Chalam Pakala Engineering and Environmental Solutions

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

October 31, 2019
Ms. Heather Carter, Regional Supervisor
Systel Building
225 Green Street, Suite 74
Fayetteville, North Carolina 28301

Re: **Air Permit 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 Ms. Carter:

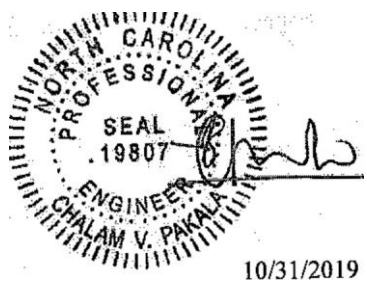
On behalf of Active Energy Renewable Power (AERP), per the requirements of NC DEQ - Division of Air Quality, CP Engineering and Environmental Solutions (CPEES) is pleased to submit an Air Permit request for all the proposed air emission sources at the subject facility located in Lumberton, Robeson County, 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 Boiler, 4mmBTU/hr Dryer, one Screw Press and Pellet Making. A condenser, as a control device, is proposed for the pressure cooker to condense VOCs and other pollutants from the pressure cooker operations. 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 (Al, A2, A4, B, B2, C7, D1, D2, D2A, D3, D4, 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. Antonia Esposito of AERP at 910-547-1920 or me at (704) 541-4042 if you have any questions or comments on this permit exemption 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



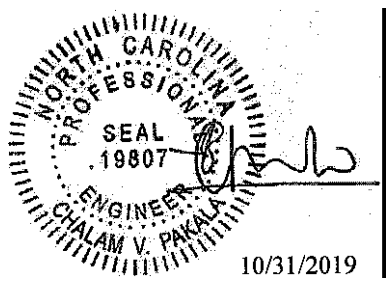
10/31/2019

*Air Permit Request for **all the** Proposed Air Emission Sources*

Prepared for:

ACTIVE ENERGY GROUP

Active Energy Renewable Power
1885 Alamac Road
Lumberton, Robeson County, North Carolina



CPEES Project No. 1198-001
October 31, 2019

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 PROPOSED 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	20mmBTU/hr	Outside	None
ES-D-1	Natural Gas fired Dr er	4mmBTU/hr	Outside	None
ES-P-1	Pressure Cooker with a Condenser 80-95%	Max 5 ton/hr	Outside	None
ES-SPD-1	Screw Press/Dryer/Pellet Press	Max 5 ton/hr	Outside	None
ES-PS-I	Pellet Stora e	Max 5 ton/hr	Intside	None

The process includes:

1. Dry chips received at the site are pressure cooked using steam generated from a 20 mmBTU/hr boiler. The released steam with all VOCs and HAPs/TAPs is condensed using a condenser and the condensed liquids are either disposed of/ sold of as a side product. We believe 20% emissions will be released from this operation.
2. Wet chips from the pressure cooker are sent to Screw Press for pellet making. We believe 80-90% of VOCs in the raw chips are removed during the pressure cooking process and small amounts of VOCs will be released from the Screw Press/Pellet Makingillrying. No coolers will be present with the Screw Press unlike Enviva or other pellet manufacturing facilities.
3. The proposed process is a new process and therefore, we do not have any relevant Emission Factors to calculate air emissions from the proposed sources. Therefore, based on our discussions with Mr. Greg Reeves of the NC DEQ, we have obtained EFs from the Enviva Stack Tests conducted in 2017 and 2018. Our air emissions calculations were based on Emissions Factors (EF) collected from above described Enviva Stack test results supplied by the State. No coolers will be installed at this rocess unlike Enviva.
4. *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.

3.0 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.

4.0 PAST INSIGNIFICANT/EXEMPTED SOURCES ACTIVE ENERGY WOULD LIKE TO KEEP IN THE PERMIT

Lumberton Energy Holdings, LLC acquired the Air Permit (permit #0362R23, Facility ID #7800003) from the previous company when the company sold the building to Lumberton Energy Holdings. However, Lumberton Energy Holding, LLC do not either operate/remove majority of the permitted sources at the facility except the Insignificant Emission Sources listed below. Please note Lumberton Energy Holdings, LLC is the parent company for Active Energy Renewal Power and Active Energy Renewal Power would like to rescind the current Air Permit and obtain a new permit or the exemption status under Active Energy Renewal Power.

Description of the Source	jti;I!lE er;1iiifE B'Jii/nli
IES-WWTP One wastewater treatment !ant	2Q .0102 (g)(6)
IES-FP Diesel-fired fire pump (180 horsepower) **(NESHAP ZZZZ**	2Q.0102 (h)(S)
IES-GEN Diesel-fired emergency generator (15 horsepower) **NESHAPZZZZ**	2Q .0102 (h)(S)
!ES-PROPANE Propane vaporize!	2Q .0I02 (h)(S)

PERMIT APPLICATION

Active Energy Air Permit Matrix
Lumberton, NC

	A' (Forrri< 'Sei:ti.on\2	A1 Mines	A2	A3	B Forms	C Forms	D1	D2	D2A	D3	D4	D5	D6	Il
New Facility (Unpermitted) / Greenfield	X		X	XX	XX	XX	X	XX	XX	XX	XX	XX		

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FORMA

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)
- ☑ Responsible Official/Authorized Contact Signature
- ☑ Appropriate Number of Copies of Application
- ☑ 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.ANTONIO ESPOSITO/CHIEF OPERATING OFFICER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-547-1920 Fax No.:

Secondary Phone No.:

Email Address: antonio.esposito@aegplc.com

Invoice Contact:

Name/Title: MR.ANTONIO ESPOSITO/CHIEF OPERATING OFFICER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-547-1920 Fax No.:

Secondary Phone No.:

Email Address: antonio.esposito@aegplc.com

Facility/Inspection Contact:

Name/Title: MR.ANTONIO ESPOSITO/CHIEF OPERATING OFFICER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-547-1920 Fax No.:

Secondary Phone No.:

Email Address: antonio.esposito@aegplc.com

Permit/Technical Contact:

Name/Title: MR.ANTONIO ESPOSITO/CHIEF OPERATING OFFICER

Mailing Address Line 1: 1885 ALAMAC ROAD

Mailing Address Line 2:

City: LUMBERTON State: NC Zip Code: 28358

Primary Phone No.: 910-547-1920 Fax No.:

Secondary Phone No.:

Email Address: antonio.esposito@aegplc.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.

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

Current/Previous Air Permit No. | Expiration Dale:

Facility Coordinates: Latitude: 34G35'20.49"N Longitude: 79G00'21.99"W

Does this application contain confidential data? **0** 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.ANTONIO ESPOSITO

Title: CHIEF OPERATING OFFICER

X Signature (Blue Ink):

Qat8:

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 RENEWALN/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? D YES @ NO

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

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

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

SECTION AA2- APPLICATION FOR TITLE V PERMIT RENEWALN/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 unlls are exempted under the North Carolina Tille V regulations at 15A NCAC 20 .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 20 ,0512 compliance with the conditions of the permit shall be deemed compliance wlth 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 appl!cable 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

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 bean modifications to the originally premilted facility that would requie an air quality permit since the last permit was issued and if !her 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, 0 _____ (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): _____

Data:

New Facility Name:

Former Facility Name:

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

Name (typed or print):

Tille:

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):

Attach Additional Sheets As Necessary

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

FORMs A2,A3

EMISSION SOURCE LISTING FOR THIS APPLICATION • A2

112r APPLICABILITY INFORMATION -A3

REVISED09/22/16 NCDEQ/Division of Air Quality • Application for Air Permit to ConstrucUOperate **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-B-1	ONE 20MMBTU/HR NATURAL GAS FIRED BOILER	NA	NONE
ES-P-1	ONE PRESSURE COOKER WITH 20MMBTU/HR NATURAL GAS FIRED BOILER (ES-B-1)	ES-CD-1	WATER CIRCULATION CONDENSER
ES-D-1	ONE 4MMBTU/HR NATURAL GAS FIRED DRYER	NA	NONE
ES-SPD-1	ONE SCREW PRESS W/DRYER (ES-0-1)/PELLET PRESS	NA	NONE
IES-WWTP	ONE WASTEWATER TREATMEI		
IES-FP	DISEL-FIRED FIRE PUMP (180 HP) (NESHAP ZZZZ)		NONE
IES-GEN	DISEL-FIRED EMERGENCY GENERATOR (15 HP) (NESHAP ZZZZ)	NA	NONE
JES-PROPANE	PROPANE VAPORIZER	NA	NONE
P-STG	PELLET STORAGE	NA	NONE
Existing Permitted Equipment To Be MODIFIED By This Application			
Equipment To Be DELETED By This Application			

112(r) APPLICABILITY INFORMATION **A3**

Is your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act? Yes J 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 68.1O or Part 68.150?

D Yes D 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?

D Yes D No If yes, please specify: _____

C. List the recesses subject to 112 r at our facility:

PROCESS DESCRIPTION	PROCESS LEVEL (1, 2, or3)	HAZARDOUS CHEMICAL	MAXIMUM INTENDED INVENTORY (LBS

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC

AIR PERMIT: ; FACILITY ID#

FORMB

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 NCDEQ/Dlvlslon 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

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 B1-89 ON THE FOLLOWING PAGES):

0 Coal,wood,oil, gas, otherburner (Form 81) D Woodworking (Form 84) D Manuf. of chemicals/coatings/inks (Form 87)
D Int.combustion engine/generator (Form 82) D Coating/finishing/printing (Form B5) D Incineration (Form BB)
Liquid storage tanks (Form B3) D Storage silos/bins (Form B6) Other (Form 89)

START CONSTRUCTION DATE:NOVEMBER 2019 DATE MANUFACTURED: NOVEMBER 2019

MANUFACTURER/ MODEL NO.: EXPECTED OP. SCHEDULE: 22_HR/DAY 7_ DAY/WK _52_WK/YR

S 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 CONTRC LS/ LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTRC LS/ LIMITS) tons/yr	POTENTIAL EMISSIONS {BEFORE CONTROLS I LIMITS) lb/hr	POTENTIAL EMISSIONS {BEFORE CONTROLS I 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 MA1TER<10 MICRONS (PM_{10})	AP-42/NC DEQ	0.01	0.04	0.01	0.04	0.01	0.04
PARTICULATE MA1TER<2.5 MICRONS ($PM2.5$)	AP-42/NC DEQ	0.01	0.04	0.01	0,04	0.01	0.04
SULFUR DIOXIDE S02)	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	CASNO.	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{n	7664417					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)	COG-other	AP-42/NC DEQ	1.65E-06	0.01	1.65E-06	0.01	1.65E-06	O.o1
Formaldehyde {TH)	50000	AP-42/NC OEQ	1.47E-03	11.76	1.47E-03	12.88	1.47E-03	12.88
Hexane, n- (TH)	110543	AP-42/NC OEQ	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.BOE-06	0.09	9.BOE-06	0.09
Napthalene (H)	91203			0.10	1.20E-05	0.10		0.10
Toluene (TH)								

TOXIC AIR

TOXIC AIR POLLUTANT	CASNO.	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+OO	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 OEQ	2.35E-08	5.18E-07	0.00
Formaldeh de (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: ; FACILITY ID#
FORMB
SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 NCDEQ/Divislon 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

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 81-89 ON THE FOLLOWING PAGES):

0 Coal,wood,oil, gas, other burner {Form B1) D Woodworking (Form 84) D Manuf. of chemicals/coatings/inks (Form B7)
D Int.combustion engine/generator (Form B2) D Coating/finishing/printing (Form B5) D Incineration (Form B8)
Liquid storage tanks (Fonn B3) D Storage silos/bins (Form B6) Other (Fonn 89)

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 (PMu,)	AP-42/NC DEQ	0.00	0.□1	0.01	0.04	0.01	0.04
PARTICULATE MATTER<2.5 MICRONS (PM...s)	AP-42/NC DEQ	0.00	0,01	0.01	0.04	0.01	0,04
SULFUR DIOXIDE (S02)	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	CASNO.	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)	COG-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 OEQ	2.94E-04	2.35	2.94E-04	2.58	2.94E-04	2.58
Hexane, n- (TH)	110543	AP-42/NC OEQ	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		2.39E-06	0.02	2.39E-06	0.02		0.02
Toluene (TH)								

