a source. RACT requires that sources adopt controls that are reasonably available and thus they may not be the most stringent controls that have been adopted as BACT for other similar sources[2].

Irrespective of whether a "top-down" analysis could result in identifying technically feasible control options that may be more stringent than those considered reasonably available, this VOC RACT evaluation was generally based on a "top-down" approach that included the following steps:

1. Identify possible VOC control options;
2. Review the technical feasibility of the control options and identify the potential VOC control efficiency for each option;
3. Rank the control options based upon emissions reduction potential and address economic factors for the top-ranked options; and
4. Identify RACT as the top-ranked control option considering the economic factors.

3.1 VOC Control Options

Under CAA section 108(h), the EPA is required to make information regarding emission control technology available to states and to the general public through a central database. The RACT/BACT/LAER Clearinghouse (RBLC) database is mainly a repository for air pollution control and pollution prevention technology determinations required for major new and modified sources subject to new source review (BACT and Lowest Achievable Emission Rate [LAER]) permitting requirements but can also be informative in RACT due diligence reviews. A RBLC database search was performed to identify the emission control technologies and emission levels that were determined by permitting authorities within the past ten years for process code 69.999 (Chemical Manufacturing – Other Chemical Manufacturing Sources). The RBLC database identifies six facilities with VOC permit limits from process operations. The VOC control requirements for the process operations for all six facilities included thermal oxidizers and/or flares with control efficiencies of 98%. Attachment B provides a summary of the RBLC search results.

In addition, Ohio EPA considers the following technologies to be generally available for controlling VOC emissions and must be evaluated, as specified in OAC 3745-21-11(B):

- Thermal Incinerator

[1] 44 FR 53762, September 17, 1979

[2] U.S. EPA Memo from William T. Harnett, Air Quality Policy Division Director, to Regional Air Division Directors, May 18, 2006, "RACT Qs & As – Reasonably Available Control Technology (RACT): Questions and Answers", pg. 2.

- Catalytic Incinerator
- Carbon Adsorber
- Condenser
- Scrubber

The technical feasibility of these control options, including VOC control efficiencies, are discussed below.

3.1.1 Thermal Incinerator

Thermal oxidation is the process of oxidizing organic contaminants in a waste gas stream by raising the temperature above the auto-ignition point in the presence of oxygen and maintaining it at high temperature for sufficient time to completely oxidize the organic contaminants to carbon dioxide and water. The residence time, temperature, turbulence, and the amount of oxygen affect the oxidation rate and destruction efficiency. For safety considerations, the maximum concentration of the VOC in the waste gas must be substantially below the lower flammable level (lower explosive limit [LEL]) of the specific compound being controlled. As a rule, a safety factor of four (i.e., 25% of the LEL) is used, although some direct-flame oxidizers are able to operate safely above this level. The waste gas may be diluted with ambient air, if necessary, to lower the concentration.

The residence time of the waste gas in the thermal combustion chamber and the reactor temperature determine the level of VOC control. The shorter the residence time, the higher the reactor temperature must be to achieve the desired level of VOC control. Thermal oxidizers are typically designed to have a residence time of one second or less and combustion chamber temperatures between 1,200 and 2,000°F. Thermal oxidizers typically require combustion of an auxiliary fuel (e.g., natural gas), when insufficient VOCs are present to maintain oxidation alone, to maintain the combustion chamber temperature high enough to completely oxidize the contaminant gases.

There are three types of thermal oxidation systems: 1) direct flame, 2) recuperative, and 3) regenerative. They are differentiated by the equipment used for heat recovery:

1. A direct flame thermal oxidizer consists of only a combustion chamber with no heat recovery equipment. A VCU is an enclosed thermal oxidation system that combusts VOCs in the waste gas stream by direct flame in an enclosed stack. The waste gas stream is burned by an open flame in an enclosed stack using a specially designed burner tip, auxiliary fuel, and steam or air to promote mixing for nearly complete VOC destruction. Complete combustion in a VCU is governed by flame temperature, residence time in the combustion zone, turbulent mixing of the components to complete the oxidation reaction, and available oxygen for free radical formation.
2. A recuperative oxidizer is comprised of the combustion chamber, the waste gas preheater (heat exchanger), and, if low-pressure steam or hot water can be used on site, a secondary energy recovery heat exchanger. Considerable fuel savings may be realized by recovering the heat energy from the exhaust gas and preheating the incoming waste gas. Recuperative thermal oxidizers can recover up to 70% of the waste heat from the exhaust gases.
3. In a regenerative thermal oxidizer, the waste gas stream is preheated using the heat content of the treated gas stream, resulting in improved oxidizer efficiency and significant fuel cost savings. In a regenerative thermal oxidizer, a high-density media such as a packed ceramic bed, which is heated in a previous cycle, is used to preheat the incoming waste gas stream, resulting in improved oxidizer efficiency and significant fuel cost savings.

