National Biodiesel Board made the technology as a show case.

Preliminary research and inquiries with various State agencies indicate that our process will be exempt from most permit requirements.

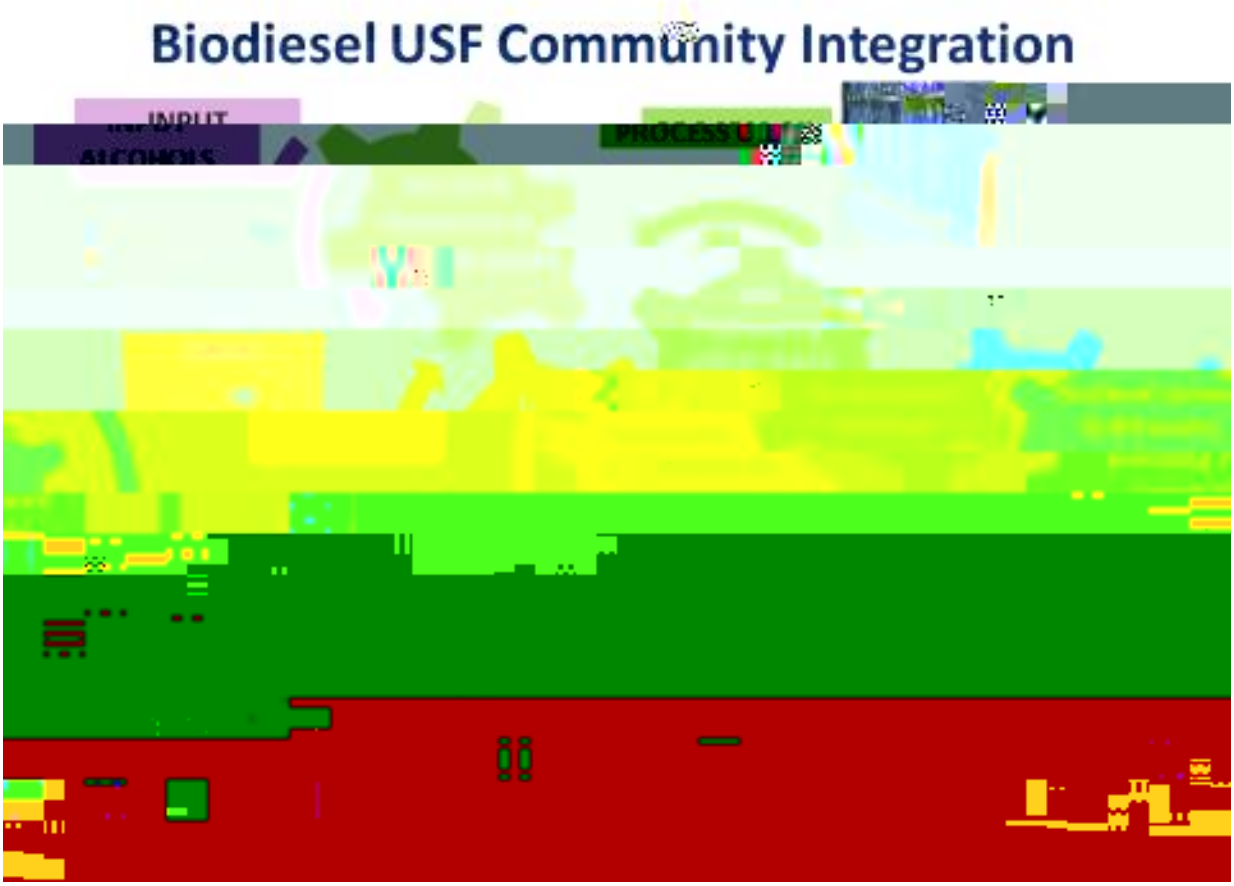

Figure 1. Current schematics for cooking oil and laboratory waste to biodiesel and soap

The facility location challenges and scale that will make it an economically sustainable initiative beyond university training activity resulted to further the study plans with a modified design. A minimum of 100,000-200,000 gallon/year mobile mini-plant is proposed. A five to 10 fold increase in capacity from the current 20,000 gallons per year will not change the unit footprint. The design involves still the same size trailer that houses the processing unit. The unit is functionally complete and self-sufficient—including the processing unit, the waste oil storage, the biodiesel storage as well as pumping capability—along with solar panels and energy storage batteries. The revenue potential of the project is over half a million dollars due to by product soap production capability.

Project Activities

The proposed project activities includes three parallel but integrated areas of development.

The first direction is the technology components. The design of the mobile mini-plant to include the components depicted in Figures 2, 3, and 4. These figures with the exception of 2 which is processing unit are off-the-shelf. Figure 2 shows a similar unit to what is being developed to be housed in a solar-powered integrated trailer, while Figure 4 shows the fuel delivery system. The dimension also product testing as well as soap manufacturing unit which is off-the shelf.

