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SUBJECT: Testimony of Debbie Reed, Executive Director of Ecosystem Services Market Consortium (ESMC), to a hybrid hearing on Voluntary Carbon Markets in Agriculture and Forestry of the Full Committee on Agriculture of the United States House of Representatives

Chairman Scott, Ranking Member Thompson, and other distinguished members of the House Agriculture Committee, thank you for the opportunity to testify today to discuss voluntary carbon markets for agriculture and forestry. My name is Debbie Reed and I am the Executive Director of the Ecosystem Services Market Consortium (ESMC), a member-based, not-for-profit organization launching a national scale ecosystem services market for agriculture to recognize and reward farmers and ranchers for their environmental services to society. We appreciate the opportunity to provide feedback to the committee on how these markets work and how they can benefit our American farmers, ranchers and foresters and I look forward to answering your questions today.

The Ecosystem Services Market Consortium (ESMC)

ESMC is a non-profit organization, and a public-private partnership. We have raised and are investing to date approximately \$23 million in our voluntary, private market program, leveraging federal and private sector funds. We operate in the pre-competitive space to enable collective action and collective success across the agricultural supply chain and value chain.

ESMC's mission is to scale beneficial environmental outcomes from agriculture, using private voluntary markets as the mechanism. We operate a market exclusively for generating ecosystem services credits from the agricultural sector. Our innovative program, business model and protocols were designed to overcome the challenges and failures of past and current markets to accommodate agricultural projects, and to account for and stack the many benefits of agricultural systems outcomes – not just carbon or greenhouse gases (GHG). Our projects generate credits for increased soil carbon, reduced GHG outcomes, improved water quality, water use conservation, and biodiversity. By stacking multiple credits, we ensure that all the beneficial impacts to society are quantified and verified; and by selling them separately or in a bundle we ensure that farmers and ranchers are paid for each of these services, all of which are currently in high demand.

ESMC's value proposition to members is a national scale, harmonized standardized market program that streamlines and lowers the burden on farmers and ranchers, and ensures our science-based, standards-based market program and all credits generated by our program are credible and have the highest integrity. This credibility is important to buyers and investors in carbon and ecosystem credits – whether corporate, municipal, or local government buyers -- to ensure the outcomes they pay for are real and verified. These credits are intangible assets – they represent products that often cannot be seen or sold in a

store. For this reason, we must ensure the proper quantification, verification, and certification of these credits to prevent buyers and agricultural producers who sell credits to avoid charges of green-washing or green-wishing.

With corporations now facing the prospect of mandatory financial disclosures and Securities and Exchange Commission (SEC) filings of their climate risk and mitigation plans, as well as their annual ESG reports, credibility and integrity of their mitigation plans and strategies and documentation of progress will take on an entirely new requirement, with potential regulatory and additional financial risks if these plans are deemed insufficient or inaccurate.

Ecosystem Services Market Research Consortium (ESMRC)

ESMC operates its market program and a separate research program, EMSRC. EMSRC is the business incubator for ESMC in which we are investing in technologically advanced infrastructure, tools, technologies and an innovative market design to overcome past and current challenges in these markets - particularly challenges to agricultural participation.

ESMC's Next Generation Market Program for Agriculture

ESMC has engaged in due diligence to develop this program. Planning began in 2017 with a series of multi-stakeholder roundtable discussion to assess interest and need for a new market program. The stakeholder discussions arrived at consensus agreement that a fit-for-purpose national scale, next generation ecosystems market for agriculture was desired. In 2018 we developed our first-generation innovative, integrated multi-credit protocols and our innovative market design.

In 2019, with the generous funding and support of a \$10.3 million grant from the Foundation for Food and Agriculture Research (FFAR), we launched our member-based consortium, in which we are leveraging another \$10.3 million in private sector investments from members to match the FFAR grant. Together with these funds and additional funds from philanthropic and other private sector contributions, our member-based consortium is co-investing \$23 million in the build-out of a national scale, harmonized, dedicated program to ensure success of all our partners in the agricultural supply chain and value chain in realizing improved and sustainable outcomes from the agricultural sector.

ESMC has over 80 members across the agricultural supply chain and value chain. *Figure 1* below depicts our current members and funders who are collaborators and co-investors in our unique market program.





Figure 1: ESMC/ESMRC Members and Funders

ESMC/ESMRC: Enabling Collective Success

Since 2015, private sector corporations have taken on new and increased commitments to reduce their carbon and GHG footprints, reduce their consumptive water use, improve impacts to water quality, and protect natural resource and biodiversity outcomes within their operations and supply chain operations. These commitments have increased exponentially since 2018 as the world's scientists have agreed not only that we must utilize all tools to combat climate change and associated impacts, but that every sector must play a decisive role in the same.

The programmatic and infrastructure investments ESMC and ESMRC are making overcome the need for every company to make these investments themselves. ESMC/ESMRC is an enabling platform for collective investments, collective action, and shared collective benefits.

Corporations in our membership are investing millions of dollars a year each on regenerative and sustainable agricultural outcomes. In many cases they are struggling to effect change within their agricultural supply chain, and to appropriately quantify and document the outcomes of actions agricultural producers in their supply chain have undertaken to reduce their environmental footprints.

Private corporations will find it hard to justify continue investments in these activities if they cannot show with certainty and credibility that the outcomes they are achieving result in real, quantified, verified improvements in soil carbon, reduced GHG emissions, and improved water and biodiversity impacts. They must show impacts to make valid claims for these outcomes in the annual ESG reports they file.

ESMC's collective enabling program ensures they are successful. We take on not just the programmatic infrastructure development burden, but are having our projects, protocols, quantification and verification approaches approved and validated by appropriate 3rd party standards. In our case, we are working with Gold Standard and SustainCERT to achieve this work.

A successful market requires not just that we meet the needs of buyers, but sellers as well.

ESMC/ESMRC's model is dependent on ensuring that the farmers and ranchers who work in partnership



with us and with the corporations to achieve improved environmental footprints are adequately compensated for their actions and have all the tools and technologies necessary to be successful as well. For these markets to work, we need to ensure we are generating enough supply to meet the growing buyer demand. Farmers and ranchers are the supply side in this market program, and our goal is to arm them with the resources they need to supply the credits in high demand. Farmers and ranchers are farming and ranching first and foremost, and if these markets don't work for them and contribute also to their success, we cannot hope to succeed.

ESMC operates a Producer Circle of 34 farmers and ranchers from across the country. The Producer Circle is an advisory body that provides grower insights to our program, reviews and provides feedback to materials and the program operations, and in general ensures that the voices of farmers and ranchers are represented in our operations. The Producer Circle is in addition to the many growers involved in our projects across the country, and the many national and state level producer groups represented in our membership whose valuable voices also help guide program development and operations.

ESMC/ESMRC's Program and Current Deployment

ESMC/ESMRC is concluding year two of our 3-year market program infrastructure buildout in which we have been pressure testing the entire program and refining it in preparation for a full market launch in September 2022. Our pre-market soft launch has enabled us to test the program in multiple regions and all major agricultural production systems, and we are constantly launching new projects. This year we are launching full dairy operation projects in two regions of the country, an almond project in California, and an animal feed production project in the Southeast. We are also able to operate scaled projects beginning in January 2022 based on the program refinements accorded by our project activities to date.

ESMC is selling credits in our projects currently and paying producers for the credits. For instance, checks are currently going out to wheat growers for a Kansas project in which General Mills Inc. is purchasing supply chain carbon assets and the Kansas Department of Health and Environment are purchasing water quality credits from the same project.

For our national scale launch in September 2022, we are refining program contracts to ensure the program operates smoothly at scale. We are also completing sensitivity analyses across the program to reduce data collection requirements and producer burdens, while ensuring we still meet buyer needs and market standards to generate verified, certified credits.

We would like to publicly thank our members and funders for their partnership, collaboration and contributions in building this innovative market program. Together we have built out and tested our program with our members and collaborators to ensure it meets everyone's needs. Our program currently covers all major crop and livestock systems across about 75% of the US. We generate quantified and verified credits for soil carbon increases, total greenhouse gas emissions, water quality improvements, water use conservation (where there is demand), and have just launched our first project in Missouri soy and corn systems that will generate and sell biodiversity credits as well.



