I. SUMMARY

We certify as a Class I New Renewable Resource the output of the S.D. Warren Company d/b/a Sappi Fine Paper North America (“Sappi”) Recovery Boiler located at the Somerset Mill in Skowhegan, Maine as eligible to satisfy Maine’s new renewable resource portfolio requirement pursuant to Chapter 311, § 3(B) of the Commission’s rules. This certification is for the generation from the steam produced by the combustion of renewable biomass in the Recovery Boiler, pursuant to the calculation specified in this Order.

II. BACKGROUND

A. New Renewable Resource Portfolio Requirement

During its 2007 session, the Legislature enacted an Act To Stimulate Demand for Renewable Energy (Act). P.L. 2007, ch. 403 (codified at 35-A M.R.S.A. § 3210(3-A)). The Act added a mandate that specified percentages of electricity that supply Maine’s consumers come from “new” renewable resources. Generally, new renewable resources are renewable facilities that have an in-service date, resumed operation or were refurbished after September 1, 2005. The percentage requirement starts at one percent in 2008 and increases in annual one percent increments to ten percent in 2017, unless the Commission suspends the requirement pursuant to the provisions of the Act.

As required by the Act, the Commission modified its portfolio requirement rule (Chapter 311) to implement the “new” renewable resource requirement. Order Adopting Rule and Statement of Factual and Policy Basis, Docket No. 2007-391 (Oct. 22, 2007). The implementing rules designated the “new” renewable resource

1 Maine’s electric restructuring law, which became effective in March 2000, contained a portfolio requirement that mandated that at least 30% of the electricity to supply retail customers in the State come from eligible resources, which are either renewable or efficient resources. 35-A M.R.S.A. § 3210(3). The Act did not modify this 30% requirement.
requirement as “Class I” and incorporated the resource type, capacity limit, and the vintage requirements as specified in the Act. The rules thus state that a new renewable resource used to satisfy the Class I portfolio requirement must be of the following types:

- fuel cells;
- tidal power;
- solar arrays and installations;
- wind power installations;
- geothermal installations;
- hydroelectric generators that meet all state and federal fish passage requirements; or
- biomass generators, including generators fueled by landfill gas.

In addition, except for wind power installations, the generating resource must not have a nameplate capacity that exceeds 100 MW. Finally, the resource must satisfy one of four vintage requirements. These are:

1) renewable capacity with an in-service date after September 1, 2005;
2) renewable capacity that has been added to an existing facility after September 1, 2005;
3) renewable capacity that has not operated for two years or was not recognized as a capacity resource by the ISO-NE or the NMISA and has resumed operation or has been recognized by the ISO-NE or NMISA after September 1, 2005; or
4) renewable capacity that has been refurbished after September 1, 2005, and is operating beyond its useful life or employing an alternate technology that significantly increases the efficiency of the generation process.³

² The “new” renewable resource requirement was designated as Class I because the requirement is similar to portfolio requirements in other New England states that are referred to as “Class I.” Maine’s pre-existing “eligible” resource portfolio requirement is designated as Class II.

³ The 125th Maine State Legislature recently amended 35-A M.R.S.A. § 3210, sub-section 2, B-4, to provide additional guidance on the meaning of the term refurbish. The new language states that “to refurbish’ means to make an investment in equipment or facilities, other than for routine maintenance and repair, to renovate, reequip or restore the renewable capacity resource.” P.L. 2011, Ch. 413, § 1.
Chapter 311, section 3(B)(4) of the Commission’s rules, establishes a certification process that requires generators to pre-certify facilities as a new renewable resource under the requirements of the rule and provides for a Commission determination of resource eligibility on a case-by-case basis.\(^4\) The rule contains the information that must be included in a petition for certification and specifies that the Commission shall provide an opportunity for public comment if a petitioner seeks certification under vintage categories 2, 3 and 4. Finally, the rule specifies that the Commission may revoke a certification if there is a material change in circumstance that renders the generation facility ineligible as a new renewable resource.

B. Petition for Certification

On October 5, 2012, S.D. Warren Company d/b/a Sappi Fine Paper North America (“Sappi”) filed a petition to certify its Recovery Boiler System located at the Somerset Mill in Skowhegan, Maine as a Class I New Renewable Resource under the refurbishment provision of the Commission’s renewable portfolio rules. Ch. 311, § 3(B)(3)(d). After a protective order was issued by the Commission Staff, Sappi supplemented its petition with confidential documents on October 17, 2012. Staff issued one information request and Sappi provided responses on February 25, 2013. Sappi also discussed its application with Commission Staff on April 24, 2013. As required by our rules, the Commission provided interested persons with an opportunity to comment on Sappi’s Petition. No comments were received.

The Petition states the Recovery Boiler System is fueled primarily by “black liquor,” with No. 6 oil used as needed for startup, shutdown, and upset conditions.\(^5\) The Petition states the Recovery Boiler provides steam to a common 900 psi steam header which then feeds steam to both turbine generators (“TG1” and “TG2”).\(^6\) A total of approximately 31 MW is generated from black liquor in the Recovery Boiler System under normal conditions (see Figure 1).

\(^4\) In the Order Adopting Rule at 6, the Commission noted that a request for certification can be made at any time so that a ruling can be obtained before a capital investment is made in a generation facility.

\(^5\) For a description of the black liquor combustion process, as explained in the Petition, pages 3-4, see Appendix 1.

\(^6\) The Recovery Boiler is one of several steam generation sources contained in the Somerset Paper Mill. The Mill also produces steam from two hogged fuel boilers (“HB1” and “HB2”). This steam feeds into TG1 and TG2 along with steam from the Recovery Boiler. HB1 and HB2 also burn renewable fuel to produce renewable steam, but Sappi has not sought Class I certification of these steam generation sources. The Commission has determined that a portion of a renewable generation facility can be certified as a Class I eligible resource. See Order Granting In Part and Denying In Part New Renewable Resource Certification in Docket No. 2012-81.
**Figure 1.** Schematic illustrating the Sappi Somerset energy generation facility. The process flow diagram indicates how steam will typically flow from the various boilers to TG1 and TG2.

Sappi states that its Recovery Boiler was installed in 1976, and as the expected useful life of a recovery boiler is 20 years, the Recovery Boiler is currently operating beyond its previous useful life. Petition at 2. The Petition states TG1 was installed in 1976 and TG2 was installed in 1990. The Petition also states that since September 1, 2005, the sum of all major refurbishments and capital invested into the Recovery Boiler System has totaled $47.53 million and that this level of investment is more than four times the Recovery Boiler Power Plant’s unrefurbished book value. This investment includes projects such as replacement of the rear superheater, replacement of the high temperature superheater pendant, replacement of water tubes, a new continuous emissions monitoring system, a new RBLI (tracer chemical) system, replacement of ID fan inlet expansion joints, replacement of all generating bank tubes, a recovery cycle upgrade (including a new economizer and casing, new downcomer piping, and a new green liquor piping system), an evaporator upgrade (including new black liquor concentrators, conversion of 5th and 6th effects to falling film technology, and an added surface condenser), a new gland steam regulator for TG1, and a new station service battery bank for TG2.
III. DECISION

A. New Renewable Resource Certification

After considering Sappi’s Petition and the additional information provided by Sappi in response to Staff’s questions, we find that Sappi’s Recovery Boiler has been refurbished pursuant to Chapter 311, section 3(B)(3)(d), and therefore its output qualifies as a Maine Class I New Renewable Resource. Our decision to grant Class I certification for the Sappi Somerset Facility is based upon our finding that Sappi has satisfied each of the following elements of Class I New Renewable Resource eligibility: (1) Resource Type; (2) Capacity Limit; and (3) Vintage.

1. Resource Type

Sappi’s Petition states that the Recovery Boiler is fueled by “black liquor” nearly 100% of the time, with auxiliary fuel (#6 fuel and recycled oil) being used only for startup, shutdown, and emergency plant conditions. Sappi seeks Class I certification for only the portion of the generation derived from black liquor.

