I. Executive Summary

The U.S. Climate Smart Cotton Program (the Program) is a 5-year, collaborative pilot to provide technical and financial assistance to 1,650 U.S. cotton farmers (including historically underserved cotton producers) to advance the adoption of climate smart conservation practices on 1.2M acres (10% of total U.S. cotton acres), produce 4.2M bales (480 lbs.) of Climate Smart Cotton over five years, and demonstrate 1.14M metric tons of CO_2e reductions and $290M in economic benefits to farmers. The economic benefits - including a reduction in input costs, potential yield improvements, and added revenue from carbon insets - all generated by climate smart agriculture (CSA) practices - will incentivize long-term commitment to management change and accelerate growth in adoption beyond this 5-year pilot.

The Program will be led by the U.S. Cotton Trust Protocol (USCTP) Lead Project Administrator, Gary Adams, PhD; gadams@cotton.org; 901-274-9030. Other Program partners include: Soil Health Institute (SHI), Cotton Council International (CCI), Cotton Incorporated (CI), Agricenter International (AI), North Carolina A&T State University (NCAT), Alabama A&M University (AAMU), and Texas A&M AgriLife Research (TAMU). The Program will target enrollment of cotton farmers across all 17 cotton-producing states – West (CA, AZ, NM), Southwest (TX, OK, KS), Mid-South (MO, AR, TN, MS, LA), and Southeast (AL, GA, FL, SC, NC, VA).

Compelling Need. The fashion/textile industry is the third largest manufacturing sector in the world and is responsible for 2 - 8% of global carbon emissions [1]. Recognizing climate risks posed by emissions generated in their value chain, many of the largest brands and retailers (e.g., Gap Inc., Levi Strauss & Co., Ralph Lauren, Target, VF Corp.) have signed on to the Fashion Industry Charter for Climate Action to support the goal of reducing the carbon footprint of the industry by 50% by 2030, and achieve net zero emissions by 2050 [2,3]. U.S. cotton farmers play a vital role in achieving this goal, since Scope 3 GHG emissions include cotton production and contribute to the carbon footprint of this value chain. Current GHG emissions from U.S. cotton production are estimated to be 10.7M metric tons of CO_2e per year [4]. By reducing their carbon footprint and supporting GHG emission reduction goals espoused by the fashion/textile industry, U.S. cotton farmers can strengthen their competitiveness and expand global market opportunities. U.S. and international brands and retailers, some of which are members of USCTP, currently have demand for about 10M bales of Climate Smart Cotton per year, half of all U.S. production. Since U.S. cotton is grown on farms with at least 20 other crops, the knowledge gained by participating farmers will be extended to their diverse rotational crops. Additionally, U.S. agriculture originates many sustainable production practices (e.g., IPM, precision application, nutrient management, no-till) that eventually lead to durable global adoption that magnify the GHG reduction benefits.

Expected Outcomes. The Program will reduce GHG emissions from U.S. cotton by 1.4M metric tons CO_2e by: (a) providing technical and financial assistance to 1,650 U.S. cotton farmers (including 330 historically underserved community [HUC] producers) to adopt climate smart conservation practices on 582K acres; (b) measuring/quantification, monitoring, reporting, and verification (MMRV) and tracking 4.2M bales of Climate Smart Cotton and their GHG benefits; and (c) promoting those bales and their associated carbon insets to build demand by brands and retailers. The Program expects to generate a 0.013 metric ton CO_2e reduction per dollar spent, and an economic return of $3.22 per dollar spent, Table 1.

Table 1: GHG & economic benefits of the U.S. Climate Smart Cotton Program

	GHG benefit metric ton CO_2e reduction		Economic benefit U.S. dollars [a]	
Timeframe	Annual	5-yr Total	Annual	5-yr Total
Project	220,000	1,100,000	$58,000,000	$290,000,000
Historically Underserved Communities	44,000	220,000	$11,600,000	$58,000,000
Per farmer [b]	$133	$667	$35,200	$176,000
Per acre [c]	0.19	0.94	$50	$249
Per bale [d]	0.27	0.27	$70	$70
GHG reduction per USDA dollar funding		0.013	--	--
Economic benefit per USDA dollar funding			--	$3.22
Jobs created [g]			240	1,200
Value Added [g]			$17,600,000	$85,300,000

[a] *based on SHI survey results showing an increased profitability of $100 an acre per year when climate smart agriculture practices are adopted [5].* [b] *assumes cotton production 2 of 3 years due to crop rotation on 706 acres and a 3-year commitment to the Program.* [c] *based on 2 years of Climate Smart Cotton production, and financial assistance for new climate smart practice adoption and sale of carbon insets* for 3 years; [d] *total and annual figures are the same as a bale of cotton is a discrete output that can only be generated once.* [g] *Based on 80lb/acre increased yield from SHI survey data and IMPLAN economic model using 2019 USA data set from MIG [5].*

Program Objectives. This Program has a strong focus on providing the knowledge and tools to help U.S. cotton farmers successfully adopt new management practices to meet the fashion/textile industry's demand for cotton with a significantly lower carbon footprint, and strengthen the competitiveness and revenue potential of U.S. cotton farms, through five key objectives:

1. **Enroll 1,650 U.S. cotton farmers, including 330 farmers from historically underserved communities.** The Program will minimize farmer enrollment transaction costs associated with entering field data for MMRV by providing a one-time $5 per acre enrollment incentive (up to $3,530 per farmer), along with educational programs, peer-to-peer outreach, hands-on assistance with enrollment, and a helpline for those who need it. USCTP will lead enrollment efforts. AI will lead outreach and enrollment of veteran cotton farmers; AAMU and NCAT (both Minority Serving Institutions [MSIs]) will lead outreach and enrollment of Black, Indigenous, and People of Color (BIPOC) cotton farmers. SHI will engage Historically Black Colleges and Universities (HBCUs) across all cotton states to expand long-term connections needed to include more HUC cotton farmers in Climate Smart Cotton production and associated benefits.

2. **Provide technical support and $61.2M in financial assistance to farmers supporting long-term adoption of climate smart practices on 582K acres.** SHI, AAMU, and NCAT will develop communities of practice to provide technical agronomic support to farmers, farm-level evidence of economic benefit, field-specific soil health and carbon (C) targets, and reports on

changes to GHG emissions and soil carbon storage. Enrolled farmers will receive three consecutive years of technical and financial assistance for practice adoption - enough time to experience evidence of GHG reductions, cost reductions, price premiums, and soil health benefits. The technical support includes the development of a peer-to-peer information exchange.

