Project: Robust Engineered Catalyst Demonstration for Ethanol to Sustainable Aviation Fuel via Oxygenate Intermediate

Applicant: Tallgrass MLP Operations, LLC

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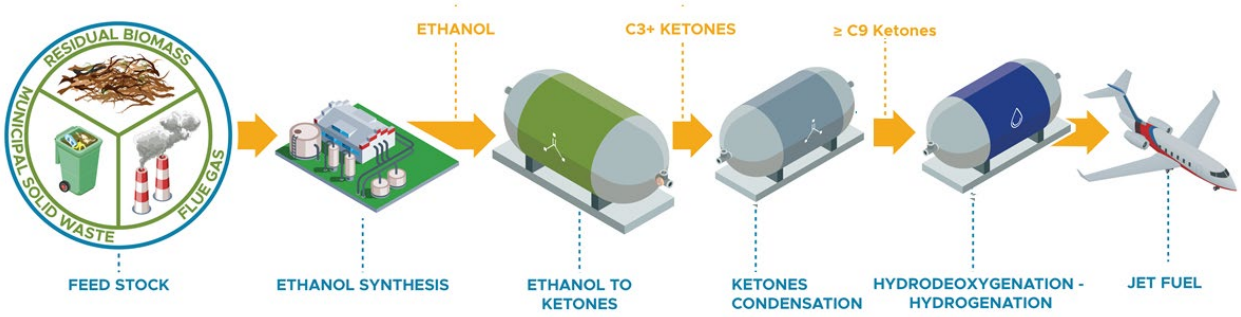
Team Member Organizations:

- Pacific Northwest National Laboratory
- Green Plains Inc.
- Clariant Corporation
- University of Houston
- Genesis Energies

Project Objectives: This project will demonstrate a robust catalytic process that converts renewable lignocellulosic ethanol to Sustainable Aviation Fuel (SAF) via ketone intermediates. This project will focus on developing engineered catalyst for the ketone formation and ketone condensation steps by unraveling the kinetics and deactivation mechanisms and on demonstrating the stability of the engineered catalyst over an extended period (> 500 hours continuous on-stream).



Simplified process flow diagram of the lignocellulosic and other low-cost feedstocks conversion to SAF through ethanol (ketones intermediate)

Potential Impact: Achieving this project's objectives will demonstrate the scalability of the proposed technology by testing the engineered catalyst in a realistic environment. Following a favorable demonstration, Tallgrass MLP Operations, LLC and Green Plains Inc. intend to pilot and then deploy PNNL's novel SAF technology to produce low-carbon SAF at a world-class facility. This production will support the Biden Administration's goals to reduce aviation emissions by 20% and produce three billion gallons of SAF per year by 2030.