

STATEMENT OF WORK FOR GRANT AGREEMENT

BETWEEN THE

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

AND

MEACH COVE REAL ESTATE TRUST

Relative to: Proposal entitled “Fuel from the Field to the Flue: Grass pellet heating equipment combustion optimization project,” submitted in response to the 2011 Vermont Conservation Innovation Grant (CIG) program.

This agreement is entered into by and between the USDA, Natural Resources Conservation Service hereinafter referred to as the “NRCS” and Meach Cove Real Estate Trust, hereinafter referred to as “MCRET”.

I. PURPOSE

This award is for MCRET to install and evaluate two different types of grass pellet heating equipment, and identify the most suitable species of grass fuel. The combustion performance of the equipment will be evaluated and adjusted to optimize their efficiency. Feedback will be given to the manufacturers to incorporate the modifications into production, as well as made public so Vermont consumers could purchase similar heating equipment that will burn grass pellets more reliably and efficiently. Documentation will also be made available to assist farmers in the selection of grass species to produce the optimal grass species for fuel.

II. AUTHORITY

Environmental Quality Incentive Program (EQIP), 16 U.S.C. 3839aa-3839aa-8, 3841, 7 CFR Part 1466 (CFDA 10.912); Food, Conservation and Energy Act of 2008 (Public Law 110-246).

III. OBJECTIVES

This project will build upon research previously done on grass fuel combustion heating systems. The owners of Meach Cove Farms have always been interested in exploring ways to make better use of the natural resources available locally to offset petroleum that is being used for space heating. Being able to efficiently and dependably burn grass fuel that is raised on Meach Cove Farm or other Vermont farms would represent a huge step towards another renewable alternative to fossil fuels.

IV. RESPONSIBILITIES OF THE PARTIES

A. NRCS will:

1. Provide funding in the amount not to exceed \$73,400 towards the work described under the expected accomplishment and deliverables of this agreement.
2. Provide any necessary guidance and direction to the recipient to ensure deliverables are accomplished in a timely manner.
3. Review project deliverables for proper format and acceptable documentation.
4. Upon review and approval of the accomplishments and deliverables along with proper documentation submit payment for the costs attributable to the completion of the work set forth in this agreement.
5. Provide the following as contacts:

Technical Contact

Name: Bob Kort
Address: 356 Mountain View Dr.
Colchester, VT 05446
Phone: (802) 951-6796 X 233
Fax: (802) 655-0638
Email: bob.kort@vt.usda.gov

Administrative Contact

Pat Pickett
356 Mountain View Dr.
Colchester, VT 05446
(802) 951-6796 X224
(802) 655-0638
pat.pickett@vt.usda.gov

Programmatic Contact

Katura Wright
356 Mountain View Dr.
Colchester, VT 05446
(802) 95106796 X 228
(802) 655-0638 (fax)
katura.wright@vt.usda.gov

B. MCRET will:

1. Accomplish the deliverables on time according to the milestones outlined in this agreement.
2. Contact the NRCS technical contact for any needed clarification or guidance throughout the project.

3. Submit all deliverables with sufficient time for review and necessary revision prior to the final approval.
4. Comply with the attached General Terms and Conditions.
5. Submit an accrual report to the NRCS technical contact by the 11th day of the month before close of the Federal fiscal year quarter, i.e., March 11, June 11, September 11, and December 11.
6. Submit a quarterly progress report and Federal Financial Report (SF-425) to the NRCS technical contact.
7. Submit a brief description of activities accomplished during the billing period (not required if billing quarterly) and a supporting statement of expenditures with each request for advance or reimbursement (SF-270).
8. Provide the following as contacts:

	<u>Technical Contact</u>	<u>Administrative Contact</u>
Name:	Christopher Davis	Barbara Mercure
Address:	P.O. Box 309 109 Colonel Fletcher Road Shelburne, VT 05482-0309	P.O. Box 309 109 Colonel Fletcher Road Shelburne, VT 05482-0309
Phone:	(802) 985-9218	(802) 985-9218
Fax:	(802) 985-9225	(802) 985-9225
Email:	cdavis@fodas.org	bmercure@fodas.org

V. EXPECTED ACCOMPLISHMENTS AND DELIVERABLES

The following items are defined deliverables for this grant and will be completed by MCRET:

1. A final report available in printed, electronic and video formats which will summarize the information collected as a result of this project containing:
 - Operational data for one hot water boiler and one hot air furnace both capable of burning pelletized grass fuel
 - The published results of the combustion testing of several promising species of pelletized grass fuel in this heating equipment.
 - A detailed summary and diagrams of any modifications or adjustments made to the two types of heating equipment to optimize the combustion of up to four types of pelletized grass fuel.
2. Hold open houses, field days and tours by appointment to showcase the work being done in this project.

3. The heating units evaluated as part of this project will be improved to optimize their operation when using more than one species of pelletized grass. The modifications will be detailed and included in the project report.
4. Collaborate with the manufacturers of the two heating units to incorporate modifications that resulted in improved performance into their production designs.
5. Evaluate, analyze and report on the composition, combustion and ash production of up to four species of grass fuels. This information will be useful to farmers who wish to grow grass for use as pelletized fuel for Vermont and the region. The information will also be useful to anyone wishing to make grass pellet fuel.
6. Long term evaluation and updates on the heating equipment after the completion of this project. Provide access to the equipment by appointment.

VI. PERIOD OF PERFORMANCE

Project timeline will begin with the date of the last signature on the agreement and shall remain in effect for eighteen months.

VII. MILESTONES

1. **Action:** Identify and evaluate a promising hot water boiler and a hot air furnace in the 100,000 – 500,000 BTU output range that have already been proven to be capable of burning grass pellets. Day 1-45
2. **Milestone:** The selection of one hydronic boiler and one hot air furnace that are grass pellet capable and the install them in two buildings at Meach Cove Farms. Day 30-75
3. **Action:** Collect and analyze the data obtained from the grass pellet combustion and design monitoring equipment and automatic controls for this heating equipment to instantaneously adjust the basic combustion settings to optimize their efficiency, emissions and ash handling systems. Day 75-135
4. **Milestone:** Install the identified control and automation devices, operate the equipment and make any adjustments as needed. Day 135-240
5. **Action:** Operate, monitor and modify the heating equipment to optimize the combustion process and ash handling for grass pellet fuel. Document the performance under actual heating conditions. Day 240-375
6. **Milestone:** Publish the final report containing the results of this project and host open houses, field days and tours by appointment. Day 375-389
7. **Action:** Work with the manufacturers of the modified heating equipment to adopt the discovered improvements into production. Day 350-420

8. **Action:** Run this heating equipment after the project has concluded to determine how well they perform over the long term. Report the results and provide visitors access to the heating equipment by appointment.