

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: December 5, 2014

AT (OFFICE): NHPUC

NHPUC 5DEC14AM9:07

FROM: Barbara Bernstein 
Sustainable Energy Analyst

SUBJECT: DE 14-296, Androscoggin Valley Hospital Application for Certification as a REC Eligible Facility – Class I Thermal Staff Recommends that Interim Eligibility be Granted

TO: Chairman Martin P. Honigberg
Commissioner Robert R. Scott
Debra A. Howland, Executive Director and Secretary

CC: David J. Shulock, Staff Attorney
Michael Sheehan, Staff Attorney 

Summary

On October 14, 2014, the Commission received an application filed by Yeaton Associates, Inc. (Yeaton Associates) on behalf of Androscoggin Valley Hospital. Yeaton Associates is requesting interim Class I Thermal renewable energy certificate eligibility¹ for Androscoggin Valley Hospital's 2.4527 megawatt (MW) equivalent,² thermal biomass facility.

Staff has reviewed the Androscoggin Valley Hospital certification request and has determined that the project meets the eligibility requirements under RSA 362-F:4, I(e), as an interim Class I Thermal facility and complies with the New Hampshire Code of Administrative Rules Puc 2500. Staff recommends the Commission grant interim approval for the Androscoggin Valley Hospital thermal biomass facility as a Class I Thermal renewable energy source, effective as of March 21, 2014.³ This review reflects recommended changes to the interim Proposed Amendments to Puc 2500.

Analysis

To qualify as a facility eligible to produce useful thermal energy, Puc 2505.02 (d)⁴ requires the source to provide the following:

¹ Pursuant to Proposed Amendments to Puc 2500 as contemplated by Order No. 25,678 (June 19, 2014) issued in Docket No. DRM 14-095 effective as of July 23, 2014.

² Androscoggin Valley Hospital's boiler system has a rated thermal capacity of 8,368,750 Btu/hr. The gross output is 250 Boiler Horsepower (BHP). Megawatts = BHP x 8,368,750 / 3,412,000.

³ The facility began operation March 21, 2014. Consistent electronic data tracking began after September 1, 2014. Yeaton Associates has provided methodology based on fuel consumption for the March 21, 2014 through August 1, 2014 and daily recorded tracking for September.

⁴ Initial Proposal 4-04-14.

- 1) *The name, address and contact information of the applicant:* The application was filed by David M. Kyle, P.E., Yeaton Associates, Inc., 66 Jackson Street, Littleton, NH 03561 on behalf of Androscoggin Valley Hospital, 59 Paige Hill Road, Berlin, NH 03570. The primary contact for Androscoggin Valley Hospital is Stephen McMann, Director of Facilities.
- 2) *The name and location of the facility:* Androscoggin Valley Hospital is located at the address listed in 1) above.
- 3) *A description of the equipment and meters used to measure useful thermal energy including the manufacturer, model, placement of the sensors in the energy production system, temperature operating range, flow operating range, thermal energy operating range, and pressure operating range, if applicable.*

System or Component	Product Name	Manufacturer/Model
Supply steam mass flow rate	Rosemount 8800D Series Vortex Flowmeter	Model #8800DR030
Supply Seam Temperature	Rosemount 8800D Multivariable Vortex temperature sensor	Integral to the above model
Total System Accuracy	Mass Flow Meter: Manufacturer's guaranteed accuracy is +/- 2.48% of rate. See p.18 of Attachment 3-1 of the application.	

Attachment 3.4 of the application provides details on the assumptions and calculations for the interim calculations of useful thermal energy and the megawatt hours produced.

- 4) *A description of the manufacturer's recommended methods and frequency for meter calibration.* (See Attachment 3-3). The meter manufacturer, Rosemount, calibrates the meter at the factory. The calibration period is not given in the Rosemount guidelines. Yeaton Associates recommends calibration to be performed annually.
- 5) *The rated thermal capacity of the facility.* The gross output of the boiler at Androscoggin Valley Hospital is 8,368,750 Btu/hr or 250 BHP (Boiler Horsepower).
 $250 \text{ BHP} \times 33,475 = 8,368,750 \text{ Btu/hr}$
 $8,368,750 / 3,412,000 = 2.4527 \text{ MW equivalent.}$
- 6) *The GIS facility code.* The Androscoggin Valley Hospital thermal biomass project is registered as account number 15628 in the NEPOOL-GIS system. The NEPOOL-GIS unit identification code for the Androscoggin Valley Hospital useful thermal capacity has been verified as NON 43842.
- 7) *The name, license number, if applicable, and contact information of the installer of the thermal biomass facility, solar thermal technology or geothermal system, or a statement that the equipment was installed directly by the owner.* The application lists the installer as Langford and Low, General Contractor, 248 Warren Avenue, Portland, ME 04104.

