



**ESW**  
BIOFUELS

**Newsletter**  
Spring 2019



Engineers for a Sustainable World



Develop

Promote

Innovate

Cooperate

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# ESW Biofuels

After a very successful recruitment, Engineers for a Sustainable World welcomed 8 new members this Spring, with 2 joining the Biofuels sub-team.

## New Members: Bioenergy Implementation

Ian Starnes is a junior from Saratoga Springs, NY double majoring in Environmental and Mechanical Engineering. He is most looking forward to studying the feasibility of different feedstocks for biofuel production on a large scale. Ian loves the outdoors and type 2 fun.

Bennett McCombe is a freshman majoring in Environmental Engineering in the College of Agriculture and Life Sciences. He is from Riverhead, Long Island where his family runs a small farm and bakery. Bennett enjoys keeping up with McLaren Racing, his favorite Formula One team. This year, he is most looking forward to researching how to incorporate biodiesel into existing fuel systems.





# ESW Biofuels

## New Project: Biodiesel Engine Project

ESW Biofuels has recently made progress on their biodiesel engine project. The team has been communicating with CTECH (the Center for Transportation, Environment, and Community Health), Farm Services, Cornell Transportation, and a biodiesel technology start-up company to complete a proposal for a Phase I pilot project on Cornell's campus.

The proposal must be reviewed and approved by Cornell administration before the project materializes, but the team is excited by these developments and looks forward to the future of the project.





# Research & Development

## Biodiesel Reactor

R&D continued working on the waste vegetable oil biodiesel reactor project from last semester. Waste Vegetable Oil will be collected from Greek Houses and co-ops on campus, and the fuel product will be used by the Agricultural Research Station in mowers and tractors.

The Research and Development sub-team recently got their bioreactor delivered, and have been working on getting it to a functional level using their ESW Small Project Grant. They have been developing CAD models and will be transitioning to new projects soon with inspiration from their project bank.





# Bioenergy Implementation

## L.I.V.E.S. Challenge

In January, we received 23 submissions for our L.I.V.E.S Challenge for high school students in New York! Since then, we have recruited Biofuels team members, Cornell professors, and professional engineers to judge each submission. In April, we will invite the top 3 teams on-campus where they will present their proposals to a panel of faculty and students.

## Hollenbeck Cider Mill

Last semester, our goal was to evaluate the feasibility of implementing a small-scale anaerobic digester on their property to co-generate electricity and heat from their organic waste. After months of research, we concluded that this project would be infeasible. The variable annual production of apple pomace and the high acidity of this waste both contribute to this conclusion. Currently, we are formulating our results into a report to send to the facility.







# Business & Outreach

Business and Outreach found success with the heating system solution that they developed last semester for the Fats, Oils & Greases Collection Station, as it has been installed and is currently in use at the Tompkins County Recycling and Materials Management Center. The sub-team plans to visit the center and take pictures of the set-up. B&O is also working with Knowledge Chikundi, a student from Zimbabwe, to help set up an ESW chapter there. B&O also has a fundraiser at the Loft in Collegetown.

