

North Dakota Renewable Energy Program Status Report

Recipient: Hankinson Renewable Energy, LLC

Contract Number: 039-049

Report for time period of: June 11, 2019 - August 31, 2019

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Description of Project

Please provide a brief description of the project:

HRE's current ethanol production rate is steam-limited during the winter months inhibiting the plant's ability to produce ethanol, thereby limiting overall production. This project will address this limitation through the installation of a Stack Heat Recovery (SHR) system. The SHR system is designed to capture excess heat energy released from the plant's dryer exhaust stack and recycle the heat back into the production process. In addition, the system will collect water condensation from the dryer exhaust stack and use it for boiler make-up and process water. In effect, the system will improve efficiency by decreasing natural gas and make-up water needed, while increasing the production of ethanol and coproducts.

The project is expected to increase ethanol production by an estimated 10 million gallons per year. The 85% cash match (\$2,742,569) comes from the applicant.

This project will serve as a demonstration for other North Dakota ethanol plants interested in utilizing the technology. It will result in increased ethanol production, increased demand for corn, increased supply of coproducts, and additional revenue in the state.

HRE expects to see significant benefits, including:

- Reduction of water usage by 6.4% per gallon of ethanol.

- Reduction of natural gas usage by 8.2% per gallon of ethanol.
- Increase annual net income by \$4,478,000.

Project Tasks

Please describe the progress on all project tasks achieved during the reporting period:

Process Engineering was completed by May 31, 2019. Procurement of major equipment and instrumentation commenced mid-May, and all equipment and material was on order by mid-June.

The contractor mobilized on-site June 3, 2019. The condensate tank and flash tank vessels have been fabricated and installed. The steam piping has been installed. The water piping has been installed from the vessels to the pump locations. The pumps were delivered to the site the week of August 26, 2019. The pumps will be set the week of September 3, 2019 and water piping will be completed to the pumps. The SHR fans were delivered on September 3, 2019.

Overall, the project is estimated to be 45% complete. The steam educator, the electrical motor controllers, and the heat exchangers are the remaining equipment to be delivered. The heat exchangers have the longest lead time and are expected to be delivered mid-October. The construction of the project is expected to be completed by November 30, 2019.

Equipment Testing & Trials as well as Process & Evaluation will commence once the construction is complete.

Deliverables

Please describe the progress on project deliverables, as stated in your contract, achieved during the reporting period:

As discussed above, the overall project is estimated to be 45% complete. The project is on schedule with project completion expected by November 30, 2019.

Steam production and the effectiveness of the technology will be reported once the system is operational. The effectiveness of the technology will be evaluated based on the following:

- Reduction of water usage per gallon of ethanol
- Reduction of natural gas usage per gallon of ethanol
- Increase of annual net income
- Increase in ethanol production

Expenditures

Please provide a breakdown of expenditures. Include all sources of match. Provide supporting documentation as a separate attachment.

EXPENDITURES FOR THIS REPORTING PERIOD ONLY				
Project Expense	NDIC	REP Recipient	Other Sponsor	Total
Mechanical Installation & Equipment	\$836,487.70	\$836,487.71		\$1,672,975.41
Total	\$836,487.70	\$836,487.71		\$1,672,975.41

CUMULATIVE EXPENDITURES				
Project Expense	NDIC	REP Recipient	Other Sponsor	Total
Mechanical Installation & Equipment	\$836,487.70	\$836,487.71		\$1,672,975.41
Total	\$836,487.70	\$836,487.71		\$1,672,975.41