Chalam Pakala Engineering and Environmental Solutions

10017 Allyson Park Dr.. Charlotte. NC 28277 Tel: (704) 541-4042 Fax: (704) 541-4043

April 26, 2021

Active Energy Renewable Power
1885 Alamac Road
Lumberton, North Carolina 28358

Attention: **Mr. Michael Rowan**
Chief Executive Officer

Re: **Air Permit Modification Request for Pellet Manufacturing Air Emission Sources**
Active Energy Renewable Power
1885 Alamac Road
Lumberton, Robeson County, North Carolina
CPEES Project No. 1198-001

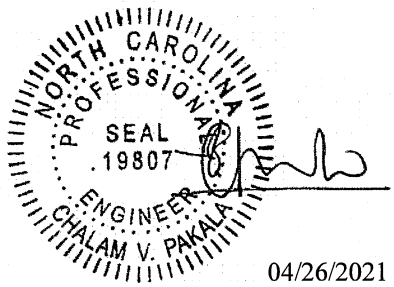
Dear Mr. Rowan:
Attached please see an Air Permit modification request report for all the proposed air emission sources at the subject facility located in Lumberton, North Carolina. Active Energy Renewable Power (AERP) had requested CP Engineering and Environmental Solutions (CPEES) to calculate air emissions from all the proposed air emission sources to determine if an air permit modification is required for the proposed operations. The air emissions sources at the facility include: one 20mmBTU/hr natural gas fired Boiler, Two pressure cookers (one always used as a standby) with a condenser as a control device, one Screw Press and a 4mmBTU/hr natural gas fired Dryer with a cyclone as a control device, One Pelletizer and Pellet Cooling system with a cyclone as a control device, Pellet Screen with Cartridge Filter as a control device and pellet storage. The air permit calculations are completed based on the air emission source information provided to CPEES. Based on the information provided to CPEES and the air emissions calculations performed for all the proposed air emissions sources at the subject facility, CPEES concludes a small air permit would be required for the subject facility due to VOC emissions expected from the proposed sources. A few insignificant sources approved by NC DEQ will be in the permit as per the several NC DEQ exemption criteria. Please note CPEES is neither involved in the design of the equipment or control devices and therefore, CPEES is not responsible for their process flow and control efficiencies. The air permit application package includes:

- Facility Operations and Air Emission Sources Description;
- Process Flow Schematic;
- Air emissions calculations for the proposed air emission sources with supporting documentation; and
- Site USGS topo Map.

It is my pleasure to complete this important project for AERP and please call me at (704) 541-4042 if you have any questions or comments on this permit application package.

Respectfully submitted,
CP Engineering and Environmental Solutions
(A Cost Effective Solution Provider for Manufacturing)

Chalam V. Pakala, P.E.
Managing Principal
Attachments: Air Permit Exemption Package



04/26/2021

Chalam Pakala Engineering and Environmental Solutions

10017 Allyson Park Dr., Charlotte. NC 28277 Tel: (704) 541-4042 Fax: (704) 541-4043

April 26, 2021

Ms. Heather Carter, Regional Supervisor
Systel Building
225 Green Street, Suite 74
Fayetteville, North Carolina 28301

Re: **Air Permit Modification Request for Pellet Manufacturing Air Emission Sources**
Active Energy Renewable Power
1885 Alamac Road
Lumberton, Robeson County, North Carolina
Air Permit #10636R00; Facility ID#7800242

Dear Ms. Carter:

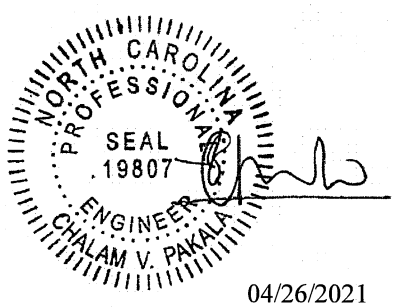
On behalf of Active Energy Renewable Power (AERP), per the requirements of NC DEQ - Division of Air Quality, CP Engineering and Environmental Solutions (CPEES) is pleased to submit an Air Permit request for all the proposed air emission sources at the subject facility located in Lumberton, Robeson County, North Carolina. In an effort to ensure that all proposed operations are under the permit exemption or in need of a permit, AERP had retained CPEES to review all the proposed operations and to calculate air emissions at the subject facility. The air emission sources at the facility include: one 20mmBTU/hr natural gas fired Boiler, Two pressure cookers (one always used as a standby) with a condenser as a control device, one Screw Press and a 4mmBTU/hr natural gas fired Dryer with a cyclone as a control device, One Pelletizer and Pellet Cooling system with a cyclone as a control device, Pellet Screen with Cartridge Filter as a control device and pellet storage. Based on the air emissions calculations performed for all the proposed air emission sources at the subject facility, CPEES has concluded that an Air Permit is required for the proposed air emission sources due to VOC emissions expected from the proposed sources. A few insignificant sources approved by NC DEQ will be in the permit as per the several NC DEQ exemption criteria. The enclosed permit exemption application package includes:

- Permit fee $50
- State air permit forms (A1, A2, A3, B, B1 and B9, C7, C4 and C1, D1 and D5);
- Facility Operations and Air Emission Sources Description;
- Air emissions calculations for the proposed air emission sources with supporting documentation; and
- Process Flow Schematic;
- Site USGS Topo Map.

Please call Mr. Tyler Player of AERP at 207-554-7122, Ron Gaskins at 910-840-7922 or me at (704) 756-7451 if you have any questions or comments on this permit application package. We appreciate your help and cooperation on the progress of this project.

Respectfully submitted,
CP Engineering and Environmental Solutions
(A Cost Effective Solution Provider for Manufacturing)

Chalam V. Pakala, P.E.
Managing Principal
Attachments: Air Permit Exemption Package



04/26/2021

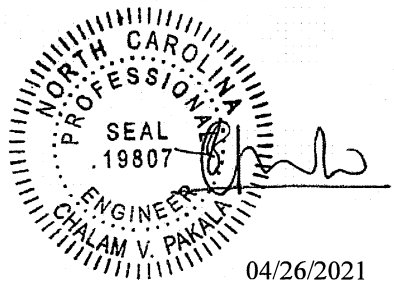
Air Permit Request for the Proposed Air Emission Sources

Prepared for:

ACTIVE ENERGY GROUP

Active Energy Renewable Power

1885 Alamac Road
Lumberton, Robeson County, North Carolina



04/26/2021

CPEES Project No. 1198-001
April 26, 2021

Prepared by:

Chalam Pakala Engineering and Environmental Solutions

10017 Allyson Park Dr.
Charlotte, North Carolina 28277
Tel: (704) 541-4042 Fax: 704-541-4043
Email: cvpakala@carolina.rr.com

1.0 FACILITY DESCRIPTION AND MANUFACTURING OPERATIONS

Active Energy Renewable Power (AERP) located at 1885 Alamac Road, Lumberton, Robeson County, North Carolina, manufactures wooden pellets for fuel source for industries. The geographic site location can also be given as 34°35'20.49"North Latitude and 79° 0'21.99"West Longitude (Figure 1). AERP proposed operations at the facility are 8000 hrs per year (potential hours are 24hrs/day, 7 days/wk and 52 wks/year = 8760 hrs/year).

2.0 EXISTING AIR EMISSION SOURCES

The proposed air emissions sources at the site are:

Air Emissions Source ID	Sources	Rating	Release	Control Device
Pellet Manufacturing				
ES-B-1	Natural Gas fired Boiler	20 mmBTU/hr	Outside	None
ES-P-1	Pressure Cooker with a Condenser (80-95%)	Max 5 ton/hr	Outside	Condenser (CD-1)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ES-PS-1	Pellet Storage	Max 5 ton/hr	Intside	None

[redacted]

2.0 PROPSOED AIR EMISSION SOURCES

The proposed air emissions sources at the site are:

Air Emissions Source ID	Sources	Rating	Release	Control Device
Pellet Manufacturing				
ES-SPD-1	Screw Press/Dryer	Max 5 ton/hr	Outside	Cyclone (CD-2)
ES-PP-1	Pelletizer and Pellet Cooler	Max 5 ton/hr	Outside	Cyclone (CD-3)
ES-PSC-1	Pellet Screening	Max 5 ton/hr	Outside	Cartridge Filter (CD-4)
IES-WCS-1	Wood Chips/Pellet Convey System		Enclosed	None
IES-GHM-1	Green Hammer Mill		Enclosed	None

Process Description

Active Energy Group (AEG) intends to construct and operate a next generation wood pellet mill production facility in Lumberton, NC. The facility will produce up to 3000 tons of steam exploded pellet product in the short-term. This product will be used in testing by various customers and allow AEG to validate production equipment and establish emission rates. Upon completion of the test runs, AEG will revisit overall production capability of the plant and modify plans according the tests.

Raw Receiving:
The facility in Lumberton will receive chips on a paved area and utilize a loader to add these chips to an infeed hopper The hopper is then discharged to a green hammermill for the purpose of size reduction to optimize the steam explosion process. This unit functions more as a chipper than a hammermill as the unit does not have an air assist setup, and is completely enclosed. The materials are then sent via enclosed conveyor to the reactors.

Steam Reactors:
Upon completion of grinding the material passes through totally enclosed conveyors into the reactor system. The reactor system is a batch process with two vessels, allowing the natural gas boiler to maintain consistent load. The wood is placed in the reactors, then steam added. During this process the vessel is completely sealed. Upon completion of the reaction process, the pressure is then vented through a condensing and expansion system. This is composed of 2 tanks, the first being for steam expansion, the second for condensing. Upon condensing the water is pumped into storage tanks for disposal elsewhere at an approved facility.

Drying Process:
The material is passed from the reactors into a screw press to remove surface moisture on the product, then transferred to a natural gas fired rotary drum dryer. The material is then dried down to 10% or less moisture in the rotary drum. The exhaust from the dryer is separated from the materials in a high efficiency cyclone. The materials then proceed via totally enclosed conveyor into the building. The exhaust stack from the dryer is located external to the building. The cyclone used to separate the material is sized for a minimum of 5 effective turns, and 10fps discharge velocity. In addition, the cyclone will be an integral part of the Dryer system. The inlet temperature of the dryer is expected to be limited to 850F or less to minimize any VOC generation in the drum.

Pelletizing & Screening
Upon drying completion the materials are placed into a hopper inside the facility. This is a metering hopper to allow pellet mill adjustments without process interruptions. The loose materials are pressed into pellets , then passed through a cooler and over a screen before storage. The cooler is intended to drop the temperature of the product to make it safe for storage, and the screen is intended to remove any fine dust that has accumulated on the exterior. The cooler and pellet mill are both under negative pressure provided by a fan and cyclone. This system discharges to the atmosphere after passing through the high efficiency cylone. PM emissions from the process are expected to be negligible as the intended purpose of the draft in both locations (cooler and pellet mill) are to pull off heat, not product. Exhausting product in this location would be detrimental to facility performance. The screening process is intended to remove any fines leftover from the cooling and pelletizing. This negative air drawn on this screen is passed through a cartridge filter. The filter will then remove 99% or more of all the PM and return it to the process for pressing back into pellets.

Based on the NC DEQ Wood Waste Burning Worksheet, VOC EF was 0.272 lb/ton and the facility wide VOCs for the 36000 ODT would be 4.896 tons/year. Therefore, we believe the VOC EFs supplied by the State for VOCs were too high for our processes. However, for the permitting purpose, AERP and CPEES had used the State supplied EF for VOCs and HAPs.

The process Flow Schematic is attached with this report.

4.0 REGULATED AIR POLLUTANTS EMISSIONS CALCULATIONS

CP Engineering and Environmental Solutions (CPEES) performed calculations for the actual and potential air emissions for all the identified sources. The actual and potential air emissions are based on emissions calculated from operations: 24 hours a day and 365 days a year (8,760 hours).

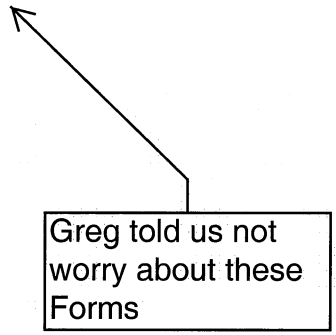
Based on the air emission calculations for the proposed sources, VOC emissions were above the 5.0 ton/year limit and therefore the facility needs an air permit for the installation and operation of the proposed sources. The Hazardous Air Pollutants (HAPs) were below the 10 for a single constituent and 25 tons/yr for the combined emissions. Further, the Toxic Air Pollutants (TAPs) were below the TPER limits and thus, NO modeling is required at this time.

The calculations and the tabulated results are presented in the attached tables. Any supporting documentation used for the air emission calculations is provided in Attachment A.

PERMIT APPLICATION

Active Energy Air Permit Matrix
Lumberton, NC

Small/Synthetic Facility														
	A - (Form Section)	A1 Minor	A2	A3	B Forms	C Forms	D1	D2	D2A	D3	D4	D5	D6	E1
New Facility (Unpermitted) / Greenfield	X		X	XX	XX	XX	X	XX	XX	XX	XX	XX		



FORM A

GENERAL FACILITY INFORMATION

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **A**

NOTE- APPLICATION WILL NOT BE PROCESSED WITHOUT THE FOLLOWING:

- ☑ Local Zoning Consistency Determination (new or modification only)
- ☑ Appropriate Number of Copies of Application
- ☑ Responsible Official/Authorized Contact Signature
- ☑ P.E. Seal (if required)

Application Fee (please check one option below): ☐ Not Required ☐ ePayment ☑ Check Enclosed

GENERAL INFORMATION

Legal Corporate/Owner Name:

Site Name: ACTIVE ENERGY RENEWAL POWER

Site Address (911 Address) Line 1: 1885 ALAMAC ROAD

Site Address Line 2:

City: LUMBERTON | State: NORTH CAROLINA

Zip Code: 28358 | County: ROBESON

CONTACT INFORMATION

Responsible Official/Authorized Contact:

Name/Title: MR.RON GASKINS, PLANT MANAGER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-840-7922 | Fax No.:

Secondary Phone No.:

Email Address: ron.gaskins@aeqplc.com

Invoice Contact:

Name/Title: MR.RON GASKINS, PLANT MANAGER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-840-7922 | Fax No.:

Secondary Phone No.:

Email Address: ron.gaskins@aeqplc.com

Facility/Inspection Contact:

Name/Title: MR.RON GASKINS, PLANT MANAGER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-840-7922 | Fax No.:

Secondary Phone No.:

Email Address: ron.gaskins@aeqplc.com

Permit/Technical Contact:

Name/Title: MR.RON GASKINS, PLANT MANAGER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-840-7922 | Fax No.:

Secondary Phone No.:

Email Address: ron.gaskins@aeqplc.com

APPLICATION IS BEING MADE FOR

☐ New Non-permitted Facility/Greenfield ☑ Modification of Facility (permitted) ☐ Renewal Title V ☐ Renewal Non-Title V

☐ Name Change ☐ Ownership Change ☐ Administrative Amendment ☐ Renewal with Modification

FACILITY CLASSIFICATION AFTER APPLICATION (Check Only One)

☐ General ☑ Small ☐ Prohibitory Small ☐ Synthetic Minor ☐ Title V

FACILITY (Plant Site) INFORMATION

Describe nature of (plant site) operation(s): WOODEN PELLETS MNUFACTURING

Facility ID No.7800242

Primary SIC/NAICS Code:2499/321999-WOOD PRODUCTS

Current/Previous Air Permit No.10636R00 Expiration Date: July 31, 2028

Facility Coordinates: Latitude: 34°35'20.49"N Longitude: 79°00'21.99"W

Does this application contain confidential data? ☐ YES ☑ NO

If yes, please contact the DAQ Regional Office prior to submitting this application. **(See Instructions)**

PERSON OR FIRM THAT PREPARED APPLICATION

Person Name: CHALAM PAKALA, PE

Firm Name: CP ENGINEERIGN AND ENVIRONMENTAL SOLUTIONS

Mailing Address Line 1:10017 ALLYSON PARK DR.

Mailing Address Line 2:

City:CHARLOTTE State:NC Zip Code:28277 County:MECKLENBURG

Phone No.: 704-541-4042 Fax No.: 704-541-4043

Email Address:cvpakala@carolina.rr.com

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name (typed):MR.MICHAEL ROWAN

Title: CHIEF EXECUTIVE OFFICER

X Signature(Blue Ink):

Date: 4/29/21

Attach Additional Sheets As Necessary

FORM A (continued, page 2 of 2)

GENERAL FACILITY INFORMATION

REVISED 09/22/16 | NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate | A

SECTION AA1 - APPLICATION FOR NON-TITLE V PERMIT RENEWAL N/A

ACTIVE ENERGY RENEWABLE POWER (Company Name) hereby formally requests renewal of Air Permit No. _____

There have been no modifications to the originally permitted facility or the operations therein that would require an air permit since the last permit was issued.

Is your facility subject to 40 CFR Part 68 "Prevnetion of Accidental Releases" - Section 112(r) of the Clean Air Act? ☐ YES ☑ NO

If yes, have you already submitted a Risk Manage Plan (RMP) to EPA? ☐ YES ☐ NO Date Submitted: _____

Did you attach a current emissions inventory? ☐ YES ☐ NO

If no, did you submit the inventory via AERO or by mail? ☐ Via AERO ☐ Mailed Date Mailed: N/A

SECTION AA2- APPLICATION FOR TITLE V PERMIT RENEWAL N/A

In accordance with the provisions of Title 15A 2Q .0513, the responsible official of _____ (Company Name) hereby formally requests renewal of Air Permit No. _____ (Air Permit No.) and further certifies that:

(1) The current air quality permit identifies and describes all emissions units at the above subject facility, except where such units are exempted under the North Carolina Title V regulations at 15A NCAC 2Q .0500;

(2) The current air quality permit cits all applicable requirements and provides the method or methods for determing compliance with the applicable requirements;

(3) The facility is currently in compliance, and shall continue to comply, with all applicable requiremetns. (Note: As provided under 15A NCAC 2Q .0512 compliance with the conditions of the permit shall be deemed compliance with the applicable requirements specifically identified in the permit);

(4) For applicable requirements that become effective during the term of the renewed permit that the facility shall comply on a timely basis;

(5) The facility shall fulfill applicable enhanced monitoring requirements and submit a compliance certification as required by 40 CFR Part 64.

The responsible official (signature on page 1) certifies under the penalty of law that all information and statements provided above, based on information and belief formed after reasonable inquiry, are true, accurate, and complete.

SECTION AA3- APPLICATION FOR NAME CHANGE N/A

New Facility Name: _____

Former Facility Name: _____

An official facility name change is requested as described above for the air permit mentioned on page 1 of this form. Complete the other sections if there have been modifications to the originally premitted facility that would requie an air quality permit since the last permit was issued and if ther has been an ownership change associated with this name change.

SECTION AA4- APPLICATION FOR AN OWNERSHIP CHANGE

By this application we hereby request transfer of Air Quality Permit No. _____ from the former owner to the new owner as described below.

The transfer of permit responsibility, coverage and liability shall be effectiv _____ (immediately or insert date.) The legal ownership of the facility described on page 1 of this form has been or will be transferred on _____ (date). There have been no modifications to the originally permitted facility that would require an air quality permit since the last permit was issued.

Signature of New (Buyer) Responsible Official/Authorized Contact (as typed on page 1):

X Signature (Blue Ink): _____

Date:

New Facility Name:

Former Facility Name:

Signature of Former (Seller) Responsible Official/Authorized Contact:

Name (typed or print):

Title:

X Signature (Blue Ink): _____

Date:

Former Legal Corporate/Owner Name:

In lieu of the seller's signature on this form, a letter may be submitted with the seller's signature indicating the ownership change

SECTION AA5- APPLICATION FOR ADMINISTRATIVE AMENDMENT

Describe the requested administrative amendment here (attach additional documents as necessary):

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **A2**

EMISSION SOURCE LISTING: New, Modified, Previously Unpermitted, Replaced, Deleted

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	CONTROL DEVICE ID NO.	CONTROL DEVICE DESCRIPTION
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement)			
ES-SPD-1	ONE SCREW PRESS W/DRYER (D-1)	CD-2	CYCLONE
ES-PP-1	PELLET PRESS AND PELLET COOLER	CD-3	CYCLONE
ES-PSC-1	PELLET SCREEN	CD-4	CARTRIDGE FILTER
P-STG	PELLET STORAGE	NA	NONE
IES-WCS	WOOD CHIPS AND PELLET CONVEY SYSTEM	NA	NONE
IES-GHM-1	GREEN HAMMER MILL	NA	NONE
Existing Exempted Equipment By This Application			
IES-WWTP	ONE WASTEWATER TREATMENT PLANT	NA	NONE
IES-FP	DISEL-FIRED FIRE PUMP (180 HP) (NESHAP ZZZZ)	NA	NONE
IES-GEN	DISEL-FIRED EMERGENCY GENERATOR (15 HP) (NESHAP ZZZZ)	NA	NONE
JES-PROPANE	PROPANE VAPORIZER	NA	NONE
IES-MTD	WOOD CHIPS CONVEYING AND HANDLING	NA	NONE
Existing Permitted Equipment To Be MODIFIED By This Application			
ES-SPD-1	ONE SCREW PRESS W/DRYER (D-1)/PELLET PRESS	NA	NONE
Equipment To Be DELETED By This Application			

112(r) APPLICABILITY INFORMATION — **A 3**

Is your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act? ☐ Yes ☑ No

If No, please specify in detail how your facility avoided applicability: REVIEW OF CHEMICALS AND THEY ARE BELOW THE THRESHOLD VALUES

If your facility is Subject to 112(r), please complete the following:

A. Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.150?

☐ Yes ☐ No Specify required RMP submittal date: _____ If submitted, RMP submittal date: _____

B. Are you using administrative controls to subject your facility to a lesser 112(r) program standard?

☐ Yes ☐ No If yes, please specify: _____

C. List the processes subject to 112(r) at your facility:

PROCESS DESCRIPTION	PROCESS LEVEL (1, 2, or 3)	HAZARDOUS CHEMICAL	MAXIMUM INTENDED INVENTORY (LBS)

Attach Additional Sheets As Necessary

Already Permitted

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC

AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: ONE 20MMBTU/HR NATURAL GAS FIRED BOILER	EMISSION SOURCE ID NO:ES-B-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO ___1___ OF ___1___	EMISSION POINT (STACK) ID NO(S):EP-B-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
20MMBTU/HR NATURAL GAS FIRED BOILER TO GENERATE STEAM

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☑ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019	DATE MANUFACTURED: NOVEMBER 2019
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR
IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____	☐ NESHAP (SUBPARTS?):_____
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25	MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	AP-42/NC DEQ	0.01	0.04	0.01	0.04	0.01	0.04
PARTICULATE MATTER<10 MICRONS (PM_{10})	AP-42/NC DEQ	0.01	0.04	0.01	0.04	0.01	0.04
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)	AP-42/NC DEQ	0.01	0.04	0.01	0.04	0.01	0.04
SULFUR DIOXIDE (SO2)	AP-42/NC DEQ	0.01	0.05	0.01	0.05	0.01	0.05
NITROGEN OXIDES (NOx)	AP-42/NC DEQ	1.96	7.84	1.96	8.59	1.96	8.59
CARBON MONOXIDE (CO)	AP-42/NC DEQ	1.65	6.59	1.65	7.21	1.65	7.21
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.11	0.43	0.11	0.47	0.11	0.47
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
AMMONIA (T)	7664417	AP-42/NC DEQ	6.27E-02	501.95	6.27E-02	549.65	6.27E-02	549.65
Benzene (TH)	71432	AP-42/NC DEQ	4.12E-05	0.33	4.12E-05	0.36	4.12E-05	0.36
Cobalt unlisted compounds (H)	COC-other	AP-42/NC DEQ	1.65E-06	0.01	1.65E-06	0.01	1.65E-06	0.01
Formaldehyde (TH)	50000	AP-42/NC DEQ	1.47E-03	11.76	1.47E-03	12.88	1.47E-03	12.88
Hexane, n- (TH)	110543	AP-42/NC DEQ	3.53E-02	282.35	3.53E-02	309.18	3.53E-02	309.18
Lead unlisted compounds (H)	PBC-other	AP-42/NC DEQ	9.80E-06	0.08	9.80E-06	0.09	9.80E-06	0.09
Napthalene (H)	91203	AP-42/NC DEQ	1.20E-05	0.10	1.20E-05	0.10	1.20E-05	0.10
Toluene (TH)	108883	AP-42/NC DEQ	6.67E-05	0.53	6.67E-05	0.58	6.67E-05	0.58

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	2.98E-07	6.56E-06	0.00
Acrolein (TH)	107028	AP-42/NC DEQ	3.53E-07	7.76E-06	0.00
Ammonia (T)	7664417	AP-42/NC DEQ	6.27E-02	1.38E+00	501.95
Arsenic unlisted compounds (TH)	ASC-other	AP-42/NC DEQ	0.00E+00	0.00E+00	0.00
Benzene (TH)	71432	AP-42/NC DEQ	4.12E-05	9.06E-04	0.33
Benzo(a)pyrene (TH)	50328	AP-42/NC DEQ	2.35E-08	5.18E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	1.47E-03	3.24E-02	11.76
Hexane, n- (TH)	110543	AP-42/NC DEQ	3.53E-02	7.76E-01	282.35
Toluene (TH)	108883	AP-42/NC DEQ	6.67E-05	1.47E-03	0.53

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

Already Permitted

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: ONE 4MMBTU/HR NATURAL GAS FIRED BOILER	EMISSION SOURCE ID NO:ES-D-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-D-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
4MMBTU/HR NATURAL GAS FIRED DRYER TO DRY WET WOOD CHIP PULP

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☑ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	AP-42/NC DEQ	0.00	0.01	0.01	0.04	0.01	0.04
PARTICULATE MATTER<10 MICRONS (PM_{10})	AP-42/NC DEQ	0.00	0.01	0.01	0.04	0.01	0.04
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)	AP-42/NC DEQ	0.00	0.01	0.01	0.04	0.01	0.04
SULFUR DIOXIDE (SO2)	AP-42/NC DEQ	0.00	0.01	0.00	0.01	0.00	0.01
NITROGEN OXIDES (NOx)	AP-42/NC DEQ	0.39	1.57	0.39	1.72	0.39	1.72
CARBON MONOXIDE (CO)	AP-42/NC DEQ	0.33	1.32	0.33	1.44	0.33	1.44
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.02	0.09	0.02	0.09	0.02	0.09
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
AMMONIA (T)	7664417	AP-42/NC DEQ	1.25E-02	100.38	1.25E-02	109.93	1.25E-02	109.93
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	0.07	8.24E-06	0.07	8.24E-06	0.07
Cobalt unlisted compounds (H)	COC-other	AP-42/NC DEQ	3.29E-07	0.00	3.29E-07	0.00	3.29E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	2.35	2.94E-04	2.58	2.94E-04	2.58
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	56.47	7.06E-03	61.84	7.06E-03	61.84
Lead unlisted compounds (H)	PBC-other	AP-42/NC DEQ	1.96E-06	0.02	1.96E-06	0.02	1.96E-06	0.02
Napthalene (H)	91203	AP-42/NC DEQ	2.39E-06	0.02	2.39E-06	0.02	2.39E-06	0.02
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	0.11	1.33E-05	0.12	1.33E-05	0.12

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.96E-08	1.31E-06	0.00
Acrolein (TH)	107028	AP-42/NC DEQ	7.06E-08	1.55E-06	0.00
Ammonia (T)	7664417	AP-42/NC DEQ	1.25E-02	2.76E-01	100.38
Arsenic unlisted compounds (TH)	ASC-other	AP-42/NC DEQ	0.00E+00	0.00E+00	0.00
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	1.81E-04	0.07
Benzo(a)pyrene (TH)	50328	AP-42/NC DEQ	4.71E-09	1.04E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	6.47E-03	2.35
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	1.55E-01	56.47
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	2.93E-04	0.11

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

Already Permitted

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PRESSURE COOKER W/CONDENSER	EMISSION SOURCE ID NO:ES-P-1
	CONTROL DEVICE ID NO(S):CD-1
OPERATING SCENARIO ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-CD-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
PRESSURE COOKER WITH A CONDENSER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.96	3.85	4.82	21.09	0.96	4.22
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.76E-02	460.80	2.88E-01	2522.88	5.76E-02	504.58
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.09E-02	487.44	3.05E-01	2668.73	6.09E-02	533.75
Methanol	67561	AP-42/NC DEQ	2.68E-02	214.56	1.34E-01	1174.72	2.68E-02	234.94
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	3.54E-02	282.96	1.77E-01	1549.21	3.53E-02	308.84

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.76E-02	1.27	460.80
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.09E-02	1.34	487.44

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: SCREW PRESS/DRYER	EMISSION SOURCE ID NO:ES-SPD-1
	CONTROL DEVICE ID NO(S):CD-2
OPERATING SCENARIO ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-SPD-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		6.67	26.67	6.67	26.67	6.67	26.67
PARTICULATE MATTER<10 MICRONS (PM_{10})		6.67	26.67	6.67	26.67	6.67	26.67
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)		0.82	3.29	0.82	3.60	0.82	3.60
CARBON MONOXIDE (CO)		1.56	6.24	1.56	6.84	1.56	6.84
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	4.82	19.26	4.82	21.09	4.82	21.09
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	925.20	1.16E-01	1013.09	1.16E-01	1013.09
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	50.40	6.30E-03	55.19	6.30E-03	55.19
Methanol	67561	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	0.14	50.40

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PELLETIZER AND PELLET COOLER	EMISSION SOURCE ID NO:ES-PP-1
	CONTROL DEVICE ID NO(S):CD-3
OPERATING SCENARIO ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PP-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		0.02	0.09	0.69	3.04	0.02	0.1
PARTICULATE MATTER<10 MICRONS (PM_{10})		0.01	0.02	0.40	1.74	0.00	0.02
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	2.25	9.00	2.25	9.86	2.25	9.86
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	925.20	1.16E-01	1013.09	1.16E-01	1013.09
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	50.40	6.30E-03	55.19	6.30E-03	55.19
Methanol	67561	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	0.14	50.40

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PELLET SCREEN	EMISSION SOURCE ID NO:ES-PSC-1
	CONTROL DEVICE ID NO(S):CD-4
OPERATING SCENARIO ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PSC-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019	DATE MANUFACTURED: NOVEMBER 2019
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR
IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____	☐ NESHAP (SUBPARTS?):_____
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25	MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		0.00	0.0003	0.08	0.34	0.00	0.0003
PARTICULATE MATTER<10 MICRONS (PM_{10})		0.00	0.003	0.08	0.34	0.00	0.0003
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	2.25	9.00	2.25	9.86	2.25	9.86
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	925.20	1.16E-01	1013.09	1.16E-01	1013.09
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	50.40	6.30E-03	55.19	6.30E-03	55.19
Methanol	67561	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	0.14	50.40

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PELLET STORAGE (FUGITIVE EMISSIONS)	EMISSION SOURCE ID NO:ES-PS-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):NA

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
PELLET STORAGE

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.23	0.90	0.23	0.99	0.23	0.99
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-02	92.52	1.16E-02	101.31	1.16E-02	101.31
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-04	5.04	6.28E-04	5.50	6.28E-04	5.50
Methanol	67561	AP-42/NC DEQ	2.03E-03	16.20	2.03E-03	17.74	2.03E-03	17.74
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-03	16.20	2.03E-03	17.74	2.03E-03	17.74

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-02	0.25	92.52
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-04	0.01	5.04

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

Already Permitted

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B1
EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B1**

EMISSION SOURCE DESCRIPTION:ONE 20MMBTU/HR NATURAL GAS FIRED BOILER	EMISSION SOURCE ID NO:ES-B-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S):EP-B-1

DESCRIBE USE: ☑ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION
☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☑ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR):20

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL: _____

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☐ CONTROLLED W/O REINJECTION

FUEL FEED METHOD: HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

COAL-FIRED BURNER

TYPE OF BOILER IF OTHER DESCRIBE:

PULVERIZED	OVERFEED STOKER	UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ CIRCULATING
☐ DRY BED	☐ CONTROLLED	☐ CONTROLLED	☐ FLYASH REINJECTION	☐ RECIRCULATING
			☐ NO FLYASH REINJECTION	

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: ☐ NORMAL ☐ TANGENTIAL ☑ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
NATURAL GAS	MMSCF	172	157

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
NATURAL GAS	1020		

COMMENTS:

Attach Additional Sheets As Necessary

Already Permitted

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B1
EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B1**

EMISSION SOURCE DESCRIPTION:ONE 4MMBTU/HR NATURAL GAS FIRED DRYER

EMISSION SOURCE ID NO:ES-D-1

CONTROL DEVICE ID NO(S):NA

OPERATING SCENARIO: 1 OF 1

EMISSION POINT (STACK) ID NO(S):EP-D-1

DESCRIBE USE: ☑ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION ☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☑ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR):20

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL: _____

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☐ CONTROLLED W/O REINJECTION

FUEL FEED METHOD:

HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

COAL-FIRED BURNER

TYPE OF BOILER

IF OTHER DESCRIBE:

PULVERIZED	OVERFEED STOKER	UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ CIRCULATING
☐ DRY BED	☐ CONTROLLED	☐ CONTROLLED	☐ FLYASH REINJECTION	☐ RECIRCULATING
			☐ NO FLYASH REINJECTION	

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: ☐ NORMAL ☐ TANGENTIAL ☑ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
NATURAL GAS	MMSCF	35	32

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
NATURAL GAS	1020		

COMMENTS:

Attach Additional Sheets As Necessary

Already Permitted

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: PRESSURE COOKER W/CONDENSER	EMISSION SOURCE ID NO:ES-P-1
	CONTROL DEVICE ID NO(S):CD-1
OPERATING SCENARIO: ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-CD-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):PRESSURE COOKER WITH A CONDENSER (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/YR)	LIMITATION(UNITYHR)
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: SCREW PRESS AND A DRYER	EMISSION SOURCE ID NO:ES-SPD-1
	CONTROL DEVICE ID NO(S):CD-2
OPERATING SCENARIO: _____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-SPD-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):SCREW PRESS W/DRYER TO REDUCE MOISTURE (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/YR)	LIMITATION(UNITYHR)
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: PELLETIZER AND PELLET COOLER	EMISSION SOURCE ID NO:ES-PP-1
	CONTROL DEVICE ID NO(S):CD-3
OPERATING SCENARIO: _____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PP-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):SCREW PRESS W/DRYER TO REDUCE MOISTURE (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/YR)	LIMITATION(UNITYHR)
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: PELLET SCREEN	EMISSION SOURCE ID NO:ES-PSC-1
	CONTROL DEVICE ID NO(S):CD-4
OPERATING SCENARIO: _____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PSC-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):SCREW PRESS W/DRYER TO REDUCE MOISTURE (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/YR)	LIMITATION(UNITYHR)
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: PELLET STORAGE (FUGITIVE EMISSIONS)	EMISSION SOURCE ID NO:ES-PS-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO: _____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):NA

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):PELLET STORAGE IN BAGS (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/YR)	LIMITATION(UNITYHR)
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C4
CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — **C4**

CONTROL DEVICE ID NO: CD-2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-SPD-1
EMISSION POINT (STACK) ID NO(S):EP-SPD-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM :CYCLONE For PM control on dryer. The cyclone is also a process collection device so it actually receivesthe amount shown in the PFD included with this documentation , with the portion noted below being only the PM10 and smaller particles.