We find that the black liquor fuel burned in the Recovery Boiler is an eligible renewable resource under the definition of biomass set forth in our Order Adopting Chapter 311 and reiterated in our Order Granting New Renewable Resource Certification for the Lincoln Paper and Tissue biomass facility because the heat generating portion of black liquor is a combustible and organic byproduct of the wood pulping process. 7,8

2. Capacity Limit

Chapter 311, section 3(B)(2) provides that a new renewable resource other than wind must not have a nameplate capacity that exceeds 100 MW. The total nameplate capacity of the entire Sappi Somerset Mill (TG1 and TG2) is 107

7 In the Commission’s Order adopting Chapter 311, the Commission concluded that, “without further legislative direction and in light of the unqualified statutory term “biomass,” the Commission would adopt a relatively broad definition that includes all fuel derived from wood and wood byproducts (along with other organic sources).” Public Utilities Commission Amendments to Portfolio Requirement Rule (Chapter 311), Docket No. 2007-397, Order Adopting Rule and Statement of Factual and Policy Basis (Oct. 27, 2007).

8 In the Commission’s Order certifying the Lincoln Paper and Tissue biomass facility as a Class I New Renewable Resource, the Commission found that the fuel used in the Lincoln facility, including wood waste, process sludge and black liquor, constituted biomass under Maine’s RPS law. Lincoln Paper and Tissue, LLC Request for Certification for RPS Eligibility, Docket No. 2008-173, Order Granting New Renewable Resource Certification at 6 (Jan. 27, 2009).
MW. See February 25, 2013 Response to Information Request No. 1 at 1. While the entire nameplate capacity of the Mill exceeds the capacity limit, the Commission has found that the capacity limit applies to the total renewable resource portion of a facility. Because the Sappi Somerset Mill burns some fuel oil and tire derived fuel in its boilers, the renewable resource portion of the facility, namely the output from the combustion of biomass in the Recovery Boiler, HG1, and HG2, has an apportioned nameplate capacity below 100 MW.

This conclusion is based upon the observed proportion of fuels combusted for fiscal years 2010-2012. While the proportion of fuels combusted varies somewhat from year to year during this period, in all years the calculated nameplate capacity of the renewable portion of the Somerset Mill was below 100 MW. The Commission does not foresee the 100 MW capacity limit being exceeded unless there is a material change in the operation of the facility, including the fuel burned in the generation process. However, as with all other Class I certification, the Commission requires the facility to provide notification of material changes in the generation process which should further mitigate this possibility.

3. Vintage

Sappi seeks certification under the refurbishment prong of the vintage criteria contained in Chapter 311, section 3(B)(3)(d). This refurbishment prong is also contained in the definition of “New” as applied to any renewable capacity resource in 35-A, MRSA § 3210(2)(B-4). The refurbishment prong defines a new renewable resource as a generation facility that:

Has been refurbished after September 1, 2005 and is operating beyond its previous useful life or is employing an alternate

9 Sappi also provided its internal calculation of the nameplate capacity of TG1 and TG2 based upon Sappi’s past internal measurements of actual, realized power factors. While this nameplate capacity, at 117 MW, is higher, it is not the reported manufacturer’s nameplate capacity. As specified in Chapter 311, section 2(L), “nameplate capacity” means the capacity rating of a generation facility as specified by the manufacturer.

10 In the Commission’s Order certifying the Verso Bucksport biomass facility as a Class I New Renewable Resource, the Commission found that since Chapter 311, section 3(B)(1) defines a new renewable resource as a generation facility that generates electricity with the renewable fuels set forth in the rule, it would consider only the portion of the Bucksport Paper Mill’s nameplate capacity attributable to the renewable output, namely the Bucksport Biomass Plant, as constituting the renewable capacity resource. Verso Bucksport, LLC Request for Certification for RPS Eligibility, Docket No. 2011-102, Order Granting New Renewable Resource Certification at 6 (Nov. 23, 2011).

11 For instance, the capacity limit might be exceeded if tire derived fuel was no longer combusted and the facility moved to essentially only combusting biomass.
technology that significantly increases the efficiency of the generation process.

This prong is a two part test that requires the Commission to first determine whether the facility has been “refurbished,” and then to determine whether the facility is operating beyond its previous useful life or employing an alternate technology that significantly increases the efficiency of the generation process.