TOXIC AIR

TOXIC AIR POLLUTANT	CASNO.	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-OB	1.31E-06	0.00
Acrolein (TH)	107028	AP-42/NC DEQ	7.06E-OB	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	O.OOE+OO	O.00E+OO	0,00
Benzene (TH}	71432	AP-42/NC DEQ	B.24E-06	1.81E-04	0.07
Benzo(a)pyrene (TH)	50328	AP-42/NC OEQ	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 OEQ	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 calculatlons and supporting documentation; (2) indicate all requested slate 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: ; FACILITY ID#

FORMB

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-CD-1
OPERATING SCENARIO 1 OF	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 81-89 ON THE FOLLOWING PAGES):

D Coal,wood,oil,gas, other burner (Form 81) D Woodworking {Form 84) D Manuf. of chemicals/coatings/inks (Form B7)
D Int.combustion engine/generator {Form B2) D Coating/finishing/printing (Form B5) D Incineration (Form 88)
Liquid storagetanks (Form 83) D Storage silos/bins {Fann 86) other {Form 89)

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 ($PM._{5}$)							
SULFUR DIOXIDE (S02)							
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 A11/JIIJI/IN/ii!!}/fJf/!1EMISSIONS 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 OEQ	O.OOE+OO	0.00	O.OOE+OO	0.00	O.OOE+OO	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	O.OOE+OO	0.00	O.OOE+OO	0.00	O.OOE+OO	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 pem,it 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: ; FACILITY ID#

FORMB

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 JD NO:ES-SP0-1
	CONTROL DEVICE ID NO(S):NA
OPERATING SCENARIO -' OF	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 81-B9 ON THE FOLLOWING PAGES):

D Coal,wood,oil, gas, other burner (Form B1) D Woodworking (Form 84) D Manuf. of chemicals/coatings/inks (Form B7)
D Int.combustion engine/generator (Form 82) D Coating/finishing/printing (Form 85) D Incineration (Form 88)
Liquid storage tanks (Form B3) D 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) lbfhr	POTENTIAL EMISSIONS (AFTER CONTROLS LIMITS) tons/yr
PARTICULATE MATTER **(PM)**							
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM._{5}$)							
SULFUR DIOXIDE (S02)							
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) {;} !ti/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 OEQ	2.03E-02	162.00	2.03E-02	177.39	2.03E-02	177.39
Phenol	108952	AP-42/NC OEQ	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 lbfhr	lbfday	lbfyr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-01	2.54	925.20
Acrolein (TH)	107028	AP-42/NC OEQ	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 stale 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: ; FACILITY ID#

FORMB

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	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):

D Coal,wood,oil, gas, other burner (Form 81) D Woodworking {Form 84) D Manuf. of chemicals/coatings/inks (Form B7)
D Int.combustion engine/generator (Form 82) D Coating/finishing/printing (Form BS) D Incineration (Form 88)
liquid storage tanks (Form 83) D Storage silos/bins {Form 86) Other (Form 89)

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/ r	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/ r
PARTICULATE MATTER (PM)							
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS (PM.:.s)							
SULFUR DIOXIDE (S02)							
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	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 DEO	2.03E-03	16.20	2.03E-03	17.74	2.03E-03	17.74
Phenol	108952	AP-42/NC DEO	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	CASNO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS/ LIMITATIONS lb/hr	\b/day	lb/yr
Acetaldehyde (TH)	75070	AP-42/NC DEQ	1.16E-02	0.25	92.52
Acro1ein (TH)	107028	AP-42/NC DEQ	O.OOE+OO	0.00	0.00
Formaldeh de (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

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

REVISED 09/22/16 NCDEQ/Oivision 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: G PROCESS HEAT OsPACEHEAT 0 ELECTRICAL GENERATION
0 CONTINUOUS USE 0 STAND BY/EMERGENCY 0 OTHER (DESCRIBE):

HEATING MECHANISM: G INDIRECT 0 DIRECT

MAX. FIRING RATE (MMBTU/HOUR):20

WOOD-FIRED BURNER

WOOD TYPE: 0 BARK 0 WOOD/BARK O WET WOOD 0 DRYWOOD 0 OTHER (DESCRIBE):

PERCENT MOISTURE OF FUEL:

0 UNCONTROLLED OcoNTROLLEDWITH FLYASH REINJECTION 0 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	0 UNCONTROLLED	0 UNCONTROLLED	0 UNCONTROLLED	0 CIRCULATING
☐ DRY BED	0 CONTROLLED	0 CONTROLLED	0 FLYASH REINJECTION	0 RECIRCULATING
			0 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: ; FACILITY ID#
FORM 81
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 1	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 [2J PROCESS HEAT SPACE HEAT 0 ELECTRICAL GENERATION
0 CONTINUOUS USE DS TAND BY/EMERGENCY 0 OTHER (DESCRIBE):

HEATING MECHANISM: ☑ INDIRECT 0 DIRECT

MAX. FIRING RATE (MMBTU/HOUR): 20

WOOD-FIRED BURNER

WOOD TYPE 0 BARK 0 WOOD/BARK 0 WET WOOD 0 DRY WOOD 0 OTHER (DESCRIBE):

PERCENT MOISTURE OF FUEL:

0 UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION 0 CONTROLLED W/0 REINJECTION

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

COAL-FIRED BURNER

TYPE OF BOILER

PULVERIZED	OVERFEED STOKER	IF OTHER DESCRIBE: UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED	0 UNCONTROLLED	0 UNCONTROLLED	☐ UNCONTROLLED	0 CIRCULATING
☐ DRY BED	0 CONTROLLED	0 CONTROLLED	☐ FLYASH REINJECTION	0 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: ; FACILITY ID *i*
FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 NCDEQ/Division of Air Quali -Application for Air Permit toConstruct/Operate

EMISSION SOURCE DESCRIPTION: PRESSURE COOKER W/CONDENSER	EMISSION SOURCE ID NO:ES-P-1 CONTROL DEVICE ID NO(S):CD-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: ; FACILITY ID#
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):NA
OPERATING SCENARIO: 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	ODTNR	39420	36000

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

MAXIMUM DESIGN (BATCHES I HOUR):	
REQUESTED LIMITATION (BATCHES/ HOUR):	(BATCHESNR):
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: ; FACILITY ID#
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-PP-1

CONTROL DEVICE ID NO(S):NA

OPERATING SCENARIO: _ 1 OF

EMISSION POINT (STACK) ID NO(S):NA

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

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REG\ JS:TEDit8R1'CITY L1M1WX'.ftoNcLf!lf:jlY11RL
TYPE	UNITS	CAPACITY (UNIT/YR)	
WOOD CHIPS	ODTNR	39420	36000

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

MAXIMUM DESIGN (BATCHES I HOUR):

REQUESTED LIMITATION (BATCHES I HOUR): (BATCHESNR):

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: ; FACILITY ID#

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-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: [,J SHELL AND TUBE D OTHER

DES RIBE CONTROL SYSTEM:CONDENSER

POLLUTANT(S) COLLECTED:	voe			
CORRESPONDING EFFICIENCY:	a_0_ %	%	%	%
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):	5010180			
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):210 (99C)
COOLANT USED: WATER	TEMPERATURE OF INLET COOLANT {°F):68 (20C)
TEMPERATURE OF CONDENSATION (°F):210 (99C)	TEMPERATURE OF OUTLET COOLANT (°F):185 (85C)
COOLANT FLOW RATE (LB/HR):30,024 (0.92gal/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 IT EMISSION SOURCE(S):SEE·THE PROCESS FLOW DIAGRAM

COMMENTS:

Attach Additional Sheets As Necessary

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

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

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS I LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS/ LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS t LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	0,05	0.05	0.05
PARTICULATE MATTER < 10 MICRONS (Ptv1i0)	0.05	0.05	0.05
PARTJCULATE MATTER< 2.5 MICRONS (Pfvl.-5)	0,05	0.05	0.05
SULFUR DIOXIDE (SQi)	0.66	0.73	0.73
NITROGEN OXIDES (NOx)	1.62	1.77	1.77
CARBON MONOXIDE (CO)	9.91	10.85	10,85
VOLATILE ORGANIC COMPOUNDS (VOC)	24.57	50.81	26.9
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)	11309	283072	283072
OTHER			

HAZARDOUS AIR POLLUTANT EMITTED	CASNO.	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS I LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS I LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS I LIMITATIONS)
Acetaldehyde (TH	75070	1478.52	1618.98	1618.98
Acrolein (TH	107028	0.003	0.004	0.00
Ammonia (T	7664417	602.34	659.56	659.56
Arsenic unlisted compounds (TH	ABC-other	0.00	0.00	0.00
Benzene (fH	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 meta! (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 (fH	50000	557.00	609.91	609.91
Hexane, n- (TH	110543	338.81	371.00	371.00
Lead unlisted compounds (H	PBC-other	0.09	0.10	0.10
Ma11oanese unlisted compounds (TH	MNC-other	0.00	0.00	0.00
MercU'" vanor (TH	7439976	0.00	0.00	0.00
Naplhalane (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	392.76	430.07	430.07
Phenol (TH	108952	0.00	0,00	0.00
Propionaldehyde (H	123386	1593.00	1744.34	1744.34

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	No	TPER LIMIT
Acetaldehyde (TH	75070	0,08	1.76	1616.98		ND	6.8 lbs/hr
Ammonia (T	7664417	0.08	1.76	659.56		ND	6.8 lbs/hr
Formaldehyde (TH	50000	0.05	1.1	609.91		ND	0.04 lbslhr
Hexane, n-(TH	110543	0.04	0.88	371.00		ND	23 lb/day
Toluene (TH	108883	0.00	0.002	0.64		ND	197.96 lblday
							58.97 lblhr

COMMENTS:

Attach Add'it'ional Sheets As Necessary

FORM D2 (N/A)

AIR POLLUTANT NETTING WORKSHEET AND FACILITY-WIDE EMISSION SUMMARY

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to ConstrucUOperate D2

PURPOSE OF NETTING: AIR TOXICS

TOXIC AIR POLLUTANT: CAS NO.:

EMISSION SOURCE ID NOS.:

SECTION A - EMISSION OFFSETTING ANALYSIS FOR MODIFIED/NEW SOURCES

Summarize in this section using the B forms	EMISSIONS - USE APPROPRIATE COLUMNS ONLY		
	LBNEAR	LB/DAY	LB/HR
MODIFICATION INCREASE			
- MINUS -	- MINUS-	- MINUS -	- MINUS -
MODIFICATION DECREASE			
=EQUALS=	=EQUALS=	=EQUALS=	= EQUALS=
NET CHANGE FROM MODIFICATION			

SECTION B - FACILITY-WIDE EMISSION NETTING ANALYSIS

CREDITABLE INCREASE			
- MINUS -	- MINUS -	- MINUS-	- MINUS·
CREDITABLE DECREASE			
=EQUALS=	=EQUALS=	=EQUALS=	=EQUALS=
NET CREDITABLE CHANGE			

SECTION C - FACILITY-WIDE EMISSIONS

TOTAL FACILITY EMISSIONS			
TPER LEVELS (20 .0711)		☐	

Are the total facility-wide emissions less than the TPER levels?: 0 YES 0

If YES, no further analysis is required.

Air dispersion modeling analysis is required if the total facility-wide emission level is greater than the 20 .0711 Toxic Air Pollutant Permitting Emissions Rate (TPER) and the source emitting the toxic air pollutant is not exempted by 15A NCAC 20 .0702(a)(27) "Exemptions".

CHECK HERE IF AN AIR DISPERSION MODELING ANALYSIS IS REQUIRED 0

If air dispersion modeling analysis is required, complete the stack parameters section of Form D3-1 for each emission source that emits this TAP. Review the modeling plan requirements.

COMMENTS:

Attach Additional Sheets As Necessary

FORM D2A **(N/A)**

AIR POLLUTANT "PROJECT ONLY" NETTING WORKSHEET

PURPOSE OF NETTING: PREVENTION OF SIGNIFICANT DETERIORATION {PSD)

PSD AIR POLLUTANT:

EMISSION SOURCE JD NO. AND DESCRIPTION:

EMISSION SOURCE ID NO. AND DESCRIPTION:

EMISSION SOURCE ID NO. AND DESCRIPTION:

EMISSION SOURCE ID NO. AND DESCRIPTION:

SECTION A - EMISSION OFFSETTING ANALYSIS FOR MODIFIED/NEW SOURCES IN PROJECT

Summarize in this section using the B forms	EMISSIONS TONS/YR
MODIFICATION INCREASE	
- MINUS -	
MODIFICATION DECREASE	
= EQUALS =	
"PROJECT" NET CHANGE FROM MODIFICATION	
PS☐ SIGNIFICANCE LEVEL FOR SPECIFIC POLLUTANT [40 CFR 51.166(b)(23)]	

IS THE "PROJECT" NET CHANGE LESS THAN THE SIGNIFICANCE LEVEL? 0 YES ☐☐ ☐

If YES, no further analysis is required.