3. **Measure and track Climate Smart Cotton GHG reductions and demonstrate the scalability of USCTP platform for MMRV and supply chain tracking.** The Program will use USCTP and the Ecosystem Service Market Provider's (ESMP) platform for MMRV of cotton production's environmental impact and track 4.2M bales of Climate Smart Cotton through the supply chain. The USCTP technology platform will leverage and incorporate the ESMP's data reporting infrastructure, SHI's measurement of soil health and carbon outcomes and track GHG benefits through the supply chain while protecting against double-counting of benefits.

4. **Develop and grow markets for Climate Smart Cotton and carbon insets among brands and retailers in the apparel industry.** USCTP and CCI will build demand for 4.2M bales of Climate Smart Cotton and 1.14M metric tons CO_2e of insets produced throughout the Program's duration to fashion/textile brands and retailers by leveraging existing USCTP membership, adding to USCTP membership, and enhancing relationships through Program partnerships such as supporters of the SHI Regenerative Cotton Fund.

5. **Create and scale a carbon inset program for the cotton supply chain generating additional revenue supporting long-term adoption of Climate Smart Agriculture practices.** The USCTP and the ESMP will create and sell 1.14M metric tons CO_2e of insets to the apparel industry and provide farmers with an opportunity for ongoing outcome payments to encourage long-term CSA adoption. These insets will help the apparel industry meet scope 3 emission reduction goals and further position U.S. cotton production as a leader in sustainability. The Program funding will help scale previous pilot-level insetting success into a revenue opportunity for farmers across the cotton belt.

Project Management Capacity

1. **U.S Cotton Trust Protocol (trustuscotton.org).** USCTP provides a scalable, low-cost platform for cotton production's environmental impact reporting and tracing cotton through the supply chain. Since launching in 2020, USCTP has enrolled over 650 U.S. cotton farmers and used its platform for 1.3M acres and 2M bales of cotton (12% of total U.S. production). USCTP members include over 693 organizations and 656 textile mills and manufacturers. USCTP has been recognized by Textile Exchange and Forum for the Future and is part of the Sustainable Apparel Coalition, 2025 Sustainable Cotton Challenge, Cotton 2040, and Cotton Up initiatives. USCTP is an affiliate of the National Cotton Council.

2. **Soil Health Institute (soilhealthinstitute.org).** SHI supports education, research, and outreach with farmers to raise awareness of the benefits of regenerative practices and assist them to achieve measurable goals for improving soil health. To promote the adoption of CSA practices, SHI has developed cost-effective, locally relevant measurement-based assessment of soil health and target setting, novel economic assessment methods, and a technical assistance program that creates local communities of practice including consulting agronomists, technical specialists, and farmers to advance the adoption of soil improvement practices. SHI has initiated farmer networks in AR, TX, MS, NC, SC, GA, and CA and has led soil health training for 13,000 certified crop advisors who advise on over 200M acres of row crop production in the U.S.

3. **Cotton Council International (cottonusa.org).** CCI is the National Cotton Council's export promotion arm and will lead the Climate Smart Cotton market promotion activities. CCI

champions U.S. cotton and expands foreign demand for U.S. cotton fiber, yarn, and other cotton products. CCI promotes the USCTP to mills, manufacturers, brands, and retailers worldwide.

4. **Cotton Incorporated (cottoninc.com).** CI is a not-for-profit company providing the resources and research needed to help companies develop and market superior, innovative, and profitable cotton products. The mission of CI is to increase the demand and profitability of cotton through research and promotion. In recent years, sustainability has become a key pillar of CI's research and promotion.
5. **Agricenter International (agricenter.org/agvets).** AI is a leader in field crop research and manages the Veterans Employed in Technology and Service in Agriculture (VETSA) program, which provides veterans with training and experience in farming, research projects, and trade skills related to agriculture. Through the VETSA program, AI has a mature network of veteran farmers.
6. **North Carolina A&T State University (ncat.edu).** NCAT is the largest historically black university in the country. NCAT has a successful research and teaching program focusing on the scientific inquiry of soil health and microbial functioning in soils and extends its work to farmers of North Carolina.
7. **Alabama A&M University (aamu.edu).** AAMU is also a historically black university and land grant institution. AAMU provides research-based programming to Alabama farmers through the Alabama Cooperative Extension System. This programming includes topics such as soil conservation practices, crop production, and integrated pest management.
8. **Texas A&M AgriLife Research (tamu.edu).** TAMU is a land grant university that promotes the wise use and stewardship of soil, plant, and water resources through scientific discovery and translation to improve environmentally sound and economically profitable production systems.

II. INTRODUCTION

Opportunity. Cotton is the most widely used natural fiber in the world. The U.S. is a leading producer and exporter of cotton and demonstrates leadership in the global cotton market. According to the U.S. Census of Agriculture, the U.S. produces 20.4M bales of cotton annually, by 16,000 farmers on 11.4M acres [6]. The use of precision agriculture, analytics, and automation has already helped U.S. farmers reduce cotton's impact on the environment while increasing on-farm efficiencies. Over the past 40 years, U.S. cotton farmers have reduced soil loss by 45%, used 58% less water, 31% less energy, and reduced GHG emissions by 25%, all while increasing yield by approximately 30% [7].

However, there is still much room for improvement. In U.S. cotton production, cover crops, reduced tillage, and no-till adoption are estimated at 8%, 30%, and 28%, respectively. Climate smart management practices that improve soil health can also benefit farmers and the environment. Farmers benefit from these practices through increased drought and flood resilience, improved nutrient use efficiency, decreased erosion risk, lower input costs, less fuel consumption, natural plant pathogen suppression, suppression of herbicide-resistant weeds, and potentially greater yield stability.

Adoption of these practices by farmers is hindered by a lack of place-based economic and technical agronomic information, training programs, and a process to establish soil health goals so farmers know the potential level of soil health and carbon storage that can be achieved on their particular farm. The proposed Program addresses these deficiencies and creates access to a commodity premium and valuation of ecosystem services, which may also incentivize adoption. Greater adoption of practices that decrease GHG emissions, store more carbon and water in the soil and

improve soil and ecosystem functioning is necessary to meet the U.S. cotton industry 2025 sustainability goals of reducing GHG emissions by 39%, increasing soil carbon by 13% (both 2025 goals are relative to 2015 levels), and contribute to a 50% reduction in the carbon footprint of the fashion/textile industry by 2030. In addition to GHG reductions, research shows that improving soil health in agricultural systems by using CSA practices creates important climate adaptation benefits and environmental co-benefits of increasing drought resilience [8,9], enhancing water quality [10,11], boosting crop yield net profits [12], increasing nutrient availability [11], reducing erosion [13], providing pollinator habitat [14], suppressing many plant diseases [15], and providing weed control [16].

