



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



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**Verso Bucksport LLC  
Hancock County  
Bucksport, Maine  
A-22-77-11-A**

**Departmental  
Findings of Fact and Order  
New Source Review  
NSR #9**

**FINDINGS OF FACT**

After review of the air emissions 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 Annotated (M.R.S.A.), Section 344 and Section 590, the Maine Department of Environmental Protection (Department) finds the following facts:

**I. REGISTRATION**

A. Introduction

Facility	Verso Bucksport LLC (Verso Bucksport)
License Amendment Type	06-096 CMR 115 Minor Modification
NAICS Code	322121 (pulp mill that produces paper)
Nature of Business	Groundwood and thermomechanical pulp; papermaking
Facility Location	2 River Road, Bucksport, Maine

Verso Bucksport LLC (Verso Bucksport) operates an integrated pulp and paper mill, producing both groundwood and thermomechanical pulp on-site and lightweight coated groundwood papers on three paper machines. Additional ancillary mill operations include steam and power generation, wastewater treatment, intake water treatment, solid waste disposal, and fuel handling. Verso Bucksport is licensed as a major source through its Part 70 Air Emission License (A-22-70-A-I, December 30, 2004) with various Part 70 amendments and New Source Review amendments.

Verso Bucksport submitted a New Source Review minor modification application to convert Boiler 5 to a natural gas fired unit. Currently the boiler fires #6 fuel oil and waste oil. This amendment also includes emission limits for both the filterable and condensable portions of PM<sub>10</sub> and PM<sub>2.5</sub>.

B. Amendment Application Description

Verso Bucksport's application is for a natural gas conversion of Boiler 5. Recently, the unit had been operated as an oil fired back-up boiler to the facility's

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primary steam generating units. The conversion project will allow the boiler to operate as a primary steam generating unit at its maximum capacity.

The Gas Turbine will be affected by the gas conversion project to the extent that license conditions will be placed on the Gas Turbine on when it can operate in relation to the operation of the converted Boiler 5. The units will be able to operate at their respective full capacities, but not simultaneously, except for transitional periods when one unit is brought on-line prior to the other unit being taken off-line. No other steam and power generation sources at Verso Bucksport will be affected by the proposed project.

C. Emission Equipment

The following equipment is addressed in this air emission license:

**Fuel Burning Equipment**

<b>Equipment</b>	<b>Maximum Capacity (MMBtu/hr)</b>	<b>Maximum Firing Rate</b>	<b>Fuel Type</b>
Boiler 5	371	356,000 scf/hr	natural gas (conversion from #6 fuel oil)
Combined Cycle Gas Turbine *	1963	1,963,000 scf/hr	natural gas
	2082	14,871 gal/hr	#2 fuel oil

\* The Gas Turbine is not being physically modified, but operational conditions on the unit will result as part of this project.

D. Application Classification

The application for Verso Bucksport does not violate any applicable federal or state requirements and does not reduce monitoring, reporting, testing or record keeping.

The modification of a major source is considered a major modification based on whether or not expected emissions increases exceed the "Significant Emission Increase Levels" as given in *Definitions Regulation*, 06-096 Code of Maine Rules (CMR) 100 (as amended).

The emission increases are determined by subtracting the baseline actual emissions of the 24 months preceding the modification (or representative 24

months) from the projected actual emissions. The results of this test are as follows:

**Comparison of Project Net Emissions to Significant Emission Increase Levels**

<b>Pollutant</b>	<b>Baseline Actual Emissions (ton/year)</b>	<b>Projected Actual Emissions (ton/year)</b>	<b>Net Emissions Increase (ton/year)</b>	<b>Significance Emissions Increase Levels (ton/year)</b>
PM	16.28	13.35	-2.93	25
PM <sub>10</sub>	48.44	47.20	-1.24	15
PM <sub>2.5</sub>	47.89	47.20	-0.69	10
SO <sub>2</sub>	42.34	4.26	-38.08	40
NO <sub>x</sub>	211.54	250.0	38.46	40
CO	20.78	120.0	99.22	100
VOC	14.95	15	0.05	40
Pb	5.52E-04	7.79E-04	2.27E-04	0.6
CO <sub>2e</sub>	828,759.88	834,736.64	5976.76	75,000