- 8) *The name and contact information of the seller of the thermal equipment.* The manufacturer of the Androskoggin Valley Hospital thermal biomass project and the seller of the boiler system is Messersmith Manufacturing Inc., 2612 F Road, Bark River, MI 49807; phone number (906) 466-9010.
- 9) *The name and contact information of the independent monitor of the facility.* The application lists Wayne G. Fillion, Yeaton Associates, as the independent monitor.⁵
- 10) *An attestation that the project meets the metering requirements of Puc 2506 and the meters were installed according to manufacturer's recommendation.* Affidavits were provided by Stephen McMann, Director of Facilities, Androskoggin Valley Hospital and David M. Kyle, P.E.
- 11) *The manufacturer's guaranteed accuracy of the meters used to calculate thermal energy output.* The guaranteed accuracy for the Rosemount 8800D is 97.52 percent.
- 12) *For small thermal sources a description of the methodology used to calculate the useful thermal energy pursuant to Puc 2506.04 including the equations and values for the variables in the equations.* Not applicable.
- 13) *For large thermal sources, a description of the methodology used to calculate the useful thermal energy pursuant to Puc 2506.04.* Two methodologies were presented. The first, based on consistent electronic data tracking, covers the period September 1, 2014 to the present. This methodology was then compared to fuel consumption and used to calculate the production from March 21, 2014 through August 31, 2014.

Methodology I.

Total Daily Thermal Energy = $[(M_{out}) \times (h_{out}) - (M_{in}) \times (h_{in})] \times (0.98)$.

- (M_{out}) is the daily pounds of steam leaving the boiler.
- (h_{out}) is the daily average specific enthalpy (Btu/lb) of steam leaving the boiler calculated using the steam temperature which is recorded once per day, and using the assumption that the steam is saturated.
- (M_{in}) is the daily pounds of boiler feedwater into the boiler.
- (h_{in}) is the daily average specific enthalpy (Btu/lb) calculated using the observed feedwater temperature.
- 0.98 is the assumed 2.0% loss in useful thermal energy due to parasitic loads, as required by draft PUC 2506.05(f).

The monthly total Btu for September was 1,023,190,089.9 and the MWh equivalent is 299.9.

Methodology II

- Step 1. The applicant compared fuel consumed during September with MWh of useful thermal energy produced during September. This analysis was then used to derive the ratio of use thermal energy to tons of fuel.

⁵ The Commission approved Mr. Yeaton as an independent monitor of thermal RECs in DE 14-173, July 15, 2014.

- Step 2. The applicant multiplied the September ratio (useful Thermal Energy)/(Tons of Fuel) by the fuel consumed in each month to estimate the useful thermal energy produced during each of the previous months.

14) *The discount factors for meter accuracy pursuant to Puc 2506.05(e) to be applied for REC calculations, if applicable.* Not applicable.

15) *The discount factor for operating energy and thermal energy losses pursuant to Puc 2506.05(f) to be applied for REC calculations, if applicable, or a detailed description of the method for determining a discount factor for operating energy and thermal energy losses, if applicable.* As required by draft PUC 2506.05(f) the discount factor is 2%.

16) *If a thermal biomass facility, the following documentation, as applicable.* On July 14, 2014 the Department of Environmental Services (DES) provided a letter to the Commission recommending approval of Androscoggin Valley Hospital as a Class I Thermal renewable energy source eligible to generate RECs.

a. For units with a heat input capacity of 100 MMBtu/hour or greater, the nitrogen oxides (NOx) emissions rate in lb/MMbtu, quarterly average. Not applicable.

b. For units with a heat input capacity of 3 MMBtu/hour or greater, the particulate matter emission rate in lb/MMBtu. A PM emission test has been performed for Androscoggin Valley Hospital, and DES finds the report to be technically acceptable and agrees that the test results show the measured particulate emission from the boiler to be 0.067 lbs/MMBtu.⁶

c. A description of pollution control equipment or proposed practices for compliance with NOx and particulate matter requirements. Temporary Permit TP-0127, issued by DES, contains pollution control equipment (electrostatic precipitator) operation and maintenance requirements.⁷

d. For units with a heat input capacity of less than 100 MMBtu/hour, the proposed best management practices (BMPs) that are consistent with the recommendations in the report entitled "Emission Controls for Small Wood-Fired Boilers" prepared for the United States Forest Service, Western Forestry Leadership Coalition by RSG, Inc., May 6, 2010, and available at http://www.wflccenter.org/news_pdf/361_pdf.pdf. Stephen McMann verified⁸ that it shall be Androscoggin Valley Hospital's policy to implement BMP's consistent with the recommendations in the "Emission Controls for Small Wood-Fired Boiler" report.

*e. ~~Proof that a copy of the completed application has been filed with the department.~~*⁹

⁶ DES letter from Raymond Walters, Air Resources Division, DES to Stephen McMann, dated July 14, 2014.

⁷ Ibid.

⁸ Email correspondence dated December 1, 2014.

⁹ Staff has determined that this stipulation is not relevant to the application. DES provides a letter with the application that verifies the facility has met all emissions requirements and established best management practices. The final rule will reflect this revision.

- 17) *All other necessary regulatory approvals that are related to REC requirements, including any reviews, approvals or permits required by the department.* On July 14, 2014, the DES provided a letter to Androscoggin Valley Hospital stating that the biomass facility was within the threshold for eligibility to participate in the proposed Renewable Portfolio Standards as a Class I Thermal renewable energy source.
- 18) *A statement as to whether the facility has been certified under another non-federal jurisdiction's renewable portfolio standards and proof thereof.* The Androscoggin Valley Hospital biomass facility has not been certified under another non-federal jurisdiction's renewable portfolio standard.
- 19) *A description of how the facility's output is reported to the GIS, including the name and contact information of the independent monitor.* The application lists the independent monitor as Wayne G. Fillion, 66 Jackson Street, Littleton, NH 03561.
- 20) *The name and telephone number of the facility's operator, if different from the owner.* The facility is operated by Androscoggin Valley Hospital.
- 21) *Such other information as the applicant wishes to provide to assist in classification of the facility.* The applicant provided ample information to complete the evaluation.
- 22) ~~*For thermal biomass renewable energy technologies, the manufacturer's rated thermal efficiency.*~~¹⁰
- 23) *For a solar thermal facility, the Solar Rating and Certification Corporation (SRCC) rating of the system.* Not applicable.
- 24) *For a geothermal facility, the coefficient of performance and the energy efficiency ratio of the system.* Not applicable.
- 25) ~~*An attestation by the applicant that the project is installed and operating in conformance with any applicable building codes.*~~¹¹
- 26) *An affidavit by the owner attesting to the accuracy of the contents of the application.* An affidavit signed by Stephen McMann, Director of Facilities, Androscoggin Valley Hospital, was provided with the application.
- 27) *An affidavit by a professional engineer that is licensed in New Hampshire and in good standing attesting that the renewable energy source meets the requirements of this part.* An affidavit signed by David M. Kyle, P.E. was provided with the application. Mr. Kyle is licensed as an engineer (No. 14525) in the State of New Hampshire.

¹⁰ Staff has determined that this information is typically not available. The final rule will reflect this revision.

¹¹ Staff has determined that this requirement is not applicable and the final rule will reflect this revision.

For thermal sources requesting eligibility to be issued certificates for the period January 1, 2014 until 60 days following the effective date of this part, the application shall include the following information for that interim period which information shall be submitted no later than 60 days following the effective date of this part:

- 1. If requesting eligibility to be issued thermal certificates, the information required under Puc 2505.02(d), except as outlined in Puc 2505.02(e)(2) See above.*
- 2. In lieu of the information required by Puc 2505.02 (d) (11) through (13), a thermal source may submit a detailed explanation of the methodology used to measure and calculate thermal energy and an attestation by a professional engineer that is licensed in New Hampshire and in good standing that the methodology for measuring useful thermal energy and calculating certificates is sound. Attachment 3.4 of the application provided the methodology for based on both calculated and actual electronic data tracking.*

Recommendation

Staff has reviewed the Androscoggin Valley Hospital application for Class I Thermal certification of its biomass facility, and can affirm it is complete pursuant to New Hampshire Code of Administrative Rules Puc 2500. Staff recommends that the Commission grant interim approval for the Androscoggin Valley Hospital thermal biomass facility as a Class I Thermal renewable energy source, effective as of March 21, 2014.

SERVICE LIST - EMAIL ADDRESSES - DOCKET RELATED

Pursuant to N.H. Admin Rule Puc 203.11 (a) (1): Serve an electronic copy on each person identified on the service list.

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Docket #: 14-296-1 Printed: December 05, 2014

FILING INSTRUCTIONS:

- a) Pursuant to N.H. Admin Rule Puc 203.02 (a), with the exception of Discovery, file 7 copies, as well as an electronic copy, of all documents including cover letter with:**

DEBRA A HOWLAND
EXECUTIVE DIRECTOR
NHPUC
21 S. FRUIT ST, SUITE 10
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- b) Serve an electronic copy with each person identified on the Commission's service list and with the Office of Consumer Advocate.**
- c) Serve a written copy on each person on the service list not able to receive electronic mail.**