

CHAIRMAN
Martin P. Honigberg

COMMISSIONERS
Robert R. Scott
Kathryn M. Bailey

EXECUTIVE DIRECTOR
Debra A. Howland



PUBLIC UTILITIES COMMISSION
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April 26, 2017

His Excellency, Governor Christopher T. Sununu
and the Honorable Council
State House
Concord, NH 03301

His Excellency and Honorable Councilors:

REQUESTED ACTION

Authorize the New Hampshire Public Utilities Commission (Commission) to amend an award of grant funds to the University of New Hampshire, Vendor #177867, by extending the completion date from June 30, 2017, to June 30, 2018. The original grant agreement was approved by the Governor and Executive Council on April 20, 2016, Item #29, to install a steam turbine electric generator in Rudman Hall. Funding is 100% Renewable Energy Fund (REF), a non-lapsing dedicated fund continually appropriated to the Commission pursuant to RSA 362-F:10. No additional funding is involved in the time extension and system size adjustment.

EXPLANATION

The grant agreement with the University of New Hampshire in the amount of \$200,000 provided for the installation of a back-pressure steam turbine electric generating unit in the Rudman Hall building at UNH's Durham campus. The UNH Campus Energy Management team is moving forward with all necessary steps to complete the project. However, site specific engineering challenges, a thirty-two week production time for the custom turbine generator, and a limited annual opportunity to work on the district steam system have resulted in the need for additional time to complete the project.

Therefore, the Commission is requesting approval of a twelve month, no-cost extension for the grant contract for the University of New Hampshire Rudman Hall Steam Turbine Electric Generation Project. All other provisions of the grant award remain in effect pursuant to the approved contract.

Your consideration of this request is appreciated.

Respectfully submitted,

Martin P. Honigberg
Chairman

Attachments:
Amendment and copy of original grant contract

AMENDMENT #01 to
COOPERATIVE PROJECT AGREEMENT
between the
STATE OF NEW HAMPSHIRE, Public Utilities Commission
and the
University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

The Cooperative Project Agreement, approved by the State of New Hampshire Governor and Executive Council on **April 20, 2016**, item # **29**, for the Project titled "**Thompson School Biomass District Heating System Project**," Campus Project Director, **Adam Kohler**, is and all subsequent properly approved amendments are hereby modified by mutual consent of both parties for the reason(s) described below:

Purpose of Amendment (Choose all applicable items):

- Extend the Project Agreement and Project Period end date, at no additional cost to the State.
- Provide additional funding from the State for expansion of the Scope of Work under the Cooperative Project Agreement.
- Other:

Therefore, the Cooperative Project Agreement is and/or its subsequent properly approved amendments are amended as follows (Complete only the applicable items):

- Article A. is revised to replace the State Department name of _____ with _____ and/or USNH campus from _____ to _____.
- Article B. is revised to replace the Project End Date of **6/30/17** with the revised Project End Date of **6/30/18**, and Exhibit A, article B is revised to replace the Project Period of **3/23/16 – 6/30/17** with **3/23/16 – 6/30/18**.
- Article C. is amended to expand Exhibit A by including the proposal titled, " _____ ," dated _____.
- Article D. is amended to change the State Project Administrator to _____ and/or the Campus Project Administrator to _____.
- Article E. is amended to change the State Project Director to _____ and/or the Campus Project Director to _____.
- Article F. is amended to add funds in the amount of \$ _____ and will read:
Total State funds in the amount of \$ _____ have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.
- Article F. is amended to change the cost share requirement and will read:
Campus will cost-share _____ % of total costs during the amended term of this Project Agreement.
- Article F. is amended to change the source of Federal funds paid to Campus and will read:
Federal funds paid to Campus under this Project Agreement as amended are from Grant/Contract/Cooperative Agreement No. _____ from _____ under CFDA# _____. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New

Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as **revised** Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

- Article G. is exercised to amend Article(s) _____ of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, as follows:

Article _____ is amended in its entirety to read as follows:

Article _____ is amended in its entirety to read as follows:

- Article H. is amended such that:

- State has chosen **not to take** possession of equipment purchased under this Project Agreement.
- State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

- Exhibit A is amended as attached.

