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Access to Federal Climate Data Can Empower Communities in Adaptation and Resilience Efforts

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Introduction and summary

Wildfires—which are growing in number and intensity—are destroying and displacing entire towns. Record rainfall is flooding farms and communities. Infectious diseases are spreading to new regions and straining health care systems. Longer and hotter heat waves are threatening vulnerable populations and overpowering electrical grids. These are just a few examples of the new normal in a climate-changed America.

Although individuals experience climate change in different ways across the country, communities of color and low-income communities are hit hardest. Moreover, the effects of a changing climate are disrupting the systems, infrastructure, services, and institutions on which communities rely daily. Local stakeholders need data, tools, and support to respond effectively to climate change. As a recent report from the Intergovernmental Panel on Climate Change (IPCC) Working Group made clear, without immediate and significant efforts to reduce emissions and reach the Paris Agreement’s 1.5 degree Celsius warming limit, the consequences of climate change will continue to grow catastrophically.¹ Immediate action to mitigate and adapt to climate change is needed to prevent the worst climate scenarios and to prepare for current and future climate impacts.

As part of this effort, the Biden administration must build on its past work to ensure that federally collected climate data are accessible to local stakeholders. Such data can help businesses, municipalities, planners, land managers, community leaders, and farmers develop and deploy the adaptation strategies that are badly needed across the country. These strategies will require effective outreach, trainings, and deployment of the recently released Climate Mapping for Resilience and Adaptation (CMRA) portal; an increase in climate science and adaptation funding; and enhanced workforce development initiatives for climate-vulnerable communities.

This report outlines the steps that the Biden administration has taken to make climate change data available to local stakeholders and leaders. It also offers recommendations for how the administration can expand the accessibility and usability of federal climate data going forward.

Closing the gap in climate adaptation and resilience finance

Climate adaptation is critical to help communities prepare for, respond to, and recover from climate impacts, yet decades of inaction have left U.S. residents and businesses vulnerable across numerous indicators, from health care access to the integrity of the country's infrastructure. Moreover, the World Bank Group estimates that by 2030, climate change will drive 32 million to 132 million more people globally into extreme poverty.² In North America, human life, safety, and livelihoods are and will increasingly be at risk from sea-level rise, severe storms, and hurricanes even if warming is limited to 1.5 degree C.³ Flooding is expected to become a dominant risk to cities, disrupting and damaging infrastructure, businesses, and homes. Wildfires are becoming increasingly deadly, expensive, and damaging to infrastructure; 2018, the most expensive fire season on record, cost more than \$25 billion.⁴ Wildfires from 2010 to 2021 cost \$100.1 billion, more than three times the wildfire costs from 1980 to 2009.⁵ And a record-shattering heat wave in 2021 caused 800 deaths in the Pacific Northwest, with older Americans, people of color, and low-income individuals experiencing disproportionate harm.⁶ From 2018 to 2021, there was a 56 percent increase in heat-related deaths, and these deaths are expected to increase as temperatures continue to rise.⁷

The Biden administration has taken important steps to address the challenges driven by climate change. The bipartisan Infrastructure Investment and Jobs Act (IIJA) invests roughly \$47 billion in resilience funding to prepare communities for extreme weather.⁸ IIJA funding will go to programs such as the Federal Emergency Management Agency's (FEMA) Building Resilient Infrastructure and Communities program for hazard mitigation projects.⁹ The funds will also be directed toward coastal resilience efforts to protect communities from flood risk, sea-level rise, and coastal erosion, as well as to projects that increase the power grid's resilience to extreme weather. The Inflation Reduction Act also contributes an extraordinary amount of funding to this work, including \$3 billion for environmental and climate justice block grants, \$2.6 billion for the National Oceanic and Atmospheric Administration (NOAA) to put toward coastal and climate resilience, \$235 million for Tribal climate resilience, \$24 million for the U.S. Geological Survey's (USGS) 3D Elevation Program, and \$33 million for the Council on Environmental Quality to fund environmental justice mapping.

