

U.S. Department of Commerce
Renewable Energy and Energy Efficiency Advisory Committee
Charter 7, 2022-2024 ● Recommendation Fact Sheet

Recommendation 1 (Approved September 21, 2023) on Adopting a Unified Carbon Intensity Methodology for Hydrogen Production.

In order to better ensure U.S. companies engaged in the production and utilization of low- and zero-carbon hydrogen can effectively compete in a rapidly-emerging global marketplace, the REEEAC recommends that the Secretary direct Department staff to advocate for, and to coordinate with other federal offices that may be engaged in, foreign discussions on the topic of developing a single unified global methodology for determining the carbon intensity of hydrogen that are currently taking place in several nations, but particularly in the United States, European Union and Canada.

In both the Inflation Reduction Act and the Bi-Partisan Infrastructure Law, the United States has directed considerable resources to help grow investment in the hydrogen manufacturing and supply chain here in the United States. However, the United States is not alone in actively developing a statutory and regulatory framework for this industry. There is urgency to this request as the Energy Commission of the European Union has recently passed its Carbon Border Adjustment Mechanism (CBAM) which will tax imports, including hydrogen, based on a carbon intensity methodology that has not yet been fully developed. It is the belief of the REEEAC that such efforts must be made, as set forth herein, by the Department of Commerce to achieve a level playing field for U.S. companies in the global hydrogen marketplace.

Sub-Committee(s): *Emerging Technologies*

Background Information: The global discussion and marketplace for hydrogen, independently and as a derivative has significantly grown over the last few years as the technology, i.e., electrolyzers, has advanced and the appetite for the use and application of hydrogen has evolved. Reducing our carbon footprint is a global responsibility and while many nations have set carbon reduction goals, it is widely accepted that it will require a global effort to be accomplished. Competitiveness of U.S. companies in this market, which has already reached the multi-billion-dollar stage, will largely depend on what metrics are used to determine qualifying hydrogen production and usage. The risk to U.S. companies in the dialogues currently taking place is that adopted metrics will favor domestic technologies in other countries, likely in non-transparent fashion that would make it difficult to challenge or modify once adopted. In order for both (i) carbon-reduction hydrogen initiatives and (ii) U.S. interests in fair markets that allow U.S. companies to compete on a level playing field to be successful, there must be a shared understanding of goals and a unified, transparent metric of measurement to quantify the achievements.

In its infancy, the hydrogen discussion first employed the use of an arbitrary color wheel to identify various types of hydrogen based on their means of production, although the actual hydrogen product was the same regardless of its source (and, of course, colorless). For example, gray hydrogen was fossil fuel based (natural gas), blue was renewable natural gas

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based, pink was nuclear, and green was renewable sourced (wind/solar). However, even within these color categories there is much dispute as to what should “qualify” for each color. In lieu of productive conversations within the industry, much time was spent disputing the definitions of the color and ultimately everyone was dissatisfied with the result. What was meant to simplify the conversation, ultimately made it much more controversial.

There has been a movement over the last 12-18 months among thought leaders in this global industry that to move the discussion forward, there must be an objective unit of measurement to calculate and then report the carbon intensity of hydrogen.

Expected Effect on U.S. Export Competitiveness:

“An internationally agreed emissions accounting framework is a way to move away from the use of terminologies based on colours or other terms that have proved impractical for the contracts that underpin investment. The adoption of such a framework can bring much-needed transparency, as well as facilitating interoperability and limiting market fragmentation, thus becoming a useful enabler of investment for the development of international hydrogen supply chains.” Towards hydrogen definitions based on their emissions intensity, IEA (2023), p. 3.

Currently the U.S. Department of Energy has adopted the GREET model, while Canada and the EU are developing their own unique models such as CertifHy and GHGenius. These inconsistencies have and will continue to be barriers for hydrogen and hydrogen projects in the international trade market. In both the Inflation Reduction Act and the Bi-Partisan Infrastructure Law, the United States has directed considerable resources to help grow investment in the hydrogen manufacturing and supply chain here in the United States. However, these companies need to compete and win in the global marketplace. To do this, the United States, through the Department of Commerce and those other federal agencies engaged in developing standards for and establishing hydrogen as an essential part of the global economy, must be advocating for a marketplace that does not create a disadvantage for these U.S. companies especially those that produce hydrogen from natural gas with CO₂ capture to achieve lower carbon intensity.

The hydrogen economy will only grow with investment. The confidence investors need will be rooted in a measurable and widely adopted system. Once a unified methodology is established, each jurisdiction around the globe can create individualized standards and regulatory frameworks. For example, Country ABC might choose to say that hydrogen with a carbon intensity score of ‘x’ will be permitted through 2045. If technologies providers know how they and their competitors will be measured and law makers/regulators identify what will be permission in their jurisdictions, investors will have a clear pathway. However, this marketplace as described above must be built on the stable foundation of an internationally agreed-upon methodology.

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Specific Agencies Responsible for Implementation: In order to implement this recommendation, the International Trade Administration (ITA) would need to take four actions. First, ITA would need to identify those federal offices, including offices within the Department of Energy, the Department of State and the Treasury, that are engaged in developing policy positions related to the carbon intensity of hydrogen production. Second, the Administration should work with those offices to develop a position statement advocating for a unified methodology for carbon intensity. Third, ITA, working with those federal offices, should identify the current open dockets and discussions happening in the European Union, Canada, and other leading nations on the topic of methodologies to measure carbon intensity. Fourth, ITA and those federal offices, as appropriate, should actively engage in those global discussions.

Measures of Success: Success would be measured by the Department and other federal offices, as appropriate, actively participating in this global discussion and publicly advocating for a unified global standard of carbon intensity, resulting in adoption in each relevant market of fair, transparent metrics that enable U.S. low- and zero-carbon hydrogen production and utilization companies to compete on a level playing field. To be clear, it is not the intent of the REEEAC to promote a particular methodology. In fact, with several methodologies being discussed around the globe, it would be a success to have multiple nations agree, such as G7 member nations, that a single methodology is best for the global marketplace and then those nations could then organize in a manner to produce the unified international methodology, provided the methodology is transparent, promotes a level playing field and provides an equal opportunity for US businesses to successfully compete.

Timing: The REEEAC requests that this four-step approach be adopted by December 31, 2023. There is urgency to this request as the Energy Commission of the European Union has recently passed CBAM which will tax imports, including hydrogen, based on a carbon intensity methodology that has not yet been developed. EU acknowledges that there is not an international methodology and therefore has included a transitional phase with regards to values used to calculate embedded emissions on imports, by allowing equivalent third country national systems through the end of 2024. The REEEAC members implore that the Department and other federal offices speak out against major market players who are attempting to create and mandate exclusive use of new and unique carbon intensity methodologies as this only enhances market uncertainty and increases burdens on and barriers to global trade, and decreases US industry competitiveness in this extremely important emerging global market.

Additional Resources:

Towards hydrogen definitions based on their emission intensity, International Energy Agency, April 2023. [Towards hydrogen definitions based on their emissions intensity – Analysis - IEA](#)

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Carbon Intensity of Hydrogen Production Methods, B.C. Centre for Innovation & Clean Energy, Deloitte, (S&T)2 Consultants, and the B.C. Ministry of Energy, Mines and Low Carbon Innovation, March 16, 2023. [Carbon Intensity of Hydrogen Production Methods Report - B.C. Centre for Innovation and Clean Energy \(cice.ca\)](#)