In general, thermal oxidizers are less efficient at treating waste gas streams with highly variable flowrates, since the variable flowrate results in varying residence times, combustion chamber temperature, and poor mixing. Typical thermal oxidizer design efficiencies range from 98% to greater than 99%, depending on system requirements and characteristics of the contaminated stream[3].

3.1.2 Catalytic Incinerator

Catalytic oxidation is the process of oxidizing organic contaminants in a waste gas stream within a heated chamber containing a bed of active material (catalyst) that facilitates the overall combustion reaction. The catalyst has the effect of increasing the reaction rate, enabling conversion at lower reaction temperatures than in thermal incinerator units. The waste stream must be preheated to a sufficiently high temperature (usually from 300 to 900ºF) to initiate the oxidation reactions. The waste stream is preheated either directly in a preheater combustion chamber or indirectly by heat exchange with the incinerator's effluent and/or other process heat. The preheated gas stream is then passed over the catalyst bed. The chemical reaction (combustion) between the oxygen in the gas stream and the gaseous pollutants takes place at the catalyst surface. Catalytic incineration can, in principle, be used to destroy essentially any oxidizable compound in an air stream. However, there are practical limits to the types of compounds that can be oxidized due to the poisoning effect some species have on the catalyst. In addition, most configurations require a low heating value and low particulate content of the inlet gas.

VOC destruction efficiency is dependent upon VOC composition and concentration, operating temperature, oxygen concentration, catalyst characteristics, and space velocity. Space velocity is commonly defined as the volumetric flow of gas entering the catalyst bed chamber divided by the volume of the catalyst bed. The relationship between space velocity and VOC destruction efficiency is strongly influenced by catalyst operating temperature. As space velocity increases, VOC destruction efficiency decreases, and as temperature increases, VOC destruction efficiency increases. Under typical operating conditions, catalytic incinerators can achieve 95 percent VOC destruction efficiency. Higher destruction efficiencies of (98 - 99 percent) are achievable but require larger catalyst volumes and/or higher temperatures and are usually designed on a site-specific basis[4].

3.1.3 Carbon Adsorption

Carbon adsorption utilizes a column of activated carbon to adsorb organic pollutants. Adsorption is a non-destructive control technology employed to remove volatile organic compounds (VOCs) from low to medium concentration gas streams. Adsorption is a phenomenon where gas molecules passing through a bed of solid particles (e.g., activated carbon) are selectively held there by attractive forces which are weaker and less specific than those of chemical bonds. During adsorption, a gas molecule migrates from the gas stream to the surface of the solid where it is held by physical attraction releasing energy, which typically equals or exceeds the heat of condensation. Gases form actual chemical bonds with the adsorbent surface groups. Most adsorbates can be cleaned by heating to a sufficiently high temperature, usually via steam or (increasingly) hot combustion gases, or by reducing the pressure to a sufficiently low value (vacuum desorption).

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[3] EPA Air Pollution Control Technology Fact Sheet, EPA-452/F-03-022, Thermal Incinerator
[4] EPA Air Pollution Control Technology Fact Sheet, EPA-452/F-03-018, Catalytic Incinerator

Carbon adsorbers use activated carbon to adsorb VOCs with intermediate molecular weights (typically between 45 and 130 lb/lb-mole). Smaller compounds do not adsorb well and larger compounds cannot be removed during carbon bed regeneration when the carbon adsorber is cleaned using a sufficiently high temperature. Carbon beds can be plugged by heavy particulate or wet gas streams. Carbon adsorbers are particularly useful for situations where there are relatively dilute VOC concentrations (less than 100 ppmv) and moderate flow rates, which can be difficult or uneconomical to remove using other types of pollution controls. When properly designed, operated, and maintained, carbon adsorbers can achieve high VOC removal efficiencies of 95 to 99 percent at input VOC concentrations of between 500 and 2,000 ppm in air[5].