If NO, then a further evaluation should be done using credilable emissions at the facility for each specific pollutant over a contemporaneous time period.

COMMENTS:

Attach Additional Sheets As Necessary

FORM D3 (N/A)

MODELING REQUEST FORMS (3 pages)

If the applicant desires, the NCDAQ/AQAB will perform the initial modeling compliance demonstration using EPA approved screening and, if applicable and where possible, refined models. If the model results indicate the facility will be unable to demonstrate compliance with applicable Acceptable Ambient Level(s) the applicant will be notified and will be required to perform the compliance demonstration using established modeling protocol and modeling analysis requirements as defined in the North Carolina Administrative Code 15A NCAC 2D .1100 and 20 .0700 and in the Guidelines for Evaluating the Impacts of Toxic Pollutants in North Carolina.

To perform the dispersion modeling compliance demonstration, the AQAB will require the following data:

1. INTRODUCTION

Provide a brief description of the modification and/or addition necessitating the toxic modeling request:All NEW SOURCES

2. EMISSIONS DATA - Facility-wide emissions, by source, of all modeled toxics.

CRITERIA OR TOXIC AIR POLLUTANT (TAP)	MAXIMUM TOXIC AIR POLLUTANT (TAP) EMISSIONS (After Controls)			
	Emission Point ID	lbs/year	lbs/day	lbs/hr
Formaldehide		431.43	1.1	0.05

Attach Additional Sheets As Necessary

POINT SOURCE	STACK DATA					
Emission Point ID						
Stack Description						
Stack Height (ft or m) - AGL						
Stack Temperature (oF or oK)						
Stack Exit Velocity {fl/s or mis)						
Stack Diameter (ft or m)						
Stack Base Elevation {ft) - MSL						
Stack UTM Coordinates (m) E						
NAO version 27 / 83 (circle one) N						
1oR1 Zone						
Latitude 'N						
Longitude 'W						
Rain Cap? (YIN)						
Vertical Stack? (Y/N)						

AREA SOURCE (contact DAQ for clarification of Input data requirements)	AREA SOURCE DATA (for each area source, submit a separate detailed description of the area source, to include dimensions of the area and elevations. Also include source on site map.)					
Emission Point ID						
Source Description						
Area Source Height (ft or m) - AGL						
Area Source Length (ft or m)						
Area Source Width (ft or m)						
Source Base Elevation (ft) - MSL						
Area Source UTM Coordinates {m) E						
NAD version 27 / 83 (circle one) N						
1-1 Zone						
Latitude 'N						
Longitude 'W						

VOLUME SOURCE (contact DAQ for clarification of input data requirements)	VOLUME SOURCE DATA {for each volume source, submit a separate detalled description of the volume source, to Include dimensions of the volume source where emissions beglne to disperse.)					
Emission Point ID						
Source Description						
Volume Source Height (ft or m) - AGL						
Volume Source Length (ft or m)						
Volume Source Bldg Height (ft or m)						
Source base Elevation (ft) - MSL						
Volume Source UTM Coordinates (m) E						
NAD version 27 / 83 (circle one) N						
,-1 Zone						
Latitude 'N						
Longitude 'W						

ft- feet
m- meters
AGL-Above Ground level
UTM- Universal Transverse Mercator
mis- meters per second
MSL- Mean Sea Level
Kelvin (degrees)=273+((aF-32) x 5/9)

Attach Add1 t 1onal Sheets As Necessary

4. SITE DATA

A detailed site diagram must be submitted and should include all of the information listed below:

- Property boundaries
- Scale and true north indicator
- All existing and proposed buildings or structures on site
- Locations of all emission sources (existing and proposed) listed in Section 2, Page 1 of Form D3
- All public rights-of-way traversing the property { e.g. roads, railroad tracks, rivers, etc.)
- UTM coordinates or latitude/longitude of at least one point (e.g. source or building corner)

A USGS Contour Map must also be submitted with the location of your facility clearly deslgnated.

A certified plat map from County Register of Deeds or a signed survey map.

5. BUILDING DATA

List each building. List tiers of different heights on a single building as separate buildings.

Building ID						
Building Description						
Building Height (ft or m)						
Building Length (fl or m)						
Building Width {ft or m)						

6. MISCELLANEOUS DATA

Facility Operating Limits {Operating hours, fuel limits, or other enforceable limits) _____

If an operating schedule is not given, continuous operations will be assumed (i.e. 24 hoursfday, 8760 hours/year).

Note: if compliance is demonstrated using the above facility operating limits, these limits will be imposed as a permit restriction

7. FACILITY IDENTIFICATON

Facility Name: _____ Facility ID: _____

Facility Address
Street: _____
City: _____
County: _____

Point of Contact
Name: _____
Title: _____
Phone: _____
Email: _____

Attach Additional Sheets As Necessary

ACTIVE ENERGY RENEWABLE POWER
LUMBERTON, NC
AIR PERMIT: ; **FACILITY ID** #

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

ACTIVITIES EXEMPTED PER 2Q .0102 OR
INSIGNIFICANT ACTIVITIES PER 2Q .0503 FOR TITLE V SOURCES

DESCRIPTION OF **EMISSION** SOURCE	**SIZE OR PRODUCTION RATE**	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
1.IES-WWTP One wastewater treatment plant		2Q .0102 (g)(6)
2.IES-FP Diesel-fired fire pump (180 horsepower) (NESHAP ZZZZ)	180HP	2Q .0102 (h)(S)
3.JES-GEN Diesel-fired emergency generator (15 horsepower) (NESHAP ZZZZ)	15 HP	2Q .0102 (h)(S)
4.JES-PROPANE Propane vaporizer		2Q .0102 (h)(S)
5.		
6.		
7.		
8.		
9.		
10.		

Attach Additional Sheets As Necessary

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

REVISED 09/22/16 NCDEQ/Divlsion of Air Quality-Application for Air Permit to Construct/Operate J 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 Band B1through 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 20 .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

f,, ---------- *has been reviewed by me and is accurate, complete and consistent with the information supplied in the engineering plans, calculations, and all other supporling documentation to the best of* my *knowledge. I furlher attest that to the best of* my *knowledge the proposed design* has *been prepared in accordance with the applicable regulations. Although cerlain 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: ...C...H...A...LA...M...._PA...KAc...LA=..

DATE: 30-0ct-19

COMPANY: CP ENGINEERIGN AND ENV SOLUTIONS

ADDRESS: 10017 ALLYSON PARK DR., CHARLOTTE, NC 282

TELEPHONE: 704-541-404

SIGNATURE:

PAGES CERTIFIED: '-'A'"LLc

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

PLACE NORTH CAROLINA SEAL HERE

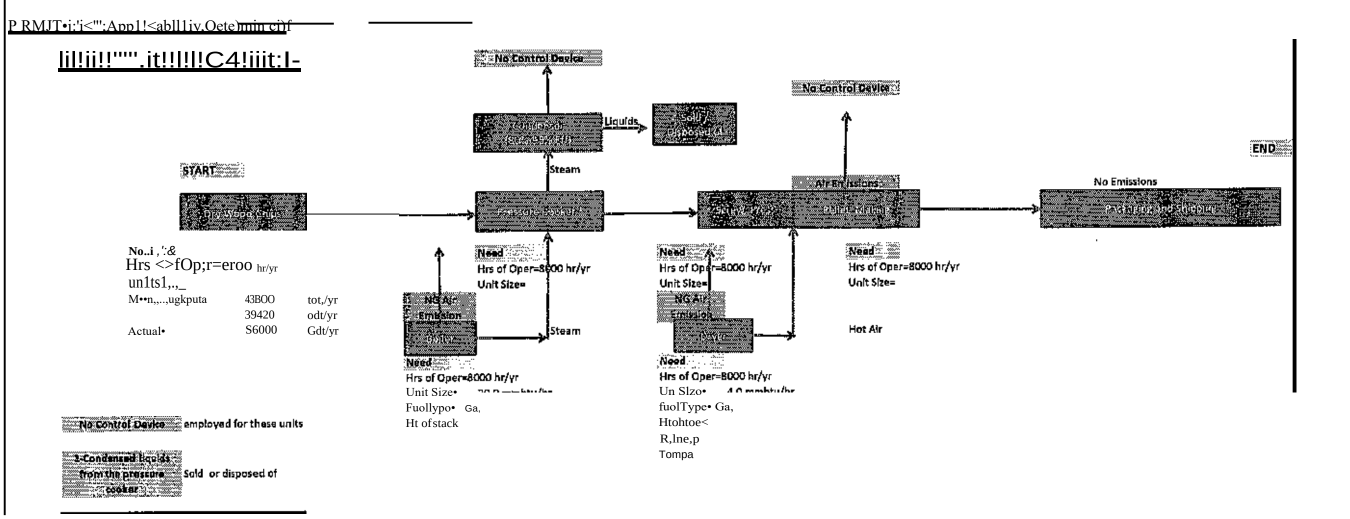
NORTH CAROLINA PROFESSIONAL SEAL 19807 ENGINEER CHALAM V. PAKALA

10/30/2019

Attach Additional Sheets As Necessary

PROCESS SCHEMATICS

Wooden Pellet Manufacturing
Attlve Energy Renewal Power
Lumberton, NC



TABLES

AIR EMISSION CALCULATIONS

; = t : sb•!i: fli=?!;I:-•..

Act w■I Houni of Op-_r,tio•/vr = 8000

Potential Hours of Operation/yr= 8760

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)	Screw Press/Dryer/Pellet Press (ES-SPD-1)	Pellet Storage (ES-Ps-1)	Actual Emissions	Actual Emissions	Potential Emissions	Potential Emissions	Potential Emissions Before CD
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/hr)	(ton/yr)	(ton/hr)	(ton/yr)
Criteria Air Pollutants											
PM	PM	0.04	0.01				0.05	0.000	0.06	0.00	0.05
PM10	PM10	0.04	0.01				0.05	0.000	0.05	0.00	0,05
PM2.5			0.01							0.00	0.04
[redacted]							[redacted]			0.00	0.73
NITROGEN OXIDES (NOx)	'lli	0.05								0.00	1.77
CARBON MONOXIDE (CO)	00	8.59	1.32							0.00	10.65
VOLATILE ORGANIC COMPOUNDS (VOC)	'O'	0.47	0.09	3,65	19.26	0.90				0.00	50.81
Greenhouse Gas Emissions											
CARBON DIOXIDE (CO,.)		9424.29	1664.74						12,383.39		
METHANE (CH,)	oo,	0.18	0.04						0.23		
NITROUS OXIDE (NiO)	,,o	0.02	0.00						0.02		
Toxlo/Hazardous Air Pollutants	&/vi 0::§§Y•"iti""lili ,-,			_..::p=					n,.,,.	•r"W;	
Ac•taldeh de ''	75070	0.002	0.000	460.800	925,20	92,52			1618.98	0,18	
Acrolein '	107028	0.003	0.001						0.004	0.00	
Ammonia T	7664417	501,952	100,364						659.86	0.06	
Arsenic unlisted com ounds ''	ASC-<>th•r								0.00	0.00	
Benzene TH	71432	0.329	0.066						0.43	0,00	
8e,,lo a '''' '''	50328	0.000	0.000						0.00	0,00	
'' lium metal unreacted ''	7440417								0.00	0.00	
Cadmium met [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-0.00	0.00	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	0.QO	0.00	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	0.02	0.00	
[redacted]	50000	11.765	2.353	487,440	50.40	5.04	[redacted]	[redacted]	"609.111	0.07	
Heeone n- TH	110543	282.348	511.466						'371.00'	0.04	
Leadunlisted com ound• H	PBC-other	0,078	0.016						Q.1D	0.00	
Man anese unlisted com ounds ''	MNC-other								0:00""	0.00	
Mercu ■ '''	7439976								,0.00,	0.00	
' lhalene (H)	91203	0,096	0019						0,13-	0.00	
Nickel meta ''	7440020								-'0.00,	0.00	
Selenium com ound• H	see	0.004	0,001						0.00	0.00	
Toluene TH	108883	0.533	0107						*0.10*	0.00	
Methanol(H)	67561			214.560	162.00	16.20			43D.07	0.05	
Phenol	108952								0.00	0.00	
Pro lonaldehyde (H)	123386			1414 800	162.00	16.20			1744.34'	0.20	
HAP Indiv. Max		501.IIS	,100.3B		915.20				2632.08		
HAP total		1&1:1r---	1S9.4'1		1299.60		826UO		6858.31		

[1]Xylenos (total) includes emission factors listed as Xylene.

