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-A-N

Departmental
Findings of Fact and Order
Air Emission License

FINDINGS OF FACT

After review of the air emission license 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), along with co-applicant Player Design, Inc., has applied for an Air Emission License for the operation of emission sources associated with a proposed 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 will be located on New Dam Road in Sanford, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Fuel 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	Multiclone	1

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

Process Equipment

Equipment	Max Finished Material Process Rate	Pollution Control Equipment	Stack #
Dryer #1	5 ODT/hr[b]	Cyclone	1
Pelletizer	6 ton/hr	None	N/A
Pellet Cooler	6 ton/hr	None	N/A
Hammermills	N/A	N/A	N/A
Conveyors	N/A	Covers	N/A

[b] Based on converting to a moisture content of 10% by weight and referred to as oven-dried tons per hour (ODT/hr)

T&D Wood may operate small stationary engines smaller than 0.5 MMBtu/hr. These engines are considered insignificant activities and are not required to be included in this license. However, they are still subject to applicable State and Federal regulations. More information regarding requirements for small stationary engines is available on the Department's website at the link below.
http://www.maine.gov/dep/air/publications/docs/SmallRICEGuidance.pdf

Additionally, T&D Wood may utilize portable engines on-site for construction, maintenance, and emergency purposes. These engines are not to be used for primary electrical needs (i.e. to power production equipment) or to drive process equipment. These engines are considered insignificant activities and are not required to be included in this license. However, they may still be subject to other applicable State or Federal regulations.

C. Definitions

Continuous. For the purposes of this license, continuous means at least three (3) data points in each full operating hour with at least one (1) data point in each half-hour period.

Portable Engine. For the purposes of this license, *portable 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.

D. Application Classification

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

A new source is considered a major source based on whether or not total licensed annual emissions exceed the "Significant Emission" levels as defined in the Department's *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100.

Pollutant	Total Licensed Annual Emissions (TPY)	Significant Emission Levels
PM	34.0	100
PM_{10}	34.0	100
SO_2	2.5	100
NO_x	16.1	100
CO	28.9	100
VOC	49.7	50
CO_2e	< 100,000	100,000

The Department has determined the facility is a minor source and the application has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 C.M.R. ch. 115.

E. Facility Classification

With the limit on annual hours of use for Burner #1, the facility is licensed as follows:

- As a synthetic minor source of air emissions, because the licensed emissions are below the 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. Facility Description

T&D Wood has proposed the installation and operation of a new wood pellet manufacturing facility which will produce primarily softwood pellets made from white pine.

Raw material, including wood chips, shavings, sawdust, and bark, will be delivered to the facility. Approximately one-third of the raw material will come from the adjacent (and separately owned) sawmill. The remaining two-thirds of the fuel/raw material will be delivered to the site via truck from other local sawmills.

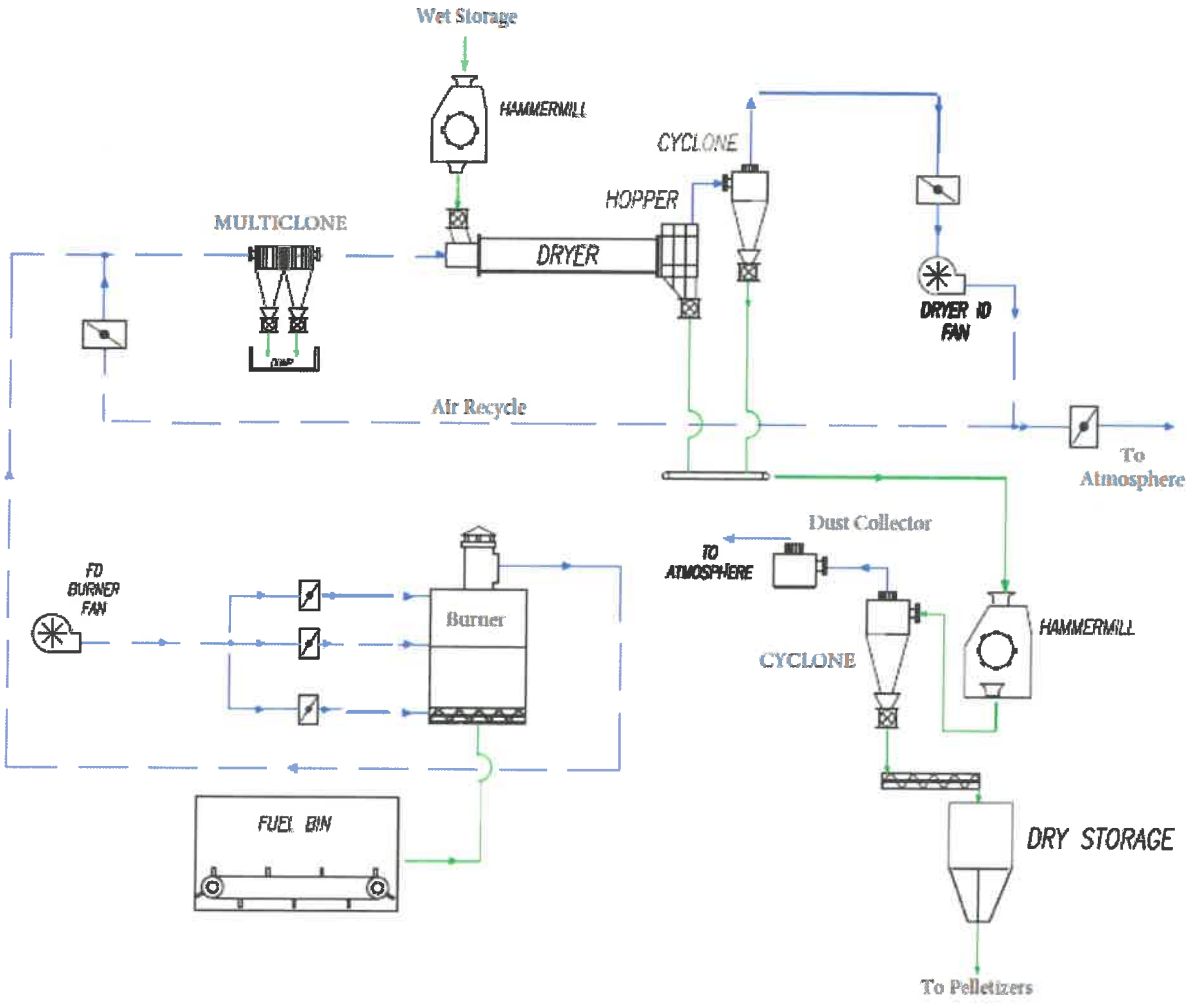
Green material will be conveyed to a covered raw material storage area where it will be loaded into hoppers. Covered conveyors will transport the material to a hammermill which will break it down and roughly size it before drying.

After the hammermill, the green wood will be introduced into Dryer #1 along with hot exhaust gas supplied by Burner #1. The dryer will reduce the moisture content of the wood from approximately 50% by weight to 8-12% by weight.

Once the wood passes through the dryer, it is separated from the exhaust stream by a cyclone and transferred into the dry material storage building. Dried wood will move from the dry material storage building via covered conveyor to another hammermill for final sizing. The material is then fed to the pellet mill which consists of one pelletizer with a maximum output of approximately 6 ton/hr. Pellets are transferred to the pellet cooler and then storage silos. The final product may be bagged or transported off-site in bulk.

Burner #1 is used to provide heat to Dryer #1 and is wood/biomass-fired. The fuel for Burner #1 will be a blend of bark, green wood, and dry fines from the process equipment. A portion of the exhaust gases from the end of the process will be recycled and mixed with the exhaust gases from Burner #1 prior to the dryer to increase efficiency and to control the temperature of the gases entering the dryer. The system will be equipped with a multiclone downstream of the mixing point of the exhaust gas recycle and prior to Dryer #1. The multiclone will reduce ash carryover from the burner which will reduce the ash content of the pellets as well as particulate loading to the stack.

The portion of the exhaust gas not recycled back to Dryer #1 will exit through Stack #1. Stack #1 will have a diameter of 2.5 feet and exhaust 53 feet above ground level (AGL). Burner #1 will also be equipped with an emergency bypass stack for use during startups, shutdowns, and malfunctions.



C. 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 expects to process 100% softwood, primarily white pine.

Heat for Dryer #1 will be 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. 40 C.F.R. Part 60, Subpart Dc

   Burner #1 is not subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units,* 40 C.F.R. Part 60, Subpart Dc, which is applicable to steam generating units greater than or equal to 10 MMBtu/hr and less than or equal to 100 MMBtu/hr for which construction, modification, or reconstruction occurred after June 9, 1989. Steam generating unit is defined in 40 C.F.R. Part 60, Subpart Dc as "a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. This term includes any duct burner that combusts fuel and is part of a combined cycle system. This term does not include process heaters as defined in this subpart."

   Burner #1 does not use heat transfer mediums; therefore, 40 C.F.R. Part 60, Subpart Dc is not applicable to this equipment since it is not considered a steam generating unit.

2. 40 C.F.R. Part 63, Subpart JJJJJJ

   Burner #1 is not subject to *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources,* 40 C.F.R. Part 63, Subpart JJJJJJ, which is applicable to all new, reconstructed, and existing boilers firing coal, biomass, or oil located at an area source of hazardous air pollutants (HAPs). T&D Wood is an area source for HAP, with the facility's potential to emit less than 10 tons per year of a single HAP and 25 tons per year combined HAP. The definition of boiler in 40 C.F.R. Part 63, Subpart JJJJJJ states: "Boiler means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. Waste heat boilers are excluded from this definition." Burner #1 does not heat water to recover thermal energy; therefore, 40 C.F.R. Part 63, Subpart JJJJJJ is not applicable to this unit since it is not considered a boiler.

3. BACT Findings

   The data obtained from the review of licenses from similar sources, along with information on the economic impact, technical feasibility, and environmental impact of various control options was used to determine the available control technologies and corresponding levels of control for the dryer line which includes Burner #1 and Dryer #1.

The following summarizes the BACT findings for Burner #1 and Dryer #1:

a. PM/PM_{10}

The principal components of the particulate matter (PM/PM_{10}) emissions from the proposed wood dryer line include filterable and condensable organic PM from the wood drying process in Dryer #1 and inorganic fly ash and unburned carbon resulting from incomplete combustion in Burner #1. A portion of the PM emissions leave the dryer stack as vapor but condense at normal atmospheric temperature to form liquid particles or mist that can create a visible haze. Quantities emitted are dependent on wood species, dryer temperature, and other factors including season of the year, time between logging and processing, and wood storage time.

Potential PM controls for the dryer line consist of add-on controls, good combustion and operating practices, or a combination of options. The evaluation of add-on controls for this dryer line included baghouses, wet scrubbers, thermal oxidizers, electrostatic precipitators (ESPs), wet electrostatic precipitators (WESPs), cyclone/multiclone system, and exhaust gas recycle (EGR).

Baghouses collect particulate matter on the surface of filter bags which are periodically cleaned or replaced to maintain an efficiency of greater than 80%. Baghouses can theoretically control PM emissions from wood dryers, but moisture considerations can make them impractical for wood dryer applications. Condensation of water vapor and VOCs may result in the fabric filters being overloaded or blinded. The gas stream's high moisture content cause baghouses to be technically infeasible for this project.

Thermal oxidizers destroy condensable PM by burning the exhaust gas at high temperatures, and they can also reduce CO emissions in direct-fired dryer exhausts by oxidizing the CO in the exhaust to CO_2. Regenerative thermal oxidizers (RTOs) preheat the inlet emission stream with heat recovered from the incineration exhaust gases. The inlet gas stream is passed through preheated ceramic media and an auxiliary gas burner is used to reach temperatures between 1450°F and 1600°F at a specific residence time. The combusted gas exhaust then goes through a cooled ceramic bed where heat is extracted. The estimated cost to install and operate an RTO for control of PM from this exhaust stream exceeds $50,000 per ton of PM controlled. Therefore, the installation of a thermal oxidizer is not economically feasible for this project.

ESPs work by charging particles in the exhaust stream with a high voltage, oppositely charging a collection surface where the particles accumulate, removing the collected dust by a rapping process, and collecting the dust in hoppers. ESPs work best under steady-state conditions. The nature of a wood-fired dryer system is to prone to load and flow fluctuations. Dry ESPs are also not recommended for removing moist particles or those likely to adhere to the collection surface. The gas

stream's high moisture content in conjunction with the high variability of the process cause dry ESPs to be technically infeasible for this project.

WESPs utilize a pre-quench to cool and saturate the gases prior to entering the ESP. WESPs collect only particles and droplets that can be electrostatically charged and consume significant water quantities during operation. The resulting effluent requires treatment and must be discharged to a solids-removing clarifying system prior to final disposal. The effluent may require additional sludge removal, pH adjustment, and/or additional treatment to remove dissolved solids. T&D Wood does not have the onsite capability to treat the effluent produced from a WESP. The estimated cost to install and operate a WESP alone (not including a wastewater treatment system) to control PM from this exhaust stream would exceed $20,000 per ton of PM controlled. This does not take into account the environmental impacts of wastewater production. Therefore, the installation of a WESP is not economically feasible for this project.

Wet scrubbers control particulate matter by forcing the PM in the air stream to contact a liquid, typically water. Particles are captured in the liquid droplets which are then collected. Wet scrubbers are efficient at collecting PM. However, they can require pre-treatment of the exhaust stream to remove larger particles from the drying process that can clog up the system. Wet scrubbers have a similar drawback to WESPs in that they create a liquid effluent stream that requires treatment prior to discharge. Although a technically feasible option, the use of a wet scrubber has been removed from consideration due to the adverse environmental impacts of the resulting effluent.

Cyclones, normally an integral part of rotary drum biomass dryers, are a very common particulate control device used in many applications. Cyclones utilize centripetal force to separate particles from gas streams, especially where relatively large particles need to be collected. Cyclones are commonly constructed of sheet metal, have relatively low capital cost, low operating costs, and no moving parts. Multiclones are smaller diameter cyclone units operating in parallel or in series and designed to achieve high efficiency PM collection using the same operational principles as the single cyclone. The use of a cyclone/multiclone system has been determined to be feasible and has been selected as part of the BACT strategy for the proposed dryer system.

PM emissions can be controlled using a heat/energy system that accommodates exhaust gas recycle (EGR). EGR uses an oversized combustion unit that can accommodate recirculation of dryer exhaust gases which is mixed with combustion air and exposed directly to the burner flame. EGR controls only a portion of the PM generated by the dryer system, and the moisture laden return gas would result in increased operational complexity and variability in other emissions, including CO

and VOC. The energy and environmental impacts associated with controlling only a portion of the potential PM emissions make an EGR system infeasible.

T&D Wood has proposed a system that recycles a portion of the exhaust gas such that it re-enters the exhaust stream in the ductwork downstream of the burner. The recycled air is not mixed with combustion air and is not exposed directly to the combustion zone. Therefore, this design is not considered EGR, although it is likely to result in some reduction in condensable PM emissions.

Good combustion practices can reduce products of incomplete combustion, including particulate matter. The use of a new, efficient, clean burning burner and good combustion practices can minimize PM emissions and has been selected as part of the BACT strategy for the proposed dryer system.

BACT for PM/PM_{10} emissions from Burner #1 and Dryer #1 is the use of a cyclone/multiclone system, good combustion and operating practices, an emission limit of 9.20 lb/hr, and an annual limit on hours of operation of 7,400 hr/year (12-month rolling total).

The exhaust from Stack #1 is a combination of PM/PM_{10} emissions from both fuel burning and process emissions. The PM/PM_{10} limits are determined to be more stringent than the combination of the particulate matter limits found in *Fuel Burning Equipment Particulate Emission Standard,* 06-096 C.M.R. ch. 103 and *General Process Source Particulate Emission Standard,* 06-096 C.M.R. ch. 105.

b. SO_2

Sulfur dioxide (SO_2) is formed from the combustion of sulfur present in the fuel. Control options for SO_2 include removing the sulfur from the flue gas by adding a caustic scrubbing solution or restricting the sulfur content of the fuel. The wood fuel fired in Burner #1 is inherently a low sulfur fuel, with only trace amounts of sulfur available to combine with oxygen in the combustion process. Additional sulfur controls are not justified for the dryer system.

BACT for SO_2 emissions from Burner #1 and Dryer #1 is the firing of clean wood/biomass materials including wood chips, bark, shavings, and sawdust, an annual wet-ton material throughput limit, an emission limit of 0.68 lb/hr, and an annual limit on hours of operation of 7,400 hr/year (12-month rolling total).

c. NO_x

Nitrogen oxide (NO_x) is generated from fuel NO_x, thermal NO_x, and prompt NO_x. Oxidation radicals near the combustion flame forms prompt NO_x in insignificant amounts. Reducing NO_x formation from the two other NO_x generating mechanisms includes firing a low nitrogen content fuel to minimize fuel NO_x and maintaining combustion temperatures below 3600°F to minimize thermal NO_x. Potential control

technologies for NO_x include selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), water/steam injection, and combustion of clean fuels.

SCR controls are primarily used on large industrial and utility boilers. SCR reduces NO_x emissions through the injection of ammonia in the gas exhaust stream in the presence of a catalyst to produce nitrogen and water. The effectiveness of an SCR system is directly dependent upon the exhaust temperature. The ideal exhaust temperature range for SCR operation is between 550°F and 750°F. With the expected exhaust temperature of 265°F, an SCR system is not technically feasible without the installation of an exhaust re-heat system. The installation of an exhaust re-heat system would require additional fuel input to the system and subsequently increase NO_x emissions. The energy and environmental impacts associated with controlling a relatively small amount of NO_x emissions make an SCR system infeasible.

SNCR controls are primarily used on large industrial and utility boilers. SNCR reduces NO_x to nitrogen and water by reacting the exhaust gas with a reagent such as ammonia or urea, similar to SCR. The chemical reaction takes place at temperatures ranging between 1600°F and 2100°F. The NO_x reduction efficiency decreases rapidly at temperatures outside this temperature window. Operation below this temperature range results in emissions of unreacted ammonia. Exhaust temperatures from the dryer system will be well below the required temperature range. Injecting the reagent further upstream would mean unreacted ammonia would enter the dryer and directly contact the wood being dried. This would result in ammonia-based salts on the surface of the wood which would alter the product's pH and impede bonding during the pelletizing process. Therefore, the use of SNCR for control of NO_x is determined to be technically infeasible for this project.

Water/steam injection is the process of injecting water or steam into the combustion chamber to act as a thermal ballast in the combustion process. This lowers the combustion temperature, minimizing the formation of thermal NO_x. However, introducing additional moisture into a process designed to dry material would be counterproductive to the purpose of the rotary dryer. Therefore, water/steam injection has been determined to be technically infeasible for this project.

BACT for NO_x emissions from Burner #1 and Dryer #1 is the firing of clean wood/woody biomass materials including wood chips, bark, shavings, and sawdust (having inherently low nitrogen content), an emission limit of 4.35 lb/hr, and an annual limit on hours of operation of 7,400 hr/year (12-month rolling total).

d. CO

Carbon monoxide (CO) emissions are a result of incomplete combustion, caused by conditions such as insufficient residence time or limited oxygen availability. CO emissions from units with burners are typically minimized by good combustion, although oxidation catalyst systems have been used on larger units. Thermal oxidation is also an option for add-on CO control.

An oxidation catalyst lowers the activation energy needed for CO to react with available oxygen in the exhaust to produce CO_2. In order to prevent the occurrence of particulate contamination in a biomass system, the oxidation catalyst would need to be located after the particulate matter control technology. However, the process exhaust gas must then typically be preheated prior to contact with the catalyst bed. The cost of the oxidation catalyst, the associated need for a preheat burner, and the biomass plugging potential does not result in an oxidation catalyst as a feasible option for this project.

Thermal oxidation reduces CO emissions in the flue gas with high temperature post combustion. The application of a thermal oxidizer would require additional fuel usage, would result in additional secondary emissions, and would have a large economic impact on the project. There were no CO thermal oxidizer installations on the biomass boilers reviewed in the RBLC database. Therefore, thermal oxidation for CO controls is not a feasible option for this project.

Good combustion efficiency and proper equipment operation and maintenance incorporate various techniques to minimize CO emissions. Proper combustion techniques include maintaining optimum combustion conditions within the system via optimization of residence time, temperature, and mixing. Proper maintenance includes keeping the air to fuel ratio at the manufacturer's specified settings, and having proper air and fuel pressures at the burner.

BACT for CO emissions from the Burner #1 and Dryer #1 is the use of good combustion techniques, proper equipment maintenance, an emission limit of 7.80 lb/hr, and an annual limit on hours of operation of 7,400 hr/year (12-month rolling total).

e. VOC

Volatile Organic Compounds (VOCs) are generated in the dryer system as a result of incomplete combustion and from the evaporation of the naturally occurring VOCs in the wood. Quantities of VOCs emitted are dependent on wood species and operating parameters such as temperature, residence time, and oxygen present. T&D Wood anticipates processing primarily white pine which tends to result in high VOC emissions when dried compared to other species. The options for controlling VOCs from high concentration VOC gas streams include thermal

oxidation (RTO or EGR), wet electrostatic precipitators (WESP), wet scrubbers, and condensers.

Thermal oxidizers destroy VOC by burning them at high temperatures reducing them to water and CO_2. As discussed above for PM, the cost of controlling emissions from this project using a thermal oxidizer would be cost prohibitive, and is therefore determined to be economically infeasible for this project. The application of EGR for control of VOC has the same energy and environmental impacts as its use for control of PM and is therefore considered infeasible for this project.

A WESP's primary function is to control particulate matter. However, secondary VOC control may be achieved. Dry ESPs control emissions by charging particles in the exhaust stream with a high voltage, oppositely charging a collection surface where the particles accumulate, removing the collected dust by a rapping process, and collecting the dust in hoppers. WESPs utilize a pre-quench to cool and saturate the gases prior to entering the collection chamber. The pre-quench section of the WESP may scrub and quench some fraction of the highly water-soluble compounds. Similarly, wet scrubbers can control some VOCs by absorbing them into the water droplets. WESPs and wet scrubbers consume significant water quantities during operation. The resulting effluent requires treatment and must be discharged to a solids-removing clarifying system prior to final disposal. The effluent may require additional sludge removal, pH adjustment, and/or additional treatment to remove dissolved solids. T&D Wood does not currently have the onsite capability to treat the effluent produced from a WESP or wet scrubber. The cost of controlling VOCs from this project using a WESP or wet scrubber is considered economically infeasible for this project.

Condensers are most commonly used for highly concentrated VOC streams. The exhaust stream is cooled using a heat exchanger to cause the VOCs to condense out. Very large temperature drops are often required to achieve effective condensation, requiring significant energy use. The large range of VOCs contained in the exhaust from Dryer #1 prevent refinement and reuse as an option. In addition, the nature of the condensable portion would result in the fouling of the heat exchanger used preventing efficient operation of the unit. For all of these reasons condensers are not considered technically or economically feasible for this project.

BACT for VOC emissions from the Burner #1 and Dryer #1 is the use of good combustion and operation techniques, proper equipment maintenance, an emission limit of 13.43 lb/hr, and an annual limit on hours of operation of 7,400 hr/year (12-month rolling total).

f. Opacity

Visible emissions from Stack #1 shall not exceed 20% opacity on a six-minute block average except for no more than two (2) six-minute block averages in a continuous three-hour period during which time visible emissions shall not exceed 60% opacity on a six-minute block average.

Visible emissions from the bypass stack shall not exceed 60% opacity on a six-minute block average basis.

g. Additional BACT Findings

The exhaust from Burner #1 and Dryer #1 shall exit through the cyclone and multiclone except during periods of startup, shutdown, or malfunction when the exhaust may be diverted through the associated bypass stack.

T&D Wood shall inspect the cyclone and multiclone monthly for leaks and keep records of these inspections as well as any maintenance (planned or unplanned) performed.

BACT for use of the bypass stack is determined to be limiting its use to periods of startup, shutdown, or malfunction not to exceed one hour in duration. Records shall be kept of all startups, shutdowns, and malfunctions including the 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.

Burner #1's normal operating exhaust gas temperature is expected to be approximately 1,800°F. The exhaust from Burner #1 will be tempered with recycle air from the dryer that will be at approximately 260°F such that the inlet to Dryer #1 is expected to be 650°F. The drying of wood, especially pine, at high temperatures has been shown to create blue, hazy visible emissions. To prevent the emission of this blue haze, T&D Wood shall limit the dryer inlet temperature to no more than 650°F on a 1-hr average basis. T&D Wood shall continuously monitor and record the inlet temperature of Dryer #1 to demonstrate compliance with the temperature limits listed above. "Continuously" is defined as at least three (3) data points in each full operating hour with at least (1) data point in each half-hour period.

4. Performance Testing

Within 180 days of startup of Burner #1 and Dryer #1, T&D Wood shall conduct performance tests on Stack #1 for PM, PM_{10}, NO_x, CO, VOC, and opacity to demonstrate compliance with the licensed emission limits (lb/hr) using EPA stack test methods specified in the table below or other methods approved by the Department.

Pollutant	EPA Test Method
PM	Method 5
PM_{10}	Method 201 or 201A and Method 202
NO_x	Method 7E
CO	Method 10
VOC	Methods 25A
Opacity	Method 9

Performance testing shall be conducted under normal operating conditions. T&D Wood shall record the amount of wood fired (i.e., tons and moisture content) in Burner #1 during each test run for all pollutants. T&D Wood shall record the amount of wood dried (i.e., tons of dry wood produced) during each test run for PM and VOC.

D. Wood Handling & Pellet Processing Operations

Wood handling and pellet processing operations at the facility will include screens, conveyors, hammermills, a pelletizer, pellet cooler, and storage and bagging operations. The facility will operate one pelletizer with a maximum process rate of approximately 6 tons of pellets per hour.

The dry hammermill, screens, pelletizer, pellet cooler, pellet bagging operations, and some pellet storage will be located within the pellet production building. The pellet cooler will exhaust through an exterior building vent. Air from inside the pellet production building will be picked up by a ventilation system and routed to a fabric filter baghouse for control of particulate matter before being exhausted outside.

The Department finds that the proper operation and maintenance of the baghouse in accordance with manufacturer's recommendations and compliance with the fugitive and general process visible emission limits listed in this license, as appropriate, represents BACT for control of particulate matter emissions from the pelletizer building. T&D Wood shall inspect the baghouse monthly for leaks and keep records of these inspections as well as any maintenance (planned or unplanned) performed including bag replacement.

All other wood handling and processing operations are located outside. This includes stockpiles of fuel and/or raw material, the green wood hammermill, storage silos, and various conveyors. BACT for the control of particulate matter emissions from this

equipment includes fabric filters on all vents to storage silos, the use of covers on all outdoor conveyors, and the fugitive and general process visible emission limits listed in this license, as appropriate. T&D Wood shall inspect all fabric filters monthly for leaks and keep records of these inspections as well as any maintenance (planned or unplanned) performed including filter replacement.

T&D Wood shall not cause visible emissions (not including water vapor), measured as any opacity totaling twelve 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

E. Portable Engines

T&D Wood may operate portable engines on-site for construction, maintenance, and emergency purposes. These engines are not to be used for primary electrical needs (i.e. to power production equipment) or to drive process equipment. Depending on their size and age, these engines may be subject to *Visible Emissions Regulation*, 06-096 C.M.R. ch. 101 and/or *Fuel Burning Equipment Particulate Emission Standard*, 06-096 C.M.R. ch. 103.

Any engine which cannot meet the definition of "portable engine" as defined by this license may be subject to additional State and Federal regulations. A license amendment may be necessary for a portable engine to be reclassified as stationary.

F. Annual Inventory Calculations

For the purposes of submission of the annual emissions inventory per *Emission Statements,* 06-096 C.M.R. ch. 137, T&D Wood shall estimate actual emissions for the drying system (i.e., Burner #1 & Dryer #1 combined). If the electronic reporting system used to report emissions lists these units separately, T&D Wood shall report all emissions for the system under Dryer #1 and report zero emissions from Burner #1. Annual throughput for the system shall be reported as tons of finished product (i.e., pellets) produced.

Inventory emissions for all pollutants shall be calculated by multiplying the hours of operation of Burner #1 by the following emission factors, or other emission factors approved by the Department:

Pollutant	Emission Factor (lb/hr)	Pollutant	Emission Factor (lb/hr)
PM_{10} FIL	9.20	Acetaldehyde	6.50×10^{-5}
$PM_{2.5}$ FIL	3.22	Acrolein	7.8×10^{-3}
SO_2	0.68	Arsenic	5.11×10^{-5}
NO_x	4.35	Benzene	4.95×10^{-3}
CO	7.80	Cadmium	9.95×10^{-6}
VOC	13.43	Chromium	6.50×10^{-5}
Lead	1.31×10^{-3}	Cobalt	6.41×10^{-5}
Ammonia	0	Dioxins	2.24×10^{-9}
Carbon Dioxide	5,467	Formaldehyde	1.25×10^{-1}
Methane	0.41	Manganese	2.49×10^{-3}
Nitrous Oxide	0.22	Mercury	2.90×10^{-5}
		Nickel	7.62×10^{-5}
		Polycyclic Organic Matter	1.15×10^{-2}

G. Fugitive Emissions

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity, except for no more than five minutes in any one-hour period during which time visible emissions shall not exceed 30% opacity. Compliance shall be determined by an aggregate of the individual fifteen-second opacity observations which exceed 20% in any one hour.

H. General Process Emissions

Visible emissions from any general process source (including conveyors, the pellet cooler, and pelletizer building baghouse) shall not exceed 20% opacity on a six-minute block average basis.

I. Periodic Monitoring

Following is a summary of the periodic monitoring required by this license.

1. Hours of operation of Burner #1 on a monthly and 12-month rolling total basis;
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;
3. Dryer #1 inlet temperature on a continuous basis and calculated 1-hr block averages;

4. Tons of pellets produced on a monthly and calendar year basis;
5. Records of monthly inspections of the cyclone, multiclone, baghouse, and all fabric filters; and
6. Records of any cyclone, multiclone, baghouse, or fabric filter malfunction and all maintenance activities.

J. Annual Emissions

1. Total Annual Emissions

T&D Wood shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on the licensed lb/hr emission limits for Burner #1 and Dryer #1 and an annual limit on hours of operation of 7,400 hr/year.

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

	PM	PM_{10}	SO_2	NO_x	CO	VOC
Burner #1 & Dryer #1	34.0	34.0	2.5	16.1	28.9	49.7
Total TPY	**34.0**	**34.0**	**2.5**	**16.1**	**28.9**	**49.7**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011, through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans,* 40 C.F.R. Part 52, Subpart A, § 52.21, *Prevention of Significant Deterioration of Air Quality* rule. Greenhouse gases, as defined in 06-096 C.M.R. ch. 100, are the aggregate group of the following gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO_2e).

The quantity of CO_2e emissions from this facility is less than 100,000 tons per year, based on the following:

- the facility's fuel use operating 7,400 hr/year;
- worst case emission factors from the following sources: U.S. EPA's AP-42, the Intergovernmental Panel on Climate Change (IPCC), and *Mandatory Greenhouse Gas Reporting,* 40 C.F.R. Part 98; and
- global warming potentials contained in 40 C.F.R. Part 98.

No additional licensing actions to address GHG emissions are required at this time.

III. AMBIENT AIR QUALITY ANALYSIS

A. Overview

A refined modeling analysis was performed to show that emissions from T&D Wood, in conjunction with other sources, 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 MEDEP-BAQ that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

B. Model Inputs

The AERMOD-PRIME 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 (USEPA).

A valid five-year hourly off-site meteorological database was used in the AERMOD-PRIME 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 USEPA 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 USEPA 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 USEPA.

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)	70.52	16.15	15.24	0.76	363,520	4808,898
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 (USEPA 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	0.01	1.16	0.41	0.55	0.98	402.59	16.30
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-PRIME 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-PRIME 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 ($\mu g/m^3$)	Load Case
SO_2	1-hour	0.22	363520	4808998	72.96	**10**[a]	Maximum
	3-hour	0.23	363520	4808698	70.00	**25**	Maximum
	24-hour	0.14	363470	4808748	70.00	**5**	Maximum
	Annual	0.01	363720	4808748	70.00	**1**	Maximum
PM_{10}	24-hour	**21.20**	363470	4808748	70.00	**5**	Maximum
	Annual	**1.32**	363720	4808748	70.00	**1**	Low
$PM_{2.5}$	24-hour	**5.48**	363470	4808698	70.10	**none**[b]	Maximum
	Annual	**0.45**	363720	4808748	70.00	**none**[b]	Maximum
NO_2	1-hour	**15.19**	363520	4808998	72.96	**10**[a]	Interim
	Annual	0.61	363720	4808748	70.00	**1**	Maximum
CO	1-hour	30.20	359020	4813898	114.00	**2,000**	Maximum
	8-hour	24.82	363470	4808748	70.00	**500**	Maximum

[a] Interim Significant Impact Level (SIL) adopted by Maine
[b] Previous $PM_{2.5}$ Significant Impact Levels (SIL) remanded by USEPA in 2013

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 ($\mu g/m^3$)	Date	Monitoring Site
SO_2	1-hour	24	2009-2011	Presque Isle
	3-hour	18	2009-2011	Acadia National Park
	24-hour	11		
	Annual	1		
PM_{10}	24-hour	41	2003	Bridgton
	Annual	9		
$PM_{2.5}$	24-hour	17	2008-2010	Greenville
	Annual	5		
NO_2	1-hour	43	2009-2012	Presque Isle
	Annual	4	2010-2012	
CO	1-hour	365	2010-2012	Acadia National Park
	8-hour	322		

MEDEP 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, MEDEP has determined that no other sources would be included in combined-source refined modeling.

The maximum AERMOD-PRIME 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 ($\mu g/m^3$)

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Back-Ground ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
SO_2	1-hour	0.20	363520	4808998	72.96	24	24.20	196
	3-hour	0.22	363520	4808698	70.00	18	18.22	1,300
	24-hour	0.13	363470	4808698	70.10	11	11.13	365
	Annual	0.01	363720	4808748	70.00	1	1.01	80
PM_{10}	24-hour	18.37	363470	4808698	70.10	41	59.37	150
	Annual	1.32	363720	4808748	70.00	9	10.32	50
$PM_{2.5}$	24-hour	2.48	363470	4808648	70.02	17	19.48	35
	Annual	0.45	363720	4808748	70.00	5	5.45	12
NO_2	1-hour	12.19	363520	4809048	72.93	43	55.19	188
	Annual	0.61	363720	4808748	70.00	4	4.61	100
CO	1-hour	28.96	363520	4808748	70.00	365	393.96	40,000
	8-hour	23.21	363470	4808698	70.10	322	345.21	10,000

E. Secondary Formation of $PM_{2.5}$

Since potential emissions of SO_2 and NO_2 for T&D Wood are expected to be less than 40 tpy each, per USEPA guidance, no review of secondary impacts due to $PM_{2.5}$ precursor emissions is required.

F. Class II Increment

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

Results of the Class II increment analysis are shown in Table 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 ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Increment ($\mu g/m^3$)
SO_2	3-hour	0.22	363520	4808698	70.00	512
	24-hour	0.13	363470	4808698	70.10	91
	Annual	0.01	363720	4808748	70.00	20
PM_{10}	24-hour	18.37	363470	4808698	70.10	30
	Annual	1.32	363720	4808748	70.00	17
$PM_{2.5}$	24-hour	2.48	363470	4808648	70.02	9
	Annual	0.45	363720	4808748	70.00	4
NO_2	Annual	0.61	363720	4808748	70.00	25

Federal regulations and 06-096 C.M.R. ch. 140 require that any major new source or major source undergoing a major modification provide additional analyses of impacts that would occur as a direct result of the general, commercial, residential, industrial and mobile-source growth associated with the construction and operation of that source. Since T&D Wood is a new minor source, no growth analyses were required.

G. 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 A-1129-71-A-N subject to the following conditions.

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

STANDARD CONDITIONS

(1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S. § 347-C).

(2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 C.M.R. ch. 115]

(3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 C.M.R. ch. 115]

(4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 C.M.R. ch. 115]

(5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S. § 353-A. [06-096 C.M.R. ch. 115]

(6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 C.M.R. ch. 115]

(7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 C.M.R. ch. 115]

(8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 C.M.R. ch. 115]

(9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license.
[06-096 C.M.R. ch. 115]

(10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license.
[06-096 C.M.R. ch. 115]

(11) In accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department, the licensee shall:

A. Perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
   1. Within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
   2. Pursuant to any other requirement of this license to perform stack testing.

B. Install or make provisions to install test ports that meet the criteria of 40 C.F.R. Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and

C. Submit a written report to the Department within thirty (30) days from date of test completion.

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

(12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:

A. Within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department; and

B. The days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and

C. The licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.

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

(13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 C.M.R. ch. 115]

(14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 C.M.R. ch. 115]

(15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 C.M.R. ch. 115]

SPECIFIC CONDITIONS

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

C. 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)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Burner #1 & Dryer #1 (combined)	9.20	9.20	0.68	4.35	7.80	13.43

D. Visible emissions from Stack #1 shall not exceed 20% opacity on a six-minute block average except for no more than two (2) six-minute block averages in a continuous three-hour period during which time visible emissions shall not exceed 60% opacity on a six-minute block average. [06-096 C.M.R. ch. 115, BACT]

E. Visible emissions from the bypass stack shall not exceed 60% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

F. The inlet temperature to Dryer #1 shall not exceed 650°F 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 shall exhaust through a multiclone, Dryer #1, and a cyclone (in that order). A portion of the exhaust may be recycled back into the system. Any exhaust not recycled shall exit through a 53-foot above ground level stack except for periods of startup, shutdown, or malfunction. [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. T&D Wood shall inspect the cyclone and multiclone monthly for leaks. Compliance shall be demonstrated by the periodic monitoring and recordkeeping required by this license. [06-096 C.M.R. ch. 115, BACT]

J. Within 180 days of startup of Burner #1 and Dryer #1, T&D Wood shall conduct performance tests on Stack #1 for PM, PM_{10}, NO_x, CO, VOC, and opacity to demonstrate compliance with the licensed emission limits (lb/hr) using EPA stack test methods specified in the table below or other methods approved by the Department.

Pollutant	EPA Test Method
PM	Method 5
PM_{10}	Method 201 or 201A and Method 202
NO_x	Method 7E
CO	Method 10
VOC	Methods 25A
Opacity	Method 9

Performance testing shall be conducted under normal operating conditions. T&D Wood shall record the amount of wood fired (i.e., tons and moisture content) in Burner #1 during each test run for all pollutants. T&D Wood shall record the amount of wood dried (i.e., tons of dry wood produced) during each test run for PM and VOC. [06-096 C.M.R. ch. 115, BACT]

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

A. All exterior conveyors shall be equipped and operated with covers. [06-096 C.M.R. ch. 115, BACT]

B. All storage silo vents shall be equipped and operated with fabric filters. [06-096 C.M.R. ch. 115, BACT]

C. T&D Wood shall operate the baghouse at all times the screening and/or pellet processing operations are operating. [06-096 C.M.R. ch. 115, BACT]

D. T&D Wood shall inspect the baghouse and silo filters monthly for leaks. Compliance shall be demonstrated by the periodic monitoring and recordkeeping required by this license. [06-096 C.M.R. ch. 115, BACT]

E. Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity, except for no more than five minutes in any one-hour period during which time visible emissions shall not exceed 30% opacity. Compliance shall be determined by an aggregate of the individual fifteen-second opacity observations which exceed 20% in any one hour. [06-096 C.M.R. ch. 115, BACT]

F. Visible emissions from any general process source (including conveyors, the pellet cooler, and pelletizer building baghouse) shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

G. T&D Wood shall not cause visible emissions (not including water vapor), measured as any opacity totaling twelve 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]

(18) **Portable Engines**

T&D Wood may operate portable engines on-site for construction, maintenance, and emergency purposes. These engines are not to be used for primary electrical needs (i.e., to power production equipment) or to drive process equipment.
[06-096 C.M.R. ch. 115, BACT]

(19) **Periodic Monitoring and Recordkeeping**

T&D 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. 137];
5. Records of monthly inspections of the cyclone, multiclone, baghouse, and all fabric filters [06-096 C.M.R. ch. 115, BACT]; and
6. Records of any cyclone, multiclone, baghouse, or fabric filter malfunction and all maintenance activities. [06-096 C.M.R. ch. 115, BACT]

(20) **Annual Emission Statement**

In accordance with *Emission Statements*, 06-096 C.M.R. ch. 137, the licensee shall annually report to the Department, in a format prescribed by the Department, the information necessary to accurately update the State's emission inventory. The emission statement shall be submitted as specified by the date in 06-096 C.M.R. ch. 137.

(21) T&D Wood shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S. § 605).

DONE AND DATED IN AUGUSTA, MAINE THIS 24 DAY OF April , 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PAUL MERCER, COMMISSIONER

The term of this license shall be ten (10) years from the signature date above.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 9/7/17
Date of application acceptance: 9/28/17

Date filed with the Board of Environmental Protection:

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

Filed
APR 24 2018
State of Maine
Board of Environmental Protection