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House Natural Resources Committee
Subcommittee on Energy and Mineral Resources

In Support of
H.R. 6654 – Climate Adaptation Science Centers Act
Legislative Hearing – February 17, 2022

Good afternoon, Chairman Lowenthal, Ranking Member Stauber, and members of the Subcommittee. My name is Renee McPherson. I am an atmospheric scientist and professor in the Department of Geography and Environmental Sustainability at the University of Oklahoma. I am here to support the Climate Adaptation Science Centers Act on behalf of the University Directors of the regional Climate Adaptation Science Centers, or CASCs. I am the University Director of the South Central CASC.

Climate disasters endanger the ability of important ecosystems to provide us with food, clean air and water, economic products, and natural beauty. In the 1980s, there were only 29 billion-dollar weather and climate disasters. In the 2010s, there were 123. Last year, wildfires burned iconic forests of the American West, destroyed habitats, and spewed toxic chemicals. Along the Gulf Coast, Hurricane Ida devastated tribal communities, polluted water supplies, and killed hundreds of millions of fish. Other climate hazards happen more gradually. For example, rising sea levels in the Hawaiian Islands threaten coastal infrastructure, Native Hawaiian fishponds, and a tourism economy worth over \$17 billion.

The CASCs have a critical role to play in preparing natural and cultural resource managers to deal with these changes. We deliver actionable science to managers regarding what climate impacts to expect, what systems are vulnerable, and how and where ecosystem resilience can be enhanced using traditional knowledge, climate-smart management, climate-informed conservation, and other approaches. Most importantly, the CASCs are partnership-driven. Our science products are directly actionable because we work with managers in the Department of the Interior, state and local agencies, tribes, Indigenous peoples, and nonprofits to address needs they identify. These partnerships fuse the trusted scientific and data management capabilities of the USGS and the disciplinary breadth of universities with a range of on-the-ground experts who make decisions to manage ecosystems. The resulting actionable science is highly appealing to

our resource management partners and serves to strengthen both the science and the usability of the science, thus making the most efficient use of the federal government investments in earth and environmental sciences.

As an example, the Chickasaw Nation and Choctaw Nation of Oklahoma (both are members of the South Central CASC) needed to plan for future drought episodes after their lands and peoples experienced a damaging drought beginning in 2011. Without climatologists and hydrological modelers in their environmental divisions at the time, the Nations partnered with University of Oklahoma scientists and water engineers from a private company to research how and where drought risks are projected to change the waters flowing throughout the Red River (of the South) watershed. Results were used to update their drought management plan, and new questions formed about how the changes would affect aquatic species in the basin. They added scientists from the USGS and Oklahoma State University (also a CASC member) to their team and were able to conduct a new project with new science objectives to answer their questions. This iterative cycle of activities — from decision makers’ research questions, to partnering on research activities, to infusing the learned knowledge or tools into management planning, to new questions — is what drives CASC science.

Given the tools to help ecosystems adapt, resource managers can preserve our wilderness areas and wildlife refuges, protect our water supplies and native habitats, and support sustainable hunting, fishing, and outdoor experiences. They can also save money, minimize litigation, and enhance economic development through regional approaches to hazard reduction. *But we are struggling to meet managers’ needs and the demand for actionable science, as climate-related challenges unfold with increasing speed and impact.*

One tangible step to serve these managers is to stabilize our centers by passing the CASC Act, which codifies the National and Regional Climate Adaptation Science Centers within the USGS. As background, the USGS National CASC manages nine Regional CASCs that serve every state, territory, and the U.S. Affiliated Pacific Islands. Research universities host the nine CASCs as cooperative partnerships between the USGS and a consortium of research institutions, tribes and tribal colleges, state and local entities, and non-governmental organizations. Through the regional CASCs, the USGS funds research to be conducted in partnership with managers in the U.S. Department of the Interior (DOI), tribes, state agencies, and other DOI partners, resulting in actionable science products that address regional needs and priorities. The USGS also has funded educational activities that build capacity in DOI, partner agencies, and tribes and develop a next-generation workforce.

Collaboration with our universities benefits the USGS because we can respond quickly to emerging issues. Hiring processes at universities are more streamlined than those in the USGS, and the availability of recent, highly educated graduates at universities results in open positions being filled in a timely fashion. Universities also have access to “soft-funded” research or

technical staff members, providing opportunities for temporary engagements and workforce development.

Universities link the USGS with well-established networks of regional partners. Most public universities have 100-year or longer histories working with and for communities in their state. Service to the state or region is an important element of most faculty positions and, as a result, faculty and their research groups have developed relationships with public, private, and non-profit sectors. Land grant, sea grant, and space grant universities have additional connections to community colleges, K-12 schools, agricultural extension offices, and other community or county-based institutions.