- Exhibit B is amended as attached.

All other terms and conditions of the Cooperative Project Agreement remain unchanged.

This Amendment, all previous Amendments, the Cooperative Project Agreement, and the Master Agreement constitute the entire agreement between State and Campus regarding the Cooperative Project Agreement, and supersede and replace any previously existing arrangements, oral and written; further changes herein must be made by written amendment and executed for the parties by their authorized officials.

This Amendment and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire or other authorized officials approve this Amendment to the Cooperative Project Agreement.

IN WITNESS WHEREOF, the following parties agree to this **Amendment #01** to the Cooperative Project Agreement.

By An Authorized Official of:

University of New Hampshire

Name: Louise Griffin

Title: Sr. Director, Sponsored Programs
Administration

Signature and Date: *Louise Griffin* 4/24/17

By An Authorized Official of: the New
Hampshire Office of the Attorney General

Name: *Brian Burkman*

Title: *AAG*

Signature and Date: *Brian Burkman* 5/4/17

By An Authorized Official of:

NH Public Utilities Commission

Name: Martin P. Honigberg

Title: Chairman

Signature and Date: *Martin P. Honigberg* 4/26/17

By An Authorized Official of: the New
Hampshire Governor & Executive Council

Name: _____

Title: _____

Signature and Date: _____

EXHIBIT A

- A. Project Title:** Rudman Hall Steam Turbine Generator Project
- B. Project Period:** March 23, 2016 - June 30, 2018
- C. Objectives:** N/A
- D. Scope of Work:** N/A
- E. Deliverables Schedule:** N/A
- F. Budget and Invoicing Instructions:** N/A

THE STATE OF NEW HAMPSHIRE

CHAIRMAN
Martin P. Horigberg

COMMISSIONERS
Robert R. Scott
Kathryn M. Bailey

EXECUTIVE DIRECTOR
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RQ # 166712

WV # 10011582

PO # 1050235

April 6, 2016

Her Excellency, Governor Margaret Wood Hassan
and the Honorable Council
State House
Concord, NH 03301

4/20/16
#29
✓

Her Excellency and Honorable Councilors:

REQUESTED ACTION

Authorize the New Hampshire Public Utilities Commission (Commission) to award grant funds in the amount of \$200,000.00 to the University of New Hampshire, Vendor #177867, to install a steam turbine electric generator in Rudman Hall, from Governor and Council approval through June 30, 2017. Funding is 100% Renewable Energy Fund (REF), a non-lapsing special fund continually appropriated to the Commission pursuant to RSA 362-F:10.

02-81-81-811510-54540000 Renewable Portfolio Standard 362-F:10

	FY2016	Total
010-081-54540000-073-500579 Grants to Institutions – State	\$200,000.00	\$200,000.00

EXPLANATION

Pursuant to RSA 362-F:10, the Commission is charged with administering the Renewable Energy Fund (REF), the purpose of which is to support thermal and electrical renewable energy initiatives. On September 25, 2015, the Commission issued a Request for Proposals (RFP) pursuant to RSA 362-F:10 XI that requires the Commission to issue, on an annual basis, an RFP for renewable energy projects in the commercial and industrial sectors funded by grants from the REF.

The Commission received eight proposals requesting a total of \$3.2 million in funds in response to the RFP. The University of New Hampshire and three (3) others have been selected to receive a total of \$1,025,000 in this funding round. Attachment A provides additional information on the grant review and award process.

G&C 4/20/2016

Page 1 of 2
Initials MSH
Date 4/5/16

With these funds, the University of New Hampshire will install and operate a steam turbine electric generation unit in Rudman Hall. The steam is generated at the Campus' Combined Heat and Power (CHP) plant which burns landfill gas – a renewable energy source .