POLLUTANT(S) COLLECTED:	PM			
BEFORE CONTROL EMISSION RATE (LB/HR):	670.00			
CAPTURE EFFICIENCY:	100 %	%	%	%
CONTROL DEVICE EFFICIENCY:	99 %	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	99 %	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	6.70			

PRESSURE DROP (IN. H_20): 2 MIN 6 MAX	
INLET TEMPERATURE (°F): 0F MIN 400F MAX	OUTLET TEMPERATURE (°F): 0F MIN 400F MAX
INLET AIR FLOW RATE (ACFM):15556	BULK PARTICLE DENSITY (LB/FT^3):
POLLUTANT LOADING RATE (GR/FT^3):0.05 (discharge)	

SETTLING CHAMBER	**CYCLONE**			**MULTICYCLONE**
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): 50-60fps		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H:31' including dischar	Dd: 9 feet	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	Inlet 50-60fps	Lb:	FLOW RATE (GPM):	☐ YES ☐ NO
NO. TRAYS:	De:	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:	S:		☐ YES ☐ NO
	TYPE OF CYCLONE: ☐ CONVENTIONAL		☑ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES: Visual inspection for wear or openings. Also inspect airlock flaps to avoid carry over. Active control over cyclone differential pressure.

DESCRIBE INCOMING AIR STREAM: Air stream is a collection of all particles for the process, with the portion shown above to be the portion that is PM10 and smaller particle size. PLEASE NOTE : OVERALL FLOW IS REFLECTED IN THE PFD_ PORTION SHOWN ABOVE IS ONLY FOR PM10 and SMALLER PARTICLES.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	0.25%	0.25%
1-10	0.75%	1.00%
10-25	8%	9.00%
25-50	15%	24.00%
50-100	39%	63.00%
>100	37%	100.00%
		TOTAL = 100

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC: Differential pressure on the cyclone

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C4
CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **C4**

CONTROL DEVICE ID NO: CD-3	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-PP-1
EMISSION POINT (STACK) ID NO(S):EP-PP-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM :CYCLONE for cooler and pelletizer. This system is meant to collect any PM that arises from the pelltizing and cooling process.

POLLUTANT(S) COLLECTED:	PM			
BEFORE CONTROL EMISSION RATE (LB/HR):	0.75			
CAPTURE EFFICIENCY:	100 %	%	%	%
CONTROL DEVICE EFFICIENCY:	99 %	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	99 %	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	0.01			

PRESSURE DROP (IN. H_20): 4 MIN 6 MAX

INLET TEMPERATURE (°F): 0F MIN 400F MAX	OUTLET TEMPERATURE (°F): 0F MIN 400F MAX
INLET AIR FLOW RATE (ACFM):8500	BULK PARTICLE DENSITY (LB/FT^3):
POLLUTANT LOADING RATE (GR/FT^3):0.32	

SETTLING CHAMBER	**CYCLONE**			**MULTICYCLONE**
LENGTH (INCHES):	INLET VELOCITY (FT/SEC):		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H:253" Including outlet	Dd: 6 feet nominal	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:50-60fps	Lb:	FLOW RATE (GPM):	☐ YES ☐ NO
NO. TRAYS:	De: N/A	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:N/A	S:		☐ YES ☐ NO
	TYPE OF CYCLONE: ☑ CONVENTIONAL		☐ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES:

DESCRIBE INCOMING AIR STREAM: Hot air from pellitizer and cooler. Distribution size unknown as minimal PM is expected.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1		
1-10		
10-25		
25-50		
50-100		
>100		
		TOTAL = 100

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — **C1**

CONTROL DEVICE ID NO:CD-4	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-PSC-1
EMISSION POINT (STACK) ID NO(S): EP-PSC-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
___1___ OF ___1___	P.E. SEAL REQUIRED (PER 2q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM: CARTRIDGE FILTER MANUFACTURER BY SLY, information included for removal specifications. Set up to remove PM from screening proc

POLLUTANTS COLLECTED:	PM			
BEFORE CONTROL EMISSION RATE (LB/HR):	483.00			
CAPTURE EFFICIENCY:	100 %	%	%	%
CONTROL DEVICE EFFICIENCY:	99.9 %	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	99.9 %	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	0.483			

PRESSURE DROP (IN H_20): MIN:	MAX:	GAUGE? ☑ YES ☐ NO	
BULK PARTICLE DENSITY (LB/FT^3):		INLET TEMPERATURE (°F): MIN:72	MAX: 72
POLLUTANT LOADING RATE: ☑ LB/HR ☐ GR/FT^3		OUTLET TEMPERATURE (°F) MIN:72	MAX:72
INLET AIR FLOW RATE (ACFM):		FILTER OPERATING TEMP (°F):72	
NO. OF COMPARTMENTS:1	NO. OF BAGS PER COMPARTMENT:	LENGTH OF BAG (IN.):	
NO. OF CARTRIDGES:60	FILTER SURFACE AREA PER CARTRIDGE (FT^2):	DIAMETER OF BAG (IN.):	
TOTAL FILTER SURFACE AREA (FT^2):	AIR TO CLOTH RATIO:		

DRAFT TYPE: ☑ INDUCED/NEGATIVE ☐ FORCED/POSITIVE — FILTER MATERIAL: ☑ WOVEN ☐ FELTED

DESCRIBE CLEANING PROCEDURES:

☑ AIR PULSE ☐ SONIC
☐ REVERSE FLOW ☐ SIMPLE BAG COLLAPSE
☐ MECHANICAL/SHAKER ☐ RING BAG COLLAPSE
☐ OTHER:

DESCRIBE INCOMING AIR STREAM: Screen negative air. The screen is used to remove fine dust from the pellets and this unit is used to ensure that dust is recovered and put back in the process. It is also used to ensure high efficienty of PM control.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	NOT KNOWN	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:SEE THE PROCESS FLOW FOR DETAILS

Attach Additional Sheets As Necessary

Already Permitted

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C7
CONTROL DEVICE (CONDENSER)

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **C7**

AS REQUIRED BY 15A NCAC 2Q .0112, THIS FORM MUST BE SEALED BY A PROFESSIONAL ENGINEER (P.E.) LICENSED IN NORTH CAROLINA.

CONTROL DEVICE ID NO:CD-1	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-P-1
EMISSION POINT ID NO(S):EP-CD-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
1 OF 1	
CONDENSER TYPE: ☐ DIRECT CONTACT ☑ INDIRECT CONTACT	CONDENSER TYPE: ☑ SHELL AND TUBE ☐ OTHER

DESCRIBE CONTROL SYSTEM:CONDENSER

POLLUTANT(S) COLLECTED:	VOC			
CORRESPONDING EFFICIENCY:	80 %	%	%	%
EFFICIENCY DETERMINATION CODE:				
BEFORE CONTROL CONCENTRATION (PPMV):				
BEFORE CONTROL EMISSION RATE (LB/HR):	4.815			
AFTER CONTROL CONCENTRATION (PPMV):				
AFTER CONTROL EMISSION RATE (LB/HR):	0.9625			
BOILING POINT OF COLLECTED POLLUTANT (°F):	131-356			
HEAT OF VAPORIZATION OF COLLECTED POLLUTANT (BTU/LB-MOL):				
SPECIFIC HEAT OF POLLUTANT COLLECTED (BTU/LB-MOL °F):				

EMISSION STREAM FLOW RATE (ACFM):75.25	INLET EMISSION STREAM TEMPERATURE (°F): 439 (226C)
MOISTURE CONTENT OF EMISSION STREAM (%):99.8	OUTLET EMISSION STREAM TEMPERATURE (°F): 131 (50C)
COOLANT USED: WATER	TEMPERATURE OF INLET COOLANT (°F):68 (20C)
TEMPERATURE OF CONDENSATION (°F):210 (99C)	TEMPERATURE OF OUTLET COOLANT (°F): 140 (60C)
COOLANT FLOW RATE (LB/HR): 48,149 (1.6gal/sec)	REFRIGERATION CAPACITY (TONS):NONE
CONDENSER SURFACE AREA (FT^2):2015 (20 m2)	

DESCRIBE MAINTENANCE PROCEDURES:CLEAN CONDENSER AS PER THE MANUFACTURER SPECS

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:TEMPERATURE AND PRESSURE GAUGES

ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):SEE THE PROCESS FLOW DIAGRAM

COMMENTS:

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM D1
FACILITY-WIDE EMISSIONS SUMMARY (PROPOSED)

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

AIR POLLUTANT EMITTED	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	26.81	29.35	29.35
PARTICULATE MATTER < 10 MICRONS (PM_{10})	26.73	29.35	29.35
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)	0.06	0.06	0.06
SULFUR DIOXIDE (SO_2)	0.66	0.73	0.73
NITROGEN OXIDES (NOx)	4.91	5.38	5.38
CARBON MONOXIDE (CO)	16.15	17.68	17.68
VOLATILE ORGANIC COMPOUNDS (VOC)	24.57	26.9	26.9
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)	11309	283072	283072
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
		Lbs/yr	Lbs/yr	Lbs/yr
Acetaldehyde (TH)	75070	2403.72	2632.08	2632.08
Acrolein (TH)	107028	0.003	0.004	0.004
Ammonia (T)	7664417	602.34	659.56	659.56
Arsenic unlisted compounds (TH)	ASC-other	0.00	0.00	0.00
Benzene (TH)	71432	0.40	0.43	0.43
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00
Beryllium metal (unreacted) (TH)	7440417	0.00	0.00	0.00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00	0.00	0.00
Chromic acid (VI) (TH)	7738945	0.00	0.00	0.00
Cobalt unlisted compounds (H)	COC-other	0.02	0.02	0.02
Formaldehyde (TH)	50000	607.40	665.10	665.10
Hexane, n- (TH)	110543	338.81	371.00	371.00
Lead unlisted compounds (H)	PBC-other	0.09	0.10	0.10
Manganese unlisted compounds (TH)	MNC-other	0.00	0.00	0.00
Mercury vapor (TH)	7439976	0.00	0.00	0.00
Napthalene (H)	91203	0.11	0.13	0.13
Nickel metal (TH)	7440020	0.00	0.00	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00
Toluene (TH)	108883	0.64	0.70	0.70
Methanol (H)	67561	554.76	607.46	607.46
Phenol (TH)	108952	0.00	0.00	0.00
Propionaldehyde (H)	123386	1755.00	1921.73	1921.73

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY. **(NO MODELING IS REQUIRED)**

TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Modeling Required ? Yes	Modeling Required ? No	TPER LIMIT
Acetaldehyde (TH)	75070	0.27	6.59	2403.72		NO	6.8 lbs/hr
Ammonia (T)	7664417	0.07	1.65	602.34		NO	6.8 lbs/hr
Formaldehyde (TH)	50000	0.07	1.66	607.40		NO	0.04 lbs/hr
Hexane, n- (TH)	110543	0.04	0.93	338.81		NO	23 lb/day
Toluene (TH)	108883	0.00	0.00	0.64		NO	197.96 lb/day
							58.97 lb/hr

COMMENTS:

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM D5
TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **D5**

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRAM AS NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES:

A **SPECIFIC EMISSIONS SOURCE (EMISSION INFORMATION) (FORM B and B1 through B9) -** SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL BALANCES, AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATION OF POTENTIAL BEFORE AND, WHERE APPLICABLE, AFTER CONTROLS. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT MATERIAL BALANCE CALCULATIONS.

B **SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM E2 - TITLE V ONLY) -** PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION (PSD), NEW SOURCE PERFORMANCE STANDARDS (NSPS), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY REQUIRED INFORMATION TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE, DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CALCULATIONS.

C **CONTROL DEVICE ANALYSIS (FORM C and C1 through C9) -** PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES LISTED ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS (e.g. OPERATING CONDITIONS, MANUFACTURING RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER PERFORMANCE OF THE CONTROL DEVICES). INCLUDE AND LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTENANCE TO BE PERFORMED.

D **PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS - (FORM E3 - TITLE V ONLY)** - SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REGULATIONS.

E **PROFESSIONAL ENGINEERING SEAL -** PURSUANT TO 15A NCAC 2Q .0112 "APPLICATION REQUIRING A PROFESSIONAL ENGINEERING SEAL," A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APPLICATION FOR NEW SOURCES AND MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY).

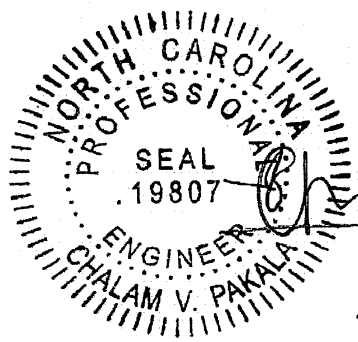
I, CHALAM PAKALA attest that this application for ACTIVE ENERGY RENEWABLE POWER *has been reviewed by me and is accurate, complete and consistent with the information supplied in the engineering plans, calculations, and all other supporting documentation to the best of my knowledge. I further attest that to the best of my knowledge the proposed design has been prepared in accordance with the applicable regulations. Although certain portions of this submittal package may have been developed by other professionals, inclusion of these materials under my seal signifies that I have reviewed this material and have judged it to be consistent with the proposed design. Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed $10,000 as well as civil penalties up to $25,000 per violation.*

(PLEASE USE BLUE INK TO COMPLETE THE FOLLOWING)

NAME:	CHALAM PAKALA
DATE:	26-Apr-21
COMPANY:	CP ENGINEERIGN AND ENV SOLUTIONS
ADDRESS:	10017 ALLYSON PARK DR., CHARLOTTE, NC 28277
TELEPHONE:	704-756-7451
SIGNATURE:	
PAGES CERTIFIED:	ALL

(IDENTIFY ABOVE EACH PERMIT FORM AND ATTACHMENT THAT IS BEING CERTIFIED BY THIS SEAL)

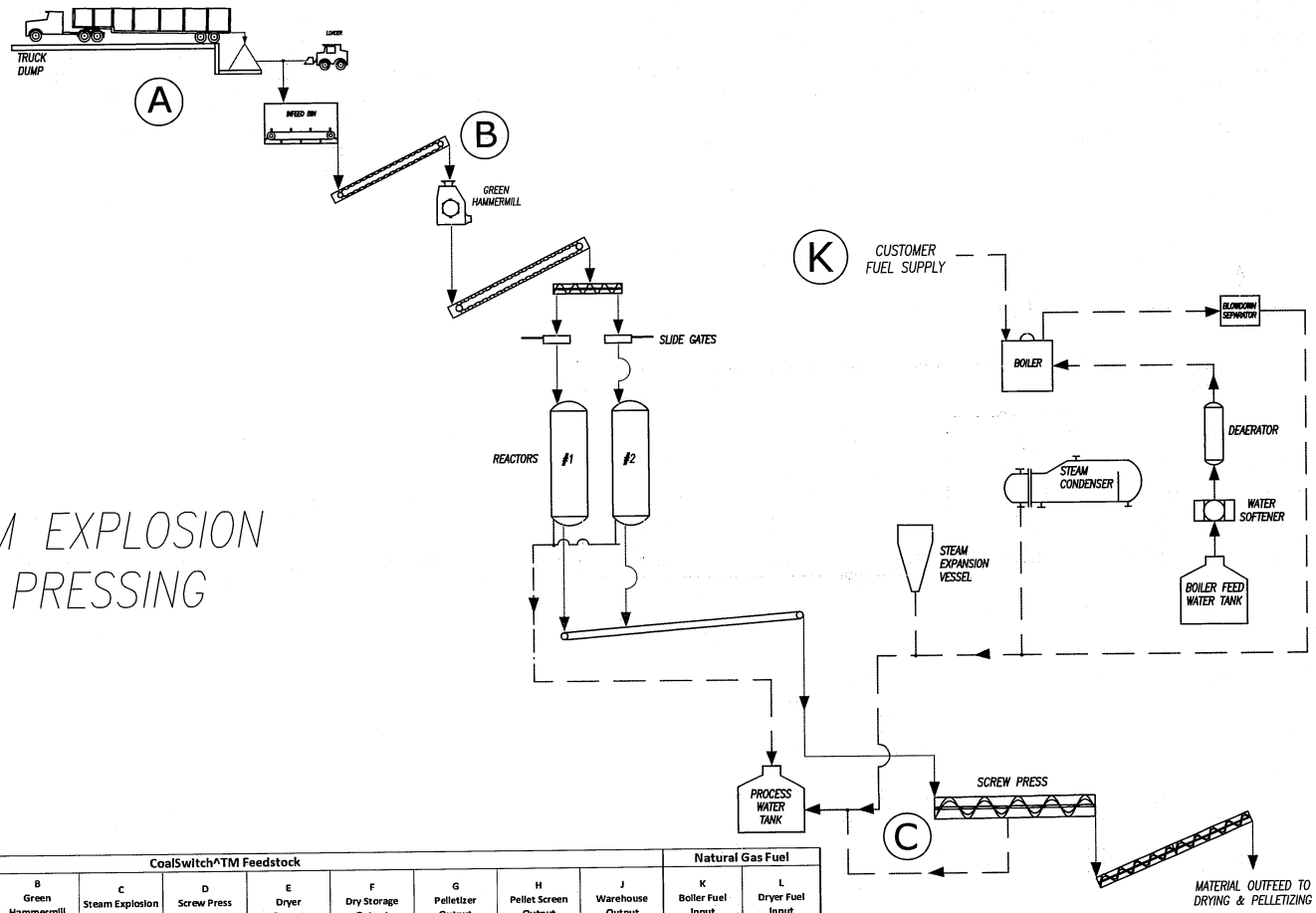
PLACE NORTH CAROLINA SEAL HERE



4/26/2021

Attach Additional Sheets As Necessary

PROCESS SCHEMATICS



STEAM EXPLOSION & PRESSING

	CoalSwitch^TM Feedstock									Natural Gas Fuel	
Process Step	A Wood Chip Input	B Green Hammermill Output	C Steam Explosion Output	D Screw Press Output	E Dryer Output	F Dry Storage Output	G Pelletizer Output	H Pellet Screen Output	J Warehouse Output	K Boiler Fuel Input	L Dryer Fuel Input
kg/hr	10,967	10,912	9,745	8,770	4,876	4,852	4,609	4,379	4,357	204	343
lbs/hr	24,178	24,057	21,483	19,335	10,750	10,696	10,162	9,654	9,605	449	756
Tons/yr	96,713	96,230	85,933	77,340	43,001	42,786	40,647	38,614	38,421	1,796	3,026
ODT/yr	48,357	48,115	43,126	46,404	38,701	38,507	38,614	36,684	36,500	8,515	14,005
Process Loss(%)	0.0%	0.5%	10.7%	10.0%	44.4%	0.5%	5.0%	5.0%	0.5%	CFH	CFH
% of Initial Weight	100%	100%	89%	80%	44%	44%	42%	40%	40%		
Process Loss(lbs/hr)	0	120	2,299	1,933	4,773	53	508	483	48		
Process Loss(Tons/yr)	0	481	9,195	7,734	19,092	214	2,032	1,931	192		
Wood MC(%)	50%	50%	50%	40%	10%	10%	5%	5%	5%		
Based On Expected Plant Hours(hrs/yr)											8000

KEY:

- MATERIAL TRAVEL
- DUCTS
- FIRE WATER
- HIGH PRESSURE STEAM
- LOW PRESSURE STEAM
- LOW PRESSURE CONDENSATE
- HOT WATER
- COLD WATER

Revisions:

No.	By	Description	Date
0	ES	INITIAL DRAWING	10/14/20
1	ES	UPDATED FOR 2.5TPH PLANT	11/20/20
4	ME	UPDATED TONNAGE AND HOURS	04/23/21

Player Design, Inc.
29 Second St., Suite 2
P.O. Box 712
Presque Isle, ME 04769
Office: 207.764.6811
www.playerdesign.net

Drawing Title: AEG001 PROCESS FLOW DIAGRAM

Drawing Number: AEG001-PFD-001

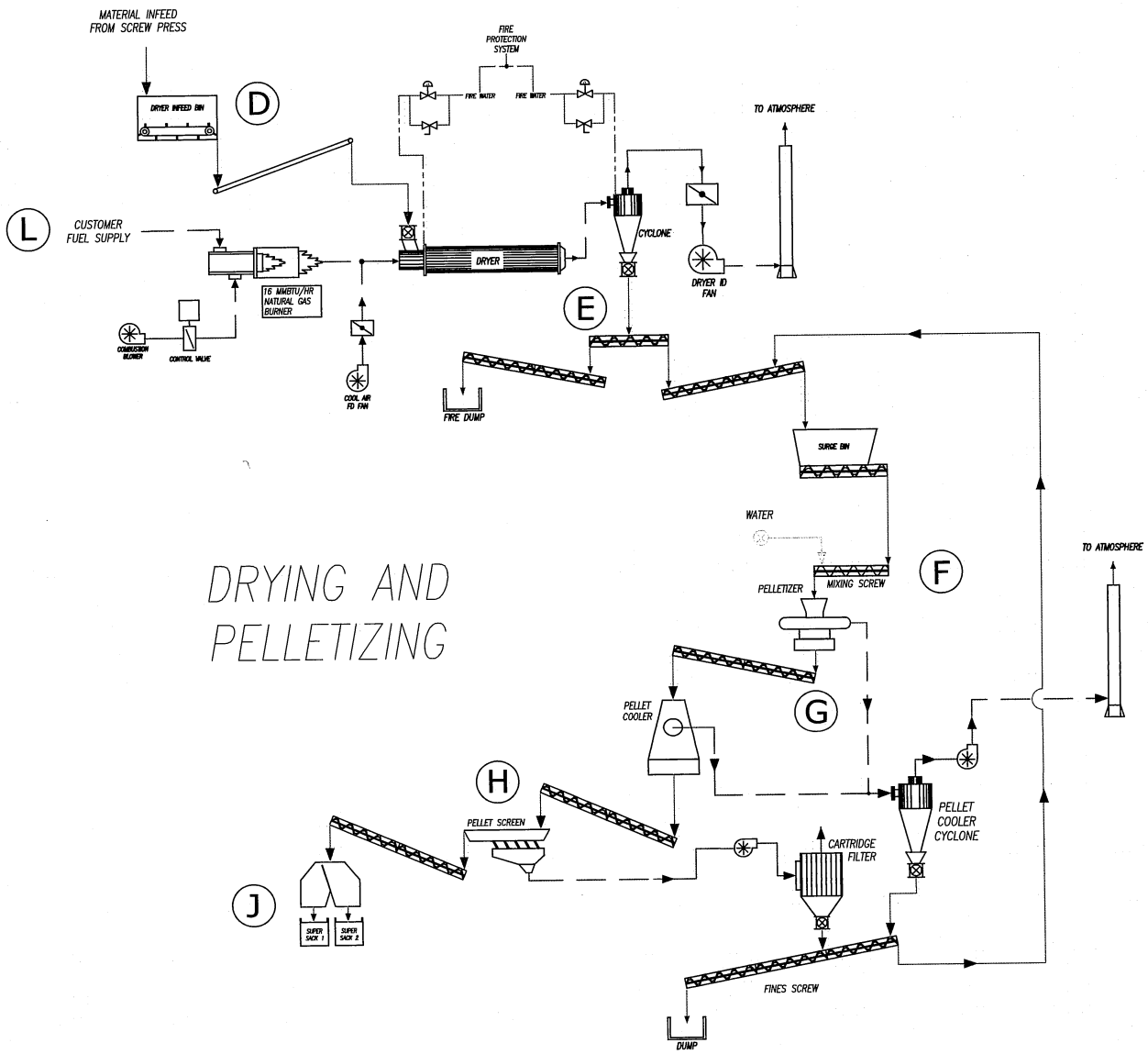
Project ID: AEG001

Project Description: 2.5 TPH COALSWITCH PELLET PLANT

Drawn By: ME | Revision NO.: 4

Checked By: TP | Sheet NO.: 1 OF 2

Scale: NTS | Date: 4/26/2021



KEY:

MATERIAL TRAVEL	———
DUCTS	— — —
FIRE WATER	— — —
HIGH PRESSURE STEAM	
LOW PRESSURE STEAM	
LOW PRESSURE CONDENSATE	———
HOT WATER	— — · —
COLD WATER	———

Revisions:

No.	By	Description	Date
0	ES	INITIAL DRAWING	10/14/20
1	ES	UPDATED FOR 2.5TPH PLANT	11/20/20
4	ME	UPDATED TONNAGE AND HOURS	04/23/21

Player Design, Inc.
29 Second St., Suite 2
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Drawing Title: AEG001 PROCESS FLOW DIAGRAM

Drawing Number: AEG001-PFD-001

Project ID: AEG001

Project Description: 2.5 TPH COALSWITCH PELLET PLANT

Drawn By: ME | Revision NO.: 4

Checked By: TP | Sheet NO.: 2 OF 2

Scale: NTS | Date: 4/26/2021

4/27/21

PDI 10 X 45 DRYER SYSTEM

PLAYER DESIGN, INC.
29 Second St. Suite 2
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Presque Isle, ME 04769
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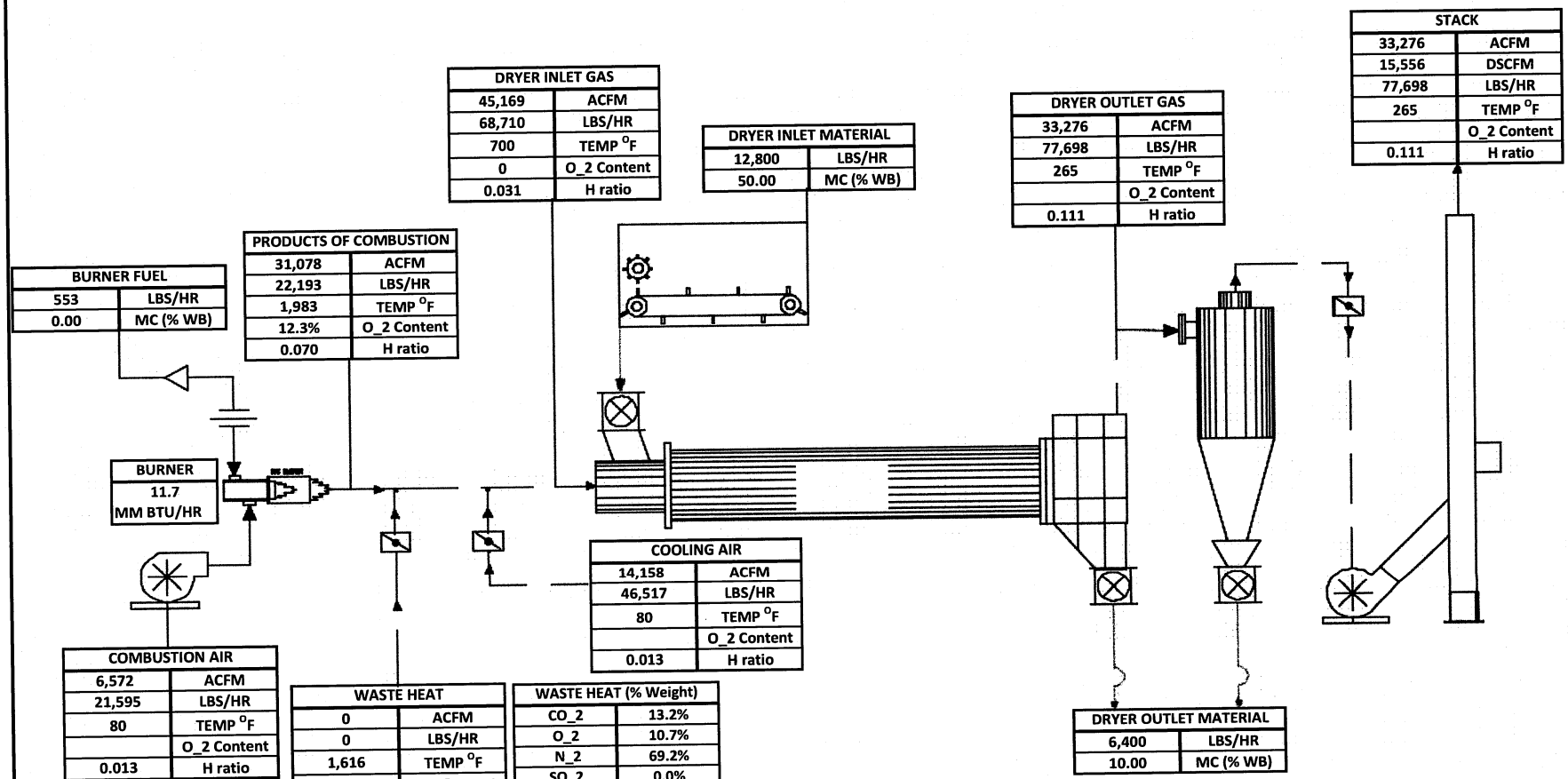

Emissions Out Of Dryer								
PM.Total	6.72	lbs/hr	>>>>>>>>	2.10	lbs/ODT	>>>>>>>>	26.49	tons/yr
CO	1.34	lbs/hr	>>>>>>>>	0.42	lbs/ODT	>>>>>>>>	5.30	tons/yr
NO.x	0.86	lbs/hr	>>>>>>>>	0.27	lbs/ODT	>>>>>>>>	3.41	tons/yr
VOC	5.44	lbs/hr	>>>>>>>>	1.70	lbs/ODT	>>>>>>>>	21.44	tons/yr

TABLES

AIR EMISSION CALCULATIONS

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Yearly Potential/Actual emissions: Boilers, Dryers, and Screw & Pellet Presses

Pollutant	CAS Number	Steam Boiler (ES-B-1)	Dryer (ES-D-1)	Pressure Cooker W/Condenser (ES-P-1) & CD-1	Screw Press/Dryer (ES-SPD-1) & CD-2	Pellet Press & Cooler (ES-PP-1) & CD-3	Pellet Screening (ES-PSC-1) & CD-4	Pellet Storage (ES-PS-1) No CD	AFTER CONTROL DEVICE: Actual Emissions after CD	Actual Emissions	Potential Emissions before CD	Potential Emissions after CD	Potential Emissions
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)	(ton/yr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants													
PM	PM	0.04	0.01		26.67	0.09	0.0003		**26.81**	0.003		**29.35**	0.003
PM10	PM10	0.04	0.01		26.67	0.02	0.0003		**26.73**	0.003		**29.27**	0.003
PM2.5	PM2.5	0.03	0.01			0.02	0.0003		**0.06**	0.000		**0.06**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.65	0.01						**0.66**	0.000		**0.73**	0.000
NITROGEN OXIDES (NOx)	NOx	0.05	1.57		3.29				**4.91**	0.001		**5.38**	0.001
CARBON MONOXIDE (CO)	CO	8.59	1.32		6.24				**16.15**	0.002		**17.68**	0.002
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.47	0.09	3.85	19.26			0.90	**24.57**	0.003		**26.90**	0.003
Greenhouse Gas Emissions													
CARBON DIOXIDE (CO_2)	CO_2	9424.29	1884.74						**11,309.03**			**12,383.39**	
METHANE (CH_4)	CH_4	0.18	0.04						**0.21**			**0.23**	
NITROUS OXIDE (N_2O)	N_2O	0.02	0.00						**0.02**			**0.02**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/hr)		(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.002	0.000	460.800	925.20	925.20		92.52	**2403.72**	0.27	**2632.08**	**2632.08**	0.30
Acrolein (TH)	107028	0.003	0.001						**0.003**	0.00	**0.004**	**0.004**	0.00
Ammonia (T)	7664417	501.952	100.384						**602.34**	0.07	**659.56**	**659.56**	0.08
Arsenic unlisted compounds (TH)	ASC-other								**0.00**	0.00	**0.00**	**0.00**	0.00
Benzene (TH)	71432	0.329	0.066						**0.40**	0.00	**0.43**	**0.43**	0.00
Benzo(a)pyrene (TH)	50328	0.000	0.000						**0.00**	0.00	**0.00**	**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417								**0.00**	0.00	**0.00**	**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439								**0.00**	0.00	**0.00**	**0.00**	0.00
Chromic acid (VI) (TH)	7738945								**0.00**	0.00	**0.00**	**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.013	0.003						**0.02**	0.00	**0.02**	**0.02**	0.00
Formaldehyde (TH)	50000	11.765	2.353	487.440	50.40	50.40		5.04	**607.40**	0.07	**665.10**	**665.10**	0.08
Hexane, n- (TH)	110543	282.348	56.466						**338.81**	0.04	**371.00**	**371.00**	0.04
Lead unlisted compounds (H)	PBC-other	0.078	0.016						**0.09**	0.00	**0.10**	**0.10**	0.00
Manganese unlisted compounds (TH)	MNC-other								**0.00**	0.00	**0.00**	**0.00**	0.00
Mercury vapor (TH)	7439976								**0.00**	0.00	**0.00**	**0.00**	0.00
Napthalene (H)	91203	0.096	0.019						**0.11**	0.00	**0.13**	**0.13**	0.00
Nickel metal (TH)	7440020								**0.00**	0.00	**0.00**	**0.00**	0.00
Selenium compounds (H)	SEC	0.004	0.001						**0.00**	0.00	**0.00**	**0.00**	0.00
Toluene (TH)	108883	0.533	0.107						**0.64**	0.00	**0.70**	**0.70**	0.00
Methanol (H)	67561			214.560	162.00	162.00		16.20	**554.76**	0.06	**607.46**	**607.46**	0.07
Phenol (TH)	108952								**0.00**	0.00	**0.00**	**0.00**	0.00
Propionaldehyde (H)	123386			1414.800	162.00	162.00		16.20	**1755.00**	0.20	**1921.73**	**1921.73**	0.22
HAP Indiv. Max		**501.95**	**100.38**		**925.20**	**925.20**	**0.00**				**2632.08**	**2632.08**	
HAP total		**797.12**	**159.41**		**1299.60**	**1299.60**	**0.00**		**6263.30**		**6858.31**	**6858.31**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

