Change Log for 45VH2-GREET "Guidelines to Determine Well-to-Gate Greenhouse Gas (GHG) Emissions of Hydrogen Production Pathways"

December 2025 Model and Supporting Documentation

Updates in December 2025 documentation include:

- Description of new technologies added to the model (Section 2.4): partial oxidation, reformers that are integrated with CCS utilizing pressure swing adsorption (PSA), and can co-produce steam, by-product of chlorine manufacturing, and co-electrolysis of water and carbon dioxide.
- Change to pressure value in the functional unit, as explained in Section 2.1.
- Change to methane loss rate in Section 2.5.2.
- Added description of flaring efficiency assumed for coal mine methane in Section 2.5.6.

June 2025 Model and Supporting Documentation

Updates in June documentation include:

- Description of how the natural gas supply chain may be represented (Section 2.5.2).
- Description of how the pressure of hydrogen at a facility must be accounted for.
- Minor corrections to emissions factors for electricity generation from specific sources, in Table 3, and to flaring efficiency in Footnote 26.
- Minor updates to emissions factors for each grid region, in Table 6.

May 2025 Model and Supporting Documentation

Updates in May documentation include:

- Description of the manner in which users may account for bespoke information (i.e., foreground data) to represent specific aspects of their natural gas supply chain.
- Description of the manner in which users may represent consumption of multiple primary feedstocks at the same hydrogen production facility.

January 2025 Model and Supporting Documentation

Updates in January documentation include:

- Description of electricity inputs that can be simulated for high-temperature electrolysis.
- Description of the ability to represent steam co-product for facilities that use reformers with cryogenic carbon capture and sequestration (CCS).
- Description of the revised approach to account for impurities and mixed gases, in alignment with the 45V Final Regulations.
- Description of the grid regions represented in the model, based on the 45V Final Regulations.

- Description of methane feedstock (renewable natural gas [RNG] from manure, RNG from wastewater treatment plants, upgraded coal mine methane) added to the model.
- Description of the manner in which CCS rates must be determined for natural gas turbines used for power generation.
- Description of the manner in which sub-annual accounting may be conducted in 2030.

September 2024 Model and Supporting Documentation

Updates in September documentation include:

- Description of the ability to represent steam co-product for facilities that use reformers with non-solvent based CCS.
- Description of the ability to represent nitrogen co-product for coal gasification.

August 2024 Model and Supporting Documentation

Updates in August documentation include:

- Description of renewable electricity feedstock that may be simulated for high-temperature electrolysis. The new narrative is in the “Electrolysis” portion of Section 2.3 and in the Appendix.

March 2024 Supporting Documentation

Updates in the March 2024 documentation include:

- Inclusion of Appendix A, which defines hydrogen production pathways represented in 45VH2-GREET.
- Corrects the description regarding properties of steam co-products on page 11.
- Corrects the emissions factor for electricity production from natural gas turbines with CCS on page 14.