FARM, RANCH AND RURAL COMMUNITIES ADVISORY COMMITTEE
RECOMMENDATIONS TO
U.S. ENVIRONMENTAL PROTECTION AGENCY ADMINISTRATOR MICHAEL S. REGAN
AUGUST 2024

Background
EPA established the Farm, Ranch, and Rural Communities Committee (FRRCC) in 2007 to provide independent policy advice, information, and recommendations to the Administrator on a range of environmental issues and policies that are of importance to agricultural and rural communities. Committee members include representatives from academia, industry (e.g., agriculture and allied industries), non-governmental organizations, and state, local, and tribal governments. The current charter was renewed January 5, 2024, and extends for 2 years through January 2026. The committee charge stayed the same since issued by the US EPA Administrator in January 2023.

The current FRRCC held one public hybrid (remote/in-person) meeting August 5-7, 2024 in Lancaster, PA since sending our last set of recommendations to the EPA Administrator in January. The three *ad hoc* work groups: a) climate, energy, water nexus; b) climate mitigation, adaptation and resilience; and c) climate finance, social inclusion, and technical assistance continued to meet virtually on a bi-weekly basis since the January meeting to carry out and develop the work of the committee. During the August 2024 in-person meeting, work group recommendations were presented to the full committee, discussed and voted upon. The recommendations further down in this letter represent those that the committee voted to move on to share with you, the EPA Administrator.

Charge (as issued by the US EPA Administrator and delivered during the committee's first meeting in January 2023)
Advancing Climate Mitigation and Adaptation Strategies for U.S. Agriculture America's farmers and ranchers find themselves on the front lines of the climate crisis. Severe storms, widespread flooding, prolonged drought, and more frequent wildfires are creating unprecedented risks to our food system. These extreme weather events threaten to erode agricultural productivity even while global population surges toward 10 billion people by mid-century.

The FRRCC is charged with considering how EPA's tools and programs can best support and advance the U.S. agriculture sector's climate mitigation and adaptation goals. By identifying voluntary, incentive-based opportunities; public-private partnerships; and market-based approaches, EPA can support farmers and ranchers in their efforts to reduce emissions, sequester carbon, and accelerate a more resilient food and agriculture system.

The FRRCC should evaluate the Agency's policies and programs at the nexus of agriculture and climate change. Specific topics may include:

- Alternative manure management systems and other methane reduction practices

- Improved quantification of greenhouse gas emissions reductions from low-carbon biofuels
- Climate and water quality co-benefits from nutrient management practices
- Strategies to achieve EPA and USDA's goal of halving food loss and waste by 2030
- Research and regulatory responses to evolving pest pressures due to climate change
- Water management and reuse strategies to address water scarcity

The FRRCC's recommendations should be rooted in EPA's foundational value of scientific integrity with a commitment to ensuring environmental justice for all communities.

FRRCC RECOMMENDATIONS TO ADMINISTRATOR REGAN

The FRRCC officially presents these recommendations to Administrator Regan for his consideration and adoption. Please note that full documents are attached as *Exhibit 1* with additional information as determined helpful by the ad hoc work groups and the full committee. FRRCC leadership welcomes the opportunity to discuss the details of these recommendations with Administrator Regan.

I. Recommendation Preamble:

The Farm, Ranch and Rural Community Committee (FRRCC) members endeavor to serve our nation and citizens across its vast landscape. We recognize that with diverse backgrounds and experiences, many of us have experienced a legacy of injustice and the marginalization of others in our society.

The FRRCC recognizes that EPA is committed to continue to improve access to outreach, training, funding, and support for underserved and disadvantaged populations, rural communities and those defined by EO 13985 Advancing Racial Equity and Support for Underserved Communities Through the Federal Government ("populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life…).

Today, many opportunities, programs and benefits afforded to our citizens:

- Are not well-known or publicized to the desired beneficiaries,
- Are inequitably distributed, particularly to underserved and disadvantaged agricultural operations, tribes, and rural communities and
- Do not receive the resources or support needed for implementation, long term viability and management.

Organizations that have larger resource pools (ex: lawyers, grant writers, and engineers) are more often able to obtain grants and benefits from government efforts. Smaller rural communities and marginalized groups often don't have the same staffing and capacity.

With these factors in mind, it is imperative to provide intentional outreach, resources and technical assistance to create a more equitable process.

To address these historic inequities, our committee has proposed a variety of approaches that will result in added resources, data, research, and technical assistance to these disadvantaged and underserved communities. Addressing these systemic barriers to equity will meet this committee's charge to improve the climate for current and future generations, as well as advance our hope to create a better nation for all.

A. Water, Climate and Energy Nexus Recommendations

The FRRCC recommends the EPA act on the following items regarding roles that EPA can play to scale up public-private partnerships, market-based approaches, and innovative financing to accelerate adoption of agricultural conservation practices that will benefit climate and other environmental co-benefits.

Regulatory & Policy Roles:

Recommendation A1: EPA to Offer Regulatory Flexibility:

a. EPA should finalize a policy statement and rulemaking that allow for flexibilities in implementing market-based approaches for the National Pollutant Discharge Elimination System (NPDES) permit program.
b. EPA should encourage and promote market-based and pay-for-performance approaches for states that have delegation authority for EPA Clean Water Act and Safe Drinking Water Act regulatory programs.
c. EPA should support rewarding early innovators: EPA should find ways to support rewarding early adopters of conservation practices that benefit climate and water quality, so that they can participate in market-based and pay-for-performance programs.

Funding & Financing Roles:

Recommendation A2: EPA To Promote Successful Ways to Use EPA Funding: EPA should work closely with the state agencies and local partners to encourage flexibility in funding utilization and to promote successful ways to use and leverage EPA funding for public-private partnerships, market-based approaches, and innovative financing (e.g., EPA's Clean Water State Revolving Fund (SRF), EPA's Drinking Water State Revolving Fund, 319 nonpoint source funding, etc.). For example, EPA could:

a. Promote ways that States can use the non-federal portion of SRF funding as match for market-based approaches that are funded through public money (for example, as match for the USDA Natural Resources Conservation Service's (NRCS) Regional Conservation Partnership Program (RCPP)).
b. Promote ways that states can be flexible with SRF loan interest rates they offer to incentivize market-based approaches.

c. Promote ways that states with large SRF balances can offer SRF administrators the flexibility to use their investment authority to invest in market-based projects. A prime example is the Iowa Clean Water SRF investment in the Soil and Water Outcomes Fund.
d. Promote ways states can use SRF as bridge loans to provide upfront capital farmers need to install agricultural conservation practices. These loans can then be paid back with United States Department of Agriculture (USDA) Farm Bill funding directly to SRF, without having to burden the farmers (e.g., NRCS Assignments of Payment for SRF in Virginia).
e. Promote how the SRF can be used to support "Watershed Financing Partnerships" that support partners (private, nonprofit, or public-private partnerships) playing an aggregator role to bring together multiple funding streams, identify high-return projects, and implement those projects within a watershed.

