



## Colors of Hydrogen

*Part of the Hydrogen Tech Brief Series*

# What the Colors Mean

- Color is a shorthand to allow us to specify two parameters with one label (color)
  - Whether the source of hydrogen *emitted CO<sub>2</sub>* or not
  - Whether the source of hydrogen was *renewable* or not
- Only four colors are needed to describe any hydrogen
  - Carbon Intensity (CI) scores needed for more detail

	Emits CO <sub>2</sub>	
	No	Yes
Renewable Energy	Green	Tan
Non-Renewable (fossil & nuclear)	Blue	Gray

# The Four Colors of Hydrogen

- Natural hydrogen wells (geological) (see: nh2e.com)
- Hydrogen generated by splitting water with renewable electricity
  - Wind, Solar, Geothermal, Hydroelectric
- Hydrogen from biomass with carbon capture and sequestration

		Emits CO <sub>2</sub>	
		No	Yes
Source	Renewable Energy	Green	Tan
	Non-Renewable (fossil & nuclear)	Blue	Gray

Hydrogen from biomass Without Carbon Capture (Tan Proposed)

Hydrogen from fossil fuels without Carbon Capture

- Hydrogen from fossil fuels with carbon capture
- Hydrogen from petroleum wells with carbon left in the ground (<https://proton.energy>)
- Hydrogen generated using nuclear power

***Only Four Colors Are Needed to Describe Any Hydrogen  
A Carbon Intensity (CI) Score is Needed for More Details***