



TO: United States House Select Committee on the Climate Crisis

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Topic: Answers to Questions Posed by Select Committee

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Please consider these high-level responses as you continue to investigate and solicit information from stakeholders on appropriate policy opportunities to address climate change.

Background Information on ESMC:

The goal of the Ecosystem Services Market Consortium (ESMC) is to launch a fully functioning national scale ecosystem services market conceived and designed for the agriculture sector by 2022.

Healthy soils are paramount to the future of the agriculture industry, maintaining ecosystem function and sustaining plant communities. Unfortunately, some management practices have led to physical soil loss via erosion and large declines in soil organic matter. It has been estimated that nearly 40% of the earth's arable lands have been degraded at some level by anthropogenic activities due to soil erosion, extensive soil cultivation, and over-grazing. In addition to soil health, agricultural systems also create critical ecological and natural resource impacts that benefit society, such as improved water quality, water use conservation, biodiversity, and pollinator and wildlife habitat. With approximately 70% of U.S. land in private ownership, America's farmers and ranchers are key to creating solutions to address our nation's soil health, natural resource and ecosystem services challenges.

The Ecosystem Services Market (ESM) program will enable farmers and ranchers to voluntarily adjust crop and livestock production systems in ways that increase soil carbon sequestration and retention, reduce greenhouse gas emissions, improve water quality, conserve water use, and benefit many additional ecosystem service outcomes. ESMC quantifies changes to ecosystem services annually and over time in a science-based, standards-based, verified and certified program. The quantified changes in ecosystem services are monetized and sold as ecosystem services credits. The farmers and ranchers who create the ecosystem services are paid for those credits in a national ecosystem services market in which buyers purchase credits to reduce their environmental and supply chain impacts.

ESMC is a collaboration of over 40 members from across the entire agricultural supply chain and value chain working together to ensure that the program scales successfully to meet farmer and rancher

needs as well as corporate, NGO, consumer and societal needs. ESMC's research arm, the Ecosystem Services Market Research Consortium – or ESMRC — is working collaboratively to invest in identified research, development, demonstration, and economic gaps to overcome past and current market-based challenges in lead-up to the 2022 ESMC market launch.

ESMC Members and Collaborators currently include the following:

ESMC Founding Circle members: ADM; Bunge; Cargill; Corteva Agriscience; Danone North America; General Mills; Land O'Lakes Inc.; McDonald's USA; National Fish and Wildlife Foundation; Nestle; Noble Research Institute, LLC; Nutrien; The Nature Conservancy; the Soil Health Institute; and Syngenta. **ESMC Legacy Partner members:** Almond Board of California; American Farmland Trust; American Soybean Association; Anuvia Plant Nutrients; Arizona State University; Arva Intelligence; Bayer; the Conservation Technology Information Center; Farm Foundation; Field to Market: The Alliance for Sustainable Agriculture; Impact Ag Partners; Mars, Inc.; National Association of Conservation Districts; National Corn Growers Association; National Farmers Union; NativeEnergy; Newtrient, LLC; OpenTEAM; Pivot Bio; Sand County Foundation; Soil Health Partnership; The Fertilizer Institute; Tatanka Resources; the Tri-Societies; Tyson Foods and World Wildlife Fund.

Questions and Responses as provided by the Ecosystem Services Market Consortium (ESMC):

Cross-Cutting Policies

4. Carbon Pricing:

a. What role should carbon pricing play in any national climate action plan to meet or exceed net zero by mid-century, while also minimizing impacts to low- and middle-income families, creating family-sustaining jobs, and advancing environmental justice? Where possible, please provide analytical support to show that the recommended policies achieve these goals.

ESMC: *Carbon prices are best established in a free and open marketplace. Policies should be established that support market creation, price discovery and robust, transparent markets as a means of addressing climate action plans for achieving net-zero objectives.*

b. How could sectoral-specific policies, outlined in questions 1-3, complement a carbon pricing program?

