STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

T&D Wood Energy LLC and
Player Design, Inc.
York County
Sanford, Maine
A-1129-71-B-A

Departmental
Findings of Fact and Order
Air Emission License
Amendment #1

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

T&D Wood Energy LLC (T&D Wood) and co-applicant Player Design, Inc. were issued Air Emission License A-1129-71-A-N on April 24, 2018, for the operation of emission sources associated with a wood pellet manufacturing facility. Throughout this air emission license, the term "T&D Wood" is used to refer jointly to both T&D Wood Energy LLC and Player Design, Inc.

The equipment addressed in this license amendment is located at 36 LeFrancois Lane in Sanford, Maine.

T&D Wood has requested an amendment to their license in order to make the following changes:

1. Remove the multiclone associated with the drying operation;
2. Change the stack height and diameter based on updated Ambient Air Quality Analysis; and
3. Add a portable engine (Pre-Grinder #1).

In addition to the changes requested by T&D Wood, this license clarifies the limits, recordkeeping, and testing requirements needed to demonstrate this facility can be classified as a synthetic minor source which meets ambient air quality standards. This license also incorporates changes to visible emission limits due to recent revisions to *Visible Emissions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 101.

B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

Wood Burning Equipment

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate (ton/hr)	Fuel Type	Pollution Control Equipment	Stack #
Burner #1	27.2[a]	2.75[a]	wood/biomass	None	1

[a] Based on firing wood with a moisture content of 45% by weight.

Process Equipment

Equipment	Finished Material Process Rate	Pollution Control Equipment	Stack #
Dryer #1	4.9 ODT/hr[b]	None	1

[b] Oven-dried tons per hour, based on an annual average of pellets produced.

Engines

Equipment	Max. Input Capacity (MMBtu/hr)	Rated Output Capacity (HP)	Fuel Type, % sulfur	Firing Rate (gal/hr)	Date of Manuf.	Date of Install.
Pre-Grinder #1	3.7	330	Distillate Fuel, 0.0015%	27	1999	2020

C. Definitions

Biomass means any biomass-based solid fuel that is not a solid waste. This includes, but is not limited to, wood residue; wood products (e.g., trees, tree stumps, tree limbs, bark, lumber, sawdust, sander dust, chips, scraps, slabs, millings, and shavings). This definition also includes wood chips and processed pellets made from wood or other forest residues. Inclusion in this definition does not constitute a determination that the material is not considered a solid waste. T&D Wood should consult with the Department before adding any new biomass type to its fuel mix.

Distillate Fuel means the following:

- Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
- Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
- Kerosene, as defined in ASTM D3699;
- Biodiesel, as defined in ASTM D6751; or
- Biodiesel blends, as defined in ASTM D7467.

Portable or Non-Road Engine means an internal combustion engine which is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. This definition does NOT include engines which remain or will remain at a location (excluding storage locations) for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period.

An engine is not a non-road (portable) engine if it remains or will remain at a location for more than 12 consecutive months or for a shorter period of time if sited at a seasonal source. A seasonal source is a source that remains in a single location for two years or more and which operates for fewer than 12 months in a calendar year. If an engine operates at a seasonal source for one entire season, the engine does not meet the criteria of a non-road (portable) engine and is subject to applicable stationary engine requirements.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the date this license was issued.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the "Significant Emission" levels as defined in the Department's *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Significant Emission Levels
PM	34.0	34.1	+0.1	100
PM_{10}	34.0	34.1	+0.1	100
SO_2	2.5	2.5	–	100
NO_x	16.1	19.1	+3.0	100
CO	28.9	29.6	+0.7	100
VOC	49.7	49.9	+0.2	50

This modification is determined to be a minor modification and has been processed as such.

E. Facility Classification

With the annual operating hours restriction on Burner #1, the fuel limit on Pre-Grinder #1, and the production rate limit on Dryer #1, the facility is licensed as follows:

- As a synthetic minor source of air emissions, because T&D Wood is subject to license restrictions that keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

Emissions of VOC are licensed above 80% of the major source threshold. Therefore, this facility is classified as an "80% Synthetic Minor" for the purpose of determining the minimum required compliance inspection frequency in accordance with Maine's Compliance Monitoring Strategy.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Burner #1/Dryer #1

Dryer #1 is a direct-fired, single-pass, rotary drum dryer with a maximum hourly throughput rate of approximately 5 ODT/hr. T&D Wood processes 100% softwood, primarily white pine.

Heat for Dryer #1 is provided by Burner #1 which has a maximum fuel throughput of 2.75 ton/hr of biomass with a moisture content averaging 45% by weight. This equates to a heat input capacity of 27.2 MMBtu/hr. Burner #1 shall fire a mixture of bark, green wood, sawdust, and dried fines from the process.

1. Removal of Multiclone

In the original BACT analysis included in A-1129-71-A-N (4/24/2018), T&D Wood proposed the installation and operation of a multiclone for control of particulate matter from Burner #1.

T&D Wood states that the original intent of the multiclone was as a product quality measure. Dryer #1 is a direct-contact dryer. Fly ash in Burner #1's exhaust can attach to the wood being dried and affect the ash content of the wood pellets produced, a parameter that can have a bearing on the grade and value of the pellets. However, T&D Wood ultimately decided that the multiclone was not necessary to meet quality standards, and the unit was never installed.

The original BACT analysis established emission limits of 9.20 lb/hr for both PM and PM_{10}. T&D Wood has conducted performance testing which demonstrates compliance with these limits without the multiclone. Therefore, the Department has determined that operation of the multiclone is not required provided T&D Wood can continue to demonstrate compliance with the particulate matter emission limits. The existing emission limits of 9.20 lb/hr for PM and PM_{10} are determined to be BACT for the exhaust from Burner #1 and Dryer #1.

Compliance with the PM emission limit shall be demonstrated through performance testing conducted annually with no more than 14 months between tests. Testing shall be performed under conditions that represent normal operation as defined by the facility's Operations Plan described later in this license.. Compliance with the PM_{10} emission limit is addressed in the next section.

2. Revisions due to Ambient Air Quality Analysis

In their application for Air Emission License A-1129-71-A-N (4/24/2018), T&D Wood submitted an ambient air quality analysis demonstrating the proposed facility would not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for SO_2, PM_{10}, $PM_{2.5}$, NO_2, or CO or to Class II increments for SO_2, PM_{10},

$PM_{2.5}$, or NO_2. However, the facility was constructed with building and stack dimensions that deviated from the original, modeled proposal such that compliance with increment standards for PM_{10} and $PM_{2.5}$ could no longer be demonstrated. In response, T&D Wood proposed increasing the height of the stack from 53 feet to 75 feet and establishing a $PM_{2.5}$ emission limit of 4.35 lb/hr. An ambient air quality analysis was performed incorporating these proposed changes, as described in Section III below, which successfully demonstrated compliance with NAAQS and increment standards. Therefore, these changes have been incorporated into T&D Wood's license.

Additionally, since the proposed $PM_{2.5}$ emission limit is significantly lower than the PM and PM_{10} emission limits and since exceedance of the PM_{10} or $PM_{2.5}$ emission limits could potentially indicate an exceedance of the corresponding increment standard, T&D Wood must demonstrate compliance with the PM_{10} and $PM_{2.5}$ emission limits.

The temperature and moisture content of the exhaust from Dryer #1 can potentially lead to conditions where water droplets may form inside the stack. In accordance with EPA guidance, the stack test methods used to determine the filterable portion of PM_{10} and $PM_{2.5}$ cannot be used when water droplets are present because the size separation of the water droplets may not be representative of the dry particle size released into the air.

Since direct measurement is the preferred method of compliance demonstration, T&D Wood shall attempt to demonstrate compliance through performance testing. However, if on the day of testing conditions in the exhaust which are out of the facility's control are not conducive to testing in accordance with the approved methods, compliance shall be determined by pro-rating the PM test results in accordance with the following equation:

$$PM_{10} \text{ or } PM_{2.5} = [PM\ filterable * FRAC] + PM\ condensable$$

Where *FRAC* is equal to the fraction of PM filterable that was PM_{10} or $PM_{2.5}$ (as applicable) at the most recent successful performance test. If no such test exists, *FRAC* shall be 0.42.

Whether or not exhaust conditions are conducive to testing shall be determined by the Department. Only a full series of three complete test runs shall be used in determining compliance with the emission limits. However, T&D shall report all data from any full or partial runs attempted.

If results of the most recent performance test are less than 75% of the applicable limit, the next performance test shall be completed within 3 years (no more than 38 months between tests). If the results of the most recent performance test are equal to or greater

than 75% of the applicable emission limit (but no greater than the limit), the next performance test shall be completed within 1 year (no more than 14 months between tests).

3. Synthetic Minor Status

Uncontrolled potential emissions of VOC from T&D Wood exceed 50 tpy of VOC. In order to be considered a synthetic minor source, T&D Wood's license must include restrictions which limit facility-wide VOC emissions to less than 50 tpy.

