

Supplemental Table 1. Life Cycle Inventory (LCI) data and sources.

Input	Data Source
Agricultural Production	
Seed - Corn	PE, 2015
Seed - Switchgrass	
Seed - Miscanthus	
Soil Cultivation - Plowing	
Soil Cultivation - Chisel Tiller	
Soil Cultivation - Seed Bed Preparation	
Fertilizing - Mineral Fertilizing (Lime)	
Fertilizing - Sprayer	
Sowing - Plant Drill	
Sowing - Spike Harrow	
Sowing - Planting (Miscanthus)	
Harvesting - Combine	
Harvesting - Straw/Hay Harvester and Baling	
Nitrogen Fertilizer	
Potassium Fertilizer	
Agricultural Lime	
Glyphosate	
Corn Stover Yield	Zhang et al., 2010
Switchgrass Yield	
Miscanthus Yield	
Nitrogen Loss via Surface Runoff	
Nitrogen Loss via Sediment	
Nitrogen Loss via Lateral Subsurface Flow	
Nitrogen Loss via Percolation	
Phosphorus Loss via Surface Runoff	
Phosphorus Loss via Sediment	
Phosphorus Loss via Percolation	
Net Primary Production	
Carbon Content of Yield	
CO ₂ Respired	
Soil Carbon Lost	
N ₂ O Emissions	
Fossil Fuel Production	
Natural Gas	US LCI, 2008
Gasoline	
Diesel	
Bituminous Coal	
Residual Fuel Oil	
Liquified Petroleum Gas	
Heat and Power	
Residual Fuel Oil combusted in Industrial Boiler	US LCI, 2008
Diesel Fuel Oil combusted in Industrial Boiler	
Gasoline combusted in equipment	
Bituminous Coal combusted in Industrial Boiler	
Natural Gas combusted in Industrial Boiler	
Liquified Petroleum Gas combusted in Industrial Boiler	

Power from Nuclear Power Plant	PE, 2015
Power from Coal	
Power Natural Gas	
Power from Hydropower	
Power from Wind	
Regional emission factors for electric power	Meier, 2012
Regional emission factors for transportation and process-heating fuels	ANL, 2010
Transport	
Train - Diesel	US LCI, 2008
Barge - Diesel	
Barge - Residual Oil	
Combination Truck - Diesel	
Truck (52,000 lbs or 23 MT payload) - Diesel	PE, 2015
Chemical and Biorefinery	
Sulphuric Acid	PE, 2015
Ammonia	US LCI, 2008
Diammonium Phosphate	EcolInvent, 2007
Ammonium Sulphate	
AFEX Pretreatment	B. Bals Pers. Comm., 2011; B. Bals Pers. Comm., 2013; Laser et al., 2009
Dilute Acid Pretreatment	Humbird et al., 2011
Hydrolysis	
Fermentation	
Cellulase Production	
Lignin Combustion and Utilities	
Wastewater Treatment	
Distillation, Dehydration and Denaturation	
Storage and Handling	