must focus on both climate adaptation and mitigation to ensure our nation and communities thrive in an era of climate change.

As part of this effort, we will empower our staff and partners by increasing awareness of how climate change may affect our collective ability to implement effective and resilient programs. We will also provide them with the necessary training, tools, data, information and technical support to make informed decisions and integrate climate adaptation into our work.

The EPA will work to modernize its financial assistance programs to encourage climate-resilient investments across the nation. We will also focus on ensuring that investments funded by the Bipartisan Infrastructure Law, the Inflation Reduction Act and other government programs are resilient to the impacts of climate change. Finally, as our knowledge advances and as impacts continue to develop, our response will likewise evolve. We will work to share these developments to enhance the collective resilience of our nation.

The actions outlined in these implementation plans reflect the EPA's commitment to build every community's capacity to anticipate, prepare for, adapt to and recover from the increasingly destructive impacts of climate change. Together with our partners, we will work to create a healthy and prosperous nation that is resilient to the ever-increasing impacts of climate change — which is vital to the EPA's goal of protecting human health and the environment and to ensuring the long-term success of our nation.

Janet G. McCabe

Introduction

The U.S. Environmental Protection Agency's (EPA) Region 7 is made up of four states and nine tribal nations. It's roughly 14.1 million people are spread across both rural and metropolitan areas, including St. Louis, Kansas City, Springfield, Des Moines, Cedar Rapids, Omaha, Lincoln, and Wichita.

Region 7's lands are managed by its states, tribal nations, and federal agencies. These entities have interests that include agriculture, energy development and production, environmental protection and stewardship, manufacturing, recreation, tourism, and commercial development.

Figure 1. Region 7 States and Tribal Nations

The Region spans three geographical regions defined by the Fourth National Climate Assessment: the Midwest region (includes Missouri and Iowa), the Northern Great Plains region (includes Nebraska), and the Southern Great Plains region (includes Kansas). The Fourth National Climate Assessment identifies water, agriculture, indigenous peoples, and human health as main areas impacted by climate change across these three regions.

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment report, released in 2021, projects that Central North America will experience increases in drought and fire weather and projected increases in extreme precipitation and river and pluvial flooding. These changes are coupled with temperature increases due to human influence.

To continue to achieve EPA's mission in the face of a changing climate, Region 7 has developed this Climate Adaptation Implementation Plan to address climate risks that impact its programmatic areas of responsibility. It will continue to integrate climate adaptation and resilience practices into its existing programs and identify new opportunities to increase adaptive capacity as regulations change, new initiatives and priorities are instituted, and funding opportunities are identified. Region 7's climate adaptation priority actions (see Section 3) align with the five agency-wide climate adaptation priorities outlined in the 2021 EPA Climate Adaptation Action Plan:

1. Integrate climate adaptation into EPA programs, policies, rulemaking processes, and enforcement activities;
2. Consult and partner with states, tribes, territories, environmental justice organizations, community groups, businesses, and other federal agencies to strengthen adaptive capacity and increase the resilience of the nation, with a particular focus on advancing environmental justice;
3. Implement measures to protect the agency's workforce, facilities, critical infrastructure, supply chains, and procurement processes from the risks posed by climate change;
4. Measure and evaluate performance; and
5. Identify and address climate adaptation science needs.

Tribal Treaty and Reserved Rights

Under the Constitution, treaties with tribal nations are part of the supreme law of the land, establishing unique sets of rights, benefits, and conditions for the treaty-making tribes who were forced to cede millions of acres of their homelands to the United States, in return for recognition of property rights in land and resources as well as federal protections. Tribal treaty rights have the same legal force and effect as federal statutes, and they should be integrated into and given the fullest consideration throughout EPA's collective work. Reserved rights are the rights tribes retain that were not expressly granted to the United States by tribes in treaties. Treaty and reserved rights,

including but not limited to the rights to hunt, fish, and gather, may be found both on and off-reservation lands. Agencies should consider treaty and reserved rights in developing and implementing climate adaptation plans in order to protect these rights and ensure the agencies meet their legal and statutory obligations and other mission priorities as they work to combat the climate crisis.

In September 2021, EPA joined 16 other federal agencies in signing a Memorandum of Understanding (MOU) that committed those parties to identifying and protecting tribal treaty rights early in the decision-making and regulatory processes. Accordingly, EPA will consider and protect treaty and reserved rights in developing and implementing climate adaptation plans through strengthened consultation, additional staff training, and annual reporting requirements.