Recommendation A3: EPA To Address Match Requirements Barriers: EPA should find ways to help partners meet public grant match requirements.

a. EPA should work with States and USDA to find and promote eligible ways to use EPA funding (SRF, 319, geographic watershed grants, etc.) as match for USDA NRCS's Regional Conservation Partnership Program (RCPP).
b. EPA should write memoranda that clearly articulate eligible funding that can qualify as match.
c. EPA should explore the feasibility of offering flexibility in meeting match requirements for EPA grant programs.

Recommendation A4: EPA To Provide Administrative and Technical Assistance Funding:

a. EPA identify and promote opportunities to use EPA funding (SRF, 319, grants) to support administrative and technical assistance activities that are critical for keeping market-based projects simple for farmers – including watershed planning, strategic deployment of agricultural conservation practices, and quantification of environmental outcomes.

Recommendation A5: EPA To Help Blend/Stack Funding Pools & Attract Private Capital:

a. EPA should actively engage with corporations, foundations, project sponsors and developers to blend private-public funding pools (grants, philanthropic, private capital) to sustain funding for public-private partnerships and market-based approaches.

Recommendation A6: EPA To Structure Greenhouse Gas Reduction Fund to Support Agriculture:

a. EPA should highlight segments of the Greenhouse Gas Reduction Fund's "allowable activities" and terms and conditions that enable the agricultural sector to access these funds. The $14 billion National Clean Investment Fund program within Greenhouse Gas Reduction Fund has such flexibilities.
b. EPA should take a closer look at appropriate project standards, definitions of eligible producers (including equity considerations) and financial institutions, reporting requirements, simplicity of applications and timeliness of decisions, and other

requirements to ensure that agriculture is not inadvertently disadvantaged in its opportunity to participate.

c. EPA should include a list of approved agricultural conservation practices that are eligible for the Greenhouse Gas Reduction Fund and prioritize those practices that significantly benefit both climate and water quality.

Engagement & Collaboration Roles:

Recommendation A7: EPA To Develop and Implement a Communications, Engagement & Collaboration Strategic Plan to Publicly Promote Successful Approaches

a. EPA leadership should promote to USDA, State, and local partners successful public-private partnerships, market-based approaches, and innovative financing. EPA's endorsement will provide a green light for States and local partners to pursue these approaches, build them into their state statutes and policies, and scale up this work. Examples include:
   i. Write a letter from EPA that encourages states to use market-based "alternative compliance" mechanisms for MS4, post-construction stormwater, and other permit-based compliance programs under the Clean Water Act.
   ii. Write a letter from EPA that encourages market-based purchase pools for clean water, including allocations from the SRF (e.g., Maryland's Clean Water Commerce Account Program).
   iii. Promote projects through meetings with States and local partners, podcasts, webinar series, mentoring programs, in order to encourage support for them and to increase number of projects.

Recommendation A8: EPA Coordinate with USDA: EPA should work with USDA to:

a. Institutionalize successful ways to coordinate federal funding to scale up public-private partnerships and market-based approaches.
b. Find ways for EPA funding to serve as match for RCPP and other projects (for example, the non-federal portion of SRF funding, geographic specific grants). Consider feasibility of EPA and USDA establishing matching arrangements upfront versus project by project through a joint agreement or Memorandum of Understanding.
c. Determine how EPA funding can be used to fill gaps in technical assistance in RCPP projects.
d. Find ways to attract private capital (for example, requiring that the private sector match the public funding levels).
e. Formalize a successful way to use SRF as bridge loans to cover capital costs of agricultural practice implementation that are directly repaid with USDA Farm Bill funding (without burdening the farmer).

Verification Roles:

Recommendation A9: EPA To Help Quantify Carbon Benefits of Water Quality Practices:

a. EPA should invest in and support research and monitoring of climate and water quality benefits of agricultural conservation practices to take advantage of both water quality and climate funding for these approaches.

Recommendation A10: EPA To Help Quantify Environmental Outcomes to help with payments for environmental services.

The FRRCC has two recommendations to ensure solar funding maximizes benefits to rural communities and minimizes impacts:

Recommendation A11: EPA should provide reliable information to land and home/building owners considering community solar and educate them about the solar leasing process.

Recommendation A12: EPA should encourage solar development in ways that design community solar and distributed solar energy programs that support agriculture and rural vitality.

B. Climate Mitigation, Resilience and Adaptation

The FRRCC endorses these goals to allow quicker and less expensive review of emerging biotechnology products, and suggests the following complementary recommendation:

Recommendation B1: EPA to incorporate a regulatory foundation to quickly evaluate and expedite regulatory approvals for tools which can be incorporated into Climate Smart Agriculture applications related to biotechnology. To aide in this process, the FRRCC encourages the following:

a. The Environmental Protection Agency (EPA) should quantify climate benefits of approved biotechnology crops, as well as the net benefits of biotechnology in assisting agriculture as it mitigates climate change impacts. Examples could include but are not limited to drought resistant crops and extended shelf life to reduce food waste. Much of the relevant data may exist in academia or with other sources. We encourage EPA to issue a Request for Information (RFI) to see what data may exist.

   Specific objectives include:

   I. Assessing the regional effects of biotechnology on mitigating the impact of agriculture on climate.
   II. Develop and adopt regulatory improvements to shorten the review process, including a “regulatory sand-box” that provides expedited multi-agency review for

technology that creates prioritized environmental benefits, that will incentivize innovation and reduce barriers, resulting in lower costs, for increased market adoption of emerging technologies, including biotechnology, resulting in climate net benefits.

b. Convene a series of stakeholder workshops on emerging technologies, including biotechnology development, evaluation, and adoption and to identify critical priorities for future development, including crops, pesticides and their applications that advance climate goals.
c. Examine data harmonization and sharing opportunities for biotechnology across the three regulatory agencies, to expedite potential approval and reduce the regulatory burden across federal agencies. For example, USDA has issued updated guidance to expedite approval of genome edited biotech crops which may be a good model for EPA to follow. The FRRCC recommends that EPA adopt a similar process.
d. Evaluate realistic staffing needs to meet the increased submissions and review process to timely evaluate emerging biotechnology submissions and request Congress to fund the agency request.

C. Climate Finance, Social Inclusion and Technical Assistance

The FRRCC recommends EPA assess and adopt the following examples of guidelines and administrative processes that accommodate and support lower organizational capacities:

Recommendation C1: Tailored eligibility, scoring, and expectations for 'Return on Investment' specific to rural areas, accounting for fewer amenities, smaller and more dispersed populations, and smaller budgets.

Recommendation C2: Improved access to set-asides for planning grants that provide the community with resources to develop preliminary engineering reports, cost studies and designs needed for the preparation of proposals

Recommendation C3: Set asides to ensure that resources are deployed across a spectrum of community sizes and types.

Recommendation C4: Streamlined application processes and reporting requirements to accommodate capacity burdens, including shorter application forms and forms standardized across programs and agencies to eliminate redundant data entry and application information.

Recommendation C5: Application processes that begin with short, simple, letters of intent that allow administrative staff to assess project 'fit' for a complete grant application process and provide recommendations for technical assistance to applicants not accepted to proceed with a full application process. This will support efforts to further develop project concepts and successful grant applications.

Recommendation C6: Expanded timelines to allow for planning and implementation with reduced staffing resources. For example, planning is separate from project initiation and completion, as such they should have different schedules, timeframes and/or funding.
Recommendation C7: Lowered or eliminated financial match requirements, allowance of in-kind matching, and inclusion of administrative or indirect costs in grant awards, to allow communities or organizations with limited resources to compete in grant programs.

Recommendation C8: Programming and processes that allow communities and organizations to design flexible approaches to achieve desired program outcomes.

Recommendation C9: Cooperative grant agreements that feature strong funder engagement and partnership in program implementation, to help communities and organizations build greater administrative expertise and capacity to successfully plan, implement, and manage.

Recommendation C10: EPA review of state grants, funding and programs that implement similar strategies targeting rural communities at the state level to find successful streamlining examples and opportunities for the same.

Recommendation C11: EPA regional coordination and tracking, in collaboration with state primacy agency partners, of technical assistance provided by providers and local government entities operating under multiple funding contracts from state and federal agencies.

Regardless of approach, efforts to provide technical assistance require a sustained presence and ongoing resources to develop productive relationships, trust, and awareness. The FRRCC thus recommends the following to EPA:

Recommendation C12: Provide expanded, enhanced, and ongoing support to EPA's TCTACs beyond initial grant years in perpetuity.

Recommendation C13: Conduct proactive outreach to engage directly with potential applicants, including those not currently engaged in EPA programming, in order to identify specific assistance needs, including needs for early-phase planning and project development, in order to navigate communities to appropriate resources.

Recommendation C14: Consider resources similar to the Rural Partners Network that provide ongoing support staff at the sub-regional level to work directly with underserved communities, networking resource providers, triaging specific community needs, and providing early-phase planning support.

Recommendation C15: Consider resources that would allow sub-regional organizations with pre-existing relationships and trust to build capacity that would allow them to work directly and proactively on a sustained basis with underserved partners, including those not currently engaged with EPA programming.

The FRRCC recommends that US EPA develop guidance documents, update regulations, and prioritize funding frameworks to aid communities in the development of technical, managerial and financial plans and associated projects to increase community preparedness to the expected public health impacts of climate change:

Recommendation C16: Develop or integrate into existing strategic planning efforts guidance and programmatic modifications that will incentivize infrastructure improvements, with a focus on water/wastewater systems to make them resilient to change by minimizing exposure to pathogens that can reach the water systems

Recommendation C17: EPA should work with other executive agencies to enhance integrated planning and rulemaking frameworks as well as external communications to allow for community and stakeholder input in the process

Recommendation C18: Coordinate with other federal agencies (USGS/NOAA/Bureau of Reclamation) to research and develop source water and atmospheric modeling, data collection, and monitoring programs to better understand the challenges that climate variability poses to public health and food security.

Recommendation C19: Evaluate and improve forecast systems and climate models utilized by EPA to inform preparedness plans, including the integration of local and regional modeling efforts undertaken by state and local governments, regional agencies, and integrated climate mitigation and adaptation groups (for example, the Southeast Florida Climate Change Compact).

II. Summary

The FRRCC appreciates the opportunity to provide input and recommendations to EPA leadership and could not have done this without the unending support of Venus Welch-White, Felipe Afanador-Beltran, Kelly Shenk, Linda Brown and Rod Snyder. In addition, we had numerous EPA and other speakers both at our in person full committee meetings as well as during our individual ad hoc work group meetings. Your staff were ready to speak with us, respond to questions and follow up with information when needed. Thank you. Thank you for accepting these recommendations that were developed and refined with significant discussion and then accepted with consensus by the full FRRCC. Michael and I look forward to hearing how EPA acts on them so we can report back to the full committee. In the remaining months of our charter and charge, we plan to

explore opportunities for collaboration with the Local Government Advisory Committee (LGAC) as you requested and thus, we look forward to sharing additional recommendations with you in the near future should they transpire.

Exhibit 1

EPA Farm, Ranch and Rural Communities Advisory Committee

Ad hoc Work Group Recommendations

(A) Ad Hoc Workgroup #1 – Water, Energy and Climate Nexus

Scaling Up Agriculture Conservation Practices through Public-Private Partnerships, Market-Based Approaches, & Innovative Financing

Introduction and Background

The U.S. Environmental Protection Agency's (EPA) Farm Ranch and Rural Communities Federal Advisory Committee's (FRRCC) is a policy-oriented committee that provides policy advice, information, and recommendations to the Administrator on a range of environmental issues and policies that are of importance to agriculture and rural communities. The current charge of the FRRCC is to advance climate mitigation and adaptation strategies for U.S. agriculture. To support the FRRCC's charge, one of the Committee's working groups - the Water, Energy, and Climate Nexus Ad Hoc Working Group -- focused on developing recommendations to the EPA Administrator on how the Agency can scale up public-private partnerships, market-based approaches, and innovative financing to accelerate adoption of agricultural conservation practices that deliver climate and other environmental co-benefits.

The Working Group held six meetings in April, May, and June 2024 to discuss with experts and farmers across the country successful examples of public-private partnerships, market-based approaches, and innovative financing. The discussions centered around the challenges, opportunities, key ingredients for success, and needs for scaling up this important work (Figure 1).

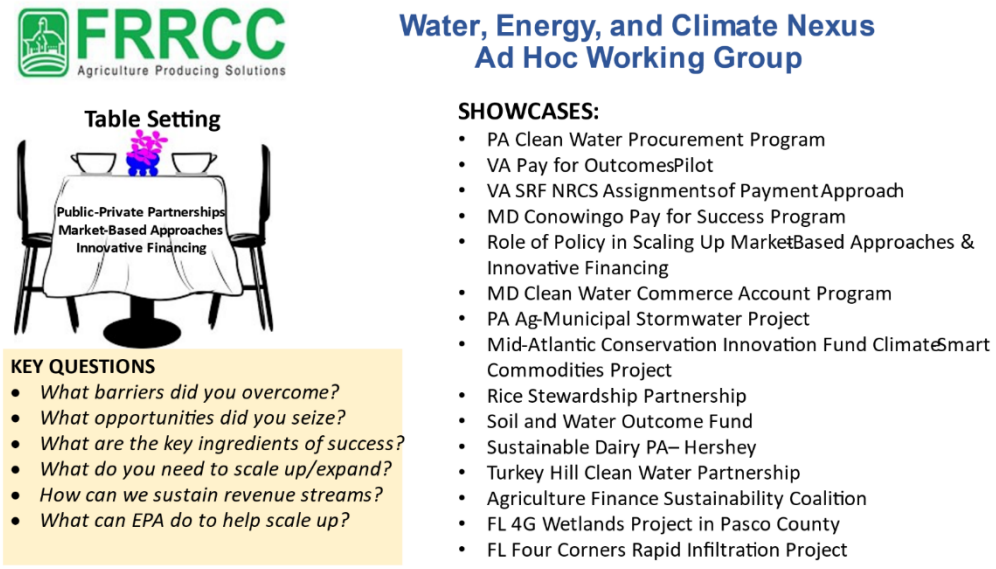

Fig 1. Key questions asked and showcases featured at Working Group meetings

Recommendations:

Based on these discussions, the ad hoc work group developed the following recommendations for the EPA Administrator regarding roles that EPA can play to scale up public-private partnerships, market-based approaches, and innovative financing to accelerate adoption of agricultural conservation practices that will benefit climate and other environmental co-benefits. The recommendations are organized by the following EPA roles: Regulatory & Policy; Funding & Financing; Engagement & Collaboration; and Verification.