Table Notes:

- The above numbers are for Boiler 5 and the Gas Turbine only. None of the other equipment at the facility is affected by this amendment.
- The baseline actual emissions are equal to actual emissions from a consecutive 24-month period within five years prior to construction. The selected 24-month baseline periods differ on a pollutant-by-pollutant basis, as follows:

PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Pb	CO <sub>2e</sub>	Total GHG
6/1/09-5/1/11	6/1/09-5/1/11	3/1/09-2/1/11	5/1/10-4/1/12	9/1/09-8/1/11	2/1/10-1/1/12	3/1/09-2/1/11	5/1/09-4/1/11	2/1/09-1/1/11	2/1/09-1/1/11

The baseline periods are representative of typical operations given the method of operation of Boiler 5 and the Gas Turbine over an extended period of time.

- Baseline emission factors were based on CEMS data, published factors, vendor data, or engineering estimates.
- Projected actual emissions from Boiler 5 were determined based on 371 MMBtu/hr and 8760 hours/year. The NO<sub>x</sub> BART limit of 250 tpy and the proposed project CO limit of 120 tpy were utilized.
- Projected actual emissions from the Gas Turbine were estimated based on the maximum annual heat input over the last five years (14,460,531 MMBtu/yr) and the highest percentage of #2 fuel oil firing versus natural gas use over the last five years.
- Projected actual emissions for the table above were determined by selecting the worst case emission rate for the two potential operating scenarios. PM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, VOC, and CO<sub>2e</sub> were based on the Gas Turbine operations. NO<sub>x</sub>, CO, and Pb were based on the operation of Boiler 5.

The net emissions increase for all regulated pollutants is below the significance increase levels; therefore, this amendment is determined to be a minor

modification under *Minor and Major Source Air Emission License Regulations* 06-096 CMR 115 (as amended).

The changes being made are not addressed or prohibited in the Part 70 air emission license. An application to incorporate the requirements of this amendment into the Part 70 air emission license shall be submitted no later than 12 months from commencement of the requested operation.

## 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 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

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

### B. Natural Gas Conversion Project

#### 1. Boiler 5 Conversion

Boiler 5 is a Riley Stoker power boiler rated at a maximum heat input of 371 MMBtu/hr and fires #6 fuel oil and waste oil. Installed in 1966, the boiler currently operates as a back-up boiler to provide process steam when the other boilers or the Gas Turbine are not operating or when temperatures are extremely cold. Boiler 5 exhausts through a common 269 foot stack with Boiler 6. The unit has low NO<sub>x</sub> burners and is subject to 06-0969 CMR 138, *NO<sub>x</sub> Reasonably Available Control Technology* (as amended). The low NO<sub>x</sub> burners have been improved with split flame tips.

Verso Bucksport has proposed to convert Boiler 5 from a fuel oil unit to a natural gas unit. The boiler will no longer be licensed to fire fuel oil. Boiler 5 shall have a 250 tpy NO<sub>x</sub> limit and 120 tpy CO limit as total annual limits with the Gas Turbine.

a. Best Available Retrofit Technology

Verso Bucksport is subject to BART requirements found in 50 CFR Part 51, Subpart P. Boiler 5 is not currently considered a BART eligible source due to the issuance of amendment A-22-77-5-M on November 2, 2010 which established state and federally enforceable license limits of 250 tons/year each for PM, SO<sub>2</sub>, and NO<sub>x</sub> from the unit. Boiler 5 shall continue to be subject to these annual limits for purposes of remaining below the BART eligibility threshold. As a consequence of the BART NO<sub>x</sub> tpy limit, this project shall limit total NO<sub>x</sub> emissions from both Boiler 5 and the Gas Turbine to 250 tpy.

b. New Source Performance Standards (NSPS)

Boiler 5 was constructed prior to the applicability date of 40 CFR Part 60, Subpart D, *Standards of Performance for Fossil-Fuel-Fired Steam Generators*, but since the proposed conversion will result in a physical modification of the boiler, the applicability of both 40 CFR Part 60, Subparts D and Db, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units*, were evaluated. Applicability criteria in both subparts include whether modification or reconstruction occurs after the subpart applicable construction dates.

