

## **COMMENTS OF THE CENTER FOR CLIMATE AND ENERGY SOLUTIONS**

This document constitutes the comments of the Center for Climate and Energy Solutions (C2ES) on the request for information to help guide the U.S. Department of Agriculture (USDA) on “how to best use Department of Agriculture programs, funding and financing capacities, and other authorities, and how to encourage the voluntary adoption of climate-smart agricultural and forestry practices that decrease wildfire risk fueled by climate change and result in additional, measurable, and verifiable carbon reductions and sequestration and that source sustainable bioproducts and fuels.”

C2ES is an independent, nonprofit, nonpartisan organization dedicated to advancing strong policy and action to reduce greenhouse gas emissions, promote clean energy, and strengthen resilience to climate impacts. We work with more than three dozen leading companies from key sectors to examine potential pathways towards decarbonizing the U.S. economy. As part of that work, we’ve identified critical strategies to maximize the role of agriculture, forestry, and land use in reducing emissions and boosting resilience. These include:

- strengthening incentives and capacity for carbon sequestration on farms and in forests
- reducing on-farm emissions from fertilizers and livestock
- bringing lower-carbon food products to market
- reducing food waste throughout the system, from farmer to consumer.

The views expressed here are those of C2ES alone and do not necessarily reflect the views of members of the C2ES Business Environmental Leadership Council (BELC) or other companies with which C2ES works.

## 1. Climate-Smart Agriculture and Forestry Questions

**A. How should USDA utilize programs, funding and financing capacities, and other authorities, to encourage the voluntary adoption of climate-smart agricultural and forestry practices on working farms, ranches, and forest lands?**

See responses to questions A.1. and A.2.

**1. How can USDA leverage *existing* policies and programs to encourage voluntary adoption of agricultural practices that sequester carbon, reduce greenhouse gas emissions, and ensure resiliency to climate change?**

Existing Natural Resources Conservation Service (NRCS) programs, including the Conservation Stewardship Program (CSP), Environmental Quality Incentives Program (EQIP) and Regional Conservation Partnership Program (RCPP), are consistently oversubscribed. Funding to these programs needs to be increased, and the conservation activities eligible should be expanded to include a broader range of climate mitigation and adaptation practices. NRCS should proactively review its conservation practices for carbon sequestration and climate resilience potential, add new climate-smart practices to its portfolio, and give funding preference to the activities with greatest climate impacts. (Highest preference should be given to activities that have durable, more difficult-to-reverse climate impacts; implementing a silvopasture system, for instance, is more difficult to reverse than reduced tillage.) While many of the conservation practices promoted by NRCS do have carbon sequestration benefits, climate change mitigation and resilience are not emphasized as priorities of these practices or programs. Including climate mitigation and resilience as stated goals of the programs would encourage adoption of climate-smart practices through CSP, EQIP and RCPP.

In line with President Biden's Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, USDA should establish climate change mitigation and resilience as a priority across all its policies, programs, research, and staff training.<sup>1</sup> NRCS field staff and third-party technical service providers should be trained on climate resilience in agriculture and the carbon sequestration potential of established conservation practices. Conservation plans developed via USDA programs should specifically speak to climate change mitigation strategies that producers may employ on their land, as well as how those strategies may need to adapt in response to a changing climate. Involving experts at USDA's Climate Hubs in the creation of these plans would help provide producers with locally relevant, science-based strategies for both mitigation and adaptation. The Climate Hubs' funding and staffing should be expanded to support this increased responsibility.

**2. What *new* strategies should USDA explore to encourage voluntary adoption of climate-smart agriculture and forestry practices?**

In many cases, climate-smart agriculture and forestry practices can reduce risk and increase farm resilience, but many producers hesitate to adopt such practices because of perceived increased risk and cost.<sup>2</sup> USDA should explore the link between climate-smart practices and the federal crop insurance program, with the aim to modify the program to promote practices that both reduce crop risk and mitigate climate change or increase farm resilience. Integrating localized climate-smart practices into USDA's Good Farming Practice standards would encourage their uptake. Other incentives for climate-smart producers should also be explored, including subsidizing insurance premiums for participating producers, similar to current initiatives underway in Iowa and Illinois with cover crops. These changes should be data-backed and implemented following research on the impacts that climate-smart practices have on soil health, crop yield, insurance liabilities, etc.

USDA should encourage the retention of climate-smart practices across generations of farmers by facilitating a land-link program (housed either at USDA or via third parties) that would connect beginning (and other) farmers seeking land with climate-smart farmers planning to retire their land. When climate-smart farmers retire, their land risks being developed or converted to conventional farming methods, which would release the additional carbon sequestered via their efforts. The land-link program would provide favorable terms to land seekers, with the condition that they uphold the climate-smart practices being implemented on the land and enroll in USDA's climate-smart programs.

USDA should also create climate-smart agriculture and forestry programs specifically tailored to urban contexts. Localized urban agriculture can reduce emissions from food transportation as well as increase community food security and resilience.<sup>3</sup> A specific set of NRCS conservation practices could be created for urban producers (along with corresponding financing programs modelled after CSP, EQIP and RCPP) that would encourage efficient use of resources and innovative production techniques, such as hydroponics. Prior to establishing these practices, USDA should research their carbon footprints (including how the footprints compare to conventional agriculture) and prioritize funding for practices that have greatest climate benefits.

Another approach to drive innovation in climate-smart practices could be through increased product transparency or certification efforts. Consumer demand has a powerful potential to encourage voluntary adoption of climate-smart practices. USDA could investigate the feasibility of transparency initiatives that would allow consumers to better understand the climate impacts of various products and opt for low-carbon choices. A climate-smart certification program could be developed (like a fair trade or organic standard) that would affirm certain climate change mitigation practices were followed in food production. USDA could explore the creation of a climate certification program by reviewing its own organic standards as a potential model. Importantly, the design of such programs should consider the full life cycle of products (with standardized carbon accounting methodologies) and a broader suite of environmental factors, recognizing that low carbon emissions are not the only indicator of ecologically sound products.

## **B. How can partners and stakeholders, including State, local and Tribal governments and the private sector, work with USDA in advancing climate-smart agricultural and forestry practices?**

USDA should provide funding to state, local and tribal governments, agriculture extension offices, conservation districts, and other third-party entities to purchase tools and equipment that can help farmers better practice climate-smart agriculture. These entities would use funds to establish equipment share or low-cost loan programs that can supply farmers with precision agriculture tools, GIS technology, soil carbon measurement tools, and other equipment necessary to enact climate-smart practices, while minimizing upfront costs for producers. Trainings and ongoing technical support should then be provided to these producers to ensure they can successfully apply these tools and technologies, analyze resulting data, and use that data to make informed climate decisions.

Existing USDA programs that partner with state, local and tribal governments, as well as the private sector and NGOs, should be expanded to include climate-smart practices. These include RCPP and Conservation Innovation Grants (CIG). Funding for both these programs should be increased, and their program scopes broadened to prioritize activities that reduce emissions and sequester carbon. Since many of the projects funded through these capacities include carbon or GHG-crediting components, investing in their expansion can also accelerate the development of emerging carbon/GHG markets.

## **C. How can USDA help support emerging markets for carbon and greenhouse gases where agriculture and forestry can supply carbon benefits?**

Producers across the country are already participating in multiple emerging voluntary markets for carbon and greenhouse gases, but these markets differ in scale, verification methodologies, pricing, and eligible practices.

USDA can help standardize practices and methodologies across emerging markets—and set the scene for a potential economy-wide market—by recommending carbon accounting methodologies for the agriculture and forestry sector and establishing best practice verification criteria. To do so, USDA should:

1. First engage with public, private and nonprofit stakeholders who are experts in voluntary carbon markets to survey existing carbon accounting methodologies, or any under development, to evaluate their strengths and weaknesses.
2. Where knowledge gaps exist (e.g., emission factors for certain crops, carbon sequestration impacts of certain land use practices, best strategies for sequestration verification), USDA should fund additional research to fill these specific gaps, with input from expert stakeholders.
3. Based on the results of this stakeholder engagement and any additional research, USDA should recommend best-practice carbon accounting methodologies that address transparency, permanence, leakage, additionality, and other attributes of high-quality carbon credits. These recommendations could either be a set of USDA-endorsed methodologies already employed by third parties, or new USDA-developed methodologies if third party approaches are deemed to be lacking in rigor. USDA's accounting recommendations should include detailed technical guidelines to evaluate impacts for each management practice incentivized in carbon markets. USDA should also develop guidelines and best practices to inform future development of any new third-party accounting methodologies and/or standards. These recommended accounting methodologies should be continually updated to reflect the latest science.
4. USDA should streamline the verification process for voluntary carbon markets by creating a set of best practice verification criteria, which markets and third-party verifiers can follow to validate carbon sequestration. USDA can also provide guidance on best practices for selecting verifiers, taking the burden off markets and businesses to determine which third-party verifiers are high quality.

These efforts would streamline the carbon accounting and verification processes for emerging markets, thus reducing overhead costs and increasing the share of the carbon credit price that flows to producers. Businesses and other entities looking to purchase carbon credits from voluntary markets would be able to refer to USDA's recommended accounting methodologies and verification criteria to determine which markets offer high-quality credits that are additional, durable, etc.

USDA should also explore opportunities to “stack” other ecosystem benefits in carbon markets, recognizing that holistic soil and ecosystem health include more factors than just carbon sequestered. Creating recommendations for how water quality, biodiversity, and other indicators can be built into emerging carbon markets could help producers secure higher per-acre payments for the wide range of ecosystem services they provide.

#### **D. What data, tools, and research are needed for USDA to effectively carry out climate-smart agriculture and forestry strategies?**

Climate-smart agriculture and forestry strategies need to be data-driven and emphasize practices that have been scientifically proven to effectively and durably sequester carbon. USDA, in partnership with land-grant universities, should pursue research, development and demonstration (RD&D) in the following areas:

1. The carbon sequestration potential of improved agriculture and forestry practices on various soil types, production systems, and regions across the country, over a production life cycle. USDA should be conservative in estimating this potential so as not to overestimate the climate benefits of various management practices.
  - a. Place particular emphasis on no-till or reduced tillage practices, which have had varying success in previous scientific studies and whose carbon impact (especially at multiple soil

- depths) needs to be better understood before encouraging their adoption. Increasing USDA's soil sampling sites can be one approach to gathering this data.
- b. Crowdsource carbon sequestration data by requiring that producers involved in climate-smart programs or receiving climate-oriented grants and loans from USDA collect carbon data pre- and post-intervention and submit it to USDA.
  - c. Make the results of its research widely available via public databases and other means, allowing the public to view carbon sequestration potential at a granular level and differentiate between regions, soil types, soil depths, and management practices.
2. The carrying capacity of soils, agricultural lands, and forests to sequester carbon, differentiated by region and soil type, and projected into the future. This will create understanding for how much carbon can be sequestered in the agriculture and forestry sector as a whole and at what point these systems will reach carbon equilibrium.
  3. Methods of growing—and varieties of—food, fiber and biomass crops that require fewer inputs, lead to greater yields, and have greater carbon sequestration potential, with particular emphasis on new perennial crops that can replace annual varieties.
  4. High-yielding, stress-resistant varieties of crops and livestock that can be cultivated and bred as farms adapt to a changing climate and extreme weather events.
  5. Feed additives or other changes to livestock feed that can reduce methane emissions, considered across the full life cycle of the feed or additive.
  6. A feasibility study or demonstration project to integrate smart agriculture technologies in communities that lack access to broadband. The project would enable producers to use digital technologies that can better monitor inputs and enable best management practices. This project could then inform expansion of broadband and technologies in similar rural communities.

The demonstration component of this RD&D is particularly important to spread successful practices and approaches to producers. Disseminating research results and success stories via local USDA offices, land-grant universities, extension services, and farmer-to-farmer exchanges would encourage widespread adoption of climate-smart practices.

As mentioned in the previous question, USDA should recommend robust soil carbon measurement methods and develop tools that can standardize how individual farmers and existing carbon markets monitor soil carbon levels. Making measurement tools, necessary equipment, and technical assistance accessible to producers and emerging markets will help ensure consistent and accurate soil carbon measurement. A broad range of digital tools and technologies (for instance those used in precision agriculture) should be incorporated in USDA outreach activities and through extension services to increase producers' technical expertise, with the goal to equip producers with the knowledge and skills to apply such tools independently.

#### **E. How can USDA encourage the voluntary adoption of climate-smart agricultural and forestry practices in an efficient way, where the benefits accrue to producers?**

Private sector carbon markets are an efficient way to promote adoption of climate-smart practices, without significant investment from USDA itself. USDA could make such markets more efficient by convening expert stakeholders; assessing and recommending carbon accounting methodologies; and filling any gaps, where needed (as mentioned earlier). USDA should promote carbon accounting methodologies that are interoperable with smart farming technologies to collect, store, and share real-time emissions data and other environmental attributes of projects. Accurate accounting and verifiable reporting would reduce the time and money marketplaces and producers spend verifying carbon sequestered, allowing producers to reap a greater share of the carbon credit price and thus attracting more producers to adopt climate-smart practices to participate in markets. Supporting the creation of high-quality carbon markets also reduces the long-term need for USDA to pay producers to adopt climate-smart practices. After initial technical and financial support

is provided to producers to transition to climate-smart systems, producers can benefit from performance-based payments in these markets that will incentivize them to maintain—and even improve on—their practices, without USDA rewards.

Ultimately, voluntary programs will be most effective if they reduce producers' risk and provide financial incentives for both participation and performance. Measures such as tax credits, low-cost financing, or subsidized crop insurance premiums for climate-smart producers would reward producers merely for participating, while per-ton carbon credits reward their performance compared to a baseline. Enacting a dual approach will encourage producers to enroll in climate-smart programs, and to consistently improve their practices for greater payouts.

Increasing consumer awareness of the benefits of climate-smart agriculture (for instance via the certification or transparency measures described previously, or other measures) could also create market demand for producers to adopt climate-smart practices. Several institutions and prominent brands have goals to reduce their supply chains' carbon footprints and would thereby be drawn to purchase from climate-smart suppliers, thus driving competition among producers to minimize their climate impact to meet demand.

## **2. Biofuels, Wood and Other Bioproducts, and Renewable Energy Questions**

### **A. How should USDA utilize programs, funding and financing capacities, and other authorities to encourage greater use of biofuels for transportation, sustainable bioproducts (including wood products), and renewable energy?**

USDA should establish carbon sequestration as a goal of the Wood Innovation Grant Program and Community Wood Energy and Wood Innovation Program, with aim to accelerate RD&D of high-sequestering, long-lived wood and wood products. USDA can also promote use of wood as a construction material, for instance by encouraging that structures funded through USDA loans and grants, and USDA's own buildings, are made with wood where appropriate. If such an approach proves successful at lowering carbon emissions, USDA could recommend a similar policy across the federal government.

In encouraging biofuels, USDA should promote use of feedstocks with the lowest life cycle emissions, taking into account the potential impacts biofuel expansion can have on food crops, land conversion, and forests. USDA should establish life cycle analysis (LCA) standards to compare biofuel feedstocks and conduct LCAs to inform what feedstocks should be incentivized in USDA programs. Although markets for some feedstocks (especially corn ethanol) are already mature, investing in RD&D to open up new biofuel markets can accelerate momentum for next-generation, low-emitting feedstocks, including potential feedstocks from agricultural residues and perennial grasses. USDA should also accelerate its research on how small trees and other biomass with limited economic value can be used in energy production and building materials. Increasing the demand for this smaller-scale biomass that USDA clears in its wildfire fuel reduction initiatives could help the agency offset the cost of these efforts and address wildfire risk in more communities.

