

Frequently Asked Questions on ESMC's Program

Who We Are

How does Ecosystem Services Market Consortium (ESMC) support program participants?

The following tools, platforms, technologies, and assistance are being developed by ESMC to support market participation by both producers as well as buyers:

- Science-based, standards-based, certified protocols for agricultural production systems.
- Technologically advanced, farm and field specific quantification tools, including new soil carbon testing technologies and methodologies aimed at improving rigor, reducing costs, and streamlining the process.
- Integrated Enrollment Platform that is user-friendly and allows for data migration from common data collection platforms utilized by producers.
- Soil Sampling Stratification application to assist in generating and tracking soil sampling locations and results.
- Certification of ecosystem service projects, protocols, and assets generated.
- On-the-ground producer support from multiple ESMC member organizations.

What makes ESMC different from other ecosystem service markets?

ESMC's non-profit structure means we minimize costs and maximize stakeholder value for farmers and ranchers, as well as those who buy the ecosystem services they produce. ESMC's 60+ members include players across the entire agriculture supply and value chain, including corporate, non-profit, foundation, industry association, and government partners.

ESMC is also a public-private partnership. ESMC uses research funding from the Foundation for Food and Agriculture Research (FFAR) to invest in a technologically advanced ecosystem services market for the agricultural sector. ESMC members contribute research to support agricultural land stewardship practices that improve soil health and related environmental outcomes. Members help govern ESMC's structure, program development, research investments, and activities. Everything we do serves our mission of incentivizing farmers and ranchers to adopt practices that benefit society.

We base our work on science, widely accepted standards and outcomes. Our market protocols have the strongest scientific basis possible to provide confidence and trust to sellers and buyers as well as the public. Protocols, projects, and ecosystem service assets will be verified and

certified by global certification bodies like [Gold Standard](#) and [SustainCERT](#) so buyers of our assets have confidence that their investment is truly having impact.

ESMC's market design is both innovative and unique. Rather than focusing on just one type of environmental improvement, we “stack” multiple ecosystem services to go beyond simply improving soil carbon and reducing greenhouse gases. The same land stewardship practices that impact soil carbon and greenhouse gas emissions, for instance, oftentimes have additional benefits, such as improved water quality and water conservation, as well as biodiversity benefits such as habitat for pollinators, insects, and birds. ESCM's marketplace will reward producers for all these benefits, not just carbon credits.

ESMC operates in more than one environmental market to maximize producer choice, returns, buyer demand, and societal benefits. Farmers and ranchers can manage their operations to improve environmental outcomes through practices that make the most sense for their production system. We look at each field holistically to capture the site characteristics, the entire set of management decisions and the resulting outcomes. Enrollment in the ESCM Program then provides producers with access to both supply chain reporting markets as well as more rigorous offset and compliance grade markets.

Ecosystem Service Assets

What kinds of improvements to the environment are being quantified for asset generation?

ESMC captures and quantifies results from producers' stewardship practices into ecosystem service assets based on the latest science, measurable results, and broadly accepted standards. We measure, and soon will market, assets that capture increases in soil organic carbon, reductions of greenhouse gases, reductions of agricultural run-off that impact water quality (including nitrogen, phosphorus, and sediment), as well as improved water conservation.

Benefits to farmers and ranchers don't stop with ESCM payments. Regenerative and sustainable agricultural practices that increase soil organic carbon also improve overall soil health, structure, fertility, and productivity. This can create more resilient production systems that are less impacted by extreme weather. Better soil health, in turn, means reduced soil erosion from wind and water, keeping valuable soil in the field. Improved soil water holding capacity can reduce nutrient losses and lower irrigation requirements. Improved practices can also positively impact biodiversity and habitat.

What are the differences between the Scope 1 and Scope 3 markets?

ESMC generates assets in two existing ecosystem service markets— the Scope 1 or offset/compliance market, and the Scope 3 or corporate supply chain reporting market. Farmers and ranchers can earn stacked credits for both markets.

The concept of different “scopes” is based on [Greenhouse Gas Protocol](#) nomenclature developed by the World Resources Institute. While this nomenclature is specific to greenhouse gas emissions, it is useful for understanding the difference between these two markets for all the ecosystem services that ESMC can generate.

To illustrate, imagine a company operates a processed food factory. The company has a greenhouse gas footprint based on this facility’s emissions. We call these Scope 1 emissions since they result from the company’s main activities. That company may want to offset these emissions by buying carbon offsets from other companies that have reduced their own emissions in ways others have not. This is the Scope 1 market.