In addition, the White House Council on Environmental Quality (CEQ) is encouraging agencies to include consideration of Traditional Ecological Knowledge (TEK) in climate adaptation plans. The CEQ, working jointly with the White House Office of Science and Technology Policy, is developing interagency guidance on how to elevate TEK in federal decision-making and is requiring progress reports on agency considerations related to TEK and climate.

EPA's Office of International and Tribal Affairs (OITA) is committed to developing and deploying training to EPA staff in order to implement the interagency TEK guidance once it is final. Based on the current timeline, OITA is proposing this training for FY 2023. Region 7 commits to participate in this training.

The Infrastructure Investment and Jobs Act

The Infrastructure Investment and Jobs Act (IIJA, or Bipartisan Infrastructure Law [BIL]) is a historic investment in the water infrastructure improvements, pollution cleanup initiatives, and workforce opportunities necessary to transform communities around the country. Much of the federal assistance provided through BIL will scale up EPA's existing grant and loan programs, such as the State Revolving Fund Programs and Brownfields Grants. It will also be delivered through the creation of new low-interest financing programs, primarily for tribes and rural or disadvantaged communities. With this significant influx of capital from BIL, it will be more important than ever for EPA – and its state, tribal, and local partners – to invest in resilient infrastructure projects that withstand climate change for decades to come.

EPA's National Program and Regional Offices will work through the programs that received BIL funding to encourage resilient infrastructure outcomes across the country. Internally, EPA is taking steps to consider how its policies, operations, and program activities can be better aligned to accelerate resilient infrastructure projects, with an emphasis on the most vulnerable communities. EPA will take steps to ensure that its financial assistance programs support resilient infrastructure investments that consider anticipated climate change impacts. It will also be critical that EPA's technical assistance programs are readily accessible to stakeholders as they take intermediate steps to make climate-informed infrastructure investments. EPA will support its external partners by providing technical assistance opportunities for BIL-funded projects to help build their adaptive capacity. Consistent with the Agency's Climate Adaptation Action Plan, EPA's Offices will seek opportunities to engage with other federal agencies, external partners, and federal funding recipients to achieve climate-resilient infrastructure.

Region 7 will take steps to ensure the outcomes of infrastructure investments using BIL funds are resilient to the impacts of climate change. Region 7 will explore opportunities to integrate climate change considerations into its financial assistance programs in order to expand support for projects that increase climate resilience while delivering co-benefits for public health, the mitigation of greenhouse gases, and the reduction of other pollution. Region 7 will also provide technical assistance to recipients of BIL funds to help them make climate-smart infrastructure investments.

Section 1. Designation of a Senior Career Leader

The EPA Region 7 Deputy Regional Administrator (DRA) is responsible for the development, management, and execution of Region 7's Climate Adaptation Implementation Plan. The DRA will work with Region 7 divisions and offices to ensure the Plan's priority actions and management activities are implemented.

Section 2. Vulnerability Assessment

This section contains a discussion of the climate change impacts affecting Region 7's four states and nine tribal nations as well as an examination of the risks posed to key Region 7 programs. It builds on the work presented in Section 4 of the 2021 EPA Climate Adaptation Action Plan.

The subsections below describe climate change vulnerabilities to EPA Region 7's mission, facilities, and operations, organized by major program areas. Limitations in the adaptive capacity and resilience of Region 7's partners, the disproportionate impacts climate change has on certain communities, and the costs associated with implementing changes are additional vulnerabilities for Region 7 across all program areas.

2.1 Air Quality

Tropospheric ozone pollution is likely to increase in certain regions

Tropospheric, or ground-level, ozone is created by photochemical reactions of short-lived pollutants in the atmosphere. Emissions from industrial facilities, electric utilities, motor vehicles, chemical solvents, controlled agricultural burning, and oil and gas production are some of the major sources of these ozone precursor pollutants in Region 7. While tropospheric ozone is higher in urban areas, some rural areas with oil and gas production activities in Region 7 may also have high levels based on experiences in Region 8 regarding this industry.[3]

There is strong evidence that climate change is worsening ozone pollution, even as Clean Air Act regulations continue to reduce ozone concentrations.[2] High temperatures and regional air stagnation associated with climate change may lead to more ozone formation, even with the same level of emissions. Biogenic emissions, or emissions from natural sources, are not expected to remain the same, however. Biogenic emissions like isoprene, an ozone precursor, are likely to increase with rising temperatures.[1]

Additionally, Region 7 has historically observed increased ozone as a result of prescribed burning of rangeland in advance of the growing season. Controlled burn events release volatile organic compounds, oxides of nitrogen, and carbon monoxide at low altitudes. As growing season shifts are an effect of climate change, these shifts have the potential to lengthen the ozone season by increasing the duration when conditions are conducive to the formation of troposphere ozone.

