



**Carbon Credits 04.19.23**



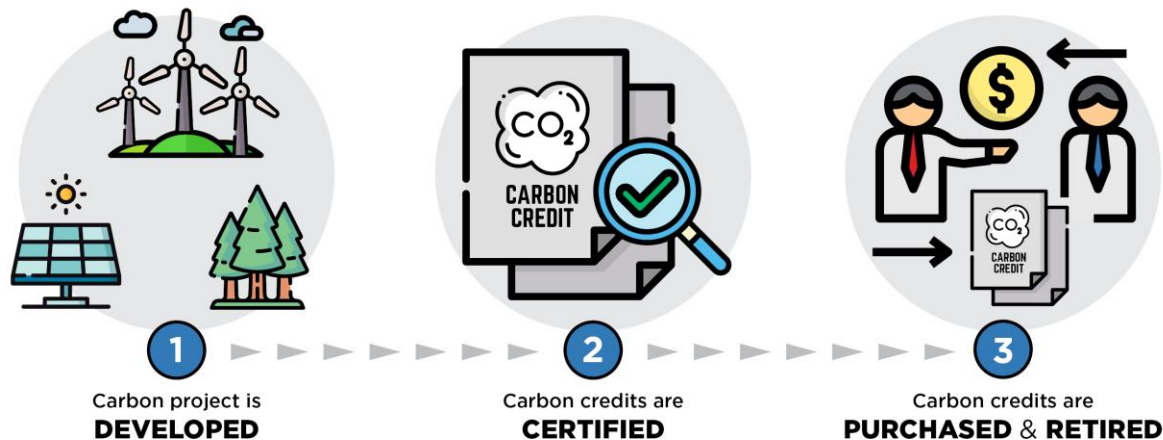


# Agenda

- What are Carbon Credits?
- Carbon Market Statistics
- Carbon Market Update
- U.S. Venture's Carbon Credit Projects
- Improved Forest Management
- Avoided Forest Conversion
- Reforestation
- Biochar
- Takeaways

# What are Carbon Credits?

- Represent 1 metric tonne of CO<sub>2</sub>e that has been avoided or removed from the atmosphere
- Certified following an industry standard that avoids duplication and meets verification procedures
- Support climate-action projects that would otherwise be economically infeasible
- May generate additional benefits to the local community or biodiversity of the area



# Credit Issuances by Type



# Issuances by CO2 Avoidance/Removal

- CO2 Removal
- CO2 Avoidance

MMt  
300  
280  
260  
240  
220  
200  
180  
160  
140  
120  
100  
80  
60  
40  
20  
0

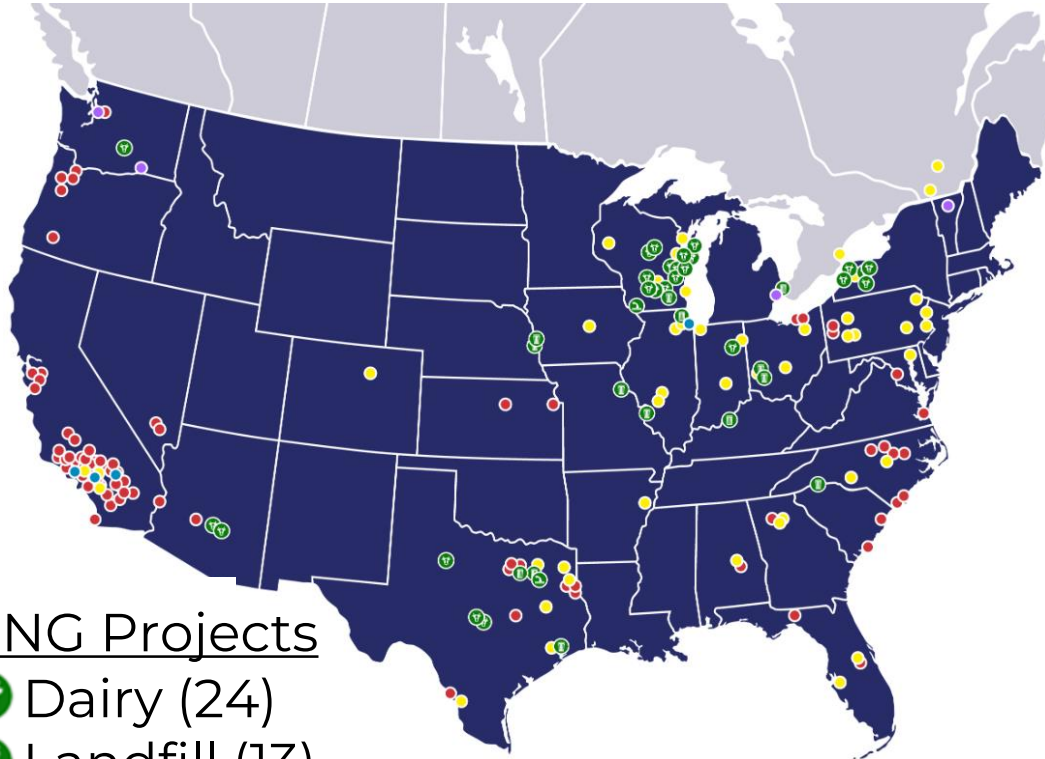
2002  
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2021  
2022






# Carbon Market Update

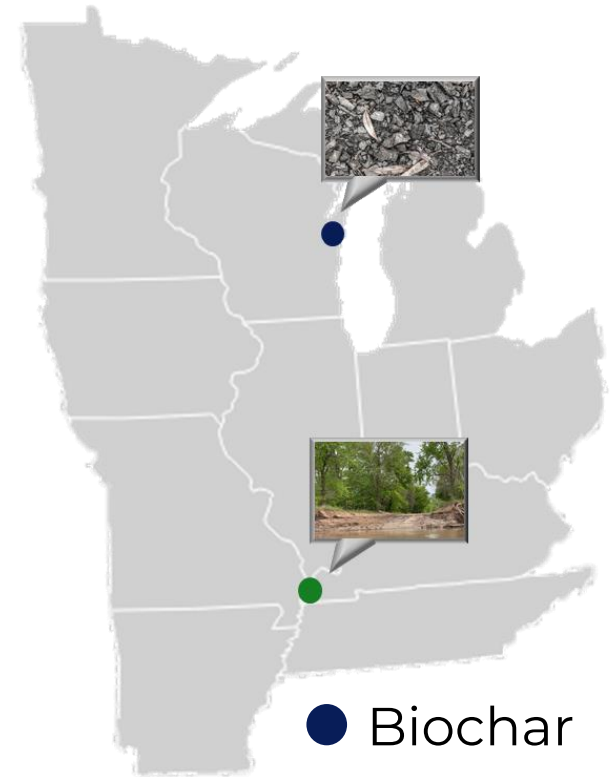
- CME Futures launched February 2021
  - Primarily international renewables & avoided deforestation
- Russia-Ukraine War, Inflation, High Interest Rates
- Time to critique
- SBTi Net Zero – only allows CO2 Removals
- Credit Ratings Agencies: i.e. BeZero, Sylvera
- VCMi (Claim Quality), IC-VCM (Credit Quality), ICAO-CORSIA, Paris Agreement Article 6.4

# U.S. Venture's Carbon Credit Projects



## RNG Projects

-  Dairy (24)
-  Landfill (13)
-  Wastewater (2)



-  Biochar
-  Forestry

U.S. Venture's environmental projects historically have been from Renewable Natural Gas (RNG) production. These projects capture methane from landfills and anaerobic digesters at dairy farms which generate carbon credits in California's LCFS market. Now that the voluntary carbon market is beginning to mature, we have expanded into forest carbon and biochar projects.



# Improved Forest Management

**Problem:** Many forests are managed to maximize short term timber profits rather than long term forest health and inventories. Clear cutting is often the most efficient way to harvest timber but is not the best practice for sustainable forest management.

## **Solution:**

- Develop and implement an improved forest management plan
- Selectively harvest the most at-risk trees and those that compete with nearby trees for growth
- Increase timber and carbon stocks over time
- Carbon credit revenue helps replace lost timber revenue

**Total Market Supply:** 13M of 61M credits are from Improved Forest Management (IFM) projects within the United States voluntary carbon market since 2018.

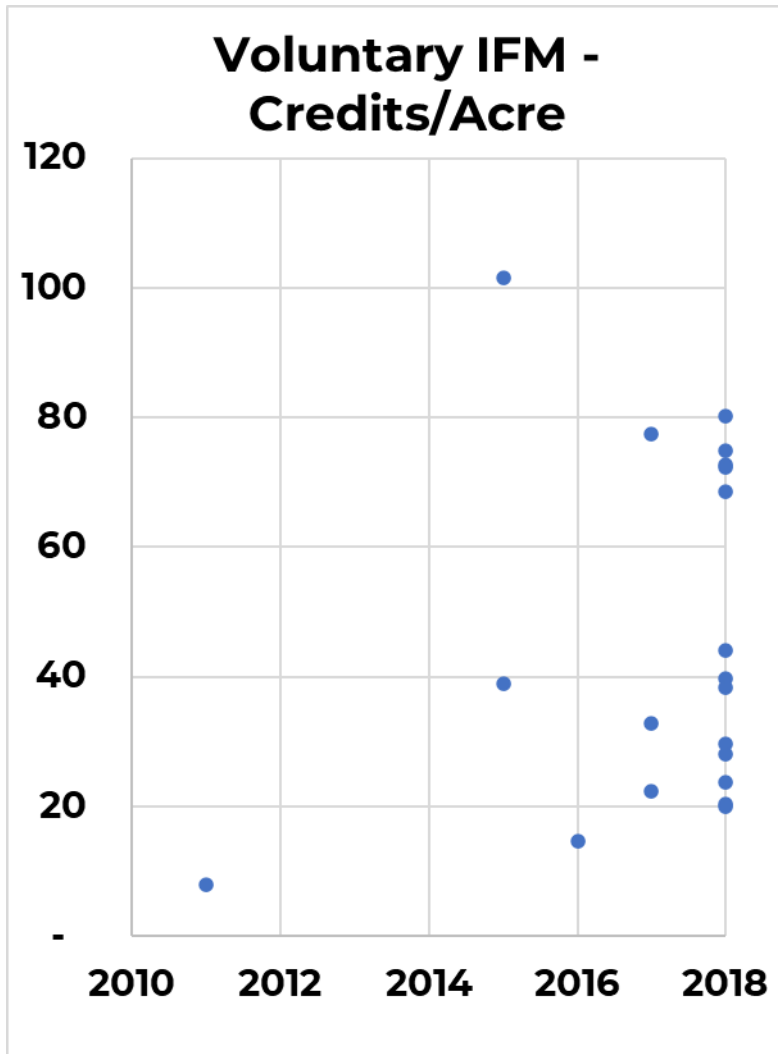


# IFM Comparison



<b>Commitment Term</b>	100-200 years	40 years
<b>Baseline Scenario</b>	Reversion to FIA Regional Average	Project-specific; Harvest scenario that maximizes NPV given all constraints
<b>Penalty for Abandoning Project</b>	140% of credits issued within first 5 years, easing to 100% by year 50	100% of credits issued
<b>Buffer Pool</b>	Credits from the project must be used	Any ACR credits within 5 Vintage Years may be used

# Historical IFM Data



## 20 projects

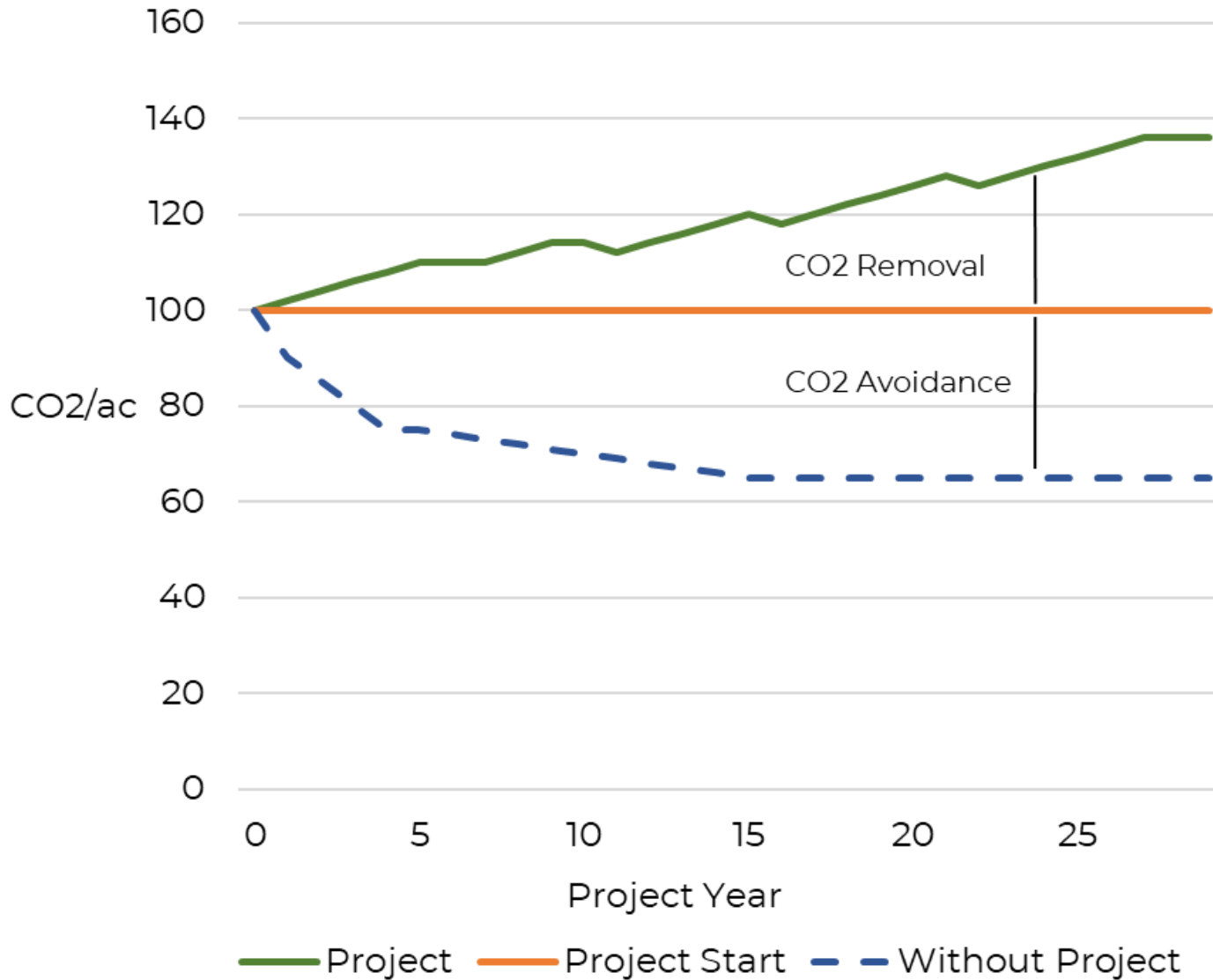
- 18 ACR, 2 CAR

**2018:** 13 projects

**2019-2021:** 24 projects

	Low	High
\$/Credit – CO2 Avoidance	5	20
\$/Credit – CO2 Removal	15	35
Credits/acre	20	80
\$/acre	200	2200

# IFM Crediting Example



# Harvested Wood Products – CO2 Removals

## 100-YEAR STORAGE FACTORS<sup>41</sup>

WOOD PRODUCT CLASS	IN-USE	LANDFILLS
Softwood Lumber	0.234	0.405
Hardwood Lumber	0.064	0.490
Softwood Plywood	0.245	0.400
Oriented Strandboard	0.349	0.347
Non-Structural Panels	0.138	0.454
Miscellaneous Products	0.003	0.518
Paper	0	0.151



# Avoided Forest Conversion

**Problem:** With a growing population and competing uses for land, there is increasing pressure on forested areas to be cleared, releasing stored carbon within the trees and soil.

**Solution:**

- Place at-risk areas into conservation easements
- Easements ensure long-term or permanent forest cover
- Carbon credits help replace lost revenue from alternative land uses

**Total Market Supply:** Only 79,000 of 61,000,000 United States voluntary carbon credits are from Avoided Forest Conversion Projects since 2018. This is largely due to the significant financial burden of permanent conservation easements.

**\*New ACR methodology: Accepts temporary easements, includes avoided N2O emissions, credits smaller projects faster**



# Reforestation

**Problem:** Bare lands or even crop fields do not store carbon above ground. The cost of reforesting degraded lands is significant, which is why it does not happen without some sort of financial assistance. In certain areas, carbon storage and biodiversity benefits of reforesting can outweigh any benefits of current land use.

**Solution:** Credit landowners that restore bare lands to a natural forested state by planting trees and placing the area in a permanent conservation easement that requires reforestation in the case of any disturbance to the forest.

**Total Market Supply:** 2.8M of 61M United States voluntary carbon credits are from reforestation projects since 2018.

**\*Can be stacked with NRCS programs**



# Biochar

**Problem:** Billions of tonnes of waste biomass are produced globally every year. While some is used for power production, much is left to decompose—creating GHG emissions.

## **Solution:**

- Collect and convert waste biomass to biochar
- Apply nutrient-rich biochar to crop field
- Reduce synthetic fertilizer needs and increase water retention in soil
- Carbon credits help finance this expensive machinery and process

**Total Market Supply:** From 2018-2022, less than 65,000 of 61,000,000 United States voluntary carbon credits are from biochar projects. This is due to the high degree of technical expertise required, financial hurdles, and limited scalability.

**\*Even out pulpwood vs sawlog demand?**

# Takeaways

- **Domestic** vs International
- **CO2 Removal** vs CO2 Avoidance
- **Quality** vs Quantity
- **Tell a Great Story**
  - Benefits beyond carbon
  - Use cases beyond offsetting
  - Local
- **U.S. Forest Carbon Credits** have great potential





# Questions?



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