Review of “Landfill Model v5 - no RINS for utility electricity.STMX”

1. Questions
   1. Should there be an inflow of landfills into flaring?
   2. What is the scenario behind the transportation electricity fraction? Do we need to get an actual scenario there?
      1. Also, I don’t really understand the note in the model on this.
      2. The “do nothing” scenario seems generic and is not very clear. Is this just an approach to account for the development of low resource projects?
   3. What is the point of the electricity part of the model? Wouldn’t it make more sense to produce natural gas and then compete uses? E.g., Electricity, hydrogen, renewable gas.
   4. What is the best way to handle candidate vs. potential landfills. Potential landfills might be economic, but they are also landfills where data is poor.
   5. In the landfill data how is “shutdown” handled? Ignored?
2. Comments and feedback
   1. The demand side of the model past the biogas production seems a bit weak. In particular, electricity production for transportation will be a new specialized area where dynamics around building capacity and retirements may be important.
   2. Co-product sales revenue is zeroed out.
      1. This is probably appropriate for landfill gas, but we would definitely use this as a part of FY16 work
      2. Is this intended to account for heat in a CHP system? Or is CHP scoped out of the electricity pathway?
   3. I am general confused about how the electricity fraction is supposed to work and what is it’s basis.
   4. CALIBRATION ISSUE: I think the revenue estimates are somehow off. Historic data indicates that on a MJ basis the selling price of NG is about 2x electricity. The model shows revenue from NG is 4x electricity.
   5. Electricity energy conversion potential seems a bit low at 20%.
3. Questions about landfill data
   1. The candidate landfill criteria don’t seem to be used in the actual classification each land full has
   2. How are we handling landfills without any data that are not classified as “potential”
4. Data we have for calibration
   1. Potential, candidate, and current landfills for waste to energy from LMOP
      1. Uses of existing landfills (e.g., CNG vs. electricity)
   2. Natural gas and electricity prices from EIA and the Clean Cities report on alternative fuels. Prices are available regionally, but I will need to dig into that a bit more
   3. Methane production curve of a landfill from an EPA source. EIA provide some years for three classes of landfills
   4. Historic waste production from EPA
   5. State level data on the MSW industry
      1. Not really seeing CA as a starkly different state either in terms of the composition of biomass or import/export of waste.
   6. Some historic per capita MSW generation by state
   7. Landfill gas production cost estimates
   8. EIA landfill gas and incineration for the electricity sector by region and industry.
   9. High and low methane yields from EIA (NOTE: Out current assumptions are on the high end)
   10. Electricity and CNG supply functions
   11. Net costs of electricity and pipeline biogas for landfills.

Subsidies: A $23.0/MWh ($11.0/MWh for technologies other than wind, geothermal and closed-loop biomass) inflation-adjusted production tax credit over the plant's first ten years of service or (2) a 30% investment tax credit, if they are under construction before the end of 201

**Notes to Organize**

How do we handle CH4 concentrations?

Do landfills differ a lot, check EPA documentation?

Active MSW Landfills Less Than 450,000 Tons of

Notes: Electricity should be 30% instead of 20% and CNG should be 99% instead of 80%.

Add PTC? 1.1 cents/kWh PTC or 30 percent of the costs attributable to the facility, which typically excludes other project costs ITC.

Other historic federal policies are “Qualified Energy Conservation Bonds” and “Section 1603 Cash Grant for Renewable Energy”

Add other state policies?