Regulatory & Policy Roles:

1. EPA to Offer Regulatory Flexibility:
   a. EPA should finalize a policy statement and rulemaking that allow for flexibilities in implementing market-based approaches for the National Pollutant Discharge Elimination System (NPDES) permit program.
   b. EPA should encourage and promote market-based and pay-for-performance approaches for states that have delegation authority for EPA Clean Water Act and Safe Drinking Water Act regulatory programs.
   c. EPA should support rewarding early innovators: EPA should find ways to support rewarding early adopters of conservation practices that benefit climate and water quality, so that they can participate in market-based and pay-for-performance programs.

Background: The working group wants to ensure EPA regulatory programs and policies support flexibilities, such as water quality nutrient trading and alternative compliance measures, that allow for market-based approaches in the NPDES permitting program. An example of alternative compliance measures is allowing municipal separate storm sewer systems (MS4s) to include pollution reductions from agricultural conservation practices in meeting stormwater permit requirements, rather than through more costly point source controls. These efforts have had

support by EPA for many years. The working group supports EPA's ongoing efforts to finalize a policy statement and rulemaking that will give States the endorsement they need to continue to pursue these types of efforts.

Oftentimes, pay-for-performance programs pay for a farmer's conservation efforts that have been implemented after a state-designated baseline year. Farmers who were early adopters of practices before the established baseline year are often not rewarded for their conservation efforts and cannot participate in these markets. To deal with this inequity, some countries (United Kingdom) and states (Maryland) have established earlier baselines that allow farmers to "bank" the environmental benefits they have created from their conservation practices and sell them at a later date.

In the EPA Office of Water's April 6, 2022, memorandum, "*Accelerating Nutrient Pollution Reductions in the Nation's Waters*," the Agency committed to finalizing a policy statement on flexibilities for implementing market-based approaches within the NPDES permit program and initiating a rulemaking to explicitly state that NPDES permits may include conditions allowing market-based approaches, including trading and off-site stormwater management, to meet applicable effluent limits. EPA's policy statement has been under review by the Office of Management and Budget (OMB) since August 2023. EPA will submit the rulemaking to OMB once OMB completes its review of the policy statement. Beyond the Clean Water Act and NPDES permitting programs, EPA also should assess additional opportunities for regulatory flexibility under the Safe Drinking Water Act.

Funding & Financing Roles:

2. EPA To Promote Successful Ways to Use EPA Funding: EPA should work closely with the state agencies and local partners to encourage flexibility in funding utilization and to promote successful ways to use and leverage EPA funding for public-private partnerships, market-based approaches, and innovative financing (e.g., EPA's Clean Water State Revolving Fund (SRF), EPA's Drinking Water State Revolving Fund, 319 nonpoint source funding, etc.). For example, EPA could:
    a. Promote ways that States can use the non-federal portion of SRF funding as match for market-based approaches that are funded through public money (for example, as match for the USDA Natural Resources Conservation Service's (NRCS) Regional Conservation Partnership Program (RCPP)).
    b. Promote ways that states can be flexible with SRF loan interest rates they offer to incentivize market-based approaches.
    c. Promote ways that states with large SRF balances can offer SRF administrators the flexibility to use their investment authority to invest in market-based projects. A prime example is the Iowa Clean Water SRF investment in the Soil and Water Outcomes Fund.
    d. Promote ways states can use SRF as bridge loans to provide upfront capital farmers need to install agricultural conservation practices. These loans can then be paid back with United States Department of Agriculture (USDA) Farm Bill funding directly to SRF, without having to burden the farmers (e.g., NRCS Assignments of Payment for SRF in Virginia).

e. Promote how the SRF can be used to support "Watershed Financing Partnerships" that support partners (private, nonprofit, or public-private partnerships) playing an aggregator role to bring together multiple funding streams, identify high-return projects, and implement those projects within a watershed.

Background: The working group identified a number of successful approaches for using EPA funding to support public-private partnerships and market-based approaches. Many of the EPA funding pools such as SRF and 319 are managed by the states. There is wide variability in how states choose to spend this funding and whether they prioritize advancing public-private partnerships and market-based approaches and the innovative financing needed to make these projects work. Therefore, it is important for EPA to work closely with the States and local partners to compile these successful approaches and promote them for wider use throughout the country to scale up this work. The Maryland Clean Water Commerce Act provides an example of how state funds can be used to purchase pollutant reductions from agricultural conservation practices to meet state clean water targets under the Clean Water Act.

3. EPA To Address Match Requirements Barriers: EPA should find ways to help partners meet public grant match requirements.
   a. EPA should work with States and USDA to find and promote eligible ways to use EPA funding (SRF, 319, geographic watershed grants, etc.) as match for USDA NRCS's Regional Conservation Partnership Program (RCPP).
   b. EPA should write memoranda that clearly articulate eligible funding that can qualify as match.
   c. EPA should explore the feasibility of offering flexibility in meeting match requirements for EPA grant programs.

Background: The USDA RCPP supports projects that make performance-based payments for environmental outcomes. These projects can be funded at levels up to $10 million, but they require an equal match (partner contribution), which can be challenging for applicants to meet. Fortunately, there are examples of how EPA funding can be used to meet these match requirements. For example, states can use the non-federal portion of SRF (which can be a significant amount) as match. EPA and USDA wrote a decision memorandum articulating conditions under which EPA's Chesapeake Bay grants can be used as partner contribution for the RCPP. Additionally, there may be ways for EPA to offer more flexibility in meeting match requirements such as offering lower match rates for rural communities or allowing for more in-kind match (versus cash match) where feasible.

4. EPA To Provide Administrative and Technical Assistance Funding:
   a. EPA identify and promote opportunities to use EPA funding (SRF, 319, grants) to support administrative and technical assistance activities that are critical for keeping market-based projects simple for farmers – including watershed planning, strategic deployment of agricultural conservation practices, and quantification of environmental outcomes.

Background: Trusted local partners who are implementing these public-private partnerships and market-based approaches are working to keep things easy for the farmer by pooling funding from many sources, providing flexible and easy contracts to farmers, and providing upfront payments to them for practice installation. Oftentimes, programs like USDA NRCS's RCPPs do not fund sufficient technical assistance to support this vital role that local partners provide. A portion of EPA's SRF and 319 funding may be used for administrative and technical assistance activities and may help meet this need. For example, state agencies that manage the SRF funding establish "set asides" for technical assistance in their SRF Intended Use Plans.

In the EPA Office of Water's April 6, 2022, memorandum, "*Accelerating Nutrient Pollution Reductions in the Nation's Waters*," the Agency commits to provide technical assistance and other support to help ensure that states, tribes, and territories have the knowledge, skills, and resources to scale effective nutrient reduction strategies.

5. EPA To Help Blend/Stack Funding Pools & Attract Private Capital:
    a. EPA should actively engage with corporations, foundations, project sponsors and developers to blend private-public funding pools (grants, philanthropic, private capital) to sustain funding for public-private partnerships and market-based approaches.

Background: EPA should intentionally cultivate partnerships with corporations and foundations. Foundations can provide critical early-stage capital to jump start financial innovation (e.g., Blue Forest Conservation's Forest Resilience Bond financing framework in California). Corporations can bring private capital to the table and send signals to food producers that a certain level of conservation is expected which will help scale up this important work. For example, the Sustainable Dairy PA project with EPA, Alliance for the Chesapeake Bay, Hershey, and Land O'Lakes where Hershey matched EPA funding to scale up farmers' conservation efforts. Another example is the Conservation Innovation Fund's Climate Smart Commodities partnership with USDA and corporations to develop market transactions for climate and water solutions. In each of these cases, project sponsors have leveraged private and public capital to develop various elements of market-based solutions.

6. EPA To Structure Greenhouse Gas Reduction Fund to Support Agriculture:
    a. EPA should highlight segments of the Greenhouse Gas Reduction Fund's "allowable activities" and terms and conditions that enable the agricultural sector to access these funds. The $14 billion National Clean Investment Fund program within Greenhouse Gas Reduction Fund has such flexibilities.
    b. EPA should take a closer look at appropriate project standards, definitions of eligible producers (including equity considerations) and financial institutions, reporting requirements, simplicity of applications and timeliness of decisions, and other requirements to ensure that agriculture is not inadvertently disadvantaged in its opportunity to participate.
    c. EPA should include a list of approved agricultural conservation practices that are eligible for the Greenhouse Gas Reduction Fund and prioritize those practices that significantly benefit both climate and water quality.

Background: The Greenhouse Gas Reduction Fund (GGRF) created within the Inflation Reduction Act is a historic $27 billion investment to combat the climate crisis by mobilizing financing and private capital for greenhouse gas- and air pollution-reducing projects in communities across the country. The National Clean Investment Fund (NCIF) represents a $14 billion portion of the GGRF program. In April 2024, EPA selected three NCIF applicants to establish national clean financing institutions that deliver accessible, affordable financing for clean technology projects nationwide, partnering with private-sector investors, developers, community organizations, and others to deploy projects and mobilize private capital at scale. The FRRCC urges eligibility and inclusion of agricultural projects in the deployment of NCIF funds.

Engagement & Collaboration Roles:

7. EPA To Develop and Implement a Communications, Engagement & Collaboration Strategic Plan to Publicly Promote Successful Approaches
    a. EPA leadership should promote to USDA, State, and local partners successful public-private partnerships, market-based approaches, and innovative financing. EPA's endorsement will provide a green light for States and local partners to pursue these approaches, build them into their state statutes and policies, and scale up this work. Examples include:
        i. Write a letter from EPA that encourages states to use market-based "alternative compliance" mechanisms for MS4, post-construction stormwater, and other permit-based compliance programs under the Clean Water Act.
        ii. Write a letter from EPA that encourages market-based purchase pools for clean water, including allocations from the SRF (e.g., Maryland's Clean Water Commerce Account Program).
        iii. Promote projects through meetings with States and local partners, podcasts, webinar series, mentoring programs, in order to encourage support for them and to increase number of projects.

Background: The working group evaluated more than a dozen public-private partnerships and market-based approaches across the country and documented what made them successful, what challenges remain, and what is needed to scale up this work across the country. A resounding recommendation from the practitioners was for EPA leadership to publicly promote successful approaches to State and local partners. Promoting this work will provide a signal to the States that EPA leadership supports and endorses these approaches and that they are allowable under the Clean Water Act. This work could involve publishing success stories; identifying the best geographies within which to scale up this work; holding meetings with USDA, State and local partners to discuss how to work together to scale up this work; and promoting these projects through EPA letters, podcasts, webinars, and mentoring programs.

In the EPA Office of Water's April 6, 2022, memorandum, "*Accelerating Nutrient Pollution Reductions in the Nation's Waters*," the Agency states that many of the most successful and

lasting efforts to significantly reduce nutrient pollution have resulted from partnerships between farmers, ranchers, local water utilities, municipalities, industry, and conservation organizations. These partnerships succeed because they benefit from the diverse knowledge and perspectives of their participants. EPA committed to seek opportunities to highlight successful partnerships, and to create the enabling conditions for their continued success.

8. EPA Coordinate with USDA: EPA should work with USDA to:
    a. Institutionalize successful ways to coordinate federal funding to scale up public-private partnerships and market-based approaches.
    b. Find ways for EPA funding to serve as match for RCPP and other projects (for example, the non-federal portion of SRF funding, geographic specific grants). Consider feasibility of EPA and USDA establishing matching arrangements upfront versus project by project through a joint agreement or Memorandum of Understanding.
    c. Determine how EPA funding can be used to fill gaps in technical assistance in RCPP projects.
    d. Find ways to attract private capital (for example, requiring that the private sector match the public funding levels).
    e. Formalize a successful way to use SRF as bridge loans to cover capital costs of agricultural practice implementation that are directly repaid with USDA Farm Bill funding (without burdening the farmer).

Verification Roles:

9. EPA To Help Quantify Carbon Benefits of Water Quality Practices:
    a. EPA should invest in and support research and monitoring of climate and water quality benefits of agricultural conservation practices to take advantage of both water quality and climate funding for these approaches.

10. EPA To Help Quantify Environmental Outcomes to help with payments for environmental services.

Background: Many agricultural conservation practices have a dual benefit to water quality (e.g., nutrient and sediment reductions) and climate (greenhouse gas emission reductions). Identifying those practices that provide both water quality and climate benefits will enable agricultural partners to access both water quality and climate funding to support implementation of those practices. EPA can continue to work with USDA to support research and monitoring to quantify the water quality and climate benefits of conservation practices. EPA can continue to work with USDA and other partners to quantify the environmental outcomes of pay-for-performance and market-based projects which will involve consistent use of models (which use latest science to estimate pollution reductions) and monitoring to assess actual pollution reductions.

Solar

Introduction and Background

The FRRCC supports private property rights and a landowner's right to make decisions about their property. We realize that solar energy has been heavily subsidized, and this is in some cases putting pressure on agricultural land and taking land out of agricultural production. The US Department of Energy projects that over 10 million acres of ground mounted utility-scale solar will be needed to decarbonize the nation's electrical grid by 2050, with 90% of this expected in rural communities. Further modeling by American Farmland Trust reveals that, without intervention, 83% of this projected development will take place on farmland, with nearly half of that on our most productive, versatile, and resilient farmland best suited for growing food and other crops. This makes sense as solar developers prefer flat, open, well-drained landscapes near existing electrical infrastructure for arrays.

Solar, particularly utility-scale solar, will present both significant opportunities and challenges for farm viability, farmland protection, agricultural planning, and rural development in the years to come. While ground-mounted utility-scale solar projects can provide lease income to landowners and new investment in rural communities, it can also take good farmland out of production, displace farmer-renters who cannot compete with the prices developers offer, and have wider impacts on the local farm economy as projects trend larger. A just transition cannot be achieved unless public funding for solar energy development is awarded in ways that maximizes benefits and minimizes negative impacts on these communities, including through EPA's *Solar for All* program.

The *Solar for All* program will serve as an important vehicle for residential and residential serving distributed solar, providing affordable access to solar for low income and disadvantaged communities. By generating power for residential customers closer to where it will be needed, *Solar for All* provides resilience to the electrical grid and has the potential to reduce the need for much larger and more land intensive utility-scale solar in certain areas.
Community solar will be one of the key facets of power for all, resulting in distributed solar generation on landfills, brownfields and suitable open lands potentially serving rural communities and assuming a 5 MW community solar project capacity).

Recommendations

The FRRCC has two recommendations to ensure solar funding maximizes benefits to rural communities and minimizes impacts:

11. EPA should provide reliable information to land and home/building owners considering community solar and educate them about the solar leasing process.

Background

Making Resources Available to Empower Smart Landowner Decision Making

When faced with solar leases, land and home/building owners often do not know where to start to advocate for themselves or protect their interests. Imbalanced access to information,

combined with significant financial opportunity, can leave land and home/building owners at a disadvantage, unable to negotiate effectively with experienced and well-financed developers. To help correct for this imbalance and contribute to a just transition to decarbonized energy, we recommend that EPA and other agencies make land and home/building owner resources readily available to help them self-educate, think through whether a solar lease is right for them, and advocate for themselves throughout the process. Given the primary role land and home/building owners will play in this process, there should be a focus on the unique considerations they face. While more are needed to provide information to land and home/building owners across the country who manage varied operations, some of these resources already exist, including the:

- Solar Leasing Guide and landowner checklist developed by USDA, Ohio State, and the National Agricultural Law Center (2019)
- Solar Leasing Guide for landowners in the Pacific Northwest and accompanying webinar (which includes water considerations) developed by American Farmland Trust with support from USDA (2022)
- Farmers Guide to Solar and Wind in Minnesota from Minnesota Farmers Union (2019)
- Department of Energy's own Farmer's Guide to Going Solar
- New York Farm Bureau Landowner Considerations for Solar Leases (2016)
- Cornell Cooperative Extension Resources (2020)
- Massachusetts Fact Sheet from Extension, which is for landowners generally but covers some farmer specific legal questions in the state (2023)

12. EPA should encourage solar development in ways that design community solar and distributed solar energy programs that support agriculture and rural vitality.

Background

Advancing Community Solar Programs that Strengthen Farm Viability with *Solar*

One-way solar funding is being used to help state and local governments advance community-scale solar programs. Community solar programs will expand access to the benefits of distributed solar, and if well-designed, will incorporate critical measures to bolster and avoid negative environmental impacts. We strongly recommend that when community solar programs are funded wholly or in part by *solar*, that the EPA take steps to educate recipients on how they can ensure these programs accelerate solar energy development while also strengthening farm viability and keeping farmland well-suited for agriculture in production. This can be done by encouraging recipients to incorporate principles and policies into their programs that achieve these goals.

- **Prioritize solar siting on the built environment, contaminated land, and other land not well-suited for farming.**
- **Safeguard the ability for land to be used for agricultural production** when siting solar on farmland by following best practices during construction, operation, and decommissioning that promote soil health and preserve productivity and access to water.

- Expand the use of agrivoltaics that pair agricultural production and solar energy generation to minimize displacement of farming due to solar development and to improve farm viability.
- Promote equity and farm viability in siting and permitting decisions with inclusive processes to accelerate project siting, maximize benefits, and minimize negative community impacts.

To ensure solar supports farmer and agricultural and rural communities, funding recipients can be encouraged to set up community solar programs that:

- Ensure rural communities can access solar funding administered at the state-level.
- Prioritize solar development on parking canopies, rooftops, landfills, brownfields, irrigation canals, and land not-well suited for farming.
- Require applicants developing traditional ground-mounted solar projects on farmland and ranchland to follow best practices during construction, operation, decommissioning, and restoration to protect and improve soil health and productivity and retain water rights (where applicable). This includes reducing soil compaction, minimizing damage to existing farm infrastructure, and ensuring financial surety for decommissioning and restoration up-front.
- Incentivize agrivoltaic projects, or the pairing of solar energy generation and agricultural production on the same piece of land for the full life of the solar project, to keep land in farming as the U.S. decarbonizes.
- Ensure developers seeking *Solar for All* funding have followed best practices related to community engagement, including hosting inclusive meetings and developing community benefit agreements that support farm viability.

(B)

Ad Hoc Workgroup #2 – Climate Mitigation, Resilience and Adaptation

Biotechnology

Introduction

In 2022, the EPA Administrator charged the Farm, Ranch, and Rural Communities Committee (FRRCC) with **advancing climate mitigation and adaptation strategies for U.S. agriculture.**

Under this charge, the FRRCC is considering how EPA's tools and programs can best catalyze the U.S. agriculture sector's climate mitigation, resilience, and adaptation goals. The EPA's foundational values of scientific integrity and commitment to environmental justice are an anchor point for recommendations. Prioritizing, modernizing, streamlining and staffing are primary anchor points for FRRCC stated recommendations.

The FRRCC assigned this charge to the Climate Resilience and Adaptation workgroup. An emerging theme is EPA's role in regulating and advancing biotechnology for agriculture and the impacts of technology in addressing climate goals.

Background

EPA's role in biotechnology regulation

On September 12, 2022, President Biden issued Executive Order 14081, "*Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure Bioeconomy*," with the goal of accelerating biotechnology innovation and growing America's bioeconomy across multiple sectors, including health, agriculture, and energy.

Biotechnology is defined in the Executive Order as "technology that applies to and/or is enabled by life sciences innovation or product development." (https://www.whitehouse.gov/briefing-room/presidential-actions/2022/09/12/executive-order-on-advancing-biotechnology-and-biomanufacturing-innovation-for-a-sustainable-safe-and-secure-american-bioeconomy/) "Biotechnology products include organisms developed through *in vitro* manipulation of genetic information and genetic engineering, as well as products produced via cell-free synthesis" (https://usbiotechnologyregulation.mrp.usda.gov/eo14081-section8c-plan-reg-reform.pdf 2024).

The FRRCC affirms that biotechnology is a critical tool for continued advancements in agricultural systems resilience and in accelerating agriculture's opportunities for mitigating and adapting to climate change, including development of climate smart agriculture solutions. Climate smart agriculture applications include and are not limited to: reducing greenhouse gas emissions by

enabling increased adoption of reduced tillage practices that reduce fossil fuel use; alleviating the need for and use of pesticides; reducing food waste by managing pests and improving food shelf life; enabling rapid genetic improvement for new crop varieties that could be drought or flood tolerant and pest resistant; and enhancing agricultural productivity by increasing yields and nutrient utilization in growing crops. An additional benefit can be less nutrient runoff, potentially reducing impairment of water quality. Climate and environmental benefits can translate into economic benefits for producers.