40 CFR Part 60, Subpart A defines a modification as “any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies” and further states that “upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere” (40 CFR §60.14). Emission rates for NSPS applicability are expressed on a short term lb/hr basis. Boiler 5 will be converted to natural gas, an inherently cleaner fuel, and short term emissions from the boiler will not be increasing, as can be seen in the following comparison:

**Fuel Oil and Natural Gas Emission Rates**

<b>Pollutant</b>	<b>#6 Fuel Oil Baseline Emission Rate (lb/MMBtu)</b>	<b>Natural Gas Projected Emission Rate (lb/MMBtu)</b>
PM	0.06	0.0018
SO <sub>2</sub>	1.05	0.000575
NO <sub>x</sub>	0.36	0.18

Hence, the proposed project does not meet the 40 CFR §60.14 definition of modification.

Likewise, 40 CFR Part 60, Subpart A defines reconstruction as “replacement of components of an existing facility to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility and it is technologically and economically feasible to meet the applicable standards set forth in this part” (40 CFR §60.15). The capital cost of the natural gas conversion of Boiler 5 does not exceed 50% of the cost of a new facility. Therefore, the proposed project does not meet the 40 CFR §60.15 definition of reconstruction.

The conversion of Boiler 5 from fuel oil to natural gas does not trigger the requirements of NSPS 40 CFR Part 60, Subparts D or Db, based on the applicability requirements and definitions.

c. National Emission Standards for Hazardous Air Pollutants (NESHAPS)

Boiler 5 is subject to 40 CFR Part 63, Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters*. Based on the definition of reconstructed which has the same criteria as the NSPS definition, Boiler 5 is considered an existing unit with a compliance date of January 31, 2016. Based on the firing of natural gas, Boiler 5 will not be subject to numerical emission limits or operating limits, but will require tune-ups and an energy assessment, as well as applicable notifications, reporting, and recordkeeping requirements.

d. Compliance Assurance Monitoring (CAM)

Boiler 5 does not meet all of the applicability criteria in the CAM rule in 40 CFR Part 64. One of the CAM criteria is the unit must use a control device to achieve compliance with the applicable limitation or standard. Boiler 5 does not employ a control device as defined in 40 CFR Part 64 §64.1 since low NO<sub>x</sub> burners are not considered a control device for CAM purposes.

e. 06-096 CMR 156, *CO<sub>2</sub> Budget Trading Program*

Boiler 5 has been exempt from 06-096 CMR 156 since the unit has historically supplied less than or equal to 10% of its gross electrical generation for transmission over the facilities of a transmission and distribution utility on an annual basis (06-096 CMR 156, Section (1)(A)(4)). The exemption may or may not still apply once the natural gas

conversion takes place and Boiler 5 is used as a primary steam generating unit. Verso Bucksport shall be subject to the requirements in 06-096 CMR 156 for Boiler 5, as applicable.

f. Best Available Control Technology

A BACT analysis was submitted for the switch from oil to natural gas firing in Boiler 5. The following summarizes the findings:

i. PM/PM<sub>2.5</sub>/PM<sub>10</sub> –

Natural gas is an inherently clean fuel, with minimal PM/PM<sub>2.5</sub>/PM<sub>10</sub> emissions as a result of ash content of the fuel and incomplete combustion. Technically feasible particulate matter controls include electrostatic precipitators, multicyclones, baghouses, and wet venturi scrubbers. However, these types of particulate matter add-on controls are not widely used for natural gas fired industrial sized boilers due to the characteristically low particulate emissions from gas and the standard practice of utilizing good combustion control to minimize particulate matter emissions.

