DATASHEET

# Hydrogen Classification Model: Carbon Intensity

Teralta classifies the hydrogen we produce based on carbon intensity (CI), a lifecycle assessment (LCA) that applies to all types of hydrogen and is endorsed by the International Energy Agency (IEA).

- CI quantifies the cleanliness of the energy produced based on the grams of carbon dioxide ($CO_2$)-equivalent released, to generate a unit of energy
- LCA methodologies have been standardized by the international Standards Organization (ISO)

CI thresholds for hydrogen produced by Teralta are significantly lower than the government recommended standards:

**CI Score Comparison** (based on $gCO_2e/MJ$)

| Government of BC | Teralta H2 Electrolysis | Teralta H2 SMR | Diesel |
|---|---|---|---|
| **< 40.1** | **0.975** | **< 36** | **~90 g CO2e/MJ** |

***"By agreeing to use the emissions intensity of hydrogen, governments can facilitate market and regulatory interoperability."***

**International Energy Agency (IEA):**

# Traditional Hydrogen Classification Models

The ubiquitous “hydrogen rainbow” while visually engaging, is open to interpretation. For example, the Oxford Scientist hydrogen array incorporates seven different colors, while the Mitsubishi Heavy Industries Group has 12 different types of hydrogen on its colour wheel.

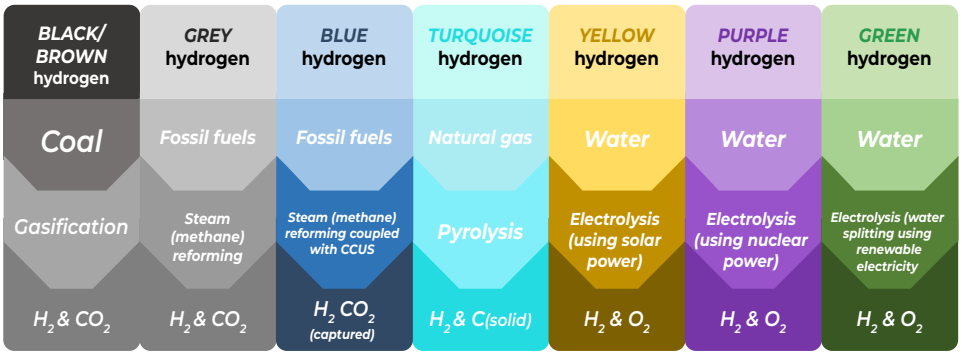
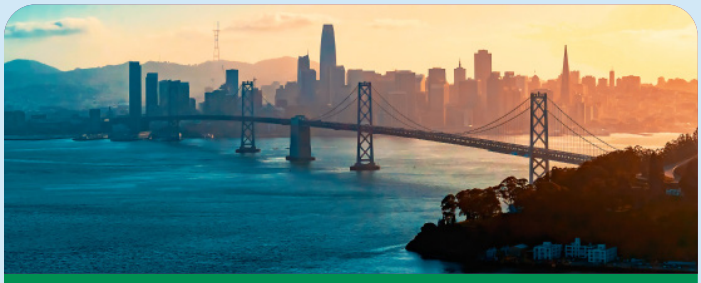



*Fig. 1: Oxford Scientist*

As the hydrogen market continues to expand rapidly, classification criteria must be standardized and universal.

Unlike traditional, non-standardized classification models, CI benchmarks are typically set by government and regulatory bodies, for example:



**California:** hydrogen fuels must have a CI score below the annual benchmark established by the California Air Resources Board (CARB).

**British Columbia:** CI thresholds are set by the provincial government based on hydrogen production pathways.

**Teralta is committed to simplifying the complicated path to clean, utility-scale hydrogen for industrial and commercial use.**

If you have any questions or would like more information about Teralta and the work we do, **contact us** or **visit our website**.

teralta