Rapid developments in biotechnology, especially those with an advantage to a changing climate, have not been fully integrated into the regulatory framework of federal agencies. An opportunity exists to re-examine regulatory processes in the EPA with the goals of:

- Integrating climate change benefits when performing a net benefit analysis of biotechnology products;
- Ensuring that risk assessments make use of the best available practices for data collection, analysis and sharing;
- Seeking opportunities to reduce review timelines and costs of biotechnology products for the benefit of all, especially small and startup businesses, federal research facilities and universities; and,
- Ensuring EPA is sufficiently staffed with qualified individuals to adequately meet the goals and suggestions stated in this document.

The FRRCC commends EPA, US Department of Agriculture and the Food and Drug Administration for their commitment to examining their regulatory processes. As written in the 2024 *Plan for Regulatory Reform under the Coordinated Framework for the Regulation of Biotechnology* (Coordinated Framework), the EPA seeks to:

- Provide regulatory clarity and assistance to developers;
- Streamline and ensure consistency across its Plant Incorporated Protectants (PIP) registration reviews;
- Update existing guidance on small-scale field testing of PIPs;
- Address the scope of plant regulator PIPs;
- Solicit feedback on additional modifications in plants that can be exempt from their respective regulations; and,
- Update information on the regulation of modified insect and invertebrate pests and working with other agencies to streamline and coordinate the regulation of modified insects.

Recommendations

The FRRCC endorses these goals to allow quicker and less expensive review of emerging biotechnology products, and suggests the following complementary recommendation:

13. EPA to incorporate a regulatory foundation to quickly evaluate and expedite regulatory approvals for tools which can be incorporated into Climate Smart Agriculture applications related to biotechnology. To aide in this process, the FRRCC encourages the following:

    a. The Environmental Protection Agency (EPA) should quantify climate benefits of approved biotechnology crops, as well as the net benefits of biotechnology in assisting agriculture as it mitigates climate change impacts. Examples could include but are not limited to drought resistant crops and extended shelf life to reduce food waste. Much of the relevant data may exist in academia or with other sources. We encourage EPA to issue a Request for Information (RFI) to see what data may exist.

       Specific objectives include:
       - Assessing the regional effects of biotechnology on mitigating the impact of agriculture on climate.
       - Develop and adopt regulatory improvements to shorten the review process, including a "regulatory sand-box" that provides expedited multi-agency review for technology that creates prioritized environmental benefits, that will incentivize innovation and reduce barriers, resulting in lower costs, for increased market adoption of emerging technologies, including biotechnology, resulting in climate net benefits.

    b. Convene a series of stakeholder workshops on emerging technologies, including biotechnology development, evaluation, and adoption and to identify critical priorities for future development, including crops, pesticides and their applications that advance climate goals.
    c. Examine data harmonization and sharing opportunities for biotechnology across the three regulatory agencies, to expedite potential approval and reduce the regulatory burden across federal agencies. For example, USDA has issued updated guidance to expedite approval of genome edited biotech crops which may be a good model for EPA to follow. The FRRCC recommends that EPA adopt a similar process.
    d. Evaluate realistic staffing needs to meet the increased submissions and review process to timely evaluate emerging biotechnology submissions and request Congress to fund the agency request.

Background

The FRRCC charge reflects a need to integrate climate change adaptation, mitigation, and resilience in the agency's biotechnology product review practices. Regional efficacy is an important determinant of the how biotechnology may be scaled to address climate change, which is a global challenge. Data and work sharing arrangements may be helpful in reducing the time and cost of approval processes across agency jurisdictions and in working with state regulatory approvals. Current software technology may encourage the use and adoption of these arrangements which can reduce the regulatory cost of biotechnology, development and implementation.

Many agriculture producers grow crops categorized as specialty crops (not corn, wheat, soybeans or peanuts) and often have limited access to labeled crop technologies due to the

market size of the crop grown. By addressing the regulatory approval process, EPA and the other agencies will provide more equitable and efficient opportunities for all producers to have access to the latest available tools to implement Climate Smart Agriculture practices and be a part of the climate solution.

The FRRCC appreciates the opportunity to provide comment and insight into this increasingly important matter.

(C)

Ad Hoc Workgroup #3 – Climate Finance, Social Inclusion and Technical Assistance

Building Capacity by Streamlining Procedures: Developing Grant Application and Administration Guidelines to Increase Accessibility to Funding for Rural and Underserved Communities

Introduction and Background

Administrative processes in grant and other governmental programming are a significant barrier for communities that have limited organizational capacities. Underserved, disadvantaged rural communities are disproportionately harmed by burdensome application and administration requirements. The burden to apply for grants is continually raised by rural stakeholders and is forcing many to explore ways to secure grant writing services to keep up. While one solution to this barrier is to build capacity within communities and organizations, or to provide technical assistance for specific programs, parallel efforts to reduce administrative burdens and streamline processes can further address capacity limitations while improving access to funding. Removing some 'barriers to entry' and reducing the time and expense involved in more extensive applications and reporting requirements would be a welcomed improvement for rural and other under-resourced communities.

Recommendations

The FRRCC recommends EPA assess and adopt the following examples of guidelines and administrative processes that accommodate and support lower organizational capacities:

14. Tailored eligibility, scoring, and expectations for 'Return on Investment' specific to rural areas, accounting for fewer amenities, smaller and more dispersed populations, and smaller budgets.
15. Improved access to set-asides for planning grants that provide the community with resources to develop preliminary engineering reports, cost studies and designs needed for the preparation of proposals
16. Set asides to ensure that resources are deployed across a spectrum of community sizes and types.
17. Streamlined application processes and reporting requirements to accommodate capacity burdens, including shorter application forms and forms standardized across programs and agencies to eliminate redundant data entry and application information.
18. Application processes that begin with short, simple, letters of intent that allow administrative staff to assess project 'fit' for a complete grant application process and provide

recommendations for technical assistance to applicants not accepted to proceed with a full application process. This will support efforts to further develop project concepts and successful grant applications.

19. Expanded timelines to allow for planning and implementation with reduced staffing resources. For example, planning is separate from project initiation and completion, as such they should have different schedules, timeframes and/or funding.
20. Lowered or eliminated financial match requirements, allowance of in-kind matching, and inclusion of administrative or indirect costs in grant awards, to allow communities or organizations with limited resources to compete in grant programs.
21. Programming and processes that allow communities and organizations to design flexible approaches to achieve desired program outcomes.
22. Cooperative grant agreements that feature strong funder engagement and partnership in program implementation, to help communities and organizations build greater administrative expertise and capacity to successfully plan, implement, and manage.
23. EPA review of state grants, funding and programs that implement similar strategies targeting rural communities at the state level to find successful streamlining examples and opportunities for the same.
24. EPA regional coordination and tracking, in collaboration with state primacy agency partners, of technical assistance provided by providers and local government entities operating under multiple funding contracts from state and federal agencies.

