



# The Nori Marketplace

---

**CAR/IETA - New York Climate Summit - 2019**

**[www.nori.com](http://www.nori.com)  
Aldyen Donnelly**

**May 23, 2019  
[aldyen@nori.com](mailto:aldyen@nori.com)**



# What is Nori?

---

A software company founded in 2017, Nori is building a marketplace to incent investment in projects that remove carbon dioxide (CO<sub>2</sub>) from the atmosphere and retain the recovered carbon (C) in a terrestrial reserve (e.g. soils, root systems, above ground biomass, minerals, the built environment).

Nori issues Carbon Removal Certificates (CRCs) to Suppliers who produce verified carbon removal claims. Nori guarantees that the underlying value of one CRC is 1 TCO<sub>2</sub>-e removed from the atmosphere and retained in a terrestrial reserve for at least 10 years.



# What Nori Does that Others Don't

---

- Dedicated carbon removal marketplace
- True CO2 removal price discovery
- Transparency
- Primarily Depends on Transactions for Revenues
- No double crediting
- No double claim
- No wash trading on the Nori Platform



# How Will the Nori Market Work?

---

- Nori is launching in the US but intends to operate globally
- CRCs are offered for sale in either a First In, First Out (FIFO) market or through a Single Price Forward Contract Auction.
- In the Forward Market, every CRC will be traded for a combination of 1 NORI token and US\$ on a designated future settlement date.
- In the auction, CRC suppliers set their selling price floors and Buyers set their purchase price ceilings. Buyers are ranked from highest to lowest bid price; Suppliers from lowest to highest. CRCs are allocated to Buyers and all Buyers pay the price bid for the last CRC allocated (“the settlement price”).
- For more details, go to: <https://nori.com/resources>



# Some Comparisons

	Nori	Traditional Offset Registries	Indigo
role	market administrator	registry operator	offset buyer/aggregator
service offering	transparent, peer-reviewed carbon removal quantification methodologies; blockchain-based FIFO and Forward market to match buyers and sellers and facilitate full price discovery	partially transparent offset credit quantification methods; central registries for project registration	agronomy advisory and data management services provided to contracted suppliers; (for now) reliance on 3rd party protocols and registries for offset credit quantification and resales
supply	carbon removal only, all sectors (1st methodology = ag soils)	emission reduction, emission avoidance and carbon removal, all sectors	emission reduction, emission avoidance and carbon removal, agriculture only
price	bid and actual settlement prices reported on platform in real time; price discovery through Forward Market bid disclosure	prices determined off-registry in confidential bi-lateral transactions; limited price disclosure	suppliers contract to sell exclusively to Indigo Ag; Indigo Ag has sole discretion to set price for 5 years
offset/ certificate resales	CRCs are retired ("used") when purchased (no CRC resales); all CRCs fully traceable	offset credits often resold, often in swaps; often results in misleading price and market liquidity signals	Indigo Ag resells offset credits to third parties in combinations of private and public transactions
supplier's confidential data	no confidential data rights transferred to Nori	limited-to-no confidential data rights transferred to the registry operator	full, perpetual, pre-paid rights to use, resell suppliers' confidential data and derivatives of that data transferred to Indigo
revenue model	100% of revenues from transaction fees (10%) and NORI token sales	50% - 80% of revenues from project registration and annually recurring registration maintenance fees	primary source of revenues is income from products derived from sales of farmers operating data and derivatives of that data



# Defining a Nori Project & Additionality

---

- **Nori does not apply an “additionality test”, *per se*.**
  - to the extent an additionality consideration is built into the Nori market design, it is reflected in the definition of “project” and the project’s dynamic carbon removal and retention baseline.
- **A Nori Project has a start date—we call it a “switch date” — which is the year in which the Supplier adopted new practices with the intent to draw CO<sub>2</sub> from the atmosphere and store the recovered C in a terrestrial reserve (soils, root systems, biomass, minerals &/or the built environment).**
- **A Nori Project meets prescribed data reporting requirements for a minimum initial term of 10 years, with options for three- to 10-year renewals thereafter.**



# Permanence

---

- Nori does not establish “permanence”, *per se*. One CRC represents 1 incremental TCO<sub>2</sub>e removed from the atmosphere and retained in a terrestrial reserve for at least 10 years.
- CRC Buyers establish permanence by entering into multiple or sequential CRC Forward Contracts to draw down incremental CO<sub>2</sub> and secure its retention for the minimum 10-year terms.
- Our research suggests that traditional offset markets’ procedure of registering covenants on land actually fails to ensure that the land is managed to maintain C stocks. So the existing promise of “permanence” is unreliable, while it also impairs the market value of the C storage facility.



# The Need for A Discrete Carbon Removal Market

---

- In existing compliance C&T markets, buyers think that when they pay \$15/allowance or offset credit certificate they are paying \$15/TCO<sub>2</sub>e. But the incremental GHG reduction value underlying the average California C&T compliance instrument is likely 0.25 to 0.35TCO<sub>2</sub>e. So they are actually paying something in the range of \$43 to \$60/TCO<sub>2</sub>e.
- In this context, carbon removal and storage in terrestrial reserves, above ground biomass and the built environment is likely a least cost solution.
- *But carbon removal and emission reduction or avoidance credits should not be viewed as fungible. A discrete carbon removal market is needed to establish true price discovery for removal & retention.*





# Working With COMET-Farm (CSU) to Establish Dynamic Project Baselines

cometfarm.nrel.colostate.edu/

**COMET Farm** United States Department of Agriculture Natural Resources Conservation Service Colorado State University

Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. ( Sign in or Register )

HOME TOOL INFO HELP

### What is COMET-Farm?

COMET-Farm is a whole farm and ranch carbon and greenhouse gas accounting system.

The tool guides you through describing your farm and ranch management practices including alternative future management scenarios. Once complete, a report is generated comparing the carbon changes and greenhouse gas emissions between your current management practices and future scenarios.

[Start Using COMET-Farm](#)

- Why should I use COMET-Farm?
- USDA GHG methods
- What information do I need?
- How are my results calculated?
- Is my information safe?
- How do I use COMET-Farm?
- Overview video

### Related Tools

- COMET-Energy Tool** [Go to COMET-Energy Tool >>](#)

COMET-Energy is a stand-alone tool that allows you to calculate reductions in greenhouse gas emissions based on anticipated fuel savings. You can use COMET-Energy by itself or in conjunction with your COMET-Farm user account.
- COMET-Planner Tool** [Go to COMET-Planner Tool>>](#)

Carbon and greenhouse gas evaluation for NRCS conservation practice planning. Evaluate potential carbon sequestration and greenhouse gas reductions from adopting NRCS conservation practices.



# Working With COMET-Farm (CSU) to Establish Dynamic Project Baselines

Step 1 Activities | Step 2 Field Management | Step 3 Report

Parcel Locations → Historic Management (Pre-2000) → Current Management (2000-Present) → Future Management (Scenarios for 10 year period)

Select a parcel: F1

F1 (60 acres)

Data complete | Data incomplete | Selected

Parcel Management Summary

- 2000 Corn
- 2001 Soybean
- 2002 Corn
- 2003 Soybean
- 2004 Corn
- 2005 Soybean
- 2006 Corn
- 2007 Soybean
- 2008 Corn
- 2009 Soybean
- 2010 Corn
- 2011 Soybean
- 2012 Corn
- 2013 Soybean
- 2014 Corn

Tillage | Manure Application | Liming | Nitrogen Application | Irrigation | Burning

For Parcel F1 in 2000 what crop did you plant, when did you plant, and when did you harvest?

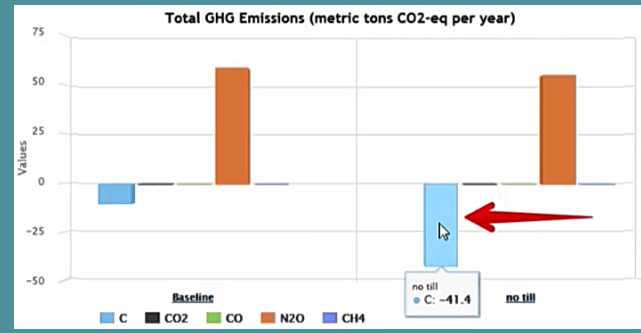
What type of crop?:  Cash Crop  Cover Crop

Crop: Corn

Planting Date: 05/07/2000

Harvest Dates	Grain	Yield (bu/ac)	Straw/Stover/Hay Removal (%)	Delete
10/31/2000	Yes	160	0	X

Source	Baseline Emissions	no till	
		Emissions	Change
# F1 (60 acres - Corn, Soybean)			
C (tonnes CO <sub>2</sub> equiv./yr.)	-9.7	-41.4	-31.7
CO <sub>2</sub> (tonnes/yr.)	0.0	0.0	0.0
CO (tonnes CO <sub>2</sub> equiv./yr.)	0.0	0.0	0.0
N <sub>2</sub> O (tonnes CO <sub>2</sub> equiv./yr.)	58.6	54.5	-4.1
CH <sub>4</sub> (tonnes CO <sub>2</sub> equiv./yr.)	0.0	0.0	0.0
<b>Total</b>	<b>48.9</b>	<b>13.1</b>	<b>-35.8</b>



NAME: Matt Sterner | RUNID: 8127\_9046\_71637 | PROJECT: Croplands Demo Project | TIME: 10/28/2015 9:08:46 AM

Source	Baseline Emissions	no till	
		Emissions	Change
# F1 (60 acres - Corn, Soybean)			
C (tonnes CO <sub>2</sub> equiv./yr.)	-9.7	-41.4	-31.7
Soil	-9.7	-41.4	-31.7
Biomass Burning			
Dead			
CO <sub>2</sub> (tonnes/yr.)			
CO (tonnes CO <sub>2</sub> equiv./yr.)			
N <sub>2</sub> O (tonnes CO <sub>2</sub> equiv./yr.)			
CH <sub>4</sub> (tonnes CO <sub>2</sub> equiv./yr.)			
<b>Total</b>			

**Equation 3-25: GHG Emissions from Biomass Burning**

$$GHG_{BiomassBurning} = A \times M \times C \times EF \times 10^3 \times GHG_{GWP}$$

Where:

- GHG<sub>BiomassBurning</sub> = Annual emissions of GHG or precursor due to biomass burning (metric tons of CO<sub>2</sub>-eq year<sup>-1</sup>)
- A = Area burned (ha)
- M = Mass of fuel available for combustion (metric tons dry matter ha<sup>-1</sup> year<sup>-1</sup>)
- C = Combustion efficiency, dimensionless
- EF = Emission factor (g GHG (kg of burned biomass)<sup>-1</sup>)
- GHG<sub>GWP</sub> = Global warming potential for each GHG (metric tons CO<sub>2</sub>-eq (metric tons GHG)<sup>-1</sup>)

COMET-Farm

Total Greenhouse Gas Emissions Per Scenario (Combined All Parcels)



# Want to Learn More about Nori and Carbon Markets?

---

- Check out the Nori Whitepaper, market design webinars, podcasts, etc, at:

[www.nori.com](http://www.nori.com)