



State of New Hampshire
Public Utilities Commission
21 S. Fruit Street, Suite 10, Concord, NH 03301-2429



DRAFT VERSION REVISED 1-7-2019

**RENEWABLE ENERGY SOURCE ELIGIBILITY FOR
CLASS I THERMAL SOURCES WITH RENEWABLE THERMAL ENERGY CAPACITY
GREATER THAN 1,000,000 BTU/HR**

Pursuant to New Hampshire Administrative Code [PUC 2500](#) Rules

- Please submit one (1) original and two (1) paper copies of the completed application and cover letter* to Debra A. Howland Executive Director at the address above and send an electronic version of the completed application and the cover letter electronically to executive.director@puc.nh.gov.
- * The cover letter must include complete contact information and identify the renewable energy class for which the applicant seeks eligibility. Pursuant to PUC 2505.01, the Commission is required to render a decision on an application within 45 days of receiving a completed application.

Please contact the Sustainable Energy Division at
(603) 271-2431 or RECAApplicationGroup@puc.nh.gov with questions

Only facilities that began operation after January 1, 2013 are eligible.

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Attachment Labeling Instructions

Please label all attachments by Part and Question number to which they apply (e.g. Part 3-7). For electronic submission, name each attachment file using the Owner Name and Part and Question number (e.g. Pearson Part 3-7)

Part 1. General Applicant Information

1-1 Aggregator Information

Is this facility part of a Commission approved aggregation?

Yes

No



Aggregator's Company Name:

Aggregator Contact Information:

1-2 Applicant Information

Name: Keene State College

Mailing Address: Heat Plant 229 main Street

Town/City: Keene State: NH Zip Code: 03435-2502

Primary Contact: William Rymes

Telephone: 603-358-2207 Cell: _____

Email Address: wrymes@keene.edu

1-3 Facility Information

Name: Heat Plant • Keene State College

Physical Address: 40 Winchester St. If the facility does not have a physical address:
Latitude: _____ Longitude: _____

Town/City: Keene State: NH Zip Code: 03435-2502

If **Different** than Applicant:

Owner

: _____ Contact Person: _____

Email: _____ Phone: _____

Physical Address: _____

Town/City: _____ State: _____ Zip Code: _____

1-4 Equipment Seller Information

Company

: _____ Contact: _____

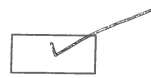
Mailing Address: _____

Town/City: _____ State: _____ Zip Code: _____

1-5 Installer Information

Name: Keene State College
Installer License Number, if applicable: _____
Mailing Address: 229 Main Street
Town/City: Keene State: NH Zip Code: 03435-2502
Primary Contact: William Rymes
Telephone: 603-358-2207 Cell: _____
Email Address: wrymes@keene.edu

If the equipment was installed by the facility owner, check here:



1-6 Facility Operator Information

(if different from owner)

Facility Operator Name: _____ Phone: _____
Facility Operator email: _____

1-7 Independent Monitor Information

Monitor Name: Roger Thibodeau, P.E., Twin State Engineering
Company: Twin State Engineering
Mailing Address: 49 Elm Street
Town/City: Charlestown State: NH Zip Code: 03603
Telephone: 603-826-5115 Cell: 603-398-4733
Email Address: twnstenge@aol.com

1-8 NEPOOL/GIS Asset ID and Facility Code

NEPOOL GIS REGISTRATION REQUIREMENT

In order to qualify your facility's thermal energy production for RECs, ***you must register with the NEPOOL – GIS***. The GIS administrator will assist in obtaining a GIS facility code and ISO-New England asset ID number.

GIS ADMINISTRATOR CONTACT INFORMATION

Registry Administrator,
APX Environmental Markets
224 Airport Parkway, Suite 600
San Jose, CA 95110
Office: 408.517.2174 GIS@apx.com

GIS Facility Code # NON 103053

1-9 Other REC Certifications

Has the facility been certified under another non-federal jurisdiction's renewable portfolio standard?

Yes ☐

No ☒

If you selected yes, please provide proof of certification in the form of an attached document labeled as **Attachment 1-9**.

1-10 Supplementary Documentation

Attach any supplementary documentation that will assist in classification of the facility and label supplementary documentation as **Attachment 1-10**.