Our universities have scholars who address complex, multi-disciplinary problems through colleges and departments in the life, physical, and social sciences, engineering, and humanities. Climate adaptation requires the input from scholars in all of these fields to create meaningful solutions and engage with managers who can implement solutions. The universities provide a broad foundation of expertise to partner with USGS scientists.

Universities educate a next-generation workforce to prepare for and respond to climate impacts on fish, wildlife, ecosystems, and the communities they support. CASC universities are attracting more students of color, including Native students, who can matriculate into government positions, diversifying the scientific workforce. All CASC personnel — USGS and university — focus on mentoring students, teaching them how to build multi-disciplinary collaborations, and how to ethically engage stakeholder groups to inform their science questions and make their results more actionable.

The strengths of the university environment in the CASCs is matched equally by the strengths of the USGS. USGS scientists collaborate with university colleagues and often bring a national perspective to regional problem solving — leading to better solutions based on their networks of expertise. Because they are embedded within universities, USGS scientists can mentor graduate students and postdoctoral fellows, building the next generation workforce alongside university researchers. USGS scientists also bring their experience as part of the Federal workforce, helping students understand and work towards careers as Federal scientists. USGS staff and leadership also form the backbone of the larger CASC enterprise, engaging national and regional stakeholders to understand priority science needs, supporting good practices in data storage and sharing, and managing the staff who enable our science and partnership activities to thrive. USGS centers of excellence in ecological, wildlife, wetland, aquatic, and fisheries research provide key expertise to regional, cross-CASC, and national projects. As a result, the entire network is stronger, more vibrant, and able to better address problems than if either the USGS or the universities were working alone. The model implemented by the USGS from the start of the CASC network is an example worthy of emulation.

Hence, along with my colleagues who serve as university directors of the regional CASCs, I strongly support the CASC Act to “establish a National Climate Adaptation Science Center and Regional Climate Adaptation Science Centers to respond to the effects of extreme weather events and climate trends, and for other purposes.”

The CASC Act stabilizes our network by ensuring that we can sustain durable relationships of trust with our partners and direct our work to address local, state, regional, and national needs and priorities on timescales that cross multiple administrations. In particular, building ethical relationships with Tribes and Indigenous peoples takes time and must endure through changes in leadership in Congress and the Administration. It is difficult to deeply engage with natural and cultural resource managers if they are unsure whether the CASCs will be there from one year to the next. Their time is precious and they need to know that we have the stability brought through authorization.

The Act will solidify how the USGS works *with our regional consortia* to serve these needs. It emphasizes a collaborative partnership whereby each member of the CASC team brings different strengths to the table, different funding sources, different perspectives on how to answer questions, and different tools and data. In the end, not only does each regional CASC benefit from collaborative science, but the Federal government saves money and time through the partnership.

The Act fosters USGS partnerships *with other Federal agencies* to encourage a collaborative approach to climate adaptation. There are multiple Federal agencies that work on climate change science, but each has specific mission driven foci. Synergistic outcomes can be derived when two or more agencies work together on a project or set of projects with the universities or other consortium institutions. We have found that these arrangements can be cumbersome and the Act is designed to streamline collaboration.

The Act provides clear fiscal mechanisms for the USGS to transfer funds to partners, eliminating administrative delays that stall climate adaptation projects. The USGS Office of Acquisitions and Grants must verify that grant expenses are justifiable under the authority of various pieces of USGS authorizing legislation. Some activities that are critical to improving climate adaptation science, such as building networks and partnerships with stakeholders and recruiting and training students from diverse backgrounds, have been difficult to support under existing secretarial orders or USGS organic act. The CASC Act clarifies what can be included in projects (and thus their budgets) and how funds can be transferred, streamlining the process and reducing bureaucracy.

The Act restores the role of an advisory council to the National CASC to ensure the agency is forward-looking, strategic, and informed by important perspectives. The Federal Advisory Council is designed to alert the USGS National CASC about shifts in goals or new priorities so that the CASC network remains flexible and responsive in its work.

By formalizing and building on the existing program, the CASC Act will improve the consistency, continuity, and efficiency of the CASC network for the long term. Climate change will affect management decisions through this century, so managers need to build long-term relationships with centers of adaptation science excellence that they can rely on for cutting-edge science, training, and engagement. The USGS CASCs can serve in this role with the benefit of the proposed authorization.

I thank the committee for your consideration of this bill.