
October 2018

Renewable Natural Gas Markets

Launched in 2005, Element Markets has become a leading producer and marketer of renewable natural gas and environmental commodities in the United States.

- Transacted over \$2.6 billion in environmental commodities since inception
- Currently provides environmental asset management services for over 6,000 MW and 10+ landfill gas projects
- Customer base of over 800 companies within the environmental markets
- Robust back-office and risk management practices for ease of execution
- Largest independent marketer of biogas in the US
- Largest Provider of Biomethane to Sustainable Buyers in the US

Environmental Credit Marketing

Emissions & GHG Credits

- Largest regional marketer of emission credits in US
- Offset project developer managing 18 GHG projects
- Transacted over 40 million tons of GHG credits

Renewable Energy Credits

- Active in all compliance and voluntary REC markets in North America
- Transacted over 19 million RECs
- Have transacted RECs in 38 different markets

Biogas & RINs

- Currently Marketing Biogas from 16 different Projects + More Pending
- Successfully Generating RINs and LCFS from Biogas
- Approaching 100 million RINs transacted

Biogas Marketing

Element Markets has been a leading marketer of Biogas since 2009:

- Portfolio includes 16 Biogas facilities registered under RFS
- Hold 25 active pathways under the RFS and LCFS programs
- Largest provider of biogas RINs to 2 of the 3 largest refiners in the US
- Expected 2019 production of over 100,000,000 D3 RINs
- First to register landfill facility with a specific Carbon Intensity under LCFS
- First to successfully register a waste water treatment facility under RFS

Biogas Business Lines

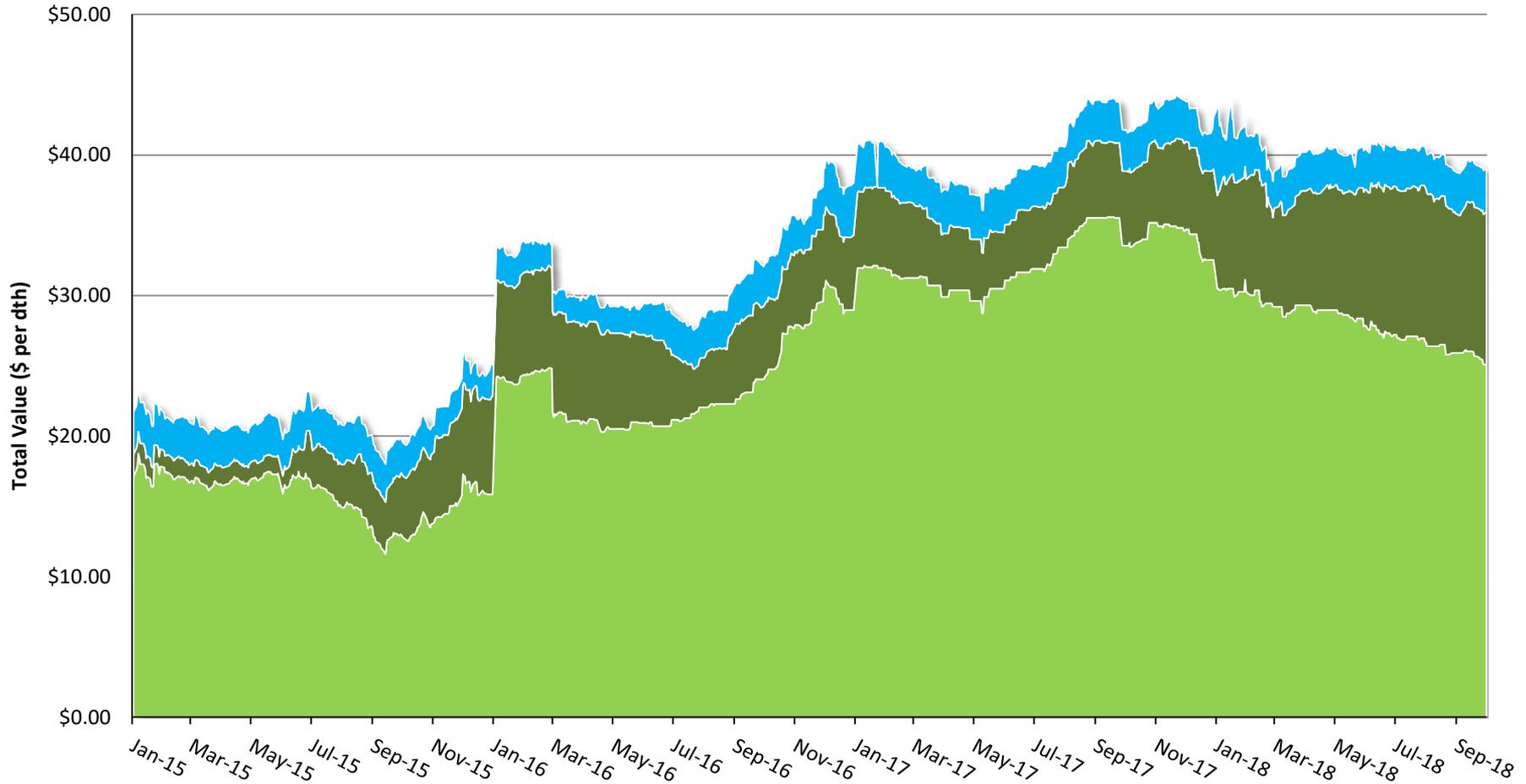
Biogas to Electricity	Biogas to Transportation	Biogas for Voluntary (CDP, Green-e)
<ul style="list-style-type: none">• Supplies Biogas to RPS markets• Strong relationships with Municipal and Utility Buyers• Have established biogas to power contract for RIN generation pending EPA approval of eRIN pathway	<ul style="list-style-type: none">• Supplies biogas to CNG and LNG to produce• Markets RINs and LCFS credit generated from CNG and LNG production• Provides Asset Management Services for EPA and CARB compliance	<ul style="list-style-type: none">• Pioneered the supply of biogas to voluntary buyers• Markets Green-e approved biogas derived Environmental Attributes as a low cost solution• Markets long term, fixed priced biogas to voluntary buyers

- Demand for Biomethane has historically been driven by:
 - Renewable Portfolio Standards (RPS) - 60+% drop since 2008 due to low REC Prices
 - Renewable Fuel Standards (RFS) - now 80+% of the market
 - Sustainable Buyers - trending up
- There is an almost unlimited demand for Biogas in the RFS Markets
- We are seeing a strong uptick in Sustainable Buyers interested in Biomethane to fuel data centers, cogen facilities, and boilers
 - Some high profile examples: L’Oreal, Interface Carpets, Kingspan, IKEA, and Apple
 - Hawaii Gas, Vermont, ConEd, National Grid, SoCal Gas and several other Utilities are working on Programs to institute Biomethane as part of fuel supply.
- Two big issues facing biomethane procurement – cost to extract and clean are much higher than natural gas and tremendous demand from RFS
- Opportunity: RFS does not transact past 1 year so market is seeking longer term off-take.

Historic Pricing for Biomethane under Renewable Fuel Stanard

Biomethane Value, per dth

■ D3 RIN Value ■ LCFS Value ■ Natural Gas Value



*Natural Gas Value is the Henry Hub natural gas spot market price as reported by US Energy Information Administration

**LCFS and D3 RIN Value are the daily average settlement price as reported by Oil Price Information Service

***LCFS Value was calculated based on an assumed carbon intensity value of 40 gCO₂/MJ (ex. wastewater treatment)

- In the published Green-e Energy National Standard Version 3.1 published on June 9, 2017, Green-e has clarified that Biogas that has been historically injected into the common carrier pipeline is bankable for use in future years.
 - <https://www.green-e.org/docs/energy/Green-eEnergyNationalStandard.pdf>
- Delivery is completed through the matching of the historic injection rights, which are conveyed via attestation, to be matched with the end use parties Natural Gas Purchases.
- This work was completed through a demonstration project by one of Bloom's clients.
- From Page 5 of National Standard (see footer):
 - “Biogas from a shared pipeline is eligible only if it can be demonstrated that all environmental attributes are appropriately transferred along the chain of custody.”
 - “Biogas used to supply electricity generators may be produced at any time prior to electricity generation, but any renewable MWh generated from such fuels must meet the requirements in Section III.B Vintage of Eligible Renewables.”

- Page 104 of CDP 2017 Climate Change Reporting Guidance:
- “Projects, such as the Green Gas Certification Scheme aim to provide a certified means of tracking gas injected into the gas grid and purchasing similar to many renewable electricity schemes such as RECs, although the gas does then get converted into energy within the purchaser’s facilities rather than upstream. CDP recommends that a company report their gas/certified biogas usage as following:
 - Fossil gas and non-certified biogas need to be accounted for and reported as Scope 1. The formula is the usual Activity data * Emissions factor, where the factor is emissions at the point of generation;
 - Certified biogas will be reported under question CC8.9a; and
 - In question CC11.3 companies shall report total MWh of energy, including certified biogas. Therefore, **the use of certified biogas will be considered to be equivalent to “zero” Scope 1 emissions for the purpose of reporting to CDP.**
- Page 104 of 2017 Climate Change Reporting Guidance of CDP

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- There are shovel ready projects seeking long term off-take at fixed prices to support debt.
 - Prices for this biogas are at a discount to RFS markets
 - Existing projects do have some excess non-RFS qualifying biogas that is also available at well below RFS prices.
 - While biomethane does demand a significant premium, it also provides the only Scope 1 zero reporting option for thermal users.
 - Prices will not be close to natural gas prices due to cost of extraction, but the sustainable value is higher than any other renewable resource.

THANK YOU

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WORLD FINANCE



“US Emissions House of the Year”, 2014 and 2010 by Energy Risk

Energy Risk Environmental Rankings

- #1 U.S. Regional Greenhouse Gas Dealer
 - #1 U.S. Voluntary GHG Credit Dealer
 - #2 Renewable Energy Credit Dealer
 - #1 NO_x & SO₂ Dealer

Environmental Finance Magazine

- Best Trading Company in North American Renewable Energy
- Runner- Up, Best Trading Company of North American GHG Markets (California)
 - Best Trading NO_x & SO₂ Company Emission Credits

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