Green-e® Renewable Hydrogen Draft - Survey for Second Stakeholder Comment Period

1. Renewable Hydrogen Survey

Second Public Stakeholder Comment Period for Renewable Hydrogen Criteria in the Green-e® Renewable Fuels Program: Renewable Hydrogen update to the Green-e® Renewable Fuels Standard, Version 1.1 - Public Comment Period Released January 20, 2025

Center for Resource Solutions (CRS) is a nonprofit that creates policy and market solutions to advance sustainable energy. CRS seeks feedback on the proposed Renewable Hydrogen update to the Green-e® Renewable Fuels Standard (the "Standard"), which provides requirements for renewable fuel production and sales of Green-e® certified renewable fuels products.

CRS staff held the first of two public stakeholder comment periods for the draft of a standard update which will incorporate renewable hydrogen into the program. The first comment period closed on August 31, 2025 and the comments that CRS has received have been taken into consideration and updates to the draft have been made accordingly. CRS is seeking comments and feedback on the second draft of the renewable hydrogen rules and aims to release a final version of the Standard update in Q2 2026. The second comment period will be open for 45 days.

For general background on the Renewable Fuels Standard, please visit https://www.green-e.org/programs/renewable-fuels (opens in a new window). You can also review the Terms of Reference ("TOR") for more information on the goals and impacts of the Standard, and a needs assessment for Green-e® certification in the renewable fuels markets.

The purpose of the renewable hydrogen update to the Green-e® Renewable Fuels Standard is to establish criteria and processes for the purchase, sale, and use of renewable hydrogen and associated environmental attributes in the voluntary renewable fuels market. These requirements will be implemented through the Green-e® Renewable Fuels certification program, which provides assurances of accuracy, transparency, and environmental quality. The ultimate objective is to accelerate the replacement of fossil fuels with renewable fuels, while ensuring that such fuels come from sustainable renewable resources and meet high environmental standards, and that users are protected in their purchase and ability to make verifiable usage claims.

The renewable hydrogen criteria will be applicable to producers, buyers, and sellers of renewable hydrogen, including large consumers purchasing renewable hydrogen directly from producers. The Standard and certification program may also be used to guide the creation of renewable hydrogen product offerings and to support marketing claims related to their use.

Feedback on the Renewable Hydrogen update to the Standard will be accepted until 11:59pm Pacific Time on March 6, 2025. You may submit feedback through the

survey or by emailing written comments to comments@green-e.org using the subject "Renewable Fuel Standard Comments." If you are submitting written comments, please review the survey PDF for the specific questions on which we are seeking detailed feedback. Comments are also welcome on any part of the Standard.

CRS will use feedback from this comment period to create a version of the Standard that includes renewable hydrogen criteria that will be voted on by the Green-e Governance Board.

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2. Respondent Background

1. What type of organization do you work for? Check all that apply.

- [ ] Hydrogen producer
- [ ] Hydrogen OEM
- [ ] Hydrogen project developer
- [ ] Hydrogen purchaser
- [ ] Hydrogen investor / financier
- [ ] RNG / biogas project developer
- [ ] RNG / biogas investor / financier
- [ ] RNG seller
- [ ] Fuels attribute seller / marketer / aggregator
- [ ] Gas utility
- [ ] Other renewable electricity or REC seller / marketer / aggregator
- [ ] Environmental nonprofit
- [ ] Other nonprofit or industry watchdog organization
- [ ] Local government
- [ ] State government
- [ ] Federal Government
- [ ] Industry consultant
- [ ] Other (please specify)

2. Although this field is not required to complete the survey, we would appreciate it if you provided your contact information. This will help us if we have follow-up questions for you. We will not distribute your contact information; it will only be used for follow-up related to the Standard.

Name

Company

State/Province

Country

Email Address

3. May we contact you for more information or if we have follow-up questions on your feedback?

- ◯ Yes
- ◯ No

4. Would you like to be added to our mailing list for updates and information regarding the Green-e® Renewable Fuels program?

- ◯ Yes
- ◯ No

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3. Production Facility (Section I.B. of the Standard)

5. For renewable hydrogen produced via the Steam Methane Reforming (SMR) process, CRS believes disclosure of biogenic emissions from end use is necessary. However, since CRS does not have information on the end use or end user, who should be responsible for disclosing the biogenic emissions relating to renewable hydrogen produced via SMR?