USDA can also leverage its BioPreferred program (which promotes bioproducts via federal purchasing and labelling) to advance climate-smart agriculture and forestry. The program could be expanded to include a complement (such as a BioPreferred Climate component) that would indicate a certain threshold of raw material inputs are sourced from climate-smart agriculture and forestry practices. Such a development would ensure not only the uptake of bioproducts, but of bioproducts produced in ways that minimize carbon emissions and strengthen resilience.

### **B. How can incorporating climate-smart agriculture and forestry into biofuel and bioproducts feedstock production systems support rural economies and green jobs?**

Biofuel and bioproducts feedstock production systems support jobs at every stage of their development, from growing or sourcing biomass; constructing and operating refineries to convert biomass into fuels and energy; growing distribution and transmission infrastructure; and building biofuel fueling stations across the country. Increasing demand for biofuels can also support employment in related industries, for instance in the manufacture of flexible fuel vehicles which can run on a higher blend of biofuel and gasoline, or in the expansion of sustainable fuels and related manufacturing in the aviation industry.

### **C. How can USDA support adoption and production of other renewable energy technologies in rural America, such as renewable natural gas from livestock, biomass power, solar, and wind?**

The Renewable Energy for America Program (REAP) provides financial assistance for renewable energy and energy efficiency projects to agricultural producers and rural small businesses. The REAP program has seen interest that far outpaces its funding, with the program consistently oversubscribed. Funding for REAP should be increased to bolster adoption of renewable energies and energy efficiency projects in rural communities and on agricultural lands. USDA should also increase the percent of total eligible project costs REAP grants and guaranteed loans can cover for projects benefitting environmental justice communities and historically underserved producers. While agriculture cooperatives should be eligible to participate in this program, many cooperatives are unable since they are owned by a parent company, have subsidiaries or affiliates in other locations, or do not fit the definition of “small business.”<sup>4</sup> Program eligibility should be amended to include agriculture cooperatives, which would enable groups of small farmers to pool resources for expensive technologies that can be shared.

Multiple programs, such as USDA’s REAP, EPA’s AgSTAR, and DOE’s Renewable Energy and Efficient Energy Projects Loan Guarantee program, provide financial and technical assistance for biodigesters and biofuel systems, but these programs are currently siloed. USDA should work with DOE and EPA to streamline and consolidate programs supporting biodigesters. Exploring moving the AgSTAR program from EPA to USDA would increase its accessibility for producers, who are more familiar with and likely to turn to USDA for technical assistance. AgSTAR should also be better integrated with existing USDA programs, especially REAP, so producers can simultaneously receive both the technical and financial assistance needed to establish and maintain biogas systems.

Co-locating renewable energies, such as solar and wind, on farms can increase revenue for farmers, while also minimizing the need for land conversion to support renewable projects. USDA should partner with NREL to study the viability of these dual-use energy systems, including region- and crop-specific design options that can benefit both agricultural and energy production. Based on research results, USDA should conduct outreach and provide technical assistance to producers on integrating such renewable energy projects on their land.

USDA’s Rural Utilities Service should, through its Electric Program and Telecommunications Program, accelerate investments in smart grid technology in rural areas. Smart grids can help rural consumers better manage their energy use, promote energy efficiency, and balance renewable energy supply (including at farms) with peak demand, for more resilient and modern power infrastructure in rural America. Extending broadband capabilities in rural areas is foundational to smart grid expansion.

## **3. Addressing Catastrophic Wildfire Questions**

### **A. How should USDA utilize programs, funding and financing capacities, and other authorities to decrease wildfire risk fueled by climate change?**

As evidenced by wildfires causing record-breaking damage in recent years, many communities are already enduring significant public health impacts, property destruction, and broader economic impacts from climate

change-fueled wildfires. In the last 40 years, the United States faced 18 wildfires exceeding one billion dollars in cost—cumulatively costing over \$100 billion.<sup>5</sup> Resource constraints often stand in the way of communities planning for and taking action to address these risks. To better support local communities, USDA should increase the funding it makes available for state and local agencies to engage in wildfire risk assessments and resilience planning processes. Enhanced planning support would also help more communities unlock pre-disaster hazard mitigation grant dollars from other federal agencies, primarily FEMA’s Hazard Mitigation Assistance grants. These programs require hazard mitigation plans as part of their applications, which are often a barrier for small and low-income communities who may not have the resources to produce them. To better support this planning as well as implementation of resilience projects, USDA should significantly increase funding for its National Fire Capacity/State Fire Assistance program, which helps build capacity and implement wildfire mitigation activities in communities.

In terms of technical assistance, USDA should bolster its Climate Hubs program to better support foresters in making science-informed management decisions in partnership with local academic institutions and state and local agencies. The Climate Hubs provide science-based and region-specific information on post-wildfire restoration, planting, ecological thinning, and invasive species management, and are often trusted sources of climate information for communities given their local focus and presence.

Similar to the Federal Flood Risk Management Standard that requires federal building and infrastructure investments to meet minimum flood resilience standards, USDA should require that any development and rebuilding it supports in the wildland-urban interface meet wildfire-resilient standards set by the International Wildland-Urban Interface Code. Though states like California have set wildfire standards for new development and many local governments have adopted wildfire resilience ordinances (including requirements for a certain amount of defensible space around buildings or the use of fire-resistant building materials), USDA should still ensure that its investments through programs like the Rural Utilities Service are not exacerbating communities’ wildfire risk.

## **B. How can the various USDA agencies work more cohesively across programs to advance climate-smart forestry practices and reduce the risk of wildfire on all lands?**

USDA should establish a climate lead in the Secretary’s office to coordinate and enhance climate initiatives across the agency, including programs with an explicit focus on climate mitigation and resilience, as well as those that are focused on broader goals like conservation but provide climate benefits. The agency should also increase funding for the Joint Chiefs’ Landscape Restoration Partnership, a program administered by the Forest Service and NRCS that restores forests, reduces wildfire risks, and enhances wildlife habitat. Such cross-agency initiatives allow USDA to work more cohesively across landscapes and climate resilience and mitigation.

## **C. What additional data, tools and research are needed for USDA to effectively reduce wildfire risk and manage Federal lands for carbon?**

Moving forward, forest managers need sub-regional projections to predict the precise spatial and temporal patterns of wildfire. Increased research, data, and modeling are needed to better inform these projections. Emerging remote-sensing technologies, such as light detection and ranging (LIDAR), could assist in mapping, monitoring, and assessing wildfire risk. USDA should focus its research on ecological changes that fuel wildfires, including the spread of insect species and pathogens as well as tree species distribution and abundance. To address these gaps, the agency, in collaboration with USGS, should enhance its existing research programs on forest health and wildfire potential and behavior. Specifically, more resources should be devoted to the Forest and Rangeland Research program and the Forest Inventory and Analysis program.



More research is also needed to better understand the long-term effectiveness of wildfire adaptation measures including prescribed burns, thinning, planting more resilient tree species, controlling invasive species, and implementing fuel breaks and firebreaks. Long-standing research programs at the agency have worked to increase understanding of how to implement effective fuel reduction projects, for example, but more research on management techniques will be needed as wildfire risk increases.

To help local leaders identify and mitigate future risks to their municipal finances and local economies, USDA should also conduct research to better quantify the economic risks of increased wildfires, as well as direct and indirect costs associated with wildfire suppression activities, power shutoffs, and other prevention and adaptation activities.

#### **D. What role should partners and stakeholders play, including State, local and Tribal governments, related to addressing wildfires?**

Collaborating with and learning from local and tribal leaders is essential as USDA works to enhance community resilience to wildfires. Implementing traditional tribal practices into USDA strategies and guidance for prescribed burns, for example, could enhance the effectiveness of USDA adaptation projects. In its field operations, USDA should prioritize recruiting its workforce from the communities in which it operates. The agency should also make additional investments in forestry workforce development to help retain forestry professionals on tribal land.

USDA should collaborate with these local partners, as well as federal partners including the White House Office of Domestic Climate Policy, the National Climate Task Force, and the Wildland Fire Leadership Council, to develop a national wildfire mitigation strategy. A strategy should identify priority areas for federal resources, incentivize resilient land use planning and the adoption of enhanced building codes and standards at the local level, and coordinate emergency management programs across agencies.

### **4. Environmental Justice and Disadvantaged Communities Questions**

#### **A. How can USDA ensure that programs, funding and financing capacities, and other authorities used to advance climate-smart agriculture and forestry practices are available to all landowners, producers, and communities?**

Climate-smart programs, funding and financing capacities should not have limitations on participation that would disadvantage certain producers. As with many other USDA programs, there should not be requirements for land ownership, years of farming/ranching experience, acreage, or crop variety. Agricultural cooperatives, as well as individual entities, should be eligible to participate in programs that would share benefits across their members.

USDA should provide financial incentives to ensure that adopting climate-smart practices is not cost-prohibitive by:

1. Exploring the possibility of providing subsidies to federal crop insurance premiums for producers who practice risk-reducing climate-smart practices, or restructuring the crop insurance program to incentivize climate-smart and resilient practices
  - a. Subsidy preference should be given to historically underserved producers, with a sliding subsidy scale dependent on farm size or annual income, so as to enable small farmers to compete with larger producers
2. Offering preferential terms on FSA loans to producers implementing climate-smart practices
3. Offering advance-payment options for historically underserved producers implementing climate-smart practices to offset upfront costs (as EQIP does)

4. Ramping up equipment rental, sharing or low-cost lending programs for producers who can't afford to buy technology or equipment outright.

As mentioned earlier, climate-smart programs should involve both rural and urban producers. USDA should partner with the Office of Urban Agriculture and Innovative Production to ensure programs are implemented in ways that reduce cities' GHG emissions, bolster local resilience to climate change, promote local employment, and increase food security across communities.

**B. How can USDA provide technical assistance, outreach, and other assistance necessary to ensure that all producers, landowners, and communities can participate in USDA programs, funding, and other authorities related to climate-smart agriculture and forestry practices?**

USDA should conduct outreach to inform producers, especially historically underserved producers, of new climate-smart agriculture and forestry programs. Partnering with community organizations and land-grant universities (particularly historically black colleges and universities and tribal colleges and universities) to promote new programs, assist farmers in enrolling in them, and facilitate producer-to-producer outreach would help USDA engage more producers, while overcoming many producers' historic mistrust of USDA. Mistrust must also be addressed at USDA itself. USDA should enhance its staff diversity and ensure field offices (especially local NRCS and Climate Hub offices) reflect their communities, with local language capacity to better serve producers.

As part of its outreach, USDA should expand partnerships with historically black land-grant colleges and universities, tribal land-grant colleges and universities, and other minority-serving institutions to bolster the number of students and faculty addressing climate change in the agriculture and forestry sectors. Building climate-oriented extension programs into USDA's next HBCU Competitiveness Plan can also ensure that black and other underserved producers can fully participate in USDA's climate programs.

Even though USDA climate-smart programs might be available to all producers at face-value, it does not mean all producers will be able to participate. Many producers, landowners and communities lack the internet connectivity that is necessary to adopt climate-smart agriculture and forestry practices, such as precision agriculture techniques.<sup>6</sup> Expanding affordable, reliable broadband services to rural areas would equip them with the necessary connectivity to manage their farming inputs and monitor results.

**C. How can USDA ensure that programs, funding and financing capabilities, and other authorities related to climate-smart agriculture and forestry practices are implemented equitably?**

One challenge to ensuring equity between producers is that climate-smart programs (especially voluntary carbon markets) are most effective when they are performance-based (i.e., providing payment for tons of carbon captured), rather than participation-based, and that payments for carbon captured often prioritize additionality, providing an advantage to producers who have not yet adopted climate-smart practices. While such an approach makes carbon accounting easier and incentivizes greater sequestration, it can also disadvantage small producers, producers in regions with less carbon sequestration potential, and producers who were ahead of the curve in adopting climate-smart practices. USDA could cushion against these unequal benefits to producers by designing programs that 1) reward producers for their participation, and 2) provide the option of additional rewards for carbon sequestration compared to a baseline (for producers not already receiving performance-based payments via third-party markets). If payments are to be made for adoption of new climate-smart practices, USDA should explore options to include producers who have already adopted such practices, for instance by allowing such producers to use a baseline from before they adopted the practices, which they can improve upon in the future. Such an approach would allow both new and existing climate-smart producers to benefit and minimize the risk that early adopters stop their climate-smart practices, then readopt them merely to meet program requirements.