Approach. The U.S. Climate Smart Program integrates leaders from all aspects of the supply chain from farmer education and applied research (SHI, CI, AAMU, TAMU, NCAT, AI), CSA practice early adopters, to promotion and demand-building (CCI, USCTP, CI) and experts in MMRV platforms (ESMP) to focus on the development and delivery of farmer-centric U.S. Climate Smart Cotton.

The Program's comprehensive approach will maximize grower enrollment, new CSA practice adoption, economic benefits, GHG reductions, and environmental co-benefits. The program will 1) enroll growers in the USCTP and quantify climate impacts from their cotton production (Level 1), 2) provide technical and financial support for adopting new CSA practices and soil health target setting (Level 2), and 3) produce and sell verified carbon insets (Level 3), Figure 1.

Program Level	Level 1: Enrollment 1.2M acres	Level 2: Practice change 582K acres	Level 3: Inset payment 582K acres
Grower Support	• $5.8M total (HUC $1.2M) • $5/acre ($3,530 max/grower) • Technical support	• $61.2M total (HUC $12.2M) • Up to $35/acre for 3 yrs. • Technical support	• Revenue from inset sale • Technical support
Outcomes	• Climate Smart Cotton with impact metric reporting & verification	• Climate Smart Cotton with verified practice change	• Climate Smart Cotton with sale of verified carbon insets
Grower Requirement	• Complete USCTP enrollment • Self assessment questionnaire • Quantify GHG emissions with Fieldprint platform • 3rd party verification if selected • Explore the feasibility of new CSA practice adoption	• Adopt new CSA practice • Participate in soil health target setting • COMET modeling on all practice change acres • New practice verification • Level 1 requirements	• Contract for carbon inset • Agree to MMRV • Soil sampling on all fields • Level 1 & 2 requirements
Required by all levels	• Meet Highly Erodible Land (HEL) and Wetland Compliance (WC) requirements. • Identify practices in each enrolled field that are already receiving funding from USDA program(s), and attest that enrolled field(s) will not have multiple sources of USDA program funding for the same practice on the same land.		

Increasing Grower Support

Figure 1. The U.S. Climate Smart Cotton Program framework

Objective 1 –Enroll 1,650 U.S. cotton farmers, including 330 farmers from historically underserved communities.

Primary Outcomes are to enroll 1,650 growers into the Program, including 330 farmers from the historically underserved community (HUC). This enrollment is targeted to include 1.165M acres, with 233K (20% of total) of those acres representing the HUC.

A maximum of 706 acres will be enrolled per farmer to ensure the Program will provide financial assistance to all 1,650 farmers. Grower requirements are different for each level of support with increasing requirements tied to increasing financial support and certainty of beneficial outcomes, Table 2. The tiered level approach is designed to maximize grower participation and reduce the barrier to entry and enrollment transaction costs. The goal is to enroll 50% of Level 1 acres into Level 2 and 100% of Level 2 acres into Level 3. These Program targets are based on experience enrolling growers in the USCTP, existing adoption rates of CSA practices, and limitations due to land ownership related to selling carbon insets [4, 6]. This method engages growers with a more approachable action and then creates a clear onramp to additional support with further adoption of CSA practices, Objective 2. The Program will provide the USDA with enrollment data and feedback to better understand barriers to scaling climate smart commodities.

Table 2: Grower enrollment and Climate Smart Cotton production

	Level 1		**Level 2** 50% of Level 1 acres		**Level 3** 100% Level 2 acres	
(Over 3 yrs.)	**HUC**	**Total**	**HUC**	**Total**	**HUC**	**Total**
Enrolled farmers	330	1,650	330	1,650	330	1,650
Acres enrolled	233,000	1,165,000	116,400	582,000	116,400	582,000
Bales Climate Smart Cotton	824,200	4,121,000	412,000	2,060,000	412,000	2,060,000
Support	$1.2	$5.8	$12.2	$61.2	$3.4	$17.1
Dollar per farmer		$3,530		$37,065		$10,365
Dollar per acre		$5		$105		$29
Doller per bale (480 lbs.)		$1.41		$29.69		$8.30

Key Activities & Lead Partners. The Program will conduct outreach activities to U.S. cotton farmers, specifically including HUC farmers, to facilitate enrollment. USCTP and SHI will lead general outreach/enrollment efforts. AI will lead outreach/enrollment and technical support for veteran cotton farmers; AAMU and NCAT will lead outreach/enrollment and technical support to the BIPOC cotton farmers [6]. SHI will engage additional Historically Black Colleges across the cotton states to build long-term connections needed to include more HUC cotton farmers in CSA cotton production.

Details. The program's goal is to enroll 1,650 farmers, then progress them from Level 1 to Level 3, creating an additional economic return for the farmer and increased GHG reductions. This approach empowers farmers to learn, grow, and explore new opportunities for reducing climate impacts, financial support, and premium markets as a result of new CSA practice adoption.

The Program will leverage USCTP technology and communications to minimize transaction costs associated with grower enrollment and data collection. The USCTP platform has already proven to be successful in enrolling over 650 cotton farmers, demonstrating the ability to engage farmers and collect a vast amount of practice and climate impact data. The USCTP has existing contracts and funding for technology development with the SEAM and Textile Genesis™ and contracts for

grower communication with Hill and Knowlton Strategies (H&K). These existing funds and contracts will be leveraged to maximize the Program's payment for outcomes.

During the first 3 years of this 5-year pilot, the Program goal is to enroll 1,650 farmers – i.e., approximately 550 cotton farmers per year. The Program will commit 3 years of financial assistance to each farmer for practice change (Level 2), which will give a reasonable runway for participants to realize higher economic returns from CSA practices and/or participation in a carbon inset program, Figure 1. There will be no further enrollment in years 4 and 5 unless enrollment targets are not met. Years 4 and 5 will continue with technical and financial assistance, see the activity table for more details on the Program schedule.

Enrollment activities include virtual and in-person field days, demonstration events, factsheets, farmer meetings, presentations at conferences and industry events (e.g., Mid-South Farm & Gin Show), emails, website content, educational webinars, and peer outreach from Farmer Mentors, agronomists, marketing cooperatives/merchants, and retailers. USCTP enrollment specialists will assist with enrollment and answer farmers' questions – e.g., enrollment process, payments, eligibility, etc.

The Program will also minimize farmer enrollment transaction costs by providing a one-time $5 per acre enrollment incentive (maximum of $3,530/farmer) for enrolling in the Program at Level 1 and exploring the feasibility of new CSA practice adoption. Based on feedback from farmers currently enrolled in the USCTP, the $5 per acre enrollment incentive is needed to scale enrollment. The total estimated cost of this incentive is $5.8M. The Program will routinely evaluate the effectiveness of outreach efforts through monthly progress reports to all team members and quarterly review reports. Findings will be shared with the Partnerships Network.

Objective 2 – Provide technical support and $61.2M in financial assistance to farmers supporting long-term adoption of climate smart practices on 582K acres.

Primary Outcomes are to enroll 582K acres in new CSA practices and provide technical and financial support to farmers totaling $61.2M with $12.2M specifically supporting HUC farmers.

The key to scaling Climate Smart Cotton is comprehensive technical support and appropriate risk sharing through financial support, Table 3. Eighty percent of the requested USDA funding will go directly to farmers supporting long-lasting CSA practice adoption.

Table 3: Financial support and estimated GHG benefits for new CSA practice adoption

Level 2: New CSA practice adoption	HUC	Total
Enrolled farmers new practice adoption	330	1,650
Acres enrolled (over 3 yrs.)	116,400	582,000
Bales Climate Smart Cotton (over 3 yrs.)	412,000	2,060,000
Support (over 3 yrs.)	$12,240,000	$61,200,000
Dollar per farmer (over 3 yrs.)		$37,065
Dollar per acre (over 3 yrs.)		$105
Doller per bale (480 lbs.)		$29.69
Metric ton CO_2e reduction [a]		1,140,000
Metric ton CO_2e reduction per USDA dollar support [a]		**0.013**

[a] Rates are an average of dry/semiarid and moist/humid climate zones [17]

Key Activities & Lead Partners. USCTP will administer financial assistance to farmers for implementing climate smart practices. Trained agronomists with experience in conservation practices, as well as other specialists at SHI, AAMU, NCAT, and associated partners, will provide enrolled farmers with technical support to facilitate the adoption of a variety of climate smart conservation practices.

The outreach program includes a multi-faceted approach that will: 1) deliver a foundational understanding of soil health, carbon storage, and the economic outcomes experienced by farmers, 2) create a community of practice with farmer mentors, advisors, and others (e.g. extension specialist and consultants), with on-farm field experience of applying principles of soil health building practices, 3) synthesize soil health data from the lab and regional mentors to identify management practices for improving drought resilience, nutrient availability, profitability, and other benefits of healthy soils with greater carbon content, and 4) provide locally relevant partial budget analyses to inform farmers of the costs and benefits of successful CSA practice adoption.

Details. The program will provide enrolled cotton farmers with up to five years of technical training and three years of financial support. Three years of financial support should allow enough time to encourage adoption and recognize on-farm and off-farm environmental and socioeconomic benefits. Potential market benefits include price premiums and/or revenue from a carbon inset program. De-risking CSA practice adoption will provide economic benefits to the producer including reduced input costs, yield improvement, and increased water use efficiency that support long-term CSA practice adoption leading to carbon storage beyond 20 years [5, 8, 10, 18]. Carbon emission reductions resulting from nutrient management planning and adoption are permanent. Additionally, the development of a carbon insetting market will create an opportunity for carbon insetting payments leading to increased permanence.

The Program will routinely evaluate the efficiency and effectiveness of technical and financial assistance through stakeholder evaluations, and quarterly review by program participants. Findings will be shared with the Partnerships Network.

Financial Assistance

Level 2 financial assistance will help offset financial risk and assist in the resources necessary to adopt new CSA practices. The basis for selecting CSA practices for financial assistance is based on modeled and empirical evidence supporting GHG reductions [18,19]. The price per practice, shown in Table 4, is set at a level that will share enough financial risk to drive new practice adoption and Level 2 Program enrollment. The price per practice is based on feedback from growers within the USCTP, and by experts at SHI and CI. Additionally, the price per acre is approximately the average total cost of planting cover crops as reported by farmers [20]. Given the uncertainty in cover crop seed and management costs, payments must be sufficient to incentivize CSA practice change. Hence, Program partners will annually review and adjust payment amounts for practices to ensure a successful balance between project costs and ensuring CSA practice adoption targets are met. With changes in price per acre for each practice adoption, the number of acres enrolled in Level 2 will be adjusted accordingly to balance the overall budget.

Total Level 2 financial assistance to farmers for the adoption of new climate smart practices is $61.2M. USCTP will implement the methods of the ESMP to coordinate with the Farm Service Agency (FSA), NRCS, and farmers to ensure no double payment for the same practices on the same acre.

Table 4: New practice adoption support and GHG emission benefits

New practice (over 3 yrs.)	Payment per acre	New practice acres	HUC support	Total support	Reduction (MT CO_2e ac^{-1} yr^{-1})	Total reduction (MT CO_2e)
Nutrient management plan	$5	582,000	$1,750,000	$8,700,000	0.08	140,000
Strip or no-till	$5	582,000	$1,750,000	$8,700,000	0.19	450,000
Cover crops	$25	582,000	$8,700,000	$43,700,000	0.32	550,000
Total	**$35**		**$12,200,000**	**$61,200,000**	**0.58**	**1,140,000**

Economic Benefits

Preliminary partial budgeting research conducted by SHI suggests that cotton farmers can increase net income by an average of $100/acre on cotton acres by adopting CSA practices [5,20]. Combining this estimate with proposed project goals delivers a $290M benefit to all cotton growers and $58M to HUCs over 3 years, Table 5. This estimate of benefit is based on SHI's economic assessment of five cotton farmers across five states to provide preliminary information to cotton farmers characterizing the costs and benefits of using CSA practices such as cover crops and no-tillage. Though representing only five farmers, results demonstrated yield, revenue, and profit increases, as well as cost reductions. An average yield increase of 80 lbs./acre was reported, with three of the five farmers reporting increased yield from CSA practices, and none reported yield declines [5]. Cost reductions were also noted in fertilizer and amendments, pesticides, fuel, labor, and equipment ownership for an average reduction in costs of $47/acre. These economic benefits did not include payments for practices nor for insetting GHG emissions.