Part 2. Source Information

2-1 Source Technology Information

Renewable Energy Source: Solar ☐

Geothermal ☐

Biomass ☐

Total System Rated Thermal Capacity Btu/hr: 23,430,000 ^{Boiler No. 3} MW equivalent: 6.9mw

Equipment make & model: Cleaver Brooks 700HP # of units: 1

Date of initial operation using renewable source: September 14, 2018

2-2 Biomass Facility Support Materials

Attachment 2-2a Emissions Requirements ✓

If a thermal biomass facility, provide proof of New Hampshire Department of Environmental Services approval that facility meets the emissions requirements set forth in Puc 2500, label as Attachment 2-2a.

Attachment 2-2b, Fuel Requirements -Eligibility ✓

If a thermal biomass facility, provide proof the fuel meets the definition of biomass fuels as defined by RSA 362-A: 1-a, I-b and Puc2502.04, label as Attachment 2-2b.

Attachment 2-2c, Fuel Requirements –Purchase Record ✓

If a thermal biomass facility, provide a contract for, or sales record of, the eligible fuel to the applicant facility, label as Attachment 2-2c.

2-3 Solar Thermal Facility Support Materials

If a solar thermal facility, please provide the Solar Rating and Certification Corporation (ICC-SRCC) rating based on Category C Medium Radiation (kBtu/day): _____

2-4 Geothermal Facility Support Materials

If a geothermal facility, please provide the following:

a. The coefficient of performance (COP): _____

b. The energy efficiency ratio of the system: _____

Part 3. Measurement and Reporting of Useful Thermal Energy

This section covers the thermal metering system including methods for calculation and reporting useful thermal energy. Please refer to PUC 2506.04 of the [Puc2500 rules](#) for more information.

3-1 Equipment/Meter Description and Guaranteed Accuracies

Using the table below, identify the thermal metering system or custom components (e.g., heat meters, flow meters, pressure and temperature sensors) used to measure the useful thermal energy and enter the accuracy of measurement for the entire system:

System or Component	Product Name	Product Manufacturer	Model No.	Maximum Error
Steam Pressure		SETRA	25650096211	$\pm 0.13\%FS$
Fuel oil meter		ISTEC	NZ02092146	$\pm 1\%$
Temp. probe		Level PRO	TPD-PTFE-4-130	$\pm 0.5\%$
Feedwater Flow		Flow Tech	TW/CB6	$\pm 0.1\%$
Total System Accuracy (Percent)		$\pm 0.73\%$	%	

Attachment 3-1a Component Specification Sheets ✓

Attach component specification sheets (Accuracy, Operating Ranges) as Attachment 3-1a. Identify /highlight component accuracy ratings on specification sheets.

Attachment 3-1b System Schematic ✓

Attach a simple schematic identifying the location of each sensor that is part of the metering system as Attachment 3-1b.

3-2 Recommended Methods for Meter Calibration

Please summarize (or provide as attachment 3-2) the manufacturer's recommended methods and frequency for metering system calibration and provide reference for source document (e.g. owners/operators manual).

Annual observation of data consistency.

3-3 Calculating Useful Thermal Energy Production

3-3a Metering Method and Accuracy

Check the applicable standard for meter accuracy prescribed in Puc 2506.04 among the six choices below (compliance with Puc 2506.04 shall be certified by a professional engineer licensed by the state of New Hampshire and in good standing):

If the facility is a large thermal source using a liquid or air based system, check the method that applies:

A.	Installation and use of heat meters capable of meeting the accuracy provisions of European Standard EN 1434-1 (2015 edition) published by CEN, the European Committee for Standardization. The heat meter shall have the highest class flow meter that will cover the design flow range at the point of measurement and a temperature sensor pair of Class 5K or lower.	<input type="checkbox"/>
B.	Installation and use of meters that do not comply with European Standard EN 1434-1, provided that the manufacturers' guaranteed accuracy of the meters is $\pm 5.0\%$ or better.	<input type="checkbox"/>
C.	Use of an alternative metering method approved pursuant to Puc 2506.06, provided that the accuracy of such method is $\pm 5.0\%$ or better.	<input type="checkbox"/>