T&D Wood's original license limited VOC emissions from Stack #1 to 13.43 lb/hr and operation of Burner #1 (and therefore also Dryer #1) to 7,400 hours/year. These limits assume the maximum emission rate (13.43 lb/hr) occurs at the maximum dryer throughput (5 ODT/hr). However, the Department has determined that the dryer is not physically limited to a maximum processing rate of 5 ODT/hr. Additionally, recent performance testing indicates that the maximum emission rate would occur at 4.9 ODT/hr. (Test results indicated emissions of 10.53 lb/hr at 3.87 ODT/hr.) Therefore, in order to ensure emissions of VOC do not exceed major source thresholds, in addition to the short-term emission limit (lb/hr) and operation limit (hours/year), T&D Wood shall be limited to a production rate of 4.9 ODT/hr on a 12-month rolling average basis. Compliance shall be demonstrated by keeping monthly records of hours of operation and tons of pellets produced.

To calculate the 12-month rolling average, T&D Wood shall divide the sum of pellets produced in the previous 12 calendar months by the sum of operating hours in the previous 12 calendar months.

$$Production\ Rate = \frac{\sum Pellets}{\sum Hours}$$

Operating hours shall be determined based on records of the date and time of all startups and shutdowns of Burner #1. Operating hours are inclusive of startup and shutdown periods, i.e., operating hours begin when startup begins and end when shutdown ends.

For the purposes of this license, startup begins when flame is first introduced into Burner #1 and shutdown ends when the inlet temperature to Dryer #1 drops below 200 °F.

Compliance with the VOC emission limit (lb/hr) shall be demonstrated through performance testing conducted annually with no more than 14 months between tests. Testing shall be performed under conditions that represent normal operation as defined by the facility's Operations Plan described later in this license..

If results of the most recent performance test are less than 75% of the VOC emission limit, the next performance test shall be completed within 3 years (no more than 38 months between tests). If the results of the most recent performance test are equal to or greater than 75% of the VOC emission limit (but no greater than the limit), the next performance test shall be completed within 1 year (no more than 14 months between tests).

4. Operations Plan

Since commencing operation, the configuration and operation of T&D Wood's equipment has varied significantly over time making it difficult to determine whether operations remain consistent with those at the time of compliance demonstration. Therefore, no later than July 16, 2021, T&D Wood shall submit to the Department for approval a document (Operations Plan) outlining the facility configuration, raw material specifications, monitored parameters, and parameter ranges indicative of normal operation. T&D Wood shall operate in accordance with the Department-approved Operating Plan and shall not make changes to the Operations Plan without prior approval from the Department.

C. Pre-Grinder #1

T&D Wood operates a portable grinder with a 330 Hp engine (Pre-Grinder #1). Pre-Grinder #1 has a maximum heat input capacity of approximately 3.7 MMBtu/hr firing distillate fuel with a maximum sulfur content of 15 ppm (0.0015% sulfur by weight). The engine was manufactured in 1999.

Operation of Pre-Grinder #1 shall be limited to 10,000 gal/year (12-month rolling total basis) of distillate fuel. The neighboring lumber mill gets bulk deliveries of distillate fuel and charges T&D Wood for its usage based on "fuel keys" needed to dispense fuel from the tank. A monthly report is generated showing how much fuel was dispensed to each fuel key. A fuel key has been assigned to Pre-Grinder #1 so that its fuel can be tracked separately from other equipment. Compliance with the annual fuel limit shall be demonstrated by monthly reports of the fuel dispensed to the Pre-Grinder #1 fuel key.

1. BACT Findings

The BACT emission limits for Pre-Grinder #1 are based on the following:

PM/PM_{10}	- 0.12 lb/MMBtu from 06-096 C.M.R. ch. 103
SO_2	- combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
NO_x	- 4.41 lb/MMBtu from AP-42 Table 3.3-1 dated 10/96
CO	- 0.95 lb/MMBtu from AP-42 Table 3.3-1dated 10/96
VOC	- 0.35 lb/MMBtu from AP-42 Table 3.3-1 dated 10/96

Visible Emissions - 06-096 C.M.R. ch. 101

The BACT emission limits for Pre-Grinder #1 are the following:

Unit	Pollutant	lb/MMBtu
Pre-Grinder #1	PM	0.12

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Pre-Grinder #1	0.44	0.44	0.01	16.32	3.52	1.30

Visible emissions from Pre-Grinder #1 (engine) shall not exceed 20% opacity on a six-minute block average basis except for periods of startup during which time T&D Wood may comply with the following work practice standards in lieu of the numerical visible emissions standard.

a. Maintain a log (written or electronic) of the date, time, and duration of all engine startups.

b. Operate the engine in accordance with the manufacturer's emission-related operating instructions.

c. Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations shall apply.

d. At all times, operate the engine and any associated air pollution control equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

2. New Source Performance Standards (NSPS)

Pre-Grinder #1 is <u>not</u> subject to *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines,* 40 C.F.R. Part 60, Subpart IIII. Its engine is both portable and manufactured prior to the applicability date of April 1, 2006.