ESMC: *The agricultural sector can provide a source of high-quality, beneficial carbon sequestration and GHG mitigation opportunities. With a carbon price and a fully functioning ecosystem market that includes carbon, the market signal would stimulate support for delivery of these high-quality sources of GHG mitigation, that also happen to increase the resiliency of the agricultural sector and can provide beneficial income generation for agriculture. Private markets are developing to support this income generation stream from the sector, and a market price will create additional demand. This is likely the most expedient way to rapidly move the agriculture sector toward a net-zero GHG emissions objective. It can also support as well as create additional ambition in*

private sector actors seeking to improve agricultural sustainability within a supply chain context.

5. Innovation:

a. Where should Congress focus an innovation agenda for climate solutions? Please identify specific areas for federal investment and, where possible, recommend the scale of investment needed to achieve results in research, development and deployment.

ESMC: *The Ecosystem Services Market Consortium (ESMC) is a not-for-profit organization working with the entire agricultural and food and beverage sector supply chain to build markets that work for everyone in that supply and value chain, including buyers and suppliers. We also include and work closely with federal partners as members and collaborators. Within agriculture, public private partnerships are not new: they have formed the basis for over 80 years of our greatest achievements together, with farmers adopting voluntary conservation practices with financial and technical assistance from state and federal agencies to overcome the dust bowl, for example. Within ESMC, U.S. Department of Agriculture (USDA) and USDA affiliates are providing technical and financial conservation assistance, as well as research funding which is being matched dollar for dollar with private sector funding to advance innovative research and understanding of agricultural systems to enable viable ecosystem service markets built specifically to reward and recognize the impacts of sustainable farming and ranching. The Farm Bill also provides funding for programs that provide conservation assistance and USDA research grants to support this work.*

USDA grants, leveraging private matching funds, enable wide ranging research, development, demonstration and deployment of technologies and applications to scale U.S. based carbon sequestration efforts. Just this week, the Foundation for Food and Agriculture Research (FFAR) awarded \$10.3 million to fill the research gaps of ESMC that support the development of a national environmental credit marketplace. ESMC and its members are matching the grant over three years to fund research and development projects in this public-private partnership for a total investment of \$20.6 million.

FFAR-funded research will help to fund research, development, demonstration and deployment of technologies to better quantify, monitor and verify the environmental impacts of agricultural producers' conservation efforts to recognize and pay them through an ecosystem services marketplace. The Ecosystem Services Market Research Consortium (ESMRC), the research arm of the ESMC, will develop tools and technologies to assure the validity of the credits cost-effectively, and at-scale, in a national market built exclusively to reward farmers and ranchers for delivering critical GHG mitigation and agricultural resiliency for society.

b. How can Congress incentivize more public-private partnerships and encourage more private investment in clean energy innovation?

Agriculture

6. What policies should Congress adopt to reduce carbon pollution and other greenhouse gas emissions and maximize carbon storage in agriculture?

ESMC: *The Ecosystem Services Market (ESM) program is a new, agricultural scale ecosystem service market-based program. The ESM program is working to measure three important soil health attributes: soil carbon and net GHG impacts; water quality; and water quantity. ESM is designing a program that works for farmers to sequester carbon and to reduce net GHG through agricultural practices. Better data and greater access to USDA and other data from government programs, as well as access to scientific expertise are needed to help support the development of and expansion of this program.*

Crafting measurable, verified ecosystem services and climate mitigation improvements based on economically viable farm practices has been challenging in carbon and other ecosystem services markets. Practices adopted by farmers must make agronomic sense for farming operations, allow for continued crop and livestock production, and be economically feasible -- not costing farmers more than the potential benefits to them. For ecosystem services markets, understanding which practices reduce GHG or increase sequestration is important, but impacts of any given practice can be variable across different production systems and different geographies and climates in the U.S. Pilot testing, feedback from farmers, and understanding the economics for farming operations as well as the market pricing for credit/certificate purchasers all figure into the future success of the program and ability to scale, and scale impacts.

ESMC commissioned an analysis of the potential for an agriculture based ecosystem service market from IHS Markit. The assessment informed the total potential value of ecosystem services in terms of national and regional supply and demand that can be provided from privately owned, working agricultural lands. The report, released in September, confirms that there is demand for ecosystem credits that is tangible and credible and not just theoretical and conceptual. The [study](#) estimates potential demand for ecosystem market credits at \$13.9 billion.