<i>If the facility is a large thermal source using a steam-based system, check the method that applies:</i>		
A.	Installation and use of meters with accuracy of $\pm 3.0\%$ or better.	<input checked="" type="checkbox"/>
B.	Installation and use of meters with system accuracy that do not meet A above but are $\pm 5\%$ or better.	<input type="checkbox"/>
C.	Use of an alternative metering method approved pursuant to Puc 2506.06, provided that the accuracy of such method is $\pm 5.0\%$ or better.	<input type="checkbox"/>

3-3b Meter Accuracy Discount Factor

0 %

Meter Accuracy Discount factor for operating energy and thermal energy losses:

If the meters used to measure useful thermal energy comply with the accuracy of the European Standard EN 1434-1 for liquid or air-based systems, or use of meters with accuracy of $\pm 3.0\%$ or better for steam systems enter zero, for all other systems enter the sum total of the manufacturer's guaranteed accuracy of the meters used or the accuracy of the alternative method approved pursuant to Puc 2506.06.

3-3c Operating Energy and Thermal Loss Discount Factor

Select the method used for determining the operating energy and thermal loss factor among the choices provided (i.e., Default Factor or Actual Metering):

Default Factor ☐ If using default factor please check appropriate default factor below:

- For sources using solar thermal technology, the discount factor shall be 3.0% of the useful thermal energy produced; ☐
- For sources using geothermal technology, the discount factor shall be 3.6% of the useful thermal energy produced; ☐
- For sources using thermal biomass renewable energy technology, the discount factor shall be 2.0% of the useful thermal energy produced. ☒

Actual Metering ☐

- Include a simple schematic identifying the operating energy and thermal energy losses and placement of the meters as 3-3c.

3-3d Method for recording, calculating, reporting production

Please provide below (or include as attachment 3-3d) a description of the frequency and method for recording data and the method for calculating useful thermal energy production as well as the frequency and method for reporting this production to NEPOOL GIS.

Part 4. Metering Requirements Checklist

Please complete the following table. Only complete for equipment used in the thermal metering system under consideration; if a piece of equipment is not used, indicate with (N) in row one and leave the rest of the column blank. For all applicable equipment and total system information, indicate C, NC, N/A as instructed below as well as the attachment and page reference number in each row.

Table 1: Description of the Equipment & Meters [Puc 2505.02 (d)(3)-(5),(10)-(14), 2506.04 (c)-(f), (m), & 2506.05]															
		C = Provided in compliance with Puc 2500				NC = Compliance with Puc 2500 not demonstrated				N/A = Not Applicable					
*if applicable	PUC 2500 Rule	Mass Flow Meter	Feedwater Flow Meter	Steam or Supply Water Temperature Sensor	Steam Pressure Sensor	Condensate or Return Water Temperature Sensor	Condensate Pressure Sensor	Thermal Energy Monitoring System							
PRODUCT APPLICABLE? (Y or N)		N		Y		N		Y		Y		N		Y	
PRODUCT COMPLIANCE/REFERENCE		C	Att./Pg.	C	Att./Pg.	C	Att./Pg.	C	Att./Pg.	C	Att./Pg.	C	Att./Pg.	C	Att./Pg.
Product Name	05.02(d)(3)			3-1 p.46				3-1 p.2		3-1 p.43					
Product Manufacturer	05.02(d)(3)			3-1 p.46				3-1 p.2		3-1 p.43					
Model #	05.02(d)(3)			3-1 p.46				3-1 p.2		3-1 p.43					
Placement of sensor	05.02(d)(3)			3-1 p.46				3-1 p.2		3-1 p.43					
Temperature operating range	05.02(d)(3)			3-1 p.46				3-1 p.2		3-1 p.43					
Flow operating range*	05.02(d)(3)			3-1 p.46				3-1 p.2		3-1 p.43					
Thermal Energy Operating Range*	05.02(d)(3)			3-1 p.46				3-1 p.2		3-1 p.43					
Pressure operating range*	05.02(d)(3)							3-1 p.2							
Manufacturer's meter calibration recommendations	05.02(d)(4)			3-1 p.46				3-1 p.7		3-1 p.45					
Manufacturer's guaranteed accuracy at operating ranges	05.05(d)(10)			3-1 p.46				3-1 p.7		3-1 p.45					
Total System Accuracy	06.04(e),(f)													✓	±0.73%
Useful thermal energy methodology & calculation	05.05(d)(12)													✓	3-3 p.1
Meter accuracy discount factor	05.02(d)(13)													✓	3-3 p.1
Discount factor for operating energy & thermal losses	05.02(d)(14)													✓	3-3 p.1
Thermal energy data read hourly	06.04(c)													✓	3-3 p.2
Thermal energy totaled every 24 hours, monthly and quarterly?	06.04(c)													✓	3-3 p.2
Manufacturer's specifications for heat meters followed	06.04(d)													✓	3-1
Rated thermal heating capacity		Btu/hr		MW		Calculation									
		23,430,000		6.9		23,430,000 Btu/hr / 3,412,142 = 6.9 MW									