Active Energy Renewable Power
Lumberton, Robeson County, NC

NOTES:

Enviva Pellets Company makes their pellets from dry/green chliil,,J\iid)htirefore,1h8 voc_are:si!!l'l _lhe chip,. "tj0Wev8,i\"A,?t1Ve_Energy !st pre'iis,J"re cii"i?ktt{e'drfl:fifpl- •.• and condense the liquids using a condeser with a conservative effic _of 80% (80-95%)./ Plea e nqte many voesQ:OJ! g pomt rs less than tli,istea:,'rt i mp anlf,!her81or_e;5::, majority of the VOC will be condensed in the steam released from the Pressur Cooker operation._ The COQdens"ed VOQ'l!q lds wm ba disposed of. c /Y.; _;:•'"._:' o: -~::Cf:." As a conservative estimate, we have estimated VOCs emissions from '.s),yera_l perm s am;I u_sedllJ.e.WOrs!_casefor Prs re·dooker emissions ea"lcs.f- s

VOC from the Pressure Cooker & Condensor (80%-95% Efficiency)- @
Condenser 80-95% Used 80%

					Emission Factor[1]	Actual Emissions	Potentlal Emissions	Actual Emissions {after Condenser 8D% Eff)	Potential Emissions (after Condenser 80% Eff)
Max Throughput 43,800.00 Tonlyr@10% m.c. 39,420.00 ODT/yr									
Actual Throughput 36,000.00 ODT/yr									
Com osition 25% Hardwood 75% Softwood					/bs/ODT	Ions/yr	Ions/yr	ICJnslyr	Ions/yr
Pollutant				voe					
voe				y	'<·"1.070	.19.26 Y Y(tbiilyrl\ ;"y	21.09 (lbs/yr)	3.85 (lbs/yr)	4.22 (lbs/yr
Aootaldeh de BP-68.36F	y	y		y	'"6:40E-02	2304.00	2522.88	460.80	504.58
Acroleln BP-127.4F)	y	y		y	·;,o.00E+00			0.00	0.00
Fonnaldeh!de (BP- (-2.2F	y	y		y	,,,,6:7,7E-02	'2437.20	2660,73.	487.44	533,75
Methanol BP-148.5	y	N		y	T2:98E-02	1072.80	1174:12	214.56	234;94
Phenol (BP-359.1 F)	y	y		y	• _0:00E+00	0.00	0,00	0.00	0.00
Pro ionaldeh de BP-119.BF	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	1,6B7.33'.-

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

Hazardous Air Pollutants and VOC from Screw Press/Pellet Drying/Pellet Press (ES-SPD-1)

				Emission Factor'	Actual Emissions	Potential Emissions
Max Throughput 43,800,00 Ton/yr@ 10% m.c. 39,420,00 CDT/yr						
Actual Throughput 36,000.00 CDT/yr						
Comoosi\ion 25% Hardwood 75% Softwood				lbs/ODT	lbs/yr	lbs/yr
Pollutant	HAP	NC TAP	voe			
voe			y		38,620.00	42,179.40
Ef from Envlva Pellet Pren .Slaokr .. 1 Dated April ZO\7			:,r_r	10 7	: illb5	•• 2,:09 .-e.- llbsivr\
Acetaldehyde (BP-68,36F)	y	y	y	·::2.57E-02	925.20	1,013.D9
Acrolein (BP•127,4F)	y	y	y	;0.00E+00		
Fonnaldehide (BP• (·2.2F)	y	y	y	.,Si .4dE-03	· 50.40	56.19
Methanol (BP-14B.5F)	y	N	y	>'4.SOE-03	. ·. 162.00	177.39
Phenol (BP-359.1 F)	y	y	y	'0.00E+00	•	
Proplonaldehyde (BP-119.BF)	y	N	y	4.S0E-03	162.00	177.39
			HAP total (lbs/year)		1;299.60	1 423.06
			HAP total (tons/yr)		. 0.65	0.71
			TAP total (lbs/year)		975.60	1,068.28
			TAP total (tons/yr)		04'	0.53

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2016 Envlva Pell■t1-l u 1 son-Drv■r tlltaok Tut
Stack Test dated Anril 2D17

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

					Emission Factor'	Actual Emissions	Potential Emissions
Max Throughput 43,800.00 Ton/yr@ 10% m.c. 39,420.00 ODT/yr							
Actual Throughput 36,000.00 ODT/yr							
Comoositlon 25% Hardwood 75% Soflwood					/bs/ODT	lbs/yr	
Pollutant	HAP	NCTAP	voe 1				
voe			Y		0.050		1,971.00
							0·99 -,tlbsN"r
Acetaldehvde (BP-68.36F)	y	y	Y		2.57E-02	·	101.31
Ac:mlaln BP-127.4Fl	y	y	Y		i;;Q,00E+00		
Fonnaldehlde !BP·!·2.2i---i	y	y	Y		1.40E-03		
Methanol BP-148.SFl	y	N	Y		4.50E-03	16,20.	17.74
Phenol BP-359.1 Fi1	y	y	Y		0.00E+00		
Propionaldehyde (BP-119.BF)	y	N	Y		ij.'.4:S0E-0:r	16.20	17.74
HAP total {lbs/year).,_.'+						'"t296	142.31
HAP total {tons/yr)					• ' -·	D.06	0.07
TAP total (lbs/year)					-- , ;	97.56	106.83
TAP total ltonslvr					-·	·0.0S	0.05

•·L ;: j-·:;-1:2l; ,.:· •1t := ,1Ji!,.: '-\ r'

2016 Enviva Pellets-Sampson-Pellet Press Stack Test Stack Test daled April 2017				0.500	0.050	Used as the worst case

Active Energy Renewable Power
Lumberton, Robeson County, NC

Calculations of NG usage based on Hours of Operation

Data Input (BOILER)

Maximum Heat Input	{Z:<il'20,00;.i;rf,.	mmBtu/hr
Boiler Size/Type	Small Industrial	
Actual Fuel Usage		ftA3/yr
or	or	
Hours of Operation	8,000	hr/yr
and	and	
Heating Value	1,020	Btu/ftA3
Calculated Fuel Usage	156,862,745 ..	ftA3/yr
	tss:ss.'.1;2'	mmscf/yr

Data Input (DRYER)

Maximum Heat Input	l; 5r:i{1&4,0d'•'i	mmBtu/hr
Boiler Size/Type	Small Industrial	
Actual Fuel Usage		ftA3/yr
or	or	
Hours of Operation	8,000	hr/yr
and	and	
Heating Value	1,020	Btu/ftA3
Calculated Fuel Usage	31,372,549	ftA3/yr
	r+15 .MJ,7	mmscf/yr

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

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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 responsiblllty to be aware of the most current Infonnation 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-8-1
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/\1V\1V)

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 1-..1

* 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 IBTU/SCE

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

1,028 BTU/SCF Idefault 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? INo 1·1

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

Instructions: Enter emissjon source *f* facility data on the "INPUr' tab/screen. The air emission results and summary of Input data are viewed I prlnted on the "OUTPUT' tab/screen. The different tabs are on the bottom of this screen.

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COMPANY:	**ACTIVE ENERGY RENEWABLE POWER**	FACILITY ID NO.:	NA
		PERMIT NUMBER:	NA
EMISSION SOURCE DESCRIPTION:	20 MMBTU/HR NATURAL GAS-FIRED BOILER	FACILITY CITY:I	LUMBERTON
EMISSION SOURCE IDNO.:	ES-B-1	FACILITY COUNTY:	ROBESON
CONTROL DEVICE: I	NO CONTROL	POLLUTANT	I CONTROL EFF.
SPREADSHEET PREPARED BY:	CHALAM PAKALA, PE		
ACTUAL FUEL THROUGHPUT:	156.86 10^6 SCFNR FUEL HEAT VALUE: 1,020 BTU/SCF	NOX	CALC'DAS 0%
POTENTIAL FUEL THROUGHPUT:	171.76 10^6 SCFNR BOILER TYPE: SMALL BOILER /<100 mmBTU/HRI	INO SNCR APPLIED	

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CO>/TROI..S I LIMITS) lb/hr	ACTUAL EMISSIONS (AFTER CO>/TROI..S I LIMITS) tons/vr	POTENTIAL EMSSIONS (EEFORE COI-HJIOLS ;U,UT'S) lb/hr	POTENTIAL EMSSIONS (EEFORE COI-HJIOLS ;U,UT'S) tons/vr	POTENTIAL EMSSIONS (AFTER CONTROLS I LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS I LIMITS) tons/vr	EMISSION FACTOR lb/mmBtu uncnn!folled	EMISSION FACTOR lb/mmBtu controlled
PARTICULATE MATTER /Totall	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 I	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 S02	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 C01	1.65	6.59	1.65	7.21	1.65	7.21	0,082	0.082
VOLATILE ORGANIC COMPOUNDS 11 oc	0.11	0.48	0.11	0.47	0.11	0.47	0.005	0.005

TOXIC I HAZARDOUS AIR POLLUTANT	CM NUMBER	ACTUAL EMISSIONS (AFTER COITTROLS IUdTS) lb/hr	ACTUAL EMISSIONS (AFTER COITTROLS IUdTS) lbs/yr	POTENTIAL EMSSIONS (BEFOIIE CONTROLS I LIMITS) lb/ht	POTENTIAL EMSSIONS (BEFOIIE CONTROLS I LIMITS) ; ' ;	POTENTIAL EMSSIONS (AFTER CONTROLS ;LIMITS) ; ;	POTENTIAL EMSSIONS (AFTER CONTROLS ;LIMITS) lb•/vr	EMISSION FACTOR lb/mmBtu uncnntl llad	EMISSION FACTOR lb/mmBtu controlled
Acetaldehvde /THl	75070	2.98E-07	2.38E-03	2.98E-07	2.61E-03	2.98E·07	2.61E-03	1.49E-08	1.4SE•08
Acroleln /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 IT\	7864417	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 comoou11ds /TH\	ASC-other	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+OO	0.00E+OO
Benzene /THl	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 rene /THl	50328	2.35E-08	1.88E-04	2.35E-08	2.06E-04	2.35E-08	2.06E-04	1.18E.()8	1.18E-09
Ber.llium metal (unreacted) rTHl	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 /VII /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 compou11ds /Hl	COG-other	1.65E-08	1.32E 02	1.65E-06	1.44E-02	1,65E-06	1.44E-02	8.24E-08	8.24E-08
Formaldehvde /THJ	50000	1.47E-03	1.18E+01	1.47E-03	1.29E+01	1.47E-03	1.29E+01	7.35E.()5	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 (Hl	PBC-other	9,80E-06	7.84E-02	9.80E-06	8.59E-02	9.80E-06	8.59E-02	4.90E.()7	4.90E-07
Mannanese 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
Mercun, vanor H	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
Nanthalene III	91203	1.20E-05	9.57E-02	1.20E-05	1.05E-01	1.ZOE-05	1.05E-01	5.98E-07	5.9BE•07
Nickel metal rJH	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 comnounds rH1	SEC	4.71E-07	3.76E-03	4.71E-07	4.12E-03	4.71E-07	4.12E-03	2.35E+OB	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.B4E-03
		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	CAS Num	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS/ LIMITATIONS lb/hr	lb/day	lb!yr	EMISSION FACTOR lblmmBtu uncontrolled	EMISSION FACTOR lblmmBtu con!folled
Acetaldehvde /TH\	75070	2.98E-07	6.56E-06	2.38E-03	1.49E-08	1.49E,08
Acrolein fTH\	107028	3.53E-07	7.76E-06	2.82E-03	1.76E.()8	1.78E-08
Ammonia	7664417	6.27E-02	1.38E+OO	5.02E+02	3.14E,03	3.14E-03
Arsenic unlisted comoounds /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 rene /THI	50328	2.35E-08	5.18E-07	1.88E-04	1.18E·OS	1.1BE·OB
Ber.llium metal /unreacted\ /THl	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium metal /elemental unreacted) /THl	7440439	0.00E+00	0,00E+00	0.00E+00	0.00E+00	0.00E+00
Soluble chromate comcounds, as chromium /VI eauivalent	SolCR6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Formaldehvde /TH\	50000	1.47E-03	3.24E-02	1.18E+01	7.35E-05	7.35E-05
Hexane, n- ITH\	110543	3.53E-02	7.76E-01	2.82E+02	1.78E-03	1.76E.03
Manoanese unlisted comcounds /THl	MNC-olher	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercurv vaoor /THl	7439976	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel metal /THl	7440020	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS EPA MRR CALCULATION METHOD: TIER 1 metric tons/yr	metric tons/yr, C02e	short tons/yr	POTENTIAL EMISSIONS short tons/yr	short tons/yr, C02e
CARBON DIOXIDE (CO2)	8549.59	8,549.59	9,424.29	10,239.47	10239.47
METHANE {CH4)	1.61E-01	4.0JE+OO	1.78E-01	1.93E-01	4.83E+OO
NITROUS OXIDE (N20)	1.61E-02	4.81E+OO	1.78E-02	1.93E-02	5.76E+OO
		TOTALC02e lmalric tons\ 8,558.42			TOTAL C02e /short tons' 10,25•006

NOTE: C02e 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

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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-0-1	
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 — 1..-1

* 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 Idefault value is from EPA's mandatory reporting rule, Table C-1, "Natural Gas Pipeline {Weighted U.S. Average)"

USAGE ANO 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?	o		

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

Instructions: Enter emission source/ faclflty data on the "INPUT" tab/screen. The air emisi.ion results and summary of Input data are viewed *I* 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. NCOEQ does not guarantee the accuracy of the information contained. This spreadsheet Is subject to continual revision and updating. 11is your responslbllity to be aware oft he most current information available. NCDEQ is not responslble for errorn or omissions that may be contained herein.