3. National Emission Standards for Hazardous Air Pollutants (NESHAP): 40 C.F.R. Part 63, Subpart ZZZZ

   Pre-Grinder #1 not subject to *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines,* 40 C.F.R. Part 63, Subpart ZZZZ.

   The definition in 40 C.F.R. § 1068.30 states that a non-road engine is an internal combustion engine that meets certain criteria, including: "Portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform." The regulation further states at 40 C.F.R. § 1068.30 that an engine is not a non-road engine if it remains or will remain at a location for more than 12 consecutive months or for a shorter period of time if sited at a seasonal source. A seasonal source is a source that remains in a single location for two years or more and which operates for fewer than 12 months in a calendar year. If an engine operates at a seasonal source for one entire season, the engine does not meet the criteria of a non-road engine and is subject to applicable stationary engine requirements. [40 C.F.R. § 63.6585]

   Pre-Grinder #1 is considered a non-road engine, as opposed to a stationary engine, since Pre-Grinder #1 is portable and will be moved to various sites at the facility.

D. Visible Emissions

In March 2019, the Department updated the standards in *Visible Emissions Regulation*, 06-096 C.M.R. ch. 101. The new standards went into effect on January 1, 2020. This amendment updates all visible emission limits to the currently applicable standards. Below is a summary of visible emission standards applicable to T&D Wood with the exception of the engine associated with Pre-Grinder #1 which is already addressed above.

Visible emissions from Stack #1 shall not exceed 20% opacity on a six-minute block average basis except for periods of startup, shutdown, or malfunction during which time T&D Wood may comply with the following work practice standards in lieu of the numerical visible emissions standard:

1. Maintain a log (written or electronic) of the date, time, and duration of all operating time, startups, shutdowns, and malfunctions for Burner #1.

2. Develop and implement a written startup and shutdown plan for the Burner #1.

3. The duration of unit startups, shutdowns, or malfunctions shall each not exceed one hour per occurrence.

4. Operate Burner #1 at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

[06-096 C.M.R. ch. 115, BACT]

T&D Wood shall not cause visible emissions (not including water vapor), measured as any opacity totaling 12 minutes or longer in any one-hour period, to occur at ground level over any land or surrounding any buildings not owned by T&D Wood. Opacity under this condition shall be determined pursuant to the Environmental Protection Agency's (EPA's) *Method 22 - Visual determination of fugitive emissions from material sources and smoke emissions from flares,* 40 C.F.R. Part 60, Appendix A. [06-096 C.M.R. ch. 115, BACT]

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 3(B)(4)]

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity on a five-minute block average basis.
[06-096 C.M.R. ch. 101, § 3(C)]

E. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee. Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included. Maximum potential emissions were calculated based on the following assumptions:

- Operating Burner #1 and Dryer #1 at maximum emissions for 7,400 hours/year;
- A production limit of 4.9 ODT/hr on an annual average; and
- Firing 10,000 gal/year in Pre-Grinder #1.

Please note, this information provides the basis for fee calculation only and should not be construed to represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC
Burner #1/Dryer #1	34.0	34.0	16.1	2.5	16.1	28.9	49.7
Pre-Grinder #1	0.1	0.1	–	–	3.0	0.7	0.2
Total TPY	**34.1**	**34.1**	**16.1**	**2.5**	**19.1**	**29.6**	**49.9**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

A. Overview

A refined modeling analysis was performed to show that emissions from T&D Wood will not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for SO_2, PM_{10}, $PM_{2.5}$, NO_2, or CO or to Class II increments for SO_2, PM_{10}, $PM_{2.5}$ or NO_2.

Since T&D Wood is a minor source, it has been determined by the Department that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

B. Model Inputs

The AERMOD refined dispersion model was used to address NAAQS and increment impacts.

All modeling was performed in accordance with all applicable requirements of the Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) and the United States Environmental Protection Agency (EPA).

A valid five-year hourly off-site meteorological database was used in the AERMOD refined modeling analysis. The following parameters and their associated heights were collected at the Sky Haven Airport monitoring site, located in Rochester NH, during the five-year period 2012-2016:

TABLE III-1: Meteorological Parameters and Collection Heights

Parameter	Sensor Height
Wind Speed	7.62 meters
Wind Direction	7.62 meters
Temperature	2 meters

The Sky Haven Airport Automated Surface Observing System (ASOS) station was selected as the primary meteorological surface data site due to:

- close proximity to T&D Wood (25 kilometers);
- surface data is meteorologically representative of application site;
- ASOS station and application site share similar characteristics;
- instrumentation and exposure of the meteorological monitoring site; and
- completeness of data set which meets all minimum data recovery requirements.