To clarify the meaning of refurbishment, the Legislature enacted an amendment to the refurbishment prong of the vintage requirement. Pursuant to the statutory amendment, “to refurbish” means “to make an investment in equipment or facilities, other than for routine maintenance and repair, to renovate, reequip or restore the renewable capacity resource.” 35-A M.R.S.A. § 3210(2)(B-4).12

As stated by the Maine Law Court, the purpose of the refurbishment provision is to encourage the preservation of older existing renewable generation facilities by creating an incentive for owners to make the investments necessary to preserve and extend the useful lives of these older facilities. Covanta Maine, LLC v. Public Utilities Commission, 2012 ME 74, ¶ 16 (2012) (Covanta).

Pursuant to the Law Court’s analysis in Covanta, in the course of making its determination regarding whether there has been a refurbishment, the Commission must consider the nature and character of the expenditures to determine whether they were made for the purpose of repair or maintenance or for investment in equipment or facilities. Covanta, 2012 ME 74, ¶¶ 17, 19.

i. **Refurbishment**

The Commission’s practice in assessing whether a generation facility has been refurbished is to examine a collection of factors, including, but not limited to, the condition of the facility prior to the investments and the nature of the expenditures to determine whether they appear to be related to routine maintenance and repair.

In its Petition, Sappi provides a list of capital investments made to Sappi’s Somerset Facility since September 1, 2005 totaling $47.5 million. Most significantly, during the Mill’s fall 2010 outage, Sappi replaced the Recovery Boiler generating bank tubes, upgraded the black liquor recovery cycle with a new larger economizer, upgraded the black liquor evaporator system with two new larger concentrators, and converted the 5th and 6th evaporator effects to a new falling film

12 The Commission interprets this language as making “explicit the Commission’s existing practice of disregarding investments made for routine maintenance and repair when looking at whether a facility has been refurbished.” Verso Bucksport LLC Request for Certification for RPS Eligibility, Docket No. 2011-102, Order Granting New Renewable Resource Certification at 7, fn. 10 (Nov. 23, 2011).
evaporator. These expenditures comprise the majority of the capital investments. Sappi also states in the Petition that, in addition to other projects, it replaced the rear superheater and the high temperature superheater pendant. We do not make a finding on whether each of the projects included in Sappi’s filing independently meets the definition of a refurbishment investment. Rather, we find that the nature, character and scope of Sappi’s investments in the Recovery Boiler system in the aggregate, go beyond routine maintenance or repair, and are sufficient to certify the renewable-based electrical generation derived from the Recovery Boiler steam via TG1 and TG2 as consistent with the statutory definition of a generation facility that has been refurbished after September 1, 2005.

ii. Operation Beyond the Facility’s Previous Useful Life

Sappi seeks qualification of its investments under the useful life sub-prong of the refurbishment vintage category, stating that the “given the usual expected useful life of twenty years for a recovery boiler, Sappi has made strategic investments to extend the useful life of this Recovery Boiler.” Petition at 3.\footnote{13} The Recovery Boiler is part of the original equipment of the Somerset Mill, dating back to 1976. It was 34 years as of 2010, when the recovery cycle upgrade project was implemented. Accordingly, we find that the Sappi Somerset Recovery Boiler, is operating beyond its useful life.

B. Methodology for Calculating RECs

Sappi proposes a proportional method for calculating the REC output of the generation from the Sappi Somerset Facility that is similar to the method initially approved by the Commission in the Verso Bucksport Biomass Facility certification proceeding.\footnote{14} This method for calculating REC production determines the qualifying MWh output of RECs by prorating the total output of TG1 and TG2 in each hour by the proportion of steam produced by Class I eligible fuel inputs from the Recovery Boiler relative to the total steam produced by other fuels (in the Recovery Boiler) and other boilers that feed TG1 and TG2 (regardless of fuel type) (Proportional Method). The Commission has determined that this type of calculation is favorable for its simplicity,\footnote{13} Sappi has not sought certification under the alternative technology sub-prong of the refurbishment category.\footnote{14} The Commission approved the proportional method for calculating the REC output of the Bucksport facility during the first phase of the proceeding. \textit{Verso Bucksport LLC Request for Certification for RPS Eligibility}, Docket No. 2011-102, Order Granting New Renewable Resource Certification at 10-12 (Nov. 23, 2011). After additional proceedings, the Commission subsequently approved an incremental method for calculating the REC output specific to the Bucksport Facility. \textit{See} April 5, 2012 Supplemental Order Modifying Renewable Energy Calculation Method, Docket No. 2011-102.
objectivity and replicability, which enables others who are less familiar with a particular plant to more easily understand and verify the calculation.

