

## North Dakota Renewable Energy Program Status Report

**Recipient:** Hankinson Renewable Energy, LLC

**Contract Number:** 039-049

**Report for time period of:** September 1, 2019 – November 30, 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. All major equipment has been installed. We are waiting on a steam valve and two control valves that are to be delivered December 9, 2019.

Overall, the project is estimated to be 95% complete. System checkout is scheduled to be started the week of December 2<sup>nd</sup> with motor rotation being checked, valves being operated, instruments being calibrated and control system programming being verified.

Equipment Testing & Trials is scheduled to commence the week of December 9, 2019 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 95% complete. The project schedule has slipped a few weeks as a result of various valve shipments being delayed. The project is expected to be complete by December 16, 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.

<b>EXPENDITURES FOR THIS REPORTING PERIOD ONLY</b>				
<b>Project Expense</b>	<b>NDIC</b>	<b>REP Recipient</b>	<b>Other Sponsor</b>	<b>Total</b>
Mechanical Installation & Equipment	\$487,298.27	\$487,298.28		\$974,596.55
<b>Total</b>				

<b>CUMULATIVE EXPENDITURES</b>				
<b>Project Expense</b>	<b>NDIC</b>	<b>REP Recipient</b>	<b>Other Sponsor</b>	<b>Total</b>
Mechanical Installation & Equipment	\$836,487.70	\$836,487.71		\$1,672,975.41
Mechanical Installation & Equipment	\$487,298.27	\$487,298.28		\$974,596.55
<b>Total</b>	<b>1,323,785.98</b>	<b>\$1,323,785.98</b>		<b>\$2,647,571.96</b>