When possible, missing surface meteorological data collected at the Sky Haven Airport site were interpolated or coded as missing as appropriate, per EPA guidance.

Surface meteorological data was combined with concurrent hourly cloud cover and upper-air data obtained from the Gray National Weather Service (NWS). Missing cloud cover and/or upper-air data values were interpolated or coded as missing, per EPA guidance.

All necessary representative micrometeorological surface variables for inclusion into AERMET (surface roughness, Bowen ratio, and albedo) were calculated using the AERSURFACE utility program and from procedures recommended by EPA.

Point-source parameters used in the modeling for T&D Wood are listed in Table III-2.

TABLE III-2: T&D Wood Point Source Stack Parameters

Stack	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height (m)	Stack Diameter (m)	UTM Easting NAD83 (m)	UTM Northing NAD83 (m)
CURRENT/PROPOSED						
• Stack #1 (Dryer Stack)	71.02	22.86	19.15	1.02	363574	4809140
2012 BASELINE ($PM_{2.5}$ INCREMENT)						
• T&D Wood did not exist during the 2012 baseline year, no $PM_{2.5}$ credits to be taken.						
1987 BASELINE (NO_2 INCREMENT)						
• T&D Wood did not exist during the 1987 baseline year, no NO_2 credits to be taken.						
1977 BASELINE (SO_2/PM_{10} INCREMENT)						
• T&D Wood did not exist during the 1977 baseline year, no SO_2/PM_{10} credits to be taken.						

Emission parameters for T&D Wood for NAAQS and Class II increment modeling are listed in Table III-3. Emission parameters for T&D Wood are based on the maximum license allowed operating configuration.

For the purpose of determining maximum predicted impacts, the following assumptions were used:

- all NO_X emissions were conservatively assumed to convert to NO_2 (EPA Tier I Method);
- all particulate emissions were conservatively assumed to convert to PM_{10}; and
- all $PM_{2.5}$ emissions were explicitly modeled as $PM_{2.5}$.

TABLE III-3: Stack Emission Parameters

Stack	Averaging Periods	SO_2 (g/s)	PM_{10} (g/s)	$PM_{2.5}$ (g/s)	NO_x (g/s)	CO (g/s)	Stack Temp (K)	Stack Velocity (m/s)
MAXIMUM LICENSE ALLOWED								
• Stack #1 (Dryer Stack)	All	0.008	1.159	0.548	0.548	0.983	393.15	8.77
2012 BASELINE ($PM_{2.5}$ INCREMENT)								
• T&D Wood did not exist during the 2012 baseline year, no $PM_{2.5}$ credits to be taken.								
1987 BASELINE (NO_2 INCREMENT)								
• T&D Wood did not exist during the 1987 baseline year, no NO_2 credits to be taken.								
1977 BASELINE (SO_2/PM_{10} INCREMENT)								
• T&D Wood did not exist during the 1977 baseline year, no SO_2/PM_{10} credits to be taken.								

C. Single Source Modeling Impacts

The AERMOD model results for T&D Wood alone are shown in Table III-4. Maximum predicted impacts that exceed their respective significance level are indicated in boldface type. For comparison to the Class II significance levels, the impacts for all pollutants/averaging periods were conservatively based on the maximum High-1st-High predicted values. No additional refined modeling was required for pollutants that did not exceed their respective significance levels.

TABLE III-4: Maximum AERMOD Impacts from T&D Wood Alone

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Significance Level ($\mu g/m^3$)
SO_2	1-hour	0.25	363350	4809150	73.90	7.9
	3-hour	0.22	363350	4809150	73.90	25
PM_{10}	24-hour	**22.87**	363550	4808950	70.00	5
$PM_{2.5}$	24-hour	**8.03**	363500	4808900	70.20	1.2
	Annual	**0.51**	363800	4809000	70.00	0.2
NO_2	1-hour	**17.38**	363350	4809150	73.90	7.5
	Annual	0.55	363800	4809050	69.80	1
CO	1-hour	33.64	363350	4809150	73.90	2,000
	8-hour	23.34	363400	4809150	74.80	500

D. Combined Source Modeling Impacts

As indicated in boldface type in Table III-4, other sources not explicitly included in the modeling analysis must be accounted for by using representative background concentrations for the area.

Background concentrations, listed in Table III-5, are derived from representative rural background data for use in the Southern Maine region.