- ◯ Provider of the Green-e® certified hydrogen product
- ◯ Other, please specify below

Comments:

6. For renewable hydrogen produced via SMR, how can information on biogenic emissions be obtained? Are there established methods to calculate it, and what specifically should be disclosed to purchasers? Please explain below:

7. The hydrogen-production pathways currently included in this draft Standard are:
Electrolysis, which uses renewable electricity to convert water into renewable hydrogen
Steam Methane Reforming, which converts biomethane into renewable hydrogen

CRS is also investigating biomass-to-renewable-hydrogen production via gasification. What types of biogenic waste do you think should be allowed under the Standard for biomass gasification to produce renewable hydrogen? If you think that gasification should not be included in the Standard altogether, please explain your reasoning.

- ◯ Urban waste
- ◯ Agricultural waste
- ◯ Forest residue
- ◯ Gasification should not be an allowable pathway in the Standard
- ◯ Other, please specify below

Please explain your response:

8. For biomass-to-hydrogen production via gasification, are there any sustainability concerns that CRS should consider? If so, please list them below.

9. For biomass-to-hydrogen production via gasification, should this pathway be allowed across the entire United States, or only in certain regions of the United States (e.g. only in California)? Please indicate your opinion below:

- ◯ Biomass-to-hydrogen production via gasification should not be permitted in the Standard
- ◯ Biomass-to-hydrogen production via gasification should be permitted only in California
- ◯ Biomass-to-hydrogen production via gasification should be permitted in the entire USA
- ◯ Biomass-to-hydrogen production via gasification should be permitted only in certain states or regions (please specify which states or regions)
- ◯ Comments

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4. Fuel Transport (Section II.B. of the Standard)

10. This draft standard permits the blending of hydrogen into natural gas pipelines up to a percentage determined by the pipeline authority. However, CRS supports the development of dedicated hydrogen pipeline infrastructure and is interested in feedback on the idea of phasing out renewable hydrogen blending in natural gas pipelines from this Standard after three years, effective from 2029 onward. Please select one of the options below that best describes your position on pipeline blending:

- ◯ Blending of renewable hydrogen into natural gas pipelines should not be allowed at all
- ◯ Blending of renewable hydrogen into natural gas pipelines should be allowed indefinitely
- ◯ Blending of renewable hydrogen into natural gas pipelines should be allowed for three years and then phased out
- ◯ Blending of renewable hydrogen into natural gas pipelines should be allowed for a different time period and then phased out. Please specify your suggested time period below:
- ◯ Other (please specify)

11. This draft Standard permits the transportation of renewable hydrogen by truck or other means directly to retailers, marketers, consumers, or other third parties. The environmental attributes associated with the renewable hydrogen may be sold separately from the physical molecules of fuel. CRS seeks feedback on including a market boundary for claimed attributes and Renewable Fuel Certificates (RFCs).

If such boundaries are included, attributes from trucked fuel could be claimed only if the fuel is used within the same geographic region, based on the regions defined by the U.S. Department of Energy in its Transmission Needs Study dated October 30, 2023 (U.S. Department of Energy, Transmission Needs Study (Oct. 30, 2023), p. 3 and Figure ES-1, using geographic regions designated by the National Laboratory of the Rockies (formerly National Renewable Energy Laboratory).

If unbundling RFCs from trucked fuel were not allowed, or were phased out, then at that point the RFCs must be retained and ultimately retired by the end consumer using the trucked fuel.

Please choose the option below that best aligns with your stance on the above matter or provide another suggestion in the comment box:

- ◯ Unbundling of trucked hydrogen should not be allowed at all
- ◯ There should not be any geographic boundaries for unbundling trucked hydrogen
- ◯ Geographic boundaries for unbundling trucked hydrogen should be included and should not be phased out.
- ◯ Geographic boundaries for unbundling trucked fuels should be included, but should be phased out after the number of years specified below:
- ◯ Other (please specify)

12. The draft Standard says that beginning in 2032, the attributes and RFCs in a Green-e® Renewable Fuels transaction may no longer be sold separately from the physical fuel. Instead, they must be retired by the end consumer using the fuel.