Table 5: Program economic benefit to growers and USDA return on investment

Based on 706 acres	Per acre	Per farmer	HUC	Program
Program enrollment	$5	$3,530	$1,160,000	$5,800,000
New CSA practice adoption	$35	$37,065	$12,240,000	$61,200,000
Carbon inset sale	$15	$10,400	$3,440,000	$17,200,000
Increased profitability*	$100	$212,000	$41,200,000	$206,000,000
Total	$155	$262,995	$58,040,000	$290,200,000
Per bale cotton (rotation 2 out of 3 yrs. in cotton)				$70
Economic benefit per dollar USDA funding				$3.20
Jobs created*				1,160
Value Added *				$85,300,000

*Based on 80 lb/acre increased yield and IMPLAN economic model using 2019 USA dataset [5].

Technical Assistance Plan

Agronomic support and training. SHI will establish and support existing and new producer-led mentoring networks comprised of farmers, their advisors, local technical specialists, HBCU partners (AAMU, NCAT), and SHI trainers. SHI will provide these networks with the knowledge,

tools, resources, training, and continuous support they need to profitably transition to CSA management practices. For example, SHI has developed new predictive equations to quantify improved drought resilience that results from soil health management [9]. Farmer-led learning identifies farmers that are early adopters and connects them with those considering adoption to discuss practices and know-how. Farmers that have successfully implemented practices are the keystone to successful practice adoption by new adopters. SHI has initiated these producer-led networks in seven cotton-growing states from 2019 to 2022, and during that time, held virtual and in-person soil health demonstration events; provided resources for cover crop adoption; maintained continuous engagement with producer mentors and technical specialists; provided cost share for cover crop seed; and produced Cotton & Covers (6-part series), Healthy Soils for Sustainable Cotton – Virtual Field Days (13-part series), and Healthy Soils for Sustainable Cotton Webinar Series (7-part series) for farmers.

Economic information on geographically appropriate cost and benefit assessments of adoption of CSA practices on farms. Comprehensive and geographically relevant data on the economic benefits of CSA practices are needed to show farmers the profitability of these practices and increase long-term adoption. SHI will assess the economics of 64 cotton producers who have been implementing regenerative CSA practices for more than 5 years (e.g., early adopters), and in Year 2, SHI will disseminate the economic results, aggregated by region. The economics of the transition to CSA practices are also needed to de-risk the adoption of practices. To address this knowledge gap around the transition economics, SHI will track farmer economics following a 3-year transition into CSA practices. Participants will engage in a 1.5-hour interview with the SHI economist and agronomist. For these farms, soil health and carbon metrics will be measured and GHG emission reductions will also be estimated with the COMET-Farm model. With grower consent, the results will be disseminated through state-based producer networks and incorporated into SHI and Program partner training programs.

Field-specific soil health and carbon targets to inform each farmer of their fields' soil health and carbon stock along with goal setting. Based on the knowledge of how to measure and monitor soil health, SHI will lead a team that includes NCAT and AAMU to establish Soil Health Targets (Targets) for soils in U.S. cotton-growing regions. These Targets allow SHI to assist farmers with assessing the current status of their soils (i.e., establish their baseline), measure progress towards improving the health of their soils using a realistic, locally relevant, science-based target, and establish goals. This approach was designed to be locally relevant, scalable, and affordable to farmers. Particularly soil health and carbon targets are scalable because metrics are standard and inexpensive, and spatial sampling is designed to scale. From a farmer empowerment perspective, providing farmers with measurable and obtainable soil health and carbon targets will help drive the adoption of CSA.

To implement this plan, SHI will use soil science knowledge to stratify cotton-growing soils into soil health sampling groups. These are groups of soils with similar surface textures and drainage classes that constrain the sampling variability among soils with a similar potential expression of health (e.g. ability to regenerate) and carbon storage. These soil groups are used to guide decisions on what soils to sample in the field. Next, SHI will define reference management systems that

reflect the ***actual potential*** for soils to express soil health and carbon storage within each soil health sampling group. Other management groupings to sample include, baseline cotton production (e.g. business as usual), and climate-smart cotton production to capture the health and carbon stock of soils in a range of management conditions. In year 1 of the project SHI and AAMU will sample soils in Alabama and South Carolina and in year 2, SHI, and NCAT will sample soils in North Carolina, California, Oklahoma, and Missouri/Arkansas. Soils in all management systems will have data collected on management practices (tillage, manure application, cover cropping, crop rotation) carbon stock, aggregate stability, available water-holding holding capacity, and carbon mineralization potential. Additionally, NCAT will measure minerally associated and particulate organic carbon fractions to help understand the ability of carbon storage to be more permanent. All groups, SHI, AAMU, and NCAT will set up monitoring plans to track adopters through their soil regeneration process and measure final carbon stock. These monitoring systems will not overlap ESMP MMRV efforts, and if we do end up on some similar farms, we will not duplicate sampling efforts.

All of these sampling and data analyses will be used to inform farmers, climate smart markets, and policymakers how much carbon stock and soil health are expressed in various cotton production systems and answer the most important question: ***How healthy and how much carbon stock can these soils achieve?*** Outputs for this work will have two focuses, enabling farmers to make science-based decisions on entering climate smart markets and informing policy and markets on what is practically and regionally achievable. We will present work as regional reports, farmer factsheets, blogs, short videos, and scientific peer-reviewed journal articles. The peer review articles are important to giving the markets credibility and thereby removing risk.

Reports on reductions in GHG emissions, soil carbon, and other environmental impacts resulting from the implementation of CSA practices in agricultural fields will be provided. SHI and the USCTP will spearhead the calculation process using information gathered from successful early adopters, such as the farmer mentors previously identified and enrolled in the USCTP. The FieldPrint platform will serve as the principal tool for estimating GHG emissions and additional environmental benefits brought about by the early adopters of these practices.

Regional technical support and enrollment specialist.

The US CTP will hire an enrollment specialist in each cotton growing region to help cotton producers enroll in the Climate Smart Cotton Program. These specialists will have experience providing technical support to producers adopting climate smart practices and will assist the enrolled producers in engaging in Level 2 and Level 3 of the program. The specialist will attend grower meetings, industry meetings, and field days to promote the program.

The specialist will work with each grower to understand their unique growing conditions. The specialist will help present agronomic changes that would qualify for Level 2 enrollment and how the producer would implement these new practices. The specialist will help provide information on how other growers have successfully implemented these practices in neighboring farms. This regional context and knowledge will be critical to the long-term adoption of CSA practices.

The regional enrollment specialist will coordinate and assist with SHI soil health target setting activities. They will also coordinate and assist the HBCU's in enrolling HUC producers in the program. These specialists may also assist in MMRV where appropriate.
SHI will not be calculating GHG emissions and other environmental impacts of early adopters as this work is beyond SHI's scope of work. The USCTP will use the Field to Market Fieldprint Platform to estimate GHG emissions and other environmental impacts of early adopters.

