



Green-e[®] Certification for Renewable Fuels

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Introduction.



Center for Resource Solutions

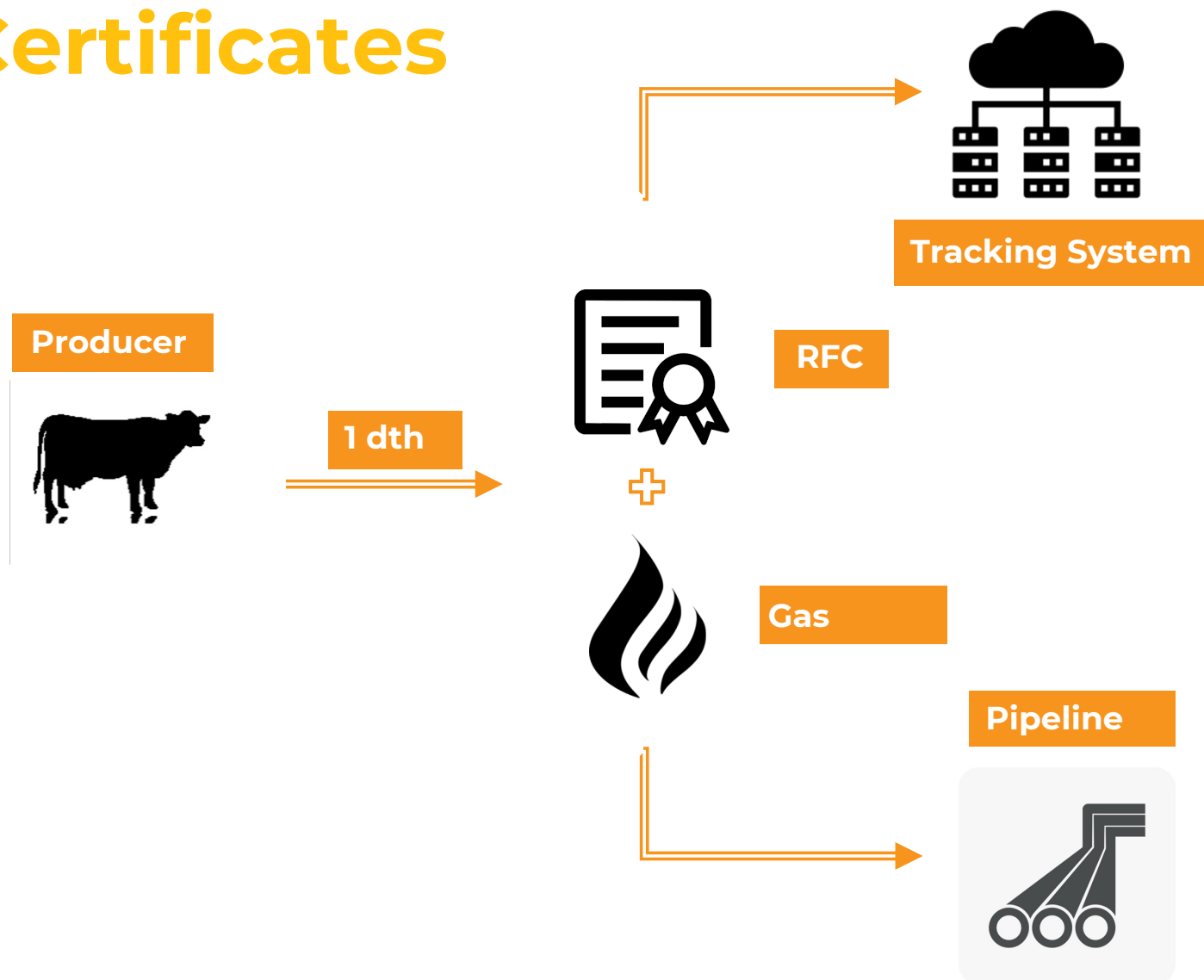
Nongovernmental Organization (NGO) creating policy and market solutions to advance sustainable energy since 1997.