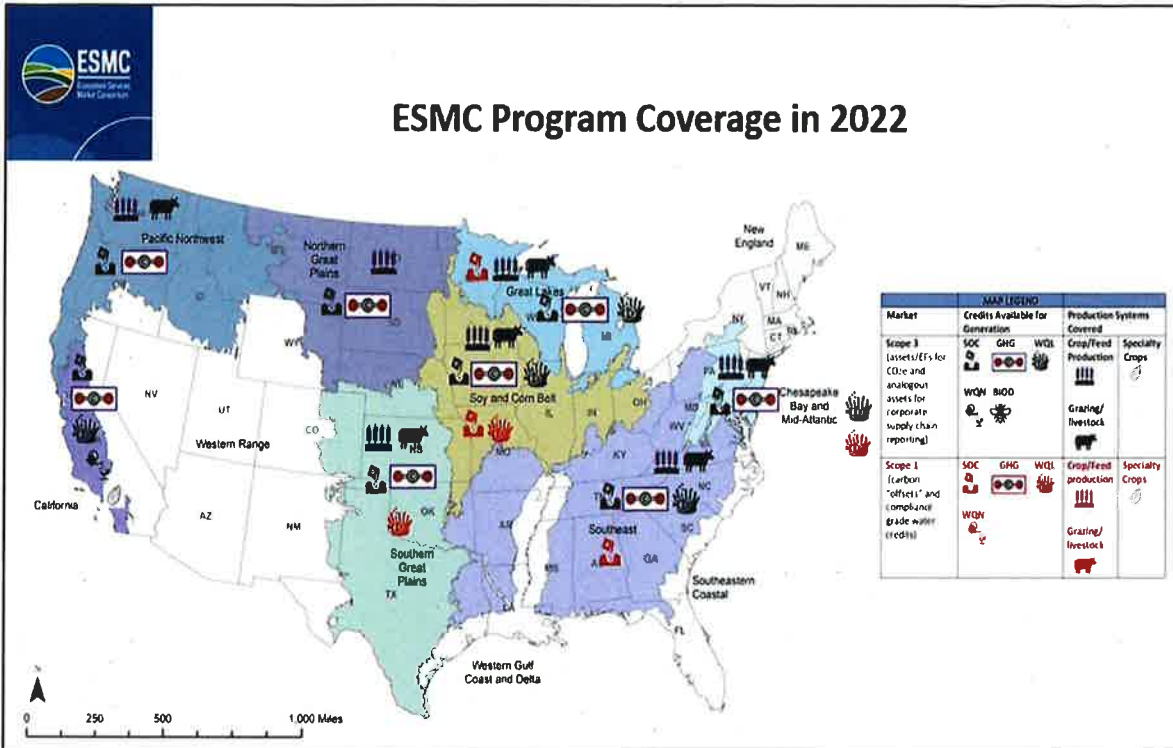


Figure 2: ESMC/ESMRC Program Coverage in 2022: all major crop and livestock systems

Private Voluntary Ecosystem Services Markets: The Genesis of Carbon Markets

Successful markets link supply and demand for goods and services. In carbon markets, the original demand started approximately 25 years ago with the UN Framework Convention on Climate Change (UNFCCC), when countries committed to reduce their GHG inventories each year to try to head off dangerous impacts of global climate change. Under the UNFCCC, each country calculated their total GHG inventories, and developed plans to reduce GHG emissions over time. The US, as a signatory to the UNFCCC, reports its annual GHG inventory and progress in meeting emissions reductions every year, as do all other countries who are signatories.

The greatest source of GHG emissions for most industrialized countries, including the US, has historically been the energy, transportation, buildings and manufacturing sectors. As such early efforts in the US and globally focused on reducing emissions from these sectors. These are capital intensive sectors with long investment and capital turnover times - so emissions reductions approaches tend to be costly and offer greater medium- to long-term emissions reductions opportunities than shorter-term, cost-effective ones.

It was recognized that other sectors could provide more immediate and less costly GHG emissions reductions at far less cost than these sectors. This was the original genesis for carbon markets. The intent was for a given period of time to allow the GHG-intensive, capital-intensive sectors to purchase emissions reductions from these other sectors while capital turnover and long-horizon investments in GHG emissions reductions technologies were made.

From the early days, agriculture and forestry have been viewed as sectors with great potential to provide offset credits for other sectors in these carbon markets. Since forestry credits are relatively easier to develop than agricultural credits, forestry projects have proliferated in these markets and have become

fairly well established as a sector for carbon-intensive sectors to purchase credits from. Agricultural projects proved harder to scale, for many reasons, and have never really take off in these markets to date. But that is changing.