Part 5 Affidavits

5-1 Owner's Affidavit

Application Checklist			
Application Section	Item Description	PUC Rule	Check box or NA
PART 1 APPLICANT INFORMATION			
1-1	Aggregator Information	2505.02(d)	<input type="checkbox"/>
1-2	Applicant Information	2505.02(d) 1	<input checked="" type="checkbox"/>
1-3	Facility Information	2505.02(d) 2	<input checked="" type="checkbox"/>
1-4	Equipment Seller Information	2505.02(d) 8	<input type="checkbox"/>
1-5	Installer Information	2505.02(d) 7	<input checked="" type="checkbox"/>
1-6	Facility Operator Information	2505.02(d) 2	<input checked="" type="checkbox"/>
1-7	Independent Monitor Information	2505.02(d) 9	<input checked="" type="checkbox"/>
1-8	NEPOOL/GIS Asset ID and Facility Code	2505.02(d) 5	<input checked="" type="checkbox"/>
1-9	Other REC Certifications	2505.02(d) 16	<input type="checkbox"/>
1-10	Supplementary Documentation	2505.02(d) 17	
PART 2 SOURCE INFORMATION			
2-1	Source Technology Information	2505.02(d) 2,5	<input checked="" type="checkbox"/>
2-2	Biomass Facility Support Materials		
	Attachment 2-2a Emissions Requirements	2505.02(d) 15	<input checked="" type="checkbox"/>
	Attachment 2-2b, Fuel Requirements -Eligibility	2502.04	<input checked="" type="checkbox"/>
	Attachment 2-2c, Fuel Requirements –Purchase Record	2502.04	<input checked="" type="checkbox"/>
2-3	Solar Thermal Facility Support Materials	2505.02(d) 10	<input type="checkbox"/>
2-4	Geothermal Facility Support Materials	2505.02(d) 10	<input type="checkbox"/>
PART 3 MEASUREMENT & REPORTING INFORMATION			
3-1	Equipment/Meter Description and Guaranteed Accuracies	2505.02(d) 10	<input checked="" type="checkbox"/>
	Attachment 3-1a Component Specification Sheets	2505.02(d) 3	<input checked="" type="checkbox"/>
	Attachment 3-1b System Schematic	2505.02(d) 3	<input checked="" type="checkbox"/>
3-2	Recommended Methods for Meter Calibration	2505.02(d) 4	<input checked="" type="checkbox"/>
3-3	Calculating Useful Thermal Energy Production		
3-3a	Metering Method and Accuracy	2505.02(d) 12	<input checked="" type="checkbox"/>
3-3b	Meter Accuracy Discount Factor	2505.02(d) 13	<input checked="" type="checkbox"/>
3-3c	Operating Energy and Thermal Loss Discount Factor	2505.02(d) 14	<input checked="" type="checkbox"/>
3-3d	Method for recording, calculating, reporting production	2505.02(d) 12	<input checked="" type="checkbox"/>
PART 4 METERING REQUIREMENTS CHECKLIST			
	Checklist completed and included	2505.02(d) 3	<input checked="" type="checkbox"/>
PART 5 AFFIDAVITS			
5-1	Owner's Affidavit	2505.02(d) 18	<input checked="" type="checkbox"/>
5-2	NH Professional Engineer's Affidavit	2505.02(d) 19	<input checked="" type="checkbox"/>