- Renewable energy and climate policy
 - Clean Energy Accounting Project
 - Expert assistance
- Renewable Energy Markets™ annual conferences
- Green-e® certification for suppliers and users of renewable electricity, carbon offsets, and renewable fuels in the voluntary market

Renewable Fuel Certificates

1 RFC represents the environmental attributes of **1 dekatherm** of renewable fuel that can be paired with gas consumption.

RFCs are essential for tracking renewable fuel production and delivery



Why Certification?

Certificates and Certification: REC Issuance vs Purchasing



Tracking Systems:

- Issue tradable certificates
- Based on meter data
- No double issuance for the same dth
- Review a producer's existence, licensing, capacity, etc.

Third-Party Certification:

- Supplemental to a tracking system
- Assess renewable fuel eligibility based on quality criteria such as environmental performance
- No double selling or double claiming
- Required customer disclosure and marketing oversight

Green-e® Certification

- Global leader in clean energy certification
- Consumer protection for voluntary renewable energy purchases
- Over 90 million MWh in retail transactions certified in 2020, enough to power 4 out of 5 U.S. households for a month.



Green-e

Benefits of Certification

Consumer Credibility. Green-e® is the leading 3rd party verification in renewable energy markets. It is recognized by many businesses as the gold standard for renewable energy sourcing.

Risk Reduction. Protects against double counting and claiming, creating confidence in clean energy purchases.

Quality Assurance. Certified renewable energy products meet rigorous environmental, sustainability, and marketing claims standards.

Stakeholder-driven standards. Developed by an Independent Governance Board, including important environmental stakeholders such as the Union of Concerned Scientists, Natural Resources Defense Council (NRDC), and CDP.

Green-e[®] Renewable Fuels



Objectives

- Accelerate the adoption and drive voluntary market demand of renewable fuels, while ensuring that the gas is from sustainable renewable resources and meets the highest environmental standards
- Ensure customers are protected in their purchase and ability to make verifiable usage claims



Green-e® Renewable Fuels Standard

Version 1.0

September 16, 2021



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Standard Setting Process

- Advisory Group
- Working Group
- Terms of Reference
- Draft Standards
- 3 stakeholder comment periods
- Independent Green-e® Governance Board voted to approve the Standard September 2021

Participant Types

- Renewable fuel producers
- Brokers
- Marketers
- Traders
- Utilities
- Retailers
- End-consumers (biomethane buyers)

Product Types

- Bundled (gas + RFCs)
 - Delivered via pipeline system
 - Trucked
 - Raw biogas delivered directly to consumer
- Unbundled
 - Renewable fuel certificates (RFCs)

Retail and wholesale transactions allowed for bundled and unbundled products

Requirements.

Standard

- Initial focus on biomethane from waste sources; adding green hydrogen in 2022
- Covers U.S. and Canada
- Regulatory surplus required: no RINs or LCFS credits for the same dekatherm sold in a Green-e® certified transaction
- Verification and audit required
- No double counting, double selling, double claiming

