

# R&D GREET 1<sup>®</sup>: Fuel Cycle Analysis

Let's introduce R&D GREET 1: Fuel Cycle Analysis. This worksheet will help you harness the R&D GREET model in any case/scenario.

## Download the R&D GREET 2023 Rev. 1 model

- (1) Go to Argonne's GREET Website: [https://greet.anl.gov/greet\\_1\\_series](https://greet.anl.gov/greet_1_series)
- (2) Enter your information and select Submit
- (3) Scroll down to the most recent download under **Prior Revisions**
- (4) Click on GREET 1 2023r1
- (5) Once the model is downloaded, extract the contents to any folder that is not the Downloads folder
- (6) Right-click on each of the Excel files in your newly extracted folder, select properties, check "Unblock," then select "Apply"

Click [here](#) for a video tutorial

## Overview tab

Spend some time exploring the Home/Overview tab in R&D GREET 1.

## What do the different color cells in R&D GREET 1 indicate?

- 1 Yellow =
- 2 Peach =
- 3 Green =
- 4 Blue =



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**What do the different color tabs in R&D GREET 1 indicate?**

- 1 Yellow =
- 2 Peach =
- 3 Green =
- 4 Grey =

**Briefly describe the “Electric” R&D GREET 1 2023 tab.**

Answer here

### **R&D GREET navigation**

How do you navigate to different tabs in R&D GREET 1?

**What are three ways to reach the Results tab of the model?**

- 1 Method 1:
- 2 Method 2:
- 3 Method 3:

**What are three ways to reach the Ag Inputs tab of the model?**

- 1 Method 1:
- 2 Method 2:
- 3 Method 3:





## Major tabs in R&D GREET 1

Which tabs would you commonly use to run a simulation in R&D GREET 1?

**When running a simulation, where would you find light-duty vehicle outputs?**

Answer here

**Where would you search to adjust the general simulations settings modeled in R&D GREET 1?**

Answer here

**Where would you search to adjust more-specified simulation settings modeled in R&D GREET 1?**

Answer here

## Similarities across tabs

Explore the peach tabs in R&D GREET 1.

**Each tab can be separated into four major sections. What are these sections?**

- 1 Section 1:
- 2 Section 2:
- 3 Section 3:
- 4 Section 4:



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## Default gasoline

Model a spark-ignition internal combustion engine (SI-ICE) vehicle fueled by gasoline in R&D GREET. All other settings should be set as default.

## WTP and WTW GHG emissions

What are the well-to-pump (WTP) GHG emissions, well-to-wheels (WTW) GHG emissions, and carbon intensity (CI) score for an SI-ICE vehicle in g CO<sub>2</sub>e/mile and g CO<sub>2</sub>e/MJ?

- 1 WTP GHG emissions =
- 2 WTW GHG emissions =
- 3 CI score =

## Change the model year

Model a spark-ignition internal combustion engine (SI-ICE) vehicle fueled by gasoline used in 2017. All other settings should be set as default.

## WTP and WTW GHG emissions

What are the well-to-pump (WTP) GHG emissions, well-to-wheels (WTW) GHG emissions, and carbon intensity (CI) score in g CO<sub>2</sub>e/mile and g CO<sub>2</sub>e/MJ for an SI-ICE vehicle used in 2017?

- 1 WTP GHG emissions =
- 2 WTW GHG emissions =
- 3 CI score =

## Change the model location

Model a spark-ignition internal combustion engine (SI ICE) vehicle fueled by gasoline with a U.S. midwest electricity grid generation mix. All other settings should be set as default.





## WTP and WTW GHG emissions

What are the well-to-pump (WTP) GHG emissions, well-to-wheels (WTW) GHG emissions, and carbon intensity (CI) score in g CO<sub>2</sub>e/mile and g CO<sub>2</sub>e/MJ for an SI-ICE vehicle used in 2017?

- 1 WTP GHG emissions =
- 2 WTW GHG emissions =
- 3 CI Score =

## Further R&D GREET 1 exploration

Answer the following questions if you have extra time. All questions will be reviewed in the demo session.

## Fuel efficiency

What is the difference between the fuel efficiency (in MPGGE) of a spark-ignition internal combustion engine (SI-ICE) fueled by gasoline and a spark-ignition direct injection internal combustion engine (SIDI-ICE) fueled by gasoline in R&D GREET 1?

- 1 Fuel efficiency for an SI-ICE vehicle =
- 2 Fuel efficiency for SIDI-ICE vehicle =

## Which greenhouse gases are accounted for by default in R&D GREET 1?

Answer here

## How far does an ocean tanker transport conventional crude oil imported from offshore countries to a U.S. terminal for use in U.S. refineries?

Answer here



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