TABLE III-5: Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)	Monitoring Site
SO_2	1-hour	24	Presque Isle
	3-hour	18	Acadia National Park
	24-hour	11	
	Annual	1	
PM_{10}	24-hour	41	Bridgton
	Annual	9	
$PM_{2.5}$	24-hour	17	Greenville
	Annual	5	
NO_2	1-hour	43	Presque Isle
	Annual	4	
CO	1-hour	365	Acadia National Park
	8-hour	322	

The Department examined other nearby sources to determine if any impacts would be significant in or near the T&D Wood significant impact area. Due to the location of T&D Wood, extent of the predicted significant impact area, and other nearby source's emissions, the Department has determined that no other sources would be included in combined-source refined modeling.

The maximum AERMOD modeled impacts, which were explicitly normalized to the form of their respective NAAQS, were added with conservative rural background concentrations to demonstrate compliance with NAAQS, as shown in Table III-6.

Because all pollutant/averaging period impacts using this method meet NAAQS, no further NAAQS modeling analyses need to be performed.

TABLE III-6: Maximum Combined Source Impacts (μg/m³)

Pollutant	Averaging Period	Max Impact (μg/m³)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Back-Ground (μg/m³)	Total Impact (μg/m³)	NAAQS (μg/m³)
SO_2	1-hour	0.20	363400	4809150	74.80	24	24.20	196
	3-hour	0.21	363400	4809150	74.80	18	18.21	1,300
PM_{10}	24-hour	16.96	363550	4808950	70.00	41	57.96	150
$PM_{2.5}$	24-hour	3.43	363500	4808900	70.20	17	20.43	35
	Annual	0.51	363800	4808900	70.00	5	5.51	12
NO_2	1-hour	13.93	363400	4809150	74.80	43	56.93	188
	Annual	0.55	363800	4809050	69.80	4	4.55	100
CO	1-hour	33.12	363350	4809150	73.90	365	398.12	40,000
	8-hour	21.79	363550	4808950	70.00	322	343.79	10,000

E. Class II Increment

The AERMOD model was used to predict maximum Class II increment impacts.

Results of the Class II increment analysis are shown in Tables III-7. All modeled maximum increment impacts were below all increment standards. Because all predicted increment impacts meet increment standards, no additional Class II SO_2, PM_{10}, $PM_{2.5}$, and NO_2 increment modeling needed to be performed.

TABLE III-7: Class II Increment Consumption

Pollutant	Averaging Period	Max Impact (μg/m³)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Increment (μg/m³)
SO_2	3-hour	0.21	363400	4809150	74.80	512
	24-hour	0.12	363550	4808950	70.00	91
	Annual	0.01	363800	4809050	69.80	20
PM_{10}	24-hour	16.96	363550	4808950	70.00	30
	Annual	1.16	363800	4809050	69.80	17
$PM_{2.5}$	24-hour	8.02	363550	4808950	70.00	9
	Annual	0.55	363800	4809050	69.80	4
NO_2	Annual	0.55	363800	4809050	69.80	25

F. Summary

In summary, it has been demonstrated that T&D Wood in its proposed configuration will not cause or contribute to a violation of any SO_2, PM_{10}, $PM_{2.5}$, NO_2, or CO NAAQS or to Class II increments for SO_2, PM_{10}, $PM_{2.5}$, or NO_2.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-1129-71-B-A subject to the conditions found in Air Emission License A-1129-71-A-N and the following conditions.

Severability. The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace Condition (16) of Air Emission License A-1129-71-A-N:

(16) **Burner #1 & Dryer #1**

A. Burner #1 is licensed to fire wood/biomass. [06-096 C.M.R. ch. 115, BACT]

B. Burner #1 shall not exceed 7,400 hours of operation on a 12-month rolling total basis. Compliance shall be demonstrated by the periodic monitoring and recordkeeping required by this license.

Operating hours shall be determined based on records of the date and time of all startups and shutdowns of Burner #1. For the purposes of this license, startup begins when flame is first introduced into Burner #1 and shutdown ends when the inlet temperature to Dryer #1 drops below 200 °F. Operating hours are inclusive of startup and shutdown periods, i.e., operating hours begin when startup begins and end when shutdown ends. [06-096 C.M.R. ch. 115, BACT]

C. T&D Wood shall not exceed a production limit of 4.9 ODT/hr on a 12-month rolling average basis. Compliance shall be demonstrated by monthly records of hours of operation and tons of pellets produced.

