



# Hydrogen Production Emissions Calculator

Hydrogen has the potential to play a significant role in decarbonizing our energy systems. However, stakeholders and the broader public lack a simple-to-use and accessible tool to assess the life cycle carbon intensity of hydrogen production. GTI Energy's **Hydrogen Production Emissions Calculator (HyPEC)** is a user-friendly, online tool that empowers users to explore the key factors impacting the carbon intensity of hydrogen production.

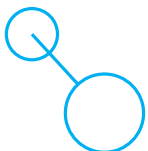
## WHAT IS THE HYDROGEN PRODUCTION EMISSIONS CALCULATOR (HYPEC)?

The Hydrogen Production Emissions Calculator (HyPEC) is a digital, online, life cycle assessment (LCA) tool that allows users to evaluate the carbon emissions intensity of various hydrogen production methods under varying assumptions and inputs. HyPEC provides quick access to credible LCA results by leveraging the rigorous methodology of the GREET model, a widely recognized and established LCA tool developed by the U.S. Department of Energy's (DOE) Argonne National Laboratory. With an intuitive and user-friendly interface, HyPEC will empower users across sector disciplines to evaluate the carbon intensity of hydrogen production quickly and easily.

## WHY DO WE NEED THIS?

The carbon intensity of hydrogen production can vary considerably, even for the same technologies and using the same energy feedstocks, due to variations in technology performance and/or emissions associated with processes upstream of the hydrogen production facility. To understand the relative greenhouse gas (GHG) impacts of various hydrogen production methods, the nuance and sensitivity associated with these parameters must be considered. HyPEC provides information, resources, and an easy-to-use calculator for evaluating the impact of key factors on the carbon intensity of hydrogen production technologies. This transparent, publicly available tool will facilitate productive, pragmatic conversations regarding the role of hydrogen in energy transitions.

## WHO SHOULD USE THIS TOOL?



Hydrogen Market Participants



Researchers



Members of the Media



Interested Public Citizens

## WHAT DOES HYPEC DO?

- Offers digestible information, guidance, and resources to help inform and educate users on life cycle assessment (LCA) and the factors impacting the carbon intensity of hydrogen production
- Provides the ability to quickly generate results for custom sets of user-defined values, empowering users to evaluate the scenarios, conditions, and sensitivities that are of interest to them
- Leverages the rigor of the GREET Model developed by Argonne National Laboratory, while providing a simple-to-use and intuitive online interface that is specifically tailored to hydrogen production and accessible to a broad array of users
- Gives users access to a wide range of input parameters and values, with flexibility that extends beyond the GREET model (version 2021), while still retaining calculation methodology that is consistent with GREET

HyPEC unpacks the complexity of evaluating the greenhouse gas emissions associated with hydrogen production. It empowers users at any technical level to perform credible life-cycle assessment calculations to compare the carbon intensity associated with various hydrogen production scenarios. Additionally, HyPEC provides helpful guidance, useful information, and access to external resources to further educate users on the topics life-cycle assessment and carbon intensity.

## WHAT TECHNOLOGIES AND PARAMETERS ARE INCLUDED?

### Parameters Included:

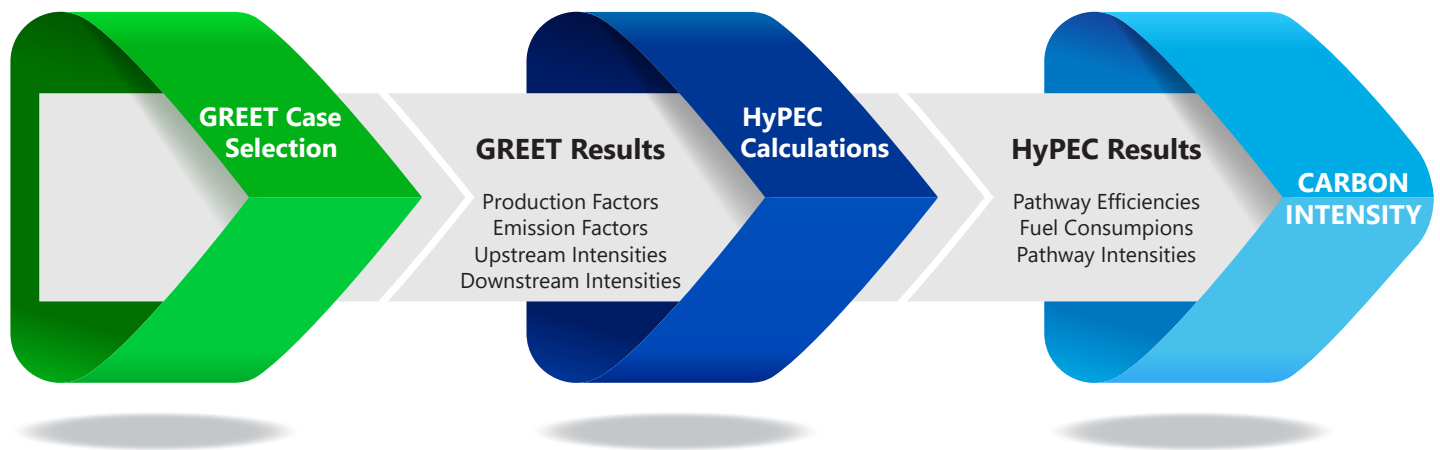
- Life cycle assessment scope
- Global warming potentials
- Electricity generation type
- Upstream methane slip
- Energy consumption
- Carbon capture rate

### Technologies Included:

- Electrolysis
- Steam methane reforming
- Biomass gasification

**Explore the tool here:**  
[hypec.gti.energy](https://hypec.gti.energy)

## HyPEC Combined Lookup and Calculation Approach

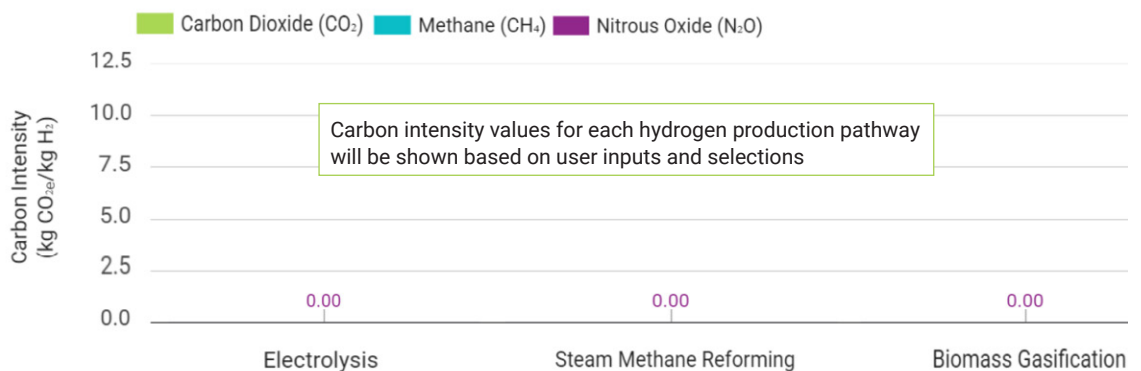


### How to use the tool:

1. Make your selections
2. Enter your input values
3. See your results displayed in the chart

### HyPEC results:

- Pathway efficiencies
- Fuel consumptions
- Pathway intensities
- **Carbon Intensity**



## LEARN MORE OR CONNECT WITH US

<https://hypec.gti.energy/>

@gti-energy

@gti\_energy