Therefore, we certify Sappi’s Recovery Boiler using the Proportional Method, which is calculated on an hourly basis using the following formula:

\[
(S_{REW} / S_T) * (G_1 + G_2) = \text{RECs}
\]

Where,

\[
S_T = (S_{RB} + S_{HB1} + S_{HB2})
\]

And,

\[
S_{REW} = (F_1 / (F_1 + F_2)) * S_{RB}
\]

And as defined by,

RECs = Maine Class I Renewable Energy Credits

\(S_T\) = Total facility steam production in klbs

\(S_{REW}\) = Recovery Boiler renewable steam production in klbs

\(F_1\) = Biomass fuel input to the Recovery Boiler in total MMbtus

\(F_2\) = Fuel oil input to the Recovery Boiler in total MMbtus

\(G_1\) = Metered electrical production of TG1 in MWh

\(G_2\) = Metered electrical production of TG2 in MWh

\(S_{RB}\) = Total metered Recovery Boiler steam production, in klbs

\(S_{HB1}\) = Total metered Hogged Fuel Boiler #1 steam production, in klbs

\(S_{HB2}\) = Total metered Hogged Fuel Boiler #2 steam production, in klbs
For the reasons stated above, and in accordance with the Proportional REC calculation method outlined above, we grant certification of the renewable electrical generation derived from the output of Sappi Somerset Recovery Boiler as a Class I new renewable resource eligible to satisfy Maine’s new renewable resource portfolio requirement pursuant to Chapter 311, § 3(B) of the Commission rules.

To the extent that any of the electricity from the Sappi Somerset Facility serves Facility load (i.e., behind-the-meter generation), we conclude that Sappi must retain GIS certificates or otherwise obtain GIS certificates necessary to satisfy Maine’s RPS (both the original 30% and the “new” requirement) for that portion of its load that is served by the facility. See Lincoln Paper and Tissue, LLC, Request for Certification for RPS Eligibility, Docket No. 2008-173, Order Granting New Renewable Resource Certification at 8 (January 27, 2009). Sappi shall submit to the Commission an annual report by July 1st of each year that demonstrates compliance with this requirement.

Accordingly, we

ORDER

1. That the electrical generation of the Sappi Somerset Facility derived from the renewable output of the Recovery Boiler is certified as a Maine Class I New Renewable Resource;

2. That Sappi shall use the Proportional Method to calculate qualifying RECs as outlined in the body of this Order;

3. That Sappi, on an annual basis beginning on July 1, 2014, shall file with the Commission a compliance report showing the full basis for the calculation of the RECs generated from the Sappi Somerset Facility. This report should include how the steam and electrical generation metering equipment associated with the Sappi Somerset Facility related to Recovery Boiler and TG1 and TG2 have been calibrated; how the metered data have been reviewed, and (if applicable) corrected for accuracy; and how the MMbtu content of the black liquor and fuel oil combusted in the Recovery Boiler have been established and verified;

4. That Sappi shall submit to the Commission an annual report by July 1st of each year that demonstrates compliance with the requirement that Sappi must retain GIS certificates or otherwise obtain GIS certificates necessary to satisfy Maine’s RPS (both the original 30% and the “new” requirement) for that portion of its load that is served by the Sappi Somerset Facility; and

5. That Sappi shall provide timely notice to the Commission of any material change in the characteristics or operation of the Sappi Somerset Facility, including the type of fuel used in the generation process, from that described in the submissions filed by Sappi in this proceeding. Sappi shall also provide timely notice to the Commission of any material change in the characteristics or operation of other components of the Sappi Somerset Paper Mill that materially
impact the characteristics, operation, or eligibility for certification of the Sappi Somerset Facility.

Dated at Hallowell, Maine, this 5th day of September, 2013.