Calculations of NG usage based on Hours of Operation

Data Input (BOILER)

Maximum Heat Input	20.00	mmBtu/hr
Boiler Size/Type	Small Industrial	
Actual Fuel Usage		ft^3/yr
or	or	
Hours of Operation	8,000	hr/yr
and	and	
Heating Value	1,020	Btu/ft^3
Calculated Fuel Usage	156,862,745	ft^3/yr
	156.86	mmscf/yr

Data Input (DRYER)

Maximum Heat Input	4.00	mmBtu/hr
Boiler Size/Type	Small Industrial	
Actual Fuel Usage		ft^3/yr
or	or	
Hours of Operation	8,000	hr/yr
and	and	
Heating Value	1,020	Btu/ft^3
Calculated Fuel Usage	31,372,549	ft^3/yr
	31.37	mmscf/yr

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - INPUT SCREEN

Air Quality ENVIRONMENTAL QUALITY

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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Directions: Enter and select information in the boxes in the column on the right:

FIELDS	***SELECTIONS***
COMPANY NAME:	ACTIVE ENERGY RENEWABLE POWER
FACILITY ID NUMBER:	NA
PERMIT NUMBER	NA
FACILITY CITY:	LUMBERTON
FACILITY COUNTY:	ROBESON
SPREADSHEET PREPARED BY:	CHALAM PAKALA, PE
EMISSION SOURCE ID NO.:	ES-B-1
MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	20.00 mmBTU/HR
TYPE OF BOILER:	SMALL BOILER (<100 mmBTU/HR)
DOES THE SOURCE ALSO BURN COAL OR FUEL OIL?	No
DATE OF CONSTRUCTION:	10/1/2019 (mm/dd/yyyy)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS (GHG) EMISSIONS

ENTER Calculation Tier from EPA Mandatory Reporting Rule (MRR)* Subpart C: TIER 1: DEFAULT HHV AND DEFAULT EF

* See http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER FUEL CARBON CONTENT: 0.7500

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER MOLECULAR WEIGHT: 19.00 kg/kg-mole

FUEL HEATING VALUE

ANNUAL AVG MEASURED FUEL HEATING VALUE (BTU/SCF): 1,020 BTU/SCF

DEFAULT FUEL HEATING VALUE (BTU/SCF) -- will be used for GHG calculations under TIER 1 approach

1,028 BTU/SCF default value is from EPA's mandatory reporting rule, Table C-1, "Natural Gas Pipeline (Weighted U.S. Average)"

USAGE AND OTHER SOURCE-SPECIFIC DATA

ACTUAL YEARLY FUEL USAGE (MILLION SCF):	156.86	MILLION SCF	
CALCULATED POTENTIAL YEARLY USAGE (MILLION SCF)	171.76	MILLION SCF	
REQUESTED ANNUAL LIMITATION (MILLION SCF)	171.76	MILLION SCF	(TYPEOVER IF NECESSARY - DEFAULT IS POTENTIAL)

DAILY HOURS OF OPERATION: 22 HOURS

TYPE OF EMISSION CONTROL: NO CONTROL

IS SNCR APPLIED TO THE BOILER? NO

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	ACTIVE ENERGY RENEWABLE POWER			FACILITY ID NO.:	NA
				PERMIT NUMBER:	NA
EMISSION SOURCE DESCRIPTION:	20 MMBTU/HR NATURAL GAS-FIRED BOILER			FACILITY CITY:	LUMBERTON
EMISSION SOURCE ID NO.:	ES-B-1			FACILITY COUNTY:	ROBESON
CONTROL DEVICE:	NO CONTROL			POLLUTANT	CONTROL EFF.
SPREADSHEET PREPARED BY:	CHALAM PAKALA, PE			NOX	CALC'D AS 0%
ACTUAL FUEL THROUGHPUT:	156.86	10^6 SCF/YR	FUEL HEAT VALUE: 1,020 BTU/SCF		
POTENTIAL FUEL THROUGHPUT:	171.76	10^6 SCF/YR	BOILER TYPE: SMALL BOILER (<100 mmBTU/HR)	NO SNCR APPLIED	
REQUESTED MAX. FUEL THRPT:	171.76	10^6 SCF/YR	HOURS OF OPERATIONS: 22		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
AIR POLLUTANT EMITTED	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	uncontrolled	controlled
PARTICULATE MATTER (Total)	0.01	0.04	0.01	0.04	0.01	0.04	0.001	0.001
PARTICULATE MATTER (Filterable)	0.00	0.02	0.00	0.02	0.00	0.02	0.000	0.000
PARTICULATE MATTER (Condensable)	0.01	0.03	0.01	0.03	0.01	0.03	0.000	0.000
PM 2.5 (Total)	0.01	0.03	0.01	0.04	0.01	0.04	0.000	0.000
PM 2.5 (Filterable)	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
SULFUR DIOXIDE (SO2)	0.01	0.05	0.01	0.05	0.01	0.05	0.001	0.001
NITROGEN OXIDES (NOx)	1.96	7.84	1.96	8.59	1.96	8.59	0.098	0.098
CARBON MONOXIDE (CO)	1.65	6.59	1.65	7.21	1.65	7.21	0.082	0.082
VOLATILE ORGANIC COMPOUNDS (VOC)	0.11	0.43	0.11	0.47	0.11	0.47	0.005	0.005

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
TOXIC / HAZARDOUS AIR POLLUTANT	CAS NUMBER	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	2.98E-07	2.38E-03	2.98E-07	2.61E-03	2.98E-07	2.61E-03	1.49E-08	1.49E-08
Acrolein (TH)	107028	3.53E-07	2.82E-03	3.53E-07	3.09E-03	3.53E-07	3.09E-03	1.76E-08	1.76E-08
Ammonia (T)	7664417	6.27E-02	5.02E+02	6.27E-02	5.50E+02	6.27E-02	5.50E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	4.12E-05	3.29E-01	4.12E-05	3.61E-01	4.12E-05	3.61E-01	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	2.35E-08	1.88E-04	2.35E-08	2.06E-04	2.35E-08	2.06E-04	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromic acid (VI) (TH)	7738945	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt unlisted compounds (H)	COC-other	1.65E-06	1.32E-02	1.65E-06	1.44E-02	1.65E-06	1.44E-02	8.24E-08	8.24E-08
Formaldehyde (TH)	50000	1.47E-03	1.18E+01	1.47E-03	1.29E+01	1.47E-03	1.29E+01	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	3.53E-02	2.82E+02	3.53E-02	3.09E+02	3.53E-02	3.09E+02	1.76E-03	1.76E-03
Lead unlisted compounds (H)	PBC-other	9.80E-06	7.84E-02	9.80E-06	8.59E-02	9.80E-06	8.59E-02	4.90E-07	4.90E-07
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Napthalene (H)	91203	1.20E-05	9.57E-02	1.20E-05	1.05E-01	1.20E-05	1.05E-01	5.98E-07	5.98E-07
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium compounds (H)	SEC	4.71E-07	3.76E-03	4.71E-07	4.12E-03	4.71E-07	4.12E-03	2.35E-08	2.35E-08
Toluene (TH)	108883	6.67E-05	5.33E-01	6.67E-05	5.84E-01	6.67E-05	5.84E-01	3.33E-06	3.33E-06
Total HAPs		3.69E-02	2.95E+02	3.69E-02	3.23E+02	3.69E-02	3.23E+02	1.84E-03	1.84E-03
Highest HAP	Hexane	3.53E-02	2.82E+02	3.53E-02	3.09E+02	3.53E-02	3.09E+02	1.76E-03	1.76E-03

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

		EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS			EMISSION FACTOR lb/mmBtu	
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	2.98E-07	6.56E-06	2.38E-03	1.49E-08	1.49E-08
Acrolein (TH)	107028	3.53E-07	7.76E-06	2.82E-03	1.76E-08	1.76E-08
Ammonia (T)	7664417	6.27E-02	1.38E+00	5.02E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	4.12E-05	9.06E-04	3.29E-01	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	2.35E-08	5.18E-07	1.88E-04	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Soluble chromate compounds, as chromium (VI) equivalent	SolCR6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Formaldehyde (TH)	50000	1.47E-03	3.24E-02	1.18E+01	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	3.53E-02	7.76E-01	2.82E+02	1.76E-03	1.76E-03
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene (TH)	108883	6.67E-05	1.47E-03	5.33E-01	3.33E-06	3.33E-06

GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD

GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD

GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS (EPA MRR CALCULATION METHOD: TIER 1)			POTENTIAL EMISSIONS	
	metric tons/yr	metric tons/yr, **CO2e**	short tons/yr	short tons/yr	short tons/yr, **CO2e**
CARBON DIOXIDE (CO_2)	8549.59	8,549.59	9,424.29	10,239.47	10239.47
METHANE (CH_4)	1.61E-01	4.03E+00	1.78E-01	1.93E-01	4.83E+00
NITROUS OXIDE (N_2O)	1.61E-02	4.81E+00	1.78E-02	1.93E-02	5.76E+00
		TOTAL CO2e (metric tons) **8,558.42**			TOTAL CO2e (short tons) **10,250.06**

NOTE: CO2e means CO2 equivalent
NOTE: The DAQ Air Emissions Reporting Online (AERO) system requires short tons be reported. The EPA MRR requires metric tons be reported.
NOTE: Do not use greenhouse gas emission estimates from this spreadsheet for PSD (Prevention of Significant Deterioration) purposes.

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - INPUT SCREEN

Air Quality ENVIRONMENTAL QUALITY

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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Directions: Enter and select information in the boxes in the column on the right:

FIELDS	***SELECTIONS***
COMPANY NAME:	ACTIVE ENERGY RENEWABLE POWER
FACILITY ID NUMBER:	NA
PERMIT NUMBER	NA
FACILITY CITY:	LUMBERTON
FACILITY COUNTY:	ROBESON
SPREADSHEET PREPARED BY:	CHALAM PAKAL, PE
EMISSION SOURCE ID NO.:	ES-D-1
MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	4.00 mmBTU/HR
TYPE OF BOILER:	SMALL BOILER (<100 mmBTU/HR)
DOES THE SOURCE ALSO BURN COAL OR FUEL OIL?	No
DATE OF CONSTRUCTION:	5/1/2000 (mm/dd/yyyy)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS (GHG) EMISSIONS

ENTER Calculation Tier from EPA Mandatory Reporting Rule (MRR)* Subpart C: TIER 1: DEFAULT HHV AND DEFAULT EF

* See http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER FUEL CARBON CONTENT: 0.7500

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER MOLECULAR WEIGHT: 19.00 kg/kg-mole

FUEL HEATING VALUE

ANNUAL AVG MEASURED FUEL HEATING VALUE (BTU/SCF): 1,020 BTU/SCF

DEFAULT FUEL HEATING VALUE (BTU/SCF) -- will be used for GHG calculations under TIER 1 approach

1,028 BTU/SCF default value is from EPA's mandatory reporting rule, Table C-1, "Natural Gas Pipeline (Weighted U.S. Average)"

USAGE AND OTHER SOURCE-SPECIFIC DATA

ACTUAL YEARLY FUEL USAGE (MILLION SCF):	31.37	MILLION SCF	
CALCULATED POTENTIAL YEARLY USAGE (MILLION SCF)	34.35	MILLION SCF	
REQUESTED ANNUAL LIMITATION (MILLION SCF)	34.35	MILLION SCF	(TYPEOVER IF NECESSARY - DEFAULT IS POTENTIAL)
DAILY HOURS OF OPERATION:	22	HOURS	
TYPE OF EMISSION CONTROL:	NO CONTROL		
IS SNCR APPLIED TO THE BOILER?	NO		

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	ACTIVE ENERGY RENEWABLE POWER			FACILITY ID NO.:	NA
				PERMIT NUMBER:	NA
EMISSION SOURCE DESCRIPTION:	4 MMBTU/HR NATURAL GAS-FIRED BOILER			FACILITY CITY:	LUMBERTON
EMISSION SOURCE ID NO.:	ES-D-1			FACILITY COUNTY:	ROBESON
CONTROL DEVICE:	NO CONTROL			POLLUTANT	CONTROL EFF.
SPREADSHEET PREPARED BY:	CHALAM PAKAL, PE			NOX	CALC'D AS 0%
ACTUAL FUEL THROUGHPUT:	31.37	10^6 SCF/YR	FUEL HEAT VALUE: 1,020 BTU/SCF		
POTENTIAL FUEL THROUGHPUT:	34.35	10^6 SCF/YR	BOILER TYPE: SMALL BOILER (<100 mmBTU/HR)	NO SNCR APPLIED	
REQUESTED MAX. FUEL THRPT:	34.35	10^6 SCF/YR	HOURS OF OPERATIONS: 22		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
AIR POLLUTANT EMITTED	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	uncontrolled	controlled
PARTICULATE MATTER (Total)	0.00	0.01	0.00	0.01	0.00	0.01	0.001	0.001
PARTICULATE MATTER (Filterable)	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
PARTICULATE MATTER (Condensable)	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
PM 2.5 (Total)	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
PM 2.5 (Filterable)	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
SULFUR DIOXIDE (SO2)	0.00	0.01	0.00	0.01	0.00	0.01	0.001	0.001
NITROGEN OXIDES (NOx)	0.39	1.57	0.39	1.72	0.39	1.72	0.098	0.098
CARBON MONOXIDE (CO)	0.33	1.32	0.33	1.44	0.33	1.44	0.082	0.082
VOLATILE ORGANIC COMPOUNDS (VOC)	0.02	0.09	0.02	0.09	0.02	0.09	0.005	0.005

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
TOXIC / HAZARDOUS AIR POLLUTANT	CAS NUMBER	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	5.96E-08	4.77E-04	5.96E-08	5.22E-04	5.96E-08	5.22E-04	1.49E-08	1.49E-08
Acrolein (TH)	107028	7.06E-08	5.65E-04	7.06E-08	6.18E-04	7.06E-08	6.18E-04	1.76E-08	1.76E-08
Ammonia (T)	7664417	1.25E-02	1.00E+02	1.25E-02	1.10E+02	1.25E-02	1.10E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	8.24E-06	6.59E-02	8.24E-06	7.21E-02	8.24E-06	7.21E-02	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	4.71E-09	3.76E-05	4.71E-09	4.12E-05	4.71E-09	4.12E-05	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromic acid (VI) (TH)	7738945	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt unlisted compounds (H)	COC-other	3.29E-07	2.64E-03	3.29E-07	2.89E-03	3.29E-07	2.89E-03	8.24E-08	8.24E-08
Formaldehyde (TH)	50000	2.94E-04	2.35E+00	2.94E-04	2.58E+00	2.94E-04	2.58E+00	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	7.06E-03	5.65E+01	7.06E-03	6.18E+01	7.06E-03	6.18E+01	1.76E-03	1.76E-03
Lead unlisted compounds (H)	PBC-other	1.96E-06	1.57E-02	1.96E-06	1.72E-02	1.96E-06	1.72E-02	4.90E-07	4.90E-07
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Napthalene (H)	91203	2.39E-06	1.91E-02	2.39E-06	2.10E-02	2.39E-06	2.10E-02	5.98E-07	5.98E-07
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium compounds (H)	SEC	9.41E-08	7.53E-04	9.41E-08	8.24E-04	9.41E-08	8.24E-04	2.35E-08	2.35E-08
Toluene (TH)	108883	1.33E-05	1.07E-01	1.33E-05	1.17E-01	1.33E-05	1.17E-01	3.33E-06	3.33E-06
Total HAPs		7.38E-03	5.90E+01	7.38E-03	6.46E+01	7.38E-03	6.46E+01	1.84E-03	1.84E-03
Highest HAP	Hexane	7.06E-03	5.65E+01	7.06E-03	6.18E+01	7.06E-03	6.18E+01	1.76E-03	1.76E-03

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

		EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS			EMISSION FACTOR lb/mmBtu	
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	5.96E-08	1.31E-06	4.77E-04	1.49E-08	1.49E-08
Acrolein (TH)	107028	7.06E-08	1.55E-06	5.65E-04	1.76E-08	1.76E-08
Ammonia (T)	7664417	1.25E-02	2.76E-01	1.00E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	8.24E-06	1.81E-04	6.59E-02	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	4.71E-09	1.04E-07	3.76E-05	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Soluble chromate compounds, as chromium (VI) equivalent	SolCR6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Formaldehyde (TH)	50000	2.94E-04	6.47E-03	2.35E+00	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	7.06E-03	1.55E-01	5.65E+01	1.76E-03	1.76E-03
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene (TH)	108883	1.33E-05	2.93E-04	1.07E-01	3.33E-06	3.33E-06

GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD

GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD

GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS (EPA MRR CALCULATION METHOD: TIER 1)			POTENTIAL EMISSIONS	
	metric tons/yr	metric tons/yr, **CO2e**	short tons/yr	short tons/yr	short tons/yr, **CO2e**
CARBON DIOXIDE (CO_2)	1709.81	1,709.81	1,884.74	2,047.89	2047.89
METHANE (CH_4)	3.22E-02	8.06E-01	3.55E-02	3.86E-02	9.66E-01
NITROUS OXIDE (N_2O)	3.22E-03	9.61E-01	3.55E-03	3.86E-03	1.15E+00
		TOTAL CO2e (metric tons) **1,711.58**			TOTAL CO2e (short tons) **2,050.01**

NOTE: CO2e means CO2 equivalent

NOTE: The DAQ Air Emissions Reporting Online (AERO) system requires short tons be reported. The EPA MRR requires metric tons be reported.

NOTE: Do not use greenhouse gas emission estimates from this spreadsheet for PSD (Prevention of Significant Deterioration) purposes.

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

VOC from the Pressure Cooker & Condensor (80%-95% Efficiency)- @230°C or 446°F **(ES-P-1) & CD-1**
Condenser 80-95% Used 80%

Max Throughput	43,800.00	Ton/yr @ 10% m.c.			Emission Factor[1]	Actual Emissions	Potential Emissions	Actual Emissions (after Condenser 80% Eff)	Potential Emissions (after Condenser 80% Eff)
Potential Throughput	39,420.00	ODT/yr			lbs/ODT	tons/yr	tons/yr	tons/yr	tons/yr
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								
Pollutant				VOC					
VOC				Y	1.070	**19.26**	**21.09**	**3.85**	**4.22**
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	6.40E-02	**2304.00**	**2522.88**	**460.80**	**504.58**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-	**0.00**	**0.00**
Formaldehide (BP- (-2.2F)		Y	Y	Y	6.77E-02	**2437.20**	**2668.73**	**487.44**	**533.75**
Methanol (BP-148.5F)		Y	N	Y	2.98E-02	**1072.80**	**1174.72**	**214.56**	**234.94**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**0.00**	**0.00**	**0.00**	**0.00**
Propionaldehyde (BP-119.8F)		Y	N	Y	3.93E-02	**1414.80**	**1549.21**	**282.96**	**309.84**
	HAPs total (lbs/year)					**7,228.80**	**7,915.54**	**1,449.61**	**1,587.33**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

PM, NOX, CO and VOC, HAPS from Screw Press/Pellet Drying with an INTEGRAL Cyclone (99% for PM) **(ES-SPD-1) & CD-2**

Max Throughput	43,800.00	Ton/yr @ 10% m.c.			Emission Factor[1]	Actual Emissions	Potential Emissions	Actual Emissions After a CD (99% Eff)	Potential Emissions After a CD (99% Eff)
Potential Throughput	39,420.00	ODT/yr			lbs/ODT	lbs/yr	lbs/yr	lbs/yr	lbs/yr
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								
Pollutant	**Flow Rate (CFM)**		**Grains/cf**	**hrs**					
PM	15556		0.05	8000		53334.80	58,401.61	53334.80	58401.61
Cyclone Loading rate calcs				Tons		**26.67**	**29.20**	**26.67**	**29.20**
VOC					1.07	38520.00	42179.40	38520.00	42179.40
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**19.26**	**21.09**	**19.26**	**21.09**
NOx (combined from dryer and NG)					0.27	9,720.00	10,643.40	9720.00	10643.40
NOx (dryer)				Tons		**3.29**	**3.60**	**3.29**	**3.60**
CO (combined from dryer and NG)					0.42	15,120.00	16,556.40	15120.00	16556.40
CO (dryer)				Tons		**6.24**	**6.84**	**6.24**	**6.84**
Pollutant		**HAP**	**NC TAP**	**VOC**					
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**925.20**	**1,013.09**	**33,307,200.00**	**36,471,384.00**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-	-	-
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**50.40**	**55.19**	**1,814,400.00**	**1,986,768.00**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**5,832,000.00**	**6,386,040.00**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	-	-	-	-
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**5,832,000.00**	**6,386,040.00**
				HAP total (lbs/year)		**1,299.60**	**1,423.06**	**46,785,600.00**	**51,230,232.00**
				HAP total (tons/yr)		**0.65**	**0.71**	**23,392.80**	**25,615.12**
				TAP total (lbs/year)		**975.60**	**1,068.28**	**35,121,600.00**	**38,458,152.00**
				TAP total (tons/yr)		**0.49**	**0.53**	**17,560.80**	**19,229.08**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

PM, VOCs and HAPS from Pellet Press & Pellet Cooler with a Cyclone (99% Eff) (ES-PP-1) & CD-3

Max Throughput	43,800.00	Ton/yr @ 10% m.c.
	39,420.00	ODT/yr
Actual Throughput	36,000.00	ODT/yr
Composition	25% Hardwood 75% Softwood	

Pollutant	Flow Rate (CFM)		EF in kg/ton	hrs	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (99% Eff) lbs/yr	Potential Emissions After a CD (99% Eff) lbs/yr
PM			0.07	8000	0.15	5554.08	6,081.72	180.00	197.10
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		2.78	3.04	0.09	0.10
PM10			0.04	8000	0.09	3170.88	3,472.11	31.71	34.72
				Tons		1.59	1.74	0.02	0.02
Pollutant		**HAP**	NC TAP	VOC				-	-
VOC				Y	0.5	18,000.00	19,710.00	18000.00	19710.00
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		9.00	9.86	9.00	9.86
						(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	925.20	1,013.09	925.20	1,013.09
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-	-	-
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	50.40	55.19	50.40	55.19
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	162.00	177.39	162.00	177.39
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	-	-	-	-
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	162.00	177.39	162.00	177.39
				HAP total (lbs/year)		1,299.60	1,423.06	1,299.60	1,423.06
				HAP total (tons/yr)		0.65	0.71	0.65	0.71
				TAP total (lbs/year)		975.60	1,068.28	975.60	1,068.28
				TAP total (tons/yr)		0.49	0.53	0.49	0.53

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	Used as the worst case
Stack Test dated April 2017				

PM from Pellet Screen with a Cartridge Filter (99.9% Eff) (ES-PSC-1) & CD-4

Max Throughput	43,800.00	Ton/yr @ 10% m.c.
Potential	39,420.00	ODT/yr
Actual Throughput	36,000.00	ODT/yr
Composition	25% Hardwood 75% Softwood	

					Emission Factor1 lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (99% Eff) lbs/yr	Potential Emissions After a CD (99% Eff) lbs/yr
PM				8000	0.0175	630.00	689.85	0.63	0.69
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		0.32	0.34	0.0003	0.0003
A consrvative estimate of 25% of Pelletize and Pellet Cooler EF was considered					0.25 x 0.07	0.0175	lbs/ODT		

Hazardous Air Pollutants and VOC from Pellet Storage (ES-PS-1)

Max Throughput	43,800.00	Ton/yr @ 10% m.c.
	39,420.00	ODT/yr
Actual Throughput	36,000.00	ODT/yr
Composition	25% Hardwood 75% Softwood	

Pollutant		HAP	NC TAP	VOC	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr
VOC				Y	0.050	1,800.00	1,971.00
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		0.90	0.99
						(lbs/yr)	(lbs/yr)
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	92.52	101.31
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	5.04	5.52
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	16.20	17.74
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	-	-
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	16.20	17.74
				HAP total (lbs/year)		129.96	142.31
				HAP total (tons/yr)		0.06	0.07
				TAP total (lbs/year)		97.56	106.83
				TAP total (tons/yr)		0.05	0.05

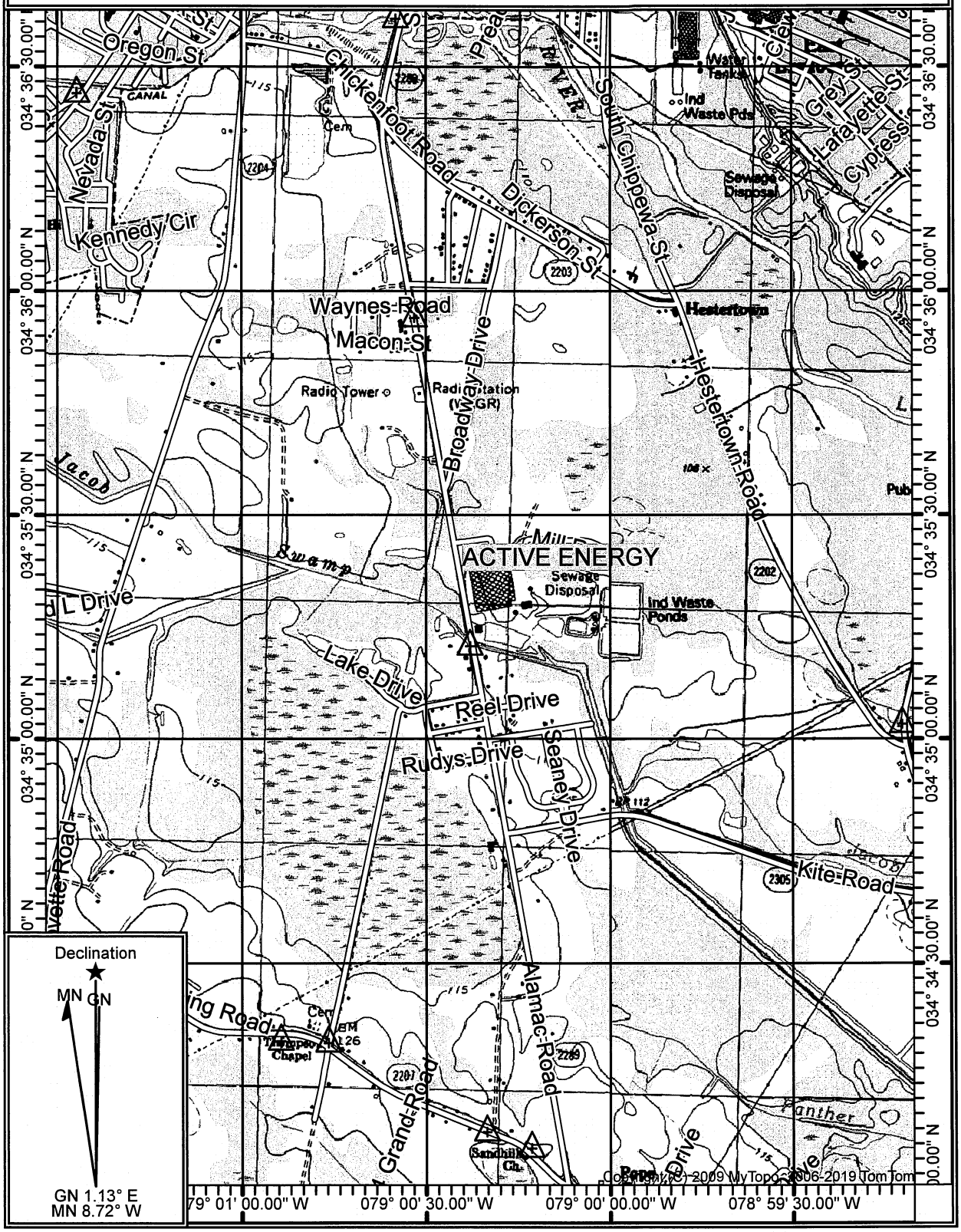
Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	Emission Factor (10%) (lb/ODT)	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	0.050	Used as the worst case
Stack Test dated April 2017					

FIGURES

FIGURE 1 – USGS Site Location Map

Map Name: SOUTHWEST LUMBERTON
Print Date: 09/25/19

Scale: 1 inch = 2,000 ft.
Map Center: 034° 35' 21.10" N, 079° 00' 21.09" W



SCALE 1:24000

0 1000 2000 3000 4000 5000 6000
FEET

SITE LOCATION MAP
ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
FIGURE 1 JOB NO. 1198-001

ATTACHMENT A

Supporting Documentation

CHUCK PAKALA

From: "Reeves, Gregory W" <gregory.reeves@ncdenr.gov>
Date: Monday, October 14, 2019 11:39 AM
To: "CHUCK PAKALA" <cvpakala@carolina.rr.com>
Cc: "Antonio Esposito" <antonio.esposito@aegplc.com>; "Michael Rowan" <michael.rowan@aegplc.com>; "Carter, Heather" <Heather.Carter@ncdenr.gov>; "Cole, Jeffrey D" <jeffrey.cole@ncdenr.gov>; "Lowery-jacobs, Evangelyn" <evangelyn.lowery-jacobs@ncdenr.gov>; "Kadir, Abdul" <abdul.kadir@ncdenr.gov>
Subject: RE: Air permit for Active Energy

Chuck, based on the information submitted and our conversation this morning, it would appear that the facility will require an air permit, as the facility-wide VOC emissions after controls appear to exceed 5 tons per year.

In reaching that conclusion, I assumed that the pressure cooker emissions at Active Energy would be similar to the dryer emissions at the Enviva Sampson pellet facility. Uncontrolled emissions from the Enviva Sampson dryer were 1.07 lb/ODT in a stack test conducted in April 2017. I further assumed that the condenser in the Active Energy process would condense 80% of the VOC from the pressure cooker, so 20% of the VOC emissions (0.21 lb/ODT) would be emitted to the atmosphere. I assumed that the pellet press/dryer operation at Active Energy would have VOC emissions similar to the pellet press/cooler operations at Enviva Sampson. The emission factor for the Enviva Sampson pellet presses during the April 2017 stack testing was 0.50 lb/ODT (5.82 lb/hr VOC emission with throughput rate of 11.54 ODT/hr). There may be additional emissions of VOC from the pellet dryer operation at the Active Energy facility that we have not yet quantified.

Based on this information, the overall facility-wide actual emissions are estimated to be 0.71 lb/ODT. Using the expected throughput of 36,000 ODT/yr, this yields an expected VOC emission of 12.78 tons/yr.

Based on this VOC emission, the facility does not qualify for an exemption from air permitting, and thus an air permit application is required prior to construction and operation.

There is a $50 fee required for the air permit application (classification is Small), and a zoning consistency determination will be required. A PE review will be required for the condenser VOC control. Call me if you need assistance with the proper forms for the air permit application or if you have other questions.

Greg Reeves
Permits Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043 910.485.7467 (Fax)
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA [mailto:cvpakala@carolina.rr.com]
Sent: Monday, October 7, 2019 6:20 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Cc: Antonio Esposito <antonio.esposito@aegplc.com>; Michael Rowan <michael.rowan@aegplc.com>
Subject: [External] Air permit for Active Energy

CHUCK PAKALA

From: "Reeves, Gregory W" <gregory.reeves@ncdenr.gov>
Date: Monday, October 28, 2019 8:26 AM
To: "CHUCK PAKALA" <cvpakala@carolina.rr.com>
Subject: RE: [External] Dryer EF

Chuck, here are the results of stack testing at Enviva – Sampson for HAP: (All results expressed in lb/ODT)

March 2017

	Dryer	Green Hammermills	Pellet
Press/Coolers			
Methanol	0.0428	0.00008	0.0045
Formaldehyde	0.0760	0.00008	0.0014
Acetaldehyde	0.0640	0	0.0257
Propionaldehyde	0.0319	0	0.0045
Total HAP	0.215	0.00016	0.036

March 2018

	Dryer
Methanol	0.0298
Formaldehyde	0.0677
Propionaldehyde	0.0393
Total HAP	0.1757

Testing was also conducted in March 2019 for Formaldehyde, but that was on the dryer including thermal oxidizer control, so I don't think that would be similar to the Active Energy process. I think you could use any of these factors. I don't think any of these factors would cause an exceedance of the toxic TPERs in 02Q .0711.

Call me if questions.....Greg

Greg Reeves
Permits Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043 910.485.7467 (Fax)
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA [mailto:cvpakala@carolina.rr.com]
Sent: Saturday, October 26, 2019 10:59 AM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Cc: Antonio Esposito <antonio.esposito@aegplc.com>
Subject: Re: [External] Dryer EF

Greg,

Having used the Enviva stack test data for VOC calculations. Did Enviva have EFs for HAPS listed below or do you have any idea what you want me to use based on your past reviews. Looks like there is so much data on Enviva that you agree as recent and some you told me that it was old. Sorry to bother you many times like this.