BACT for PM/PM<sub>2.5</sub>/PM<sub>10</sub> emissions from Boiler 5 is determined to be the use of natural gas (a low ash content fuel) and good combustion practices. Based on the AP-42 Table 1.4-2 emission factor for filterable PM of 1.9 lb/MMscf, the PM emission limit shall be 0.68 lb/hr (filterable). Based on both the filterable and condensable portions of PM<sub>2.5</sub> and PM<sub>10</sub> submitted in Verso Bucksport's application, the PM<sub>2.5</sub> and PM<sub>10</sub> emission limits shall each be 5 lb/hr (filterable and condensable).

ii. SO<sub>2</sub> –

Minimal SO<sub>2</sub> emissions occur while firing natural gas since SO<sub>2</sub> emissions result from the oxidation of sulfur in the fuel and natural gas has low sulfur content. Sulfur dioxide controls for boilers include wet scrubbers to reduce SO<sub>2</sub> emissions as well as SO<sub>3</sub> and sulfur acid mist. However, wet scrubbers are not widely used for natural gas fired industrial sized boilers due to the characteristically low sulfur content of natural gas. Low sulfur content fuel is typically identified as the control method to minimize SO<sub>2</sub> emissions.

BACT for SO<sub>2</sub> emissions from Boiler 5 is determined to be the use of natural gas (a low sulfur content fuel). Based on the AP-42 Table 1.4-2 emission factor of 0.6 lb/MMscf, the SO<sub>2</sub> emission limit shall be 0.21 lb/hr.

iii. NO<sub>x</sub> –

NO<sub>x</sub> emissions are formed primarily through the combustion process and are generated as fuel NO<sub>x</sub>, thermal NO<sub>x</sub> and prompt NO<sub>x</sub>. Fuel NO<sub>x</sub> is produced by the oxidation of fuel bound nitrogen, thermal NO<sub>x</sub> is formed by molecular nitrogen and oxygen at temperatures greater than 3600°F, and an insignificant amount of prompt NO<sub>x</sub> is formed from the oxidation of hydrocarbon radicals near the combustion flame. Reducing NO<sub>x</sub> formation includes firing a low nitrogen content fuel, maintaining combustion temperatures below 3600°F, and using combustion control techniques. Add-on NO<sub>x</sub> control options include Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), Flue Gas Recirculation (FGR), and Low NO<sub>x</sub> Burners (LNB).

SNCR is not technically feasible for Boiler 5 since it requires an ammonia or urea reagent injection at elevated temperatures which allows for the NO<sub>x</sub> reduction reaction to occur without a catalyst. Boiler 5 does not have an adequately sized combustion zone for injection and mixing of the gases in the high temperature range.

SCR is technically feasible for Boiler 5 since it utilizes a catalyst that reacts within a lower and broader temperature range to control NO<sub>x</sub>. However, in order for Boiler 5 to meet the minimum temperature requirement (SCR is most effective at 480°F-800°F), a supplementary fired pre-heater/heat exchanger would be needed to raise the exhaust gas temperature. Based on the capital cost of installing both an SCR system and a heat exchanger, Verso Bucksport has determined SCR would not be economically feasible.

Flue gas recirculation consists of recirculating the exhaust gases back into the combustion zone in order to lower flame temperatures to reduce NO<sub>x</sub> emissions. Due to the age and current burner and duct work configuration of Boiler 5, the costs associated with retrofitting the boiler with FGR was not considered economically infeasible for this project. In addition, the installation of FGR is not an option for the proposed project since it would require the installation of new and larger natural gas burners to handle the increased mass rates, thus increasing the rated heat input capacity beyond the current heat input capacity.

Low NO<sub>x</sub> burners limit NO<sub>x</sub> formation by reducing oxygen in the primary combustion zone to limit the formation for fuel NO<sub>x</sub>, reducing the flame temperature to limit the formation of thermal NO<sub>x</sub>, and/or



reducing the residence time at peak temperature to limit the formation of thermal NO<sub>x</sub>.

BACT for NO<sub>x</sub> emissions from Boiler 5 is determined to be the use of good combustion controls and low NO<sub>x</sub> burners. Based on a vendor guarantee, the NO<sub>x</sub> emission limit shall be 0.18 lb/MMBtu and 66.78 lb/hr.

iv. CO –

CO emissions are a result of incomplete combustion, caused by conditions such as insufficient residence time or limited oxygen availability. CO emissions from boilers are typically minimized by good combustion, although oxidation catalyst systems and thermal oxidation have been used. An oxidation catalyst system requires temperatures in the 800°F-1000°F range for the catalyst to oxidize CO and a supplementary pre-heater would need to be installed to raise the exhaust gas temperature. This adds to the complexity, costs, and emissions to the overall system. Also, PM and moisture in the exhaust stream can cause fouling and deactivation of the catalyst. Due to the cost and uncertainty of effectiveness, catalytic oxidation was not considered as a viable CO control option.

Good combustion practices include operating the boiler at an optimum efficiency to minimize other pollutants, including NO<sub>x</sub>, using appropriate air levels while obtaining good combustion destruction of CO and minimizing fuel usage.

BACT for CO emissions from Boiler 5 is determined to be the use of good combustion practices. Based on vendor guarantees, the CO emission limit shall be 29.68 lb/hr. Annual CO emissions shall also be limited to a total of 120 tpy, including the Gas Turbine emissions.

v. VOC –

VOC emissions occur due to incomplete combustion. Techniques for reducing VOC emission can increase NO<sub>x</sub> emissions, therefore a balance of boiler design and operation is important. VOC add-on controls for boilers include the use of a catalytic oxidation system. Additional control techniques for minimizing VOC emissions include low NO<sub>x</sub> burner systems, good equipment design and good combustion practices. Catalytic oxidation is not widely used for natural gas fired industrial sized boilers due to the minimal VOC

reductions obtained. Typical VOC controls used to reduce VOC emissions is boiler design and good combustion control.

BACT for VOC emissions from Boiler 5 is determined to be the use of low NO<sub>x</sub> burners and good combustion practices. Based on vendor estimates, the VOC emission limit shall be 2.23 lb/hr.

vi. GHG –

Greenhouse gas emissions, including carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), and methane (CH<sub>4</sub>), are produced during natural gas combustion due to conversion of carbon and organics into the greenhouse gas compounds. The majority of carbon in natural gas is converted to CO<sub>2</sub> during the combustion process, with the amount of CH<sub>4</sub> produced generally insignificant, except for higher CH<sub>4</sub> emissions during low temperature combustion or incomplete combustion, such as during a boiler's start-up or shut-down cycle. N<sub>2</sub>O emissions are minimized when combustion temperatures are kept high (above 1,475°F) and excess oxygen is kept to a minimum (less than 1%).

Verso Bucksport reviewed the RACT/BACT/LEAR Clearinghouse and EPA guidance (the November 2010 *PSD and Title V Permitting Guidance For Greenhouse Gases* permitting guidance document) and found potentially applicable GHG control alternatives of inherently lower-emitting processes/practices/designs, add-on controls, and combinations thereof. Verso Bucksport proposed that converting a 47-year old oil-fired boiler with an equivalently sized burner system that is a substantial improvement in energy efficiency, ultimately requiring less fuel (and thus, lower GHG emissions) to provide an equivalent steam load is BACT. Verso Bucksport did not identify the use of add-on controls such as carbon capture and storage for an application similar to the proposed project. EPA generally considers carbon capture and storage to be an available add-on pollution control technology for facilities emitting CO<sub>2</sub> in large amounts (e.g., coal fired power plants) and industrial facilities with high-purity CO<sub>2</sub> streams. Therefore, the use of carbon capture and storage, alone, or in combination with lower emitting processes/practices/designs, is not considered to be technically feasible for the proposed project.

BACT for GHG emissions from Boiler 5 is determined to be the use of an inherently lower carbon intensive fuel (natural gas), good combustion practices, and the combined heat and power configuration.

vii. Opacity –

Based on 06-096 CMR 101, visible emissions from Boiler 5 shall not exceed 10% opacity on a 6 minute block average, except for no more than one (1) six (6) minute block average in a 3 hour period.

viii. Monitoring and Recordkeeping Requirements

Verso Bucksport shall keep records of the amount of natural gas fired in Boiler 5 on a monthly and 12 month rolling total basis.

Upon documentation that operation of Boiler 5 exceeded an annual capacity factor of 30% (equivalent to 974,988 MMBtu/yr heat input), Verso Bucksport shall install, calibrate, maintain, and operate a continuous emission monitoring system for NO<sub>x</sub> on the unit in accordance with the applicable performance specifications set forth in 40 CFR Part 60, Appendix B within 60 days thereafter.

ix. Operating Restrictions

Boiler 5 will be restricted to non-simultaneous operation with the Gas Turbine except for the transitional period when one unit is starting up prior to shutdown of the other unit, not to exceed a 12 hour period.

2. Gas Turbine

The Gas Turbine is a GE Frame 7 combined cycle gas turbine that fires natural gas and #2 fuel oil to produce a nominal 175 MW. The Gas Turbine commenced operations in October 2000 and includes a non-fired heat recovery steam generator (HRSG). The #2 fuel oil usage license limit for the Gas Turbine is 21,587,040 gallons/year. The Gas Turbine utilizes dry low NO<sub>x</sub> burners and water injection for the control of NO<sub>x</sub> emissions.

The gas conversion project will impose no additional changes to the current Gas Turbine license requirements except for a limit for non-simultaneous operation with Boiler 5, excluding the transitional period when one unit is starting up prior to the other unit being shut down, and establishing a 250 tpy NO<sub>x</sub> limit and 120 tpy CO limit as total annual limits with Boiler 5.

a. New Source Performance Standards (NSPS)

The Gas Turbine is subject to the requirements of 40 CFR Part 60, Subpart GG, *Standards of Performance for Stationary Gas Turbines*, and the proposed project will not change the applicability of the Gas Turbine to

Subpart GG or the turbine's applicable requirements. The Gas Turbine will have a non-simultaneous operational restriction as an outcome of the project, but the turbine is not being modified or reconstructed, therefore it is not subject to 40 CFR Part 60, Subpart KKKK, *Standards of Performance for Stationary Combustion Turbines*.

b. National Emission Standards for Hazardous Air Pollutants (NESHAPs)

The Gas Turbine is not being modified or reconstructed; therefore it is not subject to any specific regulatory requirements as an existing stationary combustion turbine in 40 CFR Part 63, Subpart YYYY, *National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines*.

c. Acid Rain

The Gas Turbine is subject to the Acid Rain program in 40 CFR Parts 72, 73, 75, 77, and 78 because of its construction date and the electrical capacity which is sold to a utility. The proposed project does not have an impact on the Acid Rain regulations for the Gas Turbine.

d. Compliance Assurance Monitoring (CAM)

Although the Gas Turbine NO<sub>x</sub> emissions could potentially be subject to CAM due to the water injection add-on control device and the pre-controlled NO<sub>x</sub> emission potential, the exemptions in 40 CFR Part 64 §64.2(B)(1)(vi) allow that if a Part 70 permit specifies a continuous compliance determination method for the pollutant emission standard, CAM is not applicable. A NO<sub>x</sub> CEMS is operated on the Gas Turbine, which meets the CAM exemption.

e. 06-096 CMR 156 CO<sub>2</sub> Budget Trading Program

The Gas Turbine, a combined heat and power unit located at an integrated manufacturing facility, is currently a CO<sub>2</sub> budget unit since the fossil fuel combusted constitutes, or is projected to comprise, more than 50% of the annual heat input on a BTU basis during any calendar year and it serves a generator with a nameplate capacity equal to or greater than 25 MW electrical output. The Gas Turbine was included in the CO<sub>2</sub> budget source license (A-77-78-A-N, January 15, 2009). The Gas Turbine also has supplied more than the limited exemption amount of 10% of its gross electrical generation for transmission over the facilities of a transmission and distribution utility on an annual basis; however, the proposed project

could impact the applicability to 06-096 CMR 156 if the anticipated change in operation meets the limited exemption in the future.

f. Best Available Control Technology

The Gas Turbine licensed short-term emissions are not changing and there will be no physical modification of the unit with this project, so a BACT analysis is not required for the Gas Turbine for this amendment.

3. Project Restrictions

a. Prevention of Significant Deterioration (PSD) Avoidance

For those PSD regulated pollutants where the actual-to-projected actual emission increase is less than 50% of the PSD significance levels, the proposed project is deemed not to have a 'reasonable possibility' of resulting in a significant net emission increase and therefore, pre- and post- project recordkeeping and reporting requirements do not apply. For this project, Verso Bucksport does not have to track future actual emissions associated with PM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, VOC, Pb, and CO<sub>2e</sub>.