Code of Conduct

- Consumer disclosures and marketing compliance review

Production Pathways

A. Fuel Type: Biomethane

B. Sources of Production:

1. Digester Gas
2. Landfill Gas

C. Feedstocks for Anaerobic Digestion

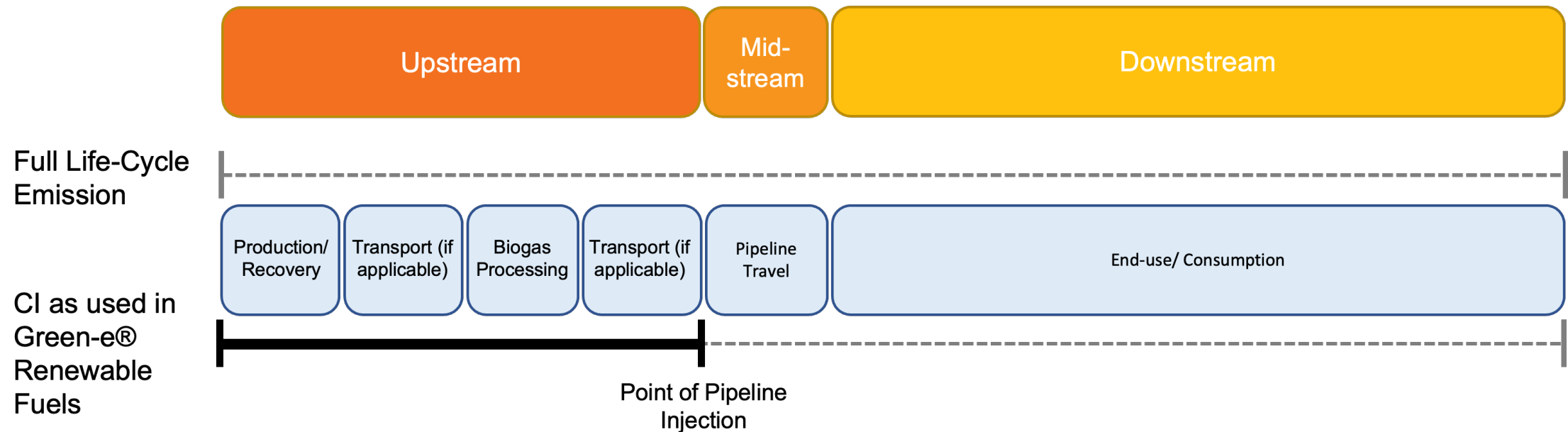
- A. Wastewater
- B. Organic component of municipal solid waste when separated prior to landfilling
- C. Food waste
- D. Vegetative matter, such as yard waste, shrub, or chaparral
- E. Crop residue
- F. Animal waste (from farms that are not CAFOs)

Carbon Intensity

Carbon Intensity (CI) score required

- Maximum upstream CI must be 10% lower than fossil natural gas (9.38 gCO₂e/MJ), up to the point of injection into the pipeline
 - Must be third-party verified
- Disclosures required: CI score for each production pathway that includes upstream and midstream emissions to customers, including pipeline leakage. Reporting downstream CI is optional.
- Accepted Methodologies: CA-GREET (US), GHGenius (Canada)

Carbon Intensity



For demonstration only; Not proportional

Carbon Intensity is the amount of greenhouse gas emissions produced during the production of a unit of energy. Green-e® Renewable Fuels requires CI to account for the production emissions (including leakage) up until the point of pipeline injection .

Vintage

Table 2: Fuel Production Vintage based on Year of Certified Transaction

Year of Certified Transaction	Earliest Eligible Fuel Production Date⁷	Latest Eligible Fuel Production Date
2021	1/1/2017	12/31/2021
2022	1/1/2018	12/31/2022
2023	1/1/2019	12/31/2023
2024	1/1/2020	12/31/2024
2025	1/1/2021	12/31/2025
2026	1/1/2025	12/31/2026
2027	1/1/2026	12/31/2027
2028 and beyond	Increases by 1 year annually	Increases by 1 year annually

⁷ Through sales year 2023, Participants may apply to use fuel generated between 5 and 15 years in the past on a first-come-first-served basis at the discretion of CRS, with a cap of 4 million MMBTU across all Participants for such fuels that are applied through sales year 2023.

Additional Requirements

- No production facility age requirement
- No geographic restrictions for contiguous U.S. and Canada if fuel is inserted into common carrier pipeline.
- Electronic tracking systems encouraged, not required
- Gas utilities: voluntary program costs may not be allocated to customers that are not participants

Verification

- 2 separate verification processes:
 - One at the facility level
 - Annual facility attestations
 - One at the transaction level
 - Annual verification audit

Tracking* Attestation Submission Process (CRS Listed)

- All production facilities using a tracking system must have an approved tracking attestation on file with CRS
 - CI Worksheet must be submitted with the Tracking Attestation