Acetaldehyde
Acrolein
Formaldehide
Methanol
Phenol
Propionaldehyde

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-541-4042
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Friday, October 25, 2019 8:48 AM
To: CHUCK PAKALA
Subject: RE: [External] Dryer EF

Chuck, I have not seen the test data from Ahoskie, so I don't know if that is any more representative of what Active Energy is doing. For the purposes of the permit, it probably does not matter at this point, as we will almost certainly be requiring stack testing at Active Energy to establish the emission factors from the processes. Either EF used will still require permitting.....Greg

Greg Reeves
Permits Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043 910.485.7467 (Fax)
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA [mailto:cvpakala@carolina.rr.com]
Sent: Thursday, October 24, 2019 6:57 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: [External] Dryer EF

Greg,

I saw a stack test data on Enviva-Ahoskie in June 2014 and the Dryer EF is given as 0.781 lb/ODT. Would you be okay to use this number for my Dryer emissions at Screw Press/Dryer. Please note the purpose of this Dryer is to remove moisture content from 30% to 15% so that pellet making would be easier. Attached is the copy of that test. Currently I am using the same EF as the pressure cooker (1.07 lb/ODT). What are your thoughts.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-541-4042
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

Greg,

Based on our conversations, research of available literature and also my extensive review of all Enviva and Natures Pellet permits, attached please find Air permit Exemption report for your review and approval process.

Assumptions:

1. Used facility wide VOCs (all operations including fuel sources) from Enviva and other pellet making industries to calculate Emission Factor for our Pressure Cooker Process
2. We believe 80% of VOC will be emitted from the Pressure Cooker process but as a conservative estimate, we used 100% VOC to be released from this (Pressure Cooker) process.
3. A Condenser (80-95% eff) will be used to control Pressure Cooker emissions and we took as a conservative estimate 80% of Pressure Cooker emissions to be condensed in the condenser and 20% will be released to the air from this process.
4. The wet chips/wood product are sent to Screw Press with NO COOLERS (@Active Energy) unlike Enviva and other Pellet manufacturing process. Therefore, the VOCs released from the Screw Press would be due to the friction heat and it will be far less compared to the dryer emissions. Therefore, as a conservative estimate, we took Enviva Dryer EF for the Screw Press air emission calcs. In addition, Enviva presses were declared as insignificant sources at one time and later in combination with Coolers were added as a significant source in the permit.
5. Our Dryer Emissions are calculated using the Enviva Dryer EF.
6. In our opinion, all our calculations were based of conservative numbers taken from Enviva and other Pellet production.
7. Based on our calcs, all actual VOC emissions were below the 5.0 ton/yr limit and thus, Active Energy Renewal Power will be qualified for an Air Permit Exemption status.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-541-4042
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

Emissions and Air Pollution Controls for the Biomass Pellet Manufacturing Industry

Reference ITQ Number: 12/01/2008

Prepared for:
Mr. Bob Konkin
The BC Ministry of the Environment
PO Box 9342, Stn.
Provincial Government
Victoria, BC V8W 9M1

BRITISH COLUMBIA
The Best Place on Earth

Prepared by:
Paul Beauchemin
Martin Tampier
Envirochem Services Inc.
310 East Esplanade
North Vancouver, B.C. V7L 1A4

ENVIROCHEM SERVICES INC.
ENVIRONMENTAL MANAGEMENT SERVICES AND TECHNOLOGIES

May 12th, 2010

Table 2: Estimated PM/PM10 Emissions for a 100,000 Tonne/yr Pellet Plant

Emission Points	Emission Factors uncontrolled	Emission Factors uncontrolled		Control Methods	Emission Factors (controlled)		Emissions (100 kt/yr Plant)		% of Total of Plant Emissions		PM10 Fraction
	PM/PM10	kg/t			kg/tonne		t/yr		%		%
	lb/ton	PM	PM10		PM	PM10	PM	PM10	PM	PM10	PM10
Log storage	Not available			None	0	0		0	0%	0%	
Log debarking	0.02/0.011 lb/ton (AP-42)	0.01	0.005 5	Water spray (50% eff.)	0.005	0.003	0.5	0.3	0%	1%	60
Log chipping	0.6/0.6 lb/hr [OK 2003]	0.3	0.3	None	0.024	0.024	2.4	2.4	1%	5%	100
Stock piles	(SCC 30700803, USEPA FIRE Now revoked)	.		Emissions controlled by moisture in sawdust (25-40%); watering unpaved areas	0.5	0.18	50	18	27%	35%	36
Load in							0	0	0%	0%	
Wind erosion	Front-end loaders (AP-42, Section 13.2.2, 12/03):						0	0	0%	0%	
Vehicular activity	5.48/4.60 lb/Vehicle mile traveled (VMT			(2.7/2.3 lb/VTM)	1.23 kg/ VTM	1.04 kg/ VTM			0%	0%	
Load out							0	0	0%	0%	
Feed bins	(3-07-008-03, FIRE page EF-77)			Multi-cyclone	0.75	0.27	75	27	40%	52%	36
Open conveyor belt							0	0	0%	0%	
Screen							0	0	0%	0%	
Hammer mill							0	0	0%	0%	
Enclosed drag belts							0	0	0%	0%	
Rotary dryer	3.4/0.69 lb/ODT (AP-42, Table 10.6.2-1)			Multi-cyclone	0.465		46.5	0	25%	0%	
Storage bin	0.33/- lb/ton of product (AP-42, 10.6.2)			Multi-cyclone	0.045		4.5	0	2%	0%	
Pellet mill	Cooler: (3-07-008-08, FIRE page EF-77)						0	0	0%	0%	
Pellet cooler					0.07	0.04	7	4	4%	8%	57

April 26, 2021

VIA <<HAND DELIVERY/CERTIFIED MAIL RETURN RECEIPT REQUESTED>>

Dixon Ivey Jr. Zoning Director
Robeson County Zoning Dept
415 Country Club Rd
Lumberton, NC 28360
910-671-6298/272-6520

Current Air Permit No. 10636R00

Dear Mr. Ivey:

On behalf of Active Energy Renewable Power (AERP) previously known as Lumberton Energy Holdings located 1885 Alamac Road, Lumberton, NC, I am writing to inform you that we intend to install and operate a wood pellet manufacturing operations at the subject site. Please note an air permit (#10636R00) for our operations was approved in the past and we adding a few control equipment to the operation. Based on my conversations with your Zoning Dept., I hereby certify that to the best of my knowledge, that the Robeson County is the only local government having jurisdiction over this part of the land for an approval.

In accordance with § 143-215.108(f) of the North Carolina General Statutes, we hereby request that you issue a determination as to whether your municipality has in effect a zoning or subdivision ordinance that is applicable to the proposed facility. Additionally, please issue a determination as to whether the proposed use would be consistent with applicable zoning or subdivision ordinances. For your convenience, I have included a form with which you may remit your determination and a copy of the draft air permit application. As a means of demonstrating proof of transmittal, please sign, title, stamp, and date the enclosed form and mail to both the facility mailing address and the checked air quality office at your earliest convenience.

Thank you for your prompt attention to this matter. If you have any questions regarding this request, please contact me at 910-547-1920 or Ms. Doris Sampson at 910-734-5863 or Mr. Chuck Pakala at 704-541-4042.

Sincerely,

Ron Gaskins
Plant Manager
910-840-7922

Enclosures:
Zoning Consistency Determination Form
Air Permit Application

Zoning Consistency Determination

Facility Name	**ACTIVE POWER RENEWABLE ENERGY**
Facility Street Address	1885 ALAMAC ROAD
Facility City	LUMBERTON, NC 28359
Description of Process	WOOD PELLET MAKING
SIC/NAICS Code	2499/321999
Facility Contact	MR. RON GASKINS
Phone Number	910-840-7922 (cell)
Mailing Address	1885 ALAMAC ROAD
Mailing City, State Zip	LUMBERTON, NC 28359

Based on the information given above:

X ☐ I have received a copy of the air permit application (final)

☐ There are no applicable zoning ordinances for this facility at this time

☐ The proposed operation IS consistent with applicable zoning ordinances

☐ The proposed operation IS NOT consistent with applicable zoning ordinances
(please include a copy of the rules in the package sent to the air quality office)

☐ The determination is pending further information and can not be made at this time

☐ Other:

Agency _____

Name of Designated Official _____

Title of Designated Official _____

Signature _____

Date _____

Please forward to the facility mailing address listed above and the air quality office at the appropriate address as checked on the back of this form.

All PSD and Title V Applications

☐ Attn: William Willets, PE
DAQ – Permitting Section
1641 Mail Service Center
Raleigh, NC 27699-1641

Local Programs

☐ Attn: David Brigman
Western NC Regional Air Quality Agency
49 Mount Carmel Road
Asheville, NC 28806
(828) 250-6777

☐ Attn: Leslie Rhodes
Mecklenburg County Air Quality
700 N. Tryon Street, Suite 205
Charlotte, NC 28202-2236
(704) 336-5430

☐ Attn: William Minor Barnette
Forsyth County Office of Environmental Assistance and Protection
201 N. Chestnut Street
Winston-Salem, NC 27101-4120
(336) 703-2440

Division of Air Quality Regional Offices

☐ Attn: Paul Muller
Asheville Regional Office
2090 U.S. Highway 70
Swannanoa, NC 28778
(828) 296-4500

X☐ **Attn: HEATHER CARTER**
Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, NC 28301
(910) 433-3300

☐ Attn: Ron Slack
Mooresville Regional Office
610 East Center Avenue, Suite 301
Mooresville, NC 28115
(704) 663-1699

☐ Attn: Patrick Butler, PE
Raleigh Regional Office
1628 Mail Service Center
Raleigh, NC 27699-1628
(919) 791-4200

☐ Attn: Robert Fisher
Washington Regional Office
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481

☐ Attn: Brad Newland
Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 796-7215

☐ Attn: Lisa Edwards, PE
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, NC 27105
(336) 776-9800

Please add a signed copy of the permit application package with the Form

ACTIVE ENERGY RENEWABLE POWER LLC 04/19
1885 ALAMAC RD
LUMBERTON, NC 28358-8859

1679

31-297/1240 2807

DATE 4-29-21

PAY TO THE ORDER OF NCDAQ $ 50.00

Fifty & no/100 DOLLARS

Security Features Details on Back.

WELLS FARGO Wells Fargo Bank, N.A.
Utah
wellsfargo.com

FOR APPLICATION FEE

Doris Sampson MP

[redacted]

RECEIVED
APR 30 2021
10:22AM
DEQ-FAYETTEVILLE REGIONAL OFFICE

AQ Permit
Robeson

April 26, 2021

VIA <<HAND DELIVERY/CERTIFIED MAIL RETURN RECEIPT REQUESTED>>

Dixon Ivey Jr. Zoning Director
Robeson County Zoning Dept
415 Country Club Rd
Lumberton, NC 28360
910-671-6298/272-6520

Current Air Permit No. 10636R00

Dear Mr. Ivey:

On behalf of Active Energy Renewable Power (AERP) previously known as Lumberton Energy Holdings located 1885 Alamac Road, Lumberton, NC, I am writing to inform you that we intend to install and operate a wood pellet manufacturing operations at the subject site. Please note an air permit (#10636R00) for our operations was approved in the past and we adding a few control equipment to the operation. Based on my conversations with your Zoning Dept., I hereby certify that to the best of my knowledge, that the Robeson County is the only local government having jurisdiction over this part of the land for an approval.

In accordance with § 143-215.108(f) of the North Carolina General Statutes, we hereby request that you issue a determination as to whether your municipality has in effect a zoning or subdivision ordinance that is applicable to the proposed facility. Additionally, please issue a determination as to whether the proposed use would be consistent with applicable zoning or subdivision ordinances. For your convenience, I have included a form with which you may remit your determination and a copy of the draft air permit application. As a means of demonstrating proof of transmittal, please sign, title, stamp, and date the enclosed form and mail to both the facility mailing address and the checked air quality office at your earliest convenience.

Thank you for your prompt attention to this matter. If you have any questions regarding this request, please contact me at 910-547-1920 or Ms. Doris Sampson at 910-734-5863 or Mr. Chuck Pakala at 704-541-4042.

Sincerely,

Ron Gaskins
Plant Manager
910-840-7922

Enclosures:
Zoning Consistency Determination Form
Air Permit Application

Zoning Consistency Determination

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Facility Street Address	1885 ALAMAC ROAD
Facility City	LUMBERTON, NC 28359
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SIC/NAICS Code	2499/321999
Facility Contact	MR. RON GASKINS
Phone Number	910-840-7922 (cell)
Mailing Address	1885 ALAMAC ROAD
Mailing City, State Zip	LUMBERTON, NC 28359

Based on the information given above:

X ☐ I have received a copy of the air permit application (final)

- ☐ There are no applicable zoning ordinances for this facility at this time
- ☒ The proposed operation IS consistent with applicable zoning ordinances
- ☐ The proposed operation IS NOT consistent with applicable zoning ordinances (please include a copy of the rules in the package sent to the air quality office)
- ☐ The determination is pending further information and can not be made at this time
- ☐ Other:

Agency	Robeson County
Name of Designated Official	Dixon Ivey, Jr.
Title of Designated Official	Director Community Development
Signature	
Date	April 29, 2021

Please forward to the facility mailing address listed above and the air quality office at the appropriate address as checked on the back of this form.

[External] Zoning letter

CHUCK PAKALA <cvpakala@carolina.rr.com>

Fri 4/30/2021 6:57 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

1 attachments (17 KB)

Form_from_Municipality 2019 REV.pdf;

Greg,

Please see the attached revised zoning info letter

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

Zoning Consistency Determination

Facility Name	**ACTIVE ENERGY RENEWABLE POWER (AERP)**
Facility Street Address	1885 ALAMAC ROAD
Facility City	LUMBERTON, NC 28359
Description of Process	WOOD PELLET MAKING
SIC/NAICS Code	2499/321999
Facility Contact	MR. RON GASKINS
Phone Number	910-840-7922 (cell)
Mailing Address	1885 ALAMAC ROAD
Mailing City, State Zip	LUMBERTON, NC 28359

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  (please include a copy of the rules in the package sent to the air quality office)
- ☐ The determination is pending further information and can not be made at this time
- ☐ Other:

Agency _____

Name of Designated Official _____

Title of Designated Official _____

Signature _____

Date _____

Please forward to the facility mailing address listed above and the air quality office at the appropriate address as checked on the back of this form.

All PSD and Title V Applications

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49 Mount Carmel Road
Asheville, NC 28806
(828) 250-6777

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Mecklenburg County Air Quality
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Charlotte, NC 28202-2236
(704) 336-5430

☐ Attn: William Minor Barnette
Forsyth County Office of Environmental Assistance and Protection
201 N. Chestnut Street
Winston-Salem, NC 27101-4120
(336) 703-2440

Division of Air Quality Regional Offices

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Asheville Regional Office
2090 U.S. Highway 70
Swannanoa, NC 28778
(828) 296-4500

X ☐ **Attn: HEATHER CARTER**
Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, NC 28301
(910) 433-3300

☐ Attn: Ron Slack
Mooresville Regional Office
610 East Center Avenue, Suite 301
Mooresville, NC 28115
(704) 663-1699

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☐ Attn: Robert Fisher
Washington Regional Office
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481

☐ Attn: Brad Newland
Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 796-7215

☐ Attn: Lisa Edwards, PE
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, NC 27105
(336) 776-9800

Active Energy Renewable Power Permit Application - Additional Information Needed

Reeves, Gregory W <gregory.reeves@ncdenr.gov>

Wed 5/5/2021 5:35 PM

To: CHUCK PAKALA <cvpakala@carolina.rr.com>
Cc: tyler@playerdesign.net <tyler@playerdesign.net>

1 attachments (16 KB)

20210505 Active Energy Application Questions.docx;

Chuck, see the attached Word document for some questions I have regarding the submitted information in the permit application. Please call me to discuss at your earliest opportunity. The permit application will be considered on hold until you respond. However, I will still continue to work on other parts of the draft permit and permit review while awaiting your response.

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

5/5/2021
Active Energy Permit Application Questions

1. In the Pressure Cooker/Condenser system (ES-P-1/CD-1) the exhaust temperature of the gases released to atmosphere is listed as 131^{o}F. The permit will contain a condition that requires maintaining this temperature below some set limit. At what temperature should this limit be set?
2. Screw Press/Dryer Emissions (ES-SPD-1)– Form B includes NOx and CO emissions, as well as HAP/TAP emissions for several aldehydes. Are these emissions from the steam explosion process, or are they from the combustion of natural gas in the dryer burner? If from the burner, they should not be included on the Screw Press/Dryer Emissions Form B, as they are already included on the natural gas combustion spreadsheet for the dryer burner.
3. Screw Press/Dryer Cyclone (CD-2)– On the Form C4 this is listed as a high-efficiency cyclone with a control efficiency for PM and PM_{10} of 99%. Do you have the manufacturer's data sheets that list this control efficiency for these pollutants?
4. Screw Press/Dryer Emissions (CD-2) – On the Form C4 the after control emissions of PM are listed as 6.70 lb/hr. No emissions are listed for PM10. These same emissions are listed on the Form B for the Screw Press/Dryer (ES-SPD-1) as 6.67 lb/hr. Please explain this discrepancy?
5. Pelletizer/Pellet Cooler Emissions (CD-3) – On the Form C4, PM emissions before control are listed as 0.75 lb/hr and after control emissions are listed as 0.02 lb/hr, but the Form B (ES-PP-1) lists the emissions before control as 0.639 lb/hr and after control as 0.01 lb/hr. Please explain this discrepancy.
6. Pelletizer/Pellet Cooler Emissions (CD-3) - The Form C4 does not list emissions for PM_{10}. However, the Form B (ES-PP-1) lists PM_{10} emissions before control as 0.40 lb/hr and after control as 0.00 lb/hr. Please provide the methodology for determining either the PM_{10} emission factors, or the rationale for the percentage of PM that is PM_{10}.
7. Pelletizer/Pellet Cooler Cyclone control efficiency (CD-3) – The Form C4 lists the cyclone as being a conventional cyclone, but lists a control efficiency for PM of 99%. Please provide manufacturer data that would demonstrate this high a control efficiency.
8. Pellet Screener Emissions (CD-4) – The Form C1 lists PM emissions before control of 483 lb/hr. This seems excessively high. Please explain.
9. Pellet Screener Emissions (CD-4) – The Form C1 does not list PM_{10} emissions. However, the Form B for the Pellet Screen (ES-PSC-1) lists PM_{10} before and after controls. Please describe how these numbers were derived.
10. Pellet Screener Emissions (ES-PSC-1) – The Form B lists VOC emissions and HAP/TAP emissions from this source. However, based on our conversations, it was assumed that there were only particulate emissions from this source, as this simply screens out fine particles from the final product pellets prior to bagging in super sacks. Please clarify why VOC and HAP/TAP emissions were included here.

Is the facility aware that DEQ Water Quality believes that either a transport permit for trucking wastewater offsite for disposal at a proper facility or a modification to the existing water permit for the facility's wastewater treatment system is required prior to startup of the facility?

Re: [External] Request

CHUCK PAKALA <cvpakala@carolina.rr.com>

Mon 5/10/2021 9:00 AM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

2 attachments (656 KB)

Pinnacle Newton Application Revised (2020 01 24) 1.pdf; Pinnacle Newton Application Revised (2020 01 24) 40.pdf;

Greg,

I did find some EFs for screen emissions. A pellet company in AL and work was done by Trinity.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Monday, May 10, 2021 8:34 AM
To: CHUCK PAKALA
Subject: Re: [External] Request

Your calcs definitely need to reflect the information on the various forms, and vice versa

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA <cvpakala@carolina.rr.com>
Sent: Monday, May 10, 2021 8:32 AM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: Re: [External] Request

CAUTION: External email. Do not click links or open attachments unless you verify. Send all suspicious email as an attachment to Report Spam.

Thanks Greg. I think, Tyler used 99.9% in the C-Form. I will use the same 99.9% in my calcs.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Monday, May 10, 2021 8:01 AM
To: CHUCK PAKALA
Subject: Re: [External] Request

A cartridge filter is generally 99.9%, similar to a bagfilter. If not certain, refer to the manufacturer's data

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA <cvpakala@carolina.rr.com>
Sent: Sunday, May 9, 2021 4:07 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: [External] Request

Greg,

What is a conservative estimate efficiency for a cartridge filter. I am seeing 90-99% in the literature. Are you comfortable if I use 90%

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

AIR PERMIT APPLICATION

Pinnacle Renewable Energy Inc. > Newton, Mississippi

Pinnacle. Renewable Energy Inc.

Wood Pellet Production Facility

TRINITY CONSULTANTS
1 Perimeter Park S
Suite 100N
Birmingham, AL 35243
(205) 970-6035

August 2019
Revised November 2019
Revised January 2020

Project 190101.0031

Trinity Consultants

EHS solutions delivered uncommonly well

Table B-23. Potential PM Emissions from Screening

EP ID	Emission Unit	Potential Throughput[1] (tpy)	Emission Factors[2] (lb/ton)			Potential Emissions[3]		
			PM	PM_{10}	$PM_{2.5}$	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
F-SC1	Wet Infeed Screening	880,000	1.76E-03	8.40E-04	1.76E-04	7.76E-01	3.70E-01	7.76E-02
F-SC2	Pellet Screening	440,000	3.15E-02	1.50E-02	3.15E-03	6.93	3.30	0.69

1. The potential throughput for wet infeed screening is based on the green material throughput. The potential throughput for pellet screening is based on the facility's production capacity.

2. Emission factors from the "Rock Crushing Plants," Table 6, published by TCEQ (February 2002). Wet screening factors were used for wet infeed screening. Dry screening factors were used for pellet screening. $PM_{2.5}$ conservatively assumed 10% of PM.

3. Potential Emissions from screening are calculated as follows: Potential Emissions (tpy) = Emission Factor (lb/ton) x Throughput (ton/year) ÷ 2,000

Re: [External] Request

CHUCK PAKALA <cvpakala@carolina.rr.com>

Mon 5/10/2021 8:33 AM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

Thanks Greg. I think, Tyler used 99.9% in the C-Form. I will use the same 99.9% in my calcs.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Monday, May 10, 2021 8:01 AM
To: CHUCK PAKALA
Subject: Re: [External] Request

A cartridge filter is generally 99.9%, similar to a bagfilter. If not certain, refer to the manufacturer's data

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA <cvpakala@carolina.rr.com>
Sent: Sunday, May 9, 2021 4:07 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: [External] Request

Greg,

What is a conservative estimate efficiency for a cartridge filter. I am seeing 90-99% in the literature. Are you comfortable if I use 90%

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

April 26, 2021

VIA <<HAND DELIVERY/CERTIFIED MAIL RETURN RECEIPT REQUESTED>>

Dixon Ivey Jr. Zoning Director
Robeson County Zoning Dept
415 Country Club Rd
Lumberton, NC 28360
910-671-6298/272-6520

RECEIVED

MAY 10 2021

DEQ-FAYETTEVILLE REGIONAL OFFICE

Current Air Permit No. 10636R00

Dear Mr. Ivey:

On behalf of Active Energy Renewable Power (AERP) previously known as Lumberton Energy Holdings located 1885 Alamac Road, Lumberton, NC, I am writing to inform you that we intend to install and operate a wood pellet manufacturing operations at the subject site. Please note an air permit (#10636R00) for our operations was approved in the past and we adding a few control equipment to the operation. Based on my conversations with your Zoning Dept., I hereby certify that to the best of my knowledge, that the Robeson County is the only local government having jurisdiction over this part of the land for an approval.

In accordance with § 143-215.108(f) of the North Carolina General Statutes, we hereby request that you issue a determination as to whether your municipality has in effect a zoning or subdivision ordinance that is applicable to the proposed facility. Additionally, please issue a determination as to whether the proposed use would be consistent with applicable zoning or subdivision ordinances. For your convenience, I have included a form with which you may remit your determination and a copy of the draft air permit application. As a means of demonstrating proof of transmittal, please sign, title, stamp, and date the enclosed form and mail to both the facility mailing address and the checked air quality office at your earliest convenience.

Thank you for your prompt attention to this matter. If you have any questions regarding this request, please contact me at 910-547-1920 or Ms. Doris Sampson at 910-734-5863 or Mr. Chuck Pakala at 704-541-4042.

Sincerely,

Ron Gaskins
Plant Manager
910-840-7922

Enclosures:
Zoning Consistency Determination Form
Air Permit Application

Zoning Consistency Determination

Facility Name	**ACTIVE ENERGY RENEWABLE POWER (AERP)**
Facility Street Address	1885 ALAMAC ROAD
Facility City	LUMBERTON, NC 28359
Description of Process	WOOD PELLET MAKING
SIC/NAICS Code	2499/321999
Facility Contact	MR. RON GASKINS
Phone Number	910-840-7922 (cell)
Mailing Address	1885 ALAMAC ROAD
Mailing City, State Zip	LUMBERTON, NC 28359

Based on the information given above:

X ☐ I have received a copy of the air permit application (final)

☐ There are no applicable zoning ordinances for this facility at this time

☒ The proposed operation IS consistent with applicable zoning ordinances

☐ The proposed operation IS NOT consistent with applicable zoning ordinances (please include a copy of the rules in the package sent to the air quality office)

☐ The determination is pending further information and can not be made at this time

☐ Other:

Agency	Robeson County
Name of Designated Official	Dixon Ivey, Jr
Title of Designated Official	Director Community Dev.
Signature	
Date	April 29, 2021

Please forward to the facility mailing address listed above and the air quality office at the appropriate address as checked on the back of this form.

All PSD and Title V Applications

☐ Attn: William Willets, PE
DAQ – Permitting Section
1641 Mail Service Center
Raleigh, NC 27699-1641

Local Programs

☐ Attn: David Brigman
Western NC Regional Air Quality Agency
49 Mount Carmel Road
Asheville, NC 28806
(828) 250-6777

☐ Attn: Leslie Rhodes
Mecklenburg County Air Quality
700 N. Tryon Street, Suite 205
Charlotte, NC 28202-2236
(704) 336-5430

☐ Attn: William Minor Barnette
Forsyth County Office of Environmental Assistance and Protection
201 N. Chestnut Street
Winston-Salem, NC 27101-4120
(336) 703-2440

Division of Air Quality Regional Offices

☐ Attn: Paul Muller
Asheville Regional Office
2090 U.S. Highway 70
Swannanoa, NC 28778
(828) 296-4500

X☐ **Attn: HEATHER CARTER**
Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, NC 28301
(910) 433-3300

☐ Attn: Ron Slack
Mooresville Regional Office
610 East Center Avenue, Suite 301
Mooresville, NC 28115
(704) 663-1699

☐ Attn: Patrick Butler, PE
Raleigh Regional Office
1628 Mail Service Center
Raleigh, NC 27699-1628
(919) 791-4200

☐ Attn: Robert Fisher
Washington Regional Office
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481

☐ Attn: Brad Newland
Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 796-7215

☐ Attn: Lisa Edwards, PE
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, NC 27105
(336) 776-9800

Please add a signed copy of the permit application package with the Form

[External] Revised files as requested

CHUCK PAKALA <cvpakala@carolina.rr.com>

Tue 5/11/2021 3:05 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Michael Rowan <michael.rowan@aegplc.com>; Tyler Player <tyler@playerdesign.net>; Brad Crone <bradcrone@campaignconnections.com>
Cc: Jennifer Scott <jscott@SHIPMANLAW.COM>; Andrew Diamond <andrew.diamond@aegplc.com>; Ron Gaskins <Ronald.Gaskins@aegplc.com>; Doris Sampson <doris.sampson@aegplc.com>; jkohn@kohnassociates.net <jkohn@kohnassociates.net>

11 attachments (3 MB)

B_2019 NEW 051021.pdf; All Emissions Calcs-GREG HAP EFs 051021.pdf; C_Forms Tyler051021.pdf; D1 NEW 051021.pdf; Pinnacle Newton Application Revised (2020 01 24) 1.pdf; Pinnacle Newton Application Revised (2020 01 24) 40.pdf; filter- EPA-P1008OHA.pdf; Cyclone efficiency.pdf; 13-PJ-100 CARTRIDGE FILTER.pdf; 11-pelletVOCs 1.pdf; 12-pelletVOCs 19.pdf;

Greg,

Thank you for your kind help and progress of this project. Please see our response in the attached revised files for your prompt action. Please note, the second cyclone (CD-3) that we will using on the Pelletizer and Pellet Cooling is an used one and we do not have any manufacturer info on that unit at this time. We used very conservative efficiency on that unit as discussed. Please let me know if you have any questions or need any additional information.

Any questions on this package, please email them to me and Tyler ONLY.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC

AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B (ALREADY APPROVED)
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: ONE 20MMBTU/HR NATURAL GAS FIRED BOILER	EMISSION SOURCE ID NO:ES-B-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-B-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
20MMBTU/HR NATURAL GAS FIRED BOILER TO GENERATE STEAM

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☑ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019	DATE MANUFACTURED: NOVEMBER 2019
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR
IS THIS SOURCE SUBJECT TO? ☑ NSPS (SUBPARTS?):_____	☐ NESHAP (SUBPARTS?):_____
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	AP-42/NC DEQ	0.01	0.04	0.01	0.04	0.01	0.04
PARTICULATE MATTER<10 MICRONS (PM_{10})	AP-42/NC DEQ	0.01	0.04	0.01	0.04	0.01	0.04
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)	AP-42/NC DEQ	0.01	0.03	0.01	0.04	0.01	0.04
SULFUR DIOXIDE (SO2)	AP-42/NC DEQ	0.01	0.05	0.01	0.05	0.01	0.05
NITROGEN OXIDES (NOx)	AP-42/NC DEQ	1.96	7.84	1.96	8.59	1.96	8.59
CARBON MONOXIDE (CO)	AP-42/NC DEQ	1.65	6.59	1.65	7.21	1.65	7.21
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.11	0.43	0.11	0.47	0.11	0.47
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
AMMONIA (T)	7664417	AP-42/NC DEQ	6.27E-02	501.95	6.27E-02	549.65	6.27E-02	549.65
Benzene (TH)	71432	AP-42/NC DEQ	4.12E-05	0.33	4.12E-05	0.36	4.12E-05	0.36
Cobalt unlisted compounds (H)	COC-other	AP-42/NC DEQ	1.65E-06	0.01	1.65E-06	0.01	1.65E-06	0.01
Formaldehyde (TH)	50000	AP-42/NC DEQ	1.47E-03	11.76	1.47E-03	12.88	1.47E-03	12.88
Hexane, n- (TH)	110543	AP-42/NC DEQ	3.53E-02	282.35	3.53E-02	309.18	3.53E-02	309.18
Lead unlisted compounds (H)	PBC-other	AP-42/NC DEQ	9.80E-06	0.08	9.80E-06	0.09	9.80E-06	0.09
Napthalene (H)	91203	AP-42/NC DEQ	1.20E-05	0.10	1.20E-05	0.10	1.20E-05	0.10
Toluene (TH)	108883	AP-42/NC DEQ	6.67E-05	0.53	6.67E-05	0.58	6.67E-05	0.58

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	2.98E-07	6.56E-06	0.00
Acrolein (TH)	107028	AP-42/NC DEQ	3.53E-07	7.76E-06	0.00
Ammonia (T)	7664417	AP-42/NC DEQ	6.27E-02	1.38E+00	501.95
Arsenic unlisted compounds (TH)	ASC-other	AP-42/NC DEQ	0.00E+00	0.00E+00	0.00
Benzene (TH)	71432	AP-42/NC DEQ	4.12E-05	9.06E-04	0.33
Benzo(a)pyrene (TH)	50328	AP-42/NC DEQ	2.35E-08	5.18E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	1.47E-03	3.24E-02	11.76
Hexane, n- (TH)	110543	AP-42/NC DEQ	3.53E-02	7.76E-01	282.35
Toluene (TH)	108883	AP-42/NC DEQ	6.67E-05	1.47E-03	0.53

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B (ALREADY APPROVED)
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: ONE 4MMBTU/HR NATURAL GAS FIRED BOILER	EMISSION SOURCE ID NO:ES-D-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-D-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
4MMBTU/HR NATURAL GAS FIRED DRYER TO DRY WET WOOD CHIP PULP

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☑ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____NA_____ ☐ NESHAP (SUBPARTS?):_____ NA

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	AP-42/NC DEQ	0.00	0.01	0.01	0.04	0.01	0.04
PARTICULATE MATTER<10 MICRONS (PM_{10})	AP-42/NC DEQ	0.00	0.01	0.01	0.04	0.01	0.04
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)	AP-42/NC DEQ	0.00	0.01	0.01	0.04	0.01	0.04
SULFUR DIOXIDE (SO2)	AP-42/NC DEQ	0.00	0.01	0.00	0.01	0.00	0.01
NITROGEN OXIDES (NOx)	AP-42/NC DEQ	0.39	1.57	0.39	1.72	0.39	1.72
CARBON MONOXIDE (CO)	AP-42/NC DEQ	0.33	1.32	0.33	1.44	0.33	1.44
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.02	0.09	0.02	0.09	0.02	0.09
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
AMMONIA (T)	7664417	AP-42/NC DEQ	1.25E-02	100.38	1.25E-02	109.93	1.25E-02	109.93
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	0.07	8.24E-06	0.07	8.24E-06	0.07
Cobalt unlisted compounds (H)	COC-other	AP-42/NC DEQ	3.29E-07	0.00	3.29E-07	0.00	3.29E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	2.35	2.94E-04	2.58	2.94E-04	2.58
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	56.47	7.06E-03	61.84	7.06E-03	61.84
Lead unlisted compounds (H)	PBC-other	AP-42/NC DEQ	1.96E-06	0.02	1.96E-06	0.02	1.96E-06	0.02
Napthalene (H)	91203	AP-42/NC DEQ	2.39E-06	0.02	2.39E-06	0.02	2.39E-06	0.02
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	0.11	1.33E-05	0.12	1.33E-05	0.12

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.96E-08	1.31E-06	0.00
Acrolein (TH)	107028	AP-42/NC DEQ	7.06E-08	1.55E-06	0.00
Ammonia (T)	7664417	AP-42/NC DEQ	1.25E-02	2.76E-01	100.38
Arsenic unlisted compounds (TH)	ASC-other	AP-42/NC DEQ	0.00E+00	0.00E+00	0.00
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	1.81E-04	0.07
Benzo(a)pyrene (TH)	50328	AP-42/NC DEQ	4.71E-09	1.04E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	6.47E-03	2.35
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	1.55E-01	56.47
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	2.93E-04	0.11

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B (ALREADY APPROVED)
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PRESSURE COOKER W/CONDENSER	EMISSION SOURCE ID NO:ES-P-1
	CONTROL DEVICE ID NO(S):CD-1
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-CD-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
PRESSURE COOKER WITH A CONDENSER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.96	3.85	4.82	21.09	0.96	4.22
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.76E-02	460.80	2.88E-01	2522.88	5.76E-02	504.58
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.09E-02	487.44	3.05E-01	2668.73	6.09E-02	533.75
Methanol	67561	AP-42/NC DEQ	2.68E-02	214.56	1.34E-01	1174.72	2.68E-02	234.94
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	3.54E-02	282.96	1.77E-01	1549.21	3.54E-02	309.84

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.76E-02	1.27	460.80
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.09E-02	1.34	487.44

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: SCREW PRESS/DRYER	EMISSION SOURCE ID NO:ES-SPD-1
	CONTROL DEVICE ID NO(S):CD-2
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-SPD-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____NA_____ ☐ NESHAP (SUBPARTS?):_____ NA

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		6.67	26.67	7.30	29.2	7.30	29.2
PARTICULATE MATTER<10 MICRONS (PM_{10})		0.07	0.27	0.07	0.29	0.07	0.29
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)		0.02	0.07	0.02	0.07	0.02	0.07
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	4.82	19.26	4.82	21.09	4.82	21.09
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	925.20	1.16E-01	1013.09	1.16E-01	1013.09
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	50.40	6.30E-03	55.19	6.30E-03	55.19
Methanol	67561	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	0.14	50.40

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PELLETIZER AND PELLET COOLER	EMISSION SOURCE ID NO:ES-PP-1
	CONTROL DEVICE ID NO(S):CD-3
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PP-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019	DATE MANUFACTURED: NOVEMBER 2019
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR
IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____NA_____	☐ NESHAP (SUBPARTS?):_____ NA
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25	MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		0.45	1.8	0.69	3.04	0.45	1.97
PARTICULATE MATTER<10 MICRONS (PM_{10})		0.08	0.32	0.40	1.74	0.08	0.35
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	2.25	9.00	2.25	9.86	2.25	9.86
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	925.20	1.16E-01	1013.09	1.16E-01	1013.09
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	50.40	6.30E-03	55.19	6.30E-03	55.19
Methanol	67561	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	0.14	50.40

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PELLET SCREEN	EMISSION SOURCE ID NO:ES-PSC-1
	CONTROL DEVICE ID NO(S):CD-4
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PSC-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019	DATE MANUFACTURED: NOVEMBER 2019
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR
IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____	☐ NESHAP (SUBPARTS?):_____
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25	MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		0.00	0.0006	0.14	0.62	0.00	0.0006
PARTICULATE MATTER<10 MICRONS (PM_{10})		0.00	0.003	0.07	0.32	0.00	0.0003
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)		0.00	0.0001	0.01	0.06	0.00	0.0001
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ						
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	925.20	1.16E-01	1013.09	1.16E-01	1013.09
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	50.40	6.30E-03	55.19	6.30E-03	55.19
Methanol	67561	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	0.14	50.40

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B1 (ALREADY APPROVED)
EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B1**

EMISSION SOURCE DESCRIPTION:ONE 20MMBTU/HR NATURAL GAS FIRED BOILER	EMISSION SOURCE ID NO:ES-B-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S):EP-B-1

DESCRIBE USE: ☑ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION
☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☑ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR):20

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL:_____

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☐ CONTROLLED W/O REINJECTION

FUEL FEED METHOD: HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

COAL-FIRED BURNER

TYPE OF BOILER IF OTHER DESCRIBE:

PULVERIZED	OVERFEED STOKER	UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ CIRCULATING
☐ DRY BED	☐ CONTROLLED	☐ CONTROLLED	☐ FLYASH REINJECTION	☐ RECIRCULATING
			☐ NO FLYASH REINJECTION	

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: ☑ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
NATURAL GAS	MMSCF	172	157

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
NATURAL GAS	1020		

COMMENTS:

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B1 (ALREADY APPROVED)
EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B1**

EMISSION SOURCE DESCRIPTION:ONE 4MMBTU/HR NATURAL GAS FIRED DRYER	EMISSION SOURCE ID NO:ES-D-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S):EP-D-1

DESCRIBE USE: ☑ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION
☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☑ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR):20

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL:_____

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☐ CONTROLLED W/O REINJECTION

FUEL FEED METHOD: HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

COAL-FIRED BURNER

TYPE OF BOILER IF OTHER DESCRIBE:

PULVERIZED	OVERFEED STOKER	UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ CIRCULATING
☐ DRY BED	☐ CONTROLLED	☐ CONTROLLED	☐ FLYASH REINJECTION	☐ RECIRCULATING
			☐ NO FLYASH REINJECTION	

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: ☑ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
NATURAL GAS	MMSCF	35	32

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
NATURAL GAS	1020		

COMMENTS:

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: PRESSURE COOKER W/CONDENSER	EMISSION SOURCE ID NO:ES-P-1
	CONTROL DEVICE ID NO(S):CD-1
OPERATING SCENARIO: ___1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-CD-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):PRESSURE COOKER WITH A CONDENSER (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/YR)	REQUESTED CAPACITY LIMITATION(UNITYHR)
TYPE	UNITS		
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B9

EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: SCREW PRESS AND A DRYER	EMISSION SOURCE ID NO:ES-SPD-1
	CONTROL DEVICE ID NO(S):CD-2
OPERATING SCENARIO: _____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-SPD-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):SCREW PRESS W/DRYER TO REDUCE MOISTURE (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/YR)	REQUESTED CAPACITY LIMITATION(UNITYHR)
TYPE	UNITS		
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B9

EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: PELLETIZER AND PELLET COOLER	EMISSION SOURCE ID NO:ES-PP-1
	CONTROL DEVICE ID NO(S):CD-3
OPERATING SCENARIO: _____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PP-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):SCREW PRESS W/DRYER TO REDUCE MOISTURE (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/YR)	REQUESTED CAPACITY LIMITATION(UNITYHR)
TYPE	UNITS		
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B9

EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: PELLET SCREEN	EMISSION SOURCE ID NO:ES-PSC-1
	CONTROL DEVICE ID NO(S):CD-4
OPERATING SCENARIO: _____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PSC-1

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):SCREW PRESS W/DRYER TO REDUCE MOISTURE (SEE PROCESS SCHEMATIC FOR DETAILS)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/YR)	REQUESTED CAPACITY LIMITATION(UNITYHR)
TYPE	UNITS		
WOOD CHIPS	ODT/YR	39420	36000

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:NONE	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C4
CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **C4**

CONTROL DEVICE ID NO: CD-2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-SPD-1
EMISSION POINT (STACK) ID NO(S):EP-SPD-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
___1___ OF ___1____	P.E. SEAL REQUIRED (PER 2Q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM :CYCLONE For PM control on dryer. The cyclone is also a process collection device so it actually receivesthe amount shown in the PFD included with this documentation , with the portion noted below being only the PM10 and smaller particles.

POLLUTANT(S) COLLECTED: (INTEGRAL CYCLONE)	PM	PM10	PM2.5	
BEFORE CONTROL EMISSION RATE (LB/HR):	6.67	0.07	0.02	
CAPTURE EFFICIENCY:	100 %	100 %	100 %	%
CONTROL DEVICE EFFICIENCY:	90 %	90 %	90 %	%
CORRESPONDING OVERALL EFFICIENCY:	90 %	90 %	90 %	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	6.67	0.07	0.02	

PRESSURE DROP (IN. H_20): ____2__ MIN ___6___ MAX

INLET TEMPERATURE (^oF): ___0F___ MIN _400F_____ MAX	OUTLET TEMPERATURE (^oF): ___0F___ MIN __400F__ MAX
INLET AIR FLOW RATE (ACFM):15556	BULK PARTICLE DENSITY (LB/FT^3):
POLLUTANT LOADING RATE (GR/FT^3):0.05 (discharge)	

SETTLING CHAMBER	**CYCLONE**			**MULTICYCLONE**
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): 50-60fps		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H:31' including dischar	Dd: 9 feet	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	Inlet 50-60fps	Lb:	FLOW RATE (GPM):	☐ YES ☐ NO
NO. TRAYS:	De:	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:	S:		☐ YES ☐ NO
	TYPE OF CYCLONE: ☐ CONVENTIONAL		☑ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES: Visual inspection for wear or openings. Also inspect airlock flaps to avoid carry over. Active control over cyclone differential pressure.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	0.25%	0.25%
1-10	0.75%	1.00%
10-25	8%	9.00%
25-50	15%	24.00%
50-100	39%	63.00%
>100	37%	100.00%
		TOTAL = 100

DESCRIBE INCOMING AIR STREAM: Air stream is a collection of all particles for the process, with the portion shown above to be the portion that is PM10 and smaller particle size. PLEASE NOTE : OVERALL FLOW IS REFLECTED IN THE PFD_ PORTION SHOWN ABOVE IS ONLY FOR PM10 and SMALLER PARTICLES.

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC: Differential pressure on the cyclone

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C4
CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **C4**

CONTROL DEVICE ID NO: CD-3	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-PP-1
EMISSION POINT (STACK) ID NO(S):EP-PP-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
___1____ OF ___1____	P.E. SEAL REQUIRED (PER 2Q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM :CYCLONE for cooler and pelletizer. This system is meant to collect any PM that arises from the pelltizing and cooling process.

POLLUTANT(S) COLLECTED:	PM	PM10		
BEFORE CONTROL EMISSION RATE (LB/HR):	0.69	0.40		
CAPTURE EFFICIENCY:	100 %	100 %	%	%
CONTROL DEVICE EFFICIENCY:	80 %	80 %	%	%
CORRESPONDING OVERALL EFFICIENCY:	80 %	80 %	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	0.45	0.08		

PRESSURE DROP (IN. H_20): ___4___ MIN ___6___ MAX

INLET TEMPERATURE (^oF): _0F_____ MIN ____400F__ MAX	OUTLET TEMPERATURE (^oF): ___0F___ MIN __400F____ MAX
INLET AIR FLOW RATE (ACFM):8500	BULK PARTICLE DENSITY (LB/FT^3):
POLLUTANT LOADING RATE (GR/FT^3):0.32	

SETTLING CHAMBER	**CYCLONE**			**MULTICYCLONE**
LENGTH (INCHES):	INLET VELOCITY (FT/SEC):		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H:253" Including outlet	Dd: 6 feet nominal	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:50-60fps	Lb:	FLOW RATE (GPM):	☐ YES ☐ NO
NO. TRAYS:	De: N/A	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:N/A	S:		☐ YES ☐ NO
	TYPE OF CYCLONE: ☑ CONVENTIONAL		☐ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES:

DESCRIBE INCOMING AIR STREAM: Hot air from pellitizer and cooler. Distribution size unknown as minimal PM is expected.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1		
1-10		
10-25		
25-50		
50-100		
>100		
		TOTAL = 100

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **C1**

CONTROL DEVICE ID NO:CD-4	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-PSC-1
EMISSION POINT (STACK) ID NO(S): EP-PSC-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
___1___ OF ___1___	P.E. SEAL REQUIRED (PER 2q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM: CARTRIDGE FILTER MANUFACTURER BY SLY, information included for removal specifications. Set up to remove PM from screening pro

POLLUTANTS COLLECTED:	PM	PM10	PM2.5	
BEFORE CONTROL EMISSION RATE (LB/HR):	0.14	0.07	0.01	
CAPTURE EFFICIENCY:	100 %	100 %	100 %	%
CONTROL DEVICE EFFICIENCY:	99.9 %	99.9 %	99.9 %	%
CORRESPONDING OVERALL EFFICIENCY:	99.9 %	99.9 %	99.9 %	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	0.0001	0.0001	0.0000	

PRESSURE DROP (IN H_20): MIN: MAX: GAUGE? ☑ YES ☐ NO			
BULK PARTICLE DENSITY (LB/FT^3):	INLET TEMPERATURE (^{0}F): MIN:0	MAX: 100	
POLLUTANT LOADING RATE: ☑ LB/HR ☐ GR/FT^3	OUTLET TEMPERATURE (^{0}F) MIN:0	MAX:100	
INLET AIR FLOW RATE (ACFM): 11200	FILTER OPERATING TEMP (^{0}F):72		
NO. OF COMPARTMENTS:1	NO. OF BAGS PER COMPARTMENT:	LENGTH OF BAG (IN.):	
NO. OF CARTRIDGES:60	FILTER SURFACE AREA PER CARTRIDGE (FT^2): appx. 81	DIAMETER OF BAG (IN.):	
TOTAL FILTER SURFACE AREA (FT^2): 4869 sq ft	AIR TO CLOTH RATIO: 2.3:1		
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☐ FORCED/POSITIVE	FILTER MATERIAL: ☑ WOVEN ☐ FELTED		

DESCRIBE CLEANING PROCEDURES:

- ☑ AIR PULSE
- ☐ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

DESCRIBE INCOMING AIR STREAM: Screen negative air. The screen is used to remove fine dust from the pellets and this unit is used to ensure that dust is recovered and put back in the process. It is also used to ensure high efficienty of PM control.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	NOT KNOWN	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:SEE THE PROCESS FLOW FOR DETAILS

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C7

Already Approved

CONTROL DEVICE (CONDENSER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **C7**

AS REQUIRED BY 15A NCAC 2Q .0112, THIS FORM MUST BE SEALED BY A PROFESSIONAL ENGINEER (P.E.) LICENSED IN NORTH CAROLINA.

CONTROL DEVICE ID NO:CD-1	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-P-1
EMISSION POINT ID NO(S):EP-CD-1	POSITION IN SERIES OF CONTROLS NO. __1____ OF ___1___ UNITS
OPERATING SCENARIO:	
___1____ OF ___1___	
CONDENSER TYPE: ☐ DIRECT CONTACT ☑ INDIRECT CONTACT	CONDENSER TYPE: ☑ SHELL AND TUBE ☐ OTHER

DESCRIBE CONTROL SYSTEM:CONDENSER

POLLUTANT(S) COLLECTED:	VOC			
CORRESPONDING EFFICIENCY:	80 %	%	%	%
EFFICIENCY DETERMINATION CODE:				
BEFORE CONTROL CONCENTRATION (PPMV):				
BEFORE CONTROL EMISSION RATE (LB/HR):	4.815			
AFTER CONTROL CONCENTRATION (PPMV):				
AFTER CONTROL EMISSION RATE (LB/HR):	0.9625			
BOILING POINT OF COLLECTED POLLUTANT **(^{o}F):**	131-356			
HEAT OF VAPORIZATION OF COLLECTED POLLUTANT (BTU/LB-MOL):				
SPECIFIC HEAT OF POLLUTANT COLLECTED (BTU/LB-MOL ^{o}F):				

EMISSION STREAM FLOW RATE (ACFM):75.25	INLET EMISSION STREAM TEMPERATURE (^{o}F): 439 (226C)
MOISTURE CONTENT OF EMISSION STREAM (%):99.8	OUTLET EMISSION STREAM TEMPERATURE (^{o}F): 131 (50C)
COOLANT USED: WATER	TEMPERATURE OF INLET COOLANT (^{o}F):68 (20C)
TEMPERATURE OF CONDENSATION (^{o}F):210 (99C)	TEMPERATURE OF OUTLET COOLANT (^{o}F): 140 (60C)
COOLANT FLOW RATE (LB/HR): 48,149 (1.6gal/sec)	REFRIGERATION CAPACITY (TONS):NONE
CONDENSER SURFACE AREA (FT^2):2015 (20 m2)	

DESCRIBE MAINTENANCE PROCEDURES:CLEAN CONDENSER AS PER THE MANUFACTURER SPECS

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:TEMPERATURE AND PRESSURE GAUGES

ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):SEE THE PROCESS FLOW DIAGRAM

COMMENTS:

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM D1
FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	28.52	32.92	31.23
PARTICULATE MATTER < 10 MICRONS (PM_{10})	0.64	2.38	0.69
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)	0.11	0.18	0.12
SULFUR DIOXIDE (SO_2)	0.06	0.06	0.06
NITROGEN OXIDES (NOx)	9.41	10.31	10.31
CARBON MONOXIDE (CO)	7.91	8.66	8.66
VOLATILE ORGANIC COMPOUNDS (VOC)	23.63	52.6	35.73
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)	11309.03	283072	283072
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	Lbs/yr	Lbs/yr	Lbs/yr
Acetaldehyde (TH)	75070	3060.00	4549.07	2530.77
Acrolein (TH)	107028	0.00	0.00	0.00
Ammonia (T)	7664417	602.34	659.58	659.58
Arsenic unlisted compounds (TH)	ASC-other	0.00	0.00	0.00
Benzene (TH)	71432	0.40	0.43	0.43
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00
Beryllium metal (unreacted) (TH)	7440417	0.00	0.00	0.00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00	0.00	0.00
Chromic acid (VI) (TH)	7738945	0.00	0.00	0.00
Cobalt unlisted compounds (H)	COC-other	0.02	0.02	0.02
Formaldehyde (TH)	50000	602.36	2794.57	659.58
Hexane, n- (TH)	110543	338.81	371.01	371.01
Lead unlisted compounds (H)	PBC-other	0.09	0.10	0.10
Manganese unlisted compounds (TH)	MNC-other	0.00	0.00	0.00
Mercury vapor (TH)	7439976	0.00	0.00	0.00
Napthalene (H)	91203	0.11	0.13	0.13
Nickel metal (TH)	7440020	0.00	0.00	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00
Toluene (TH)	108883	0.64	0.70	0.70
Methanol (H)	67561	538.56	1529.50	589.72
Phenol (TH)	108952	0.00	0.00	0.00
Propionaldehyde (H)	123386	606.96	1903.99	664.62

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY. **(NO MODELING IS REQUIRED)**

					Modeling Required ?		TPER LIMIT
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
Acetaldehyde (TH)	75070	0.35	8.38	3060.00		NO	6.8 lbs/hr
Ammonia (T)	7664417	0.07	1.65	602.34		NO	6.8 lbs/hr
Formaldehyde (TH)	50000	0.07	1.65	602.36		NO	0.04 lbs/hr
Hexane, n- (TH)	110543	0.04	0.93	338.81		NO	23 lb/day
Toluene (TH)	108883	0.00	0.00	0.64		NO	197.96 lb/day
							58.97 lb/hr

COMMENTS:

Attach Additional Sheets As Necessary

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential/Actual emissions: Boilers, Dryers, and Screw & Pellet Presses

Pollutant	CAS Number	Steam Boiler (ES-B-1)	Dryer (ES-D-1)	Pressure Cooker W/Condenser (ES-P-1) & CD-1	Screw Press/Dryer (ES-SPD-1) & CD-2	Pellet Press & Cooler (ES-PP-1) & CD-3	Pellet Screening (ES-PSC-1) & CD-4	AFTER CONTROL DEVICE: Actual Emissions after CD	AFTER CONTROL DEVICE: Actual Emissions	AFTER CONTROL DEVICE: Potential Emissions after CD	AFTER CONTROL DEVICE: Potential Emissions
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants											
PM	PM	0.04	0.01		26.67	1.80	0.0006	**28.52**	0.004	**31.23**	0.004
PM10	PM10	0.04	0.01		0.27	0.32	0.0003	**0.64**	0.000	**0.70**	0.000
PM2.5	PM2.5	0.03	0.01		0.07		0.0001	**0.11**	0.000	**0.12**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.01					**0.06**	0.000	**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	7.84	1.57					**9.41**	0.001	**10.31**	0.001
CARBON MONOXIDE (CO)	CO	6.59	1.32					**7.91**	0.001	**8.66**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.43	0.09	3.85	19.26			**23.63**	0.003	**25.87**	0.003
Greenhouse Gas Emissions											
CARBON DIOXIDE (CO_2)	CO_2	9424.29	1884.74					**11,309.03**		**12,383.39**	
METHANE (CH_4)	CH_4	0.18	0.04					**0.21**		**0.23**	
NITROUS OXIDE (N_2O)	N_2O	0.02	0.00					**0.02**		**0.02**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/hr)	(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.002	0.000	460.800	1299.60	1299.60		**3060.00**	0.38	**3350.70**	0.38
Acrolein (TH)	107028	0.003	0.001					**0.00**	0.00	**0.004**	0.00
Ammonia (T)	7664417	501.952	100.384					**602.34**	0.08	**659.56**	0.08
Arsenic unlisted compounds (TH)	ASC-other							**0.00**	0.00	**0.00**	0.00
Benzene (TH)	71432	0.329	0.066					**0.40**	0.00	**0.43**	0.00
Benzo(a)pyrene (TH)	50328	0.000	0.000					**0.00**	0.00	**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417							**0.00**	0.00	**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439							**0.00**	0.00	**0.00**	0.00
Chromic acid (VI) (TH)	7738945							**0.00**	0.00	**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.013	0.003					**0.02**	0.00	**0.02**	0.00
Formaldehyde (TH)	50000	11.765	2.353	487.440	50.40	50.40		**602.36**	0.08	**659.58**	0.08
Hexane, n- (TH)	110543	282.348	56.466					**338.81**	0.04	**371.00**	0.04
Lead unlisted compounds (H)	PBC-other	0.078	0.016					**0.09**	0.00	**0.10**	0.00
Manganese unlisted compounds (TH)	MNC-other							**0.00**	0.00	**0.00**	0.00
Mercury vapor (TH)	7439976							**0.00**	0.00	**0.00**	0.00
Napthalene (H)	91203	0.096	0.019					**0.11**	0.00	**0.13**	0.00
Nickel metal (TH)	7440020							**0.00**	0.00	**0.00**	0.00
Selenium compounds (H)	SEC	0.004	0.001					**0.00**	0.00	**0.00**	0.00
Toluene (TH)	108883	0.533	0.107					**0.64**	0.00	**0.70**	0.00
Methanol (H)	67561			214.560	162.00	162.00		**538.56**	0.07	**589.72**	0.07
Phenol (TH)	108952							**0.00**	0.00	**0.00**	0.00
Propionaldehyde (H)	123386			282.960	162.00	162.00		**606.96**	0.08	**664.62**	0.08
HAP Indiv. Max		**501.95**	**100.38**		**1299.60**	**1299.60**	**0.00**			**3350.70**	
HAP total		**797.12**	**159.41**		**1674.00**	**1674.00**	**0.00**	**5750.30**		**6296.58**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential emissions: Boilers, Dryers, and Screw & Pellet Presses, Pellet Cooler and Pellet Screening

BEFORE & AFTER CONTROL DEVICES

Pollutant	CAS Number	Steam Boiler (ES-B-1)		Dryer (ES-D-1)		Pressure Cooker W/Condenser (ES-P-1) & CD-1		Screw Press/Dryer (ES-SPD-1) & CD-2		Pellet Press & Cooler (ES-PP-1) & CD-3		Pellet Screening (ES-PSC-1) & CD-4		Potential Emissions before CD	Potential Emissions before CD	Potential Emissions after CD	Potential Emissions after CD
		Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD				
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants																	
PM	PM	0.04	0.04	0.01	0.01			29.20	29.20	3.04	1.97	0.62	0.0006	**32.92**	0.004	**31.23**	0.004
PM10	PM10	0.04	0.04	0.01	0.01			0.29	0.29	1.74	0.35	0.30	0.0003	**2.38**	0.000	**0.69**	0.000
PM2.5	PM2.5	0.04	0.04	0.01	0.01			0.07	0.07			0.06	0.0001	**0.18**	0.000	**0.12**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.05	0.01	0.01									**0.06**	0.000	**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	8.59	8.59	1.72	1.72									**10.31**	0.001	**10.31**	0.001
CARBON MONOXIDE (CO)	CO	7.21	7.21	1.44	1.44									**8.66**	0.001	**8.66**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.47	0.47	0.09	0.09	21.09	4.22	21.09	21.09	9.86	9.86			**52.60**	0.007	**35.73**	0.004
Greenhouse Gas Emissions																	
CARBON DIOXIDE (CO_2)	CO_2	10239.47	10239.47	2047.89	2047.89									**12287.37**		**12287.37**	
METHANE (CH_4)	CH_4	4.83	4.83	0.97	0.97									**5.79**		**5.79**	
NITROUS OXIDE (N_2O)	N_2O	5.76	5.76	1.15	1.15									**6.91**		**6.91**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)		(lbs/yr)				(lbs/yr)		(lbs/yr)		(lbs/yr)		(lbs/yr)	(lbs/hr)	(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.003	0.003	0.001	0.00	2522.88	504.58	1013.09	1013.09	1013.09	1013.09			**4549.07**	0.57	**2530.77**	0.29
Acrolein (TH)	107028	0.003	0.003	0.001	0.00									**0.00**	0.00	**0.00**	0.00
Ammonia (T)	7664417	549.65	549.65	109.93	109.93									**659.58**	0.08	**659.58**	0.08
Arsenic unlisted compounds (TH)	ASC-other													**0.00**	0.00	**0.00**	0.00
Benzene (TH)	71432	0.36	0.36	0.07	0.07									**0.43**	0.00	**0.43**	0.00
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00	0.00									**0.00**	0.00	**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417													**0.00**	0.00	**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439													**0.00**	0.00	**0.00**	0.00
Chromic acid (VI) (TH)	7738945													**0.00**	0.00	**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.01	0.01	0.00	0.00									**0.02**	0.00	**0.02**	0.00
Formaldehyde (TH)	50000	12.88	12.88	2.58	2.58	2668.73	533.75	55.19	55.19	55.19	55.19			**2794.57**	0.35	**659.58**	0.08
Hexane, n- (TH)	110543	309.18	309.18	61.84	61.84									**371.01**	0.05	**371.01**	0.04
Lead unlisted compounds (H)	PBC-other	0.09	0.09	0.02	0.02									**0.10**	0.00	**0.10**	0.00
Manganese unlisted compounds (TH)	MNC-other													**0.00**	0.00	**0.00**	0.00
Mercury vapor (TH)	7439976													**0.00**	0.00	**0.00**	0.00
Napthalene (H)	91203	0.10	0.10	0.02	0.02									**0.13**	0.00	**0.13**	0.00
Nickel metal (TH)	7440020													**0.00**	0.00	**0.00**	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00	0.00									**0.00**	0.00	**0.00**	0.00
Toluene (TH)	108883	0.58	0.58	0.12	0.12									**0.70**	0.00	**0.70**	0.00
Methanol (H)	67561					1174.72	234.94	177.39	177.39	177.39	177.39			**1529.50**	0.19	**589.72**	0.07
Phenol (TH)	108952													**0.00**	0.00	**0.00**	0.00
Propionaldehyde (H)	123386					1549.21	309.84	177.39	177.39	177.39	177.39			**1903.99**	0.24	**664.62**	0.08
HAP Indiv. Max		**549.65**		**109.93**				**1013.09**		**1013.09**		**0.00**				**2530.77**	
HAP total		**872.87**		**174.57**				**1423.06**		**1423.06**		**0.00**		**11809.10**		**5476.67**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - INPUT SCREEN

Air Quality
ENVIRONMENTAL QUALITY

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. NCDEQ does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. NCDEQ is not responsible for errors or omissions that may be contained herein.

Directions: Enter and select information in the boxes in the column on the right:

FIELDS	***SELECTIONS***
COMPANY NAME:	ACTIVE ENERGY RENEWABLE POWER
FACILITY ID NUMBER:	NA
PERMIT NUMBER	NA
FACILITY CITY:	LUMBERTON
FACILITY COUNTY:	ROBESON
SPREADSHEET PREPARED BY:	CHALAM PAKALA, PE
EMISSION SOURCE ID NO.:	ES-B-1
MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	20.00 mmBTU/HR
TYPE OF BOILER:	SMALL BOILER (<100 mmBTU/HR)
DOES THE SOURCE ALSO BURN COAL OR FUEL OIL?	No
DATE OF CONSTRUCTION:	10/1/2019 (mm/dd/yyyy)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS (GHG) EMISSIONS

ENTER Calculation Tier from EPA Mandatory Reporting Rule (MRR)* Subpart C: TIER 1: DEFAULT HHV AND DEFAULT EF

* See http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER FUEL CARBON CONTENT: 0.7500

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER MOLECULAR WEIGHT: 19.00 kg/kg-mole

FUEL HEATING VALUE

ANNUAL AVG MEASURED FUEL HEATING VALUE (BTU/SCF): 1,020 BTU/SCF

DEFAULT FUEL HEATING VALUE (BTU/SCF) -- will be used for GHG calculations under TIER 1 approach

1,028 BTU/SCF default value is from EPA's mandatory reporting rule, Table C-1, "Natural Gas Pipeline (Weighted U.S. Average)"

USAGE AND OTHER SOURCE-SPECIFIC DATA

ACTUAL YEARLY FUEL USAGE (MILLION SCF):	156.86	MILLION SCF	
CALCULATED POTENTIAL YEARLY USAGE (MILLION SCF)	171.76	MILLION SCF	
REQUESTED ANNUAL LIMITATION (MILLION SCF)	171.76	MILLION SCF	(TYPEOVER IF NECESSARY - DEFAULT IS POTENTIAL)
DAILY HOURS OF OPERATION:	22	HOURS	
TYPE OF EMISSION CONTROL:	NO CONTROL		
IS SNCR APPLIED TO THE BOILER?	NO		

Already Approved

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	ACTIVE ENERGY RENEWABLE POWER	FACILITY ID NO.:	NA
		PERMIT NUMBER:	NA
EMISSION SOURCE DESCRIPTION:	20 MMBTU/HR NATURAL GAS-FIRED BOILER	FACILITY CITY:	LUMBERTON
EMISSION SOURCE ID NO.:	ES-B-1	FACILITY COUNTY:	ROBESON
CONTROL DEVICE:	NO CONTROL	POLLUTANT	CONTROL EFF.
SPREADSHEET PREPARED BY:	CHALAM PAKALA, PE	NOX	CALC'D AS 0%
ACTUAL FUEL THROUGHPUT:	156.86 10^6 SCF/YR	FUEL HEAT VALUE: 1,020 BTU/SCF	
POTENTIAL FUEL THROUGHPUT:	171.76 10^6 SCF/YR	BOILER TYPE: SMALL BOILER (<100 mmBTU/HR)	NO SNCR APPLIED
REQUESTED MAX. FUEL THRPT:	171.76 10^6 SCF/YR	HOURS OF OPERATIONS: 22	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
AIR POLLUTANT EMITTED	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	uncontrolled	controlled
PARTICULATE MATTER (Total)	0.01	0.04	0.01	0.04	0.01	0.04	0.001	0.001
PARTICULATE MATTER (Filterable)	0.00	0.02	0.00	0.02	0.00	0.02	0.000	0.000
PARTICULATE MATTER (Condensable)	0.01	0.03	0.01	0.03	0.01	0.03	0.000	0.000
PM 2.5 (Total)	0.01	0.03	0.01	0.04	0.01	0.04	0.000	0.000
PM 2.5 (Filterable)	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
SULFUR DIOXIDE (SO2)	0.01	0.05	0.01	0.05	0.01	0.05	0.001	0.001
NITROGEN OXIDES (NOx)	1.96	7.84	1.96	8.59	1.96	8.59	0.098	0.098
CARBON MONOXIDE (CO)	1.65	6.59	1.65	7.21	1.65	7.21	0.082	0.082
VOLATILE ORGANIC COMPOUNDS (VOC)	0.11	0.43	0.11	0.47	0.11	0.47	0.005	0.005

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

	CAS	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
TOXIC / HAZARDOUS AIR POLLUTANT	NUMBER	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	2.98E-07	2.38E-03	2.98E-07	2.61E-03	2.98E-07	2.61E-03	1.49E-08	1.49E-08
Acrolein (TH)	107028	3.53E-07	2.82E-03	3.53E-07	3.09E-03	3.53E-07	3.09E-03	1.76E-08	1.76E-08
Ammonia (T)	7664417	6.27E-02	5.02E+02	6.27E-02	5.50E+02	6.27E-02	5.50E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	4.12E-05	3.29E-01	4.12E-05	3.61E-01	4.12E-05	3.61E-01	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	2.35E-08	1.88E-04	2.35E-08	2.06E-04	2.35E-08	2.06E-04	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromic acid (VI) (TH)	7738945	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt unlisted compounds (H)	COC-other	1.65E-06	1.32E-02	1.65E-06	1.44E-02	1.65E-06	1.44E-02	8.24E-08	8.24E-08
Formaldehyde (TH)	50000	1.47E-03	1.18E+01	1.47E-03	1.29E+01	1.47E-03	1.29E+01	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	3.53E-02	2.82E+02	3.53E-02	3.09E+02	3.53E-02	3.09E+02	1.76E-03	1.76E-03
Lead unlisted compounds (H)	PBC-other	9.80E-06	7.84E-02	9.80E-06	8.59E-02	9.80E-06	8.59E-02	4.90E-07	4.90E-07
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Napthalene (H)	91203	1.20E-05	9.57E-02	1.20E-05	1.05E-01	1.20E-05	1.05E-01	5.98E-07	5.98E-07
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium compounds (H)	SEC	4.71E-07	3.76E-03	4.71E-07	4.12E-03	4.71E-07	4.12E-03	2.35E-08	2.35E-08
Toluene (TH)	108883	6.67E-05	5.33E-01	6.67E-05	5.84E-01	6.67E-05	5.84E-01	3.33E-06	3.33E-06
Total HAPs		3.69E-02	2.95E+02	3.69E-02	3.23E+02	3.69E-02	3.23E+02	1.84E-03	1.84E-03
Highest HAP	Hexane	3.53E-02	2.82E+02	3.53E-02	3.09E+02	3.53E-02	3.09E+02	1.76E-03	1.76E-03

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

		EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS			EMISSION FACTOR lb/mmBtu	
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	2.98E-07	6.56E-06	2.38E-03	1.49E-08	1.49E-08
Acrolein (TH)	107028	3.53E-07	7.76E-06	2.82E-03	1.76E-08	1.76E-08
Ammonia (T)	7664417	6.27E-02	1.38E+00	5.02E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	4.12E-05	9.06E-04	3.29E-01	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	2.35E-08	5.18E-07	1.88E-04	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Soluble chromate compounds, as chromium (VI) equivalent	SolCR6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Formaldehyde (TH)	50000	1.47E-03	3.24E-02	1.18E+01	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	3.53E-02	7.76E-01	2.82E+02	1.76E-03	1.76E-03
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene (TH)	108883	6.67E-05	1.47E-03	5.33E-01	3.33E-06	3.33E-06

GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD

GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD

GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS (EPA MRR CALCULATION METHOD: TIER 1)			POTENTIAL EMISSIONS	
	metric tons/yr	metric tons/yr, **CO_2e**	short tons/yr	short tons/yr	short tons/yr, **CO_2e**
CARBON DIOXIDE (CO_2)	8549.59	8,549.59	9,424.29	10,239.47	10239.47
METHANE (CH_4)	1.61E-01	4.03E+00	1.78E-01	1.93E-01	4.83E+00
NITROUS OXIDE (N_2O)	1.61E-02	4.81E+00	1.78E-02	1.93E-02	5.76E+00
		TOTAL CO2e (metric tons) **8,558.42**			TOTAL CO2e (short tons) **10,250.06**

NOTE: CO2e means CO2 equivalent

NOTE: The DAQ Air Emissions Reporting Online (AERO) system requires short tons be reported. The EPA MRR requires metric tons be reported.