Heightened concentrations of tropospheric ozone can cause an increase in hospital and emergency room visits and lost days of school, health effects such as aggravated asthma, shortness of breath, and premature death, lower outdoor worker productivity, and damage to crops and plant communities.[4] Vulnerable populations may be at higher risk for health problems from increased exposure to ozone.

Increases in tropospheric ozone due to climate change may require greater pollution controls to attain or maintain the ozone National Ambient Air Quality Standard (NAAQS). Region 7 works with partners at state, local, and tribal levels to meet this standard through State Implementation Plans (SIPs) and other measures. These efforts may need to be adjusted as climate change progresses. Although Region 7's adaptive capacity with respect to this impact is dependent on national standard setting efforts, there are leverage points and voluntary actions that can be used.

Particulate matter levels (both fine and course) are likely to be affected through changes in frequency and intensity of wildfires, controlled burns, and high winds

There is evidence indicating that climate change will affect particulate matter (PM) levels through changes in the frequency or intensity of wildfires,[4] changing weather patterns, and the effects of drought on land. The IPCC has reported with very high confidence that, in North America, disturbances such as wildfires are increasing and are expected to intensify in a warmer future with drier soils and longer growing seasons. This could complicate Region 7 efforts to protect public health and the environment from PM pollution.

Certain areas of Region 7 utilize controlled burning of rangeland to reduce invasive vegetation and prepare the soil for new grass production for cattle grazing. Climate change has the potential to affect how prescribed burning is used in rangeland management, necessitating changes in the timing of burning events to coincide with favorable conditions associated with precipitation, wind, temperature, and the spring growing season. Changes in climate may result in revised burning schedules and have the potential to impact air quality that affects vulnerable populations.

Additionally, drought conditions associated with climate change can promote wind-borne dust or PM during high wind events. Wind-borne PM is principally associated with dry soil conditions and the lack of adequate vegetative cover. Due to extensive agricultural activity in Region 7, the area is very susceptible to wind-borne PM in the early spring during the period of land preparation (tilling, fertilizing, and planting). During this period, topsoil is more susceptible to being distributed in the air during high wind events, and the problem is exacerbated if the soil is dry due to low precipitation or elevated temperatures, which can be associated with climate change.

Heightened concentrations of PM can cause an increase in hospital and emergency room visits and lost days of school, health effects such as aggravated asthma, shortness of breath, and premature death, lower outdoor worker productivity, and damage to crops and plant communities.[4] Vulnerable populations may be especially at risk from increased exposure to PM.

Increases in PM due to climate change may require greater pollution controls applied to permitted sources to attain or maintain the PM NAAQS. Region 7 works with partners at state, local, and tribal levels to meet this standard through SIPs and other measures. Increases in PM as a result of wildfires, controlled burns, and high winds may be considered “exceptional events,” which are exempt from certain regulatory actions under the Clean Air Act and NAAQS. Additionally, the challenge of fire mitigation and firefighting falls on national, regional, and local agencies with authorities peripheral of EPA’s jurisdiction. However, there may be air monitoring or risk communication opportunities that Region 7 can use to assist other agencies in adapting to this impact.

Climate change may worsen the quality of indoor air and increase exposure to contaminants

Climate change may worsen existing indoor environmental problems and introduce new ones due to temperature increases and an increased frequency and severity of extreme weather events. For example, warmer temperatures may affect the emergence, evolution, and geographic range of pests, infectious agents, and disease vectors.[5] This may lead to shifting patterns of indoor exposure to pesticides as occupants and building owners respond to new infestations.[6] Additionally, heavy precipitation events may contribute to increases in indoor dampness and building deterioration, increasing occupants’ exposure to mold and other biological contaminants as well as emissions from building materials. Outdoor air quality changes also have the potential to move into the indoor environment. Increased levels of ozone and PM outside can lead to increased levels of exposure to these pollutants inside as well.