The Sudden Growth and Interest in Carbon and Ecosystem Services Markets

Since their genesis 25 years ago, carbon markets have made slow but steady growth. **Compliance markets**, which are those created by legislation or a regulatory requirement, generally operate within a certain government jurisdiction. Examples of compliance market programs include California's cap-and-trade market, the European Union's Emissions Trading System (EU ETS), and the Regional Greenhouse Gas Initiative (RGGI), comprised of eleven states operating the first regional cap-and-trade program. In a compliance market a regulatory body establishes annual "caps" or upper limits of GHG emissions in a given jurisdiction and designates which high emitting sectors are subject to these "caps". Regulators then establish annual emission reduction targets for the jurisdiction and for capped sectors in the jurisdiction. Typically, capped sectors are given some percentage amount of their emissions reductions that they can achieve by buying credits from others – in the form of carbon offset credits. Besides purchasing offset credits, the capped sectors must devise ways to reduce their GHG footprints within their own operations – through energy efficiency measures, for instance, or by devising means to operate with new technologies that do not emit GHG or that emit fewer GHG emissions.

Voluntary carbon markets, by contrast, operate without regulatory or legislative mandates for emissions reductions to be achieved. Voluntary markets have been market venues for corporates who have made voluntary commitments to reduce their GHG inventories. They operate like compliance carbon markets, but without legislative or regulatory mandates or total caps on GHG emissions.

What has changed and created a sudden uptick of activity and demand in these markets? It is not compliance market or regulatory market activity, but rather voluntary action by the private sector. When the Paris Agreement was reached in 2015 under the UNFCCC, many private sector corporations and multinationals made either new robust voluntary, commitments to reduce their GHG, and some who had existing commitments doubled down and took on more stringent emissions reduction commitments. These corporates are doing what governments had previously done to stimulate these markets in the first place. They are assessing their total GHG inventories, and then developing concrete plans to reduce their GHG emissions on an annual basis. Since 2015, the number of industries and companies in the private sector who have taken on emissions reductions commitments has rapidly escalated. We have all seen the drumbeat of new commitments from private sector corporations as well as many government jurisdictions - from national to local - to become climate neutral, achieve net zero GHG emissions, or become climate positive.

In addition to reducing just their own direct GHG footprints, however, these corporations are also looking at their indirect supply chain GHG footprints and striving to reduce these footprints as well. Supply chain activity from private corporations is what is new and different and creating a robust new demand for carbon credits. But these credits are not what we traditionally think of when we think of carbon offset credits. Actions that reduce GHG emissions within a supply chain are sometimes referred to as carbon insets, rather than offsets. They have a different purpose and serve a different requirement for reporting companies. Companies cannot utilize carbon offsets to make claims within their supply chain inventories.

What is a carbon offset credit?

What is a carbon offset credit? Carbon markets are global in nature, and carbon credits have an accepted representation in these markets. One carbon credit represents one ton of carbon removed from the atmosphere (in the case of soil carbon sequestration, for example, which removes carbon from the atmosphere and stores it in soil), or one ton of GHG emissions reductions, which can include reduced nitrous oxide (N₂O) emissions or reduced methane (CH₄), as well as carbon dioxide from reduced fossil

fuel utilization. The credits are generally expressed as carbon dioxide equivalents (CO₂e), which allows different GHG with different global warming potentials to be compared on an equivalent basis.

A carbon offset credit is generated and can be sold when a protocol that has been approved by a carbon market registry is used to create credits that are quantified, verified and certified to carbon offset market standards.

Carbon Insets, or Supply Chain GHG Emission Reductions

Not only have carbon market demands increased, but the demand includes a new type of credit – for carbon “insets”, or credits that can account for emissions reductions achieved by the corporate sector within their supply chains. ESMC is the first organization to apply a market approach to supply chain emissions reduction reporting. These markets are new and additional to traditional carbon offset markets.

How are “carbon offset” credits different than supply chain carbon “insets”?

Carbon Offset credits represent a ‘trade’ of greenhouse gas credits. For example, Party A generates carbon credits by developing projects that quantify, verify and certify carbon credits according to market standards. Party B pays Party A for those carbon credits, and Party B can claim they have ‘reduced’ their emissions by the amount of credits they purchase. Party A can no longer make those emissions reductions claims, since they sold the credits and the rights to those claims to Party B.