Technical Support Roles
In the Climate Smart Cotton Program, various organizations collaborate to provide targeted technical support to different grower groups, see the table below. SHI, AAMU, and NCAT primarily focus on BIPOC grower enrollment, outreach, and agronomic support. SHI has 1.5 dedicated staff, including soil health trainers and educators, while AAMU and NCAT each have one senior personnel, Dr. Davis and Dr. Bhowmik, respectively.

AI is responsible for veteran grower enrollment, outreach, and agronomic support, with one dedicated program manager on their team. USCTP assists with enrollment, outreach, and agronomic support for all grower groups, including female growers. They have four dedicated grower enrollment specialists as part of their staff.

In addition to the staff supported directly by the Climate Smart Commodity Project award, the USCTP will dedicate 4 additional staff towards enrolling growers in the Climate Smart Cotton Program which is supported by other funds, not from the USDA. In total, these organizations have 12.5 dedicated staff members working together to ensure comprehensive support for various grower groups within the Climate Smart Cotton Program. This collaborative effort aims to promote sustainable cotton farming practices and help growers adapt to climate change challenges.

Technical support funded by the Climate Smart Cotton Program

Organization	Target Grower Group	Primary Focus of Technical Support	Dedicated Staff	Dedicated Staff
SHI	BIPOC Growers	Enrollment, Outreach & Agronomic Support	1.5	Soil health trainer and educators
AAMU	BIPOC Growers	Enrollment, Outreach & Agronomic Support	1	Senoir personel (Dr. Davis)
NCAT	BIPOC Growers	Enrollment, Outreach & Agronomic Support	1	Senoir personnel (Dr. Bhowmik)
AI	Veteran Growers	Enrollment, Outreach & Agronomic Support	1	Program manager
USCTP	All Grower including Female Growers	Enrollment, Outreach & Agronomic Support	4	Grower enrollment specialist
		Total	**8.5**	

Objective 3 – Measure and track Climate Smart Cotton GHG reductions and demonstrate the scalability of the USCTP platform for MMRV and supply chain tracking.

Primary Outcome. Execution of integrated and improved MMRV for Climate Smart Cotton and GHG benefits for 1,650 farmers on 1.2M acres, each enrolled for 3 years, to create 4.2M bales of Climate Smart Cotton and 1.14M metric tons CO_2e reduction.

The USCTP will leverage its existing technology platform developed by the SEAM which includes a grower enrollment portal and supply chain tracking integration with the Textile Genesis™ platform. To date, this software solution has tracked over a million USCTP cotton bales from over 650 producers. For the Program, this system will be expanded to include additional MMRV activities to verify and track the climate benefits of new practice adoption incentivized in Objective

2. Quantification of the GHG benefits of Climate Smart Cotton production will be calculated on each acre enrolled; however, we estimate the total benefits from new CSA practice adoption will be 1.4M metric tons of CO_2e over five years. **This reduction equates to 0.013 metric tons (13 kg) of CO_2e reduction per dollar of USDA funding within the project term.** With the successful development of a carbon inset program and continued grower practices, benefits will continue to increase after the three-year grower commitment and five-year project term.

Key Activities & Lead Partners. The Program will, 1) combine USCTP's platform (the Protocol Consumption Management Solution that includes a customized version of Textile Genesis™ [21]) for tracking cotton through the supply chain and leverage the selected ESMP's proven MMRV approach, and 2) improve the reliability of soil carbon and GHG estimates and reporting through scalable measurement and verification.

The program will leverage the selected ESMP's MMRV platform that will be based on available and accepted approaches to monitoring soil carbon and COMET-based estimates of GHG emissions. Working with TAMU, the Program will explore state-of-the-art measurement approaches that will inform current MMRV methods, resulting in reduced costs and more reliable estimates. The working hypothesis is the integration of innovative ideas into a currently sound and tested MMRV can lower transaction costs by increasing certainty in GHG estimates and reducing soil sampling costs. The result will be a more robust, cost-effective, and scalable platform for the USCTP to meet the needs of farmers, verifiers, and brands and retailers in the fashion/textile industry. The MMRV platform efficiency, accuracy, and performance will be assessed monthly through reporting and quarterly review by a 6-person advisory group of technical experts from USCTP, SHI, CI, the ESMP, TAMU, and participating brands/retailers. Findings will be shared twice a year with the Partnerships Network.

Details. MMRV Description of GHG Quantification.

MMRV Field Data Collection. The USCTP's farmer enrollment and data management system will be used to collect demographic, farm, field, and operational level data from enrollees. The system interfaces and connects with farm data management systems to reduce the input burden on farmers. The Level 1 enrollment will require the completion of the Field to Market Fieldprint Platform analysis estimating GHG emission, and other environmental indicators on 10% of the grower's enrolled acres. When farmers enroll, they must provide at least a full rotation of historical and future management data (e.g., the additional CSA practices being adopted). Farm Service Agency farm and tract numbers are collected to meet USDA reporting requirements. Before enrollment, farmers review and consent to the USCTP's data privacy and use policy.

Outcome Quantification. The selected ESMP will have a data application programming interface (API) to streamline COMET modeling. COMET modeling will be in addition to the Fieldprint analysis. Comet modeling is required on all acres enrolled in Level 2. As such, 2 models will be used to estimate emissions from grower operations. The API should provide seamless data transfer to the modeling platform, where the data will be reviewed by agronomy experts. The farm operations will be combined with multiple years of historical "spin-up" data to establish a baseline before predicting changes associated with new practices. Following the model spin-up, average annual CO_2e estimates will be calculated based on a 10-year projection from the year the conservation practice was implemented. The CO_2e estimates will be calculated by comparing

baseline fluxes to those corresponding with simulation years following the conservation practice intervention.

Farmer Contracting. For Level 3, outcome data will be reviewed by the ESMP, and payment estimates will be developed. The ESMP assigns a price per outcome that is used to structure the payment that will be distributed by USCTP. Payment estimates are sent to farmers and they can choose to accept or reject the payment for an inset offer.

MMRV Approach & GHG Monitoring Plan

Field Inspections, Records, and Field Audits. In person visits will occur for each field enrolled in Levels 2 & 3 of the Program to document crop type, tillage, residue levels, presence of cover crops, and other information. Photos and field notes will be taken during the inspections. The contract requires farm managers to retain paper or electronic records of the planned and actual farming practices. If conservation practices are not observed during field inspections, the ESMP will request proof of practice from the producer.