NOTE: Do not use greenhouse gas emission estimates from this spreadsheet for PSD (Prevention of Significant Deterioration) purposes.

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - INPUT SCREEN

Air Quality
ENVIRONMENTAL QUALITY

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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Directions: Enter and select information in the boxes in the column on the right:

FIELDS	***SELECTIONS***
COMPANY NAME:	ACTIVE ENERGY RENEWABLE POWER
FACILITY ID NUMBER:	NA
PERMIT NUMBER	NA
FACILITY CITY:	LUMBERTON
FACILITY COUNTY:	ROBESON
SPREADSHEET PREPARED BY:	CHALAM PAKAL, PE
EMISSION SOURCE ID NO.:	ES-D-1
MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	4.00 mmBTU/HR
TYPE OF BOILER:	SMALL BOILER (<100 mmBTU/HR)
DOES THE SOURCE ALSO BURN COAL OR FUEL OIL?	No
DATE OF CONSTRUCTION:	5/1/2000 (mm/dd/yyyy)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS (GHG) EMISSIONS

ENTER Calculation Tier from EPA Mandatory Reporting Rule (MRR)* Subpart C: TIER 1: DEFAULT HHV AND DEFAULT EF

* See http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER FUEL CARBON CONTENT: 0.7500

SINCE TIER 3 IS NOT BEING USED, DO NOT ENTER MOLECULAR WEIGHT: 19.00 kg/kg-mole

FUEL HEATING VALUE

ANNUAL AVG MEASURED FUEL HEATING VALUE (BTU/SCF): 1,020 BTU/SCF

DEFAULT FUEL HEATING VALUE (BTU/SCF) -- will be used for GHG calculations under TIER 1 approach

1,028 BTU/SCF default value is from EPA's mandatory reporting rule, Table C-1, "Natural Gas Pipeline (Weighted U.S. Average)"

USAGE AND OTHER SOURCE-SPECIFIC DATA

ACTUAL YEARLY FUEL USAGE (MILLION SCF):	31.37	MILLION SCF	
CALCULATED POTENTIAL YEARLY USAGE (MILLION SCF)	34.35	MILLION SCF	
REQUESTED ANNUAL LIMITATION (MILLION SCF)	34.35	MILLION SCF	(TYPEOVER IF NECESSARY - DEFAULT IS POTENTIAL)
DAILY HOURS OF OPERATION:	22	HOURS	
TYPE OF EMISSION CONTROL:	NO CONTROL		
IS SNCR APPLIED TO THE BOILER?	NO		

Already Approved

NATURAL GAS COMBUSTION EMISSIONS CALCULATOR REVISION N 01/05/2017 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. NCDEQ does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. NCDEQ is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	ACTIVE ENERGY RENEWABLE POWER	FACILITY ID NO.:	NA
		PERMIT NUMBER:	NA
EMISSION SOURCE DESCRIPTION:	4 MMBTU/HR NATURAL GAS-FIRED BOILER	FACILITY CITY:	LUMBERTON
EMISSION SOURCE ID NO.:	ES-D-1	FACILITY COUNTY:	ROBESON
CONTROL DEVICE:	NO CONTROL	POLLUTANT	CONTROL EFF.
SPREADSHEET PREPARED BY:	CHALAM PAKAL, PE	NOX	CALC'D AS 0%
ACTUAL FUEL THROUGHPUT:	31.37 10^6 SCF/YR	FUEL HEAT VALUE: 1,020 BTU/SCF	
POTENTIAL FUEL THROUGHPUT:	34.35 10^6 SCF/YR	BOILER TYPE: SMALL BOILER (<100 mmBTU/HR)	NO SNCR APPLIED
REQUESTED MAX. FUEL THRPT:	34.35 10^6 SCF/YR	HOURS OF OPERATIONS: 22	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
AIR POLLUTANT EMITTED	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	uncontrolled	controlled
PARTICULATE MATTER (Total)	0.00	0.01	0.00	0.01	0.00	0.01	0.001	0.001
PARTICULATE MATTER (Filterable)	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
PARTICULATE MATTER (Condensable)	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
PM 2.5 (Total)	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
PM 2.5 (Filterable)	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
SULFUR DIOXIDE (SO2)	0.00	0.01	0.00	0.01	0.00	0.01	0.001	0.001
NITROGEN OXIDES (NOx)	0.39	1.57	0.39	1.72	0.39	1.72	0.098	0.098
CARBON MONOXIDE (CO)	0.33	1.32	0.33	1.44	0.33	1.44	0.082	0.082
VOLATILE ORGANIC COMPOUNDS (VOC)	0.02	0.09	0.02	0.09	0.02	0.09	0.005	0.005

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

	CAS	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR lb/mmBtu	
TOXIC / HAZARDOUS AIR POLLUTANT	NUMBER	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	5.96E-08	4.77E-04	5.96E-08	5.22E-04	5.96E-08	5.22E-04	1.49E-08	1.49E-08
Acrolein (TH)	107028	7.06E-08	5.65E-04	7.06E-08	6.18E-04	7.06E-08	6.18E-04	1.76E-08	1.76E-08
Ammonia (T)	7664417	1.25E-02	1.00E+02	1.25E-02	1.10E+02	1.25E-02	1.10E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	8.24E-06	6.59E-02	8.24E-06	7.21E-02	8.24E-06	7.21E-02	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	4.71E-09	3.76E-05	4.71E-09	4.12E-05	4.71E-09	4.12E-05	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromic acid (VI) (TH)	7738945	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt unlisted compounds (H)	COC-other	3.29E-07	2.64E-03	3.29E-07	2.89E-03	3.29E-07	2.89E-03	8.24E-08	8.24E-08
Formaldehyde (TH)	50000	2.94E-04	2.35E+00	2.94E-04	2.58E+00	2.94E-04	2.58E+00	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	7.06E-03	5.65E+01	7.06E-03	6.18E+01	7.06E-03	6.18E+01	1.76E-03	1.76E-03
Lead unlisted compounds (H)	PBC-other	1.96E-06	1.57E-02	1.96E-06	1.72E-02	1.96E-06	1.72E-02	4.90E-07	4.90E-07
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Napthalene (H)	91203	2.39E-06	1.91E-02	2.39E-06	2.10E-02	2.39E-06	2.10E-02	5.98E-07	5.98E-07
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium compounds (H)	SEC	9.41E-08	7.53E-04	9.41E-08	8.24E-04	9.41E-08	8.24E-04	2.35E-08	2.35E-08
Toluene (TH)	108883	1.33E-05	1.07E-01	1.33E-05	1.17E-01	1.33E-05	1.17E-01	3.33E-06	3.33E-06
Total HAPs		7.38E-03	5.90E+01	7.38E-03	6.46E+01	7.38E-03	6.46E+01	1.84E-03	1.84E-03
Highest HAP	Hexane	7.06E-03	5.65E+01	7.06E-03	6.18E+01	7.06E-03	6.18E+01	1.76E-03	1.76E-03

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

		EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS			EMISSION FACTOR lb/mmBtu	
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	uncontrolled	controlled
Acetaldehyde (TH)	75070	5.96E-08	1.31E-06	4.77E-04	1.49E-08	1.49E-08
Acrolein (TH)	107028	7.06E-08	1.55E-06	5.65E-04	1.76E-08	1.76E-08
Ammonia (T)	7664417	1.25E-02	2.76E-01	1.00E+02	3.14E-03	3.14E-03
Arsenic unlisted compounds (TH)	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene (TH)	71432	8.24E-06	1.81E-04	6.59E-02	2.06E-06	2.06E-06
Benzo(a)pyrene (TH)	50328	4.71E-09	1.04E-07	3.76E-05	1.18E-09	1.18E-09
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Soluble chromate compounds, as chromium (VI) equivalent	SolCR6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Formaldehyde (TH)	50000	2.94E-04	6.47E-03	2.35E+00	7.35E-05	7.35E-05
Hexane, n- (TH)	110543	7.06E-03	1.55E-01	5.65E+01	1.76E-03	1.76E-03
Manganese unlisted compounds (TH)	MNC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury vapor (TH)	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel metal (TH)	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene (TH)	108883	1.33E-05	2.93E-04	1.07E-01	3.33E-06	3.33E-06

GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD				*GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD*	
GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS EPA MRR CALCULATION METHOD: TIER 1			**POTENTIAL** EMISSIONS	
	metric tons/yr	metric tons/yr, **CO2e**	short tons/yr	short tons/yr	short tons/yr, **CO2e**
CARBON DIOXIDE (CO_2)	1709.81	1,709.81	1,884.74	2,047.89	2047.89
METHANE (CH_4)	3.22E-02	8.06E-01	3.55E-02	3.86E-02	9.66E-01
NITROUS OXIDE (N_2O)	3.22E-03	9.61E-01	3.55E-03	3.86E-03	1.15E+00
		TOTAL CO2e (metric tons) **1,711.58**			TOTAL CO2e (short tons) **2,050.01**

NOTE: CO2e means CO2 equivalent
NOTE: The DAQ Air Emissions Reporting Online (AERO) system requires short tons be reported. The EPA MRR requires metric tons be reported.
NOTE: Do not use greenhouse gas emission estimates from this spreadsheet for PSD (Prevention of Significant Deterioration) purposes.

Active Energy Renewable Power
Lumberton, Robeson County, NC

Calculations of NG usage based on Hours of Operation

Data Input (BOILER)

Maximum Heat Input	20.00	mmBtu/hr
Boiler Size/Type	Small Industrial	
Actual Fuel Usage		ft^3/yr
or	or	
Hours of Operation	8,000	hr/yr
and	and	
Heating Value	1,020	Btu/ft^3
Calculated Fuel Usage	156,862,745	ft^3/yr
	156.86	mmscf/yr

Data Input (DRYER)

Maximum Heat Input	4.00	mmBtu/hr
Boiler Size/Type	Small Industrial	
Actual Fuel Usage		ft^3/yr
or	or	
Hours of Operation	8,000	hr/yr
and	and	
Heating Value	1,020	Btu/ft^3
Calculated Fuel Usage	31,372,549	ft^3/yr
	31.37	mmscf/yr

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

VOC from the Pressure Cooker & Condensor (80%-95% Efficiency)- @131^{0}F **(ES-P-1) & CD-1**
Condenser 80-95% Used 80%

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	25% Hardwood 75% Softwood		

Pollutant				VOC	Emission Factor[1] lbs/ODT	Actual Emissions tons/yr	Potential Emissions tons/yr	Actual Emissions (after Condenser 80% Eff) tons/yr	Potential Emissions (after Condenser 80% Eff) tons/yr
VOC				Y	1.070	19.26	21.09	3.85	4.22
						(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)
Acetaldehyde (BP-68.36F)		Y	Y	Y	6.40E-02	2304.00	2522.88	460.80	504.58
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-	0.00	0.00
Formaldehide (BP- (-2.2F)		Y	Y	Y	6.77E-02	2437.20	2668.73	487.44	533.75
Methanol (BP-148.5F)		Y	N	Y	2.98E-02	1072.80	1174.72	214.56	234.94
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	0.00	0.00	0.00	0.00
Propionaldehyde (BP-119.8F)		Y	N	Y	3.93E-02	1414.80	1549.21	282.96	309.84
	HAPs total (lbs/year)					7,228.80	7,915.54	1,449.61	1,587.33

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

PM, NOX, CO and VOC, HAPS from Screw Press/Pellet Drying with an INTEGRAL high Efficiency Cyclone (90% for PM) **(ES-SPD-1) & CD-2**

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	25% Hardwood 75% Softwood		

Pollutant	Flow Rate (CFM)		Grains/cf	hrs	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (90 Eff for PM and 60% for PM10) lbs/yr	Potential Emissions After a CD (90% Eff for PM and 60% for PM10) lbs/yr
PM	15556		0.05	8000		53334.80	58,401.61	53334.80	58401.61
Cyclone Loading rate calcs				Tons		26.67	29.20	26.67	29.20
PM10	1.0% of total PM from C Forms			8000	1.00%	533.35	584.02	533.35	584.02
				Tons		0.27	0.29	0.27	0.29
PM2.5	0.25% of total PM from C Forms			8000	0.25%	133.34	146.00	133.34	146.00
				Tons		0.07	0.07	0.07	0.07
VOC					1.07	38520.00	42179.40	38520.00	42179.40
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		19.26	21.09	19.26	21.09

Pollutant		HAP	NC TAP	VOC		(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	925.20	1,013.09	925.20	1,013.09
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-	-	-
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	50.40	55.19	50.40	55.19
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	162.00	177.39	162.00	177.39
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	-	-	-	-
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	162.00	177.39	162.00	177.39
	HAP total (lbs/year)					1,299.60	1,423.06	1,299.60	1,423.06
	HAP total (tons/yr)					0.65	0.71	0.65	0.71
	TAP total (lbs/year)					975.60	1,068.28	975.60	1,068.28
	TAP total (tons/yr)					0.49	0.53	0.49	0.53

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

PM, VOCs and HAPS from Pellet Press & Pellet Cooler with a Conventional Cyclone (80-90% Eff) (ES-PP-1) & CD-3

Max Throughput Potential Throughput	43,800.00	Ton/yr @ 10% m.c.							
	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

Pollutant	Flow Rate (CFM)		EF in kg/ton	hrs	Emission Factor[1]	Actual Emissions	Potential Emissions	Actual Emissions After a CD (80% Eff)	Potential Emissions After a CD (80% Eff)
					lbs/ODT	*lbs/yr*	*lbs/yr*	*lbs/yr*	*lbs/yr*
PM			0.07	8000	0.15	5554.08	6,081.72	3600.00	3942.00
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**2.78**	**3.04**	**1.80**	**1.97**
PM10			0.04	8000	0.09	3170.88	3,472.11	634.18	694.42
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**1.59**	**1.74**	**0.32**	**0.35**
Pollutant		HAP	NC TAP	VOC				-	-
VOC				Y	0.5	**18,000.00**	**19,710.00**	**18000.00**	**19710.00**
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**9.00**	**9.86**	**9.00**	**9.86**
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**925.20**	**1,013.09**	**925.20**	**1,013.09**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**50.40**	**55.19**	**50.40**	**55.19**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
				HAP total (lbs/year)		**1,299.60**	**1,423.06**	**1,299.60**	**1,423.06**
				HAP total (tons/yr)		**0.65**	**0.71**	**0.65**	**0.71**
				TAP total (lbs/year)		**975.60**	**1,068.28**	**975.60**	**1,068.28**
				TAP total (tons/yr)		**0.49**	**0.53**	**0.49**	**0.53**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	Used as the worst case
Stack Test dated April 2017				

PM from Pellet Screen with a Cartridge Filter (99.9% Eff) (ES-PSC-1) & CD-4

Max Throughput Potential Throughput	43,800.00	Ton/yr @ 10% m.c.							
	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

					Emission Factor1	Actual Emissions	Potential Emissions	Actual Emissions After a CD (99.9% Eff)	Potential Emissions After a CD (99.9% Eff)
					lbs/ODT	*lbs/yr*	*lbs/yr*	*lbs/yr*	*lbs/yr*
PM, PM10 and PM2.5 EFs are taken from ref-Pinnacle Renewable Energy-Newton Facility dated August 2019, revised in Jan 2020									
PM				8000	3.15E-02	1134.00	1,241.73	1.13	1.24
				Tons		**0.57**	**0.62**	**0.0006**	**0.0006**
PM10				8000	1.50E-02	540.00	591.30	0.54	0.59
				Tons		**0.27**	**0.30**	**0.0003**	**0.0003**
PM2.5				8000	3.15E-03	113.40	124.17	0.11	0.12
				Tons		**0.06**	**0.06**	**0.0001**	**0.0001**

[External] revised B, D1 and excel sheets

CHUCK PAKALA <cvpakala@carolina.rr.com>

Wed 5/12/2021 12:47 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

3 attachments (133 KB)

D1 NEW 051021.pdf; All Emissions Calcs-GREG HAP EFs 051221.pdf; B_2019 NEW 051021-D1.pdf;

Regards

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ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B (ALREADY APPROVED)
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: ONE 4MMBTU/HR NATURAL GAS FIRED DRYER	EMISSION SOURCE ID NO:ES-D-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-D-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
4MMBTU/HR NATURAL GAS FIRED DRYER TO DRY WET WOOD CHIP PULP

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☑ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____NA_____ ☐ NESHAP (SUBPARTS?):_____ NA

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	AP-42/NC DEQ	0.00	0.01	0.01	0.01	0.01	0.01
PARTICULATE MATTER<10 MICRONS (PM_{10})	AP-42/NC DEQ	0.00	0.01	0.01	0.01	0.01	0.01
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)	AP-42/NC DEQ	0.00	0.01	0.01	0.01	0.01	0.01
SULFUR DIOXIDE (SO2)	AP-42/NC DEQ	0.00	0.01	0.00	0.01	0.00	0.01
NITROGEN OXIDES (NOx)	AP-42/NC DEQ	0.39	1.57	0.39	1.72	0.39	1.72
CARBON MONOXIDE (CO)	AP-42/NC DEQ	0.33	1.32	0.33	1.44	0.33	1.44
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.02	0.09	0.02	0.09	0.02	0.09
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
AMMONIA (T)	7664417	AP-42/NC DEQ	1.25E-02	100.38	1.25E-02	109.93	1.25E-02	109.93
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	0.07	8.24E-06	0.07	8.24E-06	0.07
Cobalt unlisted compounds (H)	COC-other	AP-42/NC DEQ	3.29E-07	0.00	3.29E-07	0.00	3.29E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	2.35	2.94E-04	2.58	2.94E-04	2.58
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	56.47	7.06E-03	61.84	7.06E-03	61.84
Lead unlisted compounds (H)	PBC-other	AP-42/NC DEQ	1.96E-06	0.02	1.96E-06	0.02	1.96E-06	0.02
Napthalene (H)	91203	AP-42/NC DEQ	2.39E-06	0.02	2.39E-06	0.02	2.39E-06	0.02
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	0.11	1.33E-05	0.12	1.33E-05	0.12

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.96E-08	1.31E-06	0.00
Acrolein (TH)	107028	AP-42/NC DEQ	7.06E-08	1.55E-06	0.00
Ammonia (T)	7664417	AP-42/NC DEQ	1.25E-02	2.76E-01	100.38
Arsenic unlisted compounds (TH)	ASC-other	AP-42/NC DEQ	0.00E+00	0.00E+00	0.00
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	1.81E-04	0.07
Benzo(a)pyrene (TH)	50328	AP-42/NC DEQ	4.71E-09	1.04E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	6.47E-03	2.35
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	1.55E-01	56.47
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	2.93E-04	0.11

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM D1
FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	28.52	32.92	31.23
PARTICULATE MATTER < 10 MICRONS (PM_{10})	0.64	2.38	0.69
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)	0.11	0.18	0.12
SULFUR DIOXIDE (SO_2)	0.06	0.06	0.06
NITROGEN OXIDES (NOx)	9.41	10.31	10.31
CARBON MONOXIDE (CO)	7.91	8.66	8.66
VOLATILE ORGANIC COMPOUNDS (VOC)	23.63	52.6	35.73
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)	11309.03	283072	283072
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	Lbs/yr	Lbs/yr	Lbs/yr
Acetaldehyde (TH)	75070	3060.00	4549.07	2530.77
Acrolein (TH)	107028	0.00	0.00	0.00
Ammonia (T)	7664417	602.34	659.58	659.58
Arsenic unlisted compounds (TH)	ASC-other	0.00	0.00	0.00
Benzene (TH)	71432	0.40	0.43	0.43
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00
Beryllium metal (unreacted) (TH)	7440417	0.00	0.00	0.00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00	0.00	0.00
Chromic acid (VI) (TH)	7738945	0.00	0.00	0.00
Cobalt unlisted compounds (H)	COC-other	0.02	0.02	0.02
Formaldehyde (TH)	50000	602.36	2794.57	659.58
Hexane, n- (TH)	110543	338.81	371.01	371.01
Lead unlisted compounds (H)	PBC-other	0.09	0.10	0.10
Manganese unlisted compounds (TH)	MNC-other	0.00	0.00	0.00
Mercury vapor (TH)	7439976	0.00	0.00	0.00
Napthalene (H)	91203	0.11	0.13	0.13
Nickel metal (TH)	7440020	0.00	0.00	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00
Toluene (TH)	108883	0.64	0.70	0.70
Methanol (H)	67561	538.56	1529.50	589.72
Phenol (TH)	108952	0.00	0.00	0.00
Propionaldehyde (H)	123386	606.96	1903.99	664.62

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY. **(NO MODELING IS REQUIRED)**

					Modeling Required ?		TPER LIMIT
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
Acetaldehyde (TH)	75070	0.35	8.38	3060.00		NO	6.8 lbs/hr
Ammonia (T)	7664417	0.07	1.65	602.34		NO	6.8 lbs/hr
Formaldehyde (TH)	50000	0.07	1.65	602.36		NO	0.04 lbs/hr
Hexane, n- (TH)	110543	0.04	0.93	338.81		NO	23 lb/day
Toluene (TH)	108883	0.00	0.00	0.64		NO	197.96 lb/day
							58.97 lb/hr

COMMENTS:

Attach Additional Sheets As Necessary

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential/Actual emissions: Boilers, Dryers, and Screw & Pellet Presses

AFTER CONTROL DEVICE

Pollutant	CAS Number	Steam Boiler (ES-B-1)	Dryer (ES-D-1)	Pressure Cooker W/Condenser (ES-P-1) & CD-1	Screw Press/Dryer (ES-SPD-1) & CD-2	Pellet Press & Cooler (ES-PP-1) & CD-3	Pellet Screening (ES-PSC-1) & CD-4	Pellet Storage (ES-PS-1) No CD	Actual Emissions after CD	Actual Emissions
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants										
PM	PM	0.04	0.01		26.67	1.80	0.0006		**28.52**	0.004
PM10	PM10	0.04	0.01		0.27	0.32	0.0003		**0.64**	0.000
PM2.5	PM2.5	0.03	0.01		0.07		0.0001		**0.11**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.01						**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	7.84	1.57						**9.41**	0.001
CARBON MONOXIDE (CO)	CO	6.59	1.32						**7.91**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.43	0.09	3.85	19.26	9.00		0.90	**33.53**	0.004
Greenhouse Gas Emissions										
CARBON DIOXIDE (CO_2)	CO_2	9424.29	1884.74						**11,309.03**	
METHANE (CH_4)	CH_4	0.18	0.04						**0.21**	
NITROUS OXIDE (N_2O)	N_2O	0.02	0.00						**0.02**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.002	0.000	460.800	925.20	925.20		92.52	**2403.72**	0.30
Acrolein (TH)	107028	0.003	0.001						**0.00**	0.00
Ammonia (T)	7664417	501.952	100.384						**602.34**	0.08
Arsenic unlisted compounds (TH)	ASC-other								**0.00**	0.00
Benzene (TH)	71432	0.329	0.066						**0.40**	0.00
Benzo(a)pyrene (TH)	50328	0.000	0.000						**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417								**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439								**0.00**	0.00
Chromic acid (VI) (TH)	7738945								**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.013	0.003						**0.02**	0.00
Formaldehyde (TH)	50000	11.765	2.353	487.440	50.40	50.40		5.04	**607.40**	0.08
Hexane, n- (TH)	110543	282.348	56.466						**338.81**	0.04
Lead unlisted compounds (H)	PBC-other	0.078	0.016						**0.09**	0.00
Manganese unlisted compounds (TH)	MNC-other								**0.00**	0.00
Mercury vapor (TH)	7439976								**0.00**	0.00
Napthalene (H)	91203	0.096	0.019						**0.11**	0.00
Nickel metal (TH)	7440020								**0.00**	0.00
Selenium compounds (H)	SEC	0.004	0.001						**0.00**	0.00
Toluene (TH)	108883	0.533	0.107						**0.64**	0.00
Methanol (H)	67561			214.560	162.00	162.00		16.20	**554.76**	0.07
Phenol (TH)	108952								**0.00**	0.00
Propionaldehyde (H)	123386			282.960	162.00	162.00		16.20	**623.16**	0.08
HAP Indiv. Max		**501.95**	**100.38**		**925.20**	**925.20**	**0.00**	**92.52**	**2403.72**	
HAP total		**797.12**	**159.41**		**1299.60**	**1299.60**	**0.00**	**129.96**	**5131.46**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential emissions: Boilers, Dryers, and Screw & Pellet Presses, Pellet Cooler and Pellet Screening

Pollutant	CAS Number	Steam Boiler (ES-B-1)		Dryer (ES-D-1)		Pressure Cooker W/Condenser (ES-P-1) & CD-1		Screw Press/Dryer (ES-SPD-1) & CD-2		Pellet Press & Cooler (ES-PP-1) & CD-3		Pellet Screening (ES-PSC-1) & CD-4		Pellet Storage (ES-PS-1) No CD		BEFORE & AFTER CONTROL DEVICES			
		Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Potential Emissions before CD	Potential Emissions before CD	Potential Emissions after CD	Potential Emissions after CD
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants																			
PM	PM	0.04	0.04	0.01	0.01			29.20	29.20	3.04	1.97	0.62	0.0006			**32.92**	0.004	**31.23**	0.004
PM10	PM10	0.04	0.04	0.01	0.01			0.29	0.29	1.74	0.35	0.30	0.0003			**2.38**	0.000	**0.69**	0.000
PM2.5	PM2.5	0.04	0.04	0.01	0.01			0.07	0.07			0.06	0.0001			**0.18**	0.000	**0.12**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.05	0.01	0.01											**0.06**	0.000	**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	8.59	8.59	1.72	1.72											**10.31**	0.001	**10.31**	0.001
CARBON MONOXIDE (CO)	CO	7.21	7.21	1.44	1.44											**8.66**	0.001	**8.66**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.47	0.47	0.09	0.09	21.09	4.22	21.09	21.09	9.86	9.86			0.99	0.99	**53.59**	0.007	**36.71**	0.004
Greenhouse Gas Emissions																			
CARBON DIOXIDE (CO_2)	CO_2	10239.47	10239.47	2047.89	2047.89											**12287.37**		**12287.37**	
METHANE (CH_4)	CH_4	4.83	4.83	0.97	0.97											**5.79**		**5.79**	
NITROUS OXIDE (N_2O)	N_2O	5.76	5.76	1.15	1.15											**6.91**		**6.91**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)		(lbs/yr)				(lbs/yr)		(lbs/yr)		(lbs/yr)				(lbs/yr)	(lbs/hr)	(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.003	0.003	0.001	0.00	2522.88	504.58	1013.09	1013.09	1013.09	1013.09			101.31	101.31	**4650.38**	0.58	**2632.08**	0.30
Acrolein (TH)	107028	0.003	0.003	0.001	0.00											**0.00**	0.00	**0.00**	0.00
Ammonia (T)	7664417	549.65	549.65	109.93	109.93											**659.58**	0.08	**659.58**	0.08
Arsenic unlisted compounds (TH)	ASC-other															**0.00**	0.00	**0.00**	0.00
Benzene (TH)	71432	0.36	0.36	0.07	0.07											**0.43**	0.00	**0.43**	0.00
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00	0.00											**0.00**	0.00	**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417															**0.00**	0.00	**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439															**0.00**	0.00	**0.00**	0.00
Chromic acid (VI) (TH)	7738945															**0.00**	0.00	**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.01	0.01	0.00	0.00											**0.02**	0.00	**0.02**	0.00
Formaldehyde (TH)	50000	12.88	12.88	2.58	2.58	2668.73	533.75	55.19	55.19	55.19	55.19			5.52	5.52	**2800.09**	0.35	**665.10**	0.08
Hexane, n- (TH)	110543	309.18	309.18	61.84	61.84											**371.01**	0.05	**371.01**	0.04
Lead unlisted compounds (H)	PBC-other	0.09	0.09	0.02	0.02											**0.10**	0.00	**0.10**	0.00
Manganese unlisted compounds (TH)	MNC-other															**0.00**	0.00	**0.00**	0.00
Mercury vapor (TH)	7439976															**0.00**	0.00	**0.00**	0.00
Napthalene (H)	91203	0.10	0.10	0.02	0.02											**0.13**	0.00	**0.13**	0.00
Nickel metal (TH)	7440020															**0.00**	0.00	**0.00**	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00	0.00											**0.00**	0.00	**0.00**	0.00
Toluene (TH)	108883	0.58	0.58	0.12	0.12											**0.70**	0.00	**0.70**	0.00
Methanol (H)	67561					1174.72	234.94	177.39	177.39	177.39	177.39			17.74	17.74	**1547.24**	0.19	**607.46**	0.07
Phenol (TH)	108952															**0.00**	0.00	**0.00**	0.00
Propionaldehyde (H)	123386					1549.21	309.84	177.39	177.39	177.39	177.39			17.74	17.74	**1921.73**	0.24	**682.36**	0.08
HAP Indiv. Max		**549.65**		**109.93**				**1013.09**	**1013.09**	**1013.09**		**0.00**		**101.31**	**101.31**	4650.38		**2632.08**	
HAP total		**872.87**		**174.57**				**1423.06**		**1423.06**		**0.00**		**142.31**	**142.31**	**11951.41**		**5618.98**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

VOC from the Pressure Cooker & Condensor (80%-95% Efficiency)- @131^{0}F **(ES-P-1) & CD-1**
Condenser 80-95% Used 80%

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	25% Hardwood 75% Softwood		

Pollutant					Emission Factor[1] lbs/ODT	Actual Emissions tons/yr	Potential Emissions tons/yr	Actual Emissions (after Condenser 80% Eff) tons/yr	Potential Emissions (after Condenser 80% Eff) tons/yr
VOC				Y	1.070	**19.26**	**21.09**	**3.85**	**4.22**
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	6.40E-02	**2304.00**	**2522.88**	**460.80**	**504.58**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**0.00**	**0.00**
Formaldehide (BP- (-2.2F)		Y	Y	Y	6.77E-02	**2437.20**	**2668.73**	**487.44**	**533.75**
Methanol (BP-148.5F)		Y	N	Y	2.98E-02	**1072.80**	**1174.72**	**214.56**	**234.94**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**0.00**	**0.00**	**0.00**	**0.00**
Propionaldehyde (BP-119.8F)		Y	N	Y	3.93E-02	**1414.80**	**1549.21**	**282.96**	**309.84**
	HAPs total (lbs/year)					**7,228.80**	**7,915.54**	**1,449.61**	**1,587.33**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

PM, NOX, CO and VOC, HAPS from Screw Press/Pellet Drying with an INTEGRAL high Efficiency Cyclone (90% for PM) **(ES-SPD-1) & CD-2**

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	25% Hardwood 75% Softwood		

Pollutant	Flow Rate (CFM)		Grains/cf	hrs	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (90 Eff for PM and 60% for PM10) lbs/yr	Potential Emissions After a CD (90% Eff for PM and 60% for PM10) lbs/yr
PM	15556		0.05	8000		53334.80	58,401.61	53334.80	58401.61
Cyclone Loading rate calcs				Tons		**26.67**	**29.20**	**26.67**	**29.20**
PM10	1.0% of total PM from C Forms			8000	1.00%	533.35	584.02	533.35	584.02
				Tons		**0.27**	**0.29**	**0.27**	**0.29**
PM2.5	0.25% of total PM from C Forms			8000	0.25%	133.34	146.00	133.34	146.00
				Tons		**0.07**	**0.07**	**0.07**	**0.07**
VOC					1.07	38520.00	42179.40	38520.00	42179.40
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**19.26**	**21.09**	**19.26**	**21.09**

Pollutant		HAP	NC TAP	VOC					
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**925.20**	**1,013.09**	**925.20**	**1,013.09**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**50.40**	**55.19**	**50.40**	**55.19**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
	HAP total (lbs/year)					**1,299.60**	**1,423.06**	**1,299.60**	**1,423.06**
	HAP total (tons/yr)					**0.65**	**0.71**	**0.65**	**0.71**
	TAP total (lbs/year)					**975.60**	**1,068.28**	**975.60**	**1,068.28**
	TAP total (tons/yr)					**0.49**	**0.53**	**0.49**	**0.53**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

PM, VOCs and HAPS from Pellet Press & Pellet Cooler with a Conventional Cyclone (80-90% Eff) (ES-PP-1) & CD-3

Max Throughput	43,800.00	Ton/yr @ 10% m.c.							
Potential Throughput	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

					Emission Factor[1]	Actual Emissions	Potential Emissions	Actual Emissions After a CD (80% Eff)	Potential Emissions After a CD (80% Eff)
					lbs/ODT	*lbs/yr*	*lbs/yr*	*lbs/yr*	*lbs/yr*
Pollutant	**Flow Rate (CFM)**		**EF in kg/ton**	**hrs**					
PM			0.07	8000	0.15	5554.08	6,081.72	3600.00	3942.00
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**2.78**	**3.04**	**1.80**	**1.97**
PM10			0.04	8000	0.09	3170.88	3,472.11	634.18	694.42
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**1.59**	**1.74**	**0.32**	**0.35**
Pollutant		HAP	NC TAP	VOC				-	-
VOC				Y	0.5	**18,000.00**	**19,710.00**	**18000.00**	**19710.00**
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**9.00**	**9.86**	**9.00**	**9.86**
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**925.20**	**1,013.09**	**925.20**	**1,013.09**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**50.40**	**55.19**	**50.40**	**55.19**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
			HAP total (lbs/year)			**1,299.60**	**1,423.06**	**1,299.60**	**1,423.06**
			HAP total (tons/yr)			**0.65**	**0.71**	**0.65**	**0.71**
			TAP total (lbs/year)			**975.60**	**1,068.28**	**975.60**	**1,068.28**
			TAP total (tons/yr)			**0.49**	**0.53**	**0.49**	**0.53**