To calculate the 12-month rolling average, T&D Wood shall divide the sum of pellets produced in the previous 12 calendar months by the sum of operating hours in the previous 12 calendar months.

$$Production\ Rate = \frac{\sum Pellets}{\sum Hours}$$

Operating hours shall be determined based on records of the date and time of all startups and shutdowns of Burner #1. For the purposes of this license, startup begins when flame is first introduced into Burner #1 and shutdown ends when the inlet temperature to Dryer #1 drops below 200 °F. Operating hours are inclusive of startup and shutdown periods, i.e., operating hours begin when startup begins and end when shutdown ends. [06-096 C.M.R. ch. 115, BACT]

D. Emissions from Stack #1 shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Emission Unit	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Burner #1 & Dryer #1 (combined)	9.20	9.20	4.35	0.68	4.35	7.80	13.43

E. Visible emissions from Stack #1 shall not exceed 20% opacity on a six-minute block average basis, except for periods of startup, shutdown, or malfunction during which time T&D Wood may comply with the following work practice standards in lieu of the numerical visible emissions standard. [06-096 C.M.R. ch. 115, BACT]

1. Maintain a log (written or electronic) of the date, time, and duration of all operating time, startups, shutdowns, and malfunctions for Burner #1.

2. Develop and implement a written startup and shutdown plan for Burner #1.

3. The duration of unit startups, shutdowns, or malfunctions shall each not exceed one hour per occurrence.

4. Operate Burner #1 at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on

information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

F. The inlet temperature to Dryer #1 shall not exceed 650ºF on a 1-hr average basis. Compliance shall be demonstrated by the periodic monitoring and recordkeeping required by this license. [06-096 C.M.R. ch. 115, BACT]

G. Burner #1 and Dryer #1 shall exit through a cyclone and then Stack #1 except for periods of startup, shutdown, and malfunction. Stack #1 shall be raised to a height of 75-feet above ground level stack no later than July 30, 2021.
[06-096 C.M.R. ch. 115, BACT]

H. During periods of startup, shutdown, or malfunction, the bypass stack may be used for Burner #1 for no more than one hour for any event. Compliance shall be demonstrated by the periodic monitoring and recordkeeping required by this license.
[06-096 C.M.R. ch. 115, BACT]

I. No later than July 16, 2021, T&D Wood shall submit to the Department for approval a document (Operations Plan) outlining the facility configuration, raw material specifications, monitored parameters, and parameter ranges indicative of normal operation. T&D Wood shall operate in accordance with the Department-approved Operating Plan and shall not make changes to the Operations Plan without prior approval from the Department. [06-096 C.M.R. ch. 115, BACT]

J. Performance Testing

1. T&D Wood shall conduct performance tests on Stack #1 for PM, VOC, and opacity to demonstrate compliance with the licensed emission limits (lb/hr and opacity) using EPA stack test methods specified in the table below or other methods approved by the Department. The next performance test for all pollutants/standards listed above is due no later than September 30, 2021.

Pollutant	EPA Test Method
PM	Method 5
VOC	Methods 25A
Opacity	Method 9

2. T&D Wood shall conduct performance tests on Stack #1 for PM_{10} and $PM_{2.5}$ to demonstrate compliance with the licensed emission limits (lb/hr) using EPA Test Methods 201 or 201A and 202 or other methods approved by the Department. The next performance test for all pollutants listed above is due no later than September 30, 2021.

If on the day of testing conditions in the exhaust which are out of the facility's control are not conducive to testing in accordance with the approved methods, compliance shall be determined by pro-rating the PM test results in accordance with the following equation:

$$PM_{10} \text{ or } PM_{2.5} = [PM\ filterable * FRAC] + PM\ condensable$$

Where *FRAC* is equal to the fraction of PM filterable that was PM_{10} or $PM_{2.5}$ (as applicable) at the most recent successful performance test. If no such test exists, *FRAC* shall be 0.42.

Whether or not exhaust conditions are conducive to testing shall be determined by the Department. Only a full series of three complete test runs shall be used in determining compliance with the emission limits. However, T&D Wood shall report all data from any full or partial runs attempted.
[06-096 C.M.R. ch. 115, BACT]

3. Testing shall be performed under conditions that represent normal operation as demonstrated by operating in accordance with the facility's Department-approved Operations Plan. Testing shall be performed at a process rate equivalent to 80% or greater than the facility's production limit (i.e., ≥ 80% of 4.9 ODT/hr)
[06-096 C.M.R. ch. 115, BACT]

4. T&D Wood shall conduct repeat performance tests on the following schedule:

   a. If the results of the most recent performance test are less than 75% of the applicable limit/standard, the next performance test shall be completed within 3 years (no more than 38 months between tests).
   b. If the results of the most recent performance test are equal to or greater than 75% of the applicable limit/standard (but no greater than the limit/standard), the next performance test shall be completed within 1 year (no more than 14 months between tests).