This same food company can also take a broader look at its greenhouse gas footprint, looking beyond its own offices and accounting for the emissions associated with the agricultural goods that it uses for its finished products.

Greenhouse gas emissions that result from the production of its raw materials are considered the food company’s Scope 3 emissions. In other words, Scope 3 represents the emissions that result from the company’s supply chain as the raw materials are produced and make their way to the factory.

Companies across many industries and sectors are assessing their Scope 1 emissions and are potential buyers in the Scope 1 market. To this end, ESMC is generating Scope 1 assets for use in these markets that are produced by farmers and ranchers. Since the Scope 3 market looks at the upstream emissions from a company’s supply chain, the buyers of ESMC Scope 3 assets will have supply chains tied to U.S. agriculture. Many, if not most, food, agriculture, and beverage companies have significantly higher Scope 3 emissions from the supply chain than Scope 1 emissions.

What are the differences between the assets that ESMC generates for the Scope 1 and Scope 3 markets?

ESMC’s ecosystem service assets for Scope 1 markets include voluntary carbon offsets and compliance-grade water quality offsets. Scope 1 markets require a higher degree of rigor since the ecosystem service assets are used to offset greenhouse gas emissions or nutrient loss. Accordingly, the process for certifying Scope 1 assets entails more data collection, monitoring, and verification to ensure that the environmental outcomes are credible, independently verifiable, and have the highest degree of confidence. They trade at higher prices than Scope 3 assets based on this higher degree of rigor.

ESMC’s Scope 3 assets can be used in corporate supply chain reporting. Scope 3 assets are not tradeable, cannot be carried over for reporting in a different year, and do not serve as an offset in the same way as ecosystem service assets do in the Scope 1 market. Instead, they represent

environmental improvements associated with the supply chains of companies within the food, agriculture, and beverage sector. Benefits to Scope 3 assets include the ability for multiple companies to co-finance and co-claim these improvements to their shared supply chains.

Since Scope 3 assets generally require less data collection, monitoring, and verification, they will likely provide a lower return to the producers who are making these improvements happen.

How the ESMC Market Works

Who are buyers in ESMC's market?

Food and beverage processors, manufacturers and retailers will be the primary buyers of ESMC Scope 3 assets. ESMC's market provides corporate partners and buyers with certified outcomes to meet their own commitments toward carbon neutrality or net-zero carbon goals, commitments to reduce environmental footprints, and efforts to contribute to global [Sustainable Development Goals 2030](#) impacts.

ESMC supports members' ambitions to continue investing in equitable, just, and environmentally sustainable food systems. We ensure these buyers can meet their goals and obligations through a certified, transparent, science-based, and cost-effective program. We lend credibility to these outcomes, thus meeting consumer-, stakeholder-, and shareholder expectations while avoiding the need for every company to establish its own programs, tools, and metrics to do so.

Non-ESMC members may also be buyers. For instance, local municipal or regional water authorities can purchase Scope 1 water quality assets. Our program empowers producers to generate carbon offsets for sale in the Scope 1 voluntary carbon offset markets to industries like the airline, financial, or energy sectors.

How will the marketplace operate?

ESMC's market is slated for launch in 2022. Farmers and ranchers in approved ESMC regions will be able to enroll with ESMC and begin generating ecosystem service assets. Those producers currently enrolled in ESMC pilot projects will be able to rollover into market launch. Enrollment will occur through ESMC's online Producer Portal, where producers will create a secure account and identify fields for enrollment. ESMC-trained soil samplers will then collect samples from the enrolled fields and send them to an accredited laboratory for analysis of soil organic carbon, bulk density, pH, and phosphorus. Required information about a producer's operations and conservation practices can be imported from other 3rd party platforms or entered directly by the producer or an assigned advisor. Producers may also be selected for on-site verification of the agricultural stewardship practices by ESMC-trained verifiers.

Farmers and ranchers do not need to enroll all their land; they can enroll as few or many eligible acres under management as they like. ESMC will quantify the environmental outcomes and then generate, verify, and register the assets – tons of soil carbon sequestered, tons of reduced CO₂ equivalent, tons of reduced sediment loss, and pounds of reduced phosphorus or nitrogen losses.

ESMC will arrange sale of producer's assets. Buyers will then purchase the assets through ESMC's marketplace, while ESMC deducts a cost-recovery fee for its role in generating the assets. Farmers and ranchers will be paid for producing these ecosystem services via their agricultural stewardship practices. Timing and frequency of payments will depend on the asset or credit types.

How does ESMC quantify environmental outcomes and determine payments?

Unlike some pay-for-practice program, ESMC calculates ecosystem service assets based on the modeled outcomes of all management practices and site characteristics, not just individual conservation practices a farmer or rancher implements.

For instance, producers do not get a per-acre payment for planting a cover crop or adopting rotational grazing under the ESMC market. Instead, we measure the beneficial environmental outcomes from all the producer's activities in a specific field. This is based on ESMC's integrated approach to quantifying these ecosystem services, which incorporates innovative technology and scientifically rigorous modeling. ESMC's market program, quantification approach, and models are calibrated and validated by region and by production system to ensure accuracy.

ESMC will issue payments annually based on market prices. Producers will enroll for a 10-year payment period, with payments beginning in the year after the assets are generated. As an example, growers who enroll in 2023 will receive their first payments in early 2024, following the conclusion of the growing season or the end of the calendar year for grazing operations.

Who sets the price of credits in ESMC's market?

Buyers will arrange individual contracts with sellers, or assets may be sold in auctions. Some ecosystem services, such as water quality improvements, benefit specific local or regional contexts and communities, so the price will be determined by those localized stakeholders and buyers. Carbon and greenhouse gas markets, on the other hand, are not place-based; their price will be subject to broader market rates, and the pool of interested buyers will be much larger.

ESMC's marketplace will also allow forward purchases - so that buyers and sellers can enter into a purchase agreement for assets that are not yet complete. ESMC will, however, also have one or more annual auctions for assets that are open or unclaimed by ESMC members. While ESMC will not set the price, our marketplace will likely entail rules such as minimum price floors.

Are there transaction costs?

ESMC will take a per-unit cost recovery fee from ecosystem service asset transactions. ESMC's fees will hold steady or even decrease as market volume grows, since ESMC is a non-profit and only needs to cover its operating expenses.

How are transaction costs accounted for?

ESMC will publish its fees to buyers and sellers. All fees will be deducted from transactions themselves.

Who is responsible for making buy-sell transactions in ESMC's market?

ESMC will manage the ledger and execution of transactions.

ESMC's role in the market is important because even for an arranged sale, the assets need to comply with all ESMC program requirements and standards, including assurance that producers' assets are not double-counted or sold to more than one buyer.

How long is a producer's engagement or contract with ESMC?

ESMC's standard contracting period is 10 years. There is no minimum volume for producers (and thus no potential for early or late achievement of anticipated benchmarks). Producers' outcomes are calculated annually over the course of a 10-year crediting period (which may be renewed another 10 years for a total of 20 years maximum participation).

During ESMC's current piloting phase, which will continue until market launch, participation depends on the specific pilot project terms. Producers from these pilots will have the opportunity to transition into the full market at the end of 2022.

How Producers Can Get Involved

How can producers get involved in pilot projects (pre-2022 market launch)?

ESMC is working towards market launch in late 2022. Until then, we are undertaking a portfolio of pilot projects with ESMC members in key production regions and systems. These early participants have a unique opportunity to test new innovations, contribute to critical research projects, and provide input into the market to guide ESMC program development – all while generating saleable ecosystem service assets.

Pilot projects are limited to approved [ESMC Pilot Regions](#) and specific production systems. ESMC's pilot regions map continues to expand as ESMC adds more regions, practices, and production systems. Our [newsletter](#) also provides updates on pilot projects.

Producers and organizations that want to start pilots in new regions should [contact ESMC](#).

How will farmers and ranchers participate following the post-2022 market launch?

Producers will be able to enroll in approved regions once the market is launched in 2022. Most will enroll through an ESMC member or partner organization. ESMC will not have its own field staff, but instead work through a network of trained ESMC Enrollment Specialists to guide producer participation in the program.

Eligibility

Does the type of production system matter?

Production systems including conventional, regenerative, and organic, can participate in the ESMC program. Major row crops such as soy, corn, and grains are currently eligible, as are forms of prescribed grazing (e.g., rotational grazing). ESMC is actively expanding its program to include additional commodities such as tree fruits and nuts and select specialty crops as well as more regions of the country. Livestock operations that require a National Pollutant Discharge Elimination System (NPDES) are not eligible.

Is the process different if a producer is a farmer or a rancher?

