

Engineering Analysis
Peak Renewables Bioenergy (Dothan), LLC
Dothan, Houston County, Alabama
Facility No. 607-S007
Air Permit Nos. X005-X008

On June 10, 2026, Peak Renewables Bioenergy (Dothan), LLC submitted an application to the ADEM-Air Division for Synthetic Minor Operating Permits (SMOP) to replace Air Permits X001-X004 at their wood pellet manufacturing facility located at 518 Renewables Road in Dothan. The facility is currently considered a synthetic minor source under the PSD regulations, a major source for criteria air pollutants and synthetic minor source for Hazardous Air Pollutants (HAP) under Title V regulations.

Current Operations

Peak Renewables (PR) operates a wood pellet manufacturing facility in Dothan. The processes include receiving dry wood shavings, two hammer mills, five pellet mills with associated coolers, screening, storage, and loading of pellets. No product drying is conducted on site. The facility is permitted to produce 275,625 U.S. tons of pellets per year.

Dry Material Receiving

Dried fiber is brought on site by trucks using paved haul roads. The trucks pass over a scale and then enter the dump area. Trucks are lifted for fiber to exit the back of the truck into the Truck Dumper for conveyance into the Dry Fiber Storage Building. Trucks also enter the covered dry storage structure directly and unload fiber by use of the truck's walking floor. Fiber enters the pelletizing process by using a front-end loader that charges the Infeed Live Bin from which the fiber is transported via covered mechanical conveyors.

Pelletizing Process with Process Filtration Unit (Baghouse)(E-01) and Regenerative Catalytic Oxidizer (RCO)

The dried fiber is processed through metering bins into two hammer mills (HM-1 and HM-2), in parallel. The hammer mills reduce the particle size of the dry fiber to less than 1/8". After the hammer mills, the material is transported through covered mechanical conveyors to the Pellet Mill Building which contains five pellet mills (PP-1, PP-2, PP-3, PP-4, and PP-5), in parallel. Starch is stored on site in the starch silo and added to materials downstream of the hammer mills to allow for a good blend process. The starch increases the pellets' durability.

Within each pellet mill, fine hammered material is metered into the system and rollers push the fiber through holes in the die plate as the die rotates. Knives on the exterior of the die plate cut the exposed wood pellets from the plate once the pellet achieves the required length. The pellets are then transferred to an associated cooler, which uses ambient air and retention time to reduce the temperature of the pellets. Particulate emissions from the Pelletizing Process are controlled by a baghouse (EU-01) and

volatile organic compounds (VOC) are controlled by an RCO (EU-02). The control devices are in series as the emissions from the baghouse exhaust to the RCO.

Finished Pellet Storage and Railcar Load-Out

The cooled pellets are mechanically transported through covered conveyors to a Pellet Shaker Screen and then directly to Railcar Loading, which utilizes two loading silos (RL-1 and RL-2), to drop the pellets into railcars for shipping off site. When pellets are not immediately loaded into railcars for shipping, the pellets are routed to a Pellet Storage Bin (PSB-1). The facility is also authorized to utilize a second storage bin (PSB-2). However, PSB-2 has not been installed. When stored pellets are ready for loading, they pass through the pellet shaker screen and are routed to the railcar load-out system. Emissions from the storage bin and railcar silos release through continuous gaps between the roof and side of each bin/silo. Fines and emissions from the pellet shaker screen are routed to the Process Filtration Unit (E-01).

Fire Water Pump Engine

The facility also operates a 317 BHP, diesel-fired emergency fire water pump engine that is subject to NSPS IIII and is limited to operate no more than 500 hours per year.

Miscellaneous

Unpermitted activities at the facility include a diesel tank (less than 10,000-gallons), fuel/lubricants and tanks/holding containers utilized for mobile sources or maintenance equipment. The emissions from the starch additive process are insignificant (~ 0.1 TPY generated within the Pellet Mill Building).

Emissions

Pelletizing Process

Emissions from the Pelletizing Process are pneumatically collected and conveyed to the Process Filtration Unit (E-01). The filtration unit (baghouse) recovers fiber and fines entrained in the exhaust and serves to control particulate matter emissions from the processes. Recovered fiber from the filter is returned to the Infeed Live Bin.