For the Boiler 5 and Gas Turbine total annual NO<sub>x</sub> and CO emission limits established in this license for PSD avoidance purposes, 250 tpy and 120 tpy, respectively, Verso Bucksport shall demonstrate compliance on a 12 month rolling total basis using the calculation methods set forth in Condition (3) of this license amendment.

b. Non- Simultaneous Operation of Boiler 5 and Gas Turbine

Boiler 5 and the Gas Turbine shall be restricted to non-simultaneous operation, except for the transitional period when one unit is starting up prior to shutdown of the other unit. This transitional period shall not exceed 12 hours. Verso Bucksport shall maintain operating records documenting compliance with this restriction.

C. Incorporation into the Part 70 Air Emission License

The requirements in this 06-096 CMR 115 New Source Review amendment shall apply to the facility upon amendment issuance. Per *Part 70 Air Emission License Regulations*, 06-096 CMR 140 (as amended), Section 1(C)(8), for a modification that has undergone NSR requirements or been processed through 06-096 CMR 115, the source must then apply for an amendment to the Part 70 license within one year of commencing the proposed operations as provided in 40 CFR Part 70.5.

D. Annual Emissions

1. Total annual licensed emissions from Verso Bucksport are not changing with this amendment. Verso Bucksport shall be restricted to the following annual emissions, based on a 12 month rolling total:

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

<u>Equipment</u>	<u>PM</u>	<u>PM<sub>10</sub></u>	<u>SO<sub>2</sub></u>	<u>NO<sub>x</sub></u>	<u>CO</u>	<u>VOC*</u>
Boilers 5, 6, 8, and the gas turbine	351	351	1400	1410	628	205
Off Machine Coater	-	-	-	29	-	-
TMP Process Vents	-	-	-	-	-	28.5
Groundwood Process Vents	-	--	-	-	-	144.5
Diesel Emergency Generators (Onan 1, 2, and 3 total)	2.3	2.3	0.3	17.4	1.7	0.6
<b>TOTALS</b>	<b>353.3</b>	<b>353.3</b>	<b>1400.3</b>	<b>1456.4</b>	<b>629.7</b>	<b>378.6</b>

\* Paper machine VOC are noted, but not included since they are highly variable and unquantified at this time. TMP and groundwood VOC calculations are based on maximum capacity.

2. Greenhouse Gases

CO<sub>2</sub>e is not used to calculate the annual fee and is not listed in the table above since Verso Bucksport is already classified as major for greenhouse gases and does not currently have annual restrictions imposed.

**III. AMBIENT AIR QUALITY ANALYSIS**

Verso Bucksport previously submitted an ambient air quality analysis for the biomass upgrade project for Boiler 8 (A-22-77-4-A, November 29, 2010) demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards. That analysis was performed with both Boiler 5 and the Gas Turbine operating simultaneously. Although the fuel in Boiler 5 is changing, the emissions will be significantly reduced for most pollutants and due to the non-simultaneous operational restrictions on Boiler 5 and the Gas Turbine, emissions will

be less than those included in the ambient air quality analysis. Therefore, an additional ambient air quality analysis is not required for this amendment.

### 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,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-22-77-11-A pursuant to the preconstruction licensing requirements of 06-096 CMR 115 and subject to the special conditions below.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License 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.

### SPECIFIC CONDITIONS

(1) **Boiler 5**

A. Natural Gas

- a. Boiler 5 shall be converted from an oil-fired boiler to a natural gas fired boiler. Once the natural gas conversion is complete, the boiler shall no longer fire oil. [06-096 CMR 115, BACT]
- b. Verso Bucksport shall maintain monthly fuel use records of the natural gas fired in Boiler 5. [06-096 CMR 115, BACT]

B. Emissions from Boiler 5 when firing natural gas shall not exceed the following [06-096 CMR 115, BACT]:

Pollutant	lb/MMBtu	lb/hr
PM*	-	0.68
PM <sub>2.5</sub> **	-	5.00
PM <sub>10</sub> **	-	5.00
SO <sub>2</sub>	-	0.21
NO <sub>x</sub>	0.18 (on a 30 day rolling average once the CEM is installed and certified)	66.78
CO	0.08	29.68
VOC	-	2.23

\* PM includes filterables only.

\*\* PM<sub>2.5</sub> and PM<sub>10</sub> includes condensables and filterables.

C. If Boiler 5 is the only boiler exhausting to the common stack, visible emissions from the common stack shall not exceed 10% opacity on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 3-hour block period. [06-096 CMR 101]

D. Compliance Methods

1. Compliance with the emission limits in Condition (1)(B) above shall be demonstrated with a stack test performed upon request of the Department using the appropriate stack test method, except as stated in Condition (1)(D)(2).
2. NO<sub>x</sub> CEMS - Within 60 days of documentation that Verso Bucksport operated Boiler 5 in exceedance of 30% of the unit's annual capacity factor, Verso Bucksport shall install, calibrate, maintain, and operate a continuous emission monitoring system for NO<sub>x</sub> on the unit in accordance with the applicable performance specifications set forth in 40 CFR Part 60, Appendix B. Exceedance of the 30% annual capacity factor limit shall be determined by a heat input of more than 974,988 MMBtu/yr in Boiler 5 (annual capacity factor means the ratio between the actual heat input to a steam generating unit from fuels during a calendar year, and the potential heat input to the steam generating unit had it been operating for 8760 hours at a maximum steady state design heat input capacity). [06-096 CMR 115, BACT and 06-096 CMR 117]



E. 40 CFR Part 63, Subpart DDDDD

Verso Bucksport shall comply with the requirements of 40 CFR Part 63, Subpart DDDDD applicable to Boiler 5, including, but not limited to operational and work practice standards, and notification, reporting, and recordkeeping requirements. [40 CFR Part 63, Subpart DDDDD]

(2) **Non-simultaneous Operation of Boiler 5 and the Gas Turbine**

- a. Boiler 5 and the Gas Turbine shall not operate simultaneously, except for the transitional period when one unit is starting up prior to shutdown of the other unit. The transitional period shall not exceed 12 hours.
- b. Verso Bucksport shall maintain operating records for Boiler 5 and the Gas Turbine documenting compliance with the 12 hour transitional period allowance for startup and shutdown events when the units may operate at the same time.

[06-096 CMR 115, BACT]

(3) **Annual Limits for Boiler 5 and the Gas Turbine**

(established to net the gas conversion project out of the PSD program)

- a. Annual NO<sub>x</sub> emissions from Boiler 5 and the Gas Turbine combined shall not exceed 250 tpy on a 12 month rolling total, in addition to Boiler 5 being restricted to 250 tpy for BART purposes. [06-096 CMR 115, BACT and A-22-77-5-M, November 2, 2010]
- b. Annual CO emissions from Boiler 5 and the Gas Turbine combined shall not exceed 120 tpy on a 12 month rolling total. [06-096 CMR 115, BACT]
- c. Verso Bucksport shall maintain records demonstrating compliance with the NO<sub>x</sub> and CO tpy limits using CEMS data, if available, or by one of the following methods:
  - i. Multiplying the licensed lb/MMBtu emission limit for Boiler 5 by the monthly heat input (MMBtu/month) supplied to the unit; or
  - ii. Multiplying the licensed lb/hr emission limits for gas and oil for the Gas Turbine by the number of hours the turbine fires each fuel in a given per month.

A fuel heat content value of 1020 Btu/scf shall be used for natural gas.

[06-096 CMR 115, BACT]

Verso Bucksport LLC  
Hancock County  
Bucksport, Maine  
A-22-77-11-A

18

Departmental  
Findings of Fact and Order  
New Source Review  
NSR #9

- (4) Verso Bucksport shall submit an application to incorporate this amendment into the Part 70 air emission license no later than 12 months from commencement of the requested operation. [06-096 CMR 140, Section 1(C)(8)]

DONE AND DATED IN AUGUSTA, MAINE THIS 15 DAY OF January, 2014.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marie Allen Robert Case for  
PATRICIA W. AHO, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: December 16, 2013

Date of application acceptance: December 16, 2013

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.

