

## **North Dakota Renewable Energy Program Status Report**

**Recipient:** c2renew

**Contract Number:** R-025-035

**Report for time period of:** August 30, 2018

### **DESCRIPTION OF PROJECT**

*Please provide a brief description of the project:*

The objective of the project is for a pilot scale operation to measure and validate expansion of c2renew corporations' production and development with existing collaborators; Bobcat Co., John Deere Co., Earth-Kind Inc. and Toshiba Corp., as well as new customers, Fargo 3D Printing, Intelligent Agricultural Solutions, Bogobrush, etc. The pilot facility will include a 75 mm twin screw extruder and ancillary processing equipment.

### **PROJECT TASKS**

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

#### **Purchase of: Twin Screw Extruder, Polymer Dryer, Air Compressor, Dust Collector, and Chiller**

- We are purchasing a larger capacity polymer dryer and a single screw extruder line. Our larger scale biomass dryer has been installed in our new facility in Fargo, ND and we are getting a new control system installed. While that is being installed we have had to contract dry with the manufacturer of our dryer to keep up with our production demands . We have a new air compressor line that has been brought in as well.

We have quotes from 4 extruder manufacturers for a larger throughput machine.

#### **Throughput Rate – measure percent change from current production to production in pilot facility and how additional extruder lines impact the rate.**

- We have currently oversold the current capacity on our existing extruder line and are assessing whether to add a second shift of production once our large scale biomass dryer is at full operational capacity. This would allow us to evaluate the economics of how multiple shifts impact the throughput of our equipment.

#### **Unit Economics – analyze the difference in the cost of goods, personnel cost and shipping with an expansion of production (i.e. IAS and Toshiba)**

- We have looked closely at the unit economics and what a larger machine would do for us specifically as it relates to toll manufacturing.

#### **Cost of Production – measure the change in scrap rate, equipment up-time and extruder profile change over.**

- Can't be measured at this time.

**Production Scheduling – refine production schedule and define a manufacturing ERP system for scaled growth.**

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## **DELIVERABLES**

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

**\*Production Growth: Expand production to 6 million pounds per year.  
(\*noted added by c2renew...this is 6 million pounds of finished product per year)**

<b>FEEDSTOCK</b>	<b>POUNDS PROCESSED PER YEAR</b>
Hemp	30,000
Flax	15,000
Barley	3,000

**Production Efficiency: Lower costs of production to \$0.20 to \$0.25 range**

**Customer Acquisition: Intent is to grow the customer base**

We continue to grow our customer base and work on new industries. We are currently developing material utilizing hemp waste and field 5-6 new leads each week of folks inquiring about our materials. We are expanding our production work into large format printing and have developed an exclusive materials for a manufacturer based in Wisconsin.

**Job Growth - increasing the number of team members between 4 to 6**

We have added 2 new interns this past summer and through our collaborative work 3DFuel has added two new employees.

**Rural Development - expansion of facilities in Colfax, North Dakota**

We have decided to locate our newest production facility in Fargo, ND. Although it is Fargo, we are located in what is defined by the state of North Dakota as an Opportunity Zone, which is an area that is economically distressed area that needs investment.

**New Technology Development**

We recently tested a new technology in collaboration with ComDel Innovations to test the feasibility of utilizing rapid tooling that would lower the time and cost of bring a product to market. Our initial test was successful but will need further refinement. For this project we shared in the cost of development with ComDel and manufactured the tooling and the material for the trial.