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'DASO%
ACTUAL FUEL THROUGHPUT:	31.37 10bSCF/YR IFUEL HEAT VALUE: 1,020 BTU/SCF		
POTENTIAL FUEL THROUGHPUT:	34.35 10^6SCF/YR BOILER TYPE: SMALL BOILER 1<100 mmBTU/HRI	INOSNCR APPIIED	
REQUESTED MAX. FUEL THRPT:	34.35 10^6 SCF /YR IHOURSOFOPERATIONS: 22		

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr		POTENTIAL EMSSIONS (BEFORE OONTROLS/LIMITSI lb/hr	tons/"r	(AFTER CONTROLS /UMITS) lb/hr	tons/"r	EMISSION FACTOR lb/mmBtu uncontrolled	controlled
PARTICULATE MATTER ITotal\	0.00	0.01	0.00	0.01	0.00	0.01	0.001	0.001
PARTICULATE MATTER IFilterabla\	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
PARTICULATE MATTER ICondensable\	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
PM 2.5 /Total I	0.00	0.01	0.00	0.01	0.00	0.01	0.000	0.000
PM 2.5 fFilterablel	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
SULFUR DIOXIDE rso21	0,00	0.Q1	0.00	0.Q1	0.00	0.Q1	0.001	0.001
NITROGEN OXIDES INOxl	0.39	1.57	0.39	1.72	0.39	1.72	0.098	0,098
CARBON MONOXIDE ICOI	0.33	1.33	0.33	1.41	0.33	1.44	0.082	0.082
VOLATILE ORGANIC COMPOUNDS NOC\	0.02	0.09	0,02	0.09	0.02	0.09	0.005	0.005

TOXIC / HAZARDOUS AIR POLLUTANT	NUMBER	ACItJAL EMISSIONS (AAER CONTROLS I LIMITS) 6E	lbs/Vr	POTENTIAL EMSSIONS {BEFORE CONTROLS I LIMITS) lb/hr	lbs/Vr	(AFTER CONTROLS/ LIMITS) lb/hr	lbs/yr	EMISSION FACTOR lb/mmBtu uncontrolled	controlled
Acetaldehvde H'	75070	5.9 -08	4.77E-04	5.96E-08	5.22E-04	5.96E-08	5.22E-04	1.48E-0B	1.49E-08
Acrolein (TH	107028	7.0SE-08	5.65E-04	7.06E-08	6.18E-04	7,0SE-08	6.18E-04	1.76E--08	1.76E-08
Ammonia1T	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 comnounds H	ASC-other	O.OOE+OO	0.00E+00	0.00E+00	0.00E+00	O.OOE+OO	0,00E+00	0.00E+00	0.00E+00
Benzene III	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 a1n"ren 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
Benllium meta unreacted H	7440417	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+0D
Cadmium meta elemental unreacted\ ITHI	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	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 comnounds IH\	COG-other	3.29E-07	2.64E-03	3.29E-07	2.89E-03	3.29E-07	2.89E-03	8.24E-08	8.24E-0B
Fom1aldehvde ITHI	50000	2.94E-04	2.35E+OO	2.94E-04	2.58E+OO	2.94E-04	2.58E+OO	7.35E-05	7.35E-05
Hexane, n- ITHI	110543	7.06E-03	5.65E+01	7.06E-03	6.18E+01	7.0BE-03	6.16E+01	1.7!IE-03	1.76E-03
Lead unlisted comoounds IH\	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
Menoanese unlisted comoounds /TH\	MNC-other	O.OOE+OO	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercurv vaoor /TH\	7439976	O.OOE+OO	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naothalene IH\	91203	2.39E-06	1.91E-02	2.39E-06	2.10E-02	2.39E-06	2.10E-02	5.SBE-07	5.98E--07
Nickel metal ITH\	7440020	O.OOE+OO	0.00E+00	0.00E+00	0.00E+00	O.OOE+OO	0.00E+00	0.00E+00	0.00E+00
Selenium comoounds IHI	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 ITH\	108683	1.33E-05	1.07E-01	1.33E-05	1.17E-01	1.33E-05	1.17E-01	3.33E-0B	3.33E-06
Total HAPs		7.3BE-03	5.90E+01 1	7.3BE-03	6.46E+01 I 6,18E+01	7.3BE-03	6.46E+01 I 16.18E+01 I	1.84E--03 1.76E-03	1.B4E-03 1.76E-03

TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/dav	lb/"r	lb/mmBtu uncontrolled	controlled
Acetaldehvde /THI	75070	5.96E-08	1.31E-06	4.77E-04	1.49E-06	1.49E-08
Acrolein H	107028	7.0BE-08	1.55E-06	5.65E-04	1.76E-08	1.76E-08
Ammonia TI	7664417	1.25E-02	2.76E-01	1.00E+02	3.14E-03	3.14E-03
Arsenic unlisted comnounds nH1	ASC-other	O.OOE+OO	O.OOE+OO	O.OOE+OO	0.00E+00	0.00E+00
Benzene 1TH	71432	8.24E-06	1.81E·04	6.59E-02	2.DBE-06	2.00E-06
Benzo a rene tTHI	50328	4.71E-09	1.04E-07	3,76E-05	UBE-011	1.16E-09
Berullium metal iunreacted TH	7440417	O.OOE+OO	O.OOE+OO	O.OOE+OO	0.00E+00	0.00E+00
Cadmium metal elemental unreacted1 fTHI	7440439	O.OOE+OO	O.OOE+OO	O.OOE+OO	0.00E+00	0.00E+00
Soluble chromate comnounds as chromium IVII enuivalent	SolCR6	O.OOE+OO	O.OOE+OO	O.OOE+OO	0.00E+00	0.00E+00
Fom1aldehvde THI	50000	2.94E-04	6.47E-03	2.35E+OO	7.35E-05	7.35E+05
Hexane, n- TH	110543	7.0BE-03	1.SSE-01	5.65E+01	1.76E--03	1.76E-03
Mannanese unlisted comnounds ITHI	MNC-other	O.OOE+OO	O.OOE+OO	O.OOE+OO	0.00E+00	0.00E+00
Mercuru vanor H	7439976	O.OOE+OO	O.OOE+OO	O.OOE+OO	0.00E+00	0.00E+00
Nickel metal 'THI	7440020	O,OOE+OO	O.OOE+OO	O.OOE+OO	0.00E+00	0.00E+00

B

GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS EPA MRR CALCULATION METHOD: TIER 1 metric tons/yr	metric tons/yr, C02e	short tons/yr	POTENTI8,b EMISSIONS short tons/yr	shorttons/yr, C02e
CARBON DIOXIDE (CO2)	1709.81	1,709.81	1,884.74	2,047.89	2047.69
METHANE (CH4)	3.22E-02	8.06E-01	3.55E-02	3.86E-02	9.66E-01
NITROUS OXIDE (N20)	3.22E-03	9.61E-01	3.55E-03	3.86E-03	1.15E+OO
		TOTALC02e (metric tonsl 1,711.58			TOTALC02e (short tons) 2,050.01

NOTE. C02e means CO2 equivalent
NOTE: The OAQ 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.

Emission factors based on AP-42 Fifth Edition, Cha ter 1 - Section 4 WebFIRE Factors, and the 2014 EPA National Emissions Invento Documentation.
Factor units are lb/106 scf

POLLUTANT	Uncontrolled		Conl1olled		Summary Per INPUT	
lbl10 [1] scf	Pre-NSPS	Post.NSPS	Low NOx Burner	'''	Uncontmllod	Controlled
NOx	''''	,,,	''''	'	0	0
CO	••	''	''	''	0	0
PM* (Total)	0.52	0.52	0.52	0.52	0	0
PM (Filterable)	0.	'''	'' '	'''	0	0
PM (Condensable)	0.32	0.32	0.32	0.32	0	0
PM2.5** (Total)	0.43	0.43	0.43	0.43	0	0
PM2.5 (Filterable)	0.11	0.11	0.11	0.11		0
SO_2	0.	0.,	0.	0.,		0
TOC	''	''	''	''		0
VOC	,,	''	''	''	0	0
Total HAP	1.89E+OO	1.B9E+OO	1.89E+OO	1.81E+OO	0.00E+00	0.00E+OO
Largest HAP (n-hexane)	3.20E+OO		3.20E+OO	3.20E+OO	0.00E+00	0.00E+OO
type	FALSE	FALSE	FALSE	FALSE		
control	TRUE	TRUE	FALSE	FALSE		
NSPS	TRUE	FALSE				
(type and control)	0	0	0	0		
(type and NSPS)	0	0				
SNCR reduction (%)	24	24	24	24		
y/n SNCR NOx (overall)						
Haps/Taps						
Acetaldehyde (H,T)***	0.00E-+{)[J	0OOE+OO	0.00E+OO	O.OOE+OO	0.00E+00	0.00E+OO
Acrolein (H,T)***	0,00E+-00	0.00E+00	0.OOE+OO	0.00E+OO	0.00E+00	0.00E+00
Ammonia (T)***	3.20E+o0	3.20E+OO	3.20E+OO	3.20E+OO	0.00E+00	0.00E+00
Arsenic (H,T)	2.00E-04	2.00E-04	2.00E-04	2.00E--04	0.00E+00	0,00E+OO
Benzene (H,T)	2.10E-03	2.10E-03	2.10E-03	2.10E-03	0.00E+00	0.00E+00
Benzo(a)pyrene (H,T)	1.20E-06	1.20E-06	1 20E-06	1.20E-06	0 00E+OO	0.00E+00
Beryllium (H,T)	1.20E-05	1.20E-05	1.20E-05	1 20E-05	0.00E+00	0.00E+OO
Cadmium (H,T)	1.10E-03	1.10E-03	1.10E-03	1.10E-03	0.00E+OO	0.00E+00
Chromium (VI) (H,T)	1.40E-03	1.40E-03	1.40E-03	1.40E-03	0.00E+00	0.00E'+OO
Cobalt (H)	B.40E.Q5	8.40E-05	B.40E-05	8.40E-05	0.00E+00	0.00E+00
Formaldehyde (H,T)****	7.SOE-02	7.50E-02	7.SOE-02	3.95E-05	0.00E+00	0.00E+00
n-Hexane (H,T)	1.BOE+OO	1.BOE+OO	1.BOE+OO	1.BOE+OO	0.00E+00	0.00E+00
Lead (H)	5 OOE-04	5.00E--04	5.00E-04	5.00E-04	0.00E+00	0.00E+00
Manganese (H,T)	3.80E-04	3,BOE--04	3.BOE-04	3.BOE-04	0.00E+00	0.00E+00
Mercury (H,T)	2.60E•04	260E--04	2.60E•04	2.BOE-04	0.00E+00	0.00E+00
Napthalene (H)	6.10E--04	6.10E--04	6.10E-04	6.10E-04	0.00E+00	0.00E+OO
Nickel (H,T)	2.10E-03	2.10E-03	2.10E'-03	2.10E-03	0.00E+OO	0.00E+00
Selenium (H)	2.40E-05	2.40E-05	2.40E-05	2.40E-05	0.00E+00	0.00E+00
Toluene (H,T)	3.40E-03	3.40E-03	3.40E-03	3.40E-03	0.00E+00	0.00E+00