BY ORDER OF THE COMMISSION

/s/Harry Lanphear

Harry Lanphear
Administrative Director

COMMISSIONERS VOTING FOR: Welch
                                      Littell
                                      Vannoy
Appendix 1

Description of Recovery Boiler Black Liquor Fuel Supply

(copied from pages 3-4 of Petition)

i. Pulping

The Somerset Mill produces wood pulp from raw wood through a chemical and mechanical process known as “kraft pulping”. In the kraft pulping process, raw wood chips are combined with a mixture of sodium hydroxide and sodium sulfide which is known as “white liquor”. The mixture is pumped into a digester where the chips are cooked at high temperature and pressure, dissolving the lignin which is the “glue” that holds the wood fibers together. The result is that approximately 50 percent of the wood chips’ biomass content is recovered as fiber for further processing into market pulp and paper products, while the remainder is dissolved in the cooking chemicals.

The pulp stream is washed to separate the spent white liquor and dissolved organics from the pulp fibers, with the resultant mixture known as “black liquor”. The black liquor contains the chemically reacted inorganic chemicals and the organic materials dissolved from the wood chips. The fuel portion of the black liquor is mostly lignin, a naturally occurring organic polymer. Approximately 1 ½ tons of black liquor solids are produced with every ton of pulp fiber produced with 2/3 being the dissolved organics and 1/3 being the spent inorganic chemicals in the white liquor.

ii. Black Liquor Processing

The black liquor containing water, dissolved organics, and inorganics is next processed through an evaporation process which removes the water and concentrates the black liquor to approximately 68 percent solids. The concentrated black liquor is then pumped into the recovery boiler, where it burns as it is a carbon based material, while the inorganic material known as molten “smelt” does not burn but instead drains from the bottom of the recovery boiler. The heat released from the combustion of this biomass fuel is used to produce steam, which in turn is used in part to generate electricity with the remainder of the steam being used to drive fans, a boiler feed water pump, paper machine line shafts, and provide for process heating.

The molten smelt which drains from the bottom of the recovery boiler is mixed with water and becomes known as “green liquor”. The green liquor is processed with lime through a process known as causticizing, producing white liquor which is sent back to the digester in an ongoing cycle. Hence the name “recovery boiler” as the pulping inorganic chemicals are “recovered” for reuse while the energy content of the raw wood biomass is recovered and used to generate steam and electricity.
iii. Summary

White liquor (inorganics) arrives at the digester and is mixed with raw wood chips under high temperature and pressure conditions. The “cooking” process delivers approximately 50 percent pulp fiber and 50 percent dissolved wood in the original white liquor. This mixture is now known as black liquor (inorganics and organics) and is burned in the recovery boiler to recover the heat value extracted from the wood chips while recovering the inorganic chemicals for conversion back into white liquor and reuse in the digester. The black liquor fuel value comes solely from the wood chips.
NOTICE OF RIGHTS TO REVIEW OR APPEAL

5 M.R.S.A. § 9061 requires the Public Utilities Commission to give each party to an adjudicatory proceeding written notice of the party’s rights to review or appeal of its decision made at the conclusion of the adjudicatory proceeding. The methods of review or appeal of PUC decisions at the conclusion of an adjudicatory proceeding are as follows:

1. **Reconsideration** of the Commission's Order may be requested under Section 1004 of the Commission's Rules of Practice and Procedure (65-407 C.M.R.110) within 20 days of the date of the Order by filing a petition with the Commission stating the grounds upon which reconsideration is sought. Any petition not granted within 20 days from the date of filing is denied.

2. **Appeal of a final decision** of the Commission may be taken to the Law Court by filing, within 21 days of the date of the Order, a Notice of Appeal with the Administrative Director of the Commission, pursuant to 35-A M.R.S.A. § 1320(1)-(4) and the Maine Rules of Appellate Procedure.

3. **Additional court review** of constitutional issues or issues involving the justness or reasonableness of rates may be had by the filing of an appeal with the Law Court, pursuant to 35-A M.R.S.A. § 1320(5).

**Note:** The attachment of this Notice to a document does not indicate the Commission’s view that the particular document may be subject to review or appeal. Similarly, the failure of the Commission to attach a copy of this Notice to a document does not indicate the Commission’s view that the document is not subject to review or appeal.