

ASCENT Project 001



Construction & demolition waste regional project

University of Hawaii

Participants: Quang Vu Bach, Jinxia Fu, Scott Turn

Program Manager: Nathan Brown

Cost Share Partner: University of Hawaii, State of Hawaii

Objective:

Generate information and data needed to support regional supply chain analysis for SAF production from construction and demolition (C&D) waste feedstocks on the island of Oahu, Hawaii

Project Benefits:

Availability of physicochemical properties of C&D feedstock available to project developers
Analysis of feedstock temporal variability
Equilibrium analysis of contaminants generated from feedstocks under gasification conditions
Provide gasification test data to inform contaminant control options, e.g. fuel blending, gas cleaning

Research Approach:

Conduct C&D waste sampling campaign at PVT Land Co. landfill over the course of a year
Analyze fuel sample properties relevant to thermochemical conversion technologies
Conduct analysis with FactSage™ thermochemical equilibrium software to predict contaminants and their concentrations and phases to inform gasification system design

Major Accomplishments (to date):

Completed sampling campaign and sample analysis; results summarized in manuscript under review for publication
Completed FactSage analysis, manuscript in preparation
Scheduled gasification tests of C&D and opportunity fuels

Future Work / Schedule:

Complete benchscale gasification tests to produce data on gas quality, yield, and contaminants
Assess contaminant abatement strategies for FT applications

ASCENT Project 001



Assessment of energy crops for SAF in Hawaii (and the tropics)

University of Hawaii

Participants: Sharon Chan, Jinxia Fu, Richard Ogoshi, Seren Weber, Gabriel Allen, Scott Turn

Program Manager: Nathan Brown

Cost Share Partner: University of Hawaii, State of Hawaii

Objective:

Assess the potential for production of oil seed and fiber crops in Hawaii under constraints of land use zoning, mean annual rainfall, mean annual temperature, land slope, current land use, and future food production

Project Benefits:

Provide estimates of production potential across Hawaii's varied agroecological zones
Targets options to revitalize Hawaii's rural economy and underutilized agricultural land vacated by sugarcane and pineapple
Provides data needed for integrated assessments with urban feedstocks

Research Approach:

Test EcoCrop¹ model capability (calibrate) by predicting former sugarcane production areas
Use the EcoCrop model to assess potential of 12 oil seed and fiber producing crops
Identify coproducts from agricultural and processing residues

Major Accomplishments (to date):

Completed model calibration using historic sugarcane land
Assessed the production potential for 12 feedstock crop candidates, summarized in draft manuscript
Published 3 papers on coproduct development

Future Work / Schedule:

Identify locations for processing and conversion facilities based on crop model results
Conduct economic analysis for energy crop production.
Identify potential opportunities to integrate agricultural and urban feedstock supplies

¹<http://www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/category/details/en/c/1027491/>