Soil Sampling. Soil sampling will be conducted by the ESMP on random 10% of Level 2 & 3 enrolled fields, and the sampling for Level 3 growers will be repeated after 5 years pending additional funding beyond the 5-year Climate Smart Project term. The sampling approach will use SHI's stratification and random selection within the strata process. The long-term goal of the sampling design is to optimize for greater statistical confidence in modeled results and minimize cost. The fields selected for soil sampling will be subject to 6 total organic carbon samples and 6 bulk density samples, a total of 12 soil samples. Within each selected field, samples will be taken on the three most prominent soil types. Samples are taken at the centroid of each soil type, taken at a total depth of 30cm, and then split to have a 0cm to 15cm and a 15cm-30cm sample. Total organic carbon and bulk density are paired at each sample depth. For more details see the table below.

Soil Sampling Table

Level 2 & 3	Total	2023	2024	2025	2026	2027	2028
Total growers enrolled			550	1,100	1,650	1,100	550
Number of New Growers Inspection and Monitoring Visits	1,650		550	550	550		
Number of field visits (100%)	17,474		1,942	3,883	5,825	3,883	1,942
Number soil samples (avg 4 field per farmer)	582		194	194	194		
Number of Soil Samples Collected	6,989		2,330	2,330	2,330		

MMRV Approach to Reporting and Tracking GHG Benefits: The selected ESMP should utilize an MMRV approach that accounts for and tracks both nitrous oxide emission changes and soil carbon storage separately at the field level. Ideally, the ESMP should be able to report N_2O and SOC CO_2e separately or in aggregate as a total CO_2e. Once the GHG outcomes have been quantified and verified, they will be reported and tracked using the following methodology:

Internal Ledger Assignment: The selected ESMP must be able to keep track of all CO_2e outcomes associated with specific producer contracts, unique field identifiers, and quantified outcomes within a data system and ledger. Once yearly quantification, monitoring and verification, and outcomes assignments are completed, the data are locked, and no further changes can be made. The ledger assignment and data locking prevent double counting and double selling of outcomes.

Buffer Pool Reduction: The ESMP will assign buffer pools to the CO_2e and represents 10% of all outcomes to account for reversals from fields under contract. Buffer pools are assigned annually, and these outcomes are not sold or reported to public or private partners.

Reporting: Annually, customers receive reports providing detailed information about the field along with CO_2e reductions. The reports are the official transfer of ownership of the CO_2e outcomes to the purchasing entity. The project anticipates reporting for U.S. Climate Smart Cotton by including data on the producer, farm, and tract numbers, environmental outcomes produced, conservation practices implemented, and documentation of highly erodible land and wetland compliance checks.

MMRV Approach to GHG Verification. Currently, third-party verification for carbon insetting has not been fully developed. Until third-party verification for Scope 3 GHG insetting has matured, the selected ESMP must ensure a quality product is produced for partners within commodity supply chains through the following:

Additionality. Any claimed inset credit represents a reduction of GHG emissions that would not have otherwise occurred without the issuing program or marketplace. The ESMP will require field-level additionality when the producer first enrolls.

Verification of Intervention. Implementation of management adoption is verified using monitoring described previously.

Third-Party Review. Verification service providers will be certified by current registries (such as Verra or Climate Action Reserve) that bring relevant agricultural carbon market verification experience using the most common protocol guidance [22, 23].

Approach to improve the credibility and certainty of GHG Quantification. TAMU will lead efforts to calibrate and create uncertainty estimates for the MMRV-based COMET model used to quantify GHG emissions using a micrometeorological method called Eddy Covariance. TAMU will set up state-of-the-art instrumentation collecting real-time, continuous data measuring GHG emissions on a total of eight, paired fields in locations representing soils and climates for over 85% of cotton production. Locations are West (CA), Southwest (TX), Mid-South (MS), and Southeast (GA) cotton-producing regions. In each location, GHG fluxes (i.e., variations in time of sources and sinks of CO_2, N_2O, and CH_4) will be measured on two fields that are growing cotton – one of the fields will be under baseline management using predominant local production practices, and the other will be using CSA practices (nutrient management, no-till, cover cropping). The climate smart field will be managed by an early adopter that has experience with climate smart practices. The paired fields will be monitored over the 5-year period and GHG flux data will provide empirical information on additional GHG emission reductions, compared to a baseline, from CSA practices. This measured emission data will be compared to COMET-based estimates to assess the degree of agreement, variance, and bias of the modeling. The results will be used to calibrate model estimates, and/or provide a certainty estimate of the MMRV outcome. These results will be published in scientific literature and shared with the Partnerships Network.

Addressing Additionality

Early adopters with high CSA practice adoption rates are still eligible for all three levels of the Program. On most farms with high CSA practice adoption rates, there are still acres yet to fully implement CSA practices, and are eligible for practice change payments. Additionally, the Program will work with commodity groups (such as sorghum and peanuts check-off programs) to

conduct a comprehensive evaluation of existing and emerging methods to address additionality and include early adopters in carbon insetting markets to encourage long-term CSA practice adoption. Discoveries from this evaluation will be shared with the Partnership Network.

Objective 4 -Develop and grow markets for Climate Smart Cotton and carbon insets among brands and retailers in the apparel industry.

Primary Outcome. To increase the demand for Climate Smart Cotton to 4.2M bales and scale a new carbon inset market to 1.14M metric tons CO_2e over the five-year project period.

Key Activities & Lead Partners. USCTP and CCI will leverage existing market promotion infrastructure to build demand for 4.2M bales of Climate Smart Cotton and 1.14M tons CO_2e carbon insets produced during the Program. As a result of previous market promotion activities and sustainability challenges such as the Textile Exchange's Sustainable Cotton Challenge, there is significant brand and retailer demand for sustainably sourced cotton that can help reduce their Scope 3 supply chain GHG emissions. Based on feedback from existing and prospective members of USCTP, the current annual demand for sustainably sourced USCTP cotton is estimated at 3M bales, with the number expected to increase to 10M bales by 2025. This level of demand would require about 5.6M acres of Climate Smart Cotton production per year.

Details. CCI has relationships with mills and manufacturers around the world with 23 dedicated marketing staff in Europe, Asia, and Central America. In addition to CCI staff and resources, USCTP will promote markets for Climate Smart Cotton within the U.S. and around the world. To maximize grower payments and GHG emissions reductions, funding of $3M per year from other industry resources will be used for USCTP and CCI Climate Smart Cotton market promotion activities. These additional funds are not included as a cost share within the Program as they are already leveraged for matching elsewhere. USCTP and CCI will promote Climate Smart Cotton to brands, retailers, textile mills, and manufacturers as well as communicate the benefits of Climate Smart Cotton at sustainability organizations and conferences.