   This schedule applies to each limit/standard individually, e.g., if only VOC results are equal to or greater than 75% of the limit, only performance testing for VOC need be conducted in the following year. [06-096 C.M.R. ch. 115, BACT]

5. T&D Wood shall record the amount of fuel fired (tons) in Burner #1 for at least six consecutive hours on the day of testing and determine the average hourly fuel use (ton/hr) for the day of testing. This data shall be included in the stack test report. [06-096 C.M.R. ch. 115, BACT]

6. Concurrent with testing, T&D Wood shall collect representative samples of the fuel and determine the moisture content using a test method approved by the Department. A minimum of one sample per test run shall be collected. This data shall be included in the stack test report. [06-096 C.M.R. ch. 115, BACT]

7. T&D Wood shall record the tons of pellets produced for at least six consecutive hours on the day of testing and determine the average hourly pellet production (ton/hr) for the day of testing. This data shall be included in the stack test report. On the day of performance testing, the facility shall be operated to minimize any changes to the levels of dry wood storage between Dryer #1 and the pelletizer. [06-096 C.M.R. ch. 115, BACT]

8. Concurrent with testing, T&D Wood shall collect representative samples of the pellets produced and determine the moisture content using a test method approved by the Department. A minimum of one sample per test run shall be collected. This data shall be included in the stack test report. [06-096 C.M.R. ch. 115, BACT]

The following shall replace Conditions (17)(E) and (F) of Air Emission License A-1129-71-A-N:

(17) **Wood Handling and Pellet Processing Operations**

E. Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity on a five-minute block average basis. [06-096 C.M.R. ch. 101, § 3(C)]

F. Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 3(B)(4)]

The following shall replace Condition (19) of Air Emission License A-1129-71-A-N:

(19) **Periodic Monitoring and Recordkeeping**

T&D Wood shall monitor, record, and keep the following records, as applicable:

1. Hours of operation of Burner #1 on a monthly and 12-month rolling total basis [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 137];
2. Records for Burner #1 of all startups, shutdowns, and malfunctions including date, time, duration, cause, method utilized to minimize duration of the event and/or to prevent reoccurrence, and whether the bypass stack was utilized and for how long [06-096 C.M.R. ch. 115, BACT];
3. Dryer #1 inlet temperature on a continuous basis and calculated 1-hr block averages [06-096 C.M.R. ch. 115, BACT];

4. Tons of pellets produced on a monthly and calendar year basis [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 137];
5. Monthly calculations of the 12-month rolling average production rate (OTD/hr) as described in this license [06-096 C.M.R. ch. 115, BACT];
6. Records of monthly inspections of the cyclone, baghouse, and all fabric filters [06-096 C.M.R. ch. 115, BACT];
7. Records of any cyclone, baghouse, or fabric filter malfunction and all maintenance activities [06-096 C.M.R. ch. 115, BACT]; and
8. Monthly records of fuel use for Pre-Grinder #1. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 137]

The following are New Conditions:

(22) **Pre-Grinder #1**

A. Pre-Grinder #1 is licensed to fire distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight). Compliance shall be demonstrated by fuel delivery receipts from the supplier, fuel supplier certification, certificate of analysis, or testing of the tank containing the fuel to be fired. [06-096 C.M.R. ch. 115, BACT]

B. Pre-Grinder #1 shall not exceed a fuel use of 10,000 gal/year on a 12-month rolling total basis. Compliance shall be demonstrated by monthly records of the fuel dispensed to the Pre-Griner #1 fuel key. [06-096 C.M.R. ch. 115, BACT]

C. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
Pre-Grinder #1	PM	0.12	06-096 C.M.R. ch. 103 § (2)(B)(1)(a)

D. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Pre-Grinder #1	0.44	0.44	0.01	16.32	3.52	1.30

E. Visible Emissions

Visible emissions from Pre-Grinder #1 shall not exceed 20% opacity on a six-minute block average basis except for periods of startup during which time T&D may comply with the following work practice standards in lieu of the numerical visible emissions standard. [06-096 C.M.R. ch. 101, § 3(A)(4)]

1. Maintain a log (written or electronic) of the date, time, and duration of all generator startups.

2. Operate Pre-Grinder #1 in accordance with the manufacturer's emission-related operating instructions.

3. Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations shall apply.

4. Operate Pre-Grinder #1 and any associated air pollution control equipment at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

DONE AND DATED IN AUGUSTA, MAINE THIS 20th DAY OF MAY, 2021.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____ for _____
MELANIE LOYZIM, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-1129-71-A-N.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 9/14/2020
Date of application acceptance: 10/6/2020

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Muzzey, Bureau of Air Quality.

FILED

MAY 20, 2021

State of Maine
Board of Environmental Protection