The market program is largely the same for farmers and ranchers, including producers who manage integrated cropland and livestock systems. The timeline for the reporting year, soil sampling, data collection, and the types of information needed for asset generation will differ slightly for cropland versus rangeland systems due to seasonality and the need to track crop yields versus number of cattle in a herd, for instance.

Do producers need to enroll all their land, or can they choose which portions to include?

Producers do not need to enroll all their land. They can enroll as many fields under management as are eligible. Producers generally cannot, however, enroll the same lands in ESMC that are also enrolled in another ecosystem service program that generates ecosystem service credits, offsets, assets, or claims.

Do producers need to own their own land to participate?

Producers who either own or lease their land are eligible to participate. Producers who do not own their land will need to demonstrate that they retain ownership rights to the ecosystem services assets or credits. This can be demonstrated through agreements between the producer and the landowner. ESMC can provide template agreements. Producers enrolling leased land will also need to demonstrate the time remaining in the lease or rental agreement.

What if ownership changes mid-contract or a producer gets a new property owner?

If enrolled land changes ownership or a producer gets a new property owner mid-contract, the producer will need to provide an updated agreement of landowner acknowledgement to demonstrate that they still have the rights to the ecosystem services to be generated and sold.

What if a producer has been using conservation practices for years?

Eligibility for market participation varies by asset type and market. For example, international standards for carbon offset markets require practice changes at the time of producer enrollment to meet “additionality” requirements for the offsets to be generated, certified, and sold. Market accounting standards in Scope 3 markets may allow more flexibility for rewarding early adopters of conservation practices while ensuring the integrity of the ecosystem services generated. ESMC is working to maximize the opportunities for producer participation while maintaining standards for verification and certification.

Practices Eligible for ESMC’s Market

Will ESMC be developing its own Best Management Practices (BMPs)?

ESMC is not developing new BMPs; we instead allow producers to decide which management systems are best for their businesses, goals, and circumstances, choosing from a list of widely recognized conservation management practices and industry standards.

Eligible BMPs are those that ESMC has determined to be supported by peer review studies and scientific demonstration sufficient to ensure they will lead to improvements in soil organic carbon, reductions in greenhouse gases, improvements in water quality, improvements in water use conservation or a combination of those actions.

What if a producer changes practices mid-season or is not successful in implementing a conservation practice?

ESMC will generate assets only for real outcomes achieved by the producer. If farmers fail to plant cover crops as planned during one year of the program, for instance, they may remain in the program. The beneficial environmental outcomes from that practice will simply not be realized for that year. Other assets generated will still be recorded.

Will practices be available for dairy farmers?

Activities associated with livestock (such as rotational grazing) are currently eligible, as are practices associated with cropping systems that produce animal feed. ESMC is currently working

to include other management practices associated with dairy operations and looks to include those in the program at a future date.

How does ESMC approach practices such as applying manure?

Manure management has the potential to result in ecosystem service asset generation. The manure application timing and its incorporation into the soil also impact the potential for beneficial outcomes. ESMC recommends that producers consult with their preferred technical assistance provider to determine which approaches to manure management will work best for their business operations, and which management changes may result in the generation of ecosystem service assets.

If producers are already enrolled in cost-share conservation programs where payment is received on the front-end, can they still participate in ESMC?

Producers enrolled in Natural Resources Conservation Service (NRCS) cost-share programs (or other NRCS programs which entail a producer payment) can also enroll in ecosystem services markets like ESMC. USDA cost-share programs are a beneficial form of complementary, up-front financing to aid in new conservation practice implementation. They may also enroll land that is enrolled in other state or local cost share programs.

Do the practices from NRCS directly transfer to ESMC?

ESMC recognizes common agricultural practices referenced in NRCS Conservation Practice Standards. Non-NRCS recognized practices may also be used, provided there are sufficient published scientific data and outcomes justify their use. Peer reviewed data is necessary to ensure ESMC's quantification tools can be properly calibrated and validated for a given practice.

Participant Support

Who will provide agronomic technical support for producers regarding different soil health practices?

ESMC will not provide practice-specific conservation technical assistance. Other organizations are better positioned to advise farmers and ranchers on which land management practices are best for their operations, goals, and circumstances. ESMC is working with members and collaborators to ensure they have the agronomic and technical support they need.

Asset Generation

What kind of soil sampling is required?