The grant is contingent on sufficient REF funds being available upon the effective date of the grant agreement. These funds have already been allocated to this RFP round, and are being held in the fund. In the event that the REF funds are insufficient or are no longer available, General Funds will not be requested to support this program.

Respectfully submitted,



Martin P. Honigberg
Chairman

Attachments:

Agreement with Exhibits
2015 Grant Review Process
Table of 2015 REF Grant Awards
Project Specific Facts and Figures

ATTACHMENT A – 2015 GRANT REVIEW PROCESS

The Public Utilities Commission (PUC) issued a Request for Proposals (RFP) on September 25, 2015 for renewable energy projects in the commercial and industrial sectors which would be eligible to generate Class I, Class I Thermal, or Class IV renewable energy certificates (RECs). The RFP was generally similar to that issued in the prior year. The RFP required that the project create certain classes of renewable energy certificates, which would be available for use by electricity providers for compliance with the renewable portfolio standard requirements in New Hampshire. Pursuant to RSA 362-F:10, the RFP is funded with monies from the Renewable Energy Fund and issued on an annual basis.

The RFP was widely circulated electronically to members of the Energy Efficiency and Sustainable Energy Board (EESB Board), regular attendees at EESB Board meetings, additional stakeholders known to have an interest in energy policy and programs, and the NH Municipal Association. The RFP was posted on the PUC website for the full submission period, and it was advertised in the New Hampshire Union Leader on September 28, 29, and 30, 2015. All responses were due by November 13, 2015. The Commission received eight (8) proposals requesting a total of \$3.17 million in grant funds for projects with a combined estimated project value of \$8.38 million.

The PUC employed a two-tier grant review process to evaluate the proposals. The initial review team consisted of three members including Stephen Eckberg (PUC Sustainable Energy Division), Joe Fontaine (Air Resources Division, DES) and Rick Minard (NH Office of Energy and Planning)¹. The second tier review team consisted of Public Utilities Commissioners including: Chairman Martin Honigberg; Commissioner Robert Scott; and Commission Kathryn Bailey.

The initial review team scored all proposals using the scoring criteria set forth in the RFP and those requirements set forth in NH Code of Administrative Rules Puc 2508.02 (b) and (c). The team scored all proposals using the pre-published scoring criteria developing a score for each from 0-100 points. Following the initial scoring, the team interviewed five (5) applicants. The review team assigned values for the factors outlined in the RFP which resulted in the final scores; ranks; and funding recommendations.

The initial review team met with the Commissioners to brief them on the committee's recommendations. The Commissioners were provided with project descriptions for those projects recommended for funding and had an opportunity to ask questions of members of the initial review team. The Commissioners approved the review team's recommendations to award grant funds for four (4) renewable energy projects totaling \$1,025,000.

¹ Oversight was provided by Karen Cramton, Director of the PUC's Sustainable Energy Division.

Attachment B

Proposed Renewable Energy Project Competitive Grant Awards 2015

	Town/City	Technology (Capacity)	Total Project Costs	Proposed Grant Funding	Annual Renewable Energy Credits & Type (or Class I)	Cost Effectiveness (Grant \$ / 10yrs-REC)	Contract End Date
Ever Better Hydro	Pittsfield	Hydro (415kW)	\$600,000	\$200,000	1,400 Class IV (or Class I)	\$14.29	6/30/2017
Froling LLC	Peterborough	Biomass Thermal	\$627,000	\$300,000	3,186 Class I T	\$9.42	6/30/2017
Pemi-Baker Cooperative School District	Plymouth	Biomass Thermal	\$1,100,000	\$325,000	1,909 Class I T	\$17.02	12/31/2016
University of New Hampshire	Durham	Landfill Gas fueled Steam Electric Generation	\$600,000	\$200,000	402 Class IV	\$33.33	6/30/2017
TOTAL			\$2,927,000	\$1,025,000			

Attachment C
University of New Hampshire
Steam Turbine Generator Project
Facts and Figures

