U.S. DEPARTMENT of ENERGY | Office of Critical Minerals and Energy Innovation



45VH2-GREET Frequently Asked Questions

Rev. November 2026

Introduction

45VH2-GREET is the model that has been adopted by the U.S. Department of the Treasury to determine emissions rates for purposes of the Clean Hydrogen Production Tax Credit under Title 26 of the U.S. Code, Section 45V. The 45VH2-GREET user manual describes the methodology used by 45VH2-GREET to calculate life cycle greenhouse gas (GHG) emissions of hydrogen production under a well-to-gate system boundary and provides instructions on how the model should be used.

Frequently asked questions (FAQ) and answers in this document pertain only to use of the 45VH2-GREET model. Questions about the 45V tax credit and eligibility for the tax credit should be directed to the Internal Revenue Service.

FAQs will be updated on a continual basis. If you have questions about use of the 45VH2GREET model, visit the GREET website for contact information.

Frequently Asked Questions

1. **The 45VH2-GREET manual states that "DOE is aware that some CCS systems that are not cryogenic or PSA-based may not utilize all steam produced by the reformer, and the reformer therefore may co-produce steam. At this time, 45VH2-GREET does not include reformers that are integrated with such systems and also co-produce steam." How does DOE intend to evaluate steam co-products from such systems in the Emissions Value Request Process (or in future updates to 45VH2-GREET)?**

In the Emissions Value Request (EVR) Process, DOE intends to utilize the "system expansion" approach described in section 2.6 of the 45VH2-GREET Manual to evaluate avoided emissions associated with steam co-products. 45VH2-GREET currently represents steam co-products from certain types of reformers (i.e., those that do not have carbon capture and sequestration (CCS), those that use cryogenic capture for CCS, and those that use pressure swing adsorption for CCS). If an EVR applicant proposes a CCS technology that is not represented in 45VH2-GREET (e.g., a solvent-based CCS technology that yields steam co-product), DOE intends to model the steam using system expansion subject to the following guardrails: a) the amount of steam produced (Btu) may not exceed 17.6% of the total energy content of all steam and hydrogen produced (using the lower heating value (LHV) of hydrogen and the energy content of steam, as described in the Manual), and b) if the reformer includes CCS, the energy content of the hydrogen produced must be at least 67% of the energy content of the natural gas input, by LHV. For instance, if 3,200 mmBtu of natural gas are consumed to produce 2,144 mmBtu of hydrogen, the ratio of hydrogen would be 67%.

The criteria above were developed in consultation with the U.S. Department of Treasury, in alignment with the 45V Final Regulations, and based on previous DOE modeling of optimally designed reformers. The criteria were designed to reduce the risk that a user claims steam co-product in excess of the amount that would normally be produced as a result of natural gas reforming.

2. **Do I need to open the "GREET1_2025" Excel file in the "GREET1_dependency" folder?**

Users should only open the "45VH2-GREET (Rev. December 2025)" Excel file. The macros would take care of opening and setting up the link between the two files.

3. **Do I need to move the "GREET1_2025" Excel file out of the "GREET1_dependency" folder?**

No, please do not move the "GREET1_2025" Excel file out of the GREET1_dependency folder.

4. Can I rename the files and folders located in the "45VH2-GREET" folder?

We do not recommend changing the names of any files or folders that are part of the unzipped file system, especially the "GREET1_dependency" folder and "GREET1_2025" Excel file.

5. Can I replace the "GREET1_2025" Excel file with an older GREET file?

Please do not replace the "GREET1_2025" Excel file that comes with the zip file. Doing so may cause errors and inconsistent results.

6. The "45VH2-GREET (Rev. December 2025)" Excel file does not allow me to enter process information and no error messages are observed.

This could be due to several reasons:

i. Please ensure that the files have been extracted into a local, static drive and are being run from that drive. The "Downloads" folder is often an effective place to save files. This is because the security settings in some cloud drives may prevent the execution of macros. Close all open instances of 45VH2-GREET files before trying again.

ii. Please verify that all files in the 45VH2-GREET folder are unblocked, and macros are enabled. Close all open instances of 45VH2-GREET files before trying again.

iii. Please ensure that another file with the filename "GREET1_2025" is not open. This will prevent 45VH2-GREET from opening the GREET1 file required to run its calculations. We recommend closing both files and then opening the "45VH2-GREET (Rev. December 2025)" Excel file again.

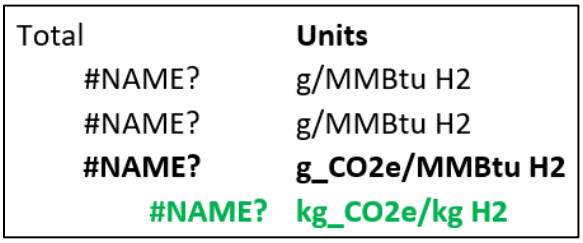
7. After I put my data into "45VH2-GREET (Rev. December 2025)" and click the "Calculate" button, Excel displays the popup error: "Compile error in hidden module: Interface."

This is because the initial version of 45VH2-GREET was designed for the 64-bit version of Office 365, and the user is using the 32-bit version. The latest version of 45VH2-GREET currently online is compatible with both the 32-bit and 64-bit versions.

8. I get the error message "Could not find the GREET1_2025.xlsm workbook."

This error is due to the Excel macro not being able to locate the "GREET1_2025" file in the "GREET1_dependency" folder. Please ensure that the "45VH2-GREET Rev. December 2025" Excel file and the "GREET1_dependency" folder are in the same folder and that the "GREET1_2025" Excel file is in the "GREET1_dependency" folder. In addition, verify that the file and folder names are correctly named.

9. **After putting all my process data into the "45VH2-GREET (Rev. December 2025)" Excel file, clicking "Calculate" results in #NAME? errors.**



Please ensure that the Excel version being used is Office 365 or Microsoft Office 2021. "45VH2-GREET" is not compatible with older versions of Microsoft Excel (Excel 2019, Excel 2016, etc.).