

# Municipal Solid Waste Project

University of Oklahoma- CBME- ChE 4253 (Fall 2018)

## Part 1-Preliminary Economic Assessment

The object of this study is to determine the feasibility of changing the processing of municipal solid waste in the city of Norman, or in the area if that is more convenient, from the current combination of recycling and landfilling to the production of chemicals.

### This Task Statement

You are requested to consider 4 options of taking the MSW and converting it to:

- Ammonia - Hydrogen - Urea - Power (IGCC plants and from Incineration)

1) For each alternative, give an idea of the plant size (for one city or many cities) and provide an estimate of

- TCI - Product Cost - Raw Material and Product selling prices
  - Potential customers and Demand. - Profitability. - Environmental Impact.
- (Yes this is fuzzy: we want your opinion here, not numbers, necessarily).

2) Make an economic comparison with

- Landfilling - Incineration

3) You are asked to make an analysis of these information you produced and choose the best alternative from the pure economic point of view and then also considering environmental issues. Make sure you have arguments to back your assertions.

**Hint:** The minimum info on TCI, costs and other details, can be obtained reading the supplemental material report and using Google for example. We encourage you to take a close look at the references cited in this report. You can then follow by an order of magnitude assessment, using adjustment factors at the very least. However, if you do more than the minimum you will sharpen your skills and we will compensate with our love and admiration. By the way, the supplemental material is not guaranteed to be 100% accurate as I did not check the sources for accuracy (now your job).

**Grading Rubric:** 1): 30%, 2) 20%, 3) Best Alternative Choice (35%) from the economic point of view. Include the largest number of issues in discussing the goodness of each choice and make logical arguments (even if we think they are wrong; you will not be penalized for this). You can confine yourself to the city of Norman or increase the scale and think of the OKC area. 4) Economics and Environmental Considerations (15%). Should you think about money only? Should Environmental considerations be added, like reducing C footprint? We encourage you to investigate possible cap and trade issues.

**Final Thought:** A good Engineer is who can make good analysis and take good technical decisions when there is lack of data, or overabundance of it. Having all the exact data you need to fill in formulas only makes you a glorified Technician. We want you to become the former!!!