The University of New Hampshire will add a new back-pressure steam turbine at Rudman Hall on the UNH Campus in Durham, NH. Rudman Hall receives high-pressure steam (HPS) from the landfill gas fired combined heat and power (CHP) plant on campus. A small amount of the HPS is used in the building as process steam, but the majority is run through pressure reducing valves installed in the basement of Rudman Hall to create low pressure steam (LPS) used for heating and cooling in the building. The steam use in the building is year round and continuous. The new steam turbine will be installed in parallel with the existing pressure reducing valves. The new turbine will generate electricity *and* reduce the steam pressure for its use in the building processes. The new turbine will, in effect, generate electricity from what has been waste energy.

Technical Specifications:

Nameplate Rating: 200 kW Steam Generating Station
To operate at estimated 35% capacity factor

Grant Cost Effectivenessⁱ: \$14.29/REC

Funding Analysis:

Total Project Cost: \$600,000
Leveraged Funds: \$400,000
Grant Amount: \$200,000 (approximately 33% of total project cost)
Payback Periodⁱⁱ: 10 years (based on Total Project Cost and Generation Value)
6.7 years (based on Leveraged Funds and Generation Value)

Financial and Environmental Benefits:

Energy Generation: 600,000 kilowatt hours per year
Generation Valueⁱⁱ: \$59,940 per year
Cost Savings: per kWh savings for University of New Hampshire
Life Expectancy: 20+ years
CO₂ Avoided: 219 tons/year

Renewable Portfolio Standard RSA 362-F:1 Criteria:

- Generates 600 Class I renewable energy certificates (RECs) per year
- Supports fuel diversity
- Keeps energy dollars in state
- Reduces the amount of greenhouse gases, nitrogen oxides and particulate matter emissions; thereby improving air quality and public health
- Reduces energy costs for University of New Hampshire

Attachment C
University of New Hampshire
Steam Turbine Generator Project
Facts and Figures

Transmission and Distribution:

Transmission:

The system will be interconnected to the UNH distribution grid. The cost of any required upgrades due to interconnection will be the responsibility of the facility owner. It is anticipated that all of the energy generated will be used on campus.

Distribution:

The Commission's rules provide that:

A distribution utility may perform an annual calculation to determine the net effect of net metering on its default service and distribution revenues and expenses in the prior calendar year. Pursuant to Puc 203, the commission shall determine by order, after notice and hearing, the utility-specific method of performing the calculation and applying the results, as well as a reconciliation mechanism to collect or credit any such net effects with appropriate carrying charges and credits applied. (N.H. Code Admin. Rules Puc 903.02(o))

This rule is intended to implement RSA 362-A:9, VII, which provides that:

A distribution utility may perform an annual calculation to determine the net effect this section had on its default service and distribution revenues and expenses in the prior calendar year. The method of performing the calculation and applying the results, as well as a reconciliation mechanism to collect or credit any such net effects with appropriate carrying charges and credits applied, shall be determined by the commission.

ⁱ The PUC a metric defined as the grant amount divided by the total number of RECs over ten (10) years of energy production as a key criteria in evaluating and choosing grantees

ⁱⁱ Simple payback calculated based only on total project costs (and leveraged funds) and generation value for ease of comparison among all the projects. Eversource default service rate = \$0.0999/kWh as of 1/1/2016 comprised of \$0.0872 energy rate + \$0.0172 Merrimack Scrubber Temporary Rate.

COOPERATIVE PROJECT AGREEMENT

between the

STATE OF NEW HAMPSHIRE, **Public Utilities Commission**

and the

University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

- A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Public Utilities Commission**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.
- B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **6/30/17**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.
- C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: **Rudman Hall Steam Turbine Generator Project**

- D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

State Project Administrator

Name: Eunice Landry
 Address: NH Public Utilities Commission
21 S. Fruit St., Suite 10
Concord, NH 03301-2429

Phone: 603-271-2431

Campus Project Administrator

Name: Dianne Hall
 Address: University of New Hampshire
Sponsored Programs Administration
51 College Rd. Rm 116
Durham, NH 03824

Phone: 603-862-1942

- E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

State Project Director

Name: Karen Cramton
 Address: NH Public Utilities Commission
21 S. Fruit St., Suite 10
Concord, NH 03301-2429

Phone: 603-271-6012

Campus Project Director

Name: Adam Kohler
 Address: Rudman Hall
6 Leavitt Lane
University of New Hampshire
Durham, NH 03824

Phone: 603-862-5491

F. Total State funds in the amount of \$200,000 have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

Campus will cost-share _____ % of total costs during the term of this Project Agreement.

Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. _____ from _____ under CFDA# _____. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

Article(s) _____ of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H. State has chosen **not to take** possession of equipment purchased under this Project Agreement.
 State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

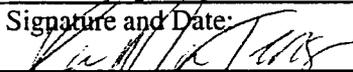
IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, _____ have executed this Project Agreement.

By An Authorized Official of:

University of New Hampshire

Name: Karen M. Jensen

Title: Manager, Sponsored Programs Administration

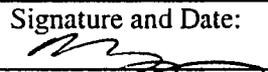
Signature and Date:  3/11/16

By An Authorized Official of:

NH Public Utilities Commission

Name: Martin P. Honigberg

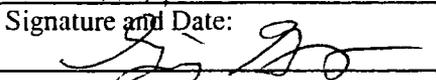
Title: Chairman

Signature and Date:  4/5/16

By An Authorized Official of: the New Hampshire Office of the Attorney General

Name: Brian Buonamano

Title: AAG

Signature and Date:  4/14/16

By An Authorized Official of: the New Hampshire Governor & Executive Council

Name:

Title:

Signature and Date:

EXHIBIT A

- A. Project Title:** UNH Rudman Hall Steam Turbine Electric Generation Project
- B. Project Period:** March 23, 2016 - June 30, 2017
- C. Objectives:** See Scope of Work
- D. Scope of Work:** This project consists of installing a new back-pressure steam turbine electric generating unit in the Rudman Hall building at UNH's Durham campus. Rudman Hall receives high pressure steam (HPS) from the combined heat and power (CHP) plant on campus. The majority of the HPS is run through a pressure reducing valve in Rudman Hall to create low pressure steam (LPS) for use in the building. The new steam turbine will be installed in parallel with the existing pressure reducing valve. The output of the steam turbine will be electric energy and LPS for use in the building. The energy input to the new turbine is 100% "waste" energy which would otherwise be vented to the atmosphere.
- E. Deliverables Schedule:** Campus agrees to prepare and submit progress reports to the State, in a form and manner prescribed by the State. The first report will cover activities related to project design, development and construction up through June 30, 2016 with the report due August 1, 2016. The second report will cover the period from July 1, 2016 through September 30, 2016 with the report due November 1, 2016. The third report will cover the period October 1, 2016 through December 31, 2016 with the report due February 1, 2017. All reports thereafter will be due on February 1st after the end of the preceding calendar year continuing for a period of ten (10) years. Any activities or benefits that occurred as a result of the grant not included in the scope of services should also be noted in reports. All reports submitted after the installation of the will provide data on the amount of electric energy produced (annual kWh). The Campus also agrees to submit a completed application to the NH Public Utilities Commission to become eligible to produce Renewable Energy Certificates (RECs) and to market such RECs to electricity providers in New Hampshire.
- F. Budget and Invoicing Instructions:** Campus will submit invoice to State on regular Campus invoice forms upon purchase of turbine. Invoice for reimburseable costs will be based on actual project expenses incurred and paid during the invoicing period, and shall show current and cumulative expenses. State will pay Campus within 30 days of receipt of each conforming invoice. Campus will submit a final expense report showing total project costs within 75 days of project end date. Invoices will be submitted to: Business Office, NH Public Utilities Commission, 21 S. Fruit St., Suite 10, Concord, NH 03301-2429 with a CC to Director, Sustainable Energy Division at the same address.

Steam turbine \$200,000