Other recent federal efforts to jump-start climate resilience programs include:

- The CMRA portal,¹⁰ which provides a dashboard of current climate hazards and a risk assessment tool for climate exposures, in addition to centralizing federal funding opportunities
- President Joe Biden’s fiscal year (FY) 2023 budget request, which asked for more than \$18 billion to invest in climate resilience and adaptation¹¹
- Executive Order 13985, which mandated the 2022 release of more than 90 federal agency equity action plans¹²
- An easy-to-access Department of Energy (DOE) website for state and local governments, nonprofits, and businesses to view resilience funding opportunities¹³
- Executive Order 14008, which mandated that more than 20 federal agencies release 2021 climate adaptation and resilience plans¹⁴
- New initiatives at the Occupational Safety and Health Administration and other agencies to protect workers and communities from extreme heat¹⁵
- Executive Order 14030, which directed federal agencies to analyze and mitigate climate-related financial risks¹⁶
- Updates to the National Flood Insurance Program’s standards to help communities align their construction and land-use practices with the latest data on flood risk reduction¹⁷

Still, more can and must be done. In 2021, U.S. climate and weather disasters cost \$152 billion.¹⁸ This pales in comparison to the \$2 trillion per year that climate change is expected to cost the United States by 2100.¹⁹ The estimated upward costs for 2100 include \$2.1 billion in federal expenditures for crop subsidies, \$94 billion for coastal disaster recovery and rebuilding in the wake of increased hurricane frequency, \$9.6 billion to respond to increased wildfire severity and frequency, and \$43.7 billion for infrastructure repair.²⁰ In addition, climate change will jeopardize the affordability of insurance, with increasing claim costs leading to higher premiums.²¹ All levels of government, particularly the local level, must develop informed, data-driven climate adaptation plans in order to lower the costs of climate change and address existing and future inequities.

Some cities, states, and regions are already undertaking their own adaptation and resilience plans. New York City has experienced increasingly severe and frequent hurricanes, including Hurricane Sandy in 2012, which resulted in \$60 billion in economic damage, and Hurricane Ida in 2021, which cost \$9 billion and led to the deaths of 16 people.²² In response to sea-level rise and increased extreme weather events, New York City launched a series of resiliency plans,

including Resilient East Harlem and Hunts Point Resiliency Project, and mandated a 2022 climate adaptation plan that will be renewed every 10 years.²³ These projects are well on their way to implementation, but completion of significant infrastructure could be years or decades away.

The planning efforts, advocacy, and leadership taking place across New York City, and more widely across the state and region, have allowed the city to be progressive in its climate adaptation response. The strong cross-collaboration between New York state, the New York City Department of Environmental Protection, and the Mayor’s Office of Resiliency has put resilience at the forefront of policy priorities. Alongside these efforts, the New York City Panel on Climate Change provides access to data and policy recommendations to city and state officials, as well as access to additional technical expertise, academic institutions, and scientific resources within the city.²⁴ Other cities that face similar adaptation challenges but do not have the same broad access to technical expertise, political capacity, and fiscal capacity require more federal data support to make informed decisions about climate adaptation.²⁵

Addressing climate justice and the needs of stakeholders and communities

Historically marginalized individuals and communities face disproportionate risks from climate change.²⁶ Health, economic, and environmental disparities in communities of color and low-income areas elevate residents' vulnerability to the effects of climate change and related public health threats.²⁷ Decades of disinvestment and policies such as redlining have left these communities with insufficient climate-resilient infrastructure and housing and fewer resources to finance and manage household evacuations during extreme weather events. Individuals in marginalized groups—such as women, older adults, people with disabilities, Indigenous people, and people of color, who continue to face institutionalized discrimination—often have restricted access to the economic, legal, and health resources that are at the heart of climate resilience.

