

R&D GREET Sustainable Aviation Fuel Quiz

Feb 7, 2025

Answer these questions using R&D GREET 1, R&D GREET 2, a calculator, and your notes from the session.



GREAT PLAINS
INSTITUTE

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U.S. Department of
ENERGY

* Required

1. Name *

2. Email *

3. What is the average passenger + luggage payload? *

200 lb

4. What are the four stages that convert ethanol into jet fuel of the alcohol-to-jet (ethanol) process? Does R&D GREET model each stage explicitly?

Dehydration, hydrogenation, hydrotreatment, and oligomerization;
Bonus question: no

5. In your own words, describe hydroprocessing in the context of the HEFA SAF production process.

Answers will vary* see slide 21 of the SAF Intro slide deck

6. What is the default feedstock for the sugar-to-jet pathway?
*

Corn stover

7. What are all the service functional unit options you can select for an aircraft in R&D GREET? Look for your answer in R&D GREET. *

kg km, lb mi, average passenger luggage km, and average passenger luggage mi

8. Determine the contribution of the soy oil extraction stage energy and material inputs on the soy oil HEFA SAF pathway in g CO₂e/MJ of SAF. *

3.41 g CO₂e/MJ

9. Determine the contribution of nitrogen fertilizer use for soy cultivation on the soy oil HEFA SAF pathway in g CO₂e/MJ of SAF. *

0.59 g CO₂e/MJ

10. Model a weighted-average aircraft fueled by corn alcohol-to-jet (ATJ) SAF using dry corn milling with extraction, **50% reduction of nitrogen fertilizer, 50% reduction of energy inputs, and carbon capture and sequestration (CCS)**. What are the WTWa GHG emissions in g CO₂e/MJ?

29.93 g CO₂e/MJ

11. Model a weighted-average aircraft fueled by **Fischer-Tropsch SAF** produced from **municipal solid waste (MSW)** and **carbon capture and sequestration (CCS)**. What are the WTWa GHG emissions in g CO₂e/MJ? *

-48.76 g CO₂e/MJ

12. Model a business jet passenger aircraft fueled by soy oil HEFA SAF and an improved oil input of 1.14 MJ/MJ total fuel and an improved energy use for jet fuel production by 20% compared to the R&D GREET default. What are the WTWa GHG emissions in g CO₂e/MJ? *

32.56792 g CO₂e/MJ

