

challenges encountered and lessons learned. Some clarifying questions regarding the data reported in the paper were also clarified. These interactions aided WSU's development of a higher fidelity Aspen model of the HEFA process.

Milestone(s)

This collaboration was discussed during the bi-weekly ASCENT Project 01 teleconference on November 13, 2017. This represents completion of MS 5 as defined in the AY 2017/2018 Grant Proposal.

Major Accomplishments

This major accomplishment of this reporting period was collaboration between MIT and WSU, to facilitate WSU's development of an Aspen HEFA model.

Publications

None

Outreach Efforts

None

Awards

None

Student Involvement

None

Plans for Next Period

None

References

Pearlson, M; Wollersheim, C; Hileman, J. A Techno-economic Review of Hydroprocessed Renewable Esters and Fatty Acids for Jet Fuel Production, *Biofuels Bioprod. Biorefining* 7, 89 (2013).

Tasks 2 & 6- Support of ILUC Calculations and Assessment of Sustainability Certification Schemes for Potential Inclusion Under CORSIA & Additional (including in-person) Support to FAA for Decision-Making in the Context of AFTF

Massachusetts Institute of Technology

Objective(s)

The objective of this task is to provide support to the FAA in the context of AFTF beyond the major LCA and policy analysis tasks outlined above. Specifically, this task will support the work of the induced land use change (ILUC) and sustainability task groups and provide in-person support for FAA decision-making at meetings of AFTF and CAEP.

Research Approach

ILUC Task Group

The ILUC Task Group is responsible for the calculation of ILUC emissions factors which are added to the core LCA values. Purdue University and the University of Toronto currently lead this task within AFTF. During the reporting period, the MIT ASCENT Project 01 team supported the work of the ILUC Task Group by:



- providing relevant pathway and technology-specific data (e.g. expected fuel yields, fuel product slates) and scenario assumptions (e.g. anticipated global fuel production volumes) for ILUC analysis such that the work is consistent with the work of the LCA Task Group;
- identify additional pathways for which ILUC values may be required (e.g. fuels derived from valuable by-product feedstocks, such as palm fatty-acid distillates or corn oil); and
- contributing to discussion on comparison of ILUC results from the GTAP and GLOBIOM models.

Sustainability Task Group

In order to qualify under CORSIA, AJFs have to satisfy sustainability criteria beyond the CO₂ reductions that are captured in the LCA and ILUC emissions analyses. During the reporting period, it was decided that these criteria would encompass only a limited set of environmental aspects. Therefore, the contribution of MIT ASCENT Project 01 team was smaller than anticipated because the scope of work was significantly reduced.

In-person Support

During the reporting period, the MIT ASCENT Project 01 team will provided significant in-person support for FAA decision-making for purposes of the AFTF. Prof. Robert Malina from Hasselt University served as the co-lead of the task group on core LCA emission values and the small group lead on feedstock classification and reporting requirements. Dr. Mark Staples from MIT led the modeling work of the AFTF Task Group for Core LCA and the small group on emissions credits. Team members took part in AFTF in-person meetings in October 2017, April 2018 and September 2018, as well as the ICAO Alternative Fuels Conference in Mexico in fall 2017, as requested by FAA. Team members also participated in numerous teleconferences, virtual meetings, and the preparation of CAEP information and working papers.

Milestone(s)

Participation in AFTF/05, AFTF/06, AFTF/07, and the ICAO Alternative Fuels Conference in fall 2017.

Major Accomplishments

None

Publications

Peer reviewed publications

None

Written reports

CAEP/11-AFTF/7-IP/12, Report on the progress of the feedstock classification small group, presented at AFTF/7, September 2018, Montreal, Canada

CAEP/11-AFTF/7-IP/13, Reporting requirements for actual GHG emissions LCA values, presented at AFTF/7, September 2018, Montreal, Canada

Outreach Efforts

None

Awards

None

Student Involvement

None

Plans for Next Period

In the coming year, the MIT ASCENT Project 01 team will continue its work in AFTF, the specific scope of which depends on decisions to be reached by CAEP in February 2019. The work carried out to-date will be documented in a number of working papers to be presented to CAEP at that meeting.