




**NOTICE OF GRANT AND AGREEMENT AWARD**

1. Award Identifying Number NR233A750004G072	2. Amendment Number	3. Award /Project Period Date of final signature - 09/14/2028	4. Type of award instrument: Grant Agreement
5. Agency (Name and Address)  USDA Partnerships for Climate-Smart Commodities c/o FPAC-BC Grants and Agreements Division 1400 Independence Ave SW, Room 3236 Washington, DC 20250 Direct all correspondence to FPAC.BC.GAD@usda.gov		6. Recipient Organization (Name and Address)  ROESLEIN ALTERNATIVE ENERGY, LLC 9200 WATSON ROAD SUITE 200 SAINT LOUIS MO 63126-1528  UEI Number / DUNS Number: DJ3WG6VLCA97 / 079477588 EIN:	
7. NRCS Program Contact  Name: MUSTAPHA ABOUALI	8. NRCS Administrative Contact  Name: Marnie Wilson	9. Recipient Program Contact  Name: Will Higgins	10. Recipient Administrative Contact  Name: Will Higgins
(b)(6)			
11. CFDA  10.937	12. Authority  15 USC 714 et seq	13. Type of Action  New Agreement	14. Program Director  Name: Bryan Sievers (b)(6)
15. Project Title/ Description: Expands markets for climate-smart Corn, Soybean, Pork, Beef and Grass in IA and MO, and supports farmer and rancher implementation and monitoring of climate-smart practices.			
16. Entity Type: Q = For-Profit Organization (Other than Small Business)			
17. Select Funding Type			
Select funding type:	<input checked="" type="checkbox"/> Federal	<input checked="" type="checkbox"/> Non-Federal	
Original funds total	\$80,000,000.00	\$4,692,964.00	
Additional funds total	\$0.00	\$0.00	
Grand total	\$80,000,000.00	\$4,692,964.00	
18. Approved Budget			

Personnel	\$6,782,708.00	Fringe Benefits	\$2,374,110.00
Travel	\$1,008,883.00	Equipment	\$0.00
Supplies	\$26,215,171.00	Contractual	\$6,353,581.00
Construction	\$0.00	Other	\$37,265,547.00
Total Direct Cost	\$76,087,550.00	Total Indirect Cost	\$3,912,450.00
		Total Non-Federal Funds	\$4,692,964.00
		Total Federal Funds Awarded	\$80,000,000.00
		Total Approved Budget	\$84,692,964.00

This agreement is subject to applicable USDA NRCS statutory provisions and Financial Assistance Regulations. In accepting this award or amendment and any payments made pursuant thereto, the undersigned represents that he or she is duly authorized to act on behalf of the awardee organization, agrees that the award is subject to the applicable provisions of this agreement (and all attachments), and agrees that acceptance of any payments constitutes an agreement by the payee that the amounts, if any, found by NRCS to have been overpaid, will be refunded or credited in full to NRCS.

Name and Title of Authorized Government Representative KATINA HANSON Acting Senior Advisor for Climate-Smart Commodities	Signature <b>KATINA HANSON</b> Digitally signed by KATINA HANSON Date: 2023.09.15 08:54:11 -05'00'	Date
Name and Title of Authorized Recipient Representative RUDOLPH ROESLEIN Founder	Signature 	Date 9/14/2023

#### NONDISCRIMINATION STATEMENT

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW., Washington, DC 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

#### PRIVACY ACT STATEMENT

The above statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. Section 522a).

## Statement of Work

### Purpose

The purpose of this agreement, between the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) and Roeslein Alternative Energy, LLC (Recipient), is to build markets for climate-smart commodities and invest in America's climate-smart producers to strengthen U.S. rural and agricultural communities.

### Objectives

The objectives of this project are to support the production and marketing of climate-smart commodities by providing voluntary incentives to producers and landowners, including early adopters, to implement climate-smart agricultural 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.

### Budget Narrative

The official budget summarized below and described in the attached Budget Narrative will be considered the total budget as last approved by the Federal awarding agency for this award.

Amounts included in this budget narrative are estimates. Reimbursement or advance liquidations will be based on actual expenditures, not to exceed the amount obligated.

TOTAL BUDGET \$84,692,964

TOTAL FEDERAL FUNDS \$80,000,000

PERSONNEL \$6,166,098

FRINGE BENEFITS \$2,158,282

TRAVEL \$917,167

EQUIPMENT \$0

SUPPLIES \$23,831,973

CONTRACTUAL \$5,775,983

CONSTRUCTION \$0

OTHER \$37,238,047 (includes PRODUCER INCENTIVES \$22,813,815)

TOTAL DIRECT COSTS \$76,087,550

INDIRECT COSTS \$3,912,450

TOTAL NON-FEDERAL FUNDS \$4,692,964

PERSONNEL \$0

FRINGE BENEFITS \$0

TRAVEL \$0

EQUIPMENT \$4,150,000

SUPPLIES \$0

CONTRACTUAL \$0

CONSTRUCTION \$0

OTHER \$542,964 (includes PRODUCER INCENTIVES \$0)

TOTAL DIRECT COSTS \$4,692,964

INDIRECT COSTS \$0

Recipient has elected to use the de minimis indirect cost rate.

Ensure that equipment purchased with Federal funds is used until no longer needed as described in the General Terms and Conditions and 2 CFR 200. If the residual value of the equipment is \$5,000 or more at the time it is no longer needed, the recipient must request disposition instructions. The disposition instructions may direct the recipient to: 1) sell the equipment and return a proportionate share of the proceeds to the Federal agency; 2) transfer title to another eligible entity identified by the Federal agency; or 3) keep the equipment if desired and compensate the Federal agency for its proportionate share of the value.

### Responsibilities of the Parties:

If inconsistencies arise between the language in this Statement of Work (SOW) and the General Terms and Conditions

attached to the agreement, the language in this SOW takes precedence.

#### **RECIPIENT RESPONSIBILITIES**

Perform the work and produce the deliverables as outlined in this Statement of Work and attachments.

Ensure Paperwork Reduction Act (PRA) clearance is obtained prior to conducting data collection from producers or other project participants, including data collection performed by subrecipients.

Comply with the applicable version of the General Terms and Conditions.

Submit reports and payment requests to the ezFedGrants system as outlined in the applicable version of the General Terms and Conditions. Reporting frequency is as follows:

Performance Reports: Quarterly

SF425 Financial Reports: Quarterly

Detailed Progress Report: Quarterly

(The detailed progress report is in addition to the performance and financial reports referenced above and described in the general terms and conditions)

#### **Expected Accomplishments and Deliverables**

See attached Benchmarks Table and associated Project Narrative.

#### **Resources Required**

See the Responsibilities of the Parties section for required resources, if applicable.

#### **Milestones**

See attached Benchmarks Table and associated Project Narrative.



## **GENERAL TERMS AND CONDITIONS**

Please reference the below link(s) for the General Terms and Conditions pertaining to this award:

<https://www.fpacbc.usda.gov/about/grants-and-agreements/award-terms-and-conditions/index.html>

### Attachments:

Budget Narrative

Project Narrative

Benchmarks Table

Climate-Smart Practices List and Limitations

Data Dictionary

Climate-Smart Specific Terms and Conditions

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act



Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

## **Horizon II: A Climate-Smart Future for Corn, Soybean, Livestock, and Renewable Natural Gas Production**

**Program Director:** Bryan J. Sievers, Roeslein Alternative Energy (RAE), 9200 Watson Road, St. Louis, MO, 63126; (b)(6)

**List of Partners:**, Conservation Districts of Iowa\*, Iowa Agriculture Water Alliance\*, Iowa State University\*, Missouri Prairie Foundation, Sievers Family Farms, Smithfield Foods\*, The Nature Conservancy, University of Missouri\*, Verdesian, Veterans in Agriculture\* (\* = serving historically underserved communities); External evaluator: University of California-Davis

**Compelling Need for Project:** We propose a novel, innovative partnership united in advancing a new climate-smart system for US agriculture. The system will reduce greenhouse gas (GHG) emissions and improve carbon sequestration for corn, soybean, pork, and beef commodities, while creating transformational opportunities for small and historically underserved producers. When deployed nationwide, the overall expected gross energy generated by the system is 1.8 billion dekatherms (Dth), with \$70.7 billion per year in new gross revenue generated and a CO<sub>2</sub>e reduction of 250 million metric tons through agriculture. The project will verify on a large scale that prairie grasses and cover crops are economically viable, low-CO<sub>2</sub>e commodities that provide a stable income stream to farmers. It will also expand the existing supply chains to produce renewable natural gas (RNG), biofertilizer, and carbon credits through the smarter utilization and connection of resources. The proposed climate-smart system will add further value in terms of soil health, clean water, flood control, and habitat for native wildlife. The Horizon II system will leverage \$700 million in capital spent on Horizon I projects to produce over 5 million Dekatherms (Dth) of RNG in the next 5 years and use the existing natural gas transmission and distribution system.

The new climate-smart system provides a transitional source of renewable energy that is distributive, reliable, and supplements, rather than competing with, food systems. Providing renewable energy independence and security for the US and allies is vital in these times of uncertain supply from unreliable and sometimes even hostile countries.

**Approach to minimize transaction costs associated with project activities:** This project efficiently minimizes transaction costs by integrating industry leaders that have committed \$217,679,513 in cost-share toward producing climate-smart commodities. RAE, a leader in the RNG industry, has a 10-year track record of delivering projects with their modular systems in the swine industry, including with Smithfield Foods, Iowa Select Farms, and others. Smithfield, the largest pork producer in the US, is committed to continued promotion of climate-smart crop- and livestock-production practices within their businesses and supply chains. These industry leaders have long-standing collaborations with stakeholders that will be used to recruit farmers.

**Geographic Focus:** Iowa and Missouri

**Project Management Capacity of Partners:** RAE is an operator and developer of renewable energy production facilities that convert livestock manure and renewable biomass feedstocks into RNG and sustainable co-products. RAE joined with Smithfield Foods in 2014 to develop one of the largest methane digest projects in US history. By successfully completing over \$180 million in digester projects at eight hog finishing farms in northern Missouri (Horizon I), RAE and Smithfield Foods produced over \$60 million in revenue from California's Low Carbon Fuel Standard (LCFS) and the US EPA's D3 RIN program in 2021.



## A. INTRODUCTION

### Vision and Goals of the Partnership

*We propose to pilot a new climate-smart system for US agriculture and lay the foundation for rapid scale up. The program will reduce greenhouse gas (GHG) emissions and improve carbon sequestration for corn, soybean, pork, and beef commodities by 250 million metric tons CO<sub>2</sub>e per year. This impact is equivalent to displacing diesel fuel consumption by 20.7 billion gallons annually. The program will verify on a large scale that prairie grasses and cover crops are economically viable, low-CO<sub>2</sub>e commodities that provide a stable income stream to farmers by being integral to agriculturally based carbon credits and renewable energy production (Fig. 1).*



**Figure 1.** The climate-smart system developed through the Horizon II pilot project.

The new climate-smart system will expand existing commodity supply chains to produce renewable natural gas (RNG) and carbon credits through the smarter utilization and connection of resources, thus improving the profitability, sustainability, and resilience of farming and ranching operations. Program partners will work with farmers, livestock producers, landowners, and other stakeholders, including early adopters of practices and historically underserved producers, to ensure equitable access to the opportunities offered by the low-carbon agriculture of the future. *A specific goal is to provide additional revenue streams through carbon credits and a market for grassy biomass that will allow smaller farms to be more profitable.* This vision will be turned into reality by a seasoned partnership working together to achieve three major goals:

**Goal 1:** Implement climate-smart food, feed, fuel production practices, activities, and systems by introducing a novel, resilient, and reliable source of renewable energy from winter hardy cover crops and restored prairie that provides significant reductions in CO<sub>2</sub> and other greenhouse gas emissions, while improving soil health, clean water, flood control, and habitat for native wildlife;

**Goal 2:** Transparently measure, monitor, and verify the carbon and GHG benefits associated with those practices; and,

**Goal 3:** Provide equitable access to new positions, markets, products, and value chains and allow for an inclusive rural economy of the future.

**A pilot project** for RNG production from grassy biomass feedstock will be developed, deployed, and verified in Iowa and Missouri (Fig. 2), where most of the nation's corn, soybeans, and pork are produced. Farmers, livestock producers, and landowners will be compensated for GHG reductions and carbon sequestration in the soil through an outcomes-based carbon credit pro-



gram. The proposed approach will incentivize improved management of nitrogen fertilizer, manure, reduced tillage and other soil resources, which are critical to the success of climate-smart practices. Cover cropping and grassland restoration will be further incentivized through a novel, market-based program that supports RNG production through the anaerobic digestion of herbaceous biomass combined with manure. This renewable energy can be fed into the national grid and become part of a sustainable new value chain. Once fully developed, deployed, and verified, the program can be extended and tailored to other agricultural commodities (i.e., dairy, poultry) and regions of the country. While focused on expanding a new, renewable source of energy, reducing GHGs, and improving soil carbon storage, the proposed climate-smart agricultural systems will add further value by cooling the atmosphere, rebuilding soil, cleaning water, preventing flooding, and providing vital, quality habitat for our diminishing wildlife.

The proposed climate-smart production can be **seamlessly integrated** into current practices and will **neither disrupt markets** nor interfere with **safe and secure food supply goals**.



**Figure 2.** Horizon II partners (dots), pilot facilities (stars), and focal region for the period of the USDA grant (dark tan). By 2040, the new climate-smart system is expected to extend nationwide.

## Background

**Current Challenges:** Agricultural systems in the US are highly productive and well-constructed for the conditions experienced in the past. While supporting state and national economies, predominant systems no longer adequately sustain farmers, rural communities, soil, air, water, or wildlife resources. Predominant systems require few farmers, are dependent on economic subsidies, and can have negative impacts on rural communities<sup>1, 2, 3, 4</sup>. Soil loss and degradation associated with dominant annual cropping systems have been widespread and prolonged, and may undermine the nation's ability to sustain long-term, efficient production<sup>5, 6</sup>. Conventional livestock manure management practices can challenge air and water quality<sup>7, 8</sup>. Water quality impairment associated with agriculture can impact individuals, communities, and ecosystems<sup>9, 10</sup>. Farm habitats, crucial for sustaining wildlife populations, are depauperate<sup>11, 12, 13</sup>.

While antecedents for more sustainable systems exist, supporting concepts, technologies, infrastructure, and markets are currently immature and not well integrated<sup>14, 15</sup>. Many paradigm-changing farm, business, industry, and educational practices are thus rendered non-competitive. For example, despite its much-heralded potential, cellulosic ethanol production, widely expected to monetize perennial and winter crops, energize rural economies, improve soil and water quality, and enhance biodiversity, has failed<sup>15</sup>. In 2007, Congress called for cellulosic biofuels to scale up to 4.5 billion gal per year by 2016, but only 0.16 billion gal were produced that year. Of that 0.16 billion gal, over 98% was biogas upgraded to RNG<sup>15, 16</sup>. Since then, all three cellulosic ethanol plants, heavily subsidized by the US government, have ceased operations<sup>17</sup>.

**This project takes a different approach**, leveraging existing, well-developed RNG infrastructure and markets to reduce the barriers faced by climate-smart agriculture for corn and soybean farmers. Tighter coupling between production and processing of biomass by siting methane biogas digesters technology on farms and at livestock facilities will take advantage of existing infrastructure while improving the efficiency and sustainability of resource use<sup>14,18</sup>. It will also increase the number of farm outputs for more diverse and stable cash flows. Co-digestion of sustainably sourced herbaceous feedstocks with manure has the potential to produce resilient, marketable energy products, bioproducts, and biobased chemicals<sup>19</sup>. The inputs (grassy feedstocks) and outputs (RNG, biofertilizer) are **compatible with current agricultural systems**, yet they produce substantially greater levels of ecosystem services – including GHG reductions and carbon sequestration – than currently achievable<sup>20</sup>.

Anaerobic digesters that produce RNG are not a new concept<sup>21</sup>. There are almost 9,000 biogas power stations being used to generate energy in Germany. Many of them depend on corn and sorghum, but they are transitioning to more sustainable feedstocks such as cover crops and crop residues. Biomass accounts for almost 8% of energy produced in Germany, making it their largest renewable source of energy, ahead of wind and solar. In Italy, more than 600 farmers are organized in the Italian Biogas Consortium to produce food and bioenergy in a nationwide, farm-level movement to increase the economic viability and stability of agriculture<sup>22, 23</sup>.

**Geographic Scope:** The Midwestern states of Iowa and Missouri contribute significantly to the economic value created by agricultural systems and rural economies in the US. In Iowa, 30.5 million acres of farmland support 84,900 farm operations<sup>24</sup>. Iowa agriculture generated \$26.2 billion in products in 2020, second only to California. Iowa ranks first in the nation in corn, swine, eggs, ethanol, and feed grain exports, and in 2018 it was ranked by the US EPA as having the highest market opportunity of any state for biogas development. Agriculture is also the largest single source of GHGs, comprising 31% of Iowa's 120.8 million metric tons CO<sub>2</sub>e total GHG emissions in 2020<sup>25</sup>. Agricultural production in northern Missouri is similar to Iowa for crops, which are primarily fed to livestock<sup>26</sup>. The value of agricultural products sold in 2020 was \$9.7 billion. Missouri has 95,000 farm operations working 27.5 million ac. Beef cattle and broilers represent much of the state's livestock population, but hog production is concentrated on large farms of 40,000 to 170,000 hogs in northern counties. In 2019, agriculture comprised 17% of Missouri's 152.2 million metric tons CO<sub>2</sub>e total GHG emissions, the second largest source of emissions behind energy production<sup>27</sup>. While leading the world in agricultural outputs, agricultural systems in these states presently do not utilize resources as efficiently as they could and require substantial external inputs in the form of nutrients, energy, and financial capital, often in the form of government subsidies. The use of assets underpinning these agricultural systems – including land, equipment, and labor assets – is particularly inefficient, when land is left fallow for 4-7 months of the year or when dominant annual crops are planted to areas where they do not perform well<sup>28,29</sup>.

**The Team:** The overall team includes 14 partnering organizations that are national leaders in the following sectors: **Renewable Natural Gas (RNG)** and **biofertilizer** production (Roeslein Alternative Energy - RAE), **Livestock** (Smithfield Foods), **Crop** (Iowa Soybean Association, Sievers Family Farms, Verdesian), ); **Farmer engagement, extension, and outreach** (Conservation Districts of Iowa - CDI, Iowa Agriculture Water Alliance - IAWA, Iowa State University - ISU, University of Missouri - Mizzou); **Engaging historically underserved communities in agriculture** (ISU, Mizzou, Smithfield Foods, Veterans in Agriculture); **Carbon credit programs** (Contracted); **Conservation delivery** (CDI,



Missouri Prairie Foundation - MPF, , The Nature Conservancy - TNC); and **Agri-environmental monitoring** (ISU, Mizzou,) (*see Letters of Commitment*). An additional **24 Supporting Organizations** have provided *Letters of Support* for the project. The team will work with an independent **external evaluator** (University of California-Davis - UC-Davis). Partner and supporting organizations have helped refine program scope and priorities, enlisted for piloting project concepts, and committed to facilitating scale up (Fig. 2).

**Preliminary Work and Relevant Results:** RAE, the project lead, is an award-winning biofuel engineering company that has already established a foundation of successful technology and market-based solutions. RAE has already built successful partnerships with project partners and operations are based on two major RNG feedstock platforms: Horizon I and Horizon II.

**Horizon I:** Horizon I uses lagoon digesters which are the most economical anaerobic digesters that obtain the lowest Carbon Intensity (CI) scores and have the best gas storage and distributive qualities of any digester. These digesters are used to break down the organic matter in manure lagoons into a methane-rich biogas that can be converted into RNG, leaving water and solids as byproducts. RAE joined with Smithfield Foods in 2014 to develop one of the largest digester projects in US history. By successfully completing over \$180 million in digester projects at eight hog finishing farms in northern Missouri, RAE and Smithfield Foods have produced over \$60 million revenue from California's Low Carbon Fuel Standard (LCFS) and the United States Environmental Protection Agency's D3 RIN program in 2021. These projects have received some of the lowest average carbon intensity scores in the renewable fuels industry (CI of – 400)<sup>30</sup>. RAE has since expanded its collaborations toward RNG production within and beyond the Midwest to include projects with the Smithfield-Dominion Energy joint venture, Align, Iowa Select Farms, Murphy Family Ventures, and Seaboard. RAE and Smithfield formed a joint venture, Monarch Bio Energy (*see Letter of Commitment*), which was recently joined by TPG (*see Letter of Support*). Monarch Bio Energy owns and operates 83 lagoon digesters in northern Missouri with plans to expand to multiple locations around the US.

**Horizon II:** Horizon II adds renewable biomass feedstocks to the digestion process to expand production and provide a market for sustainably grown and harvested grassy feedstocks, such as cover crops and prairie. The production of grassy feedstocks is crucial to achieving climate-smart goals on annual croplands and bringing RNG and carbon markets to crop farms, including small and mid-sized farms<sup>31</sup>. Since 2014, RAE has partnered with ISU to conduct research and outreach, and in 2020 were awarded a \$10 million grant from USDA's National Institute for Food and Agriculture (award number: 2020-68012-31824). In 2021, RAE invested \$14 million and formed a joint venture with Sievers Family Farms (*see Letter of Commitment*) to build the first Horizon II facility, which will be commissioned in 2023.

The team has a strong track record of successful **Diversity, Equity, Inclusion**-focused programs. **RAE** actively pursues DEI through the company's robust internship program. RAE, its parent company Roeslein & Associates, and Mr. Rudi Roeslein personally, provide scholarships to students from underserved communities, specifically African Americans in St. Louis, Mo. Roeslein has ongoing relationships with Cardinal Ritter College Prep High School, which has a 98 % African American student population. Roeslein offers scholarships to students at St. Mary's High School, Mr. Roeslein's alma mater, which is predominantly African American. Across Roeslein's growing footprint of RNG operations in Missouri, Iowa and beyond, employment and partnership opportunities exist for members of underserved communities, including veterans, women farmers and landowners, small farmers, and those of traditionally marginalized ethnic descent. Roeslein seeks diverse candidates for open positions because experience and research have proven a more diverse workforce results in a more successful business. Roeslein is

committed to growing and maintaining a diverse workforce. **Smithfield Foods** pledged \$5 million over the last two years to build access to and foster diversity in food education, agriculture, and science, technology, engineering, and mathematics (ASTEM) careers. They host training programs to strengthen diversity in their management ranks, including Smithfield's Operations Leadership Program (OLP), which is designed to create a robust pipeline of diverse candidates to fill management positions within the company. They launched a New Minority Farmer Program to diversify the hog supply chain by addressing historic barriers disproportionately facing Black and other minority farmers such as access to capital and cost of capital. **ISU** has a suite of programs designed to engage and support historically underserved members of the agricultural community, including Women in Agriculture, Beginning Farmers, and Veterans in Agriculture. The Science Bound program works to empower Iowa students of color to pursue degrees and careers in ASTEM fields by engaging middle and high school students from multiple Iowa communities that have large representation of underserved students, whose parents often work in agricultural supply chains. **Veterans in Agriculture**, a non-profit that 'empowers veterans to thrive in agriculture' by helping veterans and active military develop and become successful in their desired agricultural enterprise, has developed two Registered Apprenticeship Programs that provide instruction and on-the-job training in production agriculture and/or in agribusiness. **CDI** provides direct support to 500 Conservation District Commissioners in the state of Iowa, including historically underserved farmers.

**IAWA** regularly partners with USDA NRCS' Women Land and Legacy program to provide outreach and support to women farmers and women landowners; Future Farmers of America to help serve beginning farmers; and numerous other agricultural associations and organizations that serve small farmers, and more recently Veterans in Agriculture.

**IAWA** regularly partners with numerous agricultural associations, private businesses, and public organizations to do outreach to farmers about conservation practices. Included in these organizations are groups such as USDA NRCS' programs that provide outreach and support to women farmers and women landowners; CDI to reach historically underserved farmers; Future Farmers of America to help serve beginning farmers; and more recently Veterans in Agriculture to do outreach to veterans.

## **B. RATIONALE AND SIGNIFICANCE**

Here we propose to expand on our foundational work, summarized in the *Previous Work and Relevant Results* section, to pilot, monitor, and market the new climate-smart commodity system for corn, soybean, livestock, and RNG production (Fig. 1). The majority of the funding will be used to establish climate-smart practices on corn and soybean farms and fairly compensate farmers for potential operational risks associated with transitioning to the climate-smart food, feed, fuel production practices, activities, and systems associated with Horizon II. Additional funding will support farmer, farmland owner, and agricultural community outreach, education, and decision making; development and testing at the Horizon II facilities; support independent monitoring, recording, and verification of climate smart practices and systems; and project administration and evaluation. We are **not** seeking funding for digester or biofertilizer plant construction from USDA; these costs are covered by \$4.15 million in private cost-share for the biofertilizer plant and digester facilities will be constructed as necessary.

**Three major market drivers** make this the ideal time to develop this climate-smart agricultural

commodity system. **(1) Farm profitability.** Yield monitoring and economic modeling indicates over 20% of the cropland devoted to annual row crops, such as corn and soybeans, lose money as a result of poor soil, flooding, or drought. Strategically integrating herbaceous biomass crops on areas where corn and soybeans are underperforming will increase field and farm profitability, reduce greenhouse gas emissions, and improve soil carbon storage while also improving soil health, nutrient retention and water quality, reducing soil loss, and enhancing wildlife and pollinator habitat<sup>20,32,33,34</sup>. **(2) Voluntary carbon markets are rapidly expanding,** with many businesses purchasing carbon insets and offsets to meet climate action goals<sup>35</sup>. In 2021, the value of carbon credits traded exceeded \$1 billion<sup>36</sup>, and further expansion is expected. **(3) The Federal Renewable Fuel Standard (RFS2) price premium for RNG.**



Without incentives, methane derived from biogas typically sells as compressed RNG for a modest \$4 per Dth<sup>37</sup>. In 2014, the EPA designated RNG from cellulosic sources (including landfills and manure) eligible for RFS2 D3 (cellulosic) Renewable Identification Numbers (RINs), which in 2022 are worth an additional \$25 per Dth (#3.12 per gallon gasoline equivalent).

This pilot project will prove the integration of grassy feedstocks, technologies and markets, and determine processes to expand digester profitability to small-to-midsized farms in the US that may or may not raise or produce livestock. The overall vision for Horizon II is to incentivize the planting of **100 million acres of cover crops and 30 million acres of native grassland** in the continental United States by 2040. Through integration of Horizon I and II, this climate-smart commodities partnership is poised to deliver significant revenue and CO<sub>2</sub>e benefits for US agriculture when deployed nationwide (Table 1). Together, the Horizon I and II systems will be extended and tailored to other agricultural commodities (i.e., dairy, poultry) and regions of the country once fully developed, deployed, and verified through this project.

**Table 1.** Projected annual benefits of the Horizon I and Horizon II climate-smart systems when deployed nationwide in the US, expressed as dekatherm (Dth) production, diesel gallons displacement, and CO<sub>2</sub>e reductions\* per year.

Metrics	Horizon I: Livestock-based		Horizon II: Crop-based	
	Hog Manure	Dairy Cow Manure	Cover Crop Biomass	Prairie Biomass
Raw Feedstocks	70 million hogs/y produce ~35.8 billion gallons/y manure, at 8% dry matter	10 million dairy cows/y produce ~36.0 billion gallons/y manure, at 25% dry matter	100 million ac cover crops yielding 2 dry tons/ac/y on average, harvested annually	30 million ac prairie yielding 2.8 dry tons/ac/y on average, harvested every other year
Million Dth RNG Produced Annually	39	139	1,325	280
Percent of Total Energy Produced	2%	8%	74%	16%
Billion Diesel gallons per year displacement	0.3	1.0	9.5	2.0
Expected Carbon Intensity Score of Projects	-400	-250	25	40
Million metric tons of CO <sub>2</sub> e reduction	18	63	76	13
Value of a Dth of RNG	\$100	\$73	\$36	\$35
Total Gross revenue of RNG <i>in billions</i>	\$3.9	\$10.2	\$46.8	\$9.8
*As calculated by RAE. CO <sub>2</sub> e associated with changes in agroecosystem management are not included.				