Permit Name	**ODT Processed (ODT/Yr)**	**Facility Wide VOC (ton/yr)**	**Emission Factor (lb/ODT)**	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	Used as the worst case
Stack Test dated April 2017				

PM from Pellet Screen with a Cartridge Filter (99.9% Eff) (ES-PSC-1) & CD-4

Max Throughput	43,800.00	Ton/yr @ 10% m.c.							
Potential Throughput	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

					Emission Factor1	Actual Emissions	Potential Emissions	Actual Emissions After a CD (99.9% Eff)	Potential Emissions After a CD (99.9% Eff)
					lbs/ODT	*lbs/yr*	*lbs/yr*	*lbs/yr*	*lbs/yr*
PM, PM10 and PM2.5 EFs are taken from ref-Pinnacle Renewable Energy-Newton Facility dated August 2019, revised in Jan 2020									
PM				8000	3.15E-02	1134.00	1,241.73	1.13	1.24
				Tons		**0.57**	**0.62**	**0.0006**	**0.0006**
PM10				8000	1.50E-02	540.00	591.30	0.54	0.59
				Tons		**0.27**	**0.30**	**0.0003**	**0.0003**
PM2.5				8000	3.15E-03	113.40	124.17	0.11	0.12
				Tons		**0.06**	**0.06**	**0.0001**	**0.0001**

Hazardous Air Pollutants and VOC from Pellet Storage (ES-PS-1)

Max Throughput	43,800.00	Ton/yr @ 10% m.c.							
	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

					Emission Factor[1]	Actual Emissions	Potential Emissions
					lbs/ODT	*lbs/yr*	*lbs/yr*
Pollutant		HAP	NC TAP	VOC			
VOC				Y	0.050	**1,800.00**	**1,971.00**
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**0.90**	**0.99**
						(lbs/yr)	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**92.52**	**101.31**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**5.04**	**5.52**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**16.20**	**17.74**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**16.20**	**17.74**
			HAP total (lbs/year)			**129.96**	**142.31**
			HAP total (tons/yr)			**0.06**	**0.07**
			TAP total (lbs/year)			**97.56**	**106.83**
			TAP total (tons/yr)			**0.05**	**0.05**

Permit Name	**ODT Processed (ODT/Yr)**	**Facility Wide VOC (ton/yr)**	**Emission Factor (lb/ODT)**	**Emission Factor (10%) (lb/ODT)**	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	0.050	Used as the worst case
Stack Test dated April 2017					

[External] b form for D1

CHUCK PAKALA <cvpakala@carolina.rr.com>

Wed 5/12/2021 12:54 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

2 attachments (34 KB)

B_2019 NEW 051021-D1.pdf; D1 NEW 051021.pdf;

Regards

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ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242
FORM B (ALREADY APPROVED)
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: ONE 4MMBTU/HR NATURAL GAS FIRED DRYER	EMISSION SOURCE ID NO:ES-D-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-D-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
4MMBTU/HR NATURAL GAS FIRED DRYER TO DRY WET WOOD CHIP PULP

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☑ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____NA_____ ☐ NESHAP (SUBPARTS?):_____ NA

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	AP-42/NC DEQ	0.00	0.01	0.01	0.01	0.01	0.01
PARTICULATE MATTER<10 MICRONS (PM_{10})	AP-42/NC DEQ	0.00	0.01	0.01	0.01	0.01	0.01
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)	AP-42/NC DEQ	0.00	0.01	0.01	0.01	0.01	0.01
SULFUR DIOXIDE (SO2)	AP-42/NC DEQ	0.00	0.01	0.00	0.01	0.00	0.01
NITROGEN OXIDES (NOx)	AP-42/NC DEQ	0.39	1.57	0.39	1.72	0.39	1.72
CARBON MONOXIDE (CO)	AP-42/NC DEQ	0.33	1.32	0.33	1.44	0.33	1.44
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	0.02	0.09	0.02	0.09	0.02	0.09
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
AMMONIA (T)	7664417	AP-42/NC DEQ	1.25E-02	100.38	1.25E-02	109.93	1.25E-02	109.93
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	0.07	8.24E-06	0.07	8.24E-06	0.07
Cobalt unlisted compounds (H)	COC-other	AP-42/NC DEQ	3.29E-07	0.00	3.29E-07	0.00	3.29E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	2.35	2.94E-04	2.58	2.94E-04	2.58
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	56.47	7.06E-03	61.84	7.06E-03	61.84
Lead unlisted compounds (H)	PBC-other	AP-42/NC DEQ	1.96E-06	0.02	1.96E-06	0.02	1.96E-06	0.02
Napthalene (H)	91203	AP-42/NC DEQ	2.39E-06	0.02	2.39E-06	0.02	2.39E-06	0.02
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	0.11	1.33E-05	0.12	1.33E-05	0.12

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	5.96E-08	1.31E-06	0.00
Acrolein (TH)	107028	AP-42/NC DEQ	7.06E-08	1.55E-06	0.00
Ammonia (T)	7664417	AP-42/NC DEQ	1.25E-02	2.76E-01	100.38
Arsenic unlisted compounds (TH)	ASC-other	AP-42/NC DEQ	0.00E+00	0.00E+00	0.00
Benzene (TH)	71432	AP-42/NC DEQ	8.24E-06	1.81E-04	0.07
Benzo(a)pyrene (TH)	50328	AP-42/NC DEQ	4.71E-09	1.04E-07	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	2.94E-04	6.47E-03	2.35
Hexane, n- (TH)	110543	AP-42/NC DEQ	7.06E-03	1.55E-01	56.47
Toluene (TH)	108883	AP-42/NC DEQ	1.33E-05	2.93E-04	0.11

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	28.52	32.92	31.23
PARTICULATE MATTER < 10 MICRONS (PM_{10})	0.64	2.38	0.69
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)	0.11	0.18	0.12
SULFUR DIOXIDE (SO_2)	0.06	0.06	0.06
NITROGEN OXIDES (NOx)	9.41	10.31	10.31
CARBON MONOXIDE (CO)	7.91	8.66	8.66
VOLATILE ORGANIC COMPOUNDS (VOC)	33.53	53.59	36.71
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)	11309.03	12287.37	12287.37
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) Lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS) Lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) Lbs/yr
Acetaldehyde (TH)	75070	2403.72	4650.38	2632.08
Acrolein (TH)	107028	0.00	0.00	0.00
Ammonia (T)	7664417	602.34	659.58	659.58
Arsenic unlisted compounds (TH)	ASC-other	0.00	0.00	0.00
Benzene (TH)	71432	0.40	0.43	0.43
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00
Beryllium metal (unreacted) (TH)	7440417	0.00	0.00	0.00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00	0.00	0.00
Chromic acid (VI) (TH)	7738945	0.00	0.00	0.00
Cobalt unlisted compounds (H)	COC-other	0.02	0.02	0.02
Formaldehyde (TH)	50000	607.40	2800.09	665.10
Hexane, n- (TH)	110543	338.81	371.01	371.01
Lead unlisted compounds (H)	PBC-other	0.09	0.10	0.10
Manganese unlisted compounds (TH)	MNC-other	0.00	0.00	0.00
Mercury vapor (TH)	7439976	0.00	0.00	0.00
Napthalene (H)	91203	0.11	0.13	0.13
Nickel metal (TH)	7440020	0.00	0.00	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00
Toluene (TH)	108883	0.64	0.70	0.70
Methanol (H)	67561	554.76	1547.24	607.46
Phenol (TH)	108952	0.00	0.00	0.00
Propionaldehyde (H)	123386	623.16	1921.73	682.36

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY.**(NO MODELING IS REQUIRED)**

					Modeling Required ?		TPER LIMIT
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
Acetaldehyde (TH)	75070	0.27	6.59	2403.72		NO	6.8 lbs/hr
Ammonia (T)	7664417	0.07	1.65	602.34		NO	6.8 lbs/hr
Formaldehyde (TH)	50000	0.07	1.66	607.40		NO	0.04 lbs/hr
Hexane, n- (TH)	110543	0.04	0.93	338.81		NO	23 lb/day
Toluene (TH)	108883	0.00	0.00	0.64		NO	197.96 lb/day
							58.97 lb/hr

COMMENTS:

Attach Additional Sheets As Necessary

[External] D1, C Form and calcs

CHUCK PAKALA <cvpakala@carolina.rr.com>

Wed 5/12/2021 4:20 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

3 attachments (129 KB)

All Emissions Calcs-GREG HAP EFs 051221.pdf; D1 NEW 051021.pdf; C_Forms Tyler051021-CD3.pdf;

Regards

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ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	27.28	32.92	29.86
PARTICULATE MATTER < 10 MICRONS (PM_{10})	0.64	2.38	0.69
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)	0.11	0.18	0.12
SULFUR DIOXIDE (SO_2)	0.06	0.06	0.06
NITROGEN OXIDES (NOx)	9.41	10.31	10.31
CARBON MONOXIDE (CO)	7.91	8.66	8.66
VOLATILE ORGANIC COMPOUNDS (VOC)	33.53	53.59	36.71
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)	11309.03	12287.37	12287.37
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	Lbs/yr	Lbs/yr	Lbs/yr
Acetaldehyde (TH)	75070	2403.72	4650.38	2632.08
Acrolein (TH)	107028	0.00	0.00	0.00
Ammonia (T)	7664417	602.34	659.58	659.58
Arsenic unlisted compounds (TH)	ASC-other	0.00	0.00	0.00
Benzene (TH)	71432	0.40	0.43	0.43
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00
Beryllium metal (unreacted) (TH)	7440417	0.00	0.00	0.00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00	0.00	0.00
Chromic acid (VI) (TH)	7738945	0.00	0.00	0.00
Cobalt unlisted compounds (H)	COC-other	0.02	0.02	0.02
Formaldehyde (TH)	50000	607.40	2800.09	665.10
Hexane, n- (TH)	110543	338.81	371.01	371.01
Lead unlisted compounds (H)	PBC-other	0.09	0.10	0.10
Manganese unlisted compounds (TH)	MNC-other	0.00	0.00	0.00
Mercury vapor (TH)	7439976	0.00	0.00	0.00
Napthalene (H)	91203	0.11	0.13	0.13
Nickel metal (TH)	7440020	0.00	0.00	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00
Toluene (TH)	108883	0.64	0.70	0.70
Methanol (H)	67561	554.76	1547.24	607.46
Phenol (TH)	108952	0.00	0.00	0.00
Propionaldehyde (H)	123386	623.16	1921.73	682.36

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY.**(NO MODELING IS REQUIRED)**

					Modeling Required ?		TPER LIMIT
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
Acetaldehyde (TH)	75070	0.27	6.59	2403.72		NO	6.8 lbs/hr
Ammonia (T)	7664417	0.07	1.65	602.34		NO	6.8 lbs/hr
Formaldehyde (TH)	50000	0.07	1.66	607.40		NO	0.04 lbs/hr
Hexane, n- (TH)	110543	0.04	0.93	338.81		NO	23 lb/day
Toluene (TH)	108883	0.00	0.00	0.64		NO	197.96 lb/day
							58.97 lb/hr

COMMENTS:

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM C4
CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **C4**

CONTROL DEVICE ID NO: CD-3	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S):ES-PP-1
EMISSION POINT (STACK) ID NO(S):EP-PP-1	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
___1____ OF ___1____	P.E. SEAL REQUIRED (PER 2Q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM :CYCLONE for cooler and pelletizer. This system is meant to collect any PM that arises from the pelltizing and cooling process.

POLLUTANT(S) COLLECTED:	PM	PM10		
BEFORE CONTROL EMISSION RATE (LB/HR):	0.69	0.40		
CAPTURE EFFICIENCY:	100 %	100 %	%	%
CONTROL DEVICE EFFICIENCY:	80 %	80 %	%	%
CORRESPONDING OVERALL EFFICIENCY:	80 %	80 %	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	0.14	0.08		

PRESSURE DROP (IN. H_20): ___4___ MIN ___6___ MAX

INLET TEMPERATURE (^oF): _0F_____ MIN ____400F__ MAX	OUTLET TEMPERATURE (^oF): ___0F___ MIN __400F____ MAX
INLET AIR FLOW RATE (ACFM):8500	BULK PARTICLE DENSITY (LB/FT^3):
POLLUTANT LOADING RATE (GR/FT^3):0.32	

SETTLING CHAMBER	**CYCLONE**			**MULTICYCLONE**
LENGTH (INCHES):	INLET VELOCITY (FT/SEC):		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H:253" Including outlet	Dd: 6 feet nominal	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:50-60fps	Lb:	FLOW RATE (GPM):	☐ YES ☐ NO
NO. TRAYS:	De: N/A	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:N/A	S:		☐ YES ☐ NO
	TYPE OF CYCLONE: ☑ CONVENTIONAL		☐ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES:

DESCRIBE INCOMING AIR STREAM: Hot air from pellitizer and cooler. Distribution size unknown as minimal PM is expected.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1		
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential/Actual emissions: Boilers, Dryers, and Screw & Pellet Presses

Pollutant	CAS Number	Steam Boiler (ES-B-1)	Dryer (ES-D-1)	Pressure Cooker W/Condenser (ES-P-1) & CD-1	Screw Press/Dryer (ES-SPD-1) & CD-2	Pellet Press & Cooler (ES-PP-1) & CD-3	Pellet Screening (ES-PSC-1) & CD-4	Pellet Storage (ES-PS-1) No CD	AFTER CONTROL DEVICE: Actual Emissions after CD	Actual Emissions
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants										
PM	PM	0.04	0.01		26.67	0.56	0.0006		**27.28**	0.003
PM10	PM10	0.04	0.01		0.27	0.32	0.0003		**0.64**	0.000
PM2.5	PM2.5	0.03	0.01		0.07		0.0001		**0.11**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.01						**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	7.84	1.57						**9.41**	0.001
CARBON MONOXIDE (CO)	CO	6.59	1.32						**7.91**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.43	0.09	3.85	19.26	9.00		0.90	**33.53**	0.004
Greenhouse Gas Emissions										
CARBON DIOXIDE (CO_2)	CO_2	9424.29	1884.74						**11,309.03**	
METHANE (CH_4)	CH_4	0.18	0.04						**0.21**	
NITROUS OXIDE (N_2O)	N_2O	0.02	0.00						**0.02**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.002	0.000	460.800	925.20	925.20		92.52	**2403.72**	0.30
Acrolein (TH)	107028	0.003	0.001						**0.00**	0.00
Ammonia (T)	7664417	501.952	100.384						**602.34**	0.08
Arsenic unlisted compounds (TH)	ASC-other								**0.00**	0.00
Benzene (TH)	71432	0.329	0.066						**0.40**	0.00
Benzo(a)pyrene (TH)	50328	0.000	0.000						**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417								**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439								**0.00**	0.00
Chromic acid (VI) (TH)	7738945								**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.013	0.003						**0.02**	0.00
Formaldehyde (TH)	50000	11.765	2.353	487.440	50.40	50.40		5.04	**607.40**	0.08
Hexane, n- (TH)	110543	282.348	56.466						**338.81**	0.04
Lead unlisted compounds (H)	PBC-other	0.078	0.016						**0.09**	0.00
Manganese unlisted compounds (TH)	MNC-other								**0.00**	0.00
Mercury vapor (TH)	7439976								**0.00**	0.00
Napthalene (H)	91203	0.096	0.019						**0.11**	0.00
Nickel metal (TH)	7440020								**0.00**	0.00
Selenium compounds (H)	SEC	0.004	0.001						**0.00**	0.00
Toluene (TH)	108883	0.533	0.107						**0.64**	0.00
Methanol (H)	67561			214.560	162.00	162.00		16.20	**554.76**	0.07
Phenol (TH)	108952								**0.00**	0.00
Propionaldehyde (H)	123386			282.960	162.00	162.00		16.20	**623.16**	0.08
HAP Indiv. Max		**501.95**	**100.38**		**925.20**	**925.20**	**0.00**	**92.52**	**2403.72**	
HAP total		**797.12**	**159.41**		**1299.60**	**1299.60**	**0.00**	**129.96**	**5131.46**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential emissions: Boilers, Dryers, and Screw & Pellet Presses, Pellet Cooler and Pellet Screening

Pollutant	CAS Number	Steam Boiler (ES-B-1)		Dryer (ES-D-1)		Pressure Cooker W/Condenser (ES-P-1) & CD-1		Screw Press/Dryer (ES-SPD-1) & CD-2		Pellet Press & Cooler (ES-PP-1) & CD-3		Pellet Screening (ES-PSC-1) & CD-4		Pellet Storage (ES-PS-1) No CD		BEFORE & AFTER CONTROL DEVICES			
		Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Potential Emissions before CD	Potential Emissions before CD	Potential Emissions after CD	Potential Emissions after CD
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants																			
PM	PM	0.04	0.04	0.01	0.01			29.20	29.20	3.04	0.61	0.62	0.0006			**32.92**	0.004	**29.86**	0.003
PM10	PM10	0.04	0.04	0.01	0.01			0.29	0.29	1.74	0.35	0.30	0.0003			**2.38**	0.000	**0.69**	0.000
PM2.5	PM2.5	0.04	0.04	0.01	0.01			0.07	0.07			0.06	0.0001			**0.18**	0.000	**0.12**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.05	0.01	0.01											**0.06**	0.000	**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	8.59	8.59	1.72	1.72											**10.31**	0.001	**10.31**	0.001
CARBON MONOXIDE (CO)	CO	7.21	7.21	1.44	1.44											**8.66**	0.001	**8.66**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.47	0.47	0.09	0.09	21.09	4.22	21.09	21.09	9.86	9.86			0.99	0.99	**53.59**	0.007	**36.71**	0.004
Greenhouse Gas Emissions																			
CARBON DIOXIDE (CO_2)	CO_2	10239.47	10239.47	2047.89	2047.89											**12287.37**		**12287.37**	
METHANE (CH_4)	CH_4	4.83	4.83	0.97	0.97											**5.79**		**5.79**	
NITROUS OXIDE (N_2O)	N_2O	5.76	5.76	1.15	1.15											**6.91**		**6.91**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)		(lbs/yr)				(lbs/yr)		0		(lbs/yr)				(lbs/yr)	(lbs/hr)	(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.003	0.003	0.001	0.00	2522.88	504.58	1013.09	1013.09	1013.09	1013.09			101.31	101.31	**4650.38**	0.58	**2632.08**	0.30
Acrolein (TH)	107028	0.003	0.003	0.001	0.00											**0.00**	0.00	**0.00**	0.00
Ammonia (T)	7664417	549.65	549.65	109.93	109.93											**659.58**	0.08	**659.58**	0.08
Arsenic unlisted compounds (TH)	ASC-other															**0.00**	0.00	**0.00**	0.00
Benzene (TH)	71432	0.36	0.36	0.07	0.07											**0.43**	0.00	**0.43**	0.00
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00	0.00											**0.00**	0.00	**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417															**0.00**	0.00	**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439															**0.00**	0.00	**0.00**	0.00
Chromic acid (VI) (TH)	7738945															**0.00**	0.00	**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.01	0.01	0.00	0.00											**0.02**	0.00	**0.02**	0.00
Formaldehyde (TH)	50000	12.88	12.88	2.58	2.58	2668.73	533.75	55.19	55.19	55.19	55.19			5.52	5.52	**2800.09**	0.35	**665.10**	0.08
Hexane, n- (TH)	110543	309.18	309.18	61.84	61.84											**371.01**	0.05	**371.01**	0.04
Lead unlisted compounds (H)	PBC-other	0.09	0.09	0.02	0.02											**0.10**	0.00	**0.10**	0.00
Manganese unlisted compounds (TH)	MNC-other															**0.00**	0.00	**0.00**	0.00
Mercury vapor (TH)	7439976															**0.00**	0.00	**0.00**	0.00
Napthalene (H)	91203	0.10	0.10	0.02	0.02											**0.13**	0.00	**0.13**	0.00
Nickel metal (TH)	7440020															**0.00**	0.00	**0.00**	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00	0.00											**0.00**	0.00	**0.00**	0.00
Toluene (TH)	108883	0.58	0.58	0.12	0.12											**0.70**	0.00	**0.70**	0.00
Methanol (H)	67561					1174.72	234.94	177.39	177.39	177.39	177.39			17.74	17.74	**1547.24**	0.19	**607.46**	0.07
Phenol (TH)	108952															**0.00**	0.00	**0.00**	0.00
Propionaldehyde (H)	123386					1549.21	309.84	177.39	177.39	177.39	177.39			17.74	17.74	**1921.73**	0.24	**682.36**	0.08
HAP Indiv. Max		**549.65**		**109.93**				**1013.09**	**1013.09**	**1013.09**		**0.00**		**101.31**	**101.31**	4650.38		**2632.08**	
HAP total		**872.87**		**174.57**				**1423.06**		**1423.06**		**0.00**		**142.31**	**142.31**	**11951.41**		**5618.98**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

VOC from the Pressure Cooker & Condensor (80%-95% Efficiency)- @131^{0}F **(ES-P-1) & CD-1**
Condenser 80-95% Used 80%

Max Throughput	43,800.00	Ton/yr @ 10% m.c.
Potential Throughput	39,420.00	ODT/yr
Actual Throughput	36,000.00	ODT/yr
Composition	50% Hardwood 50% Softwood	

Pollutant				VOC	Emission Factor[1] lbs/ODT	Actual Emissions tons/yr	Potential Emissions tons/yr	Actual Emissions (after Condenser 80% Eff) tons/yr	Potential Emissions (after Condenser 80% Eff) tons/yr
VOC				Y	1.070	19.26	21.09	3.85	4.22
						(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)
Acetaldehyde (BP-68.36F)		Y	Y	Y	6.40E-02	2304.00	2522.88	460.80	504.58
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-	0.00	0.00
Formaldehide (BP- (-2.2F)		Y	Y	Y	6.77E-02	2437.20	2668.73	487.44	533.75
Methanol (BP-148.5F)		Y	N	Y	2.98E-02	1072.80	1174.72	214.56	234.94
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	0.00	0.00	0.00	0.00
Propionaldehyde (BP-119.8F)		Y	N	Y	3.93E-02	1414.80	1549.21	282.96	309.84
	HAPs total (lbs/year)					7,228.80	7,915.54	1,449.61	1,587.33

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

PM, NOX, CO and VOC, HAPS from Screw Press/Pellet Drying with an INTEGRAL high Efficiency Cyclone (90% for PM) **(ES-SPD-1) & CD-2**

Max Throughput	43,800.00	Ton/yr @ 10% m.c.
Potential Throughput	39,420.00	ODT/yr
Actual Throughput	36,000.00	ODT/yr
Composition	50% Hardwood 50% Softwood	

Pollutant	Flow Rate (CFM)		Grains/cf	hrs	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (90 Eff for PM and 60% for PM10) lbs/yr	Potential Emissions After a CD (90% Eff for PM and 60% for PM10) lbs/yr
PM	15556		0.05	8000		53334.80	58,401.61	53334.80	58401.61
Cyclone Loading rate calcs				Tons		26.67	29.20	26.67	29.20
PM10	1.0% of total PM from C Forms			8000	1.00%	533.35	584.02	533.35	584.02
				Tons		0.27	0.29	0.27	0.29
PM2.5	0.25% of total PM from C Forms			8000	0.25%	133.34	146.00	133.34	146.00
				Tons		0.07	0.07	0.07	0.07
VOC					1.07	38520.00	42179.40	38520.00	42179.40
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		19.26	21.09	19.26	21.09

Pollutant		HAP	NC TAP	VOC		(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	925.20	1,013.09	925.20	1,013.09
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	-	-	-	-
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	50.40	55.19	50.40	55.19
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	162.00	177.39	162.00	177.39
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	-	-	-	-
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	162.00	177.39	162.00	177.39
				HAP total (lbs/year)		1,299.60	1,423.06	1,299.60	1,423.06
				HAP total (tons/yr)		0.65	0.71	0.65	0.71
				TAP total (lbs/year)		975.60	1,068.28	975.60	1,068.28
				TAP total (tons/yr)		0.49	0.53	0.49	0.53

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

PM, VOCs and HAPS from Pellet Press & Pellet Cooler with a Conventional Cyclone (80-90% Eff) (ES-PP-1) & CD-3

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	50% Hardwood 50% Softwood		

Pollutant	Flow Rate (CFM)		EF in kg/ton	hrs	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (80% Eff) lbs/yr	Potential Emissions After a CD (80% Eff) lbs/yr
PM			0.07	8000	0.15	5554.08	6,081.72	1110.82	1216.34
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**2.78**	**3.04**	**0.56**	**0.61**
PM10			0.04	8000	0.09	3170.88	3,472.11	634.18	694.42
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**1.59**	**1.74**	**0.32**	**0.35**

Pollutant		HAP	NC TAP	VOC					
VOC				Y	0.5	**18,000.00**	**19,710.00**	**18000.00**	**19710.00**
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**9.00**	**9.86**	**9.00**	**9.86**
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**925.20**	**1,013.09**	**925.20**	**1,013.09**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**50.40**	**55.19**	**50.40**	**55.19**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
	HAP total (lbs/year)					**1,299.60**	**1,423.06**	**1,299.60**	**1,423.06**
	HAP total (tons/yr)					**0.65**	**0.71**	**0.65**	**0.71**
	TAP total (lbs/year)					**975.60**	**1,068.28**	**975.60**	**1,068.28**
	TAP total (tons/yr)					**0.49**	**0.53**	**0.49**	**0.53**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	Used as the worst case
Stack Test dated April 2017				

PM from Pellet Screen with a Cartridge Filter (99.9% Eff) (ES-PSC-1) & CD-4

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	50% Hardwood 50% Softwood		

					Emission Factor1 lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (99.9% Eff) lbs/yr	Potential Emissions After a CD (99.9% Eff) lbs/yr
PM, PM10 and PM2.5 EFs are taken from ref-Pinnacle Renewable Energy-Newton Facility dated August 2019, revised in Jan 2020									
PM				8000	3.15E-02	1134.00	1,241.73	1.13	1.24
				Tons		**0.57**	**0.62**	**0.0006**	**0.0006**
PM10				8000	1.50E-02	540.00	591.30	0.54	0.59
				Tons		**0.27**	**0.30**	**0.0003**	**0.0003**
PM2.5				8000	3.15E-03	113.40	124.17	0.11	0.12
				Tons		**0.06**	**0.06**	**0.0001**	**0.0001**

Hazardous Air Pollutants and VOC from Pellet Storage (ES-PS-1)

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	50% Hardwood 50% Softwood		

Pollutant		HAP	NC TAP	VOC	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr
VOC				Y	0.050	**1,800.00**	**1,971.00**
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**0.90**	**0.99**
						(lbs/yr)	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**92.52**	**101.31**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**5.04**	**5.52**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**16.20**	**17.74**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**16.20**	**17.74**
	HAP total (lbs/year)					**129.96**	**142.31**
	HAP total (tons/yr)					**0.06**	**0.07**
	TAP total (lbs/year)					**97.56**	**106.83**
	TAP total (tons/yr)					**0.05**	**0.05**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	Emission Factor (10%) (lb/ODT)	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	0.050	Used as the worst case
Stack Test dated April 2017					

[External] PSC B form

CHUCK PAKALA <cvpakala@carolina.rr.com>

Wed 5/12/2021 10:09 AM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

1 attachments (15 KB)

B_2019 NEW 051021 PSC.pdf;

Greg,

Please see the attached B Form for PSC

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PELLET SCREEN	EMISSION SOURCE ID NO:ES-PSC-1
	CONTROL DEVICE ID NO(S):CD-4
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PSC-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		0.00	0.0006	0.14	0.62	0.00	0.0006
PARTICULATE MATTER<10 MICRONS (PM_{10})		0.00	0.0003	0.07	0.32	0.00	0.0003
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)		0.00	0.0001	0.01	0.06	0.00	0.0001
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ						
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

[External] revsied the tables and D1 Form

CHUCK PAKALA <cvpakala@carolina.rr.com>

Wed 5/12/2021 12:16 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

2 attachments (114 KB)

All Emissions Calcs-GREG HAP EFs 051221.pdf; D1 NEW 051021.pdf;

Revised Actual and Potentials and also added D1 Form. Thanks for all your help. Just rushing.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential/Actual emissions: Boilers, Dryers, and Screw & Pellet Presses

Pollutant	CAS Number	Steam Boiler (ES-B-1)	Dryer (ES-D-1)	Pressure Cooker W/Condenser (ES-P-1) & CD-1	Screw Press/Dryer (ES-SPD-1) & CD-2	Pellet Press & Cooler (ES-PP-1) & CD-3	Pellet Screening (ES-PSC-1) & CD-4	Pellet Storage (ES-PS-1) No CD	AFTER CONTROL DEVICE: Actual Emissions after CD	AFTER CONTROL DEVICE: Actual Emissions
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants										
PM	PM	0.04	0.01		26.67	1.80	0.0006		**28.52**	0.004
PM10	PM10	0.04	0.01		0.27	0.32	0.0003		**0.64**	0.000
PM2.5	PM2.5	0.03	0.01		0.07		0.0001		**0.11**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.01						**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	7.84	1.57						**9.41**	0.001
CARBON MONOXIDE (CO)	CO	6.59	1.32						**7.91**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.43	0.09	3.85	19.26	9.00		0.90	**33.53**	0.004
Greenhouse Gas Emissions										
CARBON DIOXIDE (CO_2)	CO_2	9424.29	1884.74						**11,309.03**	
METHANE (CH_4)	CH_4	0.18	0.04						**0.21**	
NITROUS OXIDE (N_2O)	N_2O	0.02	0.00						**0.02**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/yr)	(lbs/yr)		(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.002	0.000	460.800	1299.60	1299.60		92.52	**3152.52**	0.39
Acrolein (TH)	107028	0.003	0.001						**0.00**	0.00
Ammonia (T)	7664417	501.952	100.384						**602.34**	0.08
Arsenic unlisted compounds (TH)	ASC-other								**0.00**	0.00
Benzene (TH)	71432	0.329	0.066						**0.40**	0.00
Benzo(a)pyrene (TH)	50328	0.000	0.000						**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417								**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439								**0.00**	0.00
Chromic acid (VI) (TH)	7738945								**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.013	0.003						**0.02**	0.00
Formaldehyde (TH)	50000	11.765	2.353	487.440	50.40	50.40		5.04	**607.40**	0.08
Hexane, n- (TH)	110543	282.348	56.466						**338.81**	0.04
Lead unlisted compounds (H)	PBC-other	0.078	0.016						**0.09**	0.00
Manganese unlisted compounds (TH)	MNC-other								**0.00**	0.00
Mercury vapor (TH)	7439976								**0.00**	0.00
Napthalene (H)	91203	0.096	0.019						**0.11**	0.00
Nickel metal (TH)	7440020								**0.00**	0.00
Selenium compounds (H)	SEC	0.004	0.001						**0.00**	0.00
Toluene (TH)	108883	0.533	0.107						**0.64**	0.00
Methanol (H)	67561			214.560	162.00	162.00		16.20	**554.76**	0.07
Phenol (TH)	108952								**0.00**	0.00
Propionaldehyde (H)	123386			282.960	162.00	162.00		16.20	**623.16**	0.08
HAP Indiv. Max		**501.95**	**100.38**		**1299.60**	**1299.60**	**0.00**	**92.52**	**3152.52**	
HAP total		**797.12**	**159.41**		**1674.00**	**1674.00**	**0.00**	**129.96**	**5880.26**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

Actual Hours of Operation/yr = **8000**

Potential Hours of Operation/yr = **8760**

Already Approved

Yearly Potential emissions: Boilers, Dryers, and Screw & Pellet Presses, Pellet Cooler and Pellet Screening