ESMC-trained contractors will follow ESMC sampling protocols for measuring soil organic carbon, bulk density, pH and phosphorus. Soil carbon measurement protocols differ from normal agronomic sampling protocols. A 2” diameter core to a depth of 30 cm (about 12 inches) in the soil profile is required. Soil sampling locations and density are determined at a field scale through the ESMC Stratification App. Sampling density requirements are likely to be reduced after launch, particularly for Scope 3 projects, depending on the outcomes of our pilots, research, demonstration projects, and the protocol refinement process.

What does ESMC mean by “Monitoring, Reporting, and Verification?”

Monitoring, Reporting, and Verification (MRV) describes the key steps necessary to quantify ecosystem services and sell them as assets. ESMC’s market is designed to ensure that these steps are as efficient, streamlined, and seamless as possible for both buyers and sellers.

Monitoring refers to the information gathered from, and self-certified by, the producer. This includes information related to crop and livestock management (e.g., crop rotation; fertilizer use; number of days the herd grazed in a particular field; crop yield) as well as ongoing program eligibility (e.g., whether producers continue to implement conservation practices as planned, and whether the land has changed ownership over the previous year).

Reporting includes compiling the management- and project eligibility information for use in both quantifying ecosystem services generated, and for ease of checking the accuracy of this information for verification.

Verification is the process of confirming that the information is both complete and accurately represents what happened on the ground so that the assets can be generated, certified, and sold.

How do producers know their information is protected?

ESMC takes data privacy and producer information seriously. As stated in the ESMC Producer privacy policy, producers’ individual personal information, e-mail address, field and management data, and modeling results will be kept secure and confidential until the producer provides explicit permission for that information to be shared. ESMC staff and contractors are bound by a Data Usage Agreement and are only allowed access to information necessary to generate assets. ESMC will not share or sell any producer information with any third party unless producers specifically agree to a data-sharing option. All producer data is owned by the producer not ESMC.

What are possible producer expenses for participation?

ESMC imposes no enrollment fees and requires no purchase of any agricultural products or services to participate. Conservation practices that result in ecosystem service assets typically come with operational costs to the producer. These may include the cost of cover crop seed, new planting or cultivation equipment, different labor requirements, etc. Some of the expense in implementing different conservation practices may be eligible for NRCS or state cost-share programs. Producers are encouraged to consider such programs to help offset costs of these conservation practices. Improvements in soil health provide other benefits to producers, such as increased resilience to extreme weather events, increased soil fertility and productivity, improved water holding capacity, and reduced need for purchased inputs, all of which can reduce operating costs and increase profits.

Soil sampling costs will be incorporated into ESMC operating costs. ESMC or pilot project partners incur the cost of soil sampling and analysis, monitoring, reporting, and verification. As a non-profit, ESMC will not charge more than is required to cover the expenses associated with generating the ecosystem service assets for producers.

In addition to costs, are there other producer liabilities to participation?

The producer will be held accountable for intentional reversals of soil organic carbon gains in Scope 1 carbon offset markets. If producers have received payments for soil carbon sequestered, for instance, and then intentionally till that soil and release the carbon, they may be responsible for either sequestering that carbon again through the rest of the contract or paying back the ecosystem service payments already received. Unintentional reversals due to natural causes are not a producer liability.

Science Supporting ESMC's Program

How does ESMC develop its protocols?

ESMC is committed to using strong, peer reviewed science in developing protocols and quantification techniques to provide confidence and trust to both sellers and buyers of agricultural ecosystem service assets. The market program is both science- and outcomes-based, following International Standards Organization (ISO) approaches for protocol development. ESMC's program, protocols and certified ecosystem service assets are aligned with the relevant standards for each market, such as the Science Based Targets initiative (SBTi) and the Greenhouse Gas Protocol guidance for the Scope 3 corporate reporting market. ESMC's carbon offsets will be certified by internationally recognized carbon registries.

ESMC relies on the latest available knowledge and technologies to quantify the recognized ecosystem services including process-based models to quantify the dynamic biogeochemical and

hydrological interactions that occur within agricultural soils and systems. The models are rigorously calibrated and validated on a region-by-region and production system-specific basis to account for the different agronomic and ecological systems of the continental United States. The models were originally developed at public land-grant universities and have been used in hundreds of peer reviewed studies.

Is this science being considered relative to the geographic region?

The validation and calibration of ESMC’s quantification approaches is based on peer reviewed research specific to each of the 12 protocol regions – this ensures that model performance is informed by data and scientific demonstration for each of the conservation practices and production systems present in each ESMC protocol region. These protocol regions were defined based on its shared agroecological zones and characteristics.