VERMONT STATE CONSERVATION INNOVATION GRANTS

Quarterly Progress Report

Project Title: Fuel from the Field to the Flue: Grass pellet heating equipment combustion optimization project.
Grantee Name: Meach Cove Real Estate Trust
Project Director: Christopher W. Davis
Progress report author (if different than Director):
Period Covered by Report: 10/1/2011 to 12/31/2011
Project End Date: 1/1/2013

A) Work performed during this period:

1. The Project Director spent 95 hours researching academic reports and literature describing the work done on grass pellet combustion in the US, Canada and Europe during the past seven years. I identified twelve boilers in the 120,000 – 500,000 BTU/Hour capacity that are reported to be able to burn pelletized grass. Further research including interviews with operators and other researchers indicated that of these twelve boilers, three are still prototype units undergoing testing by the inventors or manufacturers and are not ready for production. Several others are not approved for use in the US, and two others are either too expensive or oversized in capacity for the testing contemplated under this program.

2. Meach Cove Real Estate Trust employees worked with a local farmer to harvest approximately 2.5 tons of reed canary grass hay and 2.5 tons of Cave n' rock switch grass in 40-50 pound square bales from the Meach Cove property. Samples of this hay were taken before it was delivered to Enviro Energy in Wells Bridge, N.Y. on December 6, 2011 where it was processed into ¼" diameter pellets.

3. We returned from the December 6 trip to Enviro Energy with 4 tons of pelletized reed canary grass and 2 tons of plain grass pellets manufactured by Enviro Energy in 40 pound bags wrapped one ton per pallet. These pellets along with the Meach Cove hay and an additional 2 tons of Enviro Energy grass pellets will be the fuel used in the boiler combustion work done under this project.

B) Significant Results and lessons learned

1. The research completed in this quarter produced a larger number of reported grass pellet combustion capable boilers in the stated size range than anticipated. The results of a deeper analysis reduced the number of demonstrated grass capable boilers in this size

range down to less than 6, and of those units, only two boilers and two hot air furnaces appear to be the best suited units for evaluation in this project.

2. We are continuing to learn more about these four units and to discuss collaborative opportunities with these manufacturers prior to selecting the unit(s) to be used in this project.

3. There are a very small number of institutions or businesses that are capable of making hay into ¼ inch pellets in the New England region. Enviro Energy in Wells Bridge, N.Y. (www.enviroenergyny.com) is far ahead of any other processors of biomass pellets at this time. I understand that Vermont Technical School in Randolph, VT has ordered a mobile hay pelletizing unit that has not arrived yet. I also learned that the University of Maine is working on installing a grass pelletizing plant at their campus in Easton, Maine. This plant is not expected to be operational until the summer of 2012. (http://umaine.edu/ext-energy/blog/2010/10/21/grass-pellet-technology/).

   Renewable Energy Resources of Bennington, VT (http://www.switchgrass-rer.com/) has ordered a mobile briquette making machine that may also be capable of producing a ¼ inch sized pellet. That unit is supposed to be operational in the summer of 2012.

   Vermont Wood Pellet Company of North Clarendon, VT made some small quantities of grass pellets in 2009 for a grass combustion study sponsored by BERC and the Vermont Sustainable Jobs Fund, but they are too busy making wood pellets to keep up with their wood pellet orders for 2012 so they are not able to make grass pellets for projects such as this one.

   For these reasons we contracted with Enviro Energy to manufacture our hay into pellets and to purchase additional tons of reed canary grass and hay pellets from them. I contacted two trucking companies and found that it was less expensive to rent a truck to deliver the hay and to return with the pellets than to pay for trucking.

C) Work that we anticipate completing in the next three-month period

1. It is anticipated that the final selection of one or two of these units would be made by January 15, 2012. Meach Cove would order the one or two units following their selection.

2. Work will begin to ready the area in the Meach Cove Trust building(s) where these units will be installed and monitored. Contractors will be identified and selected to assist in setting up the heating equipment and the accessory components when they arrive.

3. It is anticipated that the selected heating equipment will be operational in late-February, 2012.

4. Operational data for the heating equipment will be collected over the remainder of the next three months.

D) EQIP and CIG provisions:

1. The primary EQIP-eligible producer for this project is:

   Meach Cove Real Estate Trust
   P.O. Box 309
   Shelburne, VT 05482

2. There are no ($00.00) direct or indirect payments for structural, vegetative or management practices under this project.

3. The Project Director, Christopher W. Davis, certifies that there will not be any direct or indirect payments made to an individual or entity for any structural, vegetative or management practices through this grant. The AIG and HEL/WC provisions do not apply to this project.

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