Pollutant	CAS Number	Steam Boiler (ES-B-1)		Dryer (ES-D-1)		Pressure Cooker W/Condenser (ES-P-1) & CD-1		Screw Press/Dryer (ES-SPD-1) & CD-2		Pellet Press & Cooler (ES-PP-1) & CD-3		Pellet Screening (ES-PSC-1) & CD-4		Pellet Storage (ES-PS-1) No CD		BEFORE & AFTER CONTROL DEVICES			
		Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Before CD	After CD	Potential Emissions before CD	Potential Emissions before CD	Potential Emissions after CD	Potential Emissions after CD
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)	(ton/yr)	(ton/hr)
Criteria Air Pollutants																			
PM	PM	0.04	0.04	0.01	0.01			29.20	29.20	3.04	1.97	0.62	0.0006			**32.92**	0.004	**31.23**	0.004
PM10	PM10	0.04	0.04	0.01	0.01			0.29	0.29	1.74	0.35	0.30	0.0003			**2.38**	0.000	**0.69**	0.000
PM2.5	PM2.5	0.04	0.04	0.01	0.01			0.07	0.07			0.06	0.0001			**0.18**	0.000	**0.12**	0.000
SULFUR DIOXIDE (SO2)	SO2	0.05	0.05	0.01	0.01											**0.06**	0.000	**0.06**	0.000
NITROGEN OXIDES (NOx)	NOx	8.59	8.59	1.72	1.72											**10.31**	0.001	**10.31**	0.001
CARBON MONOXIDE (CO)	CO	7.21	7.21	1.44	1.44											**8.66**	0.001	**8.66**	0.001
VOLATILE ORGANIC COMPOUNDS (VOC)	VOC	0.47	0.47	0.09	0.09	21.09	4.22	21.09	21.09	9.86	9.86			0.99	0.99	**53.59**	0.007	**36.71**	0.004
Greenhouse Gas Emissions																			
CARBON DIOXIDE (CO_2)	CO_2	10239.47	10239.47	2047.89	2047.89											**12287.37**		**12287.37**	
METHANE (CH_4)	CH_4	4.83	4.83	0.97	0.97											**5.79**		**5.79**	
NITROUS OXIDE (N_2O)	N_2O	5.76	5.76	1.15	1.15											**6.91**		**6.91**	
Toxic/Hazardous Air Pollutants	(lbs/yr)	(lbs/yr)		(lbs/yr)				(lbs/yr)		(lbs/yr)		(lbs/yr)				(lbs/yr)	(lbs/hr)	(lbs/yr)	(lbs/hr)
Acetaldehyde (TH)	75070	0.003	0.003	0.001	0.00	2522.88	504.58	1013.09	1013.09	1013.09	1013.09			101.31	101.31	**4650.38**	0.58	**2632.08**	0.30
Acrolein (TH)	107028	0.003	0.003	0.001	0.00											**0.00**	0.00	**0.00**	0.00
Ammonia (T)	7664417	549.65	549.65	109.93	109.93											**659.58**	0.08	**659.58**	0.08
Arsenic unlisted compounds (TH)	ASC-other															**0.00**	0.00	**0.00**	0.00
Benzene (TH)	71432	0.36	0.36	0.07	0.07											**0.43**	0.00	**0.43**	0.00
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00	0.00											**0.00**	0.00	**0.00**	0.00
Beryllium metal (unreacted) (TH)	7440417															**0.00**	0.00	**0.00**	0.00
Cadmium metal (elemental unreacted) (TH)	7440439															**0.00**	0.00	**0.00**	0.00
Chromic acid (VI) (TH)	7738945															**0.00**	0.00	**0.00**	0.00
Cobalt unlisted compounds (H)	COC-other	0.01	0.01	0.00	0.00											**0.02**	0.00	**0.02**	0.00
Formaldehyde (TH)	50000	12.88	12.88	2.58	2.58	2668.73	533.75	55.19	55.19	55.19	55.19			5.52	5.52	**2800.09**	0.35	**665.10**	0.08
Hexane, n- (TH)	110543	309.18	309.18	61.84	61.84											**371.01**	0.05	**371.01**	0.04
Lead unlisted compounds (H)	PBC-other	0.09	0.09	0.02	0.02											**0.10**	0.00	**0.10**	0.00
Manganese unlisted compounds (TH)	MNC-other															**0.00**	0.00	**0.00**	0.00
Mercury vapor (TH)	7439976															**0.00**	0.00	**0.00**	0.00
Napthalene (H)	91203	0.10	0.10	0.02	0.02											**0.13**	0.00	**0.13**	0.00
Nickel metal (TH)	7440020															**0.00**	0.00	**0.00**	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00	0.00											**0.00**	0.00	**0.00**	0.00
Toluene (TH)	108883	0.58	0.58	0.12	0.12											**0.70**	0.00	**0.70**	0.00
Methanol (H)	67561					1174.72	234.94	177.39	177.39	177.39	177.39			17.74	17.74	**1547.24**	0.19	**607.46**	0.07
Phenol (TH)	108952															**0.00**	0.00	**0.00**	0.00
Propionaldehyde (H)	123386					1549.21	309.84	177.39	177.39	177.39	177.39			17.74	17.74	**1921.73**	0.24	**682.36**	0.08
HAP Indiv. Max		**549.65**		**109.93**				**1013.09**	**1013.09**	**1013.09**		**0.00**		**101.31**	**101.31**	4650.38		**2632.08**	
HAP total		**872.87**		**174.57**				**1423.06**		**1423.06**		**0.00**		**142.31**	**142.31**	**11951.41**		**5618.98**	

[1] Xylenes (total) includes emission factors listed as o-Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

VOC from the Pressure Cooker & Condensor (80%-95% Efficiency)- @131^{0}F **(ES-P-1) & CD-1**
Condenser 80-95% Used 80%

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	25% Hardwood 75% Softwood		

Pollutant					Emission Factor[1] lbs/ODT	Actual Emissions tons/yr	Potential Emissions tons/yr	Actual Emissions (after Condenser 80% Eff) tons/yr	Potential Emissions (after Condenser 80% Eff) tons/yr
VOC				Y	1.070	**19.26**	**21.09**	**3.85**	**4.22**
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	6.40E-02	**2304.00**	**2522.88**	**460.80**	**504.58**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**0.00**	**0.00**
Formaldehide (BP- (-2.2F)		Y	Y	Y	6.77E-02	**2437.20**	**2668.73**	**487.44**	**533.75**
Methanol (BP-148.5F)		Y	N	Y	2.98E-02	**1072.80**	**1174.72**	**214.56**	**234.94**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**0.00**	**0.00**	**0.00**	**0.00**
Propionaldehyde (BP-119.8F)		Y	N	Y	3.93E-02	**1414.80**	**1549.21**	**282.96**	**309.84**
	HAPs total (lbs/year)					**7,228.80**	**7,915.54**	**1,449.61**	**1,587.33**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

PM, NOX, CO and VOC, HAPS from Screw Press/Pellet Drying with an INTEGRAL high Efficiency Cyclone (90% for PM) **(ES-SPD-1) & CD-2**

Max Throughput	43,800.00	Ton/yr @ 10% m.c.	
Potential Throughput	39,420.00	ODT/yr	
Actual Throughput	36,000.00	ODT/yr	
Composition	25% Hardwood 75% Softwood		

Pollutant	Flow Rate (CFM)		Grains/cf	hrs	Emission Factor[1] lbs/ODT	Actual Emissions lbs/yr	Potential Emissions lbs/yr	Actual Emissions After a CD (90 Eff for PM and 60% for PM10) lbs/yr	Potential Emissions After a CD (90% Eff for PM and 60% for PM10) lbs/yr
PM	15556		0.05	8000		53334.80	58,401.61	53334.80	58401.61
Cyclone Loading rate calcs				Tons		**26.67**	**29.20**	**26.67**	**29.20**
PM10	1.0% of total PM from C Forms			8000	1.00%	533.35	584.02	533.35	584.02
				Tons		**0.27**	**0.29**	**0.27**	**0.29**
PM2.5	0.25% of total PM from C Forms			8000	0.25%	133.34	146.00	133.34	146.00
				Tons		**0.07**	**0.07**	**0.07**	**0.07**
VOC					1.07	38520.00	42179.40	38520.00	42179.40
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**19.26**	**21.09**	**19.26**	**21.09**

Pollutant		HAP	NC TAP	VOC					
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**925.20**	**1,013.09**	**925.20**	**1,013.09**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**50.40**	**55.19**	**50.40**	**55.19**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
	HAP total (lbs/year)					**1,299.60**	**1,423.06**	**1,299.60**	**1,423.06**
	HAP total (tons/yr)					**0.65**	**0.71**	**0.65**	**0.71**
	TAP total (lbs/year)					**975.60**	**1,068.28**	**975.60**	**1,068.28**
	TAP total (tons/yr)					**0.49**	**0.53**	**0.49**	**0.53**

Permit Name	ODT Processed (ODT/Yr)	Facility Wide VOC (ton/yr)	Emission Factor (lb/ODT)	
2016 Enviva Pellets-Sampson-Dryer Stack Test			1.070	Used as the worst case
Stack Test dated April 2017				

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chips and therefore, the VOC are still in the chip. However, Active Energy first pressure cook the dry chips and condense the liquids using a condeser with a conservative efficieny of 80% (80-95%). Please note many VOCs boiling point is less than the steam temp and therefore, majority of the VOC will be condensed in the steam released from the Pressure Cooker operation. The condensed VOC liquids will be disposed of.
As a conservative estimate, we have estimated VOCs emissions from several permits and used the worst case for Pressure cooker emissions calcs

Actual Hrs of Operations = 8000 hrs
Potential Hrs of Operation = 8760 hrs

PM, VOCs and HAPS from Pellet Press & Pellet Cooler with a Conventional Cyclone (80-90% Eff) (ES-PP-1) & CD-3

Max Throughput	43,800.00	Ton/yr @ 10% m.c.							
Potential Throughput	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

					Emission Factor[1]	Actual Emissions	Potential Emissions	Actual Emissions After a CD (80% Eff)	Potential Emissions After a CD (80% Eff)
					lbs/ODT	*lbs/yr*	*lbs/yr*	*lbs/yr*	*lbs/yr*
Pollutant	**Flow Rate (CFM)**		**EF in kg/ton**	**hrs**					
PM			0.07	8000	0.15	5554.08	6,081.72	3600.00	3942.00
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**2.78**	**3.04**	**1.80**	**1.97**
PM10			0.04	8000	0.09	3170.88	3,472.11	634.18	694.42
PM and PM10 EFs are taken from ref ITQ# dated 12/01/2008				Tons		**1.59**	**1.74**	**0.32**	**0.35**
Pollutant		HAP	NC TAP	VOC				-	-
VOC				Y	0.5	**18,000.00**	**19,710.00**	**18000.00**	**19710.00**
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**9.00**	**9.86**	**9.00**	**9.86**
						(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**925.20**	**1,013.09**	**925.20**	**1,013.09**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**50.40**	**55.19**	**50.40**	**55.19**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**162.00**	**177.39**	**162.00**	**177.39**
			HAP total (lbs/year)			**1,299.60**	**1,423.06**	**1,299.60**	**1,423.06**
			HAP total (tons/yr)			**0.65**	**0.71**	**0.65**	**0.71**
			TAP total (lbs/year)			**975.60**	**1,068.28**	**975.60**	**1,068.28**
			TAP total (tons/yr)			**0.49**	**0.53**	**0.49**	**0.53**

Permit Name	**ODT Processed (ODT/Yr)**	**Facility Wide VOC (ton/yr)**	**Emission Factor (lb/ODT)**	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	Used as the worst case
Stack Test dated April 2017				

PM from Pellet Screen with a Cartridge Filter (99.9% Eff) (ES-PSC-1) & CD-4

Max Throughput	43,800.00	Ton/yr @ 10% m.c.							
Potential Throughput	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

					Emission Factor1	Actual Emissions	Potential Emissions	Actual Emissions After a CD (99.9% Eff)	Potential Emissions After a CD (99.9% Eff)
					lbs/ODT	*lbs/yr*	*lbs/yr*	*lbs/yr*	*lbs/yr*
PM, PM10 and PM2.5 EFs are taken from ref-Pinnacle Renewable Energy-Newton Facility dated August 2019, revised in Jan 2020									
PM				8000	3.15E-02	1134.00	1,241.73	1.13	1.24
				Tons		**0.57**	**0.62**	**0.0006**	**0.0006**
PM10				8000	1.50E-02	540.00	591.30	0.54	0.59
				Tons		**0.27**	**0.30**	**0.0003**	**0.0003**
PM2.5				8000	3.15E-03	113.40	124.17	0.11	0.12
				Tons		**0.06**	**0.06**	**0.0001**	**0.0001**

Hazardous Air Pollutants and VOC from Pellet Storage (ES-PS-1)

Max Throughput	43,800.00	Ton/yr @ 10% m.c.							
	39,420.00	ODT/yr							
Actual Throughput	36,000.00	ODT/yr							
Composition	25% Hardwood 75% Softwood								

					Emission Factor[1]	Actual Emissions	Potential Emissions
					lbs/ODT	*lbs/yr*	*lbs/yr*
Pollutant		HAP	NC TAP	VOC			
VOC				Y	0.050	**1,800.00**	**1,971.00**
EF from Enviva Pellet Press -Stack Test Dated April 2017				Tons		**0.90**	**0.99**
						(lbs/yr)	**(lbs/yr)**
Acetaldehyde (BP-68.36F)		Y	Y	Y	2.57E-02	**92.52**	**101.31**
Acrolein (BP-127.4F)		Y	Y	Y	0.00E+00	**-**	**-**
Formaldehide (BP- (-2.2F)		Y	Y	Y	1.40E-03	**5.04**	**5.52**
Methanol (BP-148.5F)		Y	N	Y	4.50E-03	**16.20**	**17.74**
Phenol (BP-359.1F)		Y	Y	Y	0.00E+00	**-**	**-**
Propionaldehyde (BP-119.8F)		Y	N	Y	4.50E-03	**16.20**	**17.74**
			HAP total (lbs/year)			**129.96**	**142.31**
			HAP total (tons/yr)			**0.06**	**0.07**
			TAP total (lbs/year)			**97.56**	**106.83**
			TAP total (tons/yr)			**0.05**	**0.05**

Permit Name	**ODT Processed (ODT/Yr)**	**Facility Wide VOC (ton/yr)**	**Emission Factor (lb/ODT)**	**Emission Factor (10%) (lb/ODT)**	
2016 Enviva Pellets-Sampson-Pellet Press Stack Test			0.500	0.050	Used as the worst case
Stack Test dated April 2017					

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	28.52	32.92	31.23
PARTICULATE MATTER < 10 MICRONS (PM_{10})	0.64	2.38	0.69
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)	0.11	0.18	0.12
SULFUR DIOXIDE (SO_2)	0.06	0.06	0.06
NITROGEN OXIDES (NOx)	9.41	10.31	10.31
CARBON MONOXIDE (CO)	7.91	8.66	8.66
VOLATILE ORGANIC COMPOUNDS (VOC)	33.53	53.59	36.71
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)	11309.03	12287.37	12287.37
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	Lbs/yr	Lbs/yr	Lbs/yr
Acetaldehyde (TH)	75070	3152.52	4650.38	2632.08
Acrolein (TH)	107028	0.00	0.00	0.00
Ammonia (T)	7664417	602.34	659.58	659.58
Arsenic unlisted compounds (TH)	ASC-other	0.00	0.00	0.00
Benzene (TH)	71432	0.40	0.43	0.43
Benzo(a)pyrene (TH)	50328	0.00	0.00	0.00
Beryllium metal (unreacted) (TH)	7440417	0.00	0.00	0.00
Cadmium metal (elemental unreacted) (TH)	7440439	0.00	0.00	0.00
Chromic acid (VI) (TH)	7738945	0.00	0.00	0.00
Cobalt unlisted compounds (H)	COC-other	0.02	0.02	0.02
Formaldehyde (TH)	50000	607.40	2800.09	665.10
Hexane, n- (TH)	110543	338.81	371.01	371.01
Lead unlisted compounds (H)	PBC-other	0.09	0.10	0.10
Manganese unlisted compounds (TH)	MNC-other	0.00	0.00	0.00
Mercury vapor (TH)	7439976	0.00	0.00	0.00
Napthalene (H)	91203	0.11	0.13	0.13
Nickel metal (TH)	7440020	0.00	0.00	0.00
Selenium compounds (H)	SEC	0.00	0.00	0.00
Toluene (TH)	108883	0.64	0.70	0.70
Methanol (H)	67561	554.76	1547.24	607.46
Phenol (TH)	108952	0.00	0.00	0.00
Propionaldehyde (H)	123386	623.16	1921.73	682.36

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY.**(NO MODELING IS REQUIRED)**

					Modeling Required ?		TPER LIMIT
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
Acetaldehyde (TH)	75070	0.36	8.64	3152.52		NO	6.8 lbs/hr
Ammonia (T)	7664417	0.07	1.65	602.34		NO	6.8 lbs/hr
Formaldehyde (TH)	50000	0.07	1.66	607.40		NO	0.04 lbs/hr
Hexane, n- (TH)	110543	0.04	0.93	338.81		NO	23 lb/day
Toluene (TH)	108883	0.00	0.00	0.64		NO	197.96 lb/day
							58.97 lb/hr

COMMENTS:

Attach Additional Sheets As Necessary

Re: [External] D1, C Form and calcs

CHUCK PAKALA <cvpakala@carolina.rr.com>

Thu 5/13/2021 10:04 AM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

1 attachments (15 KB)

B_2019 NEW 051021 PP1.pdf;

Greg,

I do not remember whether I emailed you or not. I made sure, I checked the data and resaved it again. Attached now. Thanks.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Thursday, May 13, 2021 8:57 AM
To: CHUCK PAKALA
Subject: Re: [External] D1, C Form and calcs

Chuck, is there an updated Form B for the pelletier/pellet cooler ES-PP-1? You updated the numbers on the C4 form for CD-3.

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA <cvpakala@carolina.rr.com>
Sent: Wednesday, May 12, 2021 4:18 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: [External] D1, C Form and calcs

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: 10636R00; FACILITY ID # 7800242

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: PELLETIZER AND PELLET COOLER	EMISSION SOURCE ID NO:ES-PP-1
	CONTROL DEVICE ID NO(S):CD-3
OPERATING SCENARIO ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S):EP-PP-1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
SCREW PRESS AND DRYER

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: __22_ HR/DAY ___7_ DAY/WK __52__ WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):_____NA_____ ☐ NESHAP (SUBPARTS?):_____ NA

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)		0.14	0.56	0.69	3.04	0.14	0.61
PARTICULATE MATTER<10 MICRONS (PM_{10})		0.08	0.32	0.40	1.74	0.08	0.35
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)	AP-42/NC DEQ	2.25	9.00	2.25	9.86	2.25	9.86
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lbs/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lbs/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	925.20	1.16E-01	1013.09	1.16E-01	1013.09
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	50.40	6.30E-03	55.19	6.30E-03	55.19
Methanol	67561	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC DEQ	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00
Propionaldehyde	123386	AP-42/NC DEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC DEQ	0.00E+00	0.00	0.00
Formaldehyde (TH)	50000	AP-42/NC DEQ	6.30E-03	0.14	50.40

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

Re: [External] D1, C Form and calcs

CHUCK PAKALA <cvpakala@carolina.rr.com>

Fri 5/14/2021 8:59 AM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Cc: Tyler Player <tyler@playerdesign.net>; Ron Gaskins <Ronald.Gaskins@aegplc.com>; Doris Sampson <doris.sampson@aegplc.com>

Greg,

AERP is comfortable to leave the old permit wording"AS IS" in the new permit also. Please move forward with the permit process. Please let me know if you need anything else. Thanks for all your help.

Look forward to seeing our permit soon.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Thursday, May 13, 2021 2:58 PM
To: CHUCK PAKALA
Subject: Re: [External] D1, C Form and calcs

Chuck, I also still need you to confirm what the suggested permit limit for temperature of the exhaust gases from the cooker process condenser should be in the permit. Currently listed in the existing permit as less than 99 deg C (210 deg F).

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA <cvpakala@carolina.rr.com>
Sent: Thursday, May 13, 2021 10:02 AM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: Re: [External] D1, C Form and calcs

Greg,

I do not remember whether I emailed you or not. I made sure, I checked the data and resaved it again. Attached now. Thanks.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Thursday, May 13, 2021 8:57 AM
To: CHUCK PAKALA
Subject: Re: [External] D1, C Form and calcs

Chuck, is there an updated Form B for the pelletier/pellet cooler ES-PP-1? You updated the numbers on the C4 form for CD-3.

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA <cvpakala@carolina.rr.com>
Sent: Wednesday, May 12, 2021 4:18 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: [External] D1, C Form and calcs

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)

704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

[External] Re: AERP Application - Pellet Storage Emission Calculations

Chuck Pakala <cvpakala@carolina.rr.com>

Fri 5/14/2021 4:43 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Cc: Carter, Heather <Heather.Carter@ncdenr.gov>

I am in concurrence with you for the two scenarios. Thanks for all your help. Have a great weekend!

Sent from my iPhone

> On May 14, 2021, at 3:51 PM, Reeves, Gregory W <gregory.reeves@ncdenr.gov> wrote:
>
> Chuck, based on our phone conversation and discussion of the process, it does not seem that the emissions from the pellet storage area are reasonable. I would not expect to see any VOC emissions from the finished, cooled pellets once they are packaged in super sacks. Therefore, I will remove these emissions from the emission calculation totals.
>
> Also, in our discussion, we talked about possible VOC emissions from wood chips stored in piles at the facility awaiting processing. It would appear from our conversations and from previous conversations with the facility representatives that the storage pile will be very small, and thus would have insignificant VOC emissions. Therefore, we will not include any VOC emissions in the facility totals for this wood storage.
>
> If you have any questions, please call me.
>
> <Outlook-axlmmny0.jpg>

[External] Re: AERP Application - Pellet Storage Emission Calculations

Chuck Pakala <cvpakala@carolina.rr.com>

Fri 5/14/2021 8:41 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

Great. That is fine.

Sent from my iPhone

> On May 14, 2021, at 4:43 PM, Reeves, Gregory W <gregory.reeves@ncdenr.gov> wrote:
>
> Chuck, as a result of this, I will be removing the pellet storage (ID No. IES-PS-1) from the insignificant/exempt activities listing on the permit.
>
> <Outlook-153325sh.jpg>
>
> ---
>
> **From:** Reeves, Gregory W
> **Sent:** Friday, May 14, 2021 3:51 PM
> **To:** CHUCK PAKALA <cvpakala@carolina.rr.com>
> **Cc:** Carter, Heather <Heather.Carter@ncdenr.gov>
> **Subject:** AERP Application - Pellet Storage Emission Calculations
>
> Chuck, based on our phone conversation and discussion of the process, it does not seem that the emissions from the pellet storage area are reasonable. I would not expect to see any VOC emissions from the finished, cooled pellets once they are packaged in super sacks. Therefore, I will remove these emissions from the emission calculation totals.
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>
> If you have any questions, please call me.
>
> <Outlook-axlmmny0.jpg>

Re: [External] Just checking

Reeves, Gregory W <gregory.reeves@ncdenr.gov>

Mon 5/17/2021 1:48 PM

To: CHUCK PAKALA <cvpakala@carolina.rr.com>
Cc: Lowery-jacobs, Evangelyn <evangelyn.lowery-jacobs@ncdenr.gov>

done with forms and calcs. Still awaiting a response to my question about where to set the maximum temperature for the exhaust gases from the condenser. I still think that 210 deg F is too high. What does the facility suggest as a reasonable temperature?

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA <cvpakala@carolina.rr.com>
Sent: Monday, May 17, 2021 1:39 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: [External] Just checking

Greg,

Are you done with my calcs and Forms. Please advise.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

[External] Condenser Exit gas temperature

CHUCK PAKALA <cvpakala@carolina.rr.com>

Tue 5/18/2021 12:27 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Tyler Player <tyler@playerdesign.net>; Michael Rowan <michael.rowan@aegplc.com>; Jennifer Scott <jscott@SHIPMANLAW.COM>
Cc: Ron Gaskins <Ronald.Gaskins@aegplc.com>; Doris Sampson <doris.sampson@aegplc.com>; Andrew Diamond <andrew.diamond@aegplc.com>; jkohn@kohnassociates.net <jkohn@kohnassociates.net>; CHUCK PAKALA <cvpakala@carolina.rr.com>

Greg,

I spoke with Tyler and on behalf of AERP, Tyler is comfortable to the set the exit gas temperature for the proposed condenser to 170^0F (76^0C) in the permit. As per your suggestion, I will draft a letter and sedn it AERP to sign and make it official this condition for the air permit. Please let us know if you need anything else.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

[External] Pellet HAP EFs

CHUCK PAKALA <cvpakala@carolina.rr.com>

Wed 5/19/2021 5:10 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>

1 attachments (153 KB)

Greg - Enviva HAP EF.pdf;

Greg,

Attached please see the Pellet Press/Cooler HAP EFs are given by you from Enviva and I used them in 2019 and the same were used now. Attached is a copy of your email. Please call me if you have any questions.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

CHUCK PAKALA

From: "Reeves, Gregory W" <gregory.reeves@ncdenr.gov>
Date: Monday, October 28, 2019 8:26 AM
To: "CHUCK PAKALA" <cvpakala@carolina.rr.com>
Subject: RE: [External] Dryer EF

Chuck, here are the results of stack testing at Enviva – Sampson for HAP: (All results expressed in lb/ODT)

March 2017

	Dryer	Green Hammermills	Pellet
Press/Coolers			
Methanol	0.0428	0.00008	0.0045
Formaldehyde	0.0760	0.00008	0.0014
Acetaldehyde	0.0640	0	0.0257
Propionaldehyde	0.0319	0	0.0045
Total HAP	0.215	0.00016	0.036

March 2018

	Dryer
Methanol	0.0298
Formaldehyde	0.0677
Propionaldehyde	0.0393
Total HAP	0.1757

Testing was also conducted in March 2019 for Formaldehyde, but that was on the dryer including thermal oxidizer control, so I don't think that would be similar to the Active Energy process. I think you could use any of these factors. I don't think any of these factors would cause an exceedance of the toxic TPERs in 02Q .0711.

Call me if questions……..Greg

Greg Reeves
Permits Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043 910.485.7467 (Fax)
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA [mailto:cvpakala@carolina.rr.com]
Sent: Saturday, October 26, 2019 10:59 AM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Cc: Antonio Esposito <antonio.esposito@aegplc.com>
Subject: Re: [External] Dryer EF

Greg,

Having used the Enviva stack test data for VOC calculations. Did Enviva have EFs for HAPS listed below or do you have any idea what you want me to use based on your past reviews. Looks like there is so much data on Enviva that you agree as recent and some you told me that it was old. Sorry to bother you many times like this.

Acetaldehyde
Acrolein
Formaldehide
Methanol
Phenol
Propionaldehyde

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-541-4042
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

From: Reeves, Gregory W
Sent: Friday, October 25, 2019 8:48 AM
To: CHUCK PAKALA
Subject: RE: [External] Dryer EF

Chuck, I have not seen the test data from Ahoskie, so I don't know if that is any more representative of what Active Energy is doing. For the purposes of the permit, it probably does not matter at this point, as we will almost certainly be requiring stack testing at Active Energy to establish the emission factors from the processes. Either EF used will still require permitting……Greg

Greg Reeves
Permits Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043 910.485.7467 (Fax)
Gregory.Reeves@ncdenr.gov

From: CHUCK PAKALA [mailto:cvpakala@carolina.rr.com]
Sent: Thursday, October 24, 2019 6:57 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Subject: [External] Dryer EF

Greg,

I saw a stack test data on Enviva-Ahoskie in June 2014 and the Dryer EF is given as 0.781 lb/ODT. Would you be okay to use this number for my Dryer emissions at Screw Press/Dryer. Please note the purpose of this Dryer is to remove moisture content from 30% to 15% so that pellet making would be easier. Attached is the copy of that test. Currently I am using the same EF as the pressure cooker (1.07 lb/ODT). What are your thoughts.

Regards

Chuck Pakala, PE
CP Engineering and Environmental Solutions
704-541-4042
704-756-7451 (cell)
704-541-4043 (fax)
Email: cvpakala@carolina.rr.com

[External] AERP Condenser Temperature Limit Letter

Doris Sampson <doris.sampson@aegplc.com>

Wed 5/19/2021 1:03 PM

To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>
Cc: Michael Rowan <tmr@aegplc.com>; CHUCK PAKALA <cvpakala@carolina.rr.com>; Tyler Player <tyler@playerdesign.net>; Ron Gaskins <Ronald.Gaskins@aegplc.com>

1 attachments (118 KB)

Condenser Temp. Limit Letter.pdf;

Hi Greg,

Attached is a copy of the signed official letter to confirm the Condenser Exit Gas Temperature limit to 170F (76C). I will also mail 2 copies of this letter to you today.

Thank you,

Doris Sampson
Active Energy Renewable Power LLC
1885 Alamac Road
Lumberton, NC 28358
Phone: 910-734-5863

Active Energy Renewable Power, LLC

1885 Alamac Road
Lumberton, NC 28358

May 18, 2021

Ms. Heather Carter, Regional Supervisor
Systel Building
225 Green Street, Suite 714
Fayetteville, North Carolina 28301

Re: **Air Permit – Condenser Exit Gas Temperature Limit Pellet Pressure Cooker Operations**
Active Energy Renewable Power
1885 Alamac Road
Lumberton, Robeson County, North Carolina
Air Permit #10636R00; Facility ID#7800242

Dear Ms. Carter:

Per our discussions with Mr. Greg Reeves, Permit Engineer, with NC DEQ - Division of Air Quality, Active Energy Renewable Power (AERP), is pleased to propose Condenser Exit Gas Temperature limit to 170^{0}F (76^{0}C) instead of 210^{0}F (99^{0}C) already approved in the current air permit for our pressure cooker and condenser operations at the subject facility. Please note, the current air permit had condition that the condenser exit gas temperature limit as 210^{0}F (99^{0}C). However, Mr. Reeves intends to revise the temperature number to control/mitigate the VOC releases from the above said operations. Therefore, AERP intends follow Mr. Greg Revees's request to revise the exit condenser gas temperature to 170^{0}F (76^{0}C) in the new permit. Please make this limit a rolling sum for 3-5 hrs to mitigate any hiccups in the process temperature.

Please call Mr. Tyler Player at 207-554-7122 or me at 910-840-7922 or Mr. Chuck Pakala at (704) 756-7451 if you have any questions or comments on this revised temperature limit. We appreciate your continued help and cooperation on the progress of this project.

Respectfully submitted,

Ron Gaskins
Plant Manager

AERP Dryer Emission Factor Discussion

Reeves, Gregory W <gregory.reeves@ncdenr.gov>

Fri 5/21/2021 8:32 AM

To: CHUCK PAKALA <cvpakala@carolina.rr.com>; Tyler Player <tyler@playerdesign.net>
Cc: Carter, Heather <Heather.Carter@ncdenr.gov>

Chuck/Tyler

It would appear to me in review of the emission calculations spreadsheets for the AERP project that the emission factors used for Formaldehyde and Acetaldehyde emissions from the Screw Press/Rotary Dryer operation (ID No. ES-SPD-1) may be incorrect. It was my understanding that in lieu of source test data, AERP was going to assume that the emissions from this unit were similar to the emissions of the rotary dryer operation at Enviva Sampson. It would appear that the emission factors used for these two toxic pollutants from this emission source are the emission factors from the Enviva Sampson pellet cooler operation, not the dryer operation.

In my discussions with Chuck, it was asserted that much of the VOC (and therefore HAP/TAP) will have already been removed in the cooker operation and that the dryer was operating at a low temperature, and therefore the emission factors should be lower than those for the Enviva facility. Without definitive test data or a rigorous engineering analysis, I do not agree that this approach is appropriate, and I suggest that the dryer emission factors from Enviva be used as most representative of the emissions from the AERP process.

My preliminary emission calculations using the Enviva dryer emission factors would seem to indicate that a toxics TPER might be exceeded for Formaldehyde, and toxics modeling might therefore be required.

I would like to discuss this with you at your earliest convenience. Please call me at 910-624-6469.

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

AERP Emissions Questions - Status Update

Reeves, Gregory W <gregory.reeves@ncdenr.gov>

Fri 5/21/2021 11:37 AM

To: Tyler Player <tyler@playerdesign.net>; CHUCK PAKALA <cvpakala@carolina.rr.com>
Cc: Carter, Heather <Heather.Carter@ncdenr.gov>

Tyler/Chuck

Based on my conversation with Tyler this morning, this is the status of the Lumberton project:

- The Lumberton application is on hold pending operation and emission testing at a temporary facility in Maine.
- Testing at the Maine facility will be conducted using hardwood only, producing about 1,000 tons of black wood pellets from a steam explosion process.
- The Maine facility will be starting operation in the next few weeks.
- Design of the Lumberton facility may change depending on the results of the operation and testing of the temporary facility in Maine.
- AERP will re-submit the application for Lumberton, using data from the emission testing at the Maine facility.
- Testing of the Maine facility will include analysis of emissions of PM, VOC, and HAP/TAP from the various processes, including the pressure cooker, screw press/dryer, and the pelletizer/pellet cooler. Other processes may be tested depending on the requirements of the Maine regulators.

Please let me know if any of this information is incorrect. I would be happy to discuss this further with you.

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov

05/21/2021
AERP – Phone conversation with Tyler Player (207-554-7122)

AERP/PDI have a current permitted facility in Maine. This facility produces the standard white wood pellets, similar to Enviva.

Maine has authorized a temporary permit associated with the main air permit for a test run for a steam explosion black wood pellet plant to produce about 1,000 tons of black pellets. Emissions testing will be conducted during this test run to determine VOC and HAP/TAP emissions from the pressure cooker operation, from the screw press/dryer operation, and from the pelletizer/pellet cooler operation. The facility will be utilizing FTIR analysis using EPA Method 320. Testing will also be conducted to determine PM emissions from the screw press/dryer operation and from the pelletizer/pellet cooler operation. Additional process testing may also be conducted based on the requirements in Maine.

The Maine black wood pellet test facility will be starting operation in the next few weeks. This process involves the use of only hardwood. No softwood will be processed. This process does not include a green hammermill.

If any problems in the process are discovered, it may prompt some re-design of the process. The need for re-design will be evaluated based on the results of the test run and emissions testing.

The Lumberton project will be placed on hold until after the testing is completed in Maine and results obtained for process viability and process emissions. Process equipment may be re-designed based on the results of the Maine testing.

Permit application forms will be re-submitted for Lumberton based on emissions determined in Maine.

The Lumberton project will now involve the use of hardwood only. No softwood will be utilized. Mr. Player indicated that hammermills (green or dried wood) may not be in the final design of the process.

Some of the process machinery that had been installed but not yet permitted at Lumberton has been removed.

As a side note, Mr. Player indicated that his company, Player Design Inc (PDI) does work for a number of wood pellet manufacturers, including Enviva, and has been involved with the construction of about half the pellet mills in Canada. PDI and AERP are in a joint venture in the permitted Maine facility. PDI does design/engineering work, fabricates and supplies some of the process machinery, and serves as the mechanical installation contractor for some of these facilties. Mr. Player indicated that he owns a couple of the small pellet manufacturing facilities in Canada.

Mr. Player indicated that he was not aware of any facility that is currently producing or testing pellet production facilities using the steam explosion process.

Status of Lumberton Project

Reeves, Gregory W <gregory.reeves@ncdenr.gov>

Mon 5/24/2021 11:54 AM

To: ronald.gaskins@aegplc.com <ronald.gaskins@aegplc.com>
Cc: Carter, Heather <Heather.Carter@ncdenr.gov>

Ron, per our conversation on Friday 05/21, please confirm the status of the project at the Lumberton facility. Is the project on hold with the company, or do you wish to withdraw your current application pending the source tests at the test facility in Maine and resubmit the application with new data?

Note that the application is currently on hold with DAQ pending submittal of additional information.

Greg Reeves
Compliance Coordinator
Division of Air Quality, Fayetteville Regional Office
225 Green Street, Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043
Gregory.Reeves@ncdenr.gov