Although most USDA programs are open to all types of producers, historically underserved groups still face hurdles in accessing these programs due to mistrust in USDA, fewer human resources, red tape, or limited capital.<sup>7</sup> Climate-smart programs and funding should provide carveouts for the participation of historically underserved producers (beginning, limited resource, socially disadvantaged, and veteran producers), in the way EQIP currently does, to ensure these groups benefit from USDA funding and technical support. For programs and funding where a third party (state, land-grant university, etc.) is engaging with producers, priority should be given to parties who meaningfully involve historically underserved producers in their work (in the way RCPP operates). USDA should regularly review participants of climate-smart programs to ensure all types of producers are benefitting. If certain producer types (for example, grain crop growers or producers over a certain income level) are overrepresented or receive disproportionately greater funding, USDA should investigate such disparities to determine their cause and develop solutions.

Lastly, USDA should involve its advisory committees—namely the Advisory Committee on Minority Farmers and Advisory Committee on Beginning Farmers and Ranchers—as well as the Office of Tribal Relations in the creation of climate-smart programs. These groups should provide input on how the programs can be accessible and equitable to underserved producers. The Office of Tribal Relations, in particular, should advise USDA on traditional and indigenous conservation practices that can be scaled up via climate-smart programs, recognizing that Native producers are leaders in environmental and agricultural stewardship.

## Endnotes

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<sup>1</sup> “Executive Order 14008 of January 27, 2021, Tackling the Climate Crisis at Home and Abroad,” *Federal Register* 86, no.19: 7619 (February 1, 2021), <https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad>.

<sup>2</sup> *Hearing on Climate Change and the U.S. Agriculture and Forestry Sectors, Before U.S. House Agriculture Committee*, 117th Congress (2021). (Response by Gabe Brown, Farmer and Rancher at Brown’s Ranch). Hearing available at: <https://agriculture.house.gov/calendar/eventsingle.aspx?EventID=2108>.

<sup>3</sup> Marielle Dubbeling, René van Veenhuizen and Jess Halliday, “Urban agriculture as a climate change and disaster risk reduction strategy,” *Field Actions Science Reports* Special Issue 20 (September 2019): 32-39, <https://journals.openedition.org/factsreports/5650#tocto1n4>.

<sup>4</sup> USDA Rural Business Cooperative Service, “Rural Energy for America Program,” *Federal Register* 79, no. 248 (December 29, 2014): 78220, <https://www.govinfo.gov/content/pkg/FR-2014-12-29/pdf/2014-30133.pdf>.

<sup>5</sup> NOAA National Centers for Environmental Information (NCEI), *U.S. Billion-Dollar Weather and Climate Disasters* (Washington, DC: NCEI, 2021), <https://www.ncdc.noaa.gov/billions>, DOI: 10.25921/stkw-7w73.

<sup>6</sup> “Opinion: Agriculture + Broadband = Fighting Climate Change,” Jon Sallet and Lori Sallet, last modified February 5, 2020, <https://www.agri-pulse.com/articles/13142-opinion-agriculture-broadband-fighting-climate-change>.

<sup>7</sup> *A Hearing to Review the State of Black Farmers in the U.S., Before U.S. House Agriculture Committee*, 117th Congress (2021). (Statement of Sedrick Rowe, Organic Farmer at Rowe Organic Farm). Statement available at: <https://docs.house.gov/meetings/AG/AG00/20210325/111400/HHRG-117-AG00-Wstate-RoweS-20210325.pdf>.