Offset credits can originate from any sector and be sold to any other sector. The reduction claim, then, is transferable from any sector to another. That becomes problematic when trying to account for how much emissions reductions have been achieved in any given sector – particularly if that sector has sold credits to another as offset credits. It is also problematic when, for instance, trying to account for emissions reductions achieved within a supply chain. If emissions reductions have been sold to another sector as offset credits, they cannot be counted towards efforts to reduce indirect supply chain emissions. Offset credits, then, can compete with a corporations’ commitments and obligations to achieve emissions reductions within its supply chain. Emissions reductions achieved for one cannot be claimed for the other – since that would create double-counting.

Supply Chain GHG Emissions Reductions: “carbon insets”

Carbon “Insets” refer to emissions reductions achieved within a sector’s supply chain. Carbon insets are emissions reductions for which the claims, and the right to count the emissions reductions, remain within that supply chain: they are not transferable to another sector. Insets then, are emissions reductions that remain within the sector, and cannot be sold to other sectors or claimed by them.

So for ESMC, for instance, with a focus exclusively in agriculture, we aim to help agricultural supply chain partners such as corporate organizations in the food and beverage sector, to reduce their supply chain emissions reductions within their agricultural supply chains. Corporate insetting efforts and claims, then, are more of a team effort within the supply chain.

In ESMC’s program, and in agricultural supply chain programs, carbon insets that represent one ton of increased soil carbon or one ton of reduced GHG emissions are impacts and claims that that are ‘retained’ within the ag supply chain: they are not attributable elsewhere, and thus are not ‘tradeable’ assets

These carbon insets can be co-claimed by different organizations in the supply chain, however, which enables collective action to generate and share in their claims. So for instance, if a rancher in Texas generates a carbon inset credit on her ranch, and sells the beef to Party A, who processes the beef and sells half of it to Party B and half of it to Party C, all of these actors in that supply chain can share in the emissions reductions claims. This allows multiple partners to collectively invest in projects, working with the Texas rancher and with each other.

This collective investment reduces these corporations' costs, but done right, the 'stacked' investments of these corporates can ensure that the rancher is paid enough to make it worthwhile to change practices on her ranch that lead to increased soil carbon and/or reduced GHG.

What about other Ecosystem Services Market Credits?

Increasingly, these same private sector corporations who are making voluntary carbon and GHG emissions reduction commitments are also taking on commitments to reduce their water quality footprints and their water use, and to improve their biodiversity impacts. ESMC's market program was set up to generate not just increased soil carbon credits, but also reduced net GHG emissions, improved water quality and water use conservation.

In all of our projects we are generating soil carbon, GHG and water quality credits. An almond pilot and a dairy pilot that we are launching this year with partners - both in California - will also generate water quantity credits. We have also just launched our first project in Missouri in which we are also generating biodiversity credits - in addition to the soil carbon, GHG and water quality credits - on soy and corn cropping systems.

How ESMC's Market Program Meets Corporate "Carbon Inset" Needs

The entirety of ESMC's program focus right now is working with the food and beverage sector and the agricultural supply chain to generate stacked credits to meet corporate needs and demands in the agricultural supply chain. We have found that in some projects - such as our Kansas and Missouri projects - we have different buyers for different credits. In our Kansas wheat project General Mills is buying the supply chain carbon inset credits, and the Kansas Department of Health and Environment is buying the water quality credits.

Why the Sudden Interest in Agricultural Offset and Inset Credits?

During the 2015 Paris Accord, the worlds' scientists indicated that we are seeing extreme weather events and other anticipated consequences of unmitigated climate change, and to stabilize the climate we must only not stop emitting more GHG, but actively remove GHG from the atmosphere. Also, it was agreed that every sector has to reduce GHG emissions - we can no longer afford to pick and choose from various GHG emissions reductions pathways if we are to prevent continued dangerous climate disruptions. The only currently available opportunities for cost-effective carbon removals at scale are from biological systems: increased soil carbon sequestration, and forestry sequestration.

There are industrial carbon removal technologies in development but they tend to be incredibly expensive, not operational at scale, and largely pre-commercial. Agricultural and forestry carbon removals and reductions can occur now, more cost-effectively than many other options, and at scale. The health and welfare of our food production systems and ecosystems and human populations depend on these outcomes. The actions that improve soil carbon sequestration and reduce GHG emissions from agriculture and forestry not only combat climate change, they make those natural and managed ecosystems more resilient to climate change. These natural climate solutions benefit everyone, and not surprisingly, are in high demand from corporations as well as consumers and society.

I appreciate the opportunity to testify today and look forward to answering your questions.

Sincerely,

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