3.1.4 Condenser

Condensation is the process by which the temperature of the waste gas stream is lowered to below the dew point of the contaminant gases in the waste gas forcing a phase change from gas to liquid. Condensers in use today may fall in either of two categories: refrigerated or non-refrigerated. Non-refrigerated condensers are widely used as raw material and/or product recovery devices in chemical process industries. They are frequently used prior to control devices (e.g., incinerators or absorbers). Refrigerated condensers are used as air pollution control devices for treating emission streams with high VOC concentrations (usually > 5,000 ppmv) in applications involving gasoline bulk terminals and storage, where recovery of the raw material or product is economically beneficial. A condenser cannot lower the inlet concentration to levels below the saturation concentration at the coolant temperature. Removal efficiencies above 90 percent can be achieved with coolants such as chilled water, brine solutions, ammonia, or chlorofluorocarbons, depending on the VOC composition and concentration level of the emission stream[6].

3.1.5 Scrubber

Scrubbing is the process of removing air pollutants by inertial or diffusional impaction, reaction with a sorbent or reagent slurry, or absorption into liquid solvent. A packed scrubber can be used to remove organic components out of a gas stream and into a liquid stream through absorption in which a waste gas stream interacts with a scrubbing liquid inside a contact chamber containing a bed of packing media. Absorption is widely used as a raw material and/or product recovery technique in separation and purification of gaseous streams containing high concentrations of VOC, especially water-soluble compounds such as methanol, ethanol, isopropanol, butanol, acetone, and formaldehyde. Hydrophobic VOCs can be absorbed using an amphiphilic block copolymer dissolved in water. However, as an emission control technique, it is much more commonly employed for controlling inorganic gases than for VOC. When using absorption as the primary control technique for organic vapors, the spent solvent must be easily regenerated or disposed of in an environmentally acceptable manner.

Removal efficiencies for gas absorbers vary for each pollutant-solvent system and with the type of absorber used. Most absorbers have removal efficiencies in excess of 90 percent, and packed-tower

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[5] EPA Air Pollution Control Cost Manual[*], EPA/452/B-02-001, [Section 3.1, Chapter 1 - Carbon Adsorber]
[6] EPA Air Pollution Control Cost Manual, EPA/452/B-02-001, [Section 3.1, Chapter 2 – Refrigerated Condensers]

absorbers may achieve efficiencies greater than 99 percent for some pollutant-solvent systems. The typical collection efficiency range is from 70 to greater than 99 percent[7].

3.1.6 RACT Alternatives

Alterra did not identify any additional control options to reduce VOC emissions beyond those identified above. Additionally, the facility installed state-of-the-art technology in 2017 that remains an industry leader. As such, replacement or modification of the process operations would not result in lower VOC emissions.

3.2 Evaluation of Most Effective Control Option

The control technologies options reviewed above are ranked by estimated control efficiency:

1. VCU (98% VOC control efficiency or greater)
2. Thermal oxidizers (98% VOC control efficiency or greater)
3. Catalytic oxidizers (95% VOC control efficiency or greater)
4. Carbon adsorbers (95% VOC control efficiency or greater)
5. Condensers (90% VOC control efficiency or greater)
6. Scrubbers (90% VOC control efficiency or greater)

The control technologies with the greatest control efficiencies are thermal oxidizers, including an enclosed VCU, that can be designed to achieve VOC destruction efficiency of 98% or greater. The benefit of installing a recuperative or regenerative system over a direct flame system, like a VCU, is energy recovery to preheat the inlet process stream. These systems have a higher capital investment than direct flame systems, which can be offset by lower operating costs through fuel savings. However, Alterra's process gas stream that is vented to the VCU has sufficient heat content (approximately 1,000 Btu/scf) that supplemental fuel firing is not required. Therefore, there are no fuel saving costs to offset the higher installation cost of recuperative or regenerative systems of the VCU. As such, the VCU is a more economical control option that provides the same VOC destruction efficiency as other thermal oxidizer systems.

To that end, the VCU has a VOC destruction efficiency equal to or better than all the other potential VOC control options and is more cost effective than the other thermal oxidizer systems with equal VOC destruction efficiencies. Therefore, further evaluation of potential control options, including an economic feasibility assessment, is not warranted and RACT can be defined as the use of the enclosed VCU that is currently installed and operating at the Alterra facility.

3.3 RACT Limit Definition

In accordance with OAC 3745-21-11(B)(15), a RACT study must provide a recommended definition of RACT for the affected source(s), which should include one or more of the following:

- Enforceable production limitations.
- Emissions limitations.