Figure 2. A mobile unit with similar footprint [Mowry, G. (2011)]

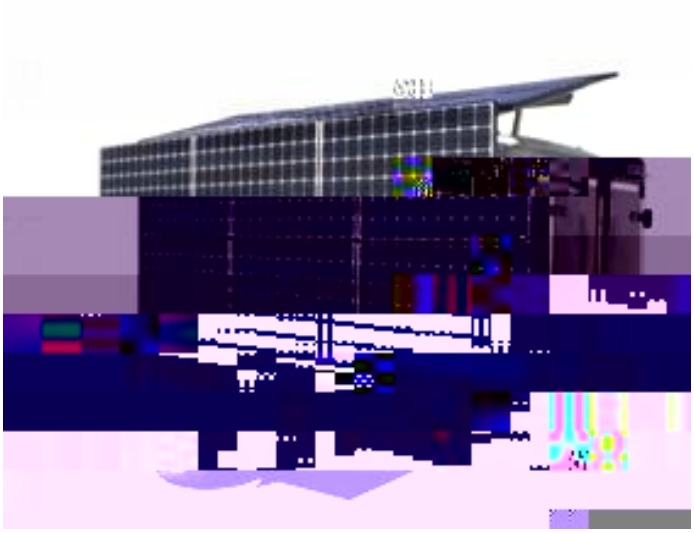

Figure 3. A solar power trailer that can house the mini plant [http://www.mobilesolarpower.net/]

Figure 4. A Mobile fueler [http://www.microfueler.com/products.html]

The second direction involves infrastructure development for oil collection and delivery with revised capacity. With the proposed mobilized processing unit, the project envisions exploiting surrounding off campus waste cooking oil resources including but not limited to Busch Gardens,

Project Results

The project will facilitate in judicious waste utilization through a green novel technology operated through a community centered enterprise to reduce the emission locally and globally in an economic way. Glycerol is the by-product generated from this process, which is of high value. At the proposed scale of 2000 gallons per week of B100, enough glycerol is produced to make about 30000 lbs. of soap per month. This can be either translated into liquid soap for use on campus or can be made into bar soap that is sold as a novelty product in the bookstore. Further, our team plans to purchase the waste oil from the University at a competitive price and sell the biodiesel produced back to the university at a price lower than the market price. This benefits the university and maintains a win-win situation for both the parties. The ROI is expected to be close to 44 % after the expenses even when waste cooking oil is purchased at $1.00/gal. The ROI increases to 88% when the waste oil free. The $1.00/gallon of waste oil value will be additional benefit for the student organizations.

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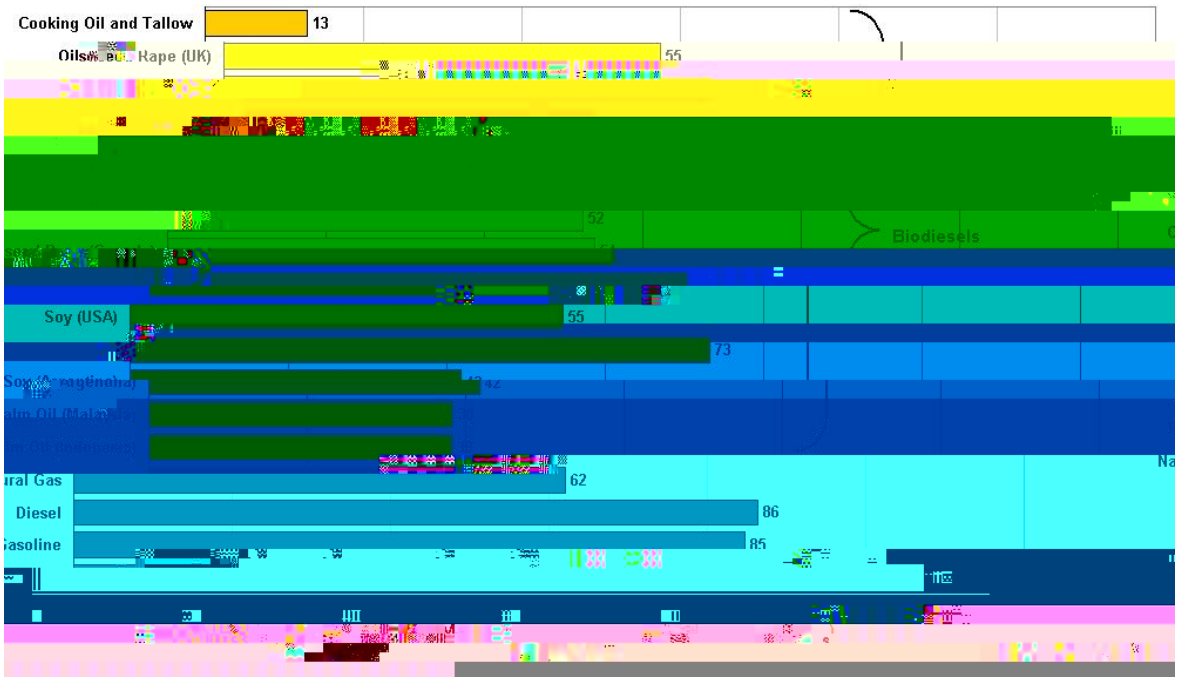

Figure 5. The Carbon Dioxide Emission per Mega Joule from different Fuels.

Figure 6. Carbon Intensity of Biodiesel Production Steps

Proposed Budget and Justification

Proposed Item	Requested From SGEF	Applicant Contribution	Total
Equipment (Truck, Solar Trailer, Processing parts, Soap facility)	$145,000	$200,000 (Pre-existing + Phase 1 Funding	