Marginalized communities are also disproportionately exposed to extreme climate threats, as they are more often located in or near flood-prone areas, heat islands, or toxic waste sites.²⁸ For example, the historically Black town of Barrett, Texas, faced an influx of toxicants leached from nearby Superfund sites after intense flooding from Hurricane Harvey. After testing the river sediment near the breached San Jacinto Waste Pits, the Environmental Protection Agency (EPA) found the presence of dioxin, a human carcinogen, at a level that exceeded the clean-up standard by 2,300 times.²⁹ While the EPA works to clean up the site, more than 600 residents have brought a civil lawsuit against several corporations, claiming that they have developed health problems due to toxic substance exposures.³⁰ What happened in Barrett is not an isolated risk: The Government Accountability Office has found that wildfires, floods, and hurricanes threaten at least 60 percent of Superfund sites.³¹ In addition, the Union of Concerned Scientists concluded that under the current emissions trajectory, more than 1,000 Superfund sites are at risk of sea-level rise by 2100.³²

Recognizing that disadvantaged communities are on the front lines of climate change, President Biden committed to deliver 40 percent of federal climate and infrastructure investment benefits to these communities.³³ In February 2022, the White House Council on Environmental Quality launched the Climate and

Economic Justice Screening Tool (CEJST) to help agencies identify at-risk populations.³⁴ This tool combines environmental, health, and socioeconomic indicators to determine where federal investments should be directed to benefit those most in need. If a census tract surpasses a certain amount of environmental, socioeconomic, or health indicator thresholds, then the CEJST designates it as a disadvantaged community.

National scale adaptation and resilience tools

- In addition to CEJST, other tools that help local stakeholders evaluate climate impacts and community resilience include:
- The Climate Mapping for Resilience and Adaptation portal, which centralizes information on communities' climate exposure risks
- The Centers for Disease Control and Prevention's Social Vulnerability Index, which maps the potentially negative impacts of external stressors on human health at the census tract level³⁵
- The EPA's EJScreen 2.0, which maps environmental, health, and demographic indicators at the census tract level³⁶
- Climate.gov and the NOAA Climate Data Mapper, which provide maps and tools for historical and predicted climate trends on the national scale³⁷
- NASA's Extreme Heat Data Pathfinder,³⁸ which maps temperature, humidity, land cover, weather, and social vulnerability

State-level adaptation and resilience tools

Helpful tools also exist at the state level, including:

- California's CalEnviroScreen, which maps cumulative impacts of environmental, health, and demographic indicators³⁹
- The Maryland Environmental Justice Screen Mapper, which uses pollution burdens and demographic data to produce an environmental justice score⁴⁰
- The New York State Energy Research and Development Agency's Disadvantaged Communities for New York, which identifies disadvantaged communities through economic data⁴¹

Although the development and deployment of these tools is an important step in increasing resilience, continued technical support and community engagement are necessary to ensure that data are accessible to local stakeholders and climate adaptation planning. The release of new mapping tools, such as CEJST and CMRA, require robust outreach and technical trainings so that disadvantaged and climate-vulnerable communities can understand and take advantage of the mapping information. While all U.S. regions are already experiencing the effects of climate change in some form, the resources to withstand, recover from, and prepare for

future climate consequences are not equally available, and data and access needs will look different at different scales—from the individual up through the community. Because of these disparities, the recommendations in the next section point to actions that the Biden administration can take to continue to support the most climate-vulnerable communities across the United States.

Policy recommendations

The Biden administration, Congress, and relevant federal agencies have an opportunity to better prepare communities for the worst consequences of climate change. The recommendations below seek to foster adaptation decision-making that is more inclusive and driven by accessible data.

Conduct technical trainings for CMRA using best practices for community engagement

The release of the CMRA portal in September 2022 was an important step in centralizing climate information to help communities and state and local governments strengthen their climate resilience plans. Developed through the U.S. Global Change Research Program (USGCRP), CMRA has a real-time dashboard of current climate hazards, an assessment tool that provides risk reports for past and potential climate exposures, and links to federal funding opportunities for managing these risks. The CMRA can be an incredibly powerful tool for communities, helping them to not only understand the impacts of climate change but also access funding to manage these risks.

To ensure that communities are using CMRA effectively, USGCRP and other contributing partners⁴² should lead a comprehensive and inclusive community engagement and stakeholder outreach plan for CMRA technical trainings. The first step of the outreach plan would involve creating a list of critical stakeholders, from environmental justice groups and climate-impacted businesses to local governments and Tribal communities, to ensure that there is sufficient and targeted outreach for CMRA trainings. Using CEJST's designation of disadvantaged communities, the CMRA trainings should also prioritize disadvantaged and climate-vulnerable communities. Additionally, training sessions for state and local government officials and agency staff should explain not only how to use the tool but also how CMRA can be integrated into existing programs and funding opportunities.

Finally, the USGCRP and contributing partners should establish and implement best practices for accessibility to CMRA trainings, including translating the technical assistance documents of climate data tools into common languages, providing language translators and captioned translations for training sessions, and offering easy and accessible links to training session recordings for those who need to watch asynchronously. The USGCRP should also apply the guidance developed by the Equitable and Just National Climate Platform to trainings and community engagement. Specific guidance includes letting communities speak for themselves, using townhalls and regional convenings for communities, and convening stakeholders in a culturally respectful way.⁴³ In addition to including accessible outreach, the CMRA website should offer common language translations. Establishing best practices for accessibility will ensure that disadvantaged and climate-vulnerable communities are able to understand the information within CMRA.

Continue to improve the CMRA website’s design and functionality

Future updates to the CMRA website should take user feedback into consideration through submitted comments and questions. Currently, the feedback mechanism can be reached by clicking “Contact” at the bottom of the CMRA homepage, and an email address to which to submit comments is also available at the bottom of the Contact page. An update should ensure that the contact area is easier to find by labeling a tab at the top of the homepage “Feedback” or “Contact.” This page should then include an in-site form, rather than a link to a separate email address, which would make it easier for USGCRP to receive feedback and would streamline the process for users to submit comments.

The funding opportunities that the CMRA details should also be more accessible and visible. On the current homepage, the funding opportunities are listed under the “Climate-related hazard information” heading and split by risk: extreme heat, drought, wildfire, flooding, and coastal inundation. To improve this feature, an update should place a separate “Funding opportunities” tab at the top of the homepage that leads to a funding database and allow users to search by risk type, eligibility, application availability, funding amount, and whether the program is covered under Justice40. This will streamline funding applications for users and allow those seeking funding to better prepare their applications using relevant data.

Increase funding for climate science tools, science communications, and adaptation

Budgetary increases for climate science communication and climate service programs are needed to support local stakeholders' climate adaptation plans and project implementation. The Biden administration and Congress should prioritize increases to NOAA's Communication Program,⁴⁴ and NOAA should be more effective at reaching underserved and disadvantaged communities. Fulfilling the agency's FY 2023 request for a \$2 million increase in NOAA's Strategic Communication and Outreach to Underserved Communities could mobilize tens of billions of federal dollars and incentivize private investment in locally led climate adaptation projects.⁴⁵ Furthermore, the Biden administration should consider ways to streamline adaptation financing for communities and augment existing funding streams such as the Community Development Block Grant Disaster Recovery.

Additionally, the Biden administration and Congress should expand existing climate science data programs such as the U.S. Department of Agriculture's Climate Hubs, the Department of the Interior's (DOI) Climate Adaptation Science Centers, NASA's Earth Observing System Data and Information System, USGCRP's working groups, and NOAA's Regional Integrated Sciences and Assessments, among others. They should also make additional efforts to communicate the work of these programs to vulnerable communities. These changes could make substantial improvements in the lives and livelihoods of Americans, with far-reaching co-benefits.

Ensure climate-vulnerable communities can access and benefit from federal employment and volunteer service programs

A wide range of occupations, from manufacturing and construction to policymaking and climate science, are critical to increase climate resilience. The Biden administration should expand workforce development and education programs to not only ensure that good-quality jobs go to climate-vulnerable communities but also foster effective local partnerships and encourage the next generation of climate leaders. The following workforce development and education recommendations outline how the Biden administration can uplift good-quality jobs in the climate adaptation sector and center equity and diversity in climate adaptation efforts.

Implement the Clean Energy Corps

The implementation of the Clean Energy Corps is an important opportunity to inclusively involve historically marginalized communities in climate science and clean energy efforts. The DOE launched the Clean Energy Corps in January 2022 after receiving \$62 billion in IIJA funding.⁴⁶ Currently, the Clean Energy Corps is hiring individuals across the United States within multiple industries to catalyze the nation's transition to clean energy. The Clean Energy Corps should recruit and hire workers from disadvantaged and climate-vulnerable communities. By doing so, it will include those who are most impacted by climate change in decision-making and solutions. The Clean Energy Corps can use CEJST to identify climate-vulnerable and disadvantaged communities. Workforce pipeline programs, such as the Clean Energy Corps and Civilian Climate Corps, should result in participants' placement in high-quality jobs that provide family-sustaining wages and benefits and allow for free and fair access to a union.⁴⁷

Strengthen partnerships in communities

Lessons learned through long-term work in communities can inform the design and implementation of federal workforce and community development initiatives. Existing community-led planning, leadership development, and capacity-building efforts demonstrate how investments in a climate resilience workforce can align federal priorities with local resilience needs and strategies. Collaborations among local and regional nongovernmental organizations, charitable and community foundations, and states are emerging across the country to assist vulnerable communities with data and capacity needs.

In Richland County, Montana, for example, the Communities in Action public health planning process integrated AmeriCorps volunteers in a local process that allowed community leaders to pursue and sustain important collaboration and action.⁴⁸ In Oregon, Rural Development Initiatives⁴⁹ and the Ford Family Foundation⁵⁰ are training local leaders, funding community capacity, and securing federal dollars for vulnerable communities across a wide range of sectors. Within this partnership, leadership development and local capacity-building efforts are designed to meet communities where they are and to balance and center community, economy, and environmental needs. Standing up and nurturing these relationships makes federal partnerships more effective and durable, ensuring continuity and lasting benefits.

Prioritize youth engagement

Lastly, the Biden administration and Congress should prioritize youth engagement opportunities and initiatives to empower the next generation of climate scientists and policymakers. President Biden's Executive Order 14008 launched the Civilian Climate Corps through the DOI to encourage youth engagement in public service and conservation work. The Civilian Climate Corps received \$20 million through the Consolidated Appropriations Act of 2022,⁵¹ and the FY 2023 budget request included \$60 million to expand the program and the related Indian Youth Service Corps.⁵²

The Biden administration should also create a youth climate advisory committee within the Office of Domestic Climate. This committee should be similar to, albeit more robust than, the National Environmental Justice Advisory Council (NEJAC) Youth Perspectives on Climate Change work group that was active from 2016 to 2018. The committee could consider ways to establish climate change curricula in schools and develop grants and funding programs in universities, particularly historically Black colleges and universities and minority-serving institutions. By creating a youth climate advisory committee and implementing youth professional development programs, the Biden administration can create the next generation of climate leaders.

Conclusion

Without immediate and significant reductions in domestic and global emissions, the current climate crisis will become substantially worse in the coming years and decades.⁵³ The Biden administration is moving in the right direction, having undone Trump-era policies that restricted access to climate science data and having taken new, positive steps to increase data accessibility and support data-driven decision-making. Now is a crucial moment for the Biden administration to build on this work and ensure data access when and where it is needed most. Local stakeholders and communities must have access to federal climate data to increase community resilience and plan for climate adaptation. The data exist; now is the time to ensure that the right people can use it to advocate for and empower their communities.

Acknowledgments

The authors thank Laurie Schoeman, director of climate and sustainability at Enterprise Community Solutions–Capital Division, and Mark Haggerty, Cathleen Kelly, and Shannon Baker-Branstetter at the Center for American Progress for their contributions to this piece.

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