Is this phased transition from unbundling to bundling appropriate? If you have alternative suggestions for unbundling vs. bundling of fuels attributes, please describe them below.

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5. Vintage for Hydrogen Production (Section IV.A. of the Standard)

The Standard includes a time limitation, or a vintage window, between the production of hydrogen and its use in a Green-e Renewable Fuels certified transaction.

13. The vintage requirement in the draft Standard includes a phase-in approach for the allowable time between hydrogen production and sale starting with a five-year vintage window. Beyond 2030, the vintage window will be reduced to two years. Is a five-year vintage window appropriate at the start? Do you agree with the approach of tightening the vintage window over time?

- ◯ Yes, a 5-year vintage window that eventually narrows to a 2-year window is appropriate
- ◯ No, a 5-year vintage window that eventually narrows to a 2-year window is not appropriate

Please provide any other suggestions or details for a vintage requirement:

14. Are there any risks associated with a looser vintage window (e.g. 5-years) for hydrogen production? If so, please state the risks below:

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6. Greenhouse Gas Emissions (Section V of the Standard)

In the current draft of the Standard, a life cycle analysis (LCA) will be required to account for the upstream emissions (emissions from extraction, production, and processing operations) of a given renewable hydrogen pathway. Each pathway must undergo a third-party LCA by a CRS-approved verifier and disclose the results and the Carbon Intensity (CI) score in marketing and sales transactions.

15. CRS has proposed a maximum carbon intensity limit of 0.45 kg CO_2e per kg of hydrogen up to the point of injection in order to qualify for use in a Green-e® Renewable Fuels certified product. Do you think this limit is appropriate?

- ◯ Yes, a maximum CI limit of 0.45kg of CO_2e per kg is appropriate
- ◯ No, a maximum CI limit of 0.45kg of CO_2e per kg is not appropriate

If you chose “No”, please specify your reason below and suggest an appropriate limit:

16. If you answered “No” to the previous question, would you support a phased-in approach to setting the maximum CI limit? As an example, the limit might start at 4 kg CO_2e per kg in 2026 and decrease by 0.5 kg CO_2e per kg each year until it reaches 0.45 kg CO_2e per kg of hydrogen.

- ◯ Yes, I support a phased-in approach for the maximum CI limit under this standard. Please suggest any proposed details of this approach in the comment box below.
- ◯ No, I do not support the phased-in approach for the maximum CI limit and would like to propose alternative suggestions.

Please state your reasons/suggestions below:

17. Is it feasible for renewable hydrogen projects using SMR to comply with a well-to-gate CI limit of 0.45 kg CO_2e per kg of hydrogen?

- ◯ Yes
- ◯ No; if you have a rationale for this, please explain below:
- ◯ Comments:

18. If the Standard permits renewable hydrogen production through biomass gasification, what would be the appropriate maximum CI threshold for this pathway?

- ◯ Gasification pathways should be subject to the same CI limit as all other pathways.
- ◯ A different CI limit will be suitable for renewable hydrogen production via gasification. Please state your suggestion and rationale below:
- ◯ Comments:

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7. Water Sourcing (section VII. of the Standard)

The U.S. Department of Agriculture’s United States Drought Monitor Map (USDM) and Agriculture and Agri Food Canada’s Canadian drought monitor map (CDM)

defines drought areas in the US and in Canada, respectively as D1 D2 D3 and D4. D1 refers to moderate drought, D2 refers to severe drought, D3 refers to extreme drought, and D4 refers to exceptional drought.

19. For water use in hydrogen production via SMR, the current draft requires using recycled and repurposed water if a SMR facility is located in drought-affected areas as defined by the USDM and CDM. Is there any technology or other method that should be allowed to reduce water consumption in the hydrogen production process via SMR? Please state your answer below:

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8. Residential Use of Renewable Hydrogen

20. Pollutants associated with the residential combustion of renewable hydrogen are typically governed by federal, state, and local regulations. Participants must also disclose the name of the jurisdiction that sets these regulations and communicate this information to customers. However, if any safety- or pollutant-related concern exists that is not regulated by federal, state, or local authorities, how do you suggest it should be regulated?

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9. General

21. Do you believe there is anything missing that should be included in this Standard, or anything in the draft that should be changed? Please explain below: