# DEPARTMENT OF THE INTERIOR
# CLIMATE ACTION PLAN

2021

# Department of the Interior
# Policy Statement for Climate Adaptation and Resilience

It is the policy of the Department of the Interior (the Department) to effectively and efficiently confront and adapt to the challenges that climate change poses to its mission, programs, operations, and personnel. The Department will use the best-available science to take concrete steps to adapt to and mitigate climate change impacts on its resources. In addition, the Department will increase its understanding of climate change impacts, ensure the integrity of Federal decision-making, and coordinate appropriate and proactive responses to impacts on public lands and waters, wildlife, cultural resources, and Tribal resources and interests, as well as issues of environmental justice in vulnerable communities.

The Department will integrate climate change risk, mitigation, adaptation, and resilience in its policies, planning, programs, and operations. The Department will prepare for the effects of climate change on its various responsibilities, which include the following themes:

- Promote Climate-Resilient Lands, Waters, and Cultural Resources
- Advance Climate Equity
- Transition to a Resilient Clean Energy Economy
- Support Tribal and Insular Community Resilience
- Empower the Next Generation of Conservation and Resilience Workers

The Department is committed to working with other Federal agencies, Tribes, Insular areas, Native Hawaiian people, States, local communities, and other public and private partners, domestically and abroad, to prepare for and respond to the impacts of climate change. The Department recognizes its role in protecting and mitigating impacts to the public and Tribal lands entrusted to its stewardship for future generations and in ensuring that climate adaptation and mitigation strategies are implemented effectively and equitably. The Department also recognizes its role in supporting Tribes, Alaska Native villages, and Native Hawaiian communities experiencing the most extreme climate change impacts, such as those facing relocation, managed retreat, or protect-in-place decisions. Because climate change spans jurisdictions, borders, and mission areas, the Department is committed to growing these partnerships to establish a whole-of-government approach to tackle the climate crisis.

The Department plays a key role in the larger federal effort to bolster adaptation, resilience, and mitigation to the impacts of climate change. Executive Order 14008, entitled “Tackling the Climate Crisis at Home and Abroad” (January 2021) calls for a government-wide approach to the climate crisis that reduces climate pollution in every sector of the economy; increases resilience to the impacts of climate change; protects public health; conserves our lands, waters, and biodiversity; delivers environmental justice; and spurs well-paying jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure.

To implement Executive Order 14008, the Department commits to the following:

- **Approving and Implementing the Department’s Climate Action Plan.** The Department’s Climate Action Plan evaluates climate change risks, emphasizes sustainability, bolsters adaptation

and resilience, and mitigates the impacts of climate change. The Department's Climate Action Plan is hereby approved.

- **Use Best-Available Science and Traditional Knowledge**. Planning and decision-making will use the best-available information that considers existing and projected climate change vulnerabilities, risks, and impacts. Decision-making will also consider traditional knowledge, and the Department will meaningfully consult with Tribes and other indigenous communities throughout decision-making processes that affect their interests.

- **Mainstream Adaptation.** Climate change adaptation will be mainstreamed and integrated into Departmental policies, planning, practices, and programs. This will ensure that the Department's decisions are not solely based on historic conditions but consider future scenarios and future-oriented management.

- **Tackle Inequity and Environmental Justice**. Issues of environmental justice and inequity will be integrated into decision-making to ensure adaptation efforts are sustainable and account for the impacts on all populations, including low-income communities, communities of color, Insular areas, and Tribes.

- **Build Strong Partnerships**. Adaptation strategies will be collaborative and coordinated across multiple scales and will build on existing efforts and knowledge of public and private partners, including recreational groups, industry, international counterparts, municipalities, States, Tribes, and Insular areas. The Department's network will also be expanded to include new partners with diverse views and values.

- **Maximize Co-Benefits.** Adaptation strategies will complement or directly support other climate-related initiatives, including respecting Tribal sovereignty and self-determination, improving disaster preparedness, promoting sustainable resource management, promoting environmental justice, restoring contaminated lands and waters, managing facilities sustainably to reduce energy and water consumption, and reducing greenhouse gas emissions.

- **Enhance Climate Literacy.** A climate-literate workforce capable of integrating climate considerations into all activities, from day-to-day operations to long-term planning, will be established. The workforce will share educational information about climate science and climate impacts with the public and engage stakeholder dialogue about mainstreaming adaptation strategies into actions related to the Department's mission.

- **Apply Risk Management Methods**. Adaptation planning will incorporate risk management methods and tools that consider potential future climate conditions to identify, assess, and prioritize options to reduce vulnerability to the environmental, social, and economic impacts of climate change.

- **Apply Nature-Based Solutions and Ecosystem-Based Approaches**. Strategies to use nature-based solutions to reduce vulnerability of human and natural systems to climate change will be

emphasized to increase ecosystem resilience, sequester greenhouse gases, and protect ecosystem services.

- **Continuously Evaluate Performance and Practice Adaptive Management.** Adaptation plans will include measurable goals, data collection and analyses, and performance metrics to continuously assess whether adaptive actions are achieving desired outcomes and to fine-tune best management practices to specific environmental or socio-economic conditions.

The Department intends to formalize its policy on adaptation with the revision of Department Manual Part 523 – Climate Change Adaptation. The policy will provide guidance to Bureaus and Offices for addressing climate change impacts on the Department's mission, programs, operations, and personnel. By taking a proactive, flexible approach to assessment, analysis, and adaptation, the Department will be able to keep better pace with a changing climate and play a central role in how the United States stewards its public lands and waters, increases environmental protections, pursues environmental justice, honors its nation-to-nation relationship with Tribes, implements its special legal relationship with the Native Hawaiian people, and fulfills its administrative responsibilities to the U.S. Insular Areas.

Secretary of the Interior

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# List of Acronyms

BIA – Bureau of Indian Affairs

BLM – Bureau of Land Management

BOEM – Bureau of Ocean Energy Management

BOR – Bureau of Reclamation

BSEE – Bureau of Safety and Environmental Enforcement

CASC – Climate Adaptation Science Center

CEQ – Council on Environmental Quality

DOE – Department of Energy

DOI – Department of the Interior

EPA – Environmental Protection Agency

EJ – Environmental Justice

FERC – Federal Energy Regulatory Commission

GAOA – Great American Outdoors Act

GSA – General Services Administration

LWCF – Land and Water Conservation Fund

NEPA – National Environmental Policy Act

NOAA – National Oceanic and Atmospheric Administration

NPS – National Park Service

OCS – Outer Continental Shelf

OIA – Department of the Interior Office of Insular Affairs

OSMRE – Office of Surface Mining Reclamation and Enforcement

OWF – Office of Wildland Fire

USACE – U.S. Army Corps of Engineers

USDA – U.S. Department of Agriculture

USFS – U.S. Forest Service

USFWS – U.S. Fish and Wildlife Service

USGCRP – U.S. Global Change Research Program

USGS – U.S. Geological Survey

# Addressing the Climate Crisis

Around the world, temperature extremes and changes in precipitation patterns are increasing; glaciers and snow cover are shrinking; sea ice is retreating; seas are warming, rising, and becoming more acidic; species are shifting their ranges, habitat, and distributions; coastal flooding and erosion are becoming more frequent; growing seasons are lengthening; and wildfires are increasing in frequency and severity. These phenomena are projected to continue to increase, and annual losses in the United States due to climate change could reach hundreds of billions of dollars.[1]

These trends in climate-related environmental conditions affect Department of the Interior (the Department, DOI) responsibilities including, but not limited to, managing 20 percent of the Nation's lands; supplying water and hydropower in the 17 western States; conserving plants, fish, and wildlife; preserving historic and cultural resources; providing geological, hydrological, and biological science; fulfilling trust responsibilities to American Indians and Alaska Natives; providing financial and technical assistance for States, Tribes, and Insular areas; providing recreational opportunities to the public; working with international partners; and leasing for renewable and non-renewable energy development on public lands and the Outer Continental Shelf (OCS).

In accordance with the direction set by the Administration, the Climate Action Plan demonstrates the Department's commitment to use science as the foundation for decisions, recognizing that the Department's approach to adaptation should evolve as science informs an understanding of climate change risks, impacts, and vulnerabilities.

> **Adaptation:** ***adjustments in natural or human systems in anticipation of or in response to a changing environment in a way that effectively uses beneficial opportunities or reduces negative effects.***[2]
>
> **Resilience:** ***the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.***
>
> **Vulnerability:** ***the extent to which a species, habitat, ecosystem, cultural feature, facility, or other resource is susceptible to and unable to cope with direct and indirect impacts of climate change.***[3]

Building from strategies set forth in the Department's 2014 Climate Adaptation Plan,[4] bureaus and offices will maintain their principal role of identifying and addressing risks to missions and programs, while the Department will continue to work closely with bureaus and offices to identify and coordinate collaboration on cross-cutting priorities and to share information and resources needed to effectively respond to climate change.

## Recent Federal and Departmental Climate Policy

*Executive Order 13990: Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (January 2021)*[5] describes the policy of the Administration to follow scientific means to promote and protect public health and the environment. The order highlights the need to use science to reduce greenhouse gas emissions, bolster resilience to the impacts of climate change, and prioritize environmental justice.

*Executive Order 14008: Tackling the Climate Crisis at Home and Abroad (January 2021)*[6] calls for quick action to build resilience against the impacts of climate change and directs Federal agencies to promote equity and environmental justice in climate solutions and develop a Climate Action Plan that describes steps to bolster adaptation and increase resilience across all operations, programs, assets, and mission responsibilities with a focus on the most pressing climate vulnerabilities. The integration of climate change adaptation and resilience strategies into Departmental activities ensures that resources are invested strategically and that Departmental actions will address both current and future climate conditions.

The Department has identified the Deputy Assistant Secretary for Policy and Environmental Management, Eric Werwa, to be the senior agency official responsible for implementation of this plan.

*Secretary's Order 3399: Department-Wide Approach to the Climate Crisis and Restoring Transparency and Integrity to the Decision-Making Process (April 2021)*[7] establishes a Departmental Climate Task Force to emphasize the use of best available science to evaluate greenhouse gas emissions and associated climate change impacts of Federal land uses. The Secretary's Order also promotes opportunities to adopt measures to increase the resilience and adaptive capacity of DOI-managed lands.