The overall expected gross energy and gross revenue generated by the combined Horizon I and Horizon II projects, when deployed at a nationwide scale, adds up to 1.8 billion Dth and \$70.7 billion per year. Energy generated can displace the equivalent of 12.8 billion gallons of diesel fuel from consumption, with a CO<sub>2</sub>e of 170 million tons, per year. The \$70.7 billion per year reflects new revenue generation from new agricultural commodities located in rural America.

***Additional new on-farm revenue generation of \$1.2 billion per year through carbon credits and \$4.9 billion per year through biomass harvest is expected. The cover crops and native prairie grasses incentivized by Horizon II are expected to store carbon and reduce emissions by an additional 50 million metric tons and 30 million metric tons of CO<sub>2</sub>e per year,***

*respectively, based on conservative estimation (15% below the COMET-Planner<sup>38</sup> output), through changes in cropping systems management and land use. These carbon storage and emissions reductions are equivalent to avoiding the annual consumption of 7.9 billion gallons of diesel fuel.* Cover cropping and prairie reconstruction will further reduce the nutrient loss from farm fields by 50-90%. Connecting these acres in a strategic way along our rivers and streams will provide water quality benefits while also minimizing erosion and flooding which costs the US over \$5 billion in losses annually<sup>39</sup>. The positive impacts on wildlife habitat will also be substantial, including for the critically listed monarch butterfly, other pollinators, and grassland birds<sup>12,13,20</sup>.

Project partners further anticipate that this project will **improve resilience to seasonal climatic variability**, including the more frequent, intense precipitation events and droughts experienced in the target region. Increasing the spatial extent of native prairie grasses, sedges and forbs, and cover crops will create **more habitat for wildlife**, including grassland birds and pollinators. Reducing the spatial extent of corn/soybean production on marginal and vulnerable croplands will reduce stressors on species that are vulnerable to climate change and improve their potential for adaptation to a rapidly changing climate.

Project partners will replicate and transfer innovations from this pilot project to farms throughout Iowa and Missouri after the successful completion of the grant, scaling up the next generation of methane digesters and initially transforming pork, corn, and soybean supply chains, followed by the inclusion of dairy and beef supply chains. Farmers participating in the Horizon II project will be adequately incentivized to maintain cover crops and prairie through carbon credit and RNG markets, eliminating the need for additional public sector funding beyond initial cost-share.

### C. APPROACH

**GOAL 1 - Implement climate-smart food, feed, fuel production practices, activities, and systems by introducing a novel, resilient, and reliable source of renewable energy from cover crops and restored prairie that provides significant reductions in CO<sub>2</sub> and other emissions, while improving soil health, clean water, flood control, and habitat for native wildlife (lead organization underlined)**

Objectives	Expected Deliverables	Contributors
1.1 - Assess subfield profitability and GHG emissions for corn-soybean systems	5.1 million ac with subfield assessment, one-on-one consulting for farmers who enroll in the pilot project	<u>ISU</u> , RAE,
1.2 - Establish markets to support cover crops and grassland restoration on marginal corn and soybean croplands	39,175 acres of cover crops and 41,850 acres of prairie established with CO <sub>2</sub> e reductions of 490,203 metric tons	<u>RAE</u> , Smithfield Foods,
1.3 - Pilot anaerobic digestion of herbaceous feedstocks on livestock farms to produce RNG	Digest 15.3 dry tons/day (5,500 dry tons/y) of grassy biomass in Sievers project area for 54,000 Dth/y; data and lessons learned for application during scale up	<u>RAE</u> , Sievers Family Farms
1.4 - Pilot ammonia concentration to produce biofertilizer	1 commercial biofertilizer plant producing 276-427 tons/y of concentrated ammonia, with avoided emissions of 506,907 metric tons CO <sub>2</sub> e/y; data and lessons learned for application during scale up	<u>RAE</u>



These objectives will be met by following the NRCS practices standards outlined in the tables below, with the exceptions indicated. If different tactics are required during grant execution, USDA must authorize any change request.

**Climate-Smart practices under this grant shall be limited to the following practices:**

<b>NRCS Practice Code (if applicable)</b>	<b>Practice Name</b>
645	Upland wildlife habitat management
590	Nutrient Management
340	Cover Crop
327	Conservation Cover

All practices applied under this grant will follow NRCS practice standards unless noted below:

<b>Practice Name</b>	<b>Alternative Practice Standards</b>
<ul style="list-style-type: none"> <li>Cover Crop – Conservation Practice Standard (CPS) 340</li> </ul>	<p>Our project proposes a minor deviation from the NRCS cover crop standard:</p> <ul style="list-style-type: none"> <li>Cover crops will be harvested for energy production, so cover crops species selection and rates and dates of cover crop seeding may be adjusted to optimize biomass production and energy potential.</li> <li>The project will select and utilize cover crop species that maintain the objectives of the cover crops practice standard (i.e. soil conservation, soil health and organic matter, water quality, carbon sequestration, weed suppression, reduced compaction, soil moisture), while improving environmental performance and providing ecosystem services and will not compromise the purpose of the cover crop standard.</li> </ul>
<ul style="list-style-type: none"> <li>Conservation Cover – Conservation Practice Standard (CPS) 327</li> </ul>	<p>Our project proposes a minor deviation from the NRCS conservation cover standard:</p> <ul style="list-style-type: none"> <li>Periodic cutting and removal of biomass will occur for energy production.</li> <li>Harvest will not occur during the primary nesting seasons in Missouri</li> </ul>

	<p>(May 1 – July 15) and Iowa (May 15 – August 1).</p> <ul style="list-style-type: none"> <li>• Pollinator forage, habitat, and migration will be accounted for.</li> <li>• The purpose and objectives of the conservation cover practice standard to reduce soil erosion and sedimentation, enhance wildlife habitat, and improve water quality will not be compromised.</li> <li>• Conservation cover is utilized to establish “prairie strips” through EQIP. Prairie strips are recognized to have disproportionate ecological benefits.</li> </ul> <p>Prairie strips are also established through CRP (CP-43). The project will optimize wildlife habitat, soil conservation, and water quality, in addition to renewable energy potential, so the statutory purposes of CRP will not be compromised.</p>
--	---

### **Objective 1.1 - Assess subfield profitability and GHG emissions for corn-soybean systems**

Foresite is an economic assessment tool developed by ISU based on a collection of data from public sources on land use, soils, and economics and integration with APSIM, the Agriculture Production Systems sIMulator, a process-based agricultural model, to formulate yield predictions for corn, soybeans, cover crops, and perennial biomass. Foresite links economic costs and returns of crop production with process-based model simulations net primary productivity, yield, hydrology, GHG emissions, soil carbon, and nutrient retention<sup>33,34</sup>. Subfield predictions for broad geo- graphic areas are made based on publicly available data and the APSIM model. Predictions are fine-tuned using actual multi-year management and yield data provided by farmers. Subfield research by the team and others has found that corn and soybean are not consistently profitable over substantial areas of the Corn Belt due to stable low yields or unstable yields<sup>33,40</sup>. This objective will provide updated assessments based on real-time input cost and market data. **Task 1.1.1:** Conduct subfield assessment for yield, profitability, and environmental performance on 5.1 million acres in the pilot project region to inform project outreach efforts using Foresite. Overall practices to be modeled for annual crop fields include improved nitrogen fertilizer management, no-till, and cover crops. **Task 1.1.2:** Communicate opportunities to spatially integrate prairie as a biomass crop within annual crop fields to meet financial and ecosystem service goals through subfield profitability analysis to project partners and participating farmers. **Task 1.1.3:** Conservation agronomists employed by RAE and a contractor will provide one-on-one consulting for farmers enrolling in the pilot program and work with ISU to fine-tune Foresite predictions for farmers' operations.

### **Objective 1.2 - Establish markets for cover crops and grassland restoration on low profit corn and soybean croplands**

**Task 1.2.1:** The team will work together to recruit farmers to the project. Smithfield Foods already works closely with corn and soybean farmers in its supply chain to promote climate-smart practices. This grant will provide needed funding to fairly compensate farmers, including small and beginning farmers, to transition their operations and enter the carbon market and the newly created market for grassy biomass. As detailed in Objective 3.1, a wide variety of methods will be used to promote climate-smart practices and the new climate-smart commodity system. **Task 1.2.2:** Conservation agronomists employed by RAE and a contractor will provide technical assistance to farms to support their transition to climate-smart practices, including 39,175 acres of cover crops and 41,850 acres grassland and prairie restoration for approximate CO<sub>2</sub>e reductions of 490,203 metric tons over the life of the project. This estimate considers scaling up of practice adoption over the 5 years of the project and conservative interpretation (15% below) of COMET-Planner<sup>38</sup> CO<sub>2</sub>e output. The team will target row crop acres within counties and watersheds that overlap with Smithfield Foods production territories and anticipated investment in digesters. Farmers who enroll in the program will be reimbursed for their seed expense of up to \$30 per acre and seeding costs of up to \$30 per acre to transition to cover crops. Farmers who participate in the prairie restoration project will receive a \$160 per acre land rental payment for establishing the prairie, along with reimbursement for the prairie seed, planting, and establishment management costs paid by the grant; The participating farmers will also receive \$20-22 per ton of grassy biomass delivered. The participating farmers may also be eligible to receive \$15 per carbon credit generated (*see section on Objective 2.1 for measurement, recording, and verification procedures*). The conservation agronomists have backgrounds in either conservation, agronomy, or a related field, and will interface with producers on the farm to help implement the climate-smart practices and address questions or issues that arise with the management of the practices. These staff also interface with USDA-

NRCS to develop environmental assessments to meet National Environmental Policy Act (NEPA) requirements and check producers' highly erodible land and wetland compliance status to ensure producer eligibility. Producers and landowners will benefit from market incentives by



generating CO<sub>2</sub>e credits for carbon sequestration and GHG emissions reductions from avoided N<sub>2</sub>O emissions resulting from avoided fertilizer applications, reduced N<sub>2</sub>O emissions from improved fertilizer management, reduced methane emissions from manure, and carbon sequestration from prairie strips and cover crops.

**Task 1.2.3:** In addition to leveraging the vicinity of the pilot facilities (Fig. 2), project partners will be promoting expanded adoption of multiple climate-smart agriculture and forestry (CSAF) practices (i.e., fertilizer management, no-till, cover crops, prairie strips, conservation cover, contour buffers, filter strips, field borders, etc.) throughout Iowa and Missouri to facilitate the expansion of Horizon II facilities both within and following the grant period (facility costs are not included in the grant budget but will be paid for with private capital). These additional acres in Iowa and Missouri beyond the pilot project farms will not be part of the project's carbon program and are outside the scope of the project's financial assistance budget for producers and landowners, so they will be eligible for state and federal cost share dollars through USDA programs such as the Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program (CSP), Conservation Reserve Program (CRP), and Iowa and Missouri state programs. Producer and landowner outreach in Iowa and Missouri will continue throughout the project but will be ramped up in Years 4-5 to raise awareness in advance of replicating Horizon II after the successful completion of the grant-funded project.

### **Objective 1.3 - Anaerobic digestion of herbaceous feedstocks to produce RNG**

**Task 1.3.1:** The project will incentivize the harvest of grassy biomass by farmers participating in the project to provide feedstock for generating RNG at the Sievers pilot facility in Eastern Iowa. Farmers will be paid \$20-22 per delivered ton of biomass. The Sievers Farm currently includes two Horizon I anaerobic digesters that digest a combination of cattle manure and bedding, along with food waste. In 2023, an additional digester dedicated to grassy feedstocks will come online, supporting the Horizon II system. The cost of digester and associated gas collection, cleaning, and injection infrastructure are paid for by RAE separately from the USDA grant.

**Task 1.3.2:** Digestion of grassy biomass to generate RNG from Horizon II digester at the Sievers facility. The Horizon II project will require grassy biomass from 2,700 acres of cover crops or 5,500 acres of restored prairie grassland to operate efficiently at 15.3 dry tons per day (5,500 dry tons per year) of grassy biomass. Biomass from cover crops and prairie strips will be digested in equal proportions. A greater number of acres of prairie is needed because it will be harvested every other year, whereas cover crops will be harvested annually.

RAE is providing cost-share to research, develop, and fine-tune RNG production at the Sievers facility. When fully operational, gas generated by the combined Horizon I and II systems at this facility is expected to reach 95,000 Dth per year, with 41,000 Dth per year generated by the manure-based system and 54,000 Dth per year generated by the grassy biomass-based system. Lessons learned will be applied to future facilities. Data from the pilot Sievers Farm facility and surrounding croplands will be used to improve RNG production from grassy feedstocks and minimize operating costs, making the integration of Horizon II system at existing and new Horizon I facilities more lucrative.

### **Objective 1.4 - Pilot ammonia concentration to produce biofertilizer**

**Task 1.4.1:** Develop and implement technologies to reduce GHG emissions through biofertilizer production. Biofertilizer production is a major component of the Horizon II climate-smart system. This pilot effort will be led by RAE at Smithfield's Whitetail Farm near Unionville, Missouri, where RAE/Monarch already has a commercial anaerobic digester in operation. Valuable nutrients will be captured and concentrated into an organic liquid fertilizer



Because this pilot facility is located at Smithfield's Whitetail Farm, effluent water from livestock operation will be cleaned to a veterinary standard of use for re-use as drinking water by the hogs. The biofertilizer can be reapplied to the soil to deliver crucial nutrients to crops. The pilot biofertilizer plant will be designed to produce 276-427 tons per year of concentrated ammonia, with estimated avoided emissions of 506,907 tons CO<sub>2</sub>e per year. Data from the pilot Whitetail Farm facility will be used to improve fertilizer production and minimize operating costs, making the fertilizer more competitive in organic markets. Lessons learned will be applied to future Horizon I and II facilities. Once deployed at scale, organic fertilizer from swine farms could displace other conventional, chemical fertilizers.

**GOAL 2 – Transparently measure, monitor, verify associated carbon and greenhouse gas – approach (lead organization underlined)**

Objectives	Expected Deliverables	Contributors
2.1 - Measure, record, and verify (MRV) climate-smart production <u>practices</u> on farmers' fields in support of the carbon programs	1 data management system /database with number, location, and acres of climate-smart practices, real-time and on-demand reporting of practice acreage, estimated, verified carbon credits	<u>Contracted</u>
2.2 - Measure, record, and verify changes in CO <sub>2</sub> e associated with the Horizon II climate-smart commodity <u>system</u> compared to the conventional baseline	1 data management systems /database supporting agricultural commodity production system evaluation, 775 farmers engaged in nitrogen-rate trials, data on yield and maximum return to nitrogen for corn/soybean cropping systems grown with cover crops, data on prairie establishment, data on GHG emissions and soil organic carbon storage, 15 quarterly, 4 annual, and 1 final reports on practice acreage, estimated, verified carbon credits and climate-smart commodity production system evaluation	<u>ISU</u> , Mizzou
2.3 - Recommend improvements climate-smart practice implementation and carbon program administration in support of scale up	Crop, digester, supply chain, and carbon credit MRV system analyses, management guidelines, technical manuals, 4 annual reports, 1 final report	<u>ISU</u> , Mizzou,

**Objective 2.1 - Measure, record, and verify (MRV) climate-smart production practices on farmers' fields in support of the carbon program**

The Horizon II carbon program will be administered by a contractor which follows a multi-step MRV protocol that includes soil sampling and modeling. A contractor will sample soils on 10% of enrolled fields every year, and the sampling is repeated every five years (if funded by project partners after the conclusion of the grant). The fields selected for sampling will be chosen at random. Results of the soil sampling are used to supplement and ground truth modeled soil carbon accumulation data. The platform also has capabilities to manage farmer contracts and payments. Customized reports, forms, and workflows will be available for RAE assessment real-time and on-demand after project initialization. **Task 2.1.1:** Three soil sampling areas, one area in each of the three predominant soil types, will be selected in each field designated for soil organic carbon (SOC) verification using a GIS script to position soil sampling areas. The selected soil sampling areas will be moved away from waterways, historically flooded, and other compromised or nontypical areas. **Task 2.1.2:** Sample collection avoids fields that have been recently fertilized or applied with manure. A composite sample of 12 individual soil cores, positioned within the 20-ft square soil sampling area, is collected from a depth of zero to 12 in. The composite soil samples will be shipped to certified laboratories for soil organic carbon analyses. **Task 2.1.3:** To quantify soil organic carbon storage (tons/acre) and detect changes over time, measurements of soil bulk density (weight of dry soil per unit of soil



volume) are needed. Soil bulk density samples will be collected from all fields selected for verification.

**Task 2.1.4:** The contractor will provide quantification services using two agricultural-based peer-reviewed environmental models, **COMET-Farm** and the **Nutrient Tracking Tool (NTT)**. The tools will be linked to the farmer enrollment platform. Both tools will use detailed spatially explicit field-level data on climate, soil, and hydrological conditions to estimate, report, and quantify nitrogen, phosphorus, and CO<sub>2</sub>e outcomes. **Task 2.1.5:** SWOF utilizes remote sensed products from the USDA to backfill field level cropping system data beyond what is provided by producers. An imagery service provider will be selected to complement USDA data by providing field boundary detection technology and to streamline the field inspection process by classifying current field management attributes such as cover crop/no cover crop and tillage/no-tillage.

**2.1.6:** Contractor staff will visit prioritized fields to document crop type, tillage, residue levels, presence of cover crops, and other information. The field visits occur in the fall or spring of each year when conservation practices such as cover crops and no-till are visible. Photos and field notes are taken during the inspections, and all data is stored in a data management system and tied directly to each field's data record.

## **Objective 2.2 - Measure, record, and verify changes in CO<sub>2</sub>e associated with the Horizon II climate-smart commodity system compared to the conventional baseline**

Because the team is developing a substantially new commodity production system, field data to support evaluation of the value chain and farmer management across conventional corn and soybean crops with novel biomass crops are sorely lacking. **Task 2.2.1:** ISU and Mizzou will work through their substantial Extension networks to conduct 75-80 field trials each year on nitrogen and cover crop management to identify the optimum nitrogen fertilizer rate. ISU and Mizzou will conduct scientifically robust, replicated plot nitrogen fertilizer rate trials on 75-80 farms every year. Farmers' historical yield data will be used to locate plots in homogenous areas of historical yield level (both high and low) to understand how best management practices for nitrogen fertilizer in cover crop systems vary at a subfield scale. In each trial, we will collect and summarize agroecosystem data on yield, soil carbon and nitrogen, and soil health. Data will be incorporated into models (APSIM, GREET) toward generating improved information on agroecosystem GHG emissions and soil carbon storage, and supply chain management. The entire geography and cropping systems of each state will be covered during the project. **Task 2.2.2:** For prairie established to supply the Sievers RNG facility, collect data on prairie establishment, biomass production, changes in soil organic carbon and GHG emissions. **Task 2.2.3:** Evaluate GHG emissions during harvest, transport, and storage of cover crop and prairie biomass supplying the associated Sievers RNG facility. **Task 2.2.4:** Changes in CO<sub>2</sub>e across the entire Horizon II system will be modeled using a combination of APSIM and GREET and compared to baseline conventionally managed corn and soybean commodities.

## **Objective 2.3 - Recommend improvements in climate-smart practice implementation and carbon program administration in support of scale up**

Project partners already have substantial experience tracking climate-smart commodities through supply chains. RAE works closely with Element Markets on tracking RNG to qualify for LCFS and EPD RIN credits. Smithfield Foods already tracks emissions throughout their supply chain. The contractor will have credible MRV and supply chain tracking services for carbon credit insets. ISU has experience investigating blockchain to track climate-smart corn and soybean



commodities (NSF Award 1924178). In the final year of the grant, ISU and Mizzou will conduct an in-depth analysis of MRV data and processes associated with the pilot.

**Task 2.3.1:** Determine how the MRV systems supporting carbon markets and the Horizon II climate-smart commodity system can be made more stable, efficient, credible and thus cost effective; **Task 2.3.2:** Identify practices and systems configurations that result in the largest

**GOAL 3 – Provide equitable access to new positions, markets, products, and value chains and allow for an inclusive rural economy of the future (lead organization underlined)**

Objectives	Deliverables	Contributors
3.1 - Communicate the value chain to diverse audiences	1 website, engagement through 6 social media platforms, 50 videos, 260 podcasts, 117,000 radio ads, 10 magazine publications, at least 50 instances of paid and earned media, 50+ field days, a digester training module for at least 114.4 million impressions, 4 annual reports, 1 final report	<u>RAE</u> , working with all project partners and supporters
3.2 - Leverage project organizations and partners to create new opportunities for underserved communities	2 leadership development programs, 2 apprentice programs, consulting sessions, 4 needs assessments, 15 learning circles, 16 workshops, Extension materials translated to Spanish, field trips with mentoring circles for 6000 students, 100 student internship positions, 4 annual reports, 1 final report	<u>ISU</u> , CDI, IAWA, RAE, Smithfield Foods, Mizzou, Veterans in Ag
3.3 - Evaluate equitable access to historically underserved communities, impacts on farmers profitability, and impacts on other commodities and rural communities	Data on in-person and online event participation, online information usage, 3 survey instrument/protocol, 3000 farmer surveys, 1 micro- and macroeconomic, 8 surveys and 2 focus groups, 4 with students from historically underrepresented communities, 50 in- depth interviews, 2000 collaborator/ participant surveys, 4 annual reports	<u>ISU</u> , Mizzou

### **Objective 3.1 - Communicate the value chain to diverse audiences**

The team will engage diverse audiences, with focused communications toward farmers and farmland owners and traditionally underserved agricultural communities through traditional and modern means of communication throughout the grant period. A multipronged approach is needed to reach diverse audiences (Table 2).

**Prairie Prophets** is a multifaceted branding platform designed to deliver outreach and education to farmers and landowners. Education on how farmers and landowners are compensated for maintaining climate-smart practices through the sustained generation of carbon credits and by harvesting cover crops and prairie biomass for RNG production is the central theme of the platform<sup>41</sup>. Special emphasis is given to showcasing opportunities for historically underserved producers to become part of the climate-smart agriculture movement.

Each Horizon II partner has their own social media channels, digital marketing campaigns, and websites through which generated digital marketing assets will be widely shared. Substantial opportunities for outreach and communications exist within ISU and Mizzou Extension services and trade organizations. University Extension programming will provide independent technical information on climate-smart agricultural practices for cropland management, harvest/transport/storage systems for biomass crops, anaerobic digestion, and financial and legal aspects of carbon and biomass markets. A digester training module will be developed by ISU Extension and digester operators' short courses will be held in Years 2 and 4 of the grant.



**Table 2.** Tasks, outputs, and estimated impressions for Horizon II communications campaign.

Tasks are to create and/or deploy...	Outputs	Estimated Impressions
<b>3.1.1:</b> Website	A stand-alone platform designed as the host of multiple content initiatives	Unknown

<b>3.1.2: Media</b>	Curated Facebook, Instagram, Twitter, YouTube, TikTok, LinkedIn accounts	Unknown
<b>3.1.3: Video Series</b>	50+ 22-min internet-based episodes on Prairie Prophets	Unknown
<b>3.1.4: Podcast Series</b>	260 podcast episodes	Unknown
<b>3.1.5: Magazine</b>	10,000 copies printed of each of the 10 issues of the magazine; additional electronic distribution	+100,000
<b>3.1.6: Radio Advertising (paid)</b>	Weekly 60-s radio ads aired 5-times per week for 52 weeks per year distributed to 90 stations in the Brownfield Ag Radio network	9.2 million in Iowa and Missouri
<b>3.1.7: Print and Digital Advertising (paid)</b>	180 advertisements in Progressive Farmer, Successful Farming and/or Farm Journal	105.1 million
<b>3.1.8: Field Day</b>	50+ on-farm field days	2,250
<b>3.1.9: Digester Training Module</b>	2 short courses on digester operations	60

### **Objective 3.2 - Leverage project organizations and partners to create new opportunities for underserved communities**

Effective engagement of traditionally underserved communities requires additional strategies beyond what is outlined in Objective 3.1. The project team will work with farmers, livestock producers, landowners, and supply chain partners, including early adopters of practices and historically underserved producers, to ensure equitable access to the opportunities offered by the low-carbon agriculture of the future. Specific programming will: **Task 3.2.1:** Support two leadership development programs, one within RAE and one within Smithfield Foods, to support diversity, equity, and inclusion goals; **Task 3.2.2:** Expand and offer two apprenticeship programs and one-on-one consulting with Veterans in Agriculture to provide instruction and on-the-job training in production agriculture and/or in agribusiness; **Task 3.2.3:** Expand and offer ISU Extension and outreach programs (needs assessments, workshops, webinars, field days) specifically designed to serve beginning, Hispanic, women, and veteran farmers involved in agricultural supply chains, including hands-on experiences, also supported by CDI; **Task 3.2.4:** Expand IAWA's work with Women Land and Legacy to host learning circles for women farmers and farmland owners; Future Farmers of America; numerous agricultural associations and other organizations that serve small farmers, and Veterans in Agriculture;

IAWA will support the work of various organization such as USDA NRCS' programs to reach women farmers and farmland landowners; Future Farmers of America; agricultural associations and other organizations that serve small farmers; and Veterans in Agriculture through communications and outreach efforts;

and, **Task 3.2.5:** Expand educational programs and internships for underserved youth through ISU's Science Bound.

A project coordinator will be hired to coordinate the DEI components of this project together with Dr. Katherine Hartmann at ISU to help with coordination and communication. Enhanced communication and access to information is needed because many of the programs, much of the content, and the internship and job opportunities created through this project will affect many historically underserved communities mentioned.

We will address the five disparities that Justice 40 highlights by targeting information for highly impacted and traditionally underserved communities, creating educational opportunities for adults, undergraduate students, veterans, and beginning, women, small, and Latinx farmers that build community capacity and allow them to create climate-smart solutions.

**Objective 3.3 – Evaluate equitable access to historically underserved communities, impacts on farmers profitability, and impacts on other commodities and rural communities**

This project will use multiple methods to evaluate access, participation, and impacts on communities. **Task 3.3.1:** Participation in meetings, seminars, and webinars will be evaluated



using descriptive statistics (number of attendees, participant organizational affiliation, demographics, number of hours of contact); field days will be evaluated by Extension team members using an established four-step protocol, and use of published materials through web analytics. **Task 3.3.2:** Farmers and farmland owners knowledge of and willingness to participate in the project and its subsequent scale up, including expected impacts on their profitability, will be evaluated through a survey (n=3000) in Year 2. Information will be used to refine estimates of impacts of project on farmer profitability and the national economic impacts of voluntary and mandatory carbon schemes including their interaction with already existing ecosystem services programs. The national economic impacts of voluntary and mandatory carbon schemes including their interaction with already existing ecosystem services programs will be quantified. **Task 3.3.3:** Student participants will complete pre-/post-assessments to evaluate their host experiences and the development of ASTEM identity. The progression of student work, community impact, and understanding of scientific content will further be assessed using experimental logs and posters to code the ideas. The undergraduate intern program will incorporate an assessment loop where students regularly meet with their program/research mentors to evaluate professional development. Additional evaluation includes self-efficacy assessment (confidence, wherewithal) for participants.

#### **D. SUSTAINING THE NEW, CLIMATE-SMART SYSTEM BEYOND THE GRANT**

**Our approach to sustaining the system beyond the period of the grant is threefold. (1)** As the nation's largest pork producer, Smithfield Foods is connected with 1 million acres of land in corn and soybean production. In September 2020, Smithfield pledged to be carbon negative by 2030. Smithfield is leveraging assets and relationships across its supply chains to meet this goal and is already demonstrating climate-smart practices such as no-till, prairie strips, and larger areas of prairie reconstruction on the land it owns in northern Missouri. Smithfield is further committed to working with farmers in its supply chain to implement the climate-smart practices that are the focus of this proposal. **(2)** In the short term, USDA funds from this grant will support agronomic technical service to farmers by university and nonprofit partners; fairly compensate producers for changes in production costs and risks to yield as they transition to climate-smart production practices; and develop a carbon program to compensate farmers for generating carbon credits. **(3)** In the long-term, the farmers will be compensated for maintaining climate-smart practices through the sustained generation of carbon credits and by harvesting cover crop and prairie biomass to generate RNG. Carbon credits generated through the current project will be sold as insets. Together, the carbon credit and biomass markets kickstarted through this USDA grant offer a substantial new revenue opportunity for producers that is well integrated with existing commodity supply chains for corn, soybean, livestock, and renewable natural gas.

#### **E. PROJECT MANAGEMENT**

RAE, as the prime recipient and lead institution on this proposal, will facilitate communication and activities across project partners and supporters. The grant will be led by Bryan Sievers, as Director of the project and Will Higgins as the Grant Manager. Together, Mr. Sievers and Mr. Higgins will provide the point of contact and liaison for partner organizations, coordinate implementation, evaluation, and assessment reporting. RAE's Chief Executive Officer, Rudi Roeslein, will continue to provide input and advice to Mr. Higgins and Mr. Sievers and participate in the **Executive Committee** for the grant. . Each **Executive Committee** member has substantial leadership experience, and together the group is responsible for overall project management and coordination, budget reallocations, and building/maintaining external relationships (Fig. 3). Brandon Butler (RAE) will serve as Communications Director. Ron Murray (RAE), Finance Director, will ensure proper financial management of the grant.

Kraig Westerbeek (Monarch Bioenergy) will provide leadership on partnerships, particularly within the swine sector. Sean McMahon (IAWA) will provide leadership on partnerships, particularly within the corn, soybean, and environmental sectors, and advise the project and partners regarding strategic communications. Dr. Lisa Schulte Moore (ISU) will provide leadership on monitoring and evaluation. Dr. Katie Hartmann (ISU) will provide leadership on DEI.

Together, the **Executive Committee** will annually evaluate progress according to the program logic model (*see Other Attachments*) and deliverables tracking, based on a project-wide reporting dashboard to be developed for the project. Input from Dr. Vikram Koundinya (University of California-Davis), the **External Evaluator**, will be used to assess and rebalance the portfolio as needed.

**Project Evaluation** will include formative evaluation using multiple methods to provide a positive feedback loop for continual improvement to programming in each year of the grant and summative evaluation in the final year. Dr. Koundinya will conduct interviews with 50 team members annually regarding program efficacy and progress toward meeting goals and objectives. He will provide annual reports to the team to ensure feedback loops between and alignment across the project's activities, management structures, and outcomes. Mid-project (Year 3) and end-of- project (Year 5) survey (n=1,000 in each year) and supporting qualitative interviews (n=25 in each year) of project collaborators and participants will additionally be developed, administered, analyzed, and reported. A final summative report will be provided in Year 5.

Organizations comprising the team have a long-standing track record, a decade or longer in most cases, of successfully collaborating with each other, including on large and ambitious projects (*see Background section*). The **Executive Committee** will work together to find solutions to any conflicts that arise during this project. Should the **Executive Committee** not be able to come to a consensus solution on their own, the **External Evaluator** will be asked to mediate. If the conflict persists, the **Executive Committee** will ask USDA to provide guidance.

The **Overall Team** will meet face-to-face for an initial kickoff meeting, face-to-face annually thereafter, and monthly on a virtual platform to maintain a shared vision and efficient workflow, plan program-wide initiatives, address barriers, share methods, report results, and ensure progress toward objectives and deliverables. Additional virtual and face-to-face sub team meetings will be held as needed. Project-wide digital files will be shared among team members using a secure cloud-based storage repository.

## CLARIFICATIONS

RAE was notified on March 1, 2023 that the match funding proposed by RAE/Monarch for \$213 million, primarily consisting of costs related to building out infrastructure and anaerobic digesters that co-digest manure and climate smart biomass feedstocks, which creates new and additional markets for the biomass produced by climate smart practices, would not be allowed to be considered match as part of the Partnerships for Climate-Smart Commodities grant program. The Horizon II project and RAE/Monarch intend to make the substantial investment needed to provide a market for the climate smart commodities produced by the funded practices and beyond, regardless of if this is considered match.

RAE was notified on August 29<sup>th</sup> that Biostar would not be able to participate in the project as planned. RAE is

the industry leader in engineering, designing, manufacturing, constructing, and operating anaerobic digester and manure management facilities across the US. RAE has done substantial investigation in several nutrient recovery technologies and was already in preparation to do a substantial amount of the construction, commissioning, and operation in partnership with a technology provider. RAE has the capability to execute this project wholly as part of its own scope, and will utilize relationships in the industry and consult with technology providers as needed.



## F. REFERENCES

- <sup>1</sup> USDA National Agricultural Statistics Service. 2022. Farm labor: number of farms and workers by decade, US. Available at: [https://www.nass.usda.gov/Charts\\_and\\_Maps/Farm\\_Labor/fl\\_frmwk.php](https://www.nass.usda.gov/Charts_and_Maps/Farm_Labor/fl_frmwk.php).
- <sup>2</sup> Morton, L. W., Hobbs, J. & Arbuckle, J. G. 2013. Shifts in farmer uncertainty over time about sustainable farming practices and modern farming's reliance on commercial fertilizers, insecticides, and herbicides. *J. soil water Conserv.* 68, 1–12.
- <sup>3</sup> Lobao, L. & Stofferahn, C. W. 2008. The community effects of industrialized farming: Social science research and challenges to corporate farming laws. *Agric. Human Values* 25, 219–240.
- <sup>4</sup> Tegtmeier, E. M. & Duffy, M. D. 2004. External costs of agricultural production in the United States. *Int. J. Agric. Sustain.* 2, 1–20.
- <sup>5</sup> Veenstra, J. J. & Burras, C. L. 2012. Effects of agriculture on the classification of Black soils in the Midwestern United States. *Can. J. Soil Sci.* 92, 403–411.
- <sup>6</sup> Montgomery, D. R. 2012. *Dirt: the erosion of civilizations*, 2nd edition. (University of California Press).
- <sup>7</sup> Donham, K. J. 2010. Community and occupational health concerns in pork production: a review. *J Anim Sci* 88, E102-11.
- <sup>8</sup> Borlée, F. et al. 2017. Air pollution from livestock farms is associated with airway obstruction in neighboring residents. *Am. J. Respir. Crit. Care Med.* 196, 1152–1161.
- <sup>9</sup> Turner, R. E. & Rabalais, N. N. 2013. Nitrogen and phosphorus phytoplankton growth limitation in the northern Gulf of Mexico. *Aquat. Microb. Ecol.* 68, 159–169.
- <sup>10</sup> Pennino, M. J., Compton, J. E. & Leibowitz, S. G. 2017. Trends in drinking water nitrate violations across the United States. *Environ. Sci. Technol.* 51, 13450–13460.
- <sup>11</sup> Spivak, M., Mader, E., Vaughan, M. & Euliss Jr, N. H. 2011. The plight of the bees. *Environ. Sci. Technol.* 45, 34–38.
- <sup>12</sup> Thogmartin, W. E. et al. 2017. Restoring monarch butterfly habitat in the Midwestern US: 'all hands on deck'. *Environ. Res. Lett.* 12, 74005.
- <sup>13</sup> Rosenberg, K. V. et al. 2019. Decline of the North American avifauna. *Science* 366 (6461):120-124.
- <sup>14</sup> Schulte, L. A. et al. 2021. Meeting global challenges with regenerative agriculture producing food and energy. *Nature Sustainability*. Available at: <https://rdcu.be/cDIXD>
- <sup>15</sup> Lynd, L. R. 2017. The grand challenge of cellulosic biofuels. *Nat. Biotechnol.* 35, 912.
- <sup>16</sup> USDA Economic Research Service. 2022. US bioenergy statistics. Available at: <https://www.ers.usda.gov/data-products/us-bioenergy-statistics/>.
- <sup>17</sup> Henderson, O. K. 2020. 'Project Liberty' cellulosic ethanol plant in Emmetsburg closed. *Radio Iowa*. Available at: <https://www.radioiowa.com/2020/10/21/project-liberty-cellulosic-ethanol-plant-in-emmettsburg-closed/>
- <sup>18</sup> Vaneekhaute, C. et al. Closing nutrient loops through decentralized anaerobic digestion of organic residues in agricultural regions: A multi-dimensional sustainability assessment. *Resour. Conserv. Recycl.* 1, 110–117 (2018).

- 
- <sup>19</sup> Angenent, L. T. et al. 2018. Integrating electrochemical, biological, physical, and thermochemical process units to expand the applicability of anaerobic digestion. *Bioresour. Technol.* 247, 1085–1094.
- <sup>20</sup> Asbjornsen, H. et al. 2014. Targeting perennial vegetation in agricultural landscapes for enhancing ecosystem services. *Renew. Agric. Food Syst.* 29, 101–125.
- <sup>21</sup> Abbasi, T., Tauseef, S. M. & Abbasi, S. A. 2012. A brief history of anaerobic digestion and “biogas”. In: *Biogas Energy* 11–23 (Springer).
- <sup>22</sup> Dale, B. E. et al. 2016. Biogasdoneright™: an innovative new system is commercialized in Italy. *Biofuels, Bioprod. Biorefining* 10, 341–345.
- <sup>23</sup> Valli, L. et al. 2017. Greenhouse gas emissions of electricity and biomethane produced using the Biogasdoneright™ system: four case studies from Italy. *Biofuels, Bioprod. Biorefining* 11, 847–860.
- <sup>24</sup> USDA National Agricultural Statistics Service. 2022. 2021 Iowa agricultural overview. Available at: [https://www.nass.usda.gov/Quick\\_Stats/Ag\\_Overview/stateOverview.php?state=IOWA](https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=IOWA)
- <sup>25</sup> Iowa Department of Natural Resources. 2021. 2020 Iowa Statewide Greenhouse Gas Emissions Inventory Report. Available at: <https://www.iowadnr.gov/Portals/idnr/uploads/air/ghgemissions/Final%202020%20GHG%20REPORT.pdf>
- <sup>26</sup> USDA National Agricultural Statistics Service. 2022. 2022 Missouri agricultural overview. Available at: [https://www.nass.usda.gov/Quick\\_Stats/Ag\\_Overview/stateOverview.php?state=MISSOURI](https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=MISSOURI)
- <sup>27</sup> US Environmental Protection Agency. 2022. Greenhouse Gas Inventory Data Explorer. Available at: <https://cfpub.epa.gov/ghgdata/inventoryexplorer/>
- <sup>28</sup> Schulte, L. A., M. Liebman, H. Asbjornsen, T.R. Crow. 2006. Agroecosystem restoration through strategic integration of perennials. *Journal of Soil and Water Conservation* 61:164A–169A.
- <sup>29</sup> Heggenstaller, A. H., Anex, R. P., Liebman, M., Sundberg, D. N. & Gibson, L. R. 2008. Productivity and nutrient dynamics in bioenergy double-cropping systems. *Agron. J.* 100, 1740–1748.
- <sup>30</sup> California Air Resources Board. 2022. LCFS pathway certified carbon intensities. Available at: <https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities>
- <sup>31</sup> Lijó, L. et al. 2017. Eco-efficiency assessment of farm-scaled biogas plants. *Bioresour. Technol.* 237, 146–155.
- <sup>32</sup> Schulte, L. et al. 2017. Prairie strips improve biodiversity and the delivery of multiple ecosystem services from corn-soybean croplands. *Proc. Natl. Acad. Sci.* 114, 11247–11252.
- <sup>33</sup> Brandes, E. et al. 2018. Targeted subfield switchgrass integration could improve the farm economy, water quality, and bioenergy feedstock production. *GCB Bioenergy* 10, 199–212.
- <sup>34</sup> Brandes, E. et al. 2016. Subfield profitability analysis reveals an economic case for cropland diversification. *Environ. Res. Lett.* 11, 014009.
- <sup>35</sup> Schulte Moore, L, J Jordahl (eds). 2022. Carbon science for carbon markets: emerging opportunities in Iowa. CROP 3175. Iowa State University Extension and Outreach, Ames, Iowa. Available at: <https://store.extension.iastate.edu/product/16214>.



- 
- <sup>36</sup> Forest Trends' Ecosystem Marketplace. 2021. 'Market in Motion', State of Voluntary Carbon Markets 2021, Installment 1. Forest Trends Association, Washington, DC.
- <sup>37</sup> US Energy Information Administration. 2022. Natural gas. Available at: <https://www.eia.gov/naturalgas/weekly/>
- <sup>38</sup> USDA Natural Resources Conservation Service and Colorado State University. 2022. COMET-Planner. Available at: <http://comet-planner.com/>
- <sup>39</sup> US National Oceanic and Atmospheric Administration National Severe Storms Laboratory. 2022. Severe weather 101: frequently asked questions about floods. Available at: <https://www.nssl.noaa.gov/education/svrwx101/floods/faq/>.
- <sup>40</sup> Maestrini, B., Basso, B., 2021. Subfield crop yields and temporal stability in thousands of US Midwest fields. *Precision Agriculture*, 22, pp.1749-1767.
- <sup>41</sup> Roeslein Alternative Energy. 2022. Prairie Prophets trailer. Available at: <https://youtube/TG3LZ3revbU>.

**Horizon II Benchmarks with cumulative numbers:****Number of producers involved (contacted, training, field days, etc):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 191, Quarter 4: 384)  
 Year 2 (Quarter 1: 576, Quarter 2: 768, Quarter 3: 960, Quarter 4: 1152)  
 Year 3 (Quarter 1: 1344, Quarter 2: 1537, Quarter 3: 1728, Quarter 4: 1918)  
 Year 4 (Quarter 1: 2111, Quarter 2: 2303, Quarter 3: 2495, Quarter 4: 2687)  
 Year 5 (Quarter 1: 2879, Quarter 2: 3071, Quarter 3: 3264, Quarter 4: 3455)

**Number of producers involved (contracted practices):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 113, Quarter 4: 225)  
 Year 2 (Quarter 1: 338, Quarter 2: 450, Quarter 3: 563, Quarter 4: 675)  
 Year 3 (Quarter 1: 788, Quarter 2: 900, Quarter 3: 1013, Quarter 4: 1125)  
 Year 4 (Quarter 1: 1238, Quarter 2: 1350, Quarter 3: 1463, Quarter 4: 1575)  
 Year 5 (Quarter 1: 1688, Quarter 2: 1801, Quarter 3: 1913, Quarter 4: 2026)

**Number of Historically Underserved producers involved (contracted practices):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 1, Quarter 4: 2)  
 Year 2 (Quarter 1: 3, Quarter 2: 5, Quarter 3: 6, Quarter 4: 7)  
 Year 3 (Quarter 1: 8, Quarter 2: 9, Quarter 3: 10, Quarter 4: 11)  
 Year 4 (Quarter 1: 12, Quarter 2: 14, Quarter 3: 15, Quarter 4: 16)  
 Year 5 (Quarter 1: 17, Quarter 2: 18, Quarter 3: 19, Quarter 4: 20)

Explanation: Estimate number of HU producers encountered will be 1%.  
 We are targeting producers in the project areas and expect the numbers to be limited based on the demographics of the area. We will coordinate with partners to identify any HU producers in the areas. Specific, targeted, HU producer outreach will be conducted as part of tasks 3.2.2, 3.2.3, and 3.2.4.

**Number of Historically Underserved producers involved (contacted, training, field days, etc):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 257, Quarter 4: 517)  
 Year 2 (Quarter 1: 774, Quarter 2: 1031, Quarter 3: 1290, Quarter 4: 1549)  
 Year 3 (Quarter 1: 1806, Quarter 2: 2066, Quarter 3: 2323, Quarter 4: 2581)  
 Year 4 (Quarter 1: 2840, Quarter 2: 3097, Quarter 3: 3354, Quarter 4: 3614)  
 Year 5 (Quarter 1: 3872, Quarter 2: 4130, Quarter 3: 4389, Quarter 4: 4647)

**Number of acres involved (contracted practices):**

Year 1 (Quarter 1: 0, Quarter 2: 306, Quarter 3: 2936, Quarter 4: 7799)  
 Year 2 (Quarter 1: 12661, Quarter 2: 17524, Quarter 3: 22386, Quarter 4: 27249)  
 Year 3 (Quarter 1: 32111, Quarter 2: 36974, Quarter 3: 41837, Quarter 4: 46699)  
 Year 4 (Quarter 1: 51561, Quarter 2: 56423, Quarter 3: 61286, Quarter 4: 66148)  
 Year 5 (Quarter 1: 71011, Quarter 2: 75873, Quarter 3: 80736, Quarter 4: 85293)

**Number of acres involved (yield, profitability, and environmental performance evaluated):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 283333, Quarter 4: 566667)

Year 2 (Quarter 1: 850000, Quarter 2: 1133333, Quarter 3: 1416667, Quarter 4: 1700000)

Year 3 (Quarter 1: 1983333, Quarter 2: 2266667, Quarter 3: 2550000, Quarter 4: 2833333)

Year 4 (Quarter 1: 3116667, Quarter 2: 3400000, Quarter 3: 3683333, Quarter 4: 3966667)

Year 5 (Quarter 1: 4250000, Quarter 2: 4533333, Quarter 3: 4816667, Quarter 4: 5100000)

**Number of head involved (finishing cattle, sows, and wean-finish/grow-finish pigs):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 21550, Quarter 4: 43100)

Year 2 (Quarter 1: 64650, Quarter 2: 86200, Quarter 3: 107750, Quarter 4: 129300)

Year 3 (Quarter 1: 150850, Quarter 2: 172400, Quarter 3: 193950, Quarter 4: 215500)

Year 4 (Quarter 1: 237050, Quarter 2: 258600, Quarter 3: 280150, Quarter 4: 301700)

Year 5 (Quarter 1: 323250, Quarter 2: 344800, Quarter 3: 366350, Quarter 4: 387900)

**Dollars provided to producers:**

Year 1 (Quarter 1: \$0, Quarter 2: \$0, Quarter 3: \$1469889, Quarter 4: \$2939781)

Year 2 (Quarter 1: \$4409670, Quarter 2: \$5879561, Quarter 3: \$7349450, Quarter 4: \$8819341)

Year 3 (Quarter 1: \$10289231, Quarter 2: \$11759122, Quarter 3: \$14975810, Quarter 4: \$18192497)

Year 4 (Quarter 1: \$21409186, Quarter 2: \$24625874, Quarter 3: \$27842563, Quarter 4: \$31059251)

Year 5 (Quarter 1: \$34275941, Quarter 2: \$37492627, Quarter 3: \$40709317, Quarter 4: \$43926005)

**GHG Benefits (Metric Tons of CO<sub>2</sub>e Reduced or Sequestered):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 5650, Quarter 4: 11300)

Year 2 (Quarter 1: 16951, Quarter 2: 22601, Quarter 3: 28251, Quarter 4: 33901)

Year 3 (Quarter 1: 39551, Quarter 2: 45202, Quarter 3: 258689, Quarter 4: 472177)

Year 4 (Quarter 1: 685662, Quarter 2: 899148, Quarter 3: 1112635, Quarter 4: 1326123)

Year 5 (Quarter 1: 1539609, Quarter 2: 1753095, Quarter 3: 1966579, Quarter 4: 2180068)

**New Marketing channels established:**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 3, Quarter 4: 3)

Year 2 (Quarter 1: 3, Quarter 2: 3, Quarter 3: 3, Quarter 4: 3)

Year 3 (Quarter 1: 3, Quarter 2: 3, Quarter 3: 3, Quarter 4: 3)

Year 4 (Quarter 1: 3, Quarter 2: 3, Quarter 3: 3, Quarter 4: 3)

Year 5 (Quarter 1: 3, Quarter 2: 3, Quarter 3: 3, Quarter 4: 3)

**Explanation:**

Leveraging existing, well-developed RNG infrastructure and markets to reduce the barriers faced by climate-smart agriculture for corn and soybean farmers. Tighter coupling between production and processing of biomass by siting methane biodigester technology on farms and at livestock facilities will take advantage of existing infrastructure while improving the efficiency and sustainability of resource use. It will also increase the number of farm outputs for more diverse and stable cash flows.

Co-digestion of sustainably sourced herbaceous feedstocks with manure has the potential to produce resilient, marketable energy products, bioproducts, and biobased chemicals. The inputs (grassy feedstocks) and outputs (RNG, biofertilizer) are compatible with current agricultural systems, yet they produce substantially greater levels of ecosystem services including GHG reductions and carbon sequestration than currently achievable.

**Marketing channels expanded:**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 2, Quarter 4: 2)  
 Year 2 (Quarter 1: 2, Quarter 2: 2, Quarter 3: 2, Quarter 4: 2)  
 Year 3 (Quarter 1: 2, Quarter 2: 2, Quarter 3: 2, Quarter 4: 2)  
 Year 4 (Quarter 1: 2, Quarter 2: 2, Quarter 3: 2, Quarter 4: 2)  
 Year 5 (Quarter 1: 2, Quarter 2: 2, Quarter 3: 2, Quarter 4: 2)

**Explanation:**

*Voluntary carbon markets are rapidly expanding*, with many businesses purchasing carbon insets and offsets to meet climate action goals. In 2021, the value of carbon credits traded exceeded \$1 billion, and further expansion is expected. *The Federal Renewable Fuel Standard (RFS2) price premium for RNG.* Without incentives, methane derived from biogas typically sells as compressed RNG for a modest \$4 per Dth. In 2014, the EPA designated RNG from cellulosic sources (including landfills and manure) eligible for RFS2 D3 (cellulosic) Renewable Identification Numbers (RINs), which in 2022 are worth an additional \$25 per Dth (\$3.12 per gallon gasoline equivalent).

This pilot project will prove the integration of grassy feedstocks, technologies and markets, and determine processes to expand digester profitability to small-to-midsized farms in the US that may or may not raise or produce livestock. The overall vision for Horizon II is to incentivize the planting of 100 million acres of cover crops and 30 million acres of native grassland in the continental United States by 2040. Through integration of Horizon I and II, this climate-smart commodities partnership is poised to deliver significant revenue and CO<sub>2</sub>e benefits for US agriculture when deployed nationwide. Together, the Horizon I and II systems will be extended and tailored to other agricultural commodities (i.e., dairy, poultry) and regions of the country once fully developed, deployed, and verified through this project.

**Measurement tools utilized:**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 11, Quarter 4: 11)

Year 2 (Quarter 1: 11, Quarter 2: 11, Quarter 3: 11, Quarter 4: 11)

Year 3 (Quarter 1: 11, Quarter 2: 11, Quarter 3: 11, Quarter 4:11)

Year 4 (Quarter 1:11, Quarter 2:11, Quarter 3:11, Quarter 4:11)

Year 5 (Quarter 1:11, Quarter 2:11, Quarter 3:11, Quarter 4:11)

**Explanation:**

In each trial, we will collect and summarize agroecosystem data on yield, soil carbon and nitrogen, and soil health. Data will be incorporated into models (APSIM, GREET) toward generating improved information on agroecosystem GHG emissions and soil carbon storage, and supply chain management. The entire geography and cropping systems of each state will be covered during the project.

Soil sampling services on 10% of enrolled fields every year, and the sampling is repeated every five years (if funded by project partners after the conclusion of the grant). The fields selected for sampling are chosen at random using a GIS tool. will provide access to technology to help streamline farmer enrollment and collect the field-level data necessary for quantification and contracting. The platform will be built with standard web best practices. The project will provide quantification services using two agricultural-based peer-reviewed environmental models, COMET-Farm and the Nutrient Tracking Tool (NTT). The project will utilize remote sensed products from the USDA to backfill field-level cropping system data beyond what is provided by producers during the enrollment process. An imagery service provider will be selected to complement USDA data by providing field boundary detection technology and to streamline the field inspection process by classifying current field management attributes such as cover crop/no cover crop and tillage/no-tillage. The project will visit prioritized fields to document crop type, tillage, residue levels, presence of cover crops, and other information. The field visits occur in the fall or spring of each year when conservation practices such as cover crops and no-till are visible. Photos and field notes are taken during the inspections, and all data is stored in the data management system and tied directly to each field's data record.

**Outreach, training, and other technical assistance milestones:**

**Next generation producers involved:**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 620, Quarter 4: 1241)  
Year 2 (Quarter 1: 1860, Quarter 2: 2479, Quarter 3: 3101, Quarter 4: 3720)  
Year 3 (Quarter 1: 4339, Quarter 2: 4960, Quarter 3: 5580, Quarter 4: 6200)  
Year 4 (Quarter 1: 6821, Quarter 2: 7440, Quarter 3: 8059, Quarter 4: 8681)  
Year 5 (Quarter 1: 9300, Quarter 2: 9919, Quarter 3: 10540, Quarter 4: 11160)

**Outreach content created:**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 104, Quarter 4: 209)  
Year 2 (Quarter 1: 313, Quarter 2: 418, Quarter 3: 522, Quarter 4: 627)  
Year 3 (Quarter 1: 731, Quarter 2: 836, Quarter 3: 941, Quarter 4: 1045)  
Year 4 (Quarter 1: 1150, Quarter 2: 1254, Quarter 3: 1359, Quarter 4: 1463)  
Year 5 (Quarter 1: 1568, Quarter 2: 1672, Quarter 3: 1777, Quarter 4: 1881)

**Outreach media impressions (estimate):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 8387995, Quarter 4: 16775988)  
Year 2 (Quarter 1: 25163984, Quarter 2: 33551978, Quarter 3: 41939972, Quarter 4: 50327966)  
Year 3 (Quarter 1: 58715962, Quarter 2: 67103955, Quarter 3: 75491950, Quarter 4: 83879945)  
Year 4 (Quarter 1: 92267938, Quarter 2: 100655934, Quarter 3: 109043928, Quarter 4: 117431922)  
Year 5 (Quarter 1: 125819916, Quarter 2: 134207912, Quarter 3: 142595905, Quarter 4: 150983900)

**Outreach Events (Hosted or Collaborated/Attended):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 12, Quarter 4: 24)  
Year 2 (Quarter 1: 35, Quarter 2: 47, Quarter 3: 58, Quarter 4: 70)  
Year 3 (Quarter 1: 82, Quarter 2: 93, Quarter 3: 106, Quarter 4: 117)  
Year 4 (Quarter 1: 128, Quarter 2: 140, Quarter 3: 152, Quarter 4: 163)  
Year 5 (Quarter 1: 176, Quarter 2: 186, Quarter 3: 198, Quarter 4: 210)

**Training and education content created:**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 0, Quarter 4: 0)  
Year 2 (Quarter 1: 1, Quarter 2: 1, Quarter 3: 4, Quarter 4: 4)  
Year 3 (Quarter 1: 5, Quarter 2: 5, Quarter 3: 5, Quarter 4: 5)  
Year 4 (Quarter 1: 5, Quarter 2: 6, Quarter 3: 6, Quarter 4: 9)  
Year 5 (Quarter 1: 9, Quarter 2: 10, Quarter 3: 10, Quarter 4: 10)

**Demonstrated engagement of major partners:**

Year 1 (Quarter 1: 3, Quarter 2: 6, Quarter 3: 13, Quarter 4: 20)  
Year 2 (Quarter 1: 26, Quarter 2: 32, Quarter 3: 39, Quarter 4: 46)  
Year 3 (Quarter 1: 52, Quarter 2: 58, Quarter 3: 65, Quarter 4: 73)  
Year 4 (Quarter 1: 79, Quarter 2: 85, Quarter 3: 91, Quarter 4: 99)  
Year 5 (Quarter 1: 105, Quarter 2: 111, Quarter 3: 117, Quarter 4: 125)

**Other specific project benchmarks/milestones:**

**Energy Produced (dekatherms, Dth):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 9111, Quarter 4: 18222)  
Year 2 (Quarter 1: 27333, Quarter 2: 36444, Quarter 3: 45556, Quarter 4: 54667)  
Year 3 (Quarter 1: 63778, Quarter 2: 72889, Quarter 3: 196046, Quarter 4: 319203)  
Year 4 (Quarter 1: 442360, Quarter 2: 565516, Quarter 3: 688675, Quarter 4: 811832)  
Year 5 (Quarter 1: 934990, Quarter 2: 1058146, Quarter 3: 1181303, Quarter 4: 1304460)

**Tons of biomass feedstock produced (dry tons):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 4353, Quarter 4: 11961)  
Year 2 (Quarter 1: 19568, Quarter 2: 27176, Quarter 3: 34784, Quarter 4: 42392)  
Year 3 (Quarter 1: 49999, Quarter 2: 57607, Quarter 3: 65215, Quarter 4: 72823)  
Year 4 (Quarter 1: 80431, Quarter 2: 88038, Quarter 3: 95646, Quarter 4: 103254)  
Year 5 (Quarter 1: 110862, Quarter 2: 118469, Quarter 3: 126077, Quarter 4: 133685)

**Biofertilizer Produced (tons):**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 0, Quarter 4: 0)  
Year 2 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 0, Quarter 4: 0)  
Year 3 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 50, Quarter 4: 100)  
Year 4 (Quarter 1: 151, Quarter 2: 201, Quarter 3: 251, Quarter 4: 301)  
Year 5 (Quarter 1: 351, Quarter 2: 401, Quarter 3: 452, Quarter 4: 502)

**Nitrogen Trials Conducted:**

Year 1 (Quarter 1: 0, Quarter 2: 0, Quarter 3: 7, Quarter 4: 14)  
Year 2 (Quarter 1: 21, Quarter 2: 28, Quarter 3: 35, Quarter 4: 42)  
Year 3 (Quarter 1: 49, Quarter 2: 56, Quarter 3: 63, Quarter 4: 69)  
Year 4 (Quarter 1: 76, Quarter 2: 83, Quarter 3: 90, Quarter 4: 97)  
Year 5 (Quarter 1: 104, Quarter 2: 111, Quarter 3: 118, Quarter 4: 125)



### Climate-Smart Practices and Limitations

Climate-Smart practices under this grant shall be limited to the following practices:

NRCS Practice Code	Practice Name
645	Upland wildlife habitat management
590	Nutrient Management
328	Conservation Crop Rotation
340	Cover Crop
327	Conservation Cover

All practices applied under this grant will follow NRCS practice standards unless noted below:

Practice Name	Alternative Practice Standards
340AmendedEn Cover Crop for Energy	<p>Our project proposes a minor deviation from the NRCS Cover Crop standard 340:</p> <ul style="list-style-type: none"> <li>• Cover crops will be harvested for energy production, so cover crops species selection and rates and dates of cover crop seeding may be adjusted to optimize biomass production and energy potential.</li> <li>• The project will select and utilize cover crop species that maintain the objectives of the cover crop practice standard (i.e. soil conservation, soil health and organic matter, water quality, carbon sequestration, weed suppression, reduced compaction, soil moisture), while improving environmental performance and providing ecosystem services and will not compromise the purpose of the cover crop standard.</li> <li>• Where applicable, the NRCS standard for conservation crop rotation will be implemented without deviation. The payment rates used for cover crops will also be applied to conservation crop rotation, as the activities performed, such as harvesting and hauling for energy production, will be the same.</li> <li>• To ensure that cover crop harvest dates do not affect producers' participation in other programs such as crop insurance, additional considerations will be taken: <ul style="list-style-type: none"> <li>✓ Proposed seeding timeline is between <b>September 1<sup>st</sup> and November 15<sup>th</sup></b>.</li> <li>✓ Proposed harvest <b>time is between May 1<sup>st</sup> and June 5<sup>th</sup></b>.</li> </ul> </li> </ul>
327AmendedEn Conservation Cover with cutting and removal of biomass for energy production	<p>Our project proposes a minor deviation from the NRCS conservation cover standard 327:</p> <ul style="list-style-type: none"> <li>• Periodic cutting and removal of biomass will occur for energy production</li> <li>• Harvest will not occur during the primary nesting seasons in Missouri (May 1 – July 15) and Iowa (May 15 – August 1)</li> </ul>





Partnerships for  
Climate-Smart  
Commodities  
Data Dictionary  
for Recipients  
February 2023  
Version 1.0

---



## Table of Contents

Overview of Reporting Requirements.....	2
Project Summary.....	3
Partner Activities.....	4
Marketing Activities .....	5
Producer Enrollment .....	6
Field Enrollment.....	7
Farm Summary.....	8
Field Summary .....	9
GHG Benefits - Alternate Modeled.....	10
GHG Benefits - Measured.....	11
Additional Environmental Benefits .....	12
Supplemental Data Submission.....	13
Data Descriptions.....	14
Unique IDs.....	14
Project Summary.....	15
Partner Activities.....	20
Marketing Activities .....	25
Producer Enrollment .....	30
Field Enrollment.....	38
CSAF Practice Sub-questions .....	44
Farm Summary.....	45
Field Summary .....	49
GHG Benefits - Alternate Modeled.....	57
GHG Benefits - Measured.....	61
Additional Environmental Benefits .....	65
CSAF Practice Sub-questions .....	75
Appendix A: Climate-smart Agriculture and Forestry Practices.....	83
All NRCS Practice Standards (not limited to climate-smart practices).....	83
Other CSAF Practices.....	85
Appendix B: Commodity List .....	86





## Overview of Reporting Requirements

Grant recipients are required to submit reports to document their performance under the *Partnerships for Climate-Smart Commodity* funding opportunity. These submissions will be required to use the Microsoft Excel workbook templates provided by USDA. The workbooks contain a series of worksheets that collect data in a standardized format to ensure data quality and allow for aggregation and summary of this information. The entire workbook must be submitted quarterly, with updates to all applicable worksheets. This guide is divided into three sections. The *Overview of Reporting Requirements* section summarizes the layout of the reporting workbook and presents the data elements included in each worksheet. It also describes additional documents that must be submitted to supplement the performance reports. The *Data Definitions* section provides descriptions and allowable response options for each data element. The guide also indicates whether each data element is required, applicable at times, or optional; as well as how frequently each data element must be updated. Finally, the *Appendices* contain practice and commodity lists that will be used for these reports. Reporting is necessary for USDA oversight of this effort. The data elements required for inclusion in the quarterly performance reports allow USDA to conduct selected audits to review whether producers are receiving federal funds from multiple sources for the same purpose; to determine whether GHG benefits from implementation of climate-smart agriculture and forestry (CSAF) practices are being estimated accurately; and for other purposes deemed appropriate by USDA.

The reporting worksheets collect information at four levels: project, partner, producer, and field.

Descriptions of each level:

**Project level:** Information about activities and impacts at a whole project/aggregate level (i.e., reflecting all activities under the grant agreement). Some project-level reporting is further subdivided by commodity type or a combination of commodity and CSAF practice(s) (commodity x practice).

**Partner level:** Information about activities related to a single organization (recipient, subrecipient, contractor, or other partner) within a project.

**Producer level:** Information about individual producers who have one or more farms enrolled in a project.

**Field level:** Information about individual fields enrolled in a project.

Certain data elements are required to be reported for each producer and field enrolled in a project. In order to minimize the burden associated with data collection and to enable USDA to match data to existing records, these producer- and field-specific records must use the producer's established FSA Farm, Tract and Field IDs, and report the State and County associated with the Farm ID. Associated data entered in conjunction with these data elements, such as Producer Name, must match the data contained in the customer's Business Partner record, and the Farm Operating Plan in Business File for that Farm ID. Disclosure of this information is protected under Section 1619 of the Food, Conservation, and Energy Act of 2008 (PL 110- 246), 7 U.S.C. 8791. Additionally, Departmental Regulation 4370-001 provides USDA's policies for collecting demographic data, including race, ethnicity and gender. Providing demographic information is voluntary and at the discretion of the customer. Demographic information is used by USDA for statistical purposes only and will not be used to determine an applicant's eligibility for programs or services for which they apply.

**Note:** For purposes of this guide, "farm" refers to the operation from which climate-smart commodities are produced and may represent farms, ranches, forests or other operations. Similarly, "field" refers to the individual land units at which climate-smart practices are being implemented to produce climate-smart commodities and may represent lots, farmsteads or other units, depending on the type of operation and commodity. The use of "Farm", "Tract" and "Field" align with the FSA definitions; for example, "A field is a part of a farm that is separated from the balance of the farm by a permanent boundary, such as; fences, permanent waterways, woodlands, croplines in cases where farming practices make it probable that this cropline is not subject to change, and other similar features."



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

The following tables list the data elements included in each reporting worksheet, along with a brief description of each item.

Project Summary

These data will be collected about each project. Cumulative results are reported each quarter. Report last quarter's entry if there has been no change in this quarter.

Table 1. Project Summary elements

Data element name	Description	Frequency
Commodity type	Type of commodity(ies) incentivized by the project	Quarterly
Commodity sales	Indicates sales of the commodity(ies) related to the project occurred this quarter	Quarterly
Farms enrolled	Indicates enrollment activities occurred this quarter	Quarterly
GHG calculation methods	Methods used to calculate greenhouse gas (GHG) benefits	Quarterly
GHG cumulative calculation	Method used to calculate cumulative GHG benefits	Quarterly
Cumulative GHG benefits	Whole project estimate of total GHG (CO <sub>2</sub> e) emission reductions	Quarterly
Cumulative carbon stock	Whole project estimate of total carbon sequestration	Quarterly
Cumulative CO <sub>2</sub> benefit	Whole project estimate of total CO <sub>2</sub> emission reductions	Quarterly
Cumulative CH <sub>4</sub> benefit	Whole project estimate of total CH <sub>4</sub> emission reductions	Quarterly
Cumulative N <sub>2</sub> O benefit	Whole project estimate of total N <sub>2</sub> O emission reductions	Quarterly
Offsets produced	Amount of carbon offsets produced by project	Quarterly
Offsets sale	Name of marketplace where carbon offsets were sold	Quarterly
Offsets price	Price of carbon in offset sales	Quarterly
Insets produced	Amount of carbon insets produced by project	Quarterly
Cost of on-farm TA	Cost of on-farm technical assistance (TA) provided to producers	Quarterly
MMRV cost	Cost of measurement, monitoring, reporting, and verification (MMRV) activities	Quarterly
GHG monitoring method	Methods used by project to monitor GHG benefits (up to 5)	Quarterly
GHG reporting method	Methods used by project to report on GHG benefits (up to 5)	Quarterly
GHG verification method	Methods used to verify GHG benefits (up to 5)	Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Partner Activities

These data will be collected at the project level. Each row in this worksheet will represent one organization involved in the project, including the recipient and all contributing partners. A partner is any organization that is receiving project funds or providing matching contributions (funds or in-kind contributions) to the project. While the recipient must complete one row for their own organization, not all data elements apply to the recipient. These exceptions are noted in the detailed descriptions of the specific elements in the *Data Definitions* section of this guide. Data are reported cumulatively each quarter. Report last quarter's entry if there has been no change in this quarter.

Table 2. Partner Activities elements

<b>Data element name</b>	<b>Description</b>	<b>Frequency</b>
Partner ID	Unique ID for each partner	One-time
Partner name	Name of partner organization	One-time
Partner type	Type of organization	One-time
Partner POC	Partner point of contact name	As applicable
Partner POC email	Partner point of contact email	As applicable
Partnership start date	Start of partnership on project	One-time
Partnership end date	End of partnership on project	As applicable
New partnership	Indicator for partner organizations that have no prior work with the recipient	As applicable
Partner total requested	Total amount requested to date by partner from recipient	Quarterly
Total match contribution	Total amount of match contribution by partner to date	Quarterly
Total match incentives	Total amount of match contribution by partner for incentives	Quarterly
Match type	Top 3 types of match contribution by partner, other than incentives	Quarterly
Match amount	Value of match contributions by type	Quarterly
Training provided	Top 3 types of training provided to the partner through project	Quarterly
Activity by partner	Top 3 types of activities provided by this partner to producers or other partners	Quarterly
Activity cost	Approximate cost per activity type provided by partner to producers or other partners	Quarterly
Products supplied	Names of products supplied to producers as part of project activities or incentives	Quarterly
Product source	Supplier or source of products supplied to producers as part of project activities or incentives	Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Marketing Activities

These data will be collected at the project level. Each row in this worksheet will correspond to one commodity for which the project enrolls fields and one marketing channel used to sell that commodity by the project or producers enrolled in the project. Data are reported for the current quarter and are not cumulative. If no sales of the commodity were reported during a quarter, do not complete this worksheet for that quarter.

Table 3. Marketing Activities elements

<b>Data element name</b>	<b>Description</b>	<b>Frequency</b>
Commodity type	Type of commodity incentivized by the project	Quarterly
Marketing channel type	Type of marketing channels used	Quarterly
Number of buyers	Number of buyers per marketing channel	Quarterly
Names of buyers	Names of buyers in the marketing channel	Quarterly
Marketing channel geography	Geography of marketing channel	Quarterly
Value sold	Value of commodity sold by marketing channel	Quarterly
Volume sold	Volume of commodity sold by marketing channel	Quarterly
Price premium	Price premium of commodity by marketing channel	Quarterly
Price premium to producer	Percent of price premium that goes to the producer	Quarterly
Product differentiation method	Top 3 types of product differentiation methods used	Quarterly
Marketing method	Top 3 types of marketing methods used	Quarterly
Marketing channel identification method	Top 3 ways marketing channel was identified	Quarterly
Traceability method	Top 3 types of supply chain traceability methods used	Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Producer Enrollment

These data will be collected at the producer level about each farm enrolled in the project. In this worksheet, each row will correspond to one farm that has at least one field enrolled in the project. Data are reported when a producer first enrolls one or more fields in the project. If a producer is enrolled in the project for multiple years, review the farm characteristics each time a new contract is signed and provide any necessary updates. The quarterly submission should contain information about each farm initially enrolled in the project during that quarter and for updates to farms that have re-enrolled during that quarter, as applicable. If no farms are enrolled during that quarter, do not complete this worksheet for that quarter.

Table 4. Producer Enrollment elements

<b>Data element name</b>	<b>Description</b>	<b>Frequency</b>
Farm ID	Unique Farm ID assigned by FSA	
State or territory	State name (must match FSA farm enrollment data)	
County of residence	County name (must match FSA farm enrollment data)	
Producer data change	Indicator that producer data was updated at re-enrollment	As applicable
Producer start date	Contract start date	Enrollment
Producer name	Name of primary operator	Enrollment
Underserved status	Indicator the primary operator is considered underserved and/or a small producer	Enrollment
Total area	Total area of enrolled operation	Annual
Total crop area	Total crop area in enrolled operation enrolled	Annual
Total livestock area	Total livestock confinement, pasture and rangeland in enrolled operation	Annual
Total forest area	Total forest area in enrolled operation	Annual
Livestock type	Top 3 types of livestock on enrolled operation	Annual
Livestock head	Total livestock currently managed (by type)	Annual
Organic farm	Indicator that part of the farm is certified or transitioning organic	Annual
Organic fields	Indicator that any of the enrolled fields are certified or transitioning organic	Annual
Producer motivation	Motivation for participation	Annual
Producer outreach	Top 3 types of outreach provided to producer	Annual
CSAF experience	Indicator of prior implementation of CSAF practices at this farm	Annual
CSAF federal funds	Indicator of prior receipt of federal funds for CSAF practices	Annual
CSAF state or local funds	Indicator of prior receipt of state funds for CSAF practices	Annual
CSAF nonprofit funds	Indicator of prior receipt of nonprofit funds for CSAF practices	Annual
CSAF market incentives	Indicator of prior receipt of market incentives for CSAF practices	Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Field Enrollment

These data will be collected about each field enrolled in the project. In this worksheet, each row corresponds to one field x commodity combination enrolled in the project. Generally, data are reported once for each field, at its initial enrollment. The quarterly submission should contain information about each field initially enrolled in the project during that quarter. If no fields are enrolled during that quarter, do not complete this worksheet for that quarter. If a field is enrolled for multiple years, any relevant changes, such as a new ID number or changes to the commodity or practice combinations should be entered in this worksheet during the quarter it is re-enrolled, or as applicable.

Table 5. Field Enrollment elements

<b>Data element name</b>	<b>Description</b>
Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name
Physical County of field	Physical county name must match FSA farm records
Prior Field ID	Previous Field ID when reconstitution of farm results in new Field IDs
Field data change	Indicator that field data has changed from initial enrollment
Contract start date	Start date of contract
Total field area	Size of enrolled field
Commodity category	Category of commodity(ies) produced
Commodity type	Type of commodity(ies) produced
Baseline yield	Average yield of commodity in 3 years prior to enrollment
Baseline yield location	Location for which baseline yield is provided
Field land use	Most common land use in field in past 3 years
Field irrigated	Most common irrigation type in field in past 3 years
Field tillage	Most common tillage in field in past 3 years
Practice past extent - farm	Extent of operation that implemented this practice prior to project enrollment
Field any CSAF practice	Indicator for prior CSAF practices in this field in past 3 years
Practice past use - this field	Indicator of prior use of this practice in this field in the past 3 years
Practice type	CSAF practice(s) that will be implemented in enrolled field (up to 7)
Practice standard	Organization that developed CSAF practice standard implemented in field
Planned practice implementation year	Year that practice is planned to be implemented
Practice extent	Area or number of animals for which practice is implemented
Follow-on questions	Follow-on questions by practice type (see Table 11)





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Farm Summary

These data will be collected about each farm enrolled in the project. In this worksheet, each row will correspond to one farm that has at least one field enrolled in the project. The quarterly submission should contain updates to any data elements that have changed for each farm enrolled in the project during that quarter. If there are no changes from the previous quarter, do not complete this worksheet for that quarter. Data are not cumulative.

Table 6. Farm Summary elements

<b>Data element name</b>	<b>Description</b>	<b>Frequency</b>
Farm ID	Unique Farm ID assigned by FSA	
State or territory	State name	
County of residence	County name	
Producer TA received	Type of technical assistance provided to producer	Quarterly
Producer incentive amount	Total financial incentive provided to the producer	Quarterly
Incentive reason	Top 4 reason(s) for financial incentives provided to producer	Quarterly
Incentive structure	Top 4 units on which financial incentives are structured	Quarterly
Incentive type	Top 4 type(s) of financial incentives provided to producer	Quarterly
Payment on enrollment	Extent of payment provided to producer upon enrollment	Quarterly
Payment on implementation	Extent of payment provided to producer upon implementation of CSAF practices	Quarterly
Payment on harvest	Extent of payment provided to producer upon harvest or slaughter	Quarterly
Payment on MMRV	Extent of payment provided to producer upon reporting or verification	Quarterly
Payment on sale	Extent of payment provided to producer upon sale of commodity	Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Field Summary

These data will be collected about each field enrolled in the project for a commodity x practice(s) combination. In this worksheet, each row will correspond to one field x commodity x practice(s) combination enrolled in the project. Data for each field will be reported quarterly and are not cumulative. Report data for any elements that have an update in that quarter. Greenhouse gas benefit estimates must be entered upon practice completion or annually, as appropriate. If there are no changes from the previous quarter, do not complete this worksheet for that quarter. This worksheet includes a section to report the “official” estimate of GHG benefits – amounts of greenhouse gas emissions reduced and carbon sequestered – for the field. These quantities refer to the estimates that are used to calculate the project’s aggregate impact (reported in Table 1). Tables 8 and 9 are used to report alternate estimates of the field-level GHG benefits when additional methods are used to model (Table 8) or measure (Table 9) these impacts. Any field that can use COMET-Planner must submit those results, either as the official or alternate model.

Table 7. Field Summary elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State or territory of field	State name	
County of field	County name	
Commodity type	Type of commodity produced from field	Quarterly
Practice type	Type of practice(s) incentivized in field (up to seven)	Quarterly
Date practice complete	Date that practice implementation is certified complete	Quarterly
Contract end date	End date of contract	Quarterly
MMRV assistance provided	Indicator that MMRV assistance is provided to field	Quarterly
Marketing assistance provided	Indicator that marketing assistance provided for commodity from field	Quarterly
Incentive per acre or head	Indicator that a per acre/head incentives is provided for the CSAF practice(s) on this field	Quarterly
Field commodity value	Value of commodity produced from field	Quarterly
Field commodity volume	Volume of commodity produced from field	Quarterly
Cost of implementation	Total cost of practice implementation in field	Quarterly
Cost coverage	Percent of total cost of implementation of practice covered by project incentives	Quarterly
Field GHG monitoring	Methods used to monitor GHG benefits in field (up to 3)	Quarterly
Field GHG reporting	Methods used to report on GHG benefits for field (up to 3)	Quarterly
Field GHG verification	Methods used to verify GHG benefits for field (up to 3)	Quarterly
Field GHG calculations	Methods used to calculate GHG benefits for field	Quarterly
Field official GHG calculation	Method used to calculate official GHG benefits for field	Quarterly
Field official GHG ER	Official estimate of total GHG emission reductions for field	Quarterly
Field official carbon stock	Official estimate of total carbon sequestration for field	Quarterly
Field official CO <sub>2</sub> ER	Official estimate of total CO <sub>2</sub> emission reductions for field	Quarterly
Field official CH <sub>4</sub> ER	Official estimate of total CH <sub>4</sub> emission reductions for field	Quarterly
Field official N <sub>2</sub> O ER	Official estimate of total N <sub>2</sub> O emission reductions for field	Quarterly
Field offsets produced	Amount of carbon offsets produced in field	Quarterly
Field insets produced	Amount of carbon insets produced in field	Quarterly
Other field measurements	Indicator that field data was collected for reasons other than GHG benefit estimation	Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

GHG Benefits - Alternate Modeled

If greenhouse gas benefits are modeled for the same field using multiple methods, the results for the alternate models are reported in this worksheet. The “alternate” models refer to those model results that were not used in the calculation of the project’s aggregate impact (as reported in Table 1). Any field that can use COMET-Planner must submit those results, either as the official or alternate model. These data will be collected about the modeled GHG benefits for each field x commodity x practice(s) combination. In this worksheet, each row will correspond to one field enrolled in the project. Data are not cumulative. Each quarterly submission should include information for all fields that have new modeled data. Greenhouse gas benefit estimates must be entered upon practice completion or annually, as appropriate.

Table 8. GHG Benefits – Alternate Modeled elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State or territory of field	State name	
County of field	County name	
Commodity type	Type of commodity(ies) produced from the field (up to 6)	Annual
Practice type	Type of practice(s) incentivized in field (up to 7)	Annual
GHG model	Model used to calculate GHG benefits	Annual
Model start date	Start date of model run	Annual
Model end date	End date of model run	Annual
Total GHG benefits estimated	Estimate of total GHG benefits for field	Annual
Total carbon stock estimated	Estimate of total change in carbon stock for field	Annual
Total CO2 estimated	Estimate of total CO2 emission reductions for field	Annual
Total CH4 estimated	Estimate of total CH4 emission reductions for field	Annual
Total N2O estimated	Estimate of total N2O emission reductions for field	Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

GHG Benefits - Measured

Projects must report the results of any carbon stock or greenhouse gas emission measurements in this worksheet. These data will be collected at the field level. Each row will represent a separate measurement method used to calculate GHG benefits for a given field. Data are reported once per year of measurement and are not cumulative. Each quarterly submission should include information for any field for which there are new soil samples or new calculations of annual GHG benefits based on actual measurements.

Table 9. GHG Benefits - Measured data elements

<b>Data element name</b>	<b>Description</b>	<b>Frequency</b>
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State	State name	
County	County name	
GHG measurement method	Method of measurement	Annual
Lab name	Entity that conducted analysis	Annual
Measurement start date	Start date of measurements	Annual
Measurement end date	End date of measurements	Annual
Total CO2 reduction calculated	Calculation of total CO2 reduction	Annual
Total carbon stock change calculated	Calculation of change in carbon stock	Annual
Total CH4 reduction calculated	Calculation of total CH4 reduction	Annual
Total N2O reduction calculated	Calculation of total N2O reduction	Annual
Soil sample result	Numeric result from soil sample	Annual
Measurement type	Type of analysis conducted	Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Additional Environmental Benefits

Projects that track additional environmental benefits (e.g., water quality improvements) from enrolled fields report results in this worksheet. These data will be collected about each field. Each row in this worksheet will correspond to an enrolled field. Data are not cumulative. Estimates of environmental benefits must be entered upon practice completion or annually, as appropriate.

Table 10. Additional Environmental Benefits elements

Data element name	Description	Frequency
Farm ID	Unique Farm ID assigned by FSA	
Tract ID	Unique Tract ID assigned by FSA	
Field ID	Unique Field ID assigned by FSA	
State	State name	
County	County name	
Environmental benefits	Indicator that project tracks other environmental benefits	Annual
Reduction in nitrogen loss	Indicator that project tracks reductions in nitrogen loss	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Reduction in phosphorus loss	Indicator that project tracks reductions in phosphorus loss	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Other water quality	Indicator that project tracks other water quality improvements	Annual
Type	Type of water quality metric being tracked	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Water quantity	Indicator that project tracks reduced water use	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Reduced erosion	Indicator that project tracks reductions in soil erosion	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Reduced energy use	Indicator that project tracks reductions in energy use	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Avoided land conversion	Indicator that project tracks reductions in land conversion	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual
Improved wildlife habitat	Indicator that project tracks improvements in wildlife habitat	Annual
Amount	Amount	Annual
Purpose	Purpose of tracking those co-benefits	Annual



### Supplemental Data Submission

#### Project MMRV Plan

##### *Definition of MMRV elements:*

**Measurement:** Quantification of the greenhouse gas benefits (reduction or capture) using mathematical models and/or direct physical measurements in the field

**Monitoring:** Ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time

**Reporting:** Documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization

**Verification:** Independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable.

Projects must submit an MMRV plan that includes details about how each of the following are addressed:

- Quantification approach, including:
  - GHG models used
  - GHG measurement plan (if applicable)
  - Approach to quantifying additional environmental benefits, if applicable (e.g., water quality, habitat)
- Verification approach:
  - Compliance criteria
  - Verification plan/methodology
- Approach to ensuring:
  - Additionality
  - Permanence
  - Leakage
  - Impacts of weather
- Plan for non-compliance

If the project is using a specific MMRV methodology or approach developed by the recipient, a project partner, or an outside organization, the project can submit documentation associated with the methodology as long as the documentation addresses each of the above categories.

If the project is tracking other environmental benefits (as reported in the *Additional Environmental Benefits* worksheet), include a description of the methodology and tools used to track and report on these benefits.

#### Field modeled GHG benefit reports

Results from any models besides COMET-Planner used to estimate GHG benefits must also be submitted as a separate report. This includes projects running COMET-Farm. The full results of any model can be submitted in the native/standard format generated by the modeling tool and must include the following Unique IDs in the report or in the file name: State, County, Farm ID, Tract ID, Field ID.

#### Field direct measurement results

For any direct physical measurements in the field, measurement results must be submitted as a separate report and must include the following Unique IDs in the report or in the file name: State, County, Farm ID, Tract ID, Field ID. Measurement results reports must include the name of the equipment used for sampling or data collection, the name of the lab that analyzed the data, and the analytical method used.

Sample report types include soil analysis reports, summarized results of portable emissions analyzers or flux towers, water quality analyses, and plant species counts. These could be collected for the purposes of determining GHG emission reductions or carbon sequestration amounts, for calibration of tools or models, for tracking other environmental benefits, or for other reasons.





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

### Data Descriptions

This section provides descriptions and allowable response options for each data element. The guide also indicates whether each data element is required, applicable at times, or optional; as well as how frequently each data element must be updated.

### Unique IDs

**Project ID:** Unique ID at the project level – “Award Identifying Number” shown on award documentation

**Partner ID:** Unique ID at the partner level – use EIN; if no EIN, a unique ID will be assigned for use in these reports

**State or territory of operation:** State or territory name

**County of operation:** Physical county name

**Farm ID:** Unique ID at the operation level assigned by Farm Service Agency (FSA)

**Tract ID:** Unique ID at the tract level assigned by FSA

**Field ID:** Unique ID at the field level assigned by FSA



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Project Summary**Commodity type****Data element name:** Commodity type**Reporting question:** What climate-smart commodity types are produced by this project?**Description:** Type of commodity incentivized by the project. These commodities include those for whom farmers are directly receiving incentives or other types of marketing support. See full list of commodity options in Appendix B. List one commodity per row.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:** FSA commodity list**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Commodity sales****Data element name:** Commodity sales**Reporting question:** Did project activities result in sales this quarter of the commodity(ies) produced by this project?**Description:** Indicator of sales of commodity(ies) related to project activities. If sales are reported, complete the *Marketing Activities* worksheet (Table 3) as part of the quarterly performance report.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Farms enrolled****Data element name:** Farms enrolled**Reporting question:** Did the project enroll any producers or fields this quarter?**Description:** Indicator that the project enrolled producers or fields. If enrollment activities occurred this quarter, complete the *Producer Enrollment* and *Field Enrollment* worksheets (Tables 4 and 5) as part of the quarterly performance report.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**GHG calculation methods****Data element name:** GHG calculation methods**Reporting question:** What methods is the project using to calculate GHG benefits?**Description:** List the way(s) that GHG benefits are being measured and calculated by the project this quarter.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Models
- Direct field measurements
- Both

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**GHG cumulative calculation****Data element name:** GHG cumulative calculation**Description:** List the method(s) that was used to calculate the total cumulative GHG benefits reported by the project this quarter.**Data type:** List**Measurement unit:** Category**Logic:** None – all respond**Data collection level:** Project**Reporting question:** What method(s) was used to calculate the total cumulative GHG benefits reported here?**Select multiple values:** No**Allowed values:**

- Models
- Direct field measurements
- Both

**Required:** Yes**Data collection frequency:** Quarterly**Cumulative GHG benefits****Data element name:** Cumulative GHG benefits**Description:** Total cumulative estimated greenhouse gas emission reductions from practice implementation. This is updated quarterly. If there are no changes, enter the same number as the previous quarter.**Data type:** Decimal**Measurement unit:** Metric tons CO<sub>2</sub>eq**Logic:** None – all respond**Data collection level:** Project**Reporting question:** What are the project's estimated total GHG emission reductions (CO<sub>2</sub>eq) to date?**Select multiple values:** No**Allowed values:** 0-10,000,000**Required:** Yes**Data collection frequency:** Quarterly**Cumulative carbon stock****Data element name:** Cumulative carbon stock**Description:** Estimated total cumulative change in carbon stock based on practice implementation. This is updated quarterly. If there are no changes, enter the same numbers as the previous quarter. Conversion rate is one ton of carbon = 3.67 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Measurement unit:** Metric tons CO<sub>2</sub>eq**Logic:** None – all respond**Data collection level:** Project**Reporting question:** How much carbon has the project sequestered to date?**Select multiple values:** No**Allowed values:** 0-10,000,000**Required:** Yes**Data collection frequency:** Quarterly**Cumulative CO<sub>2</sub> benefit****Data element name:** Cumulative CO<sub>2</sub> benefit**Description:** Estimated total cumulative carbon dioxide emission reductions based on practice implementation. This is updated quarterly. If there are no changes, enter the same number as the previous quarter.**Data type:** Decimal**Measurement unit:** Metric tons CO<sub>2</sub>**Logic:** None – all respond**Data collection level:** Project**Reporting question:** What are the project's estimated total cumulative CO<sub>2</sub> emission reductions to date?**Select multiple values:** No**Allowed values:** 0-10,000,000**Required:** Yes**Data collection frequency:** Quarterly**Cumulative CH<sub>4</sub> benefit****Data element name:** Cumulative CH<sub>4</sub> benefit**Description:** Estimated total cumulative methane reduction based on practice implementation. This is updated quarterly. If there are no changes, enter the same numbers as the previous quarter. Conversion rate is one ton of CH<sub>4</sub> = 25 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Measurement unit:** Metric tons CH<sub>4</sub> reduced in CO<sub>2</sub>eq**Logic:** None – all respond**Data collection level:** Project**Reporting question:** What are the project's estimated total CH<sub>4</sub> emission reductions to date?**Select multiple values:** No**Allowed values:** 0-10,000,000**Required:** Yes**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Cumulative N2O benefit****Data element name:** Cumulative N2O benefit**Reporting question:** What are the project's estimated total N2O emission reductions to date?

**Description:** Estimated total cumulative nitrous oxide reduction based on practice implementation. This is updated quarterly. If there are no updated numbers enter the same number as the previous quarter. Conversion rate is one ton of N<sub>2</sub>O = 298 tons of CO<sub>2</sub>eq.

**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons N2O reduced in CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Offsets produced****Data element name:** Offsets produced**Reporting question:** How many carbon offsets have been produced in the project?

**Description:** Total carbon offsets produced by enrolled project fields during the quarter. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.

**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Offsets sale****Data element name:** Offsets sale**Reporting question:** To what marketplace(s) were carbon offsets sold?

**Description:** Marketplaces to which carbon offsets produced by enrolled project fields were sold. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace. List each marketplace name. Separate names with commas.

**Data type:** Text**Select multiple values:** NA**Measurement unit:** Name**Allowed values:** Text**Logic:** Respond if >0 to 'Offsets produced'**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Offsets price****Data element name:** Offsets price**Reporting question:** What was the average price of carbon received for offsets?

**Description:** Average price per metric ton paid for carbon offsets produced by enrolled project fields. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.

**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Dollars per metric ton**Allowed values:** 0-500**Logic:** Respond if >0 to 'Offsets produced'**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Insets produced****Data element name:** Insets produced**Reporting question:** How many carbon insets have been produced in the project?

**Description:** Total carbon insets produced by enrolled fields during the quarter. Insets are defined as having been verified and certified using an accepted standard and accounted for within Scope 3 emissions for a firm.

**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Cost of on-farm TA****Data element name:** Cost of on-farm TA**Reporting question:** What is the total amount that has been spent to provide on-farm TA?**Description:** Total cost of any field- or practice-specific technical assistance provided by the project (by recipient or partners) to any producers. This is updated quarterly. If there are no changes, enter the same number as the previous quarter.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Dollars**Allowed values:** \$0-\$50,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**MMRV cost****Data element name:** MMRV cost**Reporting question:** What is the total amount that has been spent on MMRV activities?**Description:** Total cost of all MMRV activities paid for by the project (recipient or partners). MMRV components are defined as measurement (calculations or estimations of GHG emissions), monitoring (ongoing review and confirmation that the climate-smart practices have been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time), reporting (documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization), and verification (independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable). This is updated quarterly. If there are no changes, enter the same number as the previous quarter.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Dollars**Allowed values:** \$0-\$50,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**GHG monitoring method****Data element name:** GHG monitoring 1-5**Reporting question:** How did the project monitor GHG benefits?**Description:** Up to the five most common forms of monitoring GHG benefits used this quarter as part of MMRV requirements. Monitoring is defined as ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG monitoring methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG monitoring methods as free text.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Drones
- Ground-level photos and videos
- On-farm visit
- Plot-based sampling
- Producer records or attestation
- Satellite monitoring or remote sensing
- Soil metagenomics
- Soil sensors
- Water sensors
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**GHG reporting method****Data element name:** GHG reporting 1-5**Reporting question:** How did the project track and report implementation of practices to reduce GHG emissions?

**Description:** Up to the five most common forms of tracking and reporting on practice implementation used this year as part of MMRV requirements. Reporting is defined as documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG reporting methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG reporting methods as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Automated devices
- Email
- Mobile app
- Paper
- Third-party actors
- Website
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**GHG verification method****Data element name:** GHG verification method 1-5**Reporting question:** How did the project verify implementation of practices to reduce GHG emissions?

**Description:** Up to the five most common forms of verifying practice implementation used this year as part of MMRV requirements. Verification is defined as independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG verification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG verification methods as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Artificial intelligence
- Audit by recipient
- Computer modeling
- Photos
- Record audit
- Satellite imagery
- Site or field visit
- Third-party audit
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Partner Activities**Unique IDs**

Partner ID	Unique Project ID for each partner
------------	------------------------------------

**Partner name**

<b>Data element name:</b> Name of partner organization	<b>Reporting question:</b> What is the official name of the recipient or partner organization?
<b>Description:</b> Legal name of recipient or partner organization	
<b>Data type:</b> Text	<b>Select multiple values:</b> NA
<b>Measurement unit:</b> NA	<b>Allowed values:</b> Text
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Partnership initiation

**Partner type**

<b>Data element name:</b> Type of partner organization	<b>Reporting question:</b> What type of organization is this?
<b>Description:</b> Legal/financial structure of recipient or partner organization	
<b>Data type:</b> List	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Category	<b>Allowed values:</b> <ul style="list-style-type: none"> <li>• Commodity groups (501c5)</li> <li>• For-profit</li> <li>• Individual</li> <li>• Nonprofit</li> <li>• State or local agency</li> <li>• Tribal agency</li> <li>• University</li> </ul>
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Partnership initiation

**Partner POC**

<b>Data element name:</b> Partner POC	<b>Reporting question:</b> Who is the point of contact for this project at the recipient or partner organization?
<b>Description:</b> Name of a point of contact for the recipient or partner organization	
<b>Data type:</b> Text	<b>Select multiple values:</b> NA
<b>Measurement unit:</b> NA	<b>Allowed values:</b> Text
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Partnership initiation; update as necessary

**Partner POC email**

<b>Data element name:</b> Partner POC email	<b>Reporting question:</b> What is the point of contact's email address?
<b>Description:</b> Email of the point of contact for the recipient or partner organization	
<b>Data type:</b> Text	<b>Select multiple values:</b> NA
<b>Measurement unit:</b> NA	<b>Allowed values:</b> Text
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Partnership initiation; update as necessary



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Partnership start date**

<b>Data element name:</b> Partnership start date	<b>Reporting question:</b> When did the partnership start?
<b>Description:</b> Date that the partner organization and the recipient began formally partnering on the project	
<b>Data type:</b> Date	<b>Select multiple values:</b> NA
<b>Measurement unit:</b> MM/DD/YYYY	<b>Allowed values:</b> 01/01/2023 – 12/31/2030
<b>Logic:</b> No response for recipient	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Partnership initiation

**Partnership end date**

<b>Data element name:</b> Partnership end date	<b>Reporting question:</b> When did the partnership end?
<b>Description:</b> Date that the partner organization and the recipient stopped formally partnering on the project	
<b>Data type:</b> Date	<b>Select multiple values:</b> NA
<b>Measurement unit:</b> MM/DD/YYYY	<b>Allowed values:</b> 01/01/2023 – 12/31/2030
<b>Logic:</b> No response for recipient	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Partnership end quarter

**New partnership**

<b>Data element name:</b> New partnership	<b>Reporting question:</b> Is this a new partnership?
<b>Description:</b> A new partnership means that the recipient and the partner organization have not had a formal working relationship (under contract or on a grant) prior to the start of the project.	
<b>Data type:</b> List	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Category	<b>Allowed values:</b> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> <li>• I don't know</li> </ul>
<b>Logic:</b> No response for recipient	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Partnership initiation

**Partner total requested**

<b>Data element name:</b> Partner total requested	<b>Reporting question:</b> What is the total amount of funding the partner has requested to date from this project?
<b>Description:</b> Cumulative (total) amount of funds that the partner has requested reimbursement for from the recipient from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus the amount of funds requested in the reporting quarter. If there are no changes, report the value from the previous quarter.	
<b>Data type:</b> Decimal	<b>Select multiple values:</b> NA
<b>Measurement unit:</b> Dollars	<b>Allowed values:</b> \$0-\$100,000,000
<b>Logic:</b> No response for recipient	<b>Required:</b> Yes
<b>Data collection level:</b> Partner	<b>Data collection frequency:</b> Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Total match contribution****Data element name:** Total match contribution**Reporting question:** What is the total match value the organization has contributed to the project to date?

**Description:** Cumulative (total) value of funds and in-kind contributions (e.g., staff time, inputs, equipment rental, marketing support) that the partner has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus match contributions in the reporting quarter. If there are no changes, report the value from the previous quarter.

**Data type:** Decimal**Select multiple values:** NA**Measurement unit:** Dollars**Allowed values:** \$0-\$100,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly**Total match incentives****Data element name:** Total match incentives**Reporting question:** What is the total value of match provided by this organization for producer incentives?

**Description:** Cumulative (total) value of funds for incentive payments directly to producers that the partner has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus match incentives in the reporting quarter. If there are no changes, report the value from the previous quarter.

**Data type:** Decimal**Select multiple values:** NA**Measurement unit:** Dollars**Allowed values:** \$0-\$100,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly**Match type****Data element name:** Match type 1-3**Reporting question:** What types of match contributions has the organization provided to the project?

**Description:** Types of match contributions *other than incentives* provided directly to producers by the organization from the start of the partnership to the end of the reporting quarter. Enter up to the top three (in dollar value) types of match contributions provided. In-kind staff time could be used for technical assistance, marketing assistance, or other support to producers. Production inputs include seed, fertilizer, pesticides, equipment and other inputs for use in the field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 match types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other match types as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Equipment rental or use
- In-kind staff time
- Production inputs (reduced cost or free)
- Program income
- Software
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Match amount****Data element name:** Match amount 1-3**Reporting question:** What is the value of the match contributions the organization provided to the project?

**Description:** Cumulative (total) value of funds for each match type that the organization has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. Enter amounts for up to the top three (in dollar value) match types. The worksheet provides three columns for this data element. Enter one value for each column. If fewer than 3 match types are used, leave unnecessary columns blank.

**Data type:** Decimal**Select multiple values:** NA**Measurement unit:** Dollars**Allowed values:** \$0-\$100,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly**Training type provided****Data element name:** Training type 1-3 provided**Reporting question:** What types of training has the organization provided to project partners?

**Description:** Types of training provided to the project partner as a result of participating in the project during the past quarter. Training can come from the recipient, a project partner organization (including other divisions of their own organization, or an outside organization. Enter up to the top three (in dollar value) types of partner training provided. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 training types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other training types as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Data collection
- Grant reporting
- Marketing opportunities
- Providing financial assistance
- Providing technical assistance
- Writing producer contracts
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly**Activity by partner****Data element name:** Activity 1-3 by partner**Reporting question:** What types of activities has the organization provided to the project?

**Description:** Types of activities that the recipient or partner organization has provided during the reporting quarter. Enter up to the top three (in dollar value) types of activities undertaken. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 activity types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other activity types as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Marketing support
- MMRV support
- Producer outreach for enrollment
- Technical assistance to producers
- Training to other partner organizations
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Activity cost****Data element name:** Activity cost 1-3**Reporting question:** What is the value of the activities this organization has provided to the project?

**Description:** Cumulative (total) cost of each activity type that the organization has undertaken or offered from the start of the partnership to the end of the reporting quarter. Enter amounts for up to the top three (in dollar value) activity types. The worksheet provides three columns for this data element. Enter one value for each column. If fewer than 3 activity types are provided, leave unnecessary columns blank.

**Data type:** Decimal**Select multiple values:** NA**Measurement unit:** Dollars**Allowed values:** \$0-\$100,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly**Products supplied****Data element name:** Products supplied**Reporting question:** What products or supplies were provided to enrolled fields?

**Description:** Name(s) of products supplied to enrolled producers as incentives or matching contributions. Enter the name of each product, including its brand. Separate each product name with a comma. If no products or supplies were provided by the organization, leave the column blank.

**Data type:** Text**Select multiple values:** NA**Measurement unit:** Name**Allowed values:** Text**Logic:** None – all respond**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly**Product source****Data element name:** Product source**Reporting question:** Which companies provided the supplies?

**Description:** Name of firm or company from which supplies were obtained.

**Data type:** Text**Select multiple values:** NA**Measurement unit:** Name**Allowed values:** Text**Logic:** Respond if text entered for 'Products supplied'**Required:** Yes**Data collection level:** Partner**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Marketing Activities**Commodity type**

<b>Data element name:</b> Commodity type	<b>Reporting question:</b> What type of commodity is produced by the farmers enrolled in this project?
<b>Description:</b> List a single commodity produced or marketed through incentives from this project. If multiple commodities are produced by the project, use additional rows of the worksheet to report each commodity. Use the FSA commodity list in Appendix B and choose the commodity from the list.	
<b>Data type:</b> List	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Category	<b>Allowed values:</b> FSA commodity list
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Project	<b>Data collection frequency:</b> Quarterly

**Marketing channel type**

<b>Data element name:</b> Marketing channel type	<b>Reporting question:</b> What type of marketing channel is used to sell this commodity?
<b>Description:</b> List a single type of marketing channel used to sell the commodity produced by farmers enrolled in the project. If a single commodity is marketed through multiple channels, use additional rows of the worksheet to report each combination of commodity and marketing channel. If “other” is chosen, use the additional column to enter the other marketing channel type(s) as free text.	
<b>Data type:</b> List	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Category	<b>Allowed values:</b> <ul style="list-style-type: none"> <li>• Agricultural marketing board</li> <li>• Biorefinery</li> <li>• Commodity broker</li> <li>• Direct to consumer</li> <li>• Direct to institution</li> <li>• Direct to restaurant</li> <li>• Distributor (including grain elevators)</li> <li>• Food hub or cooperative</li> <li>• Food processor</li> <li>• Non-food byproducts processor</li> <li>• Retailer</li> <li>• USDA</li> <li>• Other (specify)</li> </ul>
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Project	<b>Data collection frequency:</b> Quarterly

**Number of buyers**

<b>Data element name:</b> Number of buyers	<b>Reporting question:</b> How many buyers are there in this marketing channel?
<b>Description:</b> List the number of individual firms or buyers in this marketing channel.	
<b>Data type:</b> Integer	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Count	<b>Allowed values:</b> 1-500
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Project	<b>Data collection frequency:</b> Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Names of buyers****Data element name:** Names of buyers**Reporting question:** What are the names of all of the buyers in this marketing channel?**Description:** Provide the names of all buyers in this marketing channel. Separate each name with a comma.**Data type:** Text**Select multiple values:** NA**Measurement unit:** Name**Allowed values:** Text**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Marketing channel geography****Data element name:** Marketing channel geography**Reporting question:** What is the primary geography of the marketing channel?**Description:** The primary geography of the type of marketing channel. Primary geography means the scale at which most of the activity of buying and selling happens. Local means within a single state or directly neighboring states. Regional means within a five-to-ten state area. National means across the United States. International means specific locations outside of the United States. Global means across the world or not to a specific international location.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Local
- Regional
- National
- Global

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Value sold****Data element name:** Value sold**Reporting question:** What is the value of the commodity sold in this marketing channel?**Description:** The dollar value of the commodity sold in this marketing channel this quarter (non-cumulative).**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Dollars**Allowed values:** \$1-\$100,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Volume sold****Data element name:** Volume sold**Reporting question:** What is the volume of the commodity sold in this marketing channel?**Description:** The volume of the commodity sold in this marketing channel this quarter (non-cumulative).**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Number**Allowed values:** 1-100,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Volume sold unit****Data element name:** Volume sold unit**Reporting question:** What is the unit of volume?**Description:** The unit associated with the volume of the commodity sold in the marketing channel. If "other" is chosen, use the additional column to enter the appropriate unit as free text.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Bales (500 pounds)
- Bushels
- Carcass pounds
- Gallons
- Kilograms
- Linear board feet
- Liveweight pounds
- Metric tons
- Pounds
- Short tons
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Price premium****Data element name:** Price premium**Reporting question:** What price premium is received for the commodity sold in this marketing channel?**Description:** The price premium received for the commodity sold in this marketing channel this quarter. Price premium is the amount received above a 'business as usual' price.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Dollars**Allowed values:** \$0.01-\$10,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Price premium unit****Data element name:** Price premium unit**Reporting question:** What is the unit for the price premium?**Description:** The unit associated with the price premium for the commodity sold in the marketing channel. If "other" is chosen, use the additional column to enter the appropriate unit as free text.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Per bale (500 pounds)
- Per bushel
- Per carcass pound
- Per gallon
- Per kilogram
- Per linear board foot
- Per live pound
- Per metric ton
- Per ounce
- Per short ton
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Price premium to producer****Data element name:** Price premium to producer**Reporting question:** What percent of the price premium is provided to the producer for the commodity sold in this marketing channel?**Description:** The percent of the price premium provided to the producer for the commodity sold in this marketing channel this quarter. Price premium is the amount received above a 'business as usual' price.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Percent**Allowed values:** 0-100**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Product differentiation method****Data element name:** Product differentiation method 1-3**Reporting question:** What methods are used to differentiate climate-smart commodities in this marketing channel?**Description:** Provide the methods used to differentiate the climate-smart commodity in this market channel. Product differentiation methods are ways to distinguish or differentiate the climate-smart commodity in the marketplace. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 product differentiation methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other product differentiation methods as free text.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Certification/verification for internal insetting
- Farm certification
- Label or badge used on packaging or marketing
- Third party certification/verification
- Trademark
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Marketing method****Data element name:** Marketing method 1-3**Reporting question:** What methods are used to market climate-smart commodities in this marketing channel?**Description:** Provide the method(s) used to market this commodity in this market channel. Marketing method is the way that potential buyers of the climate-smart commodity are engaged by the project partners as the sellers or facilitators of sale. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 marketing methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other marketing methods as free text**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Label or badge used on packaging or marketing materials
- Marketing partnership (e.g., promotion by buyer)
- Print marketing campaign
- Social media and digital marketing campaign
- Verbal marketing campaign (e.g., radio, word of mouth)
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Marketing channel identification method****Data element name:** Marketing channel identification method 1-3**Reporting question:** What methods are used to generate interest in climate-smart commodities in this marketing channel?

**Description:** Provide the marketing channel identification method(s) used for this commodity in this market channel. Market channel identification methods are the ways that producers and project partners generate interest in purchasing the climate-smart commodity. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 marketing channel identification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other marketing channel identification methods as free text

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Educational tours for buyers
- In-person lead generation
- Negotiated contracts with buyers
- Partnership network or project partner
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly**Traceability method****Data element name:** Traceability method 1-3**Reporting question:** What traceability methods are used for climate-smart commodities in this channel?

**Description:** Provide the traceability method(s) used for the climate-smart commodity in this market channel. Traceability methods are ways to trace the climate-smart commodity or the climate-smart claims through the supply chain. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 traceability methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other traceability methods as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Barcode or unique ID
- Blockchain
- Book and claim
- Chain of custody
- Mass balance
- Recordkeeping
- Registry with certification
- Segregation
- Supply shed
- Volume proxy
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Project**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Producer Enrollment**Unique IDs**

Farm ID	Unique Farm ID assigned by FSA
State or territory	State name (must match FSA farm enrollment data)
County of residence	County name (must match FSA farm enrollment data)

**Producer data change****Data element name:** Producer data change**Reporting question:** Is there new/updated information for a producer who is re-enrolling in the project?**Description:** Indicates that there is new or updated information for a producer who had previously enrolled in the project and is re-enrolling.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Re-enrollment**Producer start date****Data element name:** Producer start date**Reporting question:** When did the producer enroll in the project?**Description:** Date that the producer enrolled in the project by signing their first contract.**Data type:** Date**Select multiple values:** NA**Measurement unit:** MM/DD/YYYY**Allowed values:** 01/01/2023 – 12/31/2030**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment**Producer name****Data element name:** Producer name**Reporting question:** What is the name of producer enrolled in the project?**Description:** Name of the producer enrolled in the project; the name must match the name contained in the customer's Business Partner record and the Farm Operating Plan in FSA Business File for that Farm ID.**Data type:** Text**Select multiple values:** NA**Measurement unit:** NA**Allowed values:** Text**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Underserved status****Data element name:** Underserved status**Reporting question:** Is this producer considered an underserved and/or a small producer?

**Description:** Underserved status of the primary operator of the enrolled operation. Underserved producers generally include beginning farmers, socially disadvantaged farmers, veteran farmers, and limited resource farmers; women farmers and producers growing specialty crops are generally also included in these categories. Small farms are generally those with less than \$350,000 in annual gross cash farm income. Indicate whether this producer is considered underserved, a small producer, or both underserved and a small producer. Use "I don't know" if the producer declines to answer. Departmental Regulation 4370-001 provides USDA's policies for collecting demographic data, including race, ethnicity and gender. Providing demographic information is voluntary and at the discretion of the customer. Demographic information is used by USDA for statistical purposes only and will not be used to determine an applicant's eligibility for programs or services for which they apply.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes, underserved
- Yes, small producer
- Yes, underserved and small producer
- No
- I don't know

**Logic:** None – all respond**Required:** No**Data collection level:** Producer**Data collection frequency:** Initial enrollment**Total area****Data element name:** Total area**Reporting question:** What is the total area of the farm?

**Description:** Total area of the farm associated with the Farm ID. Report total area of the farm, even if only a portion of the farm is enrolled in the project. If a producer is enrolled in the project for multiple years, review the total area each time a new contract is signed and provide any necessary updates.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Less than 1 acre
- 1 to 9 acres
- 10 to 49 acres
- 50 to 69 acres
- 70 to 99 acres
- 100 to 139 acres
- 140 to 179 acres
- 180 to 219 acres
- 220 to 259 acres
- 260 to 499 acres
- 500 to 999 acres
- 1,000 to 1,999 acres
- 2,000 to 4,999 acres
- 5,000 or more acres

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Total crop area**

**Data element name:** Total crop area      **Reporting question:** What percent of the current operation is cropland?

**Description:** Area of the total farm that is currently used as cropland. If a producer is enrolled in the project for multiple years, review the total crop area each time a new contract is signed and provide any necessary updates.

**Data type:** Integer

**Select multiple values:** No

**Measurement unit:** Acres

**Allowed values:** 0-100,000

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable

**Total livestock area**

**Data element name:** Total livestock area      **Reporting question:** What amount of the current operation is used for livestock (by area)?

**Description:** Area of the total farm that is currently used for pasture, grazing, rangeland; or animal housing, feeding or milking. If a producer is enrolled in the project for multiple years, review the total livestock area each time a new contract is signed and provide any necessary updates.

**Data type:** Integer

**Select multiple values:** No

**Measurement unit:** Acres

**Allowed values:** 0-100,000

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable

**Total forest area**

**Data element name:** Total forest area      **Reporting question:** What amount of the current operation is forested (by area)?

**Description:** Area of the total farm that is currently considered forest land use. Forest land use means that at least 10% of the land area is covered in trees that will be at least 13 feet tall when mature. If a producer is enrolled in the project for multiple years, review the total forest area each time a new contract is signed and provide any necessary updates.

**Data type:** Integer

**Select multiple values:** No

**Measurement unit:** Acres

**Allowed values:** 0-100,000

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Livestock type****Data element name:** Livestock type 1-3**Reporting question:** What types of livestock are raised on the farm?

**Description:** Up to top three types of livestock (by head count) on the farm. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 livestock types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other livestock types as free text. If a producer is enrolled in the project for multiple years, review the livestock type each time a new contract is signed and provide any necessary updates.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Alpacas
- Beef cows
- Beefalo
- Buffalo or bison
- Chickens (broilers)
- Chickens (layers)
- Dairy cows
- Deer
- Ducks
- Elk
- Emus
- Equine
- Geese
- Goats
- Honeybees
- Llamas
- Reindeer
- Sheep
- Swine
- Turkeys
- Other (specify)

**Logic:** Respond if 'Total livestock area' >0**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable**Livestock head****Data element name:** Livestock head 1-3**Reporting question:** How many livestock (by type) are on this operation?

**Description:** Average annual head count for each type of livestock. Enter amounts for up to the top three livestock types by number. The worksheet provides three columns for this data element. Enter one value for each column. If there are fewer than 3 livestock types, leave unnecessary columns blank. If a producer is enrolled in the project for multiple years, review the average annual head count each time a new contract is signed and provide any necessary updates.

**Data type:** Integer**Select multiple values:** NA**Measurement unit:** Head count**Allowed values:** 1-10,000,000**Logic:** Respond if 'Total livestock area' >0**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Organic farm****Data element name:** Organic farm**Reporting question:** Is any part of the farm currently USDA-certified organic or transitioning to USDA-certified organic?

**Description:** USDA-certified organic means that the farm has been certified by an accredited organic certifying agent or is transitioning to USDA-certified organic by not using any of the prohibited substances. Yes means that some or all of the farm is certified organic or transitioning to certified organic. No means that no part of the farm is certified organic or transitioning to certified organic. If a producer is enrolled in the project for multiple years, review the organic certification status of the farm each time a new contract is signed and provide any necessary updates.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** None – all respond**Required:** No**Data collection level:** Producer**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable**Organic fields****Data element name:** Organic fields**Reporting question:** Are any of the fields enrolled in the project currently USDA-certified organic or transitioning to USDA-certified organic?

**Description:** USDA-certified organic means that the operation has been certified by an accredited organic certifying agent or is transitioning to USDA-certified organic by not using any of the prohibited substances. Yes means that some or all of the fields enrolled in the project are certified organic or transitioning to certified organic. No means that no part of the fields enrolled in the project are certified organic or transitioning to certified organic. If a producer is enrolled in the project for multiple years, review the organic certification status of the enrolled fields each time a new contract is signed and provide any necessary updates.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'Organic operation'**Required:** No**Data collection level:** Producer**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable**Producer motivation****Data element name:** Producer motivation**Reporting question:** Which of the following was the primary reason the producer enrolled in this project?**Description:** Primary operator's motivation for enrolling in the project.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Financial benefit
- Environmental benefit
- New market opportunity
- Partnerships or networks
- Other

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Producer outreach****Data element name:** Producer outreach 1-3**Reporting question:** What types of outreach were provided to producers?

**Description:** Up to three most common types of outreach provided to producer prior to enrollment. Outreach activities are those focused on identifying and enrolling producers in the project. Outreach can come from the recipient or project partners. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 outreach types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other outreach types as free text.

**Data type:** List**Select multiple values:** Yes**Measurement unit:** Category**Allowed values:**

- Commodity organizations
- Conferences
- Cooperative extension
- Digital communications and resources
- Education workshops, field days, and town halls
- Existing partner networks
- Farm visits and one-on-one meetings
- General advertising
- Peer referrals and producer groups
- Phone calls
- Print communications and resources
- Retailers
- State agencies
- Targeted messaging using proprietary data
- Technical service providers
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment**CSAF experience****Data element name:** CSAF experience**Reporting question:** Has the primary operator implemented CSAF practices in the last ten years anywhere on the farm?

**Description:** Has this farm implemented climate-smart agriculture or forestry (CSAF) practices anywhere on the farm in the past 10 years or since the current primary operator took control (whichever time period is shorter)? CSAF practices are included in a list in Appendix A.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**CSAF federal funds****Data element name:** CSAF federal funds**Reporting question:** Were prior CSAF practices supported by federal funds?

**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by federal funds? Federal funds are defined as being from programs including, but not limited to, those from the Natural Resources Conservation Service (NRCS), including through Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program (CSP), Regional Conservation Partnership Program (RCPP), or related programs), the Farm Service Agency Conservation Reserve Program (CRP), as well as funds from other USDA programs or other federal agencies.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'CSAF experience'**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment**CSAF state or local funds****Data element name:** CSAF state or local funds**Reporting question:** Were prior CSAF practices supported by state or local funds?

**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by state funds? State or local funds are those from state departments of agriculture or other state agencies, local water quality districts and other local agencies.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'CSAF experience'**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment**CSAF nonprofit funds****Data element name:** CSAF nonprofit funds**Reporting question:** Were CSAF practices supported by nonprofit funds?

**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by nonprofit funds? Nonprofit funds are those offered directly from a nonprofit organization to a producer.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'CSAF experience'**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**CSAF market incentives****Data element name:** CSAF market incentives**Reporting question:** Were CSAF practices supported by market incentives?**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by market incentives? Market incentives include premiums paid by a commodity buyer or by a consumer based on branding or labeling as a climate-smart commodity.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'CSAF experience'**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Initial enrollment





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Field Enrollment**Unique IDs**

Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name (must match FSA farm enrollment data)
County of field	County name (must match FSA farm enrollment data)
Prior Field ID, if applicable	Prior Field ID assigned by FSA if there has been reconstitution of the farm resulting in a new Field ID during the field's enrollment in the project

**Field data change****Data element name:** Field data change**Reporting question:** Has the information previously reported for this field changed?**Description:** Indicator that this entry is being used to report any relevant changes, such as a new Field ID number or changes to the commodity or practice combinations, for a field that has previously been enrolled in the project.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Re-enrollment**Contract start date****Data element name:** Contract start date**Reporting question:** What is the start date of the contract with the producer that includes this field?**Description:** Start date listed on the contract that enrolls the field in the project.**Data type:** Date**Select multiple values:** NA**Measurement unit:** MM/DD/YYYY**Allowed values:** 01/01/2023 – 12/31/2030**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment**Total field area****Data element name:** Total field area**Reporting question:** What is the total size of the enrolled field?**Description:** Total size of the field enrolled with the project.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Acres**Allowed values:** .01-500**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Commodity category****Data element name:** Commodity category**Reporting question:** What category of commodity(ies) is (are) produced from this field?**Description:** Category of commodity(ies) produced in field enrolled in the project**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Crops
- Livestock
- Trees
- Crops and livestock
- Crops and trees
- Livestock and trees
- Crops, livestock and trees

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment**Commodity type****Data element name:** Commodity type**Reporting question:** What type of commodity is produced from this field?**Description:** Type of commodity produced in field enrolled in the project. See full list in Appendix B. The worksheet provides a drop-down list of the allowed values. Choose the appropriate value. Enter additional commodities in subsequent rows.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:** FSA commodity list**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment**Baseline yield****Data element name:** Baseline yield**Reporting question:** What is the baseline yield of this field?**Description:** Average annual yield of commodity in 3 years prior to enrollment. Provide yield for the enrolled field if possible. If not at field level, provide average annual yield for the specific commodity for the operation.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Production per acre or animal**Allowed values:** .01-100,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Baseline yield unit****Data element name:** Baseline yield unit**Reporting question:** Baseline yield unit

**Description:** Unit of average annual yield of commodity in enrolled field in 3 years prior to enrollment. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Animal units per acre
- Bushels per acre
- Carcass pounds per animal
- Head per acre
- Hundred-weights (or pounds) per head
- Linear feet per acre
- Liveweight pounds per animal
- Pounds per acre
- Tons per acre
- Other (specify)

**Required:** Yes**Logic:** None – all respond**Data collection level:** Field**Data collection frequency:** Initial enrollment**Baseline yield location****Data element name:** Baseline yield location**Reporting question:** For what portion of the operation is the baseline yield being reported?

**Description:** Location of the reported average annual yield of commodity in 3 years prior to enrollment. If "other" is chosen, use the additional column to enter the appropriate location as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Enrolled field
- Whole operation
- Other (specify)

**Required:** Yes**Logic:** None – all respond**Data collection level:** Field**Data collection frequency:** Initial enrollment**Field land use****Data element name:** Field land use**Reporting question:** What is this field's land use history?

**Description:** Prior to enrollment, what was the most common land use for this field in the past 3 years?

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Crop land
- Forest land
- Non-agriculture
- Other agricultural land
- Pasture
- Range

**Required:** Yes**Logic:** None – all respond**Data collection level:** Field**Data collection frequency:** Initial enrollment





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Field irrigated****Data element name:** Field irrigated**Reporting question:** What is this field's irrigation history?**Description:** Prior to enrollment, what was the most common irrigation practice on this field the past 3 years?**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- No irrigation
- Center pivot
- Drip-subsurface
- Drip-surface
- Flood/border
- Furrow/ditch
- Lateral/linear sprinklers
- Micro-sprinklers
- Seepage
- Side roll
- Solid set sprinklers
- Supplemental
- Surface
- Traveling gun/towline
- Wheel Line
- Other

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment**Field tillage****Data element name:** Field tillage**Reporting question:** What is this field's tillage history?**Description:** Prior to enrollment, what was the most common tillage approach during the past 3 years?**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- None
- Conventional, inversion
- Conventional, vertical
- No-till, direct seed
- Reduced till, inversion
- Reduced till, vertical
- Strip till
- Other

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Practice past extent - farm****Data element name:** Practice past extent - farm**Description:** Prior to enrollment, on what portion of the whole farm had this (these) CSAF practice(s) ever been used by the primary operator? If multiple practices are planned to be implemented in this field, enter the value that best corresponds to the farm's prior experience with the planned set of practices.**Data type:** List**Measurement unit:** Category**Reporting question:** What percent of the farm has implemented this CSAF practice (combination) previously?**Select multiple values:** No**Allowed values:**

- Never used
- Used on less than 25% of operation
- Used on 25-50% of operation
- Used on 51-75% of operation
- Used on more than 75% of operation

**Required:** Yes**Logic:** None – all respond**Data collection level:** Field**Data collection frequency:** Initial enrollment**Field any CSAF practice****Data element name:** Field any CSAF practice**Description:** Prior to enrollment, have any CSAF practice or practices been used in this field in the past 3 years? CSAF practices are included in a list in Appendix A.**Data type:** List**Measurement unit:** Category**Reporting question:** What is this field's prior experience with CSAF practices?**Select multiple values:** No**Allowed values:**

- Yes
- No
- I don't know

**Required:** Yes**Logic:** None – all respond**Data collection level:** Field**Data collection frequency:** Initial enrollment**Practice past use - this field****Data element name:** Practice past use - this field**Description:** Prior to enrollment, had this (these) CSAF practice(s) been used in this field in the in the past 3 years? Enter yes if all of the practices had been used previously in this field; enter some if multiple practices are being implemented and one or more, but not all of the practices had been used previously in this field; and enter no if none of the practices had been used previously in this field.**Data type:** List**Measurement unit:** Category**Reporting question:** Have this CSAF practice (combination) been implemented previously in this field?**Select multiple values:** No**Allowed values:**

- Yes
- Some
- No
- I don't know

**Required:** Yes**Logic:** None – all respond**Data collection level:** Field**Data collection frequency:** Initial enrollment



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Practice type****Data element name:** Practice type 1-7**Reporting question:** What CSAF practice is being implemented in this field through the project?

**Description:** Which CSAF practice or practices will be implemented on this field as part of enrollment in the project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:** See list in Appendix A**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment**Practice standard****Data element name:** Practice standard 1-7**Reporting question:** What standard does the CSAF practice follow?

**Description:** Is the CSAF practice being implemented on the field as part of enrollment in the project following a defined practice standard? The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- NRCS
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment**Planned practice implementation year****Data element name:** Practice 1-7 implementation year**Reporting question:** What year is the CSAF practice planned to be implemented?

**Description:** Year that the CSAF practice is planned to be implemented on the field. Use 2022 for early adopters, defined as fields that have the practice actively implemented in 2022 (prior to contract being signed for this project). The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

**Data type:** Integer**Select multiple values:** No**Measurement unit:** Year**Allowed values:** 2022-2030**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment**Practice extent****Data element name:** Practice 1-7 extent**Reporting question:** To what extent is the practice implemented?

**Description:** Total area, length, or head where the practice is being implemented in the field specified by the contract.

**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Extent**Allowed values:** .01-100,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollment





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Practice extent unit****Data element name:** Practice 1-7  
extent unit**Reporting question:** Unit for extent of practice implementation**Description:** Unit for extent of practice implementation on the field specified by the contract. If "other" is chosen, use the additional column to enter the appropriate unit.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Acres
- Head of livestock
- Linear feet
- Square feet
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Initial enrollmentCSAF Practice Sub-questions

For certain practices, additional questions are asked that provide information necessary to estimate greenhouse gas benefits from implementation of the practice. See Table 11 in the *CSAF Practice Sub-questions* section for descriptions of individual questions to be answered depending on the CSAF practices selected.



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Farm Summary**Unique IDs**

Farm ID	Unique Farm ID assigned by FSA
State or territory	State name (must match FSA farm enrollment data)
County of residence	County name (must match FSA farm enrollment data)

**Producer TA received**

**Data element name:** Producer TA received  
1-3

**Reporting question:** What types of technical assistance were provided to this producer?

**Description:** Did the recipient or any partner provide technical assistance (TA) to the producer this year? Technical assistance is any training, education, capacity building or other support provided by any project partner(s) directly to producers enrolled in the project. List up to the top three most common types of TA provided to this producer. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 TA types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other TA types as free text.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**

- Demonstration plots
- Equipment demonstrations
- Group field days or in-person field workshops
- Hotline
- One-on-one enrollment assistance
- One-on-one field visits
- One-on-one producer mentorship
- Producer networks and peer-to-peer groups
- Retailer consultation
- Social media/digital tools
- Train-the-trainer opportunities
- Virtual meetings or field days
- Webinars and videos
- Written materials
- None
- Other (specify)

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

**Producer incentive amount**

**Data element name:** Producer incentive amount

**Reporting question:** What is the total value of financial incentives provided to this producer?

**Description:** Total incentive payment received by the producer from USDA project funds for the year (non-cumulative). Do not include incentive payments made with partner match funds.

**Data type:** Decimal

**Select multiple values:** NA

**Measurement unit:** Dollars

**Allowed values:** \$0-\$5,000,000

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Incentive reason**

**Data element name:** Incentive reason 1-4      **Reporting question:** Why were incentives provided to this producer?

**Description:** List up to four reasons for producer incentive payments. List the top 4 based on total value of the incentive for each reason. The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 reasons, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other reasons as free text.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**

- Avoided conversion
- Conference or training attendance
- Demographics/equity payment
- Enrollment
- Foregone revenue
- Historic data collection
- Identity preservation (supply chain tracing)
- Implementation of practices
- MMRV (e.g., data collection, reporting)
- Passing audit
- Price premium on output
- Yield change
- Other (specify)

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

**Incentive structure**

**Data element name:** Incentive structure 1-4      **Reporting question:** What are the units for the financial incentives provided to this producer?

**Description:** List the structures (units) corresponding to the top 4 (by dollar value) incentive payments to producers. Production unit is weight or volume (bushel, kilogram, ton). The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 structure types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other structure types as free text.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**

- Flat rate
- Per animal head
- Per area
- Per length
- Per production unit
- Per ton GHG
- Per tree
- Other (specify)

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Incentive type****Data element name:** Incentive type 1-4**Reporting question:** What type of incentives were provided to each producer?

**Description:** List the top 4 types of incentive payments to producers (based on dollar value). The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 incentive types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other incentive types as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Cash payment
- Equipment loan
- Guaranteed commodity premium payment
- Inputs and supplies
- Land rental
- Loan
- Paid labor
- Post-harvest transportation
- Tuition or fees for training
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Quarterly**Payment on enrollment****Data element name:** Payment on enrollment**Reporting question:** What portion of the financial incentive is provided to the producer upon enrollment in the project?

**Description:** Any incentive payment provided to the producer upon enrollment/signing a contract, and not related to any implementation, MMRV or sales activities. Full payment means the full incentive amount for any contract held by the producer is paid upon enrollment. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon enrollment. No payment means that none of the full incentive amount for any contract held by the producer is paid upon enrollment.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Full payment
- Partial payment
- No payment

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Quarterly**Payment on implementation****Data element name:** Payment on implementation**Reporting question:** What portion of the financial incentive is provided to the producer upon implementation of the practices?

**Description:** Any incentive payment provided to the producer upon implementing the practices included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon implementation. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon implementation. No payment means that none of the full incentive amount for any contract held by the producer is paid upon implementation.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Full payment
- Partial payment
- No payment

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Payment on harvest****Data element name:** Payment on harvest**Reporting question:** What portion of the financial incentive is provided to the producer upon harvest of the commodity?

**Description:** Any incentive payment provided to the producer upon harvesting or slaughtering the commodity included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon harvest. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon harvest. No payment means that none of the full incentive amount for any contract held by the producer is paid upon harvest.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Full payment
- Partial payment
- No payment

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Quarterly**Payment on MMRV****Data element name:** Payment on MMRV**Reporting question:** What portion of the financial incentive is provided to the producer upon completing MMRV requirements?

**Description:** Any incentive payment provided to the producer upon completing the annual MMRV requirements included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon MMRV being complete. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon MMRV being complete. No payment means that none of the full incentive amount for any contract held by the producer is paid upon MMRV being complete.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Full payment
- Partial payment
- No payment

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Quarterly**Payment on sale****Data element name:** Payment on sale**Reporting question:** What portion of the financial incentive is provided to producer upon sale of the commodity?

**Description:** Any incentive payment provided to the producer upon sale of the commodity included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon sale. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon sale. No payment means that none of the full incentive amount for any contract held by the producer is paid upon sale.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Full payment
- Partial payment
- No payment

**Logic:** None – all respond**Required:** Yes**Data collection level:** Producer**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Field Summary**Unique IDs**

Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name (must match FSA farm enrollment data)
County of field	County name (must match FSA farm enrollment data)

**Commodity type**

**Data element name:** Commodity type      **Reporting question:** What type of commodity is produced from this field?

**Description:** Type of commodity produced in field enrolled in the project. See full list in Appendix B. The worksheet provides multiple columns with a drop-down list of the allowed values. Choose one value for each column. Leave unnecessary columns blank.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:** FSA commodity list

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Quarterly

**Practice type**

**Data element name:** Field practice type 1-7      **Reporting question:** What CSAF practice is being implemented in this field through the project?

**Description:** Which climate-smart agriculture or forestry (CSAF) practice or practices are being implemented in this project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:** See list in Appendix A

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Quarterly

**Date practice complete**

**Data element name:** Date practice complete      **Reporting question:** When did the project certify CSAF practice implementation as complete?

**Description:** Date that the project certifies that implementation of the CSAF practice is complete on the field. Use January of the year prior to contract year for early adopters, defined as fields that have the practice actively implemented in the year prior to a contract associated with this project is signed). The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

**Data type:** Date

**Select multiple values:** No

**Measurement unit:** MM/DD/YYYY

**Allowed values:** 01/01/2023 – 12/31/2030

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Contract end date****Data element name:** Contract end date**Reporting question:** Contract end date**Description:** End date listed on the contract that enrolls the field in the project. If contract end date changes, submit updated end date during the next quarter's reporting.**Data type:** Date**Select multiple values:** No**Measurement unit:** MM/DD/YYYY**Allowed values:** 01/01/2023 – 12/31/2030**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**MMRV assistance provided****Data element name:** MMRV assistance provided**Reporting question:** Was MMRV assistance provided?**Description:** Was any MMRV assistance provided to the primary operator for this field? MMRV assistance includes in-field support for the use of technologies, consultation on data collection and input, and other support related to MMRV. MMRV is defined a measurement (calculations or estimations of GHG emissions), monitoring (ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time), reporting (documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization), and verification (independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable).**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Marketing assistance provided****Data element name:** Marketing assistance provided**Reporting question:** Was marketing assistance provided?**Description:** Was any marketing assistance provided to the primary operator for the commodity(ies) produced from this field? Marketing assistance includes guaranteeing the sale of the commodity(ies), providing a platform for the sale of the commodity(ies), providing a label, branding, or other support related to marketing.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Incentive per acre or head****Data element name:** Incentive per acre or head**Reporting question:** Is this field receiving a per-acre or per-head incentive?**Description:** Is this field receiving an incentive payment to implement a specific CSAF practice or set of practices on a per-acre or per-head (livestock) basis?**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Field commodity value**

<b>Data element name:</b> Field commodity value	<b>Reporting question:</b> What is the value of the commodity produced on the enrolled field?
<b>Description:</b> The dollar value of the commodity produced on the enrolled field.	
<b>Data type:</b> Decimal	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Dollars	<b>Allowed values:</b> \$1-\$10,000,000
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Field	<b>Data collection frequency:</b> Quarterly

**Field commodity volume**

<b>Data element name:</b> Field commodity volume	<b>Reporting question:</b> What is the volume of commodity produced on the enrolled field?
<b>Description:</b> The volume of the commodity produced on the enrolled field	
<b>Data type:</b> Decimal	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Number	<b>Allowed values:</b> 1-10,000,000
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Field	<b>Data collection frequency:</b> Quarterly

**Field commodity volume unit**

<b>Data element name:</b> Field commodity volume unit	<b>Reporting question:</b> What is the unit of volume?
<b>Description:</b> The unit associated with the volume of the commodity produced on the enrolled field. If “other” is chosen, enter the appropriate value in the additional column.	
<b>Data type:</b> List	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Category	<b>Allowed values:</b> <ul style="list-style-type: none"> <li>• Bushels</li> <li>• Carcass weight pounds</li> <li>• Gallons</li> <li>• Head</li> <li>• Linear feet</li> <li>• Liveweight pounds</li> <li>• Pounds</li> <li>• Tons</li> <li>• Other (specify)</li> </ul>
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Field	<b>Data collection frequency:</b> Quarterly

**Cost of implementation**

<b>Data element name:</b> Cost of implementation	<b>Reporting question:</b> What is the cost of practice implementation in the field?
<b>Description:</b> Total annual estimated cost per unit of implementing the practice(s) in the enrolled field.	
<b>Data type:</b> Decimal	<b>Select multiple values:</b> No
<b>Measurement unit:</b> Dollars	<b>Allowed values:</b> \$1-\$10,000,000
<b>Logic:</b> None – all respond	<b>Required:</b> Yes
<b>Data collection level:</b> Field	<b>Data collection frequency:</b> Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Cost unit****Data element name:** Cost unit**Reporting question:** What is the unit for cost?**Description:** The unit associated with the cost of implementing CSAF practices in the field. If "other" is chosen, enter the appropriate value in the additional column.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Per acre
- Per bushel
- Per head
- Per linear foot
- Per pound
- Per ton
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Cost coverage****Data element name:** Cost coverage**Reporting question:** What percent of the practice cost is covered by the incentive?**Description:** Estimated proportion of total annual cost of implementing the practice(s) that is covered by project incentives.**Data type:** Integer**Select multiple values:** No**Measurement unit:** Percent**Allowed values:** 0-100**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field GHG monitoring****Data element name:** Field GHG monitoring 1-3**Reporting question:** How were GHG impacts monitored in this field?

**Description:** Up to the top three forms of monitoring GHG benefits as part of MMRV requirements. Monitoring is defined as ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG monitoring methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG monitoring methods as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Drones
- Ground-level photos and videos
- On-farm inspection
- Plot-based sampling (e.g., soil, water)
- Producer records or attestation
- Satellite monitoring or remote sensing
- Soil metagenomics
- Soil sensors
- Water sensors
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Field GHG reporting****Data element name:** Field GHG reporting 1-3**Reporting question:** How were GHG benefits reported for this field?

**Description:** Up to the top three forms of reporting on GHG benefits as part of MMRV requirements. Reporting is defined as documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG reporting methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG reporting methods as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Automated devices
- Email
- Mobile app
- Paper
- Third-party actors
- Website
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field GHG verification****Data element name:** Field GHG verification 1-3**Reporting question:** How was implementation of practices to reduce GHG emissions verified for this field?

**Description:** Up to the top three of verification of GHG benefits as part of MMRV requirements. Verification is defined as independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG verification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG verification methods as free text.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Artificial intelligence
- Computer modeling
- Recipient audit
- Photos
- Record audit
- Satellite imagery
- Site or field visit
- Third-party audit
- Other (specify)

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Field GHG calculations****Data element name:** Field GHG calculations**Reporting question:** What methods are used to calculate GHG benefits in this field?**Description:** List the method(s) used to calculate GHG benefits in this field. If yes to direct physical measurements, submit result reports (see *Supplemental Data Submission – Field direct GHG measurement results*).**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Models
- Direct field measurements
- Both

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field official GHG calculation****Data element name:** Field official GHG calculation**Reporting question:** What method was used to calculate the official GHG benefits in this field?**Description:** List the method used to calculate the official GHG benefits in this field that are reported as part of the project's aggregate impact.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Models
- Direct field measurements

**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field official GHG ER****Data element name:** Field official GHG emission reductions**Reporting question:** What are the estimated total GHG emission reductions (CO<sub>2</sub>eq) in this field?**Description:** Estimated greenhouse gas emission reductions from practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field official carbon stock****Data element name:** Field official carbon stock**Reporting question:** How much carbon has been sequestered in this field?**Description:** Estimated total change in carbon stock based on practice implementation in this field. This data element can be reported in any quarter and is cumulative for the year. Conversion rate is one ton of carbon = 3.67 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Field official CO2 ER****Data element name:** Field official CO2 emission reductions**Reporting question:** What are the estimated total CO2 emission reductions in this field?**Description:** Estimated total carbon dioxide emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field official CH4 ER****Data element name:** Field official CH4 emission reductions**Reporting question:** What are the estimated total CH4 emission reductions in this field?**Description:** Estimated total methane emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate. Conversion rate is one ton of CH<sub>4</sub> = 25 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CH4 reduced in CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field official N2O ER****Data element name:** Field official N2O emission reductions**Reporting question:** What are the estimated total N2O emission reductions in this field?**Description:** Estimated total nitrous oxide emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate. Conversion rate is one ton of N<sub>2</sub>O = 298 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons N2O reduced in CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly**Field offsets produced****Data element name:** Field offsets produced**Reporting question:** How many carbon offsets have been produced in this field?**Description:** Total carbon offsets produced in the field during the quarter (not cumulative). Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** Yes**Data collection level:** Field**Data collection frequency:** Quarterly



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Field insets produced**

**Data element name:** Field insets produced      **Reporting question:** How many carbon insets have been produced in this field?

**Description:** Total carbon insets produced in the field during the quarter (not cumulative). Insets are defined as having been verified and certified using an accepted standard and accounted for within Scope 3 emissions for a firm.

**Data type:** Decimal

**Select multiple values:** No

**Measurement unit:** Metric tons CO<sub>2</sub>eq

**Allowed values:** 0-10,000,000

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Quarterly

**Other field measurement**

**Data element name:** Other field measurement      **Reporting question:** Were data collected from the field for reasons other than GHG benefit estimation?

**Description:** Direct physical measurements or data collection taken in the field for any reason other than GHG benefits estimation. These reasons could include calibration of GHG estimation tools or models, tracking other environmental benefits (see Field environmental benefits report), and other reasons. If yes, submit corresponding reports (see *Supplemental data submission - Field direct measurement results*).

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**

- Yes
- No
- I don't know

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Quarterly





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

GHG Benefits - Alternate Modeled**Unique IDs**

Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name (must match FSA farm enrollment data)
County of field	County name (must match FSA farm enrollment data)

**Commodity type****Data element name:** Commodity type 1-6**Reporting question:** What type of commodity(ies) is produced from this field?

**Description:** Type of commodity(ies) produced in field enrolled in the project. See full list of commodity options in Appendix B. The worksheet provides multiple columns with drop-down lists of the allowed values. Choose one value for each column. Leave unnecessary columns blank

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:** FSA commodity list**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual**Practice type****Data element name:** Practice type 1-7**Reporting question:** What CSAF practice is being implemented by this project?

**Description:** Which CSAF practice or practices are being implemented in this project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented by the project, leave unnecessary columns blank.

**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:** See list in Appendix A**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**GHG model****Data element name:** GHG model      **Reporting question:** What model was used for alternate calculation of GHG benefits?**Description:** Select the model used for the alternate calculation of the field's GHG benefits.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- ACC Calculator
- Agriculture, Forestry and Other Land Use (AFOLU) Carbon Calculator
- AIRES
- APEX
- Bowen Ratio Energy Balance
- Carat-Calculator
- CArPE
- CDFA web-based calculator
- COMET-Farm
- COMET-Planner
- CoolFarm
- Cover Crop Explore
- CropTrak
- CultivateAI's FMIS
- DayCent-CR
- DNDC
- DSSAT
- Earth Optics
- EcoPractices
- EPIC
- Extrapolation based on literature
- FieldPrint
- Granular
- GREET
- gTIR
- IFSM
- IPCC default emissions factors & models
- itree
- Nitrogen Balance
- Nutrient Tracking Tool (NTT)
- RCD Project Tracker
- Revised Universal Soil Loss equation 2 (RUSLE2)
- RuFaS
- SAFE-Link
- SALUS (CIBO)
- SNAPGRAZE
- SquareRoots
- SWAT-C
- SYMFONI
- Truterra Sustainability Tool
- Verra
- WEPP
- YardStick
- Other (specify)

**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Model start date****Data element name:** Model start date**Reporting question:** For what time period are the GHG benefits modeled (model start date)?**Description:** Date that the model parameters begin.**Data type:** Date**Select multiple values:** NA**Measurement unit:** MM/DD/YYYY**Allowed values:** 01/01/1950 – 12/31/2030**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual**Model end date****Data element name:** Model end date**Reporting question:** For what time period are the GHG benefits modeled (model end date)?**Description:** Date that the model parameters end.**Data type:** Date**Select multiple values:** NA**Measurement unit:** MM/DD/YYYY**Allowed values:** 01/01/2023– 12/31/2030**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual**Total GHG benefits estimated****Data element name:** Total GHG benefits estimated**Reporting question:** What is the alternate estimate of the field's total GHG emission reductions?**Description:** Total greenhouse gas emission reductions from practice implementation in the field estimated using an alternate model.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual**Total carbon stock estimated****Data element name:** Total carbon stock estimated**Reporting question:** What is the alternate estimate of how much carbon has the field has sequestered?**Description:** Total change in carbon stock based on practice implementation in the field estimated using an alternate model. Conversion rate is one ton of carbon = 3.67 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual**Total CO<sub>2</sub> estimated****Data element name:** Total CO<sub>2</sub> estimated**Reporting question:** What is the alternate estimate of the field's total CO<sub>2</sub> emission reductions?**Description:** Total carbon dioxide emission reductions based on practice implementation in the field estimated using an alternate model.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Total CH4 estimated****Data element name:** Total CH4 estimated**Reporting question:** What is the alternate estimate of the field's total CH4 emission reductions?**Description:** Total methane emission reductions based on practice implementation in the field estimated using an alternate model. Conversion rate is one ton of CH<sub>4</sub> = 25 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CH4 reduced in CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual**Total field N2O estimated****Data element name:** Total N2O estimated**Reporting question:** What is the alternate estimate of the field's total N2O emission reductions?**Description:** Total nitrous oxide emission reductions based on practice implementation in the field estimated using an alternate method. Conversion rate is one ton of N<sub>2</sub>O = 298 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons N2O reduced in CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If project calculates GHG benefits using multiple methods**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

GHG Benefits - Measured**Unique IDs**

Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name (must match FSA farm enrollment data)
County of field	County name (must match FSA farm enrollment data)

**GHG measurement method****Data element name:** GHG measurement method**Reporting question:** What measurement method is used to calculate GHG benefits?**Description:** Field-based measurement method used to calculate GHG benefits. If “other” is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Select multiple values:** No**Allowed values:**

- Emissions measurement unit
- Flux towers
- Litterbags
- Plant measurements
- Portable emissions analyzers
- Soil flux chambers
- Soil samples
- Soil sensors
- Vehicle-mounted sensors
- Other (specify)

**Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field**Logic:** None – all respond**Data collection level:** Field**Data collection frequency:** Annual**Lab name****Data element name:** Lab name**Reporting question:** What is the name of the lab that processed the measurement samples?**Description:** Name of entity that received data and conducted analysis of samples.**Data type:** Text**Select multiple values:** No**Measurement unit:** NA**Allowed values:** Free text**Logic:** None – all respond**Required:** If applicable**Data collection level:** Field**Data collection frequency:** Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Measurement start date****Data element name:** Measurement start date**Reporting question:** On what date did the measurement start?**Description:** Date that the measurements began. If it was a single point in time, use the same date for start date and end date. If multiple measurements took place over a time period, use the date that the measurements first began.**Data type:** Date**Select multiple values:** No**Measurement unit:** MM/DD/YYYY**Allowed values:** 01/01/2023 – 12/31/2030**Logic:** None – all respond**Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field**Data collection level:** Field**Data collection frequency:** Annual**Measurement end date****Data element name:** Measurement end date**Reporting question:** On what date did the measurement end?**Description:** Date that the measurements began. If it was a single point in time, use the same date for start date and end date. If multiple measurements took place over a time period, use the date that the measurements were completed.**Data type:** Date**Select multiple values:** No**Measurement unit:** MM/DD/YYYY**Allowed values:** 01/01/2023– 12/31/2030**Logic:** None – all respond**Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field**Data collection level:** Field**Data collection frequency:** Annual**Total CO2 reduction calculated****Data element name:** Total CO2 reduction calculated**Reporting question:** What are the total measured CO2 emission reductions?**Description:** Total annual CO2 emission reductions based on practice implementation in the field calculated from in-field measurements.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If a project takes carbon stock or greenhouse gas emission measurements in this field**Data collection level:** Field**Data collection frequency:** Annual**Total field carbon stock measured****Data element name:** Total field carbon stock measured**Reporting question:** What is the total amount of carbon sequestered based on repeat measurements in this field?**Description:** Change in carbon stock based on practice implementation in the field calculated from repeat soil sampling in this field. (Results for initial field soil samples should be reported in the 'Soil sample result' and 'Measurement type' columns.) Conversion rate is one ton of carbon = 3.67 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If a project conducts soil samples or takes carbon stock measurements in this field**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Total CH4 reduction calculated****Data element name:** Total CH4 reduction calculated**Reporting question:** What are the total measured CH4 emission reductions?**Description:** Total annual methane emission reductions based on practice implementation in the field calculated from in-field measurements. Conversion rate is one ton of CH<sub>4</sub> = 25 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons CH4 reduced in CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field**Data collection level:** Field**Data collection frequency:** Annual**Total N2O reduction calculated****Data element name:** Total N2O reduction calculated**Reporting question:** What are the total measured N2O emission reductions?**Description:** Total annual nitrous oxide emission reductions based on practice implementation in the field calculated from in-field measurements. Conversion rate is one ton of N<sub>2</sub>O = 298 tons of CO<sub>2</sub>eq.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Metric tons N2O reduced in CO<sub>2</sub>eq**Allowed values:** 0-10,000,000**Logic:** None – all respond**Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field**Data collection level:** Field**Data collection frequency:** Annual**Soil sample result****Data element name:** Soil sample result**Reporting question:** What is the numeric result from this soil sample?**Description:** Results of measurement(s) taken to determine the carbon stock of a soil (the tons of carbon found in a specified volume of soil).**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Amount**Allowed values:** .00001-100,000**Logic:** None – all respond**Required:** If a project conducts soil samples in this field**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

---

**Soil sample result unit**

---

**Data element name:** Soil sample result unit      **Reporting question:** What is unit for the soil sample result?**Description:** Unit for the corresponding soil sample result. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free text.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Percent
- Ppm
- Grams
- Grams per cubic centimeter
- Other (specify)

**Logic:** None – all respond**Required:** If a project conducts soil samples in this field**Data collection level:** Field**Data collection frequency:** Annual

---

**Measurement type**

---

**Data element name:** Measurement type**Reporting question:** What type of analysis was conducted for this soil sample?**Description:** Type of soil analysis conducted. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free text.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Organic matter
- Total organic carbon
- Bulk density
- Other (specify)

**Logic:** None – all respond**Required:** If a project conducts soil samples in this field**Data collection level:** Field**Data collection frequency:** Annual

---





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Additional Environmental Benefits**Unique IDs**

Farm ID	Unique Farm ID assigned by FSA
Tract ID	Unique Tract ID assigned by FSA
Field ID	Unique Field ID assigned by FSA
State or territory of field	State name (must match FSA farm enrollment data)
County of field	County name (must match FSA farm enrollment data)

**Environmental benefits**

**Data element name:** Environmental benefits

**Reporting question:** Are environmental benefits other than GHGs being tracked in the field?

**Description:** Tracking of environmental benefits other than greenhouse gas emission reductions and carbon sequestration in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**

- Yes
- No
- I don't know

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Annual

**Reduction in nitrogen loss**

**Data element name:** Reduction in nitrogen loss

**Reporting question:** Are reductions in nitrogen losses being tracked in the field?

**Description:** Tracking reductions in nitrogen losses in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'Environmental benefits'

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Annual

**Reduction in nitrogen loss amount**

**Data element**

**name:** Reduction in nitrogen loss amount

**Reporting question:** How much reduction in nitrogen losses have been measured in the field?

**Description:** Total amount of reduction in nitrogen losses that is measured and reported in the enrolled field.

**Data type:** Decimal

**Select multiple values:** No

**Measurement unit:** Amount

**Allowed values:** 0-1,000,000

**Logic:** Respond if yes to 'Reduction in nitrogen loss'

**Required:** Yes

**Data collection level:** Field

**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Reduction in nitrogen loss amount unit****Data element name:** Reduction in nitrogen loss amount unit**Description:** Unit for the total amount of reduction in nitrogen losses that is measured and reported in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the unit for how much reduction in nitrogen losses have been measured in the field?**Select multiple values:** No**Allowed values:**

- Kilograms
- Metric tons
- Pounds
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Reduction in nitrogen loss'**Data collection level:** Field**Data collection frequency:** Annual**Reduction in nitrogen loss purpose****Data element name:** Reduction in nitrogen loss purpose**Description:** Purpose of tracking reduction in nitrogen losses in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking reduction in nitrogen losses?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Reduction in nitrogen loss'**Data collection level:** Project**Data collection frequency:** Annual**Reduction in phosphorus loss****Data element name:** Reduction in phosphorus loss**Description:** Tracking of reductions in phosphorus losses in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.**Data type:** List**Measurement unit:** Category**Reporting question:** Are reductions in phosphorus losses being tracked in the field?**Select multiple values:** No**Allowed values:**

- Yes
- No
- I don't know

**Required:** Yes**Logic:** Respond if yes to 'Environmental benefits'**Data collection level:** Field**Data collection frequency:** Annual**Reduction in phosphorus loss amount****Data element name:** Reduction in phosphorus loss amount**Description:** Total amount of reduction in phosphorus losses that is measured in the field.**Data type:** Decimal**Measurement unit:** Amount**Reporting question:** How much reduction in phosphorus losses have been measured in the field?**Select multiple values:** No**Allowed values:** 0-1,000,000**Required:** Yes**Logic:** Respond if yes to 'Reduction in phosphorus loss'**Data collection level:** Field**Data collection frequency:** Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Reduction in phosphorus loss amount unit****Data element name:** Reduction in phosphorus loss amount unit**Description:** Unit for the total amount of reduction in phosphorus losses that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the unit for the reduction in phosphorus losses measured in the field?**Select multiple values:** No**Allowed values:**

- Kilograms
- Metric tons
- Pounds
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Reduction in phosphorus loss'**Data collection level:** Field**Data collection frequency:** Annual**Reduction in phosphorus loss purpose****Data element name:** Reduction in phosphorus loss purpose**Description:** Purpose of tracking reduction in phosphorus losses in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking reductions in phosphorus losses?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Reduction in phosphorus loss'**Data collection level:** Field**Data collection frequency:** Annual**Other water quality****Data element name:** Other water quality**Reporting question:** Are other water quality metrics being tracked in the field?**Description:** Project tracking of other water quality metrics in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.**Data type:** List**Measurement unit:** Category**Select multiple values:** No**Allowed values:**

- Yes
- No
- I don't know

**Required:** Yes**Logic:** Respond if yes to 'Environmental benefits'**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Other water quality type****Data element name:** Other water quality type**Description:** Type of other water quality metric (besides nitrogen loss and phosphorus loss reductions) that is measured in the field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Logic:** Respond if yes to 'Other water quality'**Data collection level:** Field**Reporting question:** What type of other water quality metric have been measured in the field?**Select multiple values:** No**Allowed values:**

- Sediment load reduction
- Temperature
- Other (specify)

**Required:** Yes**Data collection frequency:** Annual**Other water quality amount****Data element name:** Other water quality amount**Description:** Total amount of reduction in other water quality metrics that is measured in the enrolled field.**Data type:** Decimal**Measurement unit:** Amount**Logic:** Respond if yes to 'Other water quality'**Data collection level:** Field**Reporting question:** How much reduction in other water quality metrics have been measured in the field?**Select multiple values:** No**Allowed values:** 0-1,000,000**Required:** Yes**Data collection frequency:** Annual**Other water quality amount unit****Data element name:** Other water quality amount unit**Description:** Unit for the total amount of reduction in other water quality metrics that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Logic:** Respond if yes to 'Other water quality'**Data collection level:** Field**Reporting question:** What is the unit for the reduction in other water quality metrics measured in the field?**Select multiple values:** No**Allowed values:**

- Degrees F
- Kilograms
- Kilograms per liter
- Metric tons
- Pounds
- Other (specify)

**Required:** Yes**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Other water quality purpose****Data element name:** Other water quality purpose**Description:** Purpose of tracking other water quality benefits in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking other water quality benefits?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Other water quality'**Data collection level:** Field**Data collection frequency:** Annual**Water quantity****Data element name:** Water quantity**Reporting question:** Is water conservation being tracked in the field?**Description:** Tracking of water conservation or reduction in use in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.**Data type:** List**Measurement unit:** Category**Select multiple values:** No**Allowed values:**

- Yes
- No
- I don't know

**Required:** Yes**Logic:** Respond if yes to 'Environmental benefits'**Data collection level:** Field**Data collection frequency:** Annual**Water quantity amount****Data element name:** Water quantity amount**Reporting question:** How much water conservation has been measured in the field?**Description:** Total amount of water conservation or reduction that is measured in the field.**Data type:** Decimal**Measurement unit:** Amount**Select multiple values:** No**Allowed values:** 0-1,000,000**Logic:** Respond if yes to 'Water quantity'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Water quantity amount unit****Data element name:** Water quantity amount unit**Reporting question:** What is the unit for the amount of water conservation measured in the field?**Description:** Unit for the total amount of water conservation or reduced use that is measured and reported in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Select multiple values:** No**Allowed values:**

- Acre-feet
- Cubic feet
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Water quantity'**Data collection level:** Field**Data collection frequency:** Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Water quantity purpose****Data element name:** Water quantity purpose**Description:** Purpose of tracking water conservation or reductions in water use in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking water conservation?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Logic:** Respond if yes to 'Water quantity'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Reduced erosion****Data element name:** Reduced erosion**Reporting question:** Is reduced soil erosion being tracked in the field?**Description:** Tracking of reduced soil erosion in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'Environmental benefits'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Reduced erosion amount****Data element name:** Reduced erosion amount**Reporting question:** How much erosion reduction has been measured in the field?**Description:** Total amount of erosion reduction that is measured in the enrolled field.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Amount**Allowed values:** 0-1,000,000**Logic:** Respond if yes to 'Reduced erosion'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Reduced erosion amount unit****Data element name:** Reduced erosion unit**Reporting question:** What is the unit for the amount of erosion reduction measured?**Description:** Unit for the total amount of erosion reduction from enrolled fields that is measured and reported by the project. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Tons
- Other (specify)

**Logic:** Respond if yes to 'Reduced erosion'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Reduced erosion purpose****Data element name:** Reduced erosion purpose**Description:** Purpose of tracking reduced erosion the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking reduced erosion in the field?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Logic:** Respond if yes to 'Reduced erosion'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Reduced energy use****Data element name:** Reduced energy use**Reporting question:** Is reduced energy use being tracked in the field?**Description:** Tracking of reduced energy use in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Yes
- No
- I don't know

**Logic:** Respond if yes to 'Environmental benefits'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Reduced energy use amount****Data element name:** Reduced energy use amount**Reporting question:** How much energy use reduction has been measured in the field?**Description:** Total amount of energy use reduction that is measured in the enrolled field.**Data type:** Decimal**Select multiple values:** No**Measurement unit:** Amount**Allowed values:** 0-1,000,000**Logic:** Respond if yes to 'Reduced energy use'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Reduced energy use amount unit****Data element name:** Reduced energy use unit**Reporting question:** What is the unit for the energy use reduction measured in the field?**Description:** Unit for the total amount of energy use reduction that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Select multiple values:** No**Measurement unit:** Category**Allowed values:**

- Kilowatt hours
- Other (specify)

**Logic:** Respond if yes to 'Reduced energy use'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Reduced energy use purpose****Data element name:** Reduced energy use purpose**Description:** Purpose of tracking reduced energy use in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking reduced energy use in the field?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Reduced energy use'**Data collection level:** Field**Data collection frequency:** Annual**Avoided land conversion****Data element name:** Avoided land conversion**Description:** Tracking of avoided land conversion in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits. Land conservation means land use changing from agricultural uses to non-agricultural uses.**Data type:** List**Measurement unit:** Category**Reporting question:** Is avoided land conversion being tracked in the field?**Select multiple values:** No**Allowed values:**

- Yes
- No
- I don't know

**Required:** Yes**Logic:** Respond if yes to 'Environmental benefits'**Data collection level:** Field**Data collection frequency:** Annual**Avoided land conversion amount****Data element name:** Avoided land conversion amount**Description:** Total amount of avoided land conversion that is measured in the enrolled field.**Data type:** Decimal**Measurement unit:** Amount**Reporting question:** How much avoided land conversion has been measured in the field?**Select multiple values:** No**Allowed values:** 0-1,000,000**Logic:** Respond if yes to 'Avoided land conversion'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Avoided land conversion amount unit****Data element name:** Avoided land conversion unit**Description:** Unit for the total amount of avoided land conversion that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the unit for the amount of avoided land conversion measured in the field?**Select multiple values:** No**Allowed values:**

- Acres
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Avoided land conversion'**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Avoided land conversion purpose****Data element name:** Avoided land conversion purpose**Description:** Purpose of tracking avoided land conversion in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking avoided land conversion in the field?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Avoided land conversion'**Data collection level:** Field**Data collection frequency:** Annual**Improved wildlife habitat****Data element name:** Improved wildlife habitat**Description:** Tracking of improvements to wildlife in and around the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.**Data type:** List**Measurement unit:** Category**Reporting question:** Are improvements to wildlife habitat being tracked in the field?**Select multiple values:** No**Allowed values:**

- Yes
- No
- I don't know

**Required:** Yes**Logic:** Respond if yes to 'Environmental benefits'**Data collection level:** Field**Data collection frequency:** Annual**Improved wildlife habitat amount****Data element name:** Improved wildlife habitat amount**Description:** Total amount of improved wildlife habitat that is measured in and around the enrolled fields.**Data type:** Decimal**Measurement unit:** Amount**Reporting question:** How much improved wildlife habitat has been measured in the field?**Select multiple values:** No**Allowed values:** 0-1,000,000**Logic:** Respond if yes to 'Improved wildlife habitat'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual**Improved wildlife habitat amount unit****Data element name:** Improved wildlife habitat unit**Description:** Unit for the total amount of improved wildlife habitat that is measured in and around enrolled fields. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the unit for the amount of improved wildlife habitat measured in the field?**Select multiple values:** No**Allowed values:**

- Acres
- Linear feet
- Other (specify)

**Required:** Yes**Logic:** Respond if yes to 'Improved wildlife habitat'**Data collection level:** Field**Data collection frequency:** Annual



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

**Improved wildlife habitat purpose****Data element name:** Improved wildlife habitat purpose**Description:** Purpose of tracking improved wildlife habitat in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.**Data type:** List**Measurement unit:** Category**Reporting question:** What is the purpose of tracking improved wildlife habitat in the field?**Select multiple values:** No**Allowed values:**

- Commodity marketing
- Producing insets
- Producing offsets
- I don't know
- Other (specify)

**Logic:** Respond if yes to 'Improved wildlife habitat'**Required:** Yes**Data collection level:** Field**Data collection frequency:** Annual





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

CSAF Practice Sub-questions

For some CSAF practices, there is an additional set of questions that are unique to each practice. Responses to these questions are needed to verify estimated GHG benefits of these practices. If a field is implementing a CSAF practice with an NRCS CPS code in Table 11, answer the follow-up questions listed next to the relevant practice name in the table. Use the *Supplemental Reporting Workbook – CSAF Practice Sub-questions* to report the required information.

Table 11. Follow-on questions for select CSAF practices

Practice name and code	Follow-up question	Options (select one)
Alley Cropping (CPS 311)	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Shrubs
	Species density (number of trees planted per acre)	1-10,000
Anaerobic Digester (CPS 366)	Waste storage system prior to installing anaerobic digester	Aerobic lagoon Anaerobic digester (complex mix) with energy generation Anaerobic digester (plug flow) with energy generation Anaerobic lagoon Composting Covered lagoon (no energy generation or flaring) Covered lagoon with energy generation Covered lagoon with flaring Daily spread Deep bedding pack Deep pit Dry lot Dry stacking/solid storage Pasture/range/paddock Poultry with bedding Poultry without bedding (e.g., high rise) Slurry tank/basin
		Covered lagoon with energy generation Covered lagoon with flaring Covered lagoon (no energy generation or flaring) Complex mix with energy generation Plug flow with energy generation Other (specify)
		Food waste Straw or bedding Wastewater Other (specify)



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Combustion System Improvement (CPS 372)	Fuel type before installation	Coal
		Diesel
	Fuel type after installation	Electricity
		Gasoline
		Kerosene
		Liquified petroleum gas (LPG)
		Natural gas
		Propane
		Wood
		Other (specify)
Conservation Cover (CPS 327)	Fuel amount before installation	0-1,000,000
	Fuel amount unit before installation	Cubic feet (natural gas)
		Gallons (diesel, gasoline, propane, LPG, kerosene)
		Kilowatt-hours (electricity)
		Pounds (wood, coal)
		Other (specify)
	Fuel type after installation	Coal
		Diesel
		Electricity
		Gasoline
		Kerosene
		Liquified petroleum gas (LPG)
		Natural gas
		Propane
	Fuel type before installation	Wood
		Other (specify)
	Fuel amount after installation	0-1,000,000
	Fuel amount unit after installation	Cubic feet (natural gas)
		Gallons (diesel, gasoline, propane, LPG, kerosene)
		Kilowatt-hours (electricity)
		Pounds (wood, coal)
		Other (specify)
Conservation Cover (CPS 327)	Species category (select most common/extensive type if using more than one)	Brassicas
		Grasses
		Legumes
		Non-legume broadleaves
		Shrubs





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Conservation Crop Rotation (CPS 328)	Conservation crop type	Brassica Broadleaf Cool season Grass Legume Warm season
	Change implemented	Added perennial crop Reduced fallow period Both
	Conservation crop rotation tillage type	Conventional (plow, chisel, disk) No-till, direct seed Reduced till Strip till None Other (specify)
	Total conservation crop rotation length in days	1-120
Contour Buffer Strips (CPS 332)	Strip width (feet)	1-100
	Species category	Grasses Forbs Mix
Cover Crop (CPS 340)	Species category (select most common/extensive type if using more than one)	Brassicas Forbs Grasses Legume Non-legume broadleaves
	Cover crop planned management	Grazing Haying Termination
	Cover crop termination method	Burning Herbicide application Incorporation Mowing Rolling/crimping Winter kill/frost
Critical Area Planting (CPS 342)	Species category (select most common/extensive type if using more than one)	Grass Grass legume/forb mix Herbaceous woody mix Perennial or reseeding Shrubs Trees
Feed Management (CPS 592)	Crude protein (percent)	0-100
	Fat (percent)	0-100
	Feed additives/supplements	Chemical Edible oils/fats Seaweed/kelp Other (specify)
Field Border (CPS 386)	Species category (select most common/extensive type if using more than one)	Forbs Grasses Mix Shrubs



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

	Strip width (feet)	20-1,000
Filter Strip (CPS 393)	Species category (select most common/extensive type if using more than one)	Forbs Grasses Mix Shrubs
Forest Farming (CPS 379)	Land use in previous year	Forest Multi-story cropping Pasture/grazing land Row crops Other agroforestry
Forest Stand Improvement (CPS 666)	Purpose for implementation	Maintain or improve forest carbon stocks Maintain or improve forest health and productivity Maintain or improve forest structure and composition Maintain or improve wildlife, fish, and pollinator habitat Manage natural precipitation more efficiently Reduce forest pest pressure Reduce forest wildfire hazard
Grassed Waterway (CPS 412)	Species category (select most common/extensive type if using more than one)	Flowering Plants Forbs Grasses
Hedgerow Planting (CPS 422)	Species category (select most common/extensive type if using more than one)	Grasses Shrubs Trees
	Species density (number of trees planted per acre)	1-10,000
Herbaceous Wind Barriers (CPS 603)	Species category (select most common/extensive type if using more than one)	Forbs Grasses Mix Shrubs
	Barrier width (feet)	1-1,000
	Number of rows	1-100
Mulching (CPS 484)	Mulch type	Gravel Natural Synthetic Wood
	Mulch cover (percent of field)	0-100



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Nutrient management (CPS 590)	Nutrient type with CPS 590	Biosolids Commercial fertilizers Compost EEf (nitrification inhibitor) EEf (slow or controlled release) EEf (urease inhibitor) Green manure Liquid animal manure Organic by-products Organic residues or materials Solid/semi-solid animal manure Wastewater
	Nutrient application method with CPS 590	Banded Broadcast Injection Irrigation Surface application Surface application with tillage Variable rate
	Nutrient application method in the previous year	Banded Broadcast Injection Irrigation Surface application Surface application with tillage Variable rate
	Nutrient application timing with CPS 590	Single pre-planting Single post-planting Split pre- and post-planting Split post-planting
	Nutrient application timing in the previous year	Single pre-planting Single post-planting Split pre- and post-planting Split post-planting
	Nutrient application rate with CPS 590	0-20,000
	Nutrient application rate unit with CPS 590	Gallons per acre Pounds per acre
	Nutrient application rate change	Decrease compared to previous year Increase compared to previous year No change
	Species category (select most common/extensive type if using more than one)	Cool-season broadleaf Cool-season grass Warm-season broadleaf Warm-season grass
	Termination process	Grazing Haying (i.e., cutting and baling) Other (specify)
Prescribed Grazing (CPS 528)	Grazing type	Cell grazing Deferred rotational Management intensive Rest-rotation