USCTP and CCI will provide existing member companies with information on Climate Smart Cotton, its environmental benefits, and how to source it. The team will engage in market discovery to understand each company's demand volume and price points. Although verified Climate Smart Cotton would create an added value from the potential carbon reductions, it remains unclear to the extent that will translate into a price premium for the fiber. The team will routinely evaluate the efficiency and effectiveness of market development efforts through monthly progress reports and quarterly reviews to identify lessons learned and areas of improvement.

New and/or expanded marketing channels

As the USCTP enrolls new brands, growers will gain increased opportunities to market not only their Climate Smart Cotton but also carbon insets. While it is difficult to estimate the number of new brands enrolled quarterly, the USCTP will continually strive to sign up additional brands throughout the year. The existing demand for Climate Smart Cotton among current USCTP members is estimated at 3M bales, with expectations to increase to 10M bales by 2025. This demand must be taken into account in relation to the available supply. At present, there are 25 major brands and 1200 mills and manufacturers participating in the USCTP, and this number is expected to grow as Climate Smart Cotton production increases to approximately 5.6M acres per year.

The USCTP and CCI will leverage existing market promotion infrastructure to build demand for 4.2M bales of Climate Smart Cotton and 1.14M tons CO2e carbon insets produced during the Program. Climate Smart Cotton and carbon insets will be promoted to brands, retailers, textile mills, and manufacturers, as well as communicated at sustainability organizations and conferences. The program will also engage in market discovery to understand each company's demand volume and price points for both Climate Smart Cotton and carbon insets.

To effectively market carbon insets to the USCTP brands, the team will highlight the environmental benefits of the insets, such as their potential to reduce a brand's Scope 3 supply chain GHG emissions. The USCTP will also provide existing member companies with information on carbon insets, their sourcing, and their contribution to sustainability goals. The USCTP will be promoted to brands at industry and sustainability events throughout the project's duration, emphasizing the value of both Climate Smart Cotton and carbon insets. This information has been updated in the Quarterly Projection Table.

Climate Smart Promotional Activities: Grower and Supply Chain

- Create industry messaging outlining the objectives of Climate Smart
- Update grower enrollment materials, including messaging, presentations, and one-pagers that outline the Climate Smart project and benefits
- Revise sales materials for the supply chain to incorporate the program's messaging, distinguishing based on audience
- Publish content throughout the year, including podcasts, animations, newsletter articles, and videos to reach growers and the supply chain
- Integrate benefits and outcomes of the program in partner content published with outlets brands and retailers know/trust such as Sourcing Journal
- Regularly add Climate Smart into earned media pitches with agriculture, trade, sustainability, textile, and fashion publications. Examples include Farm Press publications, WWD, Just-Style, and Edie.
- Create content to publish on the Trust Protocol's website and post on owned social channels Twitter, LinkedIn, Facebook, and Instagram
- Provide pilot program updates and results in the Trust Protocol's 22/23 Annual Report
- Position the Climate Smart project as a key component of the Trust Protocol's participation in important industry events including the Beltwide Cotton Conference, Sustainable Brands, and Textile Exchange.

Objective 5 – Create and scale a carbon inset program for the cotton supply chain generating additional revenue supporting the long term adoption of CSA practices

Primary Outcome. To create and sell 1.14M metric tons CO_2e of insets to the apparel industry and provide farmers with an opportunity for ongoing outcome payments to encourage long term CSA adoption.

Growers engaging in Level 3 of the Program will have additional requirements to create and sell carbon insets, however, they will also have additional revenue to encourage the adoption and continuation of CSA practices. Payments from inset sales occur yearly and could continue past the

Program completion. Grower inset revenue will come from the sale of insets to the apparel supply chain and not from the Program resources. If the carbon inset demand is less than inset creation, carbon offset sales will be explored for the remaining carbon benefits. This additional leverage will encourage long-term adoption and continuation of climate smart practices after the Program's 3-year grower enrollment period ends. Table 6 estimates the financial and GHG benefits associated with Level 3 engagement.

Table 6: Climate Smart Cotton verified inset production and grower inset revenue from apparel brands. Assuming 3 years of inset sales and $15 per metric ton CO_2e.

	Metric ton CO_2e reduction	**Carbon inset revenue**
	Program total	Program total
Project	1,140,000	$17,100,000
HUC	*228,000*	$3,420,000
Per farmer	691	$10,400
Per acre	2.0	$29
Per bale	0.6	$8

Key Activities & Lead Partners. The USCTP has previously developed an integrated technology platform to create and sell carbon insets. This integration was based on a successful pilot project engaging NC cotton growers where 130 metric tons of CO_2e insets and water outcomes of 8,700 lbs. of nitrogen and 124 lbs. of phosphorus loss reduction were created and sold. The Program will leverage the existing USCTP and the selected ESMP's MMRV platforms to verify and track GHG benefits through the supply chain providing the data, traceability, and chain of custody to enable the sale of insets to brands and retailers.

Details. Farmers enrolled in the Program can take advantage of the assistance they receive for climate smart practices, and resulting CO_2e reduction, by participating in the carbon inset program and getting additional revenue of $15 per metric ton CO_2e reduction (estimate based on voluntary carbon market inset data). The sale of insets will only be available to the landowner, which is standard practice within the ecosystem service market. The additional revenue will reinforce the long-term growth and post-project viability of Climate Smart Cotton production. These insets are only available for purchase by brands and retailers that buy U.S. cotton and would allow these companies to make claims against their Scope 3 emissions reductions (related to the cotton used in their products). The geographic scope of sourcing includes all cotton-producing states. The USCTP will contract with an ESMP that has a technology platform that can collect and map farmer data, model environmental outcomes based on new practices, verify outcomes using in-field sampling, and provide ongoing real-time tracking of practice changes in the field. If possible, the selected ESMP should also be able to quantity water quality improvements as a Program environmental co-benefits resulting from CSA practice adoption. Additional markets for improved water outcomes credits will be explored in the Program and have the potential to pay growers up to an additional $20 an acre (based on industry sales data), however, these markets are currently limited.

In addition to a $2.5M cost share, Target Corporation has already expressed interest in purchasing carbon insets when they become available from this Program (see Letter of Support). Further, CCI and USCTP will promote additional carbon insets created by the Program to the apparel supply chain as outlined in Objective 4.

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