ALL HAPS ARE LISTED IN GREEN

Emission Factors based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein, and ammonia. Units are lb/1[6] scf.
*PM (Total) and PM (Filterable) are assumed to be PM10. PM (Total) = PM (Filterable) + PM (Condensable).
**PM2.5 (Total) = PM2.5 (Filterable) + PM (Condensable).
***Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database.
**** The FGR control factor for formaldehyde is from the WebFIRE database.
The 2014 EPA NEI is located here: https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-documentation

GREENHOUSE GASES

POLLUTANT	Uncontrolled	Controlled		Scenario Summary Per INPUT	
lb/10[6] scf		Low NOx Burner	Low NOx/FOR	Uncontrolled	Controlled
NOx	100	50	3	mo	100
CO	84	''	''	--	84
PM* (Total)	0.52	0.52	0.5	0.52	0.52
PM (Filterable)	0.2	''	,•	0.,	0.2
PM (Condensable)	0.32	0.32	0.3	0.32	0,32
PM2.5** (Total)	0.43	0.43	0.4	0.43	0.43
PM2.5 (Filterable)	0.11	0.11	0.1	0.11	0.11
SO_2	0.6	0.,	0.	0.	0.
TOC	11	''	''	''	''
VOC	5.5	''	''	''	''
Total HAP	1.89E+00	1.B9E+00	1.81E+OO	1.89E+OO	'!i?ICWEHK
Largest HAP	3.20E+00	3.20E+O0	3.20E+OO	3.20E+OO	3.20E+OO
type	TRUE	TRUE	TRUE		
control	TRUE	FALSE	FALSE		
(type and control)	1	0			
SNCR reduction	24	24			
y/n SNCR NOx (overall)	100	50			
Haps/Taps					
Acetaldehyde (H,T)***	1.52E'-05	1.52E•Oli	1.52E-05	1.52E•05	1.52E-05
Acrolein (H,T)***	1.SOE-05	1.BOE.Qli	1,BOE-05	1.BOE-05	1.BOE-05
Ammonia (T)***	3.20E+OO	3.20E+OO	3.20E+OO	3.20E+OO	3.20E+OO
Arsenic (H,T)	2.00E-04	2.00E--04	2.00E-04	2.00E--04	2.00E-04
Benzene (H,T)	2.10E-03	1.20E-06	1.20E-06	2.10E-03	2.10E-03
Benzo(a)pyrene (H,T)	1.20E-06	1.20E-06	1.20E·06	1.20E-06	1.20E-06
Beryllium (H,T)	1.20E-05	1.20E-05	1.20E-05	1.20E-05	1.20E-05
Cadmium (H,T)	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03
Chromium (VI) (H,T)	1.40E-03	1.40E-03	1.40E-03	1.40E-03	1.40E-03
Cobalt (H)	8.40E-05	B.40E-05	B.40E-05	B,40E-05	8.40E.Q5
Formaldehyde (H,T)****	7.SOE-02	7.SOE-02	1.97E-04	7.SOE-02	7.50E-02
n-Hexane (H,T)	1.SOE+OO	1.BOE+OO	1.80E+OO	1.BOE+OO	1.BOE+00
Lead (H)	5.00E-04	5.00E-04	5.00E-04	5.00E-04	5.00E-04
Manganese (H,T)	3.BDE•04	3.BOE-04	3.BOE-04	3.SOE-04	3.BOE-04
Mercury (H,T)	2 60E-04	2.60E-04	2.60E-04	2.60E-04	2.60E-04
Napthalene (H)	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04
Nickel (H,T)	2.10E-03	2.10E-03	210E-03	2.10E-03	2.10E-03
Selenium (H)	2.40E-05	2.40E-05	2.40E-05	2.40E-05	2.40E-05
Toluene (H,T)	3.40E-03	3.4QE.Q3	3.40E-03	3.40E-03	3.40E-03

ALL HAPS ARE LISTED IN GREEN

Emission Factors based on AP-42, Chapter 1.4 (revised 7/98) except acetaldeh e, acrolaln, and ammon;a

Factor units are lb/10[6] scf.

*PM (Total) and PM (Filterable) are assumed to be PM10. PM Total = PM Filterable + PM Condensable .

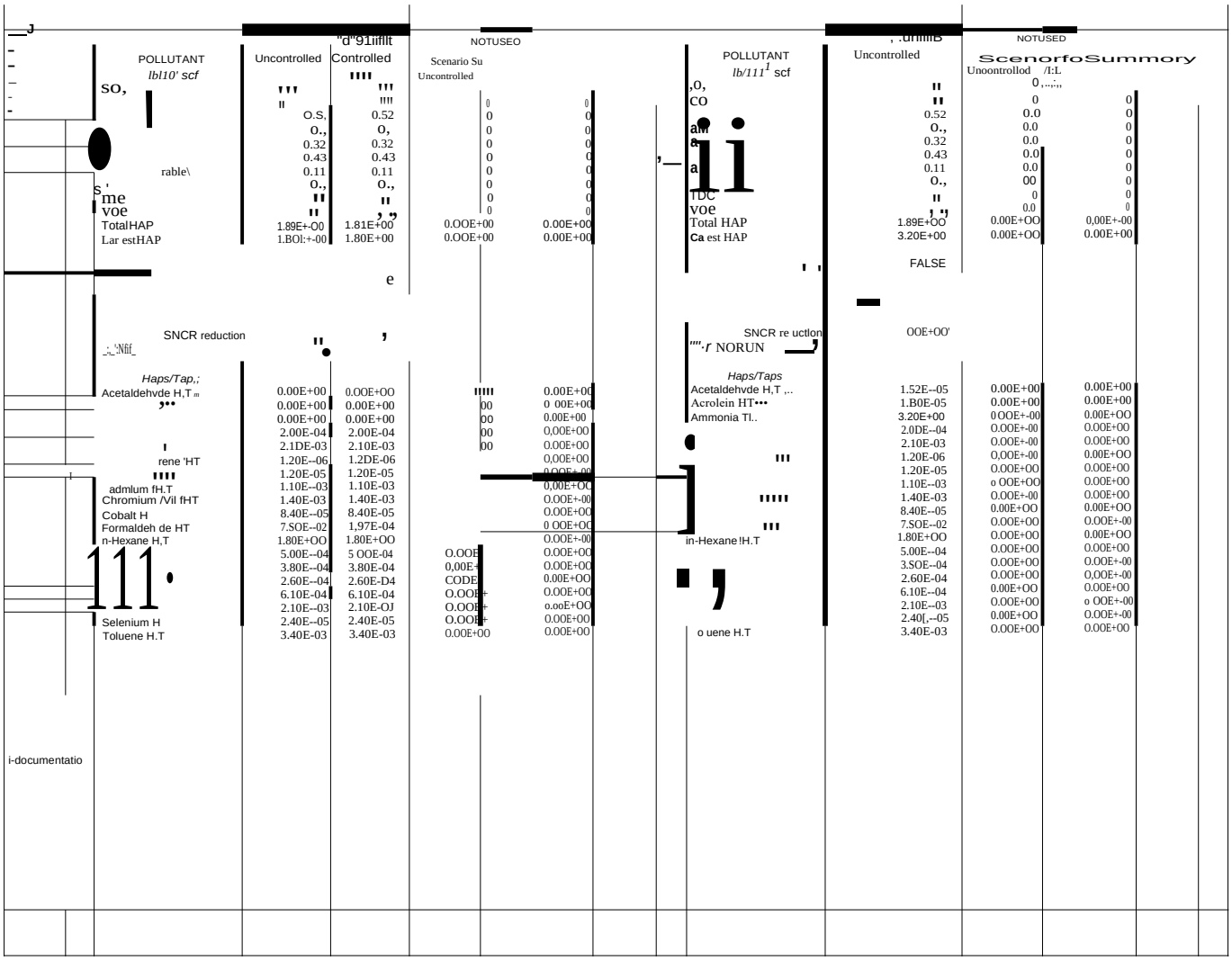
**PM2.5 (Total) = PM2.5 (Filterable) + PM (Condensable)

***Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database.

**** The FGR control factor for formaldehyde is from the WebFIRE database.

The 2014 EPA NEI is located here: https://www.epa.gov/air-emisslons-lnventorjes/2014-national-emlssions-lnvento

HHV Used:	TIER 1 DEFAULT: 1028	Btu/sci
Emission Factor, k /mmBTU	Eml«lon Fa<tors ba,ed onTo1'1•• C-1 ar>d C-2 or EPA Mor>dolory Repo l"g Rulo, 40CFR portOO, b ://NWW.epa.gov/cUmate<ho" elemi> :on.14ownloa4s09/GHG•MRR.f"l"alRule. 41	
53.02		
0.0010		
0.0001		
Repo1ted Carbon Content (if using TIER 3	net using -this is Tier 1	
Re ltedMolecularWel hi llusIngTIERJJ	notusing - this is Tier 1	



NATURAL GAS COMBUSTION EMISSIONS CALCULATOR RE"ISION N0110512017 -REVISION SCREEN

NC

!95 ..

Instructions: Enter amlaslon oouree/facl!llydata on the"INPUT' tab/se,.,.,n, Theai, emisolon rasults and summary of Input data arevlewad I printed on the "OUTPUT' tab/screen. Tha different tabs are on the bottom ofIhls screen.

This spreadsheet Is for your use only nnd should be used wm, caut!on. NCDEQ dO<IS not guarantee thaaccur&eyol Iha Information contained. This spreadsheet Is subject to continual revision and updating. Il is your =ponslbilltytobaawa,u of the most current Information avallablu. NCDEQ Is not responslble IOI' euors or omissions that may be contained herein,

ven;;on	Author	Re.ieions
		MovedSNCR selector from below the list of boiler types to above the list ofbotler types onInput oheet
		Addadfla.,a to lndJcatewhen heat input rated°""n1match boiler typeseler:tlon onInput eheet
NG20008		Added revision letter and dale to Input sheet.
		ModlftedInstructlons onInput sheet clalifying that".. may become a permit limit "only applies to usingtha spreadsheet for per mltapplIcalions
		ModifiedInstructions onInput sheet to include an 8lCf:lanation or howto calculate potential emissions.
		Added note on Input sheet for non-boiler/non-residential furnace users.
		ChangedIabel "Maximum Annual Fuel Throughput" onInputsheetlo"Annual Fuel Throughput"to minlmlzeconruslon re. thevalua expected for this cell
		Modlfied"Emlsslons Output' label on Input sheet to Include hours of operation
		Added disclaimer text to Input sheet.
		Removed "left over·HMA plant footnotes from EmInion Facto1s sheet
		Added Revisions sheet
NG20□0C		Removed emlsaionfactors for metals from small boUers and residential furnaces.
NG2 00□D 7 13112□□2	Janet Boyar	Put Into new format.
NG20□0E 2/20/20□3	Janet Boyer	Change fuel heat value to Btu/sci instead of Btulllbon output
		Change column heading on output from tons/yr to lbsfyr on HAP/TAP column heading
		Add "Total HAPS" line to output
		Add "Highast HAP" line to output
		ChangaTAP "lb/yr" calculation to be based on annual fuel lim;tation
		Correct formula In "Inputl85"
		Change Output PM lal>els to match emission factors
NG2000F 10/1412006	Delllse Hayes	Added Greenhouse Gas pollutant data, emissions, and factors to input, output, and factors s<:1eens
		Added Mercury in the toxic pollutant table since it is a toxic pollutant.
NG2000G 112212010	Su•hma Masemore	Revised GHG calculations such that the ACTUAL emissions calculated are consistent \\ith theEPA GHG Mandatory Reporting Rule
NG2000H 5124/2010	O.nlse Hayes	Updated cell for "Requested annual IlmItallon" on input •creen to default to maximum potential \\ith the option to enter facility apecific limitation.
NG20001 1130/2012	D•nise Hayes	Updated descriptions and CAS numt>ora of HAPffAP poll..tants. Added disclaimer to not use GHG emissions for PSD purposes
NG2000J 3126/2□12	DMiseHayes	Updated metal HAP/trodes emission facto,s for when boilers are r,ermitted to also bum fuel oil or coal. The metal HAP oxics ara only for dual fuel boilers.
		Added actual hours of operation item. Made miscellaneous corrections
NG200□K S/19/2012	Denise Hayes	Corracted factor for formaldehyde for large boiler., 'Mthout controt. Corrected requested limit usage onInput \ab to default to Iha potential usage.
NG2000L 10/812013	Denise Hayes	cor,ecled prlnt area ror input sheet. Corrected acn>leln, acetaldyhyde, ammonia, cobalt. and lead toahowupfor both ng only and ng/fuel oil
NG200□M 61221,!015	Denise Hayes	Upda\edcalculatlon for GHG emissions. GloP81 warming potential changed on 1/1114 for methane (21 to 25) and N20 (310 to29B)
NG200□N 1/512017	Denise Hayes	Updated particulate matter emission factors based on new data from EPA National Emissions Invento1y. Sprea<lsheettitled "Emission Factors for Particulal<l Malter from Natrual Ga• Combustion" https:IAww. rna.gov/•lr-emlsslons-1nventmiw@14-na.lional-emlsslons-lnvento.y-nei-documprrtation