[7] EPA Air Pollution Control Technology Fact Sheet, EPA-452/F-03-015, Packed-Bed/Packed-Tower Wet Scrubber

- Control efficiencies.
- Operating requirements.

To determine the appropriate form of the RACT definition for Alterra, an evaluation was completed of the previously defined RACT requirements codified in Ohio EPA VOC RACT regulations that were adopted to meet the presumptive level of RACT established in the CTGs and non-CTG categories. These RACT regulations include in the CTG regulations in OAC 3745-21-09(C) through (Z), (BB) to (EE), -13, -15, -19, -20, -22, -23, -24, and -26 through -29 and the non-CTG regulations in OAC 3745-21-12, -14, -16, -21, and -25.

Based on review of the RACT limits established in the CTGs and non-CTG categories, the majority of the limits include a VOC content limit, such as lb of VOC/lb of coating applied. Others include operating requirements, such as use of vapor balance systems or LDAR programs, while others include a VOC content limit with the option to use an add-on control device in lieu of meeting the VOC content limit. In all cases, where a control device can be used in lieu of a VOC content limit, the most stringent control requirement is at least 95% for control systems installed after April 2, 2009, on heatset web offset lithographic or heatset web letterpress printing press (Rule 3745-21-22). The only more stringent control requirement in these regulations is for air oxidation processes that produce an organic chemical identified in Appendix A to Rule 3745-21-09 which must vent their process vent stream to a combustion device to reduce VOC emissions by at least 98% or to a concentration less than 20 ppmvd [Rule 3745-21-09(EE)]. All other add-on control requirements in these regulations include no more than at least 90% overall control.

In addition to the RACT limits established for the CTGs and non-CTG category sources, Rule 3745-21-09(KK) through (ZZ) includes site-specific RACT limits established through the VOC RACT study requirements for the moderate nonattainment area SIP development process. These RACT limits primarily include VOC control requirements ranging from a minimum of 90% up to 98% control. As with the operations covered by these site-specific RACT limits, Alterra's production process does not include application of VOC-containing materials that could be changed to materials with lower VOC content in order to achieve a defined VOC emissions limitation. Similarly, Alterra cannot reduce VOC emissions through specific operating requirements that would limit the amount of VOC emitted. Therefore, without accepting enforceable production limitations to reduce emissions, the only remaining RACT limit option is a minimum control efficiency.

To that end, Alterra has defined RACT as venting all VOC emissions from the Plastics Recycling Unit, excluding VOC emissions from natural gas combustion by the process heater, to an enclosed VCU with a control efficiency of not less than 98%, by weight. This RACT limit is consistent with the most stringent VOC control efficiency defined as VOC RACT in Ohio.

4. Selected RACT for Affected Sources

As demonstrated herein, technically feasible alternative add-on VOC control technologies for the Plastic Recycling Unit have not been demonstrated to provide a higher level of VOC control than the existing enclosed VCU. Additionally, the current permitted control limit for the VCU is equal to the greatest control efficiencies defined as RACT in Ohio EPA VOCs RACT regulations. As such, Alterra proposes that RACT for the Plastic Recycling Unit is to employ an enclosed VCU with a control efficiency of not less than 98%, by weight, for VOCs.

Table 6 summarizes Alterra's proposed RACT in accordance with OAC 3745-21-11(B)(15).

Table 6: Proposed RACT for Each Affected Source

EU ID	EU Description	RACT Limit
P001	Plastics Recycling Unit	Employ an enclosed VCU with a control efficiency of not less than 98%, by weight, for volatile organic compounds (VOC)

Alterra will maintain and demonstrate compliance with the proposed RACT limit through the following PTIO additional terms and conditions, operational restrictions, monitoring, recordkeeping, and reporting:

Additional Terms and Conditions

- All captured VOC emissions from this EU excluding VOC emissions from the process heater shall be vented to a flare (i.e., an enclosed VCU).
- The permittee shall properly install, operate, and maintain a device to continuously monitor the pilot flame when the EU is in operation. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

Operational Restrictions

- A pilot flame shall be maintained at all times in the flare's pilot light burner. The presence of the pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame.
- The process gas that is generated by this EU (other than the process heater) shall be vented to the VCU. The process gas produced shall not be vented directly into the atmosphere except under a malfunction situation in accordance with OAC rule 3745-15-06(B).

Monitoring and/or Recordkeeping

- The permittee shall record all periods of time during which there was no pilot flame or the flare was inoperable.

