

For this project, I was the research coordinator of the team. This means that I led the effort in finding relevant research articles and other material for the literature review of our project. I also delegated research for other group members to perform alongside the team coordinator and team leader, Carol Rogers. I did the initial literature review research for a key source in our project—the plastics-to-fuel developer's guide and took information from this source into account when giving my inputs for the commercial process design. I also determined a lot of relevant information on plastic waste statistics and the effects on oceans. I helped spearhead the effort in contacting outside parties to determine flare information as well as permitting information. Additionally, I compiled all the data and did necessary calculations for determining the plastic feed composition. I also was the main person that determined proper safety information for the process, and the different properties of the plastics, such as melting point, decomposition temperature, etc., through a literature search. For the literature review, the final thing I did was organize resources into folders and communicate to the group where these resources were.

In terms of experimental work, I helped determine the bulk density and void fraction of the plastic feed, measure out and uniformly mix the plastic feed for experiments, perform the first run of our bench-scale reactor, give input for design changes, and clean the experimental apparatus station at the end of the semester.

The following were my accomplished tasks for the competition documents: For the report, I helped write the introduction and commercial process description. I wrote the conclusion as well as the health, safety, and environmental considerations sections of the report. I edited the bench-scale and community relations plan sections. I went through the paper with another team member to ensure references matched statements throughout the paper and that the

references were cited properly. For the poster, I helped edit the text and presented the process flow diagram and economics during the competition. For the presentation, I presented the economics, community relations plan, process safety, environmental considerations, waste generation, and conclusions and recommendations.

The remainder of tasks that I contributed to are as follows:

I helped design a commercial process flow diagram in Visio; took notes for a tour at a local landfill; found the proper shredder to use for the process; determined the feasibility of using a shredder to shred baled plastics; reached out to a local materials recovery facility; contacted a supplier of ground plastics to obtain plastic samples; largely assisted the team coordinator in communication with mentors, team members, and outside parties; turned in the thesis for the entire group; helped design the brochure; assisted in the formatting for the final draft of the report; found equipment costs for the front end equipment for the commercial design; assisted teammates in performing economic analysis, mainly the IRR and discounted cash flow; performed heat and material balance calculations alongside the team coordinator.