Congress must also be conscious of taking action that would adversely impact private activities advancing carbon sequestration and private carbon markets. Significant efforts are underway by ESMC and the private sector to further develop a private market focusing on carbon sequestration, water quality and water quantity credit sales to recognize and reward farmers for their services. Private markets operating at scale can do so in a manner that produces the highest carbon sequestration in a cost effective, efficient manner. Any policy that Congress develops must allow for and recognize the existing private markets and not adversely interfere or duplicate private sector efforts. Private sector markets can operate at a lower cost than Federal Government programs.

7. What policies should Congress adopt to help farmers, ranchers, and natural resource managers adapt to the impacts of climate change?

ESMC: Access to federal Government research and data, especially data and research conducted by the U.S. Department of Agriculture, can be instrumental to help facilitate development of a science-based, transparent system to scale GHG mitigation within the agricultural sector. Research and development of soil-based sensors to track changes in GHG in soils underway at the Department of Energy / ARPA-E should also continue, since it can help to cost-effectively scale GHG mitigation in agriculture at a faster pace than has been possible to date.

USDA Natural Resources Conservation Service voluntary conservation programs have been and continue to be important programs for working directly with farmers and ranchers to adopt conservation practices on their farming operations. Continued and improved tracking and reporting by USDA of practices and management systems utilized by farmers and ranchers in different geographies would benefit ESMC and all outcomes-based monitoring approaches by allowing the creating and tracking of baselines and changes in adoption and rates of adoption that can impact change at scale.

Agricultural producers are adopting conservation practices and utilizing new tools and technologies to sequester carbon in soil and to reduce methane and nitrous oxide generated from livestock and certain practices. In the agriculture sector major challenges have included finding systems-based approaches that can be tailored to the unique needs of farmers and ranchers in highly variable and diverse geographies and with diverse systems; and ensuring flexibility while encouraging innovation. ESMC has developed protocols to quantify soil carbon, net GHG, water quality and water quantity; and we are pilot testing the protocol in the Southern Great Plains and beginning to expand to other regions of the country and additional cropping systems. Addressing the economics and the economic impacts to farmers and ranchers is also challenging given the dearth of data and the difficulty in tracking and analyzing it. Finally, more scientific data on GHG impacts of various agricultural production systems in varied geographies is required to better advise farmers and ranchers how to achieve desired outcomes cost-effectively.

Oceans, Forestry and Public Lands

8. How should Congress update the laws governing management of federal lands, forests, and oceans to accelerate climate adaptation, reduce greenhouse gas emissions and maximize carbon storage?

ESMC: The U.S. Department of Interior needs to improve policies for public rangeland and grasslands to allow ranchers to enhance soil carbon sequestration and improve soil health in those systems and allow the rancher to own the carbon credits that can be generated based on these improvements. The improvements to the federal land resource will remain with government, but ranchers can be paid for their efforts to reduce atmospheric GHG in private markets, which incentivizes them to undertake practices to protect and improve the federal land resource asset.

In the past, Interior has eschewed adopting the same policy as USDA to allow sale of credits from ecological assets derived from actions undertaken by farmers and ranchers when there was any

investment of federal funds (e.g. for land easements). Federal easements should not disqualify ranchers from receiving credits for avoided conversion of grasslands in highly threatened areas like the prairie pothole region, for instance, if the additional GHG mitigation and ancillary ecosystem service benefits accrue to taxpayers and the general public, which is in fact the case.

Non-CO2 Greenhouse Gases

9. What policies should Congress adopt to reduce emissions of non-CO2 greenhouse gases, including methane, nitrous oxide, and fluorinated gases?

ESMC: *An ecosystem market combined with a robust carbon price signal will create cost-effective demand for all GHGs, not just carbon. In addition, significant societal benefits are generated for water quality and biodiversity that also occurs in biological and natural working lands in which GHG mitigation activities are undertaken. Systems approaches to natural resource concerns will yield greater long-term benefits than efforts focused solely upon carbon sequestration or mitigation.*