## Updated enzyme and yeast assumptions

## Starch and Cellulase Formulated Product

Corn consumption in the production of starch has been modified to reflect values in Galitsky et al. (2003). These authors report a yield of 0.57 lb starch per lb corn. The resulting demand in GREET is then 1.75 lb corn/lb starch. This value is consistent with that used by Hong et al. (2013). This revision also aligns cradle-to-gate greenhouse gas emissions for glucose (0.9 kg  $CO_2e/kg dry glucose$ ) with the range reported by Tsiropoulos et al. (2013) (0.7 – 1.1 kg  $CO_2e/kg dry glucose$ ).

Further, it has been clarified that the cellulase enzyme values in GREET are for cellulase product, not enzyme protein. Data for corn steep liquor, glucose, and ammonia consumption has been updated to reflect values in Hong et al. (2013) for formulated enzyme product.

## Sodium Hydroxide and Chlorine

Values for these two compounds have been updated to reflect new, industry based data in Franklin and Associates (2011).

## References:

Franklin Associates. *Cradle-to-Gate Life Cycle Inventory of Nine Plastic Resins and Four Polyurethane Precursors.* **2011.** Prepared for the Plastics Division of the American Chemistry Council.

Galitsky, C.; Worrell, E.; Ruth, M. *Energy Efficiency Improvement and Cost Saving Opportunities for the Corn Wet Milling Industry*. **2003**, LBNL-52307

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Tsiropoulos, I.; Cok, B.; Patel, M. K. "Energy and greenhouse gas assessment of European glucose production form corn – a multiple allocation approach for a key ingredient of the bio-based economy." *Journal of Cleaner Production*, **2013**, 43:182-190.