Cleaned air from E-01 is exhausted to the RCO (E-02). The gas stream enters the RCO through an inlet heat recovery chamber, where the air is preheated by heat recovery media before entering the combustion chamber. Inside the combustion chamber, two 4.4 MMBtu/hr natural gas-fired burners maintain the combustion temperature set point at a minimum of 900°F, as established during the most recent stack test (the natural gas burners augment the heat content offered through the organics in the exhaust stream). Based upon manufacturer's data, the RCO is expected to have a destruction/removal efficiency (DRE) of $\geq 95\%$. Testing conducted on December 9, 2025, indicated the RCO had a DRE of 99% during the test.

After the combustion chamber, the purified air passes through an outlet heat recovery chamber, where the outlet heat recovery medium bed transfers heat to the heat recovery media. After the heat recovery chamber outlet, the air is released into the atmosphere at

emission point E-02. During emergencies, the associated processes are shut down and exhaust air from the Process Filtration Unit is routed through an abort stack.

Peak utilized data from compliance testing conducted on the unit on June 13, 2024, and December 9, 2025, to establish emission factors for VOC and HAP. The emission factor utilized for Acrolein emissions was obtained utilizing test data from other pellet mills as it was more conservative than those noted during testing at the Dothan facility.

Fire Pump Engine

The potential emissions of VOC and PM from the fire pump engine would be 0.52 and 0.03 TPY based upon the NSPS Subpart IIII standards and the limited operation of 500 hours per year. A summary of emissions from the facility can be found in Appendix A.

Fugitive Emissions

All emissions from the dry materials receiving processes, pellet storage and railcar load-out are considered fugitive. Fugitive emissions were estimated from the storage/handling of dry fiber within the Dry Fiber Storage Building, at a process rate of 300,000 U.S. TPY. Emissions from finished product, pellet storage and handling through rail car loading are based on the plant production capacity of 275,625 U.S. TPY.

Particulate emissions from material handling were estimated using emission factors documented by EPA Region 10 within a memorandum titled *Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country*. The emission factors for “drop” of “dry” material from one source to another are used when the dropped material is open to the atmosphere. Organic HAP content within the VOC emitted from dry fiber is estimated using engineering judgment considering the speciation of HAP emitted from lumber-drying kilns based on emission factors documented within the *U.S. EPA’s PCWP MACT memo*. Emissions of VOC were estimated from storage and handling using uncontrolled emission factors from the *Georgia EPD Recommended Emission Factors for Wood Pellet Manufacturing*. The published emission factors in tons of pollutant per ton of product stored/handled were applied to the facility production capacity.

Emissions from the Pellet Storage Bins (PSB-1 and PSB-2) and Railcar Loading (RL-1 and RL-2) were estimated from derived emission factors from stack testing at other pellet mills and an assumed contingency of 15%.

Federal Regulations

PSD

The facility operations are not one of the 28 listed major source categories, and the facility is located in an attainment area for all criteria pollutants. Therefore, the major source threshold of concern is 250 TPY for criteria pollutants. Since the facility operations are not one of the 28 listed major source categories, fugitive emissions do not count toward PSD applicability. Emission point E-02, and the emergency fire water pump engine are the only point sources at the facility. The facility is considered a synthetic

minor source under the PSD regulations as the potential emissions of all criteria pollutants are limited to less than 250 TPY.

Title V

A facility is considered a major source for Title V applicability if its potential emissions exceed 100 tons per year of any criteria air pollutant or 10 tons per year of any single HAP (or 25 tons per year of combined HAP). As the facility-wide potential uncontrolled PM and VOC emissions exceed 100 TPY, PR is considered a major source for Title V. However, the facility requests federally enforceable limits to ensure the emissions of criteria and hazardous air pollutants do not exceed the applicable thresholds. The following summarizes PR's limitation requests:

Description	Pollutant	Limit (lb/hr)
Pelletizing Process (E-02)	VOC	8.56
	PM ₁₀	6.58
	PM _{2.5}	6.58
	Acetaldehyde	0.34
	Acrolein	0.06
	Formaldehyde	0.64
	Methanol	0.10
	Phenol	0.15
	Propionaldehyde	0.03
	Total HAP	1.32

The facility would be considered a synthetic minor source for VOC, PM₁₀, PM_{2.5}, and HAP emissions. The facility-wide emissions from all sources would be limited to 9.5 TPY for any single HAP and 24.5 TPY for combined HAP. The VOC and HAP emissions limits for E-02 are based on an RCO DRE of 95%. The PM₁₀ and PM_{2.5} emission limits are based on a designed emission rate of 0.01 gr/scf at maximum flow capacity.

NSPS and MACT

The emergency fire water pump engine is subject to 40 CFR Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* and 40 CFR Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)*. PR would comply with the requirements of Subparts ZZZZ and IIII. None of the remaining processes at the facility are subject to an NSPS or MACT.

State Regulations

Particulate Matter

The pelletizing process is subject to the particulate matter emission limitations of ADEM Admin. Code r. 335-3-4-.04(1) for Process Industries-General. The allowable emission rate is calculated using the following process weight equations:

$$E = 3.59P^{0.62} \text{ (P < 30 tons per hour)}$$

OR

$$E = 17.31P^{0.16} \text{ (P } \geq 30 \text{ tons per hour)}$$

where E = Emissions in pounds per hour

P = Process weight in tons per hour

In addition to the above limitations, ADEM Admin. Code r. 335-3-4-.01(1) sets forth a visible emissions standard which states that each stationary source at the facility shall not emit particulate of an opacity greater than twenty percent (20%), as determined by a six-minute average.

Sulfur Dioxide

There are no combustion sources at the facility that would be subject to the SO₂ regulations found in ADEM Admin. Code r. 335-3-5.

Emission Testing

Initial testing would be required on E-02 to determine compliance with the proposed synthetic minor limits for PM₁₀ and PM_{2.5}. VOC, HAP, and PM stack testing would also be required on E-02 at intervals not to exceed five years.

Emission Monitoring and Recordkeeping

VOC and HAP

To confirm RCO operation meets the organic control guarantee, PR proposes to monitor the firebox/combustion chamber temperature. While the process and RCO are operating, the firebox/combustion temperature would be monitored and recorded at least four times per hour. Three-hour block averages of the temperature would be required to be calculated and recorded. PR would operate the RCO at a minimum firebox/combustion temperature of 900°F as determined by the most recent stack test that demonstrated compliance. The parameters may be adjusted based on parameters recorded during subsequent stack testing. Activity level testing of the catalytic media would be required to be completed at least every 12 months.

Records would be required to be retained of any episodes of abort stack usage when process emissions are released without organic control through the RCO. Each episode's records would include the date, time, and duration of abort stack usage.

PR is currently required to calculate and record the monthly and 12-month rolling total HAP emissions from all sources to verify the facility-wide emissions do not exceed the Title V (HAP) thresholds. The facility would continue to calculate, record and maintain records of the facility-wide HAP emissions as currently required. The facility would also continue to maintain records of monthly and rolling 12-month production. PR would also submit Semiannual Monitoring Reports that would include the monthly and 12-month

rolling totals of HAP from all sources. The calculation methodology would match that in the SMOP application.

Visible Emissions and Fugitive Dust: PM, PM10, PM2.5 and Opacity

PR would be required to conduct daily visual emissions observations of the RCO (E-02) for the presence of any visible emissions, as well as daily observations of the pellet storage bin, truck dumper (fugitive), dry fiber storage building (fugitive) and railcar loadout (fugitive) for greater than normal visible emissions. The facility would be required to take corrective action within 24 hours if any emissions are noted from the RCO, or greater than normal emissions are noted from the remaining processes, followed by an additional visible emissions observation. Records of observations and corrective measures taken would be required to be maintained on site and available for inspection. PR would also maintain paved roads at the facility and limit traffic speeds on site. Should fugitive dust from haul roads become an issue, the facility would evaluate watering and sweeping the roads to minimize dust.

Air Quality Impact

This facility is located in Houston County, which is an attainment area for all criteria pollutants. The facility is not located within 100 km of any PSD Class I Area.

Public Comment Period

Prior to issuance of the Synthetic Minor Operating Permit, a 15-day public comment period would be required in accordance with ADEM 335-3-15-.05.

Recommendation

This analysis indicates that this facility would meet the requirements of all applicable federal and State rules and regulations. Therefore, I recommend that PR be issued the following Synthetic Minor Operating Permit for the processes at its Dothan facility, pending any comments received during the 15-day public comment period:

X005 – Dry Material Receiving which includes:

1. Truck Dumper
2. Dry Fiber Storage Building

X006 - Pelletizing Process with Process Filtration Unit (Baghouse) (E-01) and Regenerative Catalytic Oxidizer (E-02) which includes:

1. Two (2) Hammermills
2. Five (5) Pellet Mills
3. Five (5) Pellet Coolers
4. Pellet Shaker Screen

X007 - Finished Pellet Storage (PSB-1 and PSB2) and Railcar Loadout (RL-1/RL-2)

X008 - 317 BHP, Diesel-Fired Emergency Fire Water Pump Engine (NSPS IIII)

A handwritten signature in black ink, appearing to read "Lester Meredith", written over a horizontal line.

Lester Meredith
Chemical Branch
Air Division

July 20, 2026
Date

VLM/vlm

Appendix A

Peak Renewables Bioenergy (Dothan), LLC
Facility Summary for SMOP Application

Release Point	Emission sources	PT	PM ₁₀	PM _{2.5}	VOC	NO _x	CO	SO ₂	Acetaldehyde	Acrolein	Formaldehyde	Methanol	Phenol	Propionaldehyde	Total HAP
Point Sources															
Process emissions	Controlled Organic Process Emissions from Hammer Mills, Pellet Mills, and Pellet Shaker Screen	--	--	--	37.28	--	--	--	1.47	0.25	2.78	0.43	0.65	0.12	5.70
	Emissions from Natural Gas Combustion in RCO (@ 8,760 hr/yr)	0.29	0.29	0.29	0.21	3.78	3.17	0.02	--	--	0.003	--	--	--	0.071
	Pass through Controlled Particulate Process Emissions	28.53	28.53	28.53	--	--	--	--	--	--	--	--	--	--	--
	Process Emissions (using PWR)	131.65	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total Processing Emissions (E-02)	131.65	28.82	28.82	37.49	3.78	3.17	0.02	1.47	0.25	2.79	0.43	0.65	0.12	5.78
FPE	Emergency Fire Pump Engine	0.03	0.03	0.03	0.52	0.52	0.45	0.16	4.25E-04	--	6.54E-04	--	--	--	2.07E-03
Facility Point Source Emissions (tpy)		131.68	28.85	28.85	38.01	4.30	3.63	0.18	1.48	0.25	2.79	0.43	0.65	0.12	5.78
Fugitive Sources															
Fug	Fiber Storage and Handling (Dry Fiber Storage Building, DFS)	0.57	0.27	0.04	1.12	--	--	--	0.01	0.001	0.004	0.05	0.003	0.001	0.07
Fug	Pellets Storage and Handling (Pellet Storage Bin, PSB-1 and PSB-2)	0.21	0.10	0.014	55.13	--	--	--	0.46	4.00	1.40	0.47	1.50	1.34	9.16
Fug	Pellets Storage and Handling (Railcar Loading, RL-1 or RL-2 and into Railcar)	0.41	0.19	0.03	55.13	--	--	--	0.46	4.00	1.40	0.47	1.50	1.34	9.16
Facility Fugitive Source Emissions (tpy)		1.19	0.56	0.08	111.37	0.00	0.00	0.00	0.93	7.99	2.80	0.98	3.01	2.68	18.39
Facility Wide Emission Summary and Determination															
Facility Point Source Emissions (tpy)		131.68	28.85	28.85	38.01	4.30	3.63	0.18	1.48	0.25	2.79	0.43	0.65	0.12	5.78
Title V Major Source Threshold for Criteria (tpy)		N/A	100	100	100	100	100	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Title V Major Source for Criteria? (Yes or No)		N/A	No	No	No	No	No	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Facility Fugitive Source Emissions (tpy)		1.19	0.56	0.08	111.37	0.00	0.00	0.00	0.93	7.99	2.80	0.98	3.01	2.68	18.39
Facility Total Emissions (tpy)		132.87	29.40	28.93	149.38	4.30	3.63	0.18	2.41	8.24	5.58	1.41	3.66	2.80	24.16
Title V Major Source Threshold for HAP(tpy)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	10	10	10	10	10	10	25
Title V Major Source for HAP? (Yes or No)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	No	No	No	No	No
PSD Major Source Threshold (tpy)		250	250	250	250	250	250	250	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PSD Major Source? (Yes or No)		No	No	No	No	No	No	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A