Examples:

- LOI_letter_of_intent_NIFA.pdf (usda.gov)
- Building Blocks for Sustainable Communities | US EPA
- MI Neighborhood (michigan.gov)

Building Capacity with Technical Assistance and Planning Support: Developing Grant Application and Administration Guidelines to Increase Accessibility to Funding for Rural and Underserved Communities

Background

EPA's Thriving Communities Technical Assistance Centers (TCTACs) represent an important step forward in supporting rural communities, responding to a tremendous demand for assistance in navigating what are often complex and lengthy grant applications. It is vital to ensure that centers are adequately resourced to accommodate the strong demand, ensuring responsive service, to build strong relationships and trust in EPA programming.

Further, outside of the grant application processes themselves, it's clear that many communities are unprepared to undertake the extensive grant applications due to limited opportunities to plan for and develop project concepts themselves. Developing these plans requires sustained outreach to underserved communities that are unlikely to currently be engaged with EPA's

programming due to lack of capacity, which presents challenges in providing needed resources and support. One model that is demonstrating progress is the Rural Partners Network, which provides designated sub-regional staff who work directly with communities to identify needs and navigate to the appropriate resources. Similar approaches might be developed in partnership with other regional entities, through grants that allow trusted partners to build capacity or 'staff up' to meet these specific planning needs.

Recommendations

Regardless of approach, efforts to provide technical assistance require a sustained presence and ongoing resources to develop productive relationships, trust, and awareness. The FRRCC thus recommends the following to EPA:

25. Provide expanded, enhanced, and ongoing support to EPA's TCTACs beyond initial grant years in perpetuity.
26. Conduct proactive outreach to engage directly with **potential** applicants, including those not currently engaged in EPA programming, in order to identify specific assistance needs, including needs for early-phase planning and project development, in order to navigate communities to appropriate resources.
27. Consider resources similar to the Rural Partners Network that provide ongoing support staff at the sub-regional level to work directly with underserved communities, networking resource providers, triaging specific community needs, and providing early-phase planning support.
28. Consider resources that would allow sub-regional organizations with pre-existing relationships and trust to build capacity that would allow them to work directly and proactively on a sustained basis with underserved partners, including those not currently engaged with EPA programming.

Drought and Flood Resilience to Climate Change Impacts

Background

Food and water borne diseases are a global threat to public health. Disadvantaged and overburdened communities of vulnerable populations with poor sanitation infrastructure and public health capacity are at particular risk of infection. Worldwide more than 2.5 billion people have limited access to improved sanitation and more than 771 million lack access to potable water and more than 140 million drink untreated surface water (WHO 2019). Water-related diseases heighten the global public health burden. Limited access to potable water and sanitation contribute to more than 800,000 deaths in children from diarrheal illnesses (CDC 2018).

The United States of America (USA) has about 148,000 small systems, each one serving 10,000 people or less, mostly in remote and poor areas of the country. Many of these are operated by community members lacking the monetary and technical capacity to respond to the challenges of serving safe water and restoring service after a climatic event. Most are Small, and very small,

potable Water Supply Systems (SWSS- defined as serving 501-3,300; the majority serving <501 very small and small populations as shown in the USEPA Safe Drinking Water Information System Federal data (USEPA 2011)). There are also some privately/personally owned water supplies managed by the local, communities they serve which used to serve only a few households but now serve a greater number. Treatment, when present, is limited to disinfection with chlorine and is often inconsistent (Minnigh & Ramírez Toro 2004). A recent study assessed the burden of diarrheal disease due to inadequate drinking water quality in these communities (Hunter et al. 2010).

Under the Safe Drinking Water Act & the Clean Water Act, the EPA has devised ways for the protection of the population by means of establishing barriers between the user and the contaminants (Revision of the Safe Drinking Act Focus and Rules); most of these risks to contaminants were passed to the consumer by way of the system infrastructure. Droughts and floods now present another source of emerging risks. EPA under the then new 1990s focus, created or reviewed rules to address the need to prepare the infrastructure to confront emerging contaminant risks. EPA should continue this strategy to include the emerging impacts to water quality and quantity that droughts and floods are predicted to cause, incorporating the issues of rural drinking water supplies and both droughts and floods as yet another component of on-going strategies.

Small Water Supply Systems typically serve extremely rural and underserved populations. These systems are most at risk of increasing waterborne illness because typically these systems generally lack operational capacity and typically improperly treat and disinfect the water, and they are more likely to fail during an extreme climate event (Minnigh & Ramirez-Toro 2004; Hunter et al. 2010; USEPA 2006). For example, the US EPA reported that small system violations comprised the vast majority of the most serious of health-based standards (EPA 2016). Health based standards include monitoring for E. coli, turbidity and treatment techniques such as disinfection (Crespo-Medina et al. 2020). The myriad risk factors associated with water related illnesses are preventable.

Climate change, however, is predicted to lead to spatial and temporal changes in rainfall and temperature that may heighten the risk of pathogen and other contaminant proliferation and dissemination. The potential impacts of these anticipated changes are multifactorial. Environmental survival of many gastrointestinal pathogens is linked to exposure to incident radiation and temperature (John 2005). Changes in the intensity of rainfall events and their patterns through time will alter the spatial disposition of pathogens in the environment through droughts or flooding and overland flow (Sanderson et al. 2017). Spatial-temporal variation in sources and the risk of encountering pathogens will alter the distribution of the disease burden. Prior studies on Campylobacter-associated disease in UK populations demonstrated the importance of weather in determining exposure to Campylobacter in rural environments, both in terms of influencing the distribution of the pathogen (Sanderson et al. 2018) and how humans utilize the landscape (Rushton et al. 2019). Climate change may also impact crop availability,

livestock production, the makeup of family diets and limit further access to potable water sources. Whilst it is possible in general terms to indicate how climate will impact the environment, it is not possible to predict how this will impact exposure risk and human behaviors that are most likely to be of significance in determining the burden of disease.

Recommendations

The FRRCC recommends that US EPA develop guidance documents, update regulations, and prioritize funding frameworks to aid communities in the development of technical, managerial and financial plans and associated projects to increase community preparedness to the expected public health impacts of climate change:

29. Develop or integrate into existing strategic planning efforts guidance and programmatic modifications that will incentivize infrastructure improvements, with a focus on water/wastewater systems to make them resilient to change by minimizing exposure to pathogens that can reach the water systems
30. EPA should work with other executive agencies to enhance integrated planning and rulemaking frameworks as well as external communications to allow for community and stakeholder input in the process
31. Coordinate with other federal agencies (USGS/NOAA/Bureau of Reclamation) to research and develop source water and atmospheric modeling, data collection, and monitoring programs to better understand the challenges that climate variability poses to public health and food security.
32. Evaluate and improve forecast systems and climate models utilized by EPA to inform preparedness plans, including the integration of local and regional modeling efforts undertaken by state and local governments, regional agencies, and integrated climate mitigation and adaptation groups (for example, the Southeast Florida Climate Change Compact).