Residents may weatherize buildings to increase comfort and indoor environmental quality in addition to saving energy. Although, in general, these actions should be encouraged, this may lead to a reduction in ventilation and an increase in indoor environmental pollutants unless measures are taken to preserve or improve indoor air quality.

According to the 2021 EPA Climate Change and Social Vulnerability in the United States report, inland flooding and property damage risk can be higher for certain socially vulnerable groups.[19] These risks depend on geographic location and are mapped out in the report. For example, in Iowa and Missouri, individuals with no high school diploma are 10 percent more likely to live in areas projected to have the worst flooding damages, relative to those with a high school diploma, while minorities are 8 percent more likely than non-minorities to live in those areas.[19] Nebraska shows a higher disparity among minorities and individuals ages 65 and over, with both groups being 15 percent more likely to live in areas projected to have the worst flooding damage risk compared to reference groups.[19]

Region 7 and its state partners may need to re-prioritize project requests due to increasing and changing needs at the state and local levels. Region 7's work to promote green infrastructure in urban areas and areas with environmental justice concerns may be more in demand to serve multiple purposes, such as stormwater runoff management, flood mitigation, water supply, air quality management, and urban heat island reduction. Additional staffing and funding resources may be required to address this significant impact.

Region 7's Water Division is currently developing a resiliency document that focuses on water infrastructure, environmental equity, wetlands, and water quality activities. It also intends to establish a team to develop an action-oriented strategy for working with small systems that incorporates concepts such as capacity development, asset management, and financial sustainability. Additionally, it's been involved in the Lower Meramec River Watershed Integrated Planning and Community Resiliency workgroup, which so far has implemented a $100K Healthy Watersheds and Green Infrastructure pilot project.

To help address disaster emergency responses, FEMA and EPA's State Revolving Fund (SRF) program formed an agreement to closely coordinate disaster responses. This has assisted states and communities in determining the eligibility of certain projects and counting on reimbursement and funding through both programs.

Region 7 also remains involved in the Federal Mitigation and Resiliency workgroup to guide implementation of the National Mitigation Investment Strategy. This workgroup held a virtual workshop in June 2020 for state, local, and tribal partners titled "Defining our Future Path to Resilient Watersheds."

Region 7 has supported state partners with hazard mitigation resilience planning as well. This includes presentations at State Hazard Mitigation Team meetings to inform state partners of EPA tools and programs that can be used to reduce hazards and improve water quality.

As required by the America's Water Infrastructure Act of 2018, Region 7 continues to work with OW, states, tribes, and community water systems to ensure completion of required risk and resilience assessment and emergency response plan updates by the end of fiscal year 2021. Additionally, Region 7 is working with its states' drinking water programs to update their capacity development strategies to include asset management by December 2022.

Region 7 is working with state and local partners to protect drinking water sources for communities, including leading an effort with EPA headquarters and other EPA regions to convene water quality professionals on the topic of reducing nitrate contamination in groundwater. Furthermore, Region 7 is working with ORD to conduct research that will aid communities in source water protection planning and open avenues to funding for pollution mitigation practices. Region 7 is also working with state agencies to unify nonpoint source pollution mitigation efforts and source water protection pollution mitigation efforts to maximize the ability of both programs to deliver safe drinking water to communities throughout the region.

farmers have an increased water demand to maintain agriculture-related production. This may result in reduced stream flows and lower water table levels, which could adversely affect water quality and water availability for humans and groundwater-dependent ecosystems.

Ground and surface water resources are managed and controlled under a variety of state and federal entities. These include state boards and regional cooperatives or districts that manage groundwater withdrawal and surface water diversion within the state that it is used for crop irrigation and drinking water. Federal agencies, such as the Bureau of Land Management and the U.S. Army Corps of Engineers, manage land activities and jurisdictional waters of the U.S. These have a significant impact on water availability to the regional agriculture sector and drinking water systems.

The eastern states of Region 7 (Iowa and Missouri) rely predominantly on precipitation and surface water to support agriculture production. As the quantity and timing of precipitation varies as a result of climate change, the agriculture industry may not be able to rely on precipitation to provide the water necessary to sustain crop production. In response, a greater reliance on ground and surface water may occur, which could reduce groundwater levels. As the industry relies more on groundwater, there is greater potential for contamination and degradation of the resource due to the greater number of wells and reduction in groundwater volume. Increasing the number of wells provides opportunities for surface contaminants to enter the resource through poor well design or well completion. Groundwater degradation also occurs as the resource is depleted and dissolved solids make up a greater percentage of the resource volume. In Missouri, where the majority of communities and residents outside of municipalities rely on groundwater for drinking water, a reduction in groundwater level and quality may negatively impact the public's access to affordable clean drinking water. Some wetlands rely solely on groundwater as their source of hydrology. The lowering of the groundwater level may remove the source of hydrology for these wetlands and negate the water quality benefits that these wetlands provide, further decreasing water quality.

The western states of Region 7 (Kansas and Nebraska) rely predominantly on groundwater and, to a lesser extent, precipitation to support agriculture production. As of 2017, Nebraska ranks first nationally with over 8.5 million acres of irrigated land, and Kansas ranks 7th with over 2.5 million acres of irrigated land.[20] As the Great Plains region is more arid than the Midwest region, decreased precipitation is expected for this region under nearly all climate change modeling scenarios. Consequently, the agriculture sector in these two states may rely on groundwater to an even greater degree to sustain current levels of agriculture production.

The main groundwater resource in western Nebraska and Kansas is the Ogallala Aquifer, one of the largest aquifer systems in the world and the principal geologic unit of the High Plains Aquifer System. In 2017, the U.S. Geological Survey estimated that, from 2013 to 2015, the area weighted average water-level change in the High Plains aquifer was a decline of 0.6 feet.[21] The 2015 total recoverable water storage was estimated to be at 2.91 billion acre-feet, with a nine percent decline of about 273.2 million acre-feet since predevelopment.[21] The Fourth National Climate Assessment reports that the High Plains Aquifer has a rate of withdrawal for irrigation that is nearly ten times the rate of natural recharge.[11] Like Missouri, communities located in Kansas and Nebraska depend almost entirely on groundwater for public drinking water systems. In rural areas of both Kansas and Nebraska, the vast majority of homes use groundwater as the predominant source of water. As groundwater resources are used more extensively (especially by the agriculture sector), the resource may become less available for use as a drinking and public water resource.

Region 7 states and federal entities servicing the agriculture sector need to consider how greater reliance on ground and surface water will impact water resources as well as the communities that share the resources. Region 7 resources supporting public drinking water systems may be in greater demand as public utilities spend more resources accessing clean water and developing systems that reuse water, such as managed aquifer recharge.

Section 3. Climate Adaptation Priority Actions

Region 7's climate adaptation priority actions align with the five agency-wide climate adaptation priorities outlined in the 2021 EPA Climate Adaptation Action Plan and are organized accordingly below. They were constructed within the legal bounds of EPA's existing environmental statutes and are extensions of existing or planned program actions tailored to address specific climate change vulnerabilities. They rely on partnerships with state, tribal, and local environmental organizations. Many include efforts related to communication, education, and outreach.

Integrate climate adaptation into EPA programs, policies, rulemaking processes, and enforcement activities

Develop Region 7's Climate Adaptation Implementation Plan.	
Fiscal Year Start-Complete	2022-2022
Performance metric	Develop and submit Region 7's Implementation Plan by August 1, 2022
Associated vulnerability	All vulnerabilities impacting Region 7 (see Section 2)
Co-benefits	Assistance to partners, climate-ready workforce and facilities, improved measurement and tracking, science needs addressed
Resource requirements	Existing resources are available to complete this activity

Award and manage Environmental Justice (EJ) grants that relate to climate adaptation.	
Fiscal Year Start-Complete	2022-ongoing
Performance metric	Grant funds awarded and workplan progress assessed
Associated vulnerability	Specific vulnerabilities addressed will vary by grant
Co-benefits	Co-benefits will vary by grant
Resource requirements	Existing resources are available to complete this activity
Notes	In 2022, three EJ grants that include climate adaptation activities were awarded in Region 7. Additional EJ grants that relate to climate adaptation are anticipated in future years.

Map RCRA and Coal Combustion Residual sites within regional floodplains to have available during flooding events.	
Fiscal Year Start-Complete	2022-2023
Performance metric	Mapping completed and shared within the region by the end of fiscal year 2023
Associated vulnerability	Flooding
Co-benefits	Public health, environmental justice
Resource requirements	Existing resources are available to complete this activity

Conduct outreach and grant training to Region 7 communities, including tribal and rural communities, to increase their capacity to develop strong grant applications, including grants related to climate adaptation and resilience.	
Fiscal Year Start-Complete	2022-ongoing
Performance metric	Number of tribes and/or communities with environmental justice concerns represented at training events each fiscal year
Associated vulnerability	All vulnerabilities impacting the region (see Section 2)
Co-benefits	Public health, environmental justice, economic development and job creation
Resource requirements	Existing resources are available to complete this activity

Implement measures to protect the agency's workforce, facilities, critical infrastructure, supply chains, and procurement processes from the risks posed by climate change

Enhance the reliability of logistics support operations by coordinating within the region to increase local stockage levels of expendable critical response, monitoring, and enforcement materials.	
Fiscal Year Start-Complete	2022-ongoing
Performance metric	Minimum stockage levels and reorder points established
Associated vulnerability	Extreme weather events (e.g., flooding, heavy precipitation)
Co-benefits	Economic development and job creation
Resource requirements	Existing resources are available to complete this activity

Continue to consolidate information technology servers to reduce demand on local utilities.	
Fiscal Year Start-Complete	2022-ongoing
Performance metric	Number of servers consolidated
Associated vulnerability	Extreme weather events (e.g., flooding, heavy precipitation)
Co-benefits	Greenhouse gas reductions
Resource requirements	Existing resources are available to complete this activity

Continue to utilize the Environmental Management System (EMS) to ensure regional facilities have climate impact contingency plans for water/electricity reductions in place and to promote staff water and electricity use efficiencies.	
Fiscal Year Start-Complete	2022-ongoing
Performance metric	EMS administered to include annual contingency plan validation and quarterly messaging to staff
Associated vulnerability	Extreme weather events (e.g., flooding, heavy precipitation)
Co-benefits	Greenhouse gas reductions
Resource requirements	Existing resources are available to complete this activity

Identify and address climate adaptation science needs

Identify and incorporate climate adaptation concerns for Region 7 states, tribes, communities, and vulnerable populations into regional science priorities.	
Fiscal Year Start-Complete	2022-2022
Performance metric	Science priorities developed by the end of fiscal year 2022
Associated vulnerability	All vulnerabilities impacting the region (see Section 2)
Co-benefits	Assistance to partners, climate-ready workforce and facilities, improved measurement and tracking, science needs addressed
Resource requirements	Existing resources are available to complete this activity

Support ORD's Sustainable and Healthy Communities team with piloting a tool for assessing waste management infrastructure resilience strategies in Davenport, Iowa.	
Fiscal Year Start-Complete	2021-2023
Performance metric	Pilot and final report completed by the end of fiscal year 2023
Associated vulnerability	Extreme weather events (e.g., flooding, heavy precipitation)
Co-benefits	Public health, environmental justice, greenhouse gas reductions
Resource requirements	Existing resources are available to complete this activity

Make improvements to the region's mobile laboratory to increase capacity for responding to drinking water emergencies associated with extreme weather events.	
Fiscal Year Start-Complete	2022-2023
Performance metric	Improvements to the mobile lab completed by the end of fiscal year 2023
Associated Vulnerability	Extreme weather events (e.g., flooding, heavy precipitation)
Co-benefits	Public health
Resource requirements	New resources are needed to complete this activity

Improve the real-time water monitoring network capabilities to capture the impact of extreme weather events on regional waterways.	
Fiscal Year Start-Complete	2022-ongoing
Performance metric	Number of monitoring sensors installed or upgraded each fiscal year
Associated Vulnerability	Extreme weather events (e.g., flooding, heavy precipitation), increasing temperatures
Co-benefits	Public health, ecological health
Resource requirements	New resources are needed to complete this activity

Develop a strategic approach for data management of continuous stream monitoring data collected by the region's water monitoring network.	
Fiscal Year Start-Complete	2022-2023
Performance metric	Data management approach developed by the end of fiscal year 2023
Associated Vulnerability	Extreme weather events (e.g., flooding, heavy precipitation), increasing temperatures
Co-benefits	Public health, ecological health
Resource requirements	Existing resources are available to complete this activity
Notes	Priorities and activities outlined in the strategic approach could lead to additional climate adaptation actions in future years and may require additional funds.

Section 4. Training Plan

As stated in Objective 1.2 of the FY 2022-2026 EPA Strategic Plan, EPA will develop, update, and expand its existing climate adaptation training modules to prioritize two primary goals:

1. Increase awareness about the importance of climate adaptation and encourage all EPA staff and partners to consider the changing climate in the normal course of business; and
2. Introduce specific methods and tools for integrating climate adaptation into decision-making processes.

Region 7 is committed to ensuring employees have the opportunity to participate in agency-wide and program-specific climate adaptation training modules developed by the EPA National Program Offices. The anticipated training modules and their tentative release dates are outlined in the table below. As training modules are made available, Region 7 will distribute information to promote each training opportunity and encourage participation. Participation metrics will be made available to Headquarters, upon request.

Climate Adaptation Training Module by Lead Office	**Tentative Date Module Available**
Office of Policy (OP) Climate Adaptation 101	Summer 2022
Regulation Writers	End of 2022
Office of Water (OW)	End of 2022
Office of Land and Emergency Management (OLEM)	End of 2022
Office of Air and Radiation (OAR)	End of 2023
Office of Chemical Safety and Pollution Prevention (OCSPP)	End of 2023
Office of Enforcement and Compliance Assurance (OECA)	End of 2023
Office of Mission Support (OMS)	End of 2023
Office of Homeland Security (OHS)	End of 2023
Office of International and Tribal Affairs (OITA)	End of 2023
Office of Research and Development (ORD)	End of 2023

To supplement the training developed by EPA headquarters offices, Region 7 will provide additional climate adaptation training opportunities for staff. These training events will be designed to focus on specific climate change impacts affecting the region, tools and resources to help integrate adaptation into Region 7's work, and effective climate adaptation and resilience communications. Examples include providing training on EPA's Adaptation Resource Center (ARC-X), speakers presenting local examples of climate-smart agricultural practices, demonstrations of how to use the EJScreen climate change indicators, and risk communication training. An approach and timeline for this component of the training plan will be developed as more is known about staffing and funding resources for climate adaptation work in Region 7. Region 7 will look for ways to collaborate with other regions on shared training interests to make effective use of resources.

Region 7 will also assist partners by providing training on EPA climate adaptation tools, program-specific climate adaptation topics, and grant writing techniques. Region 7 will engage with partners, listen to their training needs, and work to respond to those needs with quality information to support them as they advance their adaptive capacity. Specifics about external training offerings will be included in the regional training plan as it is developed.

Section 5. Science Needs

Region 7's Regional Science Liaison works across Region 7 programs and with state and tribal partners to compile and prioritize the regional science needs, including those related to climate adaptation. Determining the fiscal year 2022-2025 regional science needs and priorities is a priority action for Region 7 in fiscal year 2022.

Region 7's science needs cover a wide range of topics that correspond with the programmatic work being done across the region. Examples include:

- Identifying communities with the most disproportionate environmental and public health impacts from the cumulative impacts of climate change to facilitate better targeting and a more holistic approach to addressing concerns;
- Social science projects to understand how EPA can better assist with and integrate climate resilience planning in communities;
- Understanding secondary impacts of climate change on local communities (e.g., how changes in precipitation could impact water quality);
- Mapping resources for climate change predictions (with metadata) for use by states and regions;
- Region-wide data compilation and analysis on climate trends (e.g., temperature, precipitation, algal growth, dissolved oxygen);
- Monitoring wadeable streams for velocity, flow, and macroinvert due to dynamic changes in precipitation (e.g., floods, drought) and extreme temperatures; and
- Vulnerability assessments for contaminated sites.

Science needs and priorities will be communicated to ORD through the Regional Science Liaison. As opportunities and funding become available, Region 7 programs will work with the Regional Science Liaison and ORD to develop projects to address climate adaptation and resilience. Specific projects will be included as priority actions during updates to Region 7's Climate Adaptation Implementation Plan.

Conclusion

In Region 7 and elsewhere across the country, the ability to adapt and be resilient to climate impacts has become imperative. Region 7 is committed to working with its partners and listening to those it serves as it takes action to increase its own adaptive capacity and assist others to become more resilient in the face of a changing climate.

This Region 7 Climate Adaptation Implementation Plan is dynamic. Regular reviews will incorporate up-to-date information and determinations about regional climate conditions, vulnerabilities, and vulnerable populations that will enable Region 7 to revise the Plan if needed, including new priority actions.

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