



COOPERATIVE EXTENSION
College of Agriculture, Forestry and Life Sciences

CARBON CREDITS: WILL THEY WORK FOR YOU?

2022 Southeastern Pecan Growers Association Annual Convention
February 26, 2022



Overview

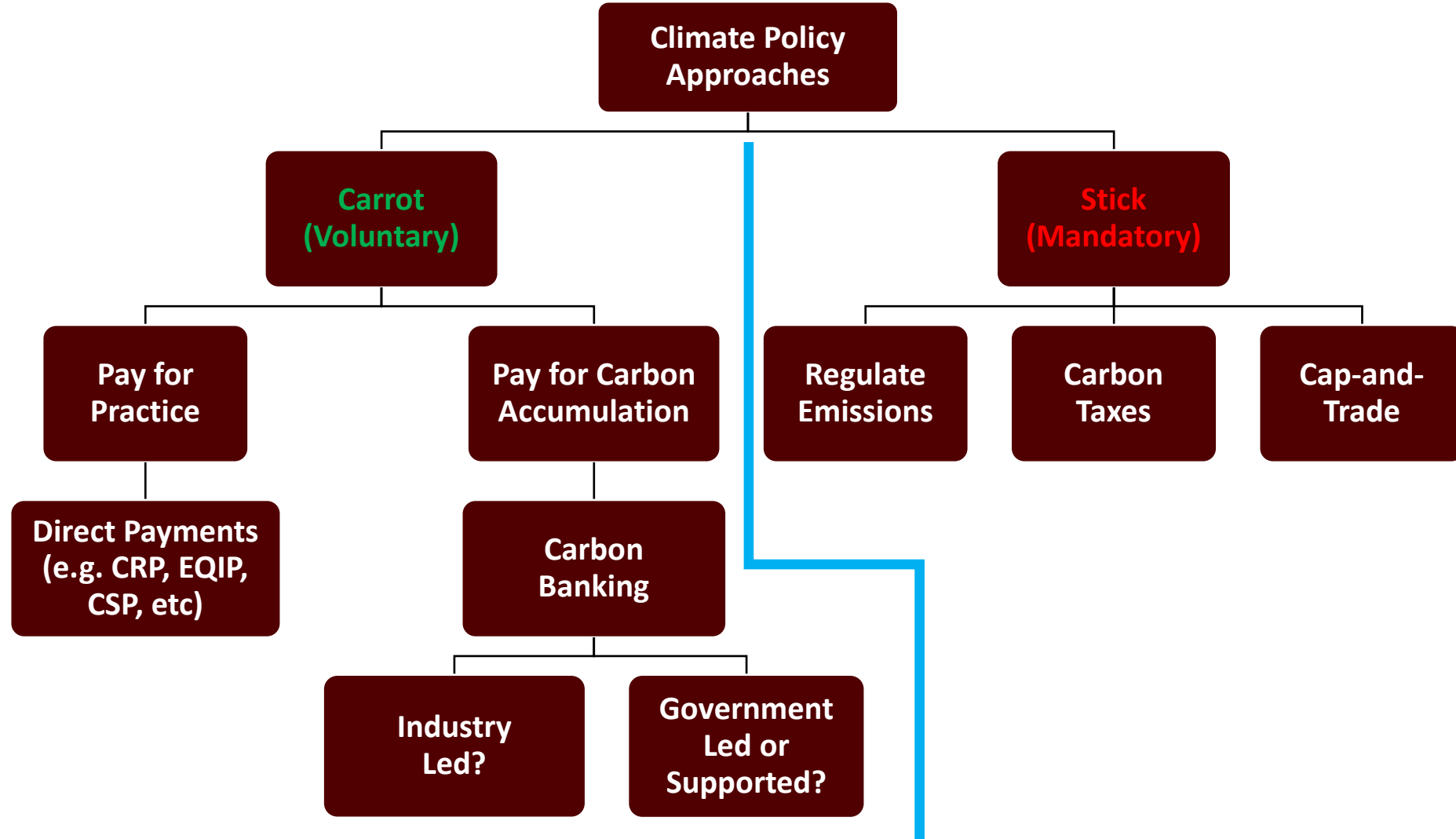
- Companies want or are required to reduce greenhouse gas emissions like CO₂.
- Climate policy is a priority of current administration.
- Two methods for reducing carbon emissions:
 - Regulatory,
 - Voluntary.
- Agriculture has large potential to:
 - Reduce carbon emissions through less intensive practices,
 - Capture and store carbon via partial or full land conversion.
- Voluntary markets and Government programs being developed.

Acknowledgements

Information including slides and charts shared by:

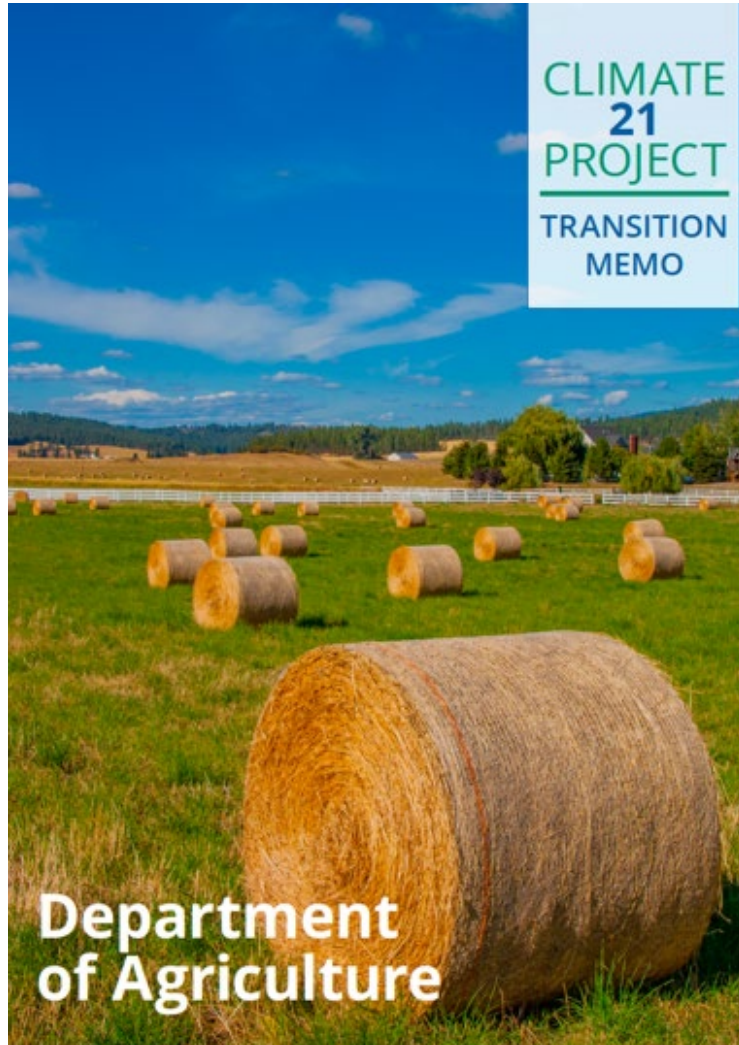
- Dr. Joe Outlaw, Agricultural and Food Policy Center, Texas A&M University
- Dr. Eric Edwards, Dept. of Ag and Resource Economics, NC State University

Two Choices on Climate Policy



Climate Policy: Recent Activity

- Biden Transition: Climate 21 Project.



CLIMATE 21 PROJECT

Transition Memo

Department of Agriculture

KEY PROGRAM RECOMMENDATIONS AND OPPORTUNITIES

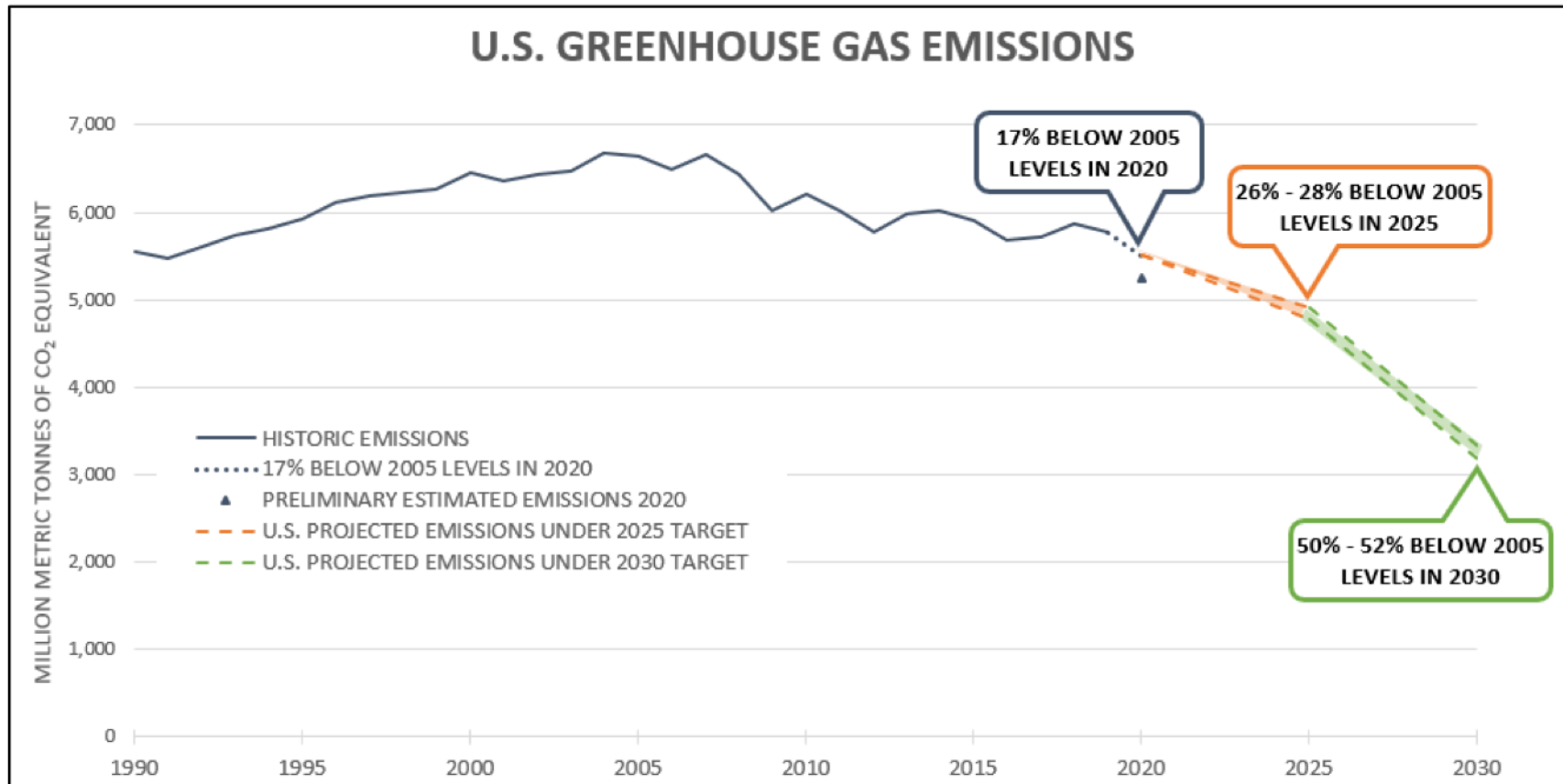
- **Issue a Secretarial Order on Climate Change and Rural Investment** to signal climate change as a top priority of the department, frame USDA's interest in investing in agriculture, forestry, technology, innovation, and rural economies, and to set agendas for policy and programmatic actions needed to act on climate. *(Day 1)*
- **Invest in natural climate solutions** by establishing a Carbon Bank using the Commodity Credit Corporation to finance large-scale investments in climate smart land management practices; prioritizing climate smart practices in implementation of Farm Bill conservation programs; and identifying opportunities to invest in natural infrastructure. *(Day 100)*
- **Incentivize Climate Smart Agriculture and Rural Investment through financial tools** including crop insurance, rural development grants and loans, and USDA procurement. *(Day 100)*
- **Decarbonize rural energy and promote green energy and smart grids** through the vast reach of rural development grants and loans to rural utilities and by dramatically increasing use of methane digesters, biofuels and wood energy, and wood product innovation. *(Day 100)*
- **Prioritize federal investment to address wildfire** by establishing a Wildfire Commission, co-chaired by the Secretaries of Agriculture and Interior and a Democratic and Republican governor, to offer recommendations to increase the pace and scale of ecologically-sound forest restoration on federal, state, tribal and private forest lands, modernize firefighting response in the US, address development in the wildland-urban interface, and increase the use of prescribed fire. *(Day 100)*

KEY ORGANIZATIONAL RECOMMENDATIONS AND OPPORTUNITIES

- **Rebuild and restore staff capacity and morale** by re-investing in science capacity, especially in the National Institute of Food and Agriculture (NIFA) and the Economic Research Service (ERS), and addressing workforce and performance protocols that reward staff for climate change innovation. *(Day 1)*
- **Reset the narrative of agriculture and forestry as climate change solutions with rural stakeholders** by emphasizing producers' and landowners' historic commitment to stewardship, and economic opportunities presented by investments in climate mitigation and resilience. *(Day 1)*

Climate Policy: Recent Activity

- Biden announced the U.S. was rejoining the Paris Climate Accords on his first day in office.



Climate Policy: Recent Activity

- The *Growing Climate Solutions Act* passed the Senate on June 24, 2021.
 - The act directs USDA to establish a certification program for private entities that provide technical assistance to farmers, ranchers, and foresters who participate in voluntary markets that trade environmental credits.
- On September 29, 2021, Secretary Vilsack announced a request for information on the Climate-Smart Agriculture and Forestry Partnership Initiative.
 - The purpose of the initiative is “to finance the deployment of climate-smart farming and forestry practices to aid in the marketing of climate-smart agricultural commodities” using “a set of pilot projects” that “could rely on the Commodity Credit Corporation’s specific power to aid in expansion or development of new and additional markets.”

Partnerships for Climate-Smart Commodities

- \$1 Billion Funding Opportunity to Pilot New Revenue Streams for America's Climate-Smart Farmers, Ranchers and Forest Landowners
- USDA will support the production and marketing of climate-smart commodities through a set of pilot projects that provide voluntary incentives through partners to producers and landowners, including early adopters, to:
 - implement climate-smart production practices, activities, and systems on working lands,
 - measure/quantify, monitor, and verify the carbon and greenhouse gas (GHG) benefits associated with those practices, and
 - develop markets and promote the resulting climate-smart commodities.

USDA Partnerships for Climate-Smart Commodities

Feb. 16, 2022

- Notice of funding opportunity
 - \$1 billion will be made available, build markets/invest in climate smart ag
 - Support production/marketing of climate smart commodities through pilot projects that provide voluntary incentives through partners, including early adopters
 - Proposals must provide a plan to implement climate smart ag
 - Grant agreements will be with a single partner
 - Two funding pools, intends to fund a diverse set of projects
 - \$5 million – \$100 million will be large scale projects
 - \$250,000 – less than \$5 million will be small scale projects
 - All projects to be tied to development of markets and promotion of climate smart commodities
 - April 8, 2022 – large projects
 - May 27, 2022 – small projects
 - USDA will make decision by Summer 2022 – grants.gov to submit application
 - Technical support – support@grants.gov
 - Federal financial assistance training – www.cfo.gov/grants-training/

Climate Policy: Challenges

- **Measurement.** Difficulty quantifying the impact of both individual practices and accumulation over time.
- **Volatility.** Practices are reversible. Sequestered carbon can be released by soil disturbance, changed tillage, etc. Raises questions of property rights and long-term commitments.
- **Additionality.** Longtime focus on incentivizing behavior to reduce GHG emissions or sequester carbon. This was a focus of programs like CSP. However, it ignores the costs internalized by early adopters along with the costs incurred in maintaining conservation measures over time.
- **Regional Equity.** One size does NOT fit all. No-till and cover crops are often cited, but there is considerable regional variability in adoption and effectiveness.

Notably, many of these challenges apply regardless of whether one is paying for practice or paying for carbon accumulation. Between these two policy approaches, the lines are blurry (e.g. carbon banking/offsets ultimately begin with a practice that sequesters carbon). But, paying for practice has a long, documented history.

Existing Conservation Programs

2018 Farm Bill

- *Conservation Reserve Program (CRP)*: expanded to 27 million acres; rental rates reduced so younger farmers wouldn't have to compete against the federal government for cropland; established a floor of 2 million grassland acres; and provided more flexibility for grazing.
- *Conservation Stewardship Program (CSP)*: capped at \$1 billion annually.
- *Environmental Quality Incentives Program (EQIP)*: authorization increased to \$2.025 billion by FY23 (+\$275 million per year); established EQIP Incentive Contracts as part of CSP reforms.
- *Agricultural Conservation Easement Program (ACEP)*: funding increased to \$450 million per year; continued conserving lands through Agriculture Land Easements (ALE) and Wetland Reserve Easements (WRE).
- *Regional Conservation Partnership Program (RCPP)*: funding increased to \$300 million per year; USDA partners with private organizations to address natural resource concerns through competitive application process.

Existing Conservation Programs

2018 Farm Bill

- USDA is already using existing programs to incentivize climate-smart practices. For example, NRCS is:
 - Providing \$10 million to support climate-smart agriculture and forestry through a targeted “Climate-Smart Agriculture and Forestry EQIP” signup in Arkansas, Florida, Georgia, Michigan, Minnesota, Mississippi, Montana, North Carolina, Pennsylvania and Wisconsin. USDA intends to expand this effort nationwide in 2022.
 - Providing \$300 million in RCPP funding for 85 projects focused on climate-smart agriculture.
 - Expanding CRP enrollment by 4 million acres by raising rental payment rates and expanding the number of voluntary incentivized environmental practices allowed. NRCS is also establishing a “Climate-Smart Practice Incentive” and pays for establishment of trees and permanent grasses, development of wildlife habitat, and wetland restoration. *NOTE: some are arguing that Secretary Vilsack is violating the 2018 Farm Bill cap on CRP rental rates.*

Existing Conservation Programs

2018 Farm Bill

- What about EQIP as a vehicle for paying for climate-smart practices [on a very large scale]?
 - In FY2019, 41,471 EQIP applications were funded (27.7%) of the 149,574 applications received. 49,443 applications (or 46% of the remaining applications) were determined to be valid, but unfunded.
 - The 2018 Farm Bill established EQIP Incentive Contracts which blend EQIP and CSP to provide financial assistance to producers for adopting conservation activities.
 - First available in FY2021 in Arizona, California, Colorado, and Oregon.
 - Available nationwide in FY2022.
 - Contracts 5- to 10-years in length with \$200,000 payment limit over the life of the 2018 Farm Bill (expires 2023).
 - Would the list of qualifying practices need to be narrowed?



Carbon Accounting

ADDITIONALITY

GHG reductions that would not have occurred in the absence of a market for offset credits

- Difficult to determine
- Prone to manipulation
- Current practices
 1. Lack of prior use of practice by farmer
 2. County/regional average of prior adoption

CERTIFICATION

1. *Verify that a practice complies with program*
 2. *Document actual GHG reductions or carbon storage*
- Soil testing
 - Soil modeling
 - Questions regarding reversals
 - Limited centralized oversight

Carbon Credits in Ag

Potential Practices

Decrease fertilization

Alter manure management

Reduce fuel consumption or use
alternative fuels

Conversion to grassland

Afforestation

Many more...

Current Payments

No Till

Cover Crops



Introduction to Carbon Markets

Carbon markets are not universal and vary in design

Carbon tax

Cap-and-trade

Offset markets

We observe a price when there is a buyer and seller transacting in a market, or a tax



Cap-and-Trade

Also called an emissions trading scheme (ETS)

Regulator establishes total allowable quantity of pollution

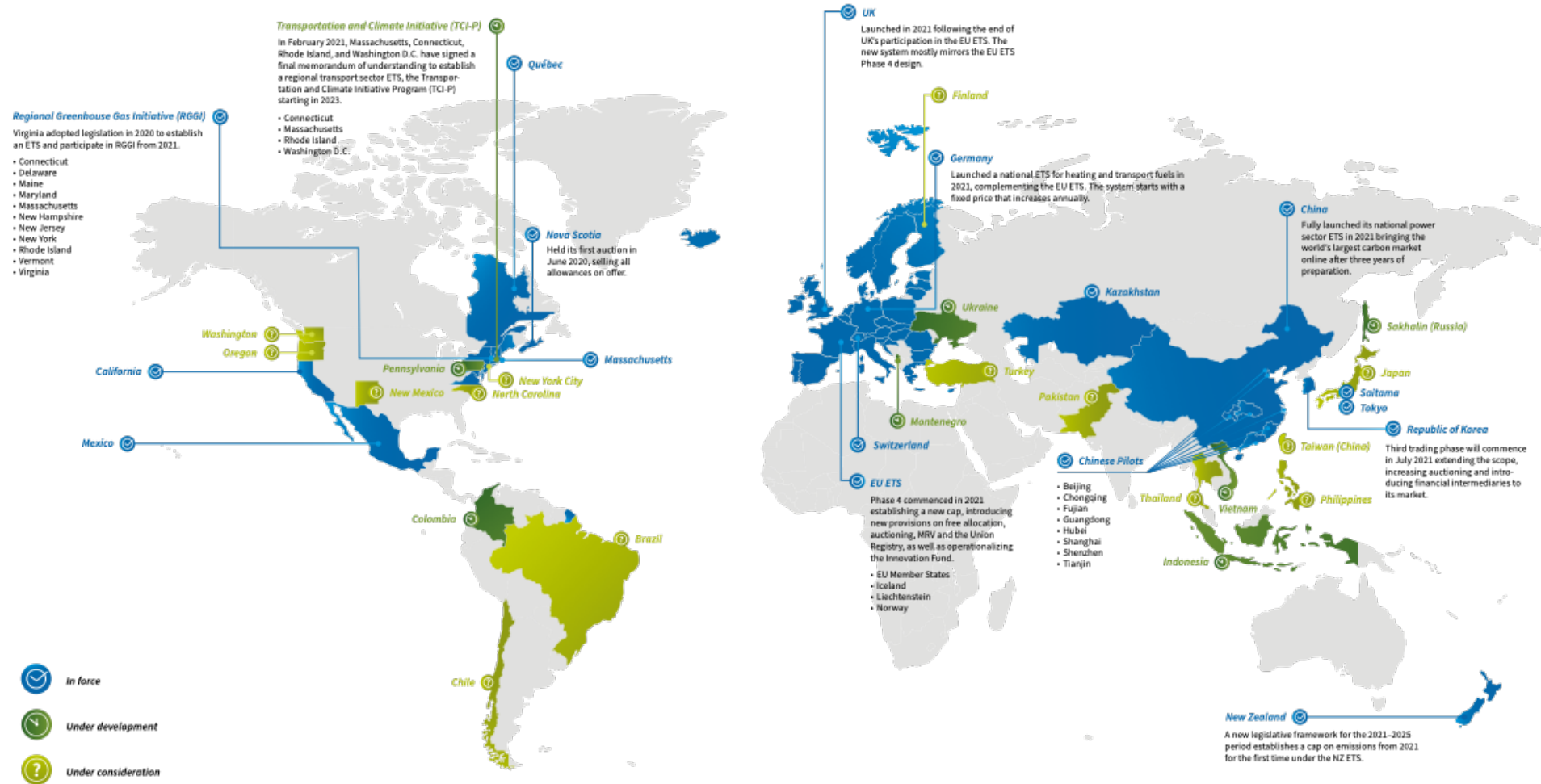
Allocates allowances to regulated firms (1 allowance = 1 unit of pollution)

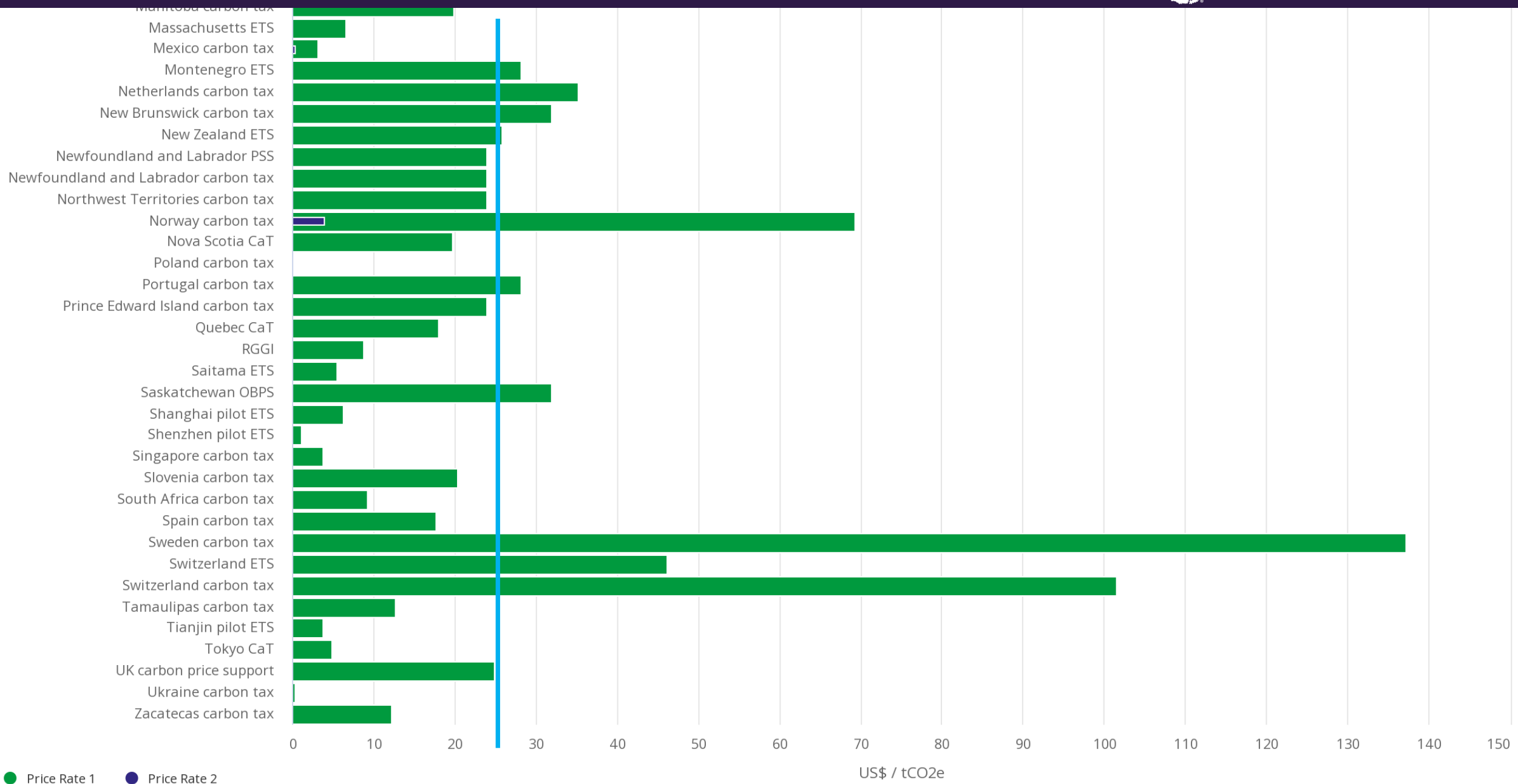
Firms w/high abatement costs will buy allowances from firms with low abatement costs

Allocation of reduction is determined by the market



Carbon Emissions Trading







Offset Markets

Compliance:

- Firms purchase offsets to comply with regulatory caps

- Rules specify projects that can sell offsets

Voluntary:

- Individual firms contract with large firms or individual farmers

- A firm connects buyers with projects (e.g. tree planting)



The Only Game in Town

- Voluntary markets are currently the only way farmers can sell carbon.
- USDA is exploring ideas like a carbon bank, but this would require a national carbon market system.
- Offset credits currently sell for ~\$15/mt of CO₂-eq.
- Selling and monitoring are potentially costly.
- Contracts are typically 10 years with exit penalties.

Carbon Contracts

- Carbon contracts are voluntary agreements that landowners can enter into promising to use certain practices such as:
 - Reduced-till/no-till farming,
 - Planting cover crops,
 - Forego the harvesting of mature timber.
- Contracting entity then pays the farmer for sequestered carbon.

Carbon Contracts

- Contracts generally have confidentiality clauses.
- Rusty Rumley with National Ag Law Center at University of Arkansas reviewed some contracts under a confidentiality agreement.
- He identified some common elements that landowners should be aware of before signing a contract.

Carbon Contracts

- The length of the contracts can vary from 1 to 10 years, may have opportunity to extend longer.
 - Example, one contract required the storage of carbon in the field for the next one hundred years.
- Ensure that you can comply with the contract for the entire life of the agreement.
- The landowner often has to grant the other party access to the property to take carbon sequestration measurements.

Carbon Contracts

- Payments and payment mechanisms can vary substantially.
 - Some pay for certain practices, such as \$3 per acre for no-till farming,
 - Some pay based on the tons of carbon sequestered, typically around \$15-\$20 per ton,
 - Method of carbon measure can vary or not explicit.
- Read the definitions section carefully, as words may not mean what you think they mean.

Carbon Contracts

- Some contracts may include language transferring other or all environmental benefits allowing the other party to sell off other environmental benefits, such as water quality credits.
- Does the contract have a mechanism to enable the landowner to realize any gain from the sale of other environmental benefits?
- Review the contract for language that allows you to profit from all potential environmental benefits.



Getting Paid for Reducing Carbon.

- Several types of companies
 - Carbon credit entities (Indigo, Nori)
 - Carbon & ecosystem service credit entities (ESMC, SWOF)
 - Input suppliers (Agoro Carbon Alliance, Bayer Carbon, Corteva, Nutrien)
 - Data platforms (CIBO Impact, Gradable Carbon, TruCarbon)
- State or region eligibility varies
- No standardization across companies
 - Setup, rules, payments, penalties, and certification all differ
 - Price of carbon is generally around \$15/mt
 - Several companies are still in pilot phase

Examples

[Indigo](#) | carbon credit →

[Bayer Carbon](#)

[Soil and Water Outcomes Fund](#)

[Corteva](#)

[Gradable Carbon](#)

How your farm can earn more through Carbon by Indigo*

On average, farmers are estimated to generate 0.2-1 credits per acre in their first year and increase credit production over time.

<p>MINIMUM PRICE PER CARBON CREDIT</p> <p>↑ \$15</p>	<p>POTENTIAL GROSS INCOME FROM ENRICHING YOUR SOIL</p> <p>↑ Up to \$30+ / ac / yr</p> <p><small>paid in 5 installments vesting over 5 calendar years; results may vary</small></p>	<p>POTENTIAL CARBON CREDITS / AC. / YR.</p> <p>↑ Up to 2 credits+</p> <p><small>achieved through sequestration or abatement</small></p>
---	---	--

How Carbon by Indigo works

- 1: SIGN UP**

You map (or import) field boundaries and enroll in Carbon by Indigo.
- 2: MAKE CHANGES**

You add new practices that increase soil carbon and reduce emissions on your farm, with agronomic support from Indigo.
- 3: RECORD DATA**

You record your historical and current season management data in our web platform, and Indigo takes soil samples on a subset of fields.**
- 4: CALCULATE IMPACT**

Indigo calculates the carbon credits produced by your farm, validates the findings with a verifier, and submits the results to a carbon registry.
- 5: ISSUE CREDITS**

Carbon registry issues carbon credits.
- 6: GET PAID**

After Indigo sells credits to corporate buyers, you get paid for the carbon credits you produced.

Examples

[Indigo](#)

[Bayer Carbon](#) | input supplier →

[Soil and Water Outcomes Fund](#)

[Corteva](#)

[Gradable Carbon](#)

Up to \$9

per acre, per year

No-till/strip-till and cover cropping are powerful ways to support your yield potential and nutrient management over time, leaving healthier soil for future generations. With the Bayer Carbon Program, you may be able to get paid for climate-smart practices you've already implemented or plan to implement.

 <p>no-till [?]/strip-till [?]</p> <p>\$3</p> <p>per acre, per year</p>	 <p>cover crops [?]</p> <p>\$6</p> <p>per acre, per year</p>	 <p>both</p> <p>\$9</p> <p>per acre, per year</p>
--	--	--

Examples

[Indigo](#)

[Bayer Carbon](#)

[SWOF](#) | carbon + es credits →

[Corteva](#)

[Gradable Carbon](#)

How the Farmer Enrollment and Payment Process Works



STEP 1. Use our farmer web portal at theoutcomesfund.com to create an account, map your field boundaries, and enter baseline and future cropping system information.



STEP 2. Review the proposed payment offering emailed to you within 1-2 weeks after data submission and determine if you wish to continue participate.



STEP 3. E-sign the contract emailed to you to confirm your participation in the Soil and Water Outcomes Fund, and receive 50% of your payment at signature.



STEP 4. Receive technical assistance from Soil and Water Outcomes Fund conservation agronomists as needed to implement conservation practices.



STEP 5. Receive remaining 50% payment after the crop year is complete and your farm's environmental outcomes are measured and verified.

Examples

[Indigo](#)

[Bayer Carbon](#)

[Soil and Water Outcomes Fund](#)

[Corteva](#) | input supplier →

[Gradable Carbon](#)

1 Enter your location

Select Your State: South Carolina
 Select Your County: Calhoun

2 Select your practice(s)

I plan to:

- Only introduce cover crops
- Only switch to strip or no-till
- Both introduce cover crops & switch to strip or no-till**

Before switching to strip or no-till, I implemented:

- Intensive tillage
- Reduced tillage

Do you irrigate your fields?

- Yes
- No**

Calculate My Payment

You can earn up to \$87/acre/year

<p>CORTEVA</p> <p>Corteva's Carbon Initiative</p> <p>Up to \$12 Est. acre/year</p> <p><small>Estimate based on \$15/credit¹ We project you'll receive \$50+/credit based on demand</small></p>	+	<p>FarmRaise</p> <p>USDA Cost-Share EQIP²</p> <p>Up to \$75 Est. acre/year¹</p> <p><small>Paid through the Environmental Quality Incentives Program (EQIP) and estimated by FarmRaise</small></p>
---	---	---

*These estimates are for illustrative purposes only. Results or payment amounts may vary.

Examples

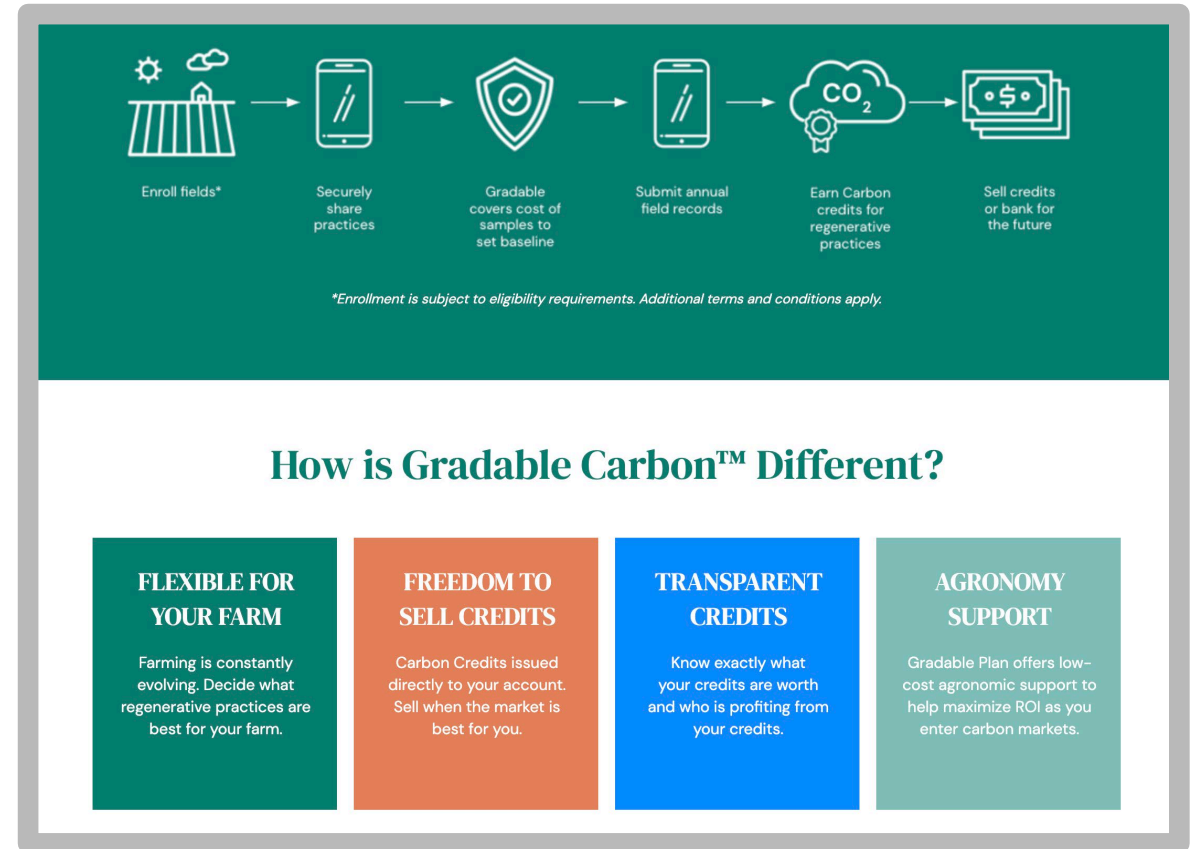
[Indigo](#)

[Bayer Carbon](#)

[Soil and Water Outcomes Fund](#)

[Corteva](#)

[Gradable Carbon](#) | platform →



Resources

Companies

- [Bayer Carbon](#)
- [Soil and Water Outcomes Fund](#)
- [Corteva](#)
- [Gradable](#)
- [Indigo](#)
- [ESMC](#)
- [Nori](#)

Information

- [Comparison of offset companies \(Iowa State\)](#)
- [Discussion of soil carbon offsets \(Green Biz\)](#)
- [Report on ag carbon mitigation options \(USDA\)](#)
- [Questions farmers should ask about carbon credit \(U. of Illinois\)](#)
- [Carbon Contracts for the Farmer \(Southern Ag Today\)](#)
- [Adopting Practices for Carbon Credits \(Southern Ag Today\)](#)

Will Carbon Credits Work for You?

- Market development opportunity and doesn't have to be all or nothing.
- Policy direction supports climate smart agriculture with a lot of dollars being directed to adoption of practices.
- Production costs on the rise, CC can help offset.
- Largely crop oriented with cover crops and no-till practices.
- Additionality is the current focus of developing markets.
- Have contract reviewed by lawyer on rights being sold.
- Is now is the time to go all in?

THANK YOU



COOPERATIVE EXTENSION
College of Agriculture, Forestry and Life Sciences

Clemson University Extension Agribusiness Team
<http://www.clemson.edu/extension/agribusiness>

Nathan Smith, PhD.

Agribusiness Program Team Director

Sandhill Research and Education Center

229-392-3948 (m)

nathan5@clemson.edu