Reporting

- The permittee shall identify in the annual Permit Evaluation Report (PER) all periods of time during which the pilot flame was not functioning properly or the flare was not maintained as required in this permit. The reports shall include the date, time, and duration of each such period.

Attachment A: Facility Plot Plan

Alterra Energy, LLC
12000 E. Waterloo Rd
Akron, OH 44306

Facility Site Map
Significant Emission Unit Locations
Facility ID: 1677011258

Alterra™
Solving Plastic Pollution®

Date: March 2026

Attachment B: VOC Emissions Data

Table B-1: VOC Emissions Data

Year	Month(s)	[redacted]	[redacted]	[redacted]	[redacted]	Controlled VOCs (lb/day)
2023	January	[redacted]	[redacted]	[redacted]		72.9
2023	Feb-March	[redacted]	[redacted]	[redacted]		60.7
2023	April-May	[redacted]	[redacted]	[redacted]		68.4
2023	June	[redacted]	[redacted]	[redacted]	[redacted]	76.6
2023	August	[redacted]	[redacted]	[redacted]		72.6
2023	September -October	[redacted]	[redacted]	[redacted]		74.9
2023	November - December	[redacted]	[redacted]	[redacted]		79.9
2024	January - March	[redacted]	[redacted]	[redacted]		73.9
2024	April	[redacted]	[redacted]	[redacted]		99.0
2024	May	[redacted]	[redacted]	[redacted]		116.0
2024	June	[redacted]	[redacted]	[redacted]		103.2
2024	July	[redacted]	[redacted]	[redacted]	[redacted]	99.3
2024	August	[redacted]	[redacted]	[redacted]		107.7
2024	September	[redacted]	[redacted]	[redacted]		102.2
2024	October	[redacted]	[redacted]	[redacted]		102.7
2024	November	[redacted]	[redacted]	[redacted]		91.8
2025	January	[redacted]	[redacted]	[redacted]		90.3
2025	February	[redacted]	[redacted]	[redacted]		99.8
2025	March	[redacted]	[redacted]	[redacted]		95.0
2025	April	[redacted]	[redacted]	[redacted]		99.3
2025	May	[redacted]	[redacted]	[redacted]		107.0
2025	June	[redacted]	[redacted]	[redacted]	[redacted]	89.3
2025	July	[redacted]	[redacted]	[redacted]		106.7
2025	August	[redacted]	[redacted]	[redacted]		101.7
2025	September	[redacted]	[redacted]	[redacted]		111.5
2025	October	[redacted]	[redacted]	[redacted]		109.1
2025	November	[redacted]	[redacted]	[redacted]		112.3
2025	December	[redacted]	[redacted]	[redacted]		114.1

[redacted]

Note 2: Control technology destruction efficiency demonstrated during December 2023 supplemental stack test witnessed by ARAQMD.

Attachment C: RBLC Summary Table

Table C-1: RBLC Summary Table

RBLC ID	Facility Name	Facility State	Process Name	Control Method Description	Percent Efficiency	Case-by-Case Basis
IN-0383	Brightmark Plastics Renewal Indiana 2 LLC	IN	VMS fuel gas H2S removal system	Flare	98%	BACT-PSD
IN-0251	RES Polyflow, LLC	IN	Plastics to Fuel Conversion	Process fuel gas combustion to generate heat required for processing	98%	Other Case-by-Case
IN-0378	Sungeel Recycling Park, Indiana, LLC	IN	Battery cell hopper shredder and vacuum dryer and battery cell crusher	Thermal oxidizer	98%	Other Case-by-Case
TX-0929	Formosa Point Comfort Plant	TX	Polyethylene 3 (PE3) Unit	Flare and thermal oxidizers	98%	BACT-PSD
			Fugitives	LDAR Program	--	BACT-PSD
TX-0888	Orange Polyethylene Plant	TX	Polyethylene Product	Thermal oxidizer or MPGF control	98%	BACT-PSD
			Fugitives	LDAR Program	--	BACT-PSD
			Ethylene Treater Regeneration Vents – Process Vents	Emissions will be routed either back into the process or to flares. Any uncontrolled venting to the atmosphere is limited to 20 ppmv of VOC.	98%	BACT-PSD
TX-0931	Roehm America Bay City Site	TX	Process Vents	Flares or thermal oxidizer	98%	BACT-PSD
			Fugitives	LDAR Program	--	BACT-PSD

MPGF – multipoint ground flare
PSD – Prevention of Significant Deterioration