## Institutional Approaches

Recognizing the need to respond to current climate change impacts while taking proactive steps to prepare for future climate conditions, the following institutional approaches will be adopted to integrate climate adaptation into the Department's mission, policies, programs, and operations. These approaches align with approaches taken by other Federal agencies, States, and local jurisdictions to prepare for climate change challenges.[8]

These institutional approaches affirm the Department's commitment to integrate the best available science and climate adaptation strategies into programs and activities, consult and engage with Tribes and affected communities as part of decision-making processes that affect their interests, and allow flexibility to anticipate and respond to existing and projected climate conditions. These institutional approaches align with the Department's Strategic Plan.

1. **Use Best-Available Science and Traditional Knowledge**. Planning and decision-making will use the best-available information that considers existing and projected climate change vulnerabilities, risks, and impacts. The most effective science will work in co-production with the management community to provide integrated multi-scale science outputs to inform decisions. Decision-making will rely on scientists across the government and beyond. This includes, but is not limited to, the science expertise of the U.S. Geological Survey (USGS), including its National and Regional Climate Adaptation Science Centers (CASCs), bureau science programs, and other resources such as the U.S. Global Change Research Program's (USGCRP) National Climate Assessment. Decision-making will also consider traditional knowledge, and the Department will meaningfully engage with Tribes and other indigenous communities throughout decision-making processes that affect their interests.

2. **Mainstream Adaptation.** Climate change adaptation will be mainstreamed and integrated into Departmental policies, planning, practices, and programs. This will ensure that the Department's decisions are not solely based on historic conditions but also consider novel future scenarios and future-oriented management.

3. **Tackle Inequity and Environmental Justice.** Adaptation choices have tradeoffs and communities should have a voice in their future. Issues of environmental justice and inequity will be integrated into the Department's decision-making to ensure adaptation efforts are sustainable and consider impacts for all populations, including low-income communities, underrepresented communities, communities of color, Insular areas, and Tribes.

4. **Build Strong Partnerships**. Because climate change spans all jurisdictions, borders, and mission areas, adaptation strategies will be more effective if they are collaborative and coordinated across multiple scales and will build on existing efforts and knowledge of public and private partners, including recreational groups, industry, international counterparts, municipalities, States, Tribes, and Insular areas. The Department's network will also be expanded to include new partners with diverse views and values.

5. **Maximize Co-Benefits.** Adaptation strategies will complement or directly support other climate-related initiatives, including efforts to respect Tribal sovereignty and self-determination, improve disaster preparedness, promote sustainable resource management, promote environmental justice, restore contaminated lands, manage facilities sustainably to reduce energy and water consumption, and reduce greenhouse gas emissions.

6. **Enhance Climate Literacy.** A climate-literate workforce capable of integrating climate considerations into all activities, from day-to-day operations to long-term planning, will be established. The workforce will share educational information about climate science and climate impacts with the public and engage in stakeholder dialogue about mainstreaming adaptation strategies associated with the Department's management actions.

7. **Incorporate Risk Management**. Adaptation planning will incorporate risk management, using appropriate methods and tools to consider potential future climate conditions, adaptation costs, and prioritize options to reduce vulnerability to environmental, social, and economic impacts of climate change.

8. **Apply Nature-Based Solutions and Ecosystem-Based Approaches**. Strategies to use nature-based solutions to reduce vulnerability of human and natural systems to climate change will be evaluated as cost-effective approaches to increase ecosystem resilience, sequester greenhouse gases, and protect ecosystem services.

9. **Continuously Evaluate Performance and Practice Adaptive Management.** Adaptation plans will align with the Department's Strategic Plan, where applicable, and include measurable goals, data collection and analyses, and performance metrics to continuously assess whether adaptive actions are achieving desired outcomes and

to fine-tune best management practices to specific environmental or socio-economic conditions.

## Vulnerabilities to the Department's Mission from Climate Change

Climate change and climate variability (henceforth "climate change") is creating new risks and exacerbating existing vulnerabilities. More frequent and intense extreme weather and climate-related events, as well as changes in average climate conditions, are expected to continue to damage infrastructure, ecosystems, and social systems that provide essential benefits to human communities. To that end, climate change is widely impacting the people the Department serves, the lands, waters, and natural and cultural resources the Department manages, and the mission-critical and mission-dependent infrastructure managed by the Department.

To understand and prioritize available adaptation options, it is necessary to identify climate vulnerabilities and the costs and risks to the Department's mission areas. Because the Department's vulnerabilities greatly vary across its mission areas and responsibilities, it does not have an agency-wide, overarching vulnerability assessment. As such, the Department's bureaus and offices generally develop vulnerability assessments based on their individual missions and responsibilities (which includes the communities they serve as well as their mission-critical assets) and determine bureau- or office-specific adaptation actions. While the goals of assessments are the same across the breadth of applications, the information, cost, effort required, and the threats will vary for the resource of interest. Assessments are living documents—as