Fee Type	Facility Type	Amount	When Assessed
Base Fee	All facilities	\$500	Annually, due at Tracking Attestation submission
Additional Review Fee (in addition to Base Fee)	Facility without an approved carbon intensity (CI) score under CA LCFS	\$1,500	Annually, due at Tracking Attestation submission
	Facility with an approved CA LCFS CI Score where CRS determines that further review of Facility information is necessary to determine if Tracking Attestation can be accepted	Not to exceed \$1,500	Annually; after initial review, CRS will contact Facility Representative with additional review free amount; Facility Representative then can choose to pay and proceed or to withdraw

* Additional fees will apply for untracked facilities

Verification of RFC Retirements

Annual Independent Verification Audit (due June 1st)

- Comparison of supply vs sales
 - All supply used to substantiate the sales must be delivered before June 1st
- Reviewed by an independent auditor or certified internal auditor (additional cost)
- Ensures clear ownership - no double counting
- Chain of custody tracked through attestations and tracking systems
- Option: expedited procurement review available for large purchases

Marketing Oversight & Support

Annual Marketing Compliance Review (February and August)

- Review of customer disclosure and marketing language
- Required Product Content Label and product disclosures
- Marketing material reviews
- Ensures accuracy in product advertising

PRODUCT CONTENT LABEL				
This product matches 10% of your estimated gas usage. The product will be made up of the following renewable fuel pathways averaged annually.				
Green-e® Renewable Fuels Certified Production in this product				
Production Pathway	Vintage	Carbon Intensity	Percentage	Location
Biomethane, Landfill Gas Methane Capture	2021	5 gCO ₂ e/MJ	5%	WA
Biomethane, Anaerobic Digester, Municipal Wastewater	2020	-65.27 g CO ₂ e/MJ	5%	ID
Total Green-e® Renewable Fuel Certified Production			10%	

Product Type

Customer Type

- Commercial or Residential

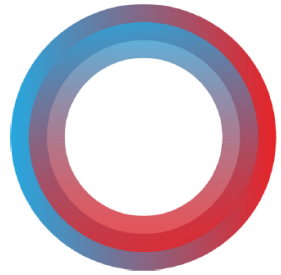
Resource Mix

- Fixed Mix (Required for Residential)
 - All customers get the same mix of resources (ex: 80% Landfill Gas Methane Capture, 20% Anaerobic Digester - Municipal Wastewater)
- Variable Mix
 - Up to 100 different resource mixes

Bundled Gas Utility/Competitive Product vs RFC-only Product

- Bundled Gas Utility/Competitive Product – Bundled product with RFC and Gas sold together
- RFC product – Unbundled product where RFCs sold separately from the gas

Additional Resources



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THERMAL
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MINNEAPOLIS

SEPTEMBER 14-16 2022



www.renewableenergymarkets.com

Q & A

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Concentrated Animal Feeding Operations

Table 1: Size Thresholds for Determining Whether Farms are Considered CAFOs

Animal Sector	Size Thresholds (number of animals)		
	Large CAFO	Medium CAFO	Small CAFO
Cattle or cow/calf pairs	1,000 or more	300 - 999	less than 300
Mature dairy cattle	700 or more	200 - 699	less than 200
Veal calves	1,000 or more	300 - 999	less than 300
Swine (weighing over 55 pounds)	2,500 or more	750 - 2,499	less than 750
Swine (weighing less than 55 pounds)	10,000 or more	3,000 - 9,999	less than 3,000
Horses	500 or more	150 - 499	less than 150
Sheep or lambs	10,000 or more	3,000 - 9,999	less than 3,000

Animal Sector	Size Thresholds (number of animals)		
	Large CAFO	Medium CAFO	Small CAFO
Turkeys	55,000 or more	16,500 - 54,999	less than 16,500
Laying hens or broilers (liquid manure handling systems)	30,000 or more	9,000 - 29,999	less than 9,000
Chickens other than laying hens (other than a liquid manure handling systems)	125,000 or more	37,500 - 124,999	less than 37,500
Laying hens (other than a liquid manure handling systems)	82,000 or more	25,000 - 81,999	less than 25,000
Ducks (other than a liquid manure handling systems)	30,000 or more	10,000 - 29,999	less than 10,000
Ducks (liquid manure handling systems)	5,000 or more	1,500 - 4,999	less than 1,500