Emission factors based on AP-42, Fffih Edition Cha ter 1 - Section 4 WebFIRE Factors, and the 2014 EPA National Emissions Inventor Documentation.
Factor units are lb/106 set,

	Lan iiiWilr	mlr»'&i ..1	BU.Iffi		NOT USED	
POLLUTANT	Uncontrolled		Controlled		Scenario Summary Per INPUT	
lb/10^6 scf	Pre-NSPS	Post-NSPS	Low NO>t Burner	SOR	Uncontrnllod	Controlled
NOx	"	"	','	"	0	0
CO	0.52	0.52	02	0.52	0	0
PM* (Total)	,''	' '			0	0
PM (Filterable)	0.32	0.32	0,32	0.32	0	0
PM (Condensable)						
PM2.5** (Total)	0.43	' "	0.43	0.43	0	0
PM2.5 (Filterable)	0.11	0.11	0.11	0.11	0	0
SO2	',•,	o.e	,",	,",	0	0
TOC	' '	"	' '	"		
VOC		, ',			0	0
Total HAP	1.89E+OO	1.69E+OO	1.89E+OO	1.B1E+OO	0.00E+OO	0.00E+OO
Largest HAP (n-hexane)	3.20E+OO	3.20E+OO	3.20E+OO	3.20E+OO	0.00E+OO	0.00E+OO
type	FALSE	FALSE	FALSE	FALSE		
control	TRUE	TRUE	FALSE	FALSE		
NSPS	TRUE	FALSE				
(type and control)	0	0	0	0		
(type and NSPS)	0	- 0				
SNCR reduction (%)	24	24	24	24		
y/n SNCR NOx (overall)	280	190	140	100		
Haps/Taps						
Acetaldehyde (H,T)***	0.GOE+OO	0.OOE+OO	0.00E+OO	0.OOE+OO	0,00E+OO	0.OOE+OO
Acrolein (H,T)***	0.00E+OD	O.OOE+OO	O.OOE+OO	0.OOE+OO	0 OOE+OO	0.00E+OO
Ammonia (T)***	3.20E+OO	3.20E+OO	3.20E+OO	3.20E+OO	0.00E+OO	O.OOE+OO
Arsenic (H,T)	2.00E-04	2.00E-04	2.00E-04	2.00E-04	0.00E+OO	O.OOE+OO
Benzene (H,T)	210E-03	2.10E-03	2.10E-03	2.10E-OO	0.00E+OO	0.00E+OO
Benzo(a)pyrene (H,T)	1.20E-06	1.2DE-06	1.20E-06	1.20E-06	0.00E+OO	O.OOE+OO
Beryllium (H,T)	1.20E-05	1.20E-05	1.20E-05	1.20E-05	o.OOE+OO	O.OOE+OO
Cadmium (H,T)	1.10E-03	1.1DE-03	1.10E-03	1.10E-03	0.00E+OO	O.OOE+OO
Chromium (VI) (H,T)	1.40E-03	1.40E-03	1.40E-03	1.40E-03	0.00E+OO	O.OOE+OO
Cobalt (H)	8.40E-05	8.40E-05	8.40E-05	8.4DE-05	0.00E+00	0,00E+OO
Formaldehyde (H,T)****	7.SOE-02	7.5DE-02	7.50E-02	3.95E--05	0.00E+OO	O.OOE+OO
n-Hexane (H,T)	1. BOE+OO	1.80E+OO	1.80E+OO	1.80E+OO	0.00E+OO	o.OOE+OO
Lead (H)	5.00E-04	5.00E-04	5.DOE-04	5.00E-04	0.00E+OO	O.OOE+OO
Manganese (H,T)	3.80E-04	3.80E-04	3.BOE-04	3.BOE-04	0,00E+OO	0.00E+OO
Mercury (H,T)	2.60E-04	2.60E-04	2.60E-04	2.SOE-04	0.00E+OO	O.OOE+OO
Napthalene (H)	6.10E-04	6.10E-04	6.10E-04	6.10E-04	0.00E+OO	O.OOE+OO
Nickel (H,T)	2.10E-03	2.10E-03	2.10E-03	2.10E-03	0.00E+OO	O.OOE+OO
Selenium (H)	2.40E-05	2.40E-05	2.40E-05	2.40E-05	0.00E+OO	O.OOE+OO
Toluene (H,T)	3.40E-03	3.40E-03	3.40E-03	3.40E-03	0.00E+00	O.OOE+OO

ALL HAPS ARE LISTED IN GREEN

Emission Factors based on AP--42, Cha er 1.4 revised 7198 exce t aoetaldehyde, aerolein and ammonia. Units are lb/1 sol.
'PM Total and PM Fliterabie are assumed to Di! PM10. PM Total = PM Fliterabie + PM Condenaable .
.. PM2.5 Total =PM2.5 Filterable + PM Condensable
.. Acetaldeh de, acrolein arid ammonia factors are from WebFIRE database
::'The FGR control factor for formaldehyde Is from the WebFIRE database.
The 2014 EPA NEI Is located here: ht! s-/lwww.e a ov/air-emlssions-inventories/2014-national-emissions-lnventor -nei-dooumentatis, _

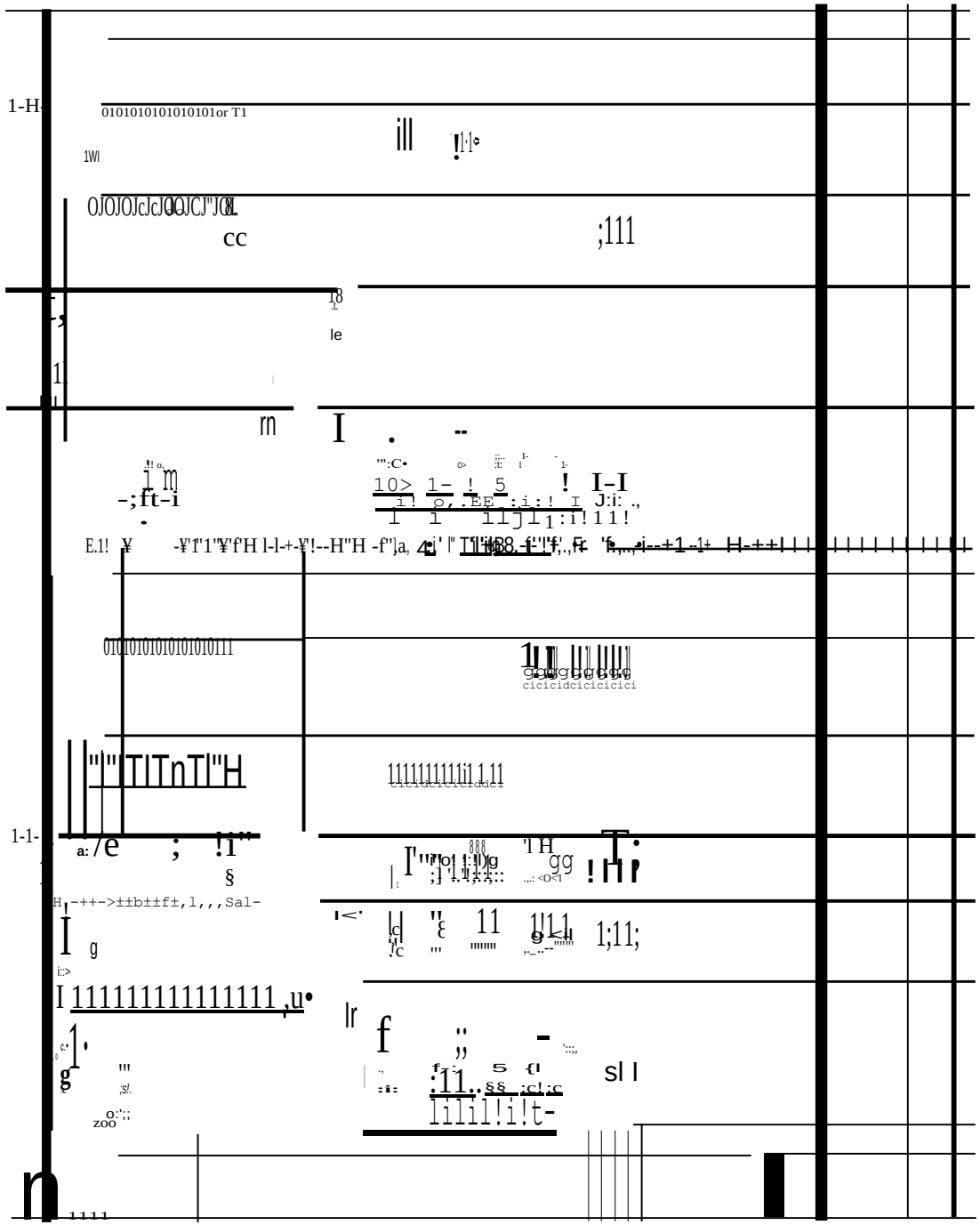
	M			FACTORS USED ON OUTPUT	
POLLUTANT	Uncontrolled	Controlled		Scenario Summar/ P•r INPUT	
lbl10'scr		Low NOx Burner	Low NO>tl FGR	Unoon1rnlled	'On!Wd"c3Y
NOx		50	3	100 r,,;;;t·- 0\\HOO	
CO	' "	84	8		
PM* (Total)	',•	0.52 0.2	0.5 0.2	0.52 0.2	0.52 0.2
PM (Filterable)					
PM (Condensable)	0.3	0 32	0.3	0.32	0.32
PM2.5** (Total)	0.4 0.1	0.43 0.11	0.4 0.1	0.43 0.11	0.43 0.11
PM2.5 (Filterable)					
SO2	",. ' '	0.6	0.	"b.e ' '	,", ' '
TOC		11	1		
VOC		5.5	5,		
Total HAP	1.BSE+OO	1.89E+o0	1.81E+OO	1.89E+00	
Largest HAP	3,20E+OO	3.20E+OO	3.20E+OO	3.20E+OO	3.20E+OO
'	TRUE	TRUE	TRU		
contro					
	TRUE	FALSE	''''''		
(type and					
SNCR reductio	"	"	"		
y/n SNGR NOx (overall)					
Haps/Taps					
Acetaldehyde (H,T)***	1.52E-05	1.52E-05	1.52E-05	1.52E-05	1.52E-05
Acrolein (H,T)***	1.80E-05	1.80E-05	1.BOE-05	1 BOE-05	1.SOE-05
Ammonia (T)***	3.2DE+OO	3.20E+OO	3.2DE+OO	3.20E+OO	3.20E+OO
Arsenic (H,T)	2.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04
Benzene (H,T)	2.10E-03	1.20E-06	1.20E-06	2.10E-03	2.10E-03
'''	1.20E-06	1.20E-06	1.20E-06	1.20E-06	1.20E-06
Beryllium (H,T)	1.20E-05	1.20E--05	1.20E-05	1.20E-05	1.20E-05
Cadmium (H,T)	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03
Chromium (VI) (H,T)	1.40E-03	140E--03	1.40E-03	1AOE-03	1.40E-03
Cobalt (H)	6.40E-05	8.40E-05	8.40E-05	8.40E-05	8.40E-05
Formaldehyde (H,T)****	7.50E-02	7.50E--02	1,97E-04	7.50E-02	7.50E-02
n-Hexane (H,T)	1.80E+OO	1.80E+OO	1.BOE+OO	1.80E+00	1.BOE+OO
Lead (H)	5.00E-04	5.00E-04	5OOE-04	5,00E-04	5.00E-04
'	3.80E-04	3.BOE-04	3.80E-04	3.80E-04	3.BOE-04
Mercury (H,T)	2.60E-04	2.BOE-04	2.60E-D4	2.60E-04	2.60E-04
Napthalene (H)	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04
Nickel (H,T)	210E-03	2.10E-03	2.10E-03	2.10E-03	2.10E-03
Selenium (H)	2 40E-05	2.40E-05	2.40E-05	2.40E-05	2.40E-05
Toluene (H,T)	3.40E-03	3.40E-03	3.40E-03	3.40E-03	3.4DE-03

ALL HAPS ARE LISTED IN GREE..

Emission Factors based on AP-42, Chapter 1.4 (revised 7 ... aGelaldeh da, acrotein, and ammonia
Factor units are lb/10^6 scf.
*PM (Total) and PM (Filterable) are assumed to be PM10
**PM2.5 (Total) = PM2.5 (Filterable) + PM (Condensable)
***Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database.
**** The FGR control factor for formaldehyde is from the \ ebFIREda\abase.
The 2014 EPA NEI is located here: https://www.epa.gov/alr-emissjons-inventories/2014-nallona em;ssions-lnvento -a

HHVUsed! | TIER 1 DEFAULT: 1026

	Emission Factor, k /mmBru	1:m1.. 1on Facio"' ba,ed on Tabios C:-1 aod C-2 or EPA MaodalOf/ R• riing Rule, 40 CFR part98, b ://w.M/.opa.qovlcl1matooho e/eml&0ionsldOWflload.09/GHel-MRR-flnalRule.pdl
oo,	53.02	
Methane	0.0010	
	0.0001	
Re-ltea Carbon Conten(lusing TIER 3)		not usin - lhisis TIER 1
Reported Molecular Weight If using TIER J)		notusing - lhisis Tier1



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

NC

Instruc1lons: Enter emission source/ facility data on the "INPUT' tablsc1een. The air emission results and summary of input data a1a viewed I printed on the "OUTPUT" tab/screen. Toe dlffe1ent tabs are on the bottom of this screan.

This sp,eadsheet Is fol your use or,ly and should be used with caut!Oll. NCDEQ dces not guarantee the accuracy of the Information contained. This spreadsheet Is subject toconUnual revision and updating. It Is your responsibility to be aware of the most current Jnfc1ma!10n avallabJe. NCDEQ Is not responsible for errors or omlsslcns that may be contained herein.

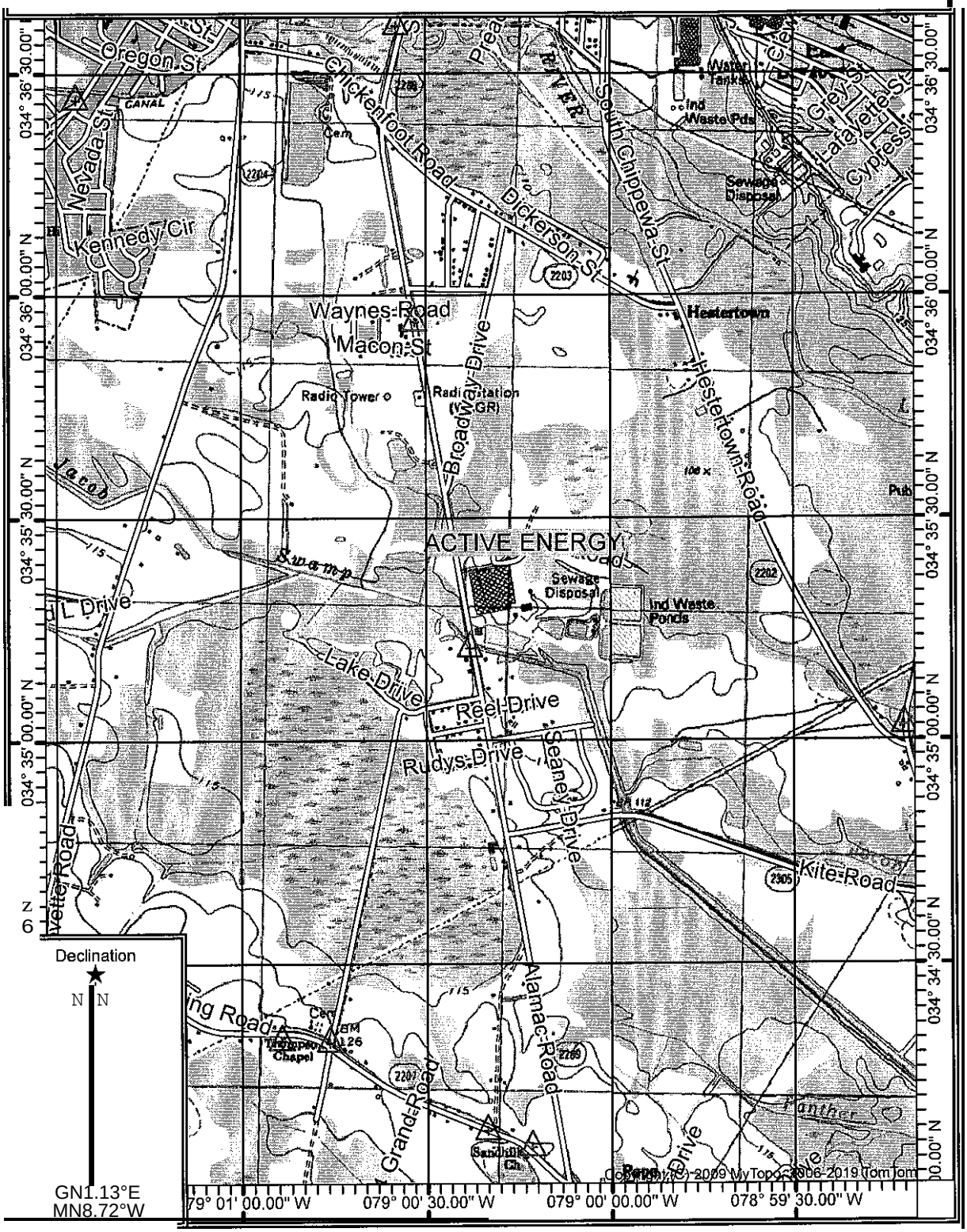
Ver_filon		Revis1ons
NG2000A		MovedSNCR selectcr from below the 11st of boiler types to abooe the list of boile,types on Input sheet.
		Added flags *to* indicatewhon heat Input rata doesn't matcl1 boiler l)'pe selection onInput sheet.
NG2000B		Added reoision letter and date to Input sheet
		Modified instructions onInput sheet clarifying that"... may become a permit limit . "' only applies to using the spreadsheet for permit applications.
		Modified Instructions onInput sheet to include an el<planation ot how to calculate potential emissions
		Added note onInput •heel for non-boile,/non•residen al furnace users
		Changed labal"Maximum Annual Fuel ThroughpUf' onInputsheatlo"' Annual Fuel Throughput" to minimize confusion re. the value expected for this coll
		Modified"Emissions Outpur' label onInput sheet to include hours of Of>!ll8 on.
		Added disclaimer text to Input sheet
		Removed"left over" HMA plant footnote• from Emission Factors sheot.
		Added Revisions sheet
NG2000C		Removed emission factors for metal• from small boil01s and residential rurneces
NG2000D 713112002 Janet Boyer		Put into new format.
NG2000E 2120/2003 Janet Boyer		Changeruel heat value to Btu/sd Instead of BtUllb on output
		Change column heading on output from tons/yr to lbs/yr on HI\PfTAP column heading
		Add "'Total HAPS" line *to* output
		Add "Highest HAP' line to output
		ChangeTAP""lb/yr"' calculation to bebas8<! on annual ruer limitation
		Cortecl formula In "'Inputl35"
		Change Output PM labels to match emission factors
NG2000F 10/14/2008 Denise Hayes		Added Greenhouse Gas pollutant data, emissions. and factors to Input, output. and factors screens.
		Added Mercury in thetox1c pollutant table since it is a toxic pollutant
NG2000G 1122/20,0 Sushma Masemore		Revised GHG calculations such that lhe ACTUAL emission• calculated are consistent ..;th the EPA GHG Mandatory Reporting Rule
NG2000H 512412010 Denise Hayes		Updated cell for "Requested annual limitation"' oninputscreen *tod*.rault to maximum potential ..;ththeoption to ente, facility specificllmltatlon
NG20□0I 1/30/2012 Denise Hayes		Updated descriptions and CAS numbers of HAP/TAP pollutants. Added disclaimer to not use GHG omissions for PSD purposes.
NG20□0J 3126.12012 Denise Hayes		Ui,dated metal HAP/toxics emission factors for when boilers are pe,mittedlo also burn fuel oil or coal. The metal HI\P o,«cs are only lo, dual fuel boilers
		Added actual hours of operation it...-,,. Made m;scellaneous correclions.
NG2000K 6/1912012 Denise Hayes		Correct&d factor for formaldehyde/or large boilers without control. Corrected requested IImil usage on Input tab to default to the potential u,age
NG2000L 101812013 Denise Hayes		corrected print area for input sheet. Corrected acrolein, acelaldyhyde, ammonia. cobalt. and leadto show up for both ng only and ngl fuel oil.
NG2000M 612212.015 Denise Hayes		Updated calculation for GHG emissions. Global warming potential changed on 111114101 methane (21 to25) and N20(310 to298).
NG2000N 1/5/2017 Denise Hayes		Updated particulate matter emission factors based on new data from EPA Nationel Emissions Inventory. Spreadsheet tltled "Emission Factors!or Pa iculate Matter from Natrual Gas Combustlon"'
		httw-U..... flP" gnv/air-emissions--inY"Dlllrifl/2014-netlonal-emission•-inven\RN-D"·-dOcumentation

FIGURES

FIGURE 1 - USGS Site Location Map

Map Name: SOUTHWEST LUMBERTON
Print Date: 10/24/19

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 voe 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 voe from the pressure cooker, so 20% of the voe emissions (0.21lb/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. Th_e emission factor for the Enviva Sampson pellet presses during the April 2017 stack testing was 0.50 lb/ODT (5.82 lb/hr voe 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 0.71lb/ODT. Using the expected throughput of 36,000 ODT/yr, this yields an expected voe emission of 12.78 tons/yr.

Based on this voe 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 Reeve,
Permits Coordinator
Division of Air Qnolitv, Fa:yett1rnille Regional Ofll'ke
225 Green. Street, Suire 714 910.433.3373 (Office)
Fayelle\'ille, NC 28301-5043 910.4Sj_?46? {Fax)
Gregory.Ree\-e,@ncdenr.gov

f1tt,:,J ..;\-.'/1S•,(':\> fa°'" ,, i:J,'<">,! irJ!I. ;!,;:/ .i,fl<hC!} to the North Carolina
m» I< ,,.cc\,Ss:/ x,;,:,,a ,,.;,cc:,s,

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

CAUTION: External email. Do not click links or open attachments unless you verify. Send all suspicious email as an **attachment to report.spam@nc.gov**

CHUCK PAKALA

From: "Reeves, Gregory W" <gregory.reeves@ncdenr.gov>
Date: Monday, October 28, 2019 8:26 AM
To: **"CHUCK PAK.ALA" <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 Reeve,
Pm?nits Coordi 1ator
Division of Air Quality, Fayetteville Regional Office
225 Green Stree Suire 714 910.433.3373 (Office)
Fayetle>,j]]e, NC 2&301-5043 910.485.7467 (Fax)
Grego,y.Reeves@nodem.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.

11.cetaldehyde
11.crolein
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

Oreg Re""""
Pmnllli Coordinator
Division of *AiI* Quolity, Fayetteville Re ional Office
225 Grn,n.Street,Suite 714 910.433.3373 (Office)
Fayetteville, NC 28301-5043 910.485.1461 (Fax)
Gregory.Reeves@ncdem.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:

I. Used facility wide voes (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 voe will be emitted from the Pressure Cooker process but as a conservative estimate, we used 100% voe 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 voes 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 voe 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

October 30, 2019

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. 03.62f2ffl3

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 the building was permitted in the past (**#03642R23).** 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(£) 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,

Antonio Esposito
Chief Operating Officer
910-547-1920

Enclosures:
Zoning Consistency Determination Form
Air Permit Application