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Range Planting (CPS 550)	Species category (select most common/extensive type if using more than one)	Forbs Grasses Legumes Shrubs Trees
Residue and Tillage Management – No-till (CPS 329)	Surface disturbance	None Seed row only
Residue and Tillage Management – Reduced Till (CPS 345)	Surface disturbance	None Seed row/ridge tillage for planting Shallow across most of the soil surface Vertical/mulch
Riparian Forest Buffer (CPS 391)	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Shrubs
	Species density (number of trees planted per acre)	1-10,000
Riparian Herbaceous Cover (CPS 390)	Species category (select most common/extensive type if using more than one)	Ferns Forbs Grasses Legumes Rushes Sedges
Roofs and Covers (CPS 367)	Roof/cover type	Concrete Flexible geomembrane Metal Timber Other (specify)
Silvopasture (CPS 381)	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Forage Shrubs
	Species density (number of trees planted per acre)	1-10,000
	Strip width (feet)	1-1,000
Stripcropping (CPS 585)	Crop category (select most common/extensive type if using more than one)	Erosion resistant crops Fallow Sediment trapping crops
	Number of strips	2-100
Tree/Shrub Establishment (CPS 612)	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Shrubs
	Species density (number of trees planted per acre)	1-10,000
Vegetative Barrier (CPS 601)	Species category (select most common/extensive type if using more than one)	Grasses Grass forb mix Grass legume mix
	Barrier width (feet)	3-1,000





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Waste Separation Facility (CPS 632)	Separation type	Chemical (e.g., salts, polymers) Mechanical (e.g., screens, presses) Settling basin
	Most common use of solids	Bedding Field applied Other (specify)
Waste Storage Facility (CPS 313)	Waste storage system prior to installing your waste storage facility	Aerobic lagoon Anaerobic digester (complex mix) with energy generation Anaerobic digester (plug flow) with energy generation Anaerobic lagoon Composting Covered lagoon (no energy generation or flaring) Covered lagoon with energy generation Covered lagoon with flaring Daily spread Deep bedding pack Deep pit Dry lot Dry stacking/solid storage Pasture/range/paddock Poultry with bedding Poultry without bedding (e.g., high rise) Slurry tank/basin
Waste Treatment (CPS 629)	Treatment type	Biological Chemical Mechanical
Waste Treatment Lagoon (CPS 359)	Waste storage system prior to installing waste treatment lagoon	Aerobic lagoon Anaerobic digester (complex mix) with energy generation Anaerobic digester (plug flow) with energy generation Anaerobic lagoon Composting Covered lagoon (no energy generation or flaring) Covered lagoon with energy generation Covered lagoon with flaring Daily spread Deep bedding pack Deep pit Dry lot Dry stacking/solid storage Pasture/Range/Paddock Poultry with bedding Poultry without bedding (e.g., high rise) Slurry tank/basin
	Is there a lagoon cover/crust?	Yes No
	Is there lagoon aeration?	Yes No





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

Windbreak/Shelterbelt Establishment and Renovation (CPS 380)	Species category (select most common/extensive type if using more than one)	Coniferous trees Deciduous trees Shrubs
	Species density (number of trees planted per acre)	1-10,000



## Appendix A: Climate-smart Agriculture and Forestry Practices

### All NRCS Practice Standards (not limited to climate-smart practices)

309, Agrichemical Handling Facility	390, Riparian Herbaceous Cover
311, Alley Cropping	391, Riparian Forest Buffer
313, Waste Storage Facility	393, Filter Strip
314, Brush Management	394, Firebreak
315, Herbaceous Weed Treatment	395, Stream Habitat Improvement and Management
316, Animal Mortality Facility	396, Aquatic Organism Passage
317, Composting Facility	397, Aquaculture Pond
318, Short Term Storage of Animal Waste and By-Products	398, Fish Raceway or Tank
319, On-Farm Secondary Containment Facility	399, Fishpond Management
320, Irrigation Canal or Lateral	400, Bivalve Aquaculture Gear and Biofouling Control
324, Deep Tillage	402, Dam
325, High Tunnel System	410, Grade Stabilization Structure
326, Clearing and Snagging	412, Grassed Waterway
327, Conservation Cover	420, Wildlife Habitat Planting
328, Conservation Crop Rotation	422, Hedgerow Planting
329, Residue and Tillage Management, No Till	423, Hillside Ditch
330, Contour Farming	428, Irrigation Ditch Lining
331, Contour Orchard and Other Perennial Crops	428A, Irrigation Water Conveyance, Ditch and Canal Lining, Plain Concrete
332, Contour Buffer Strips	428B, Irrigation Water Conveyance, Ditch and Canal Lining, Flexible Membrane
333, Amending Soil Properties with Gypsum Products	428C, Irrigation Water Conveyance, Ditch and Canal Lining, Galvanized Steel
334, Controlled Traffic Farming	430, Irrigation Pipeline
336, Soil Carbon Amendment	432, Dry Hydrant
338, Prescribed Burning	436, Irrigation Reservoir
340, Cover Crop	441, Irrigation System, Microirrigation
342, Critical Area Planting	442, Sprinkler System
345, Residue and Tillage Management, Reduced Till	443, Irrigation System, Surface and Subsurface
348, Dam, Diversion	447, Irrigation and Drainage Tailwater Recovery
350, Sediment Basin	449, Irrigation Water Management
351, Well Decommissioning	450, Anionic Polyacrylamide (PAM) Application
353, Monitoring Well	453, Land Reclamation, Landslide Treatment
355, Groundwater Testing	455, Land Reclamation, Toxic Discharge Control
356, Dike and Levee	457, Mine Shaft and Adit Closing
359, Waste Treatment Lagoon	460, Land Clearing
360, Waste Facility Closure	462, Precision Land Forming and Smoothing
362, Diversion	464, Irrigation Land Leveling
366, Anaerobic Digester	466, Land Smoothing
367, Roofs and Covers	468, Lined Waterway or Outlet
368, Emergency Animal Mortality Management	472, Access Control
371, Air Filtration and Scrubbing	484, Mulching
372, Combustion System Improvement	490, Tree/Shrub Site Preparation
373, Dust Control on Unpaved Roads and Surfaces	500, Obstruction Removal
374, Energy Efficient Agricultural Operation	511, Forage Harvest Management
375, Dust Management for Pen Surfaces	512, Pasture and Hay Planting
376, Field Operations Emissions Reduction	516, Livestock Pipeline
378, Pond	520, Pond Sealing or Lining, Compacted Soil Treatment
379, Forest Farming	521, Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner
380, Windbreak/Shelterbelt Establishment and Renovation	521A, Pond Sealing or Lining, Flexible Membrane
381, Silvopasture	521B, Pond Sealing or Lining, Soil Dispersant
382, Fence	521C, Pond Sealing or Lining, Bentonite Sealant
383, Fuel Break	
384, Woody Residue Treatment	
386, Field Border	
388, Irrigation Field Ditch	



## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

521D, Pond Sealing or Lining, Compacted Clay Treatment	632, Waste Separation Facility
522, Pond Sealing or Lining - Concrete	633, Waste Recycling
527, Sinkhole Treatment	634, Waste Transfer
528, Prescribed Grazing	635, Vegetated Treatment Area
533, Pumping Plant	636, Water Harvesting Catchment
543, Land Reclamation, Abandoned Mined Land	638, Water and Sediment Control Basin
544, Land Reclamation, Currently Mined Land	640, Waterspreading
548, Grazing Land Mechanical Treatment	642, Water Well
550, Range Planting	643, Restoration of Rare or Declining Natural Communities
554, Drainage Water Management	644, Wetland Wildlife Habitat Management
555, Rock Wall Terrace	645, Upland Wildlife Habitat Management
557, Row Arrangement	646, Shallow Water Development and Management
558, Roof Runoff Structure	647, Early Successional Habitat Development-Mgt
560, Access Road	649, Structures for Wildlife
561, Heavy Use Area Protection	650, Windbreak/Shelterbelt Renovation
562, Recreation Area Improvement	654, Road/Trail/Landing Closure and Treatment
566, Recreation Land Improvement and Protection	655, Forest Trails and Landings
570, Stormwater Runoff Control	656, Constructed Wetland
572, Spoil Disposal	657, Wetland Restoration
574, Spring Development	658, Wetland Creation
575, Trails and Walkways	659, Wetland Enhancement
576, Livestock Shelter Structure	660, Tree-Shrub Pruning
578, Stream Crossing	666, Forest Stand Improvement
580, Streambank and Shoreline Protection	670, Energy Efficient Lighting System
582, Open Channel	672, Energy Efficient Building Envelope
584, Channel Bed Stabilization	736, Crop By-Product Transfer, interim
585, Stripcropping	724, Water Treatment Facility, interim
587, Structure for Water Control	735, Waste Gasification Facility, interim
588, Crosswind Ridges	737, Reduced Water and Energy Coffee Conveyance System, interim
589, Cross Wind Trap Strips	740, Pond Sealing and Lining, Soil Cement, interim
590, Nutrient Management	751, Individual Terrace, interim
591, Amendments for Treatment of Agricultural Waste	753, Infiltration Ditch, interim
592, Feed Management	755, Well Plugging, interim
595, Pest Management Conservation System	770, Livestock Confinement Facility, interim
600, Terrace	775, Drainage Ditch Covering, interim
601, Vegetative Barrier	782, Phosphorus Removal System, interim
602, Equitable Relief	800, Controlling Existing Flowing Wells, interim
603, Herbaceous Wind Barriers	803, Water Well Disinfection, interim
604, Saturated Buffer	805, Amending Soil Properties with Lime, interim
605, Denitrifying Bioreactor	808, Soil Carbon Amendment, interim
606, Subsurface Drain	809, Conservation Harvest Management, interim
607, Surface Drain, Field Ditch	810, Annual Forages for Grazing Systems, interim
608, Surface Drain, Main or Lateral	812, Raised Beds, interim
609, Surface Roughening	815, Groundwater Recharge Basin or Trench, interim
610, Salinity and Sodic Soil Management	817, On-Farm Recharge, interim
612, Tree/Shrub Establishment	818, Water Conservation System, interim
614, Watering Facility	821, Low Tunnel Systems, interim
620, Underground Outlet	823, Organic Management, interim
629, Waste Treatment	
630, Vertical Drain	



Other CSAF Practices

Traditional or cultural practices

Microbial products

Solar power generation

Grain bin construction

Pre-season drainage



## Appendix B: Commodity List

CROPS

ALFALFA  
ALMONDS  
AMARANTH GRAIN  
APPLES  
APRICOTS  
ARONIA (CHOKEBERRY)  
ARTICHOKES  
ASPARAGUS  
ATEMOYA  
AVOCADOS  
BAMBOO SHOOTS  
BANANAS  
BARLEY  
BEANS  
BEETS  
BIRDSFOOT/TREFOIL  
BLUEBERRIES  
BREADFRUIT  
BROCCOFLOWER  
BROCCOLI  
BROCCOLINI  
BRUSSEL SPROUTS  
BUCKWHEAT  
CABBAGE  
CACAO  
CACTUS  
CAIMITO  
CALABAZA MELON  
CALALOO  
CAMELINA  
CANARY MELON  
CANARY SEED  
CANEERRIES  
CANISTEL  
CANOLA  
CANTALOUPE  
CARAMBOLA (STAR FRUIT)  
CARROTS  
CASHEW  
CASSAVA  
CAULIFLOWER  
CELERIAC  
CELERY  
CHERIMOYA  
CHERRIES  
CHESTNUTS  
CHICORY/RADICCHIO  
CHINESE BITTER MELON  
CHRISTMAS TREES  
CHUFAS

CINNAMON  
CLOVER  
COCONUTS  
COFFEE  
CORN  
COTTON ELS  
COTTON UPLAND  
CRANBERRIES  
CRENSHAW MELON  
CRUSTACEAN  
CUCUMBERS  
CURRANTS  
DASHEEN  
DATES  
DURIAN  
EGGPLANT  
EINKORN  
ELDERBERRIES  
EMMER  
FIGS  
FINFISH  
FLAX  
FLOWERS  
FORAGE SOYBEAN/SORGHUM  
GAILON  
GARLIC  
GENIP  
GINGER  
GINSENG  
GOOSEBERRIES  
GOURDS  
GRAPEFRUIT  
GRAPES  
GRASS  
GREENS  
GROUND CHERRY  
GUAMABANA/SOURSOP  
GUAR  
GUAVA  
GUAVABERRY  
GUAYULE  
HAZEL NUTS  
HEMP  
HERBS  
HESPERALOE  
HONEY  
HONEYBERRIES  
HONEYDEW  
HOPS  
HORSERADISH  
HUCKLEBERRIES

HYBRID POPLAR TREES  
IDLE  
INDIGO  
ISRAEL MELONS  
JACK FRUIT  
JERUSALEM ARTICHOKES  
JICAMA  
JOJOBA  
JUJUBE  
JUNEERRIES  
KENAF  
KHORASAN  
KIWIBERRY  
KIWIFRUIT  
KOCHIA (PROSTRATA)  
KOHLRABI  
KOREAN GOLDEN MELON  
KUMQUATS  
LAMBS EAR  
LEEKS  
LEMONS  
LENTILS  
LESPEDEZA  
LETTUCE  
LIMES  
LONGAN  
LOQUATS  
LYCHEE  
MANGOS  
MANGOSTEEN  
MAPLE SAP  
MAYHAW BERRIES  
MEADOWFOAM  
MILKWEED  
MILLET  
MIXED FORAGE  
MOHAIR  
MOLLUSK  
MORINGA  
MULBERRIES  
MUSHROOMS  
MUSTARD  
NECTARINES  
NIGER SEED  
NONI  
OATS  
OKRA  
OLIVES  
ONIONS  
ORANGES  
PAPAYA





## Partnerships for Climate-Smart Commodities Data Dictionary for Recipients

February 2023

PARSNIP	STRAWBERRIES	
PASSION FRUITS	SUGAR BEETS	
PAWPAW	SUGARCANE	<u>LIVESTOCK</u>
PEACHES	SUNFLOWERS	ALPACAS
PEANUTS	SUNN HEMP	BEEF COWS
PEARS	TANGELOS	BEEFALO
PEAS	TANGERINES	BUFFALO OR BISON
PECANS	TANGORS	CHICKENS (BROILERS)
PENNYCRESS	TANGOS	CHICKENS (LAYERS)
PEPPERS	TANNIER	DAIRY COWS
PERENNIAL PEANUTS	TARO	DEER
PERIQUE TOBACCO	TEA	DUCKS
PERSIMMONS	TEFF	ELK
PINE NUTS	TI	EMUS
PINEAPPLE	TOBACCO CIGAR WRAPPER	EQUINE
PISTACHIOS	TOBACCO BURLEY	GEESE
PITAYA/DAGONFRUIT	TOBACCO BURLEY 31V	GOATS
PLANTAIN	TOBACCO CIGAR BINDER	HONEYBEES
PLUMCOTS	TOBACCO CIGAR FILLER	LLAMAS
PLUMS	TOBACCO CIGAR FILLER BINDER	REINDEER
POMEGRANATES	TOBACCO DARK AIR CURED	SHEEP
POTATOES	TOBACCO FIRE CURED	SWINE
POTATOES SWEET	TOBACCO FLUE CURED	TURKEYS
PRUNES	TOBACCO MARYLAND	
PSYLLIUM	TOBACCO VIRGINIA FIRE CURED	
PUMMELO	TOMATILLOS	
PUMPKINS	TOMATOES	
QUINCES	TREES TIMBER	
QUINOA	TRITICALE	
RADISHES	TRUFFLES	
RAISINS	TURNIPS	
RAMBUTAN	VETCH	
RAPESEED	WALNUTS	
RHUBARB	WAMPEE	
RICE	WASABI	
RICE SWEET	WATERMELON	
RICE WILD	WAX JAMBOO FRUIT	
RUTABAGA	WHEAT	
RYE	WILLOW SHRUB	
SAFFLOWER	WINTER MELON	
SAPODILLA	WOLFBERRY/GOJI	
SAPOTE	YAM	
SCALLIONS		
SESAME		
SHALLOTS		
SORGHUM		
SORGHUM DUAL PURPOSE		
SORGHUM FORAGE		
SOYBEANS		
SPELT		
SQUASH		
STAR GOOSEBERRY		

# Partnerships for Climate-Smart Commodities

## Additional Specific Terms and Conditions

### February 2023

#### **I. Overarching Statement**

The following award terms and conditions are applicable to Partnerships for Climate-Smart Commodities agreements and are in addition to the USDA FPAC General Terms and Conditions. The award recipient must abide by all terms of this grant including, but not limited to, the General Terms and Conditions, the terms in the Funding Opportunity and associated Frequently Asked Questions, and this addendum. The recipient must also deliver on the planned objectives in the project narrative and budget narrative associated with this grant.

#### **II. Eligibility and Highly Erodible Lands and Wetlands Compliance**

In order to be eligible for an incentive payment as a part of the Partnerships for Climate-Smart Commodities, a producer must:

- Establish Farm Records with the Farm Service Agency (FSA) (have farm, tract, and field numbers in place);
- Complete an AD-2047 (Customer Data Worksheet to facilitate the collection of customer data for Business Partner Record);
- Certify highly erodible land conservation (HEL) and wetland conservation (WC) compliance via Form AD-1026, Highly Erodible Land Conservation (HELC) and Wetland Conservation (WC) Certification; and
- Certify that they are not a foreign person or entity.

Farm, tract, and field numbers are required for the producer, and ultimately the Partnerships for Climate-Smart Commodities recipient, to report climate-smart practice implementation to USDA, as well as to certify and maintain HELC/WC compliance. This will require that some producers who do not already have these numbers, like perennial crop growers or feedlots, establish these records with USDA's FSA. Farm, tract, field numbers, producer name, and Core Customer I.D. (CCID) will be provided by the recipient to the National Program Officer as a part of routine grant reporting. Recipients must ensure that producers receiving financial assistance or incentives through this project use the same name as is included in the relevant FSA Business File for that Farm ID in any contracts or similar documentation kept by the recipient.

Producers are not bound by the payment limitations and the adjusted gross income (AGI) limitations that are in place for other USDA programs.

In order to demonstrate HELC/WC compliance for Partnerships for Climate-Smart Commodities incentive payments, producers will need to request a copy of their subsidiary print from their



USDA FSA field office. The Subsidiary Print includes print year specific eligibility related information about a selected producer. The producer will then provide this documentation to the Partnerships for Climate-Smart Commodities recipients as proof of compliance. A current year subsidiary print will be required for each crop year that the producer receives a payment, and HELC/WC eligibility information is provided under the AD-1026 and Conservation Compliance sections of subsidiary (determined by year, which can change at any time during the year or in a subsequent year). As is the case already, field offices will not be expected to provide documentation to anyone besides the producer themselves (and must always comply with Section 1619 limitations if they ever do provide documentation to third parties). Producers must have control of the land for the term of their beneficiary contract.

Recipients are responsible for determining producer eligibility within the funding opportunity requirements. Recipients must inform producers of eligibility requirements and direct them to local USDA offices for requested information as necessary, including but not limited to, farm and tract establishment and Highly Erodible Land and Wetland Compliance determinations. Privacy of producers is a priority throughout this process, and recipients are responsible for maintaining producer privacy in the process.

At minimum, the recipient will collect and review subsidiary reports from participating producers. They will ensure that the producer is listed as “compliant” in all sections of the conservation compliance portion of subsidiary and “certified” for AD-1026 before an incentive payment is made. If payments to a producer span more than one Federal fiscal year, the recipient will review an updated subsidiary print each fiscal year to ensure that the status is still compliant.

### **III. Other Environmental and Cultural Resources Reviews**

A Finding of No Significant Impact (FONSI) was signed by USDA NRCS on August 26, 2022. A copy of the Programmatic Environmental Assessment for Partnerships for Climate-Smart Commodities is available at [www.usda.gov/climate-smart-commodities](http://www.usda.gov/climate-smart-commodities). USDA may determine that additional environmental and cultural resources review is needed for any particular action under Partnerships for Climate-Smart Commodities. The recipient must not execute any beneficiary contracts under this grant agreement prior to receipt of a letter from USDA that specifically details:

- 1) further procedures deemed appropriate by the Agency to ensure a completed National Environmental Policy Act (NEPA) review and all appropriate consultation requirements are met, and
- 2) additional instructions for any unanticipated discoveries or conditions.

A resolution of support is required for projects on Tribal lands from the governing body of the Tribe with jurisdiction over that land, if the applicant is not the Tribe nor an entity owned or

operated by that Tribe. USDA may approve alternative documentation for resolutions when USDA deems necessary and legally sufficient.

#### **IV. Producer Benefits**

USDA encourages the recipient to disclose to participating producers the manner and amount for which any market premiums derived from the development of the relevant climate-smart commodity will be shared between participating parties, including producers. USDA will be monitoring producer benefits, in particular those to small and underserved producers, throughout the grant period. Recipients agree that their project(s) will implement a plan for engaging small and underserved producers as laid out in this agreement.

#### **V. Producer Data Protection and Disclosure**

Recipients must ensure each producer has convenient access to any data collected from that producer or the producer's land and any associated modeling as part of the project. The recipient must provide each producer applying for benefits under this grant a description in writing of how their information, including but not limited to data about their farm and commodities, will be utilized, protected and shared as applicable.

#### **VI. Other Data and Reporting Requirements**

In addition to the reporting information provided in the statement of work and General Terms and Conditions, USDA will provide a template for the Detailed Progress Report, also known as the Partnerships for Climate-Smart Commodities (PSCS) Project Reporting Workbook. Within 30 calendar days of execution of this grant, a copy of this workbook will be posted at [www.usda.gov/climate-smart-commodities](http://www.usda.gov/climate-smart-commodities) or an alternative location provided to the recipient by the National Program Officer. USDA may provide updates to the PCSC Project Reporting Workbook or submission methods to streamline the data collection process and/or reduce the burden on the recipient throughout the grant period. Generally, these updates will be provided at least 3 months in advance of any required changes. The recipient must not transfer any data to foreign governments or foreign entities without prior approval from USDA.

USDA will provide a Technical Contact for this grant. The Technical Contact will have the responsibility of technical oversight for USDA for the project. The recipient is responsible for providing the technical assistance required to successfully implement and complete the project. The recipient must comply with any requests for information from the Technical Contact. The Technical Contact for this award is the National Program Officer assigned to this grant.

Prior to execution of this grant, the recipient must provide a shapefile depicting the project boundary for enrollment under this grant. Producer enrollment may not occur outside this boundary without modification of this grant.



Within 30 calendar days of execution of this grant, the recipient must provide to the National Program Officer a website address where enrollment information will be posted for producers for the project associated with this grant. Recipients will be responsible for the following reports:

- Submit quarterly performance reports that include a written progress report, as well as additional reporting on specific data elements contained in the most up-to-date version of the Partnerships for Climate-Smart Commodities Project Reporting Workbook. Additional information about each reported element is described in the Data Dictionary.
- Submit supplemental reports required to validate greenhouse gas (GHG) benefit data, including: (1) an initial project MMRV plan, (2) field-modeled GHG benefit reports, and (3) field-direct GHG measurement results, as applicable. Additional information about these reports is included in the Data Dictionary.
- Submit copies of project outputs and deliverables (e.g., fact sheets, reports) as attachments in ezFedGrants along with quarterly performance reports.
- Report the version of COMET-Planner used to estimate GHG benefits of the project within each quarterly performance report. As COMET-Planner is updated, recipients must adopt the latest version of the tool as directed by USDA for use in performance reports.

Recipients must designate an individual as a member of the USDA Partnerships for Climate-Smart Commodities Learning Network (Partnerships Network); this representative should be identified in the Project Narrative for this grant. Each project includes a plan for up to two Partnerships Network virtual meetings and two in-person meetings a year during the project duration. Dates and other details on events will be posted at [www.usda.gov/climate-smart-commodities](http://www.usda.gov/climate-smart-commodities) or an alternative location provided to the recipient by the National Program Officer.

The Partnerships Network will be co-chaired by representative from the USDA Office of the Chief Economist and the Farm Production and Conservation Mission Area. The Partnerships Network will inform synthesis reports to be assembled by USDA on a range of topics related to the implementation of Partnerships for Climate-Smart Commodities projects, including:

- Lessons-learned as projects are implemented;
- Options for providing technical assistance;
- Procedures for measurement/quantification, monitoring, reporting, and verifying GHG benefits;
- Options for tracing climate-smart commodities through the supply chain;
- Mechanisms for reducing costs of implementation;
- A forum for discussion and learning regarding approaches to climate-smart agriculture and forestry implementation (including but not limited to deployment and



measurement/quantification, monitoring, reporting, tracking, and verification of associated greenhouse gas benefits and marketing of climate-smart commodities).

- Synthesis of outcomes; and
- Opportunities for USDA and others to inform future approaches to generating new and expanded markets for climate-smart commodities.

The Partnerships Network topics to be discussed will cover at minimum the areas described in previous FAQs and will evolve with USDA's ongoing project data analysis efforts and with input from the project recipients on the kinds of sessions that will be most helpful to them in building the diverse climate-smart markets associated with their projects. Participation may include at least one interview a year and include questions related to the following areas:

- Technical assistance approaches, methods, and successes and/or challenges
- Producer outreach approaches, methods, and successes and/or challenges
- Monitoring, measurement, reporting, and verification (MMRV) approaches, methods, and successes and/or challenges
- Marketing approaches, methods, and successes and/or challenges
- Partnership approaches, methods, and successes and/or challenges
- Data collection and storage approaches, methods, and successes and/or challenges
- Supply chain approaches, methods and successes and/or challenges, including approaches to traceability
- Supply chain benefits and demand for climate-smart commodities
- Perspectives on program design, climate-smart commodity definitions, and future approaches or opportunities
- Project successes and stories

USDA may also request producer exit reports at a later date. Additional marketing and branding-related requirements may be provided by USDA, including signage related to Partnerships for Climate-Smart Commodities.

## **VII. Competition and Anti-Competitive Practices**

In connection with this grant, recipients may not prohibit or otherwise limit a producer from changing the provider of other services or materials not included as part of this grant.

Recipients may not condition, limit, steer, or discriminate in their provision or sale of non-project business functions or products to producers based on their participation or non-participation in or use of any services provided as part of this grant. Additionally, funds in this agreement shall not be used for purposes or activities related to mergers or acquisitions.

**VIII. Suspension and Disbarment**

The provisions governing Suspension and Disbarment in subsection 1.a.8 shall also apply to fraud, embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements, or violations of the Federal civil antitrust or unfair trade practice laws.

**IX. Special provisions for awards to for-profit entities as recipients**

This section contains provisions that apply to awards to for-profit entities. These provisions are in addition to other applicable provisions of these terms and conditions, or they make exceptions from other provisions of the terms and conditions for awards to for-profit entities. For-profit entities that receive awards have two options regarding audits:

- 1) A financial related audit of a particular award in accordance with Generally Accepted Government Auditing Standards issued by the Comptroller General of the United States, in those cases where the for-profit entity receives awards under only one USDA program; or, if awards are received under multiple USDA programs, a financial related audit of all awards in accordance with Generally Accepted Government Auditing Standards issued by the Comptroller General of the United States; or
- 2) An audit that meets the requirements contained in 2 CFR 200 subpart F.

For-profit entities that receive annual awards totaling less than the audit requirement threshold in 2 CFR 200 subpart F are exempt from USDA audit requirements for that year, but records must be available for review by appropriate officials of Federal agencies or the Government Accountability Office.

**X. Non-Disparagement**

Recipients may not engage in any advertising deemed by USDA as disparaging to another agricultural commodity or competing product, or in violation of the prohibition against false and misleading advertising. Disparagement is defined as anything that depicts other commodities in a negative or unpleasant light via overt or subjective video, photography, or statements. Comparative advertising is allowable, provided the presentation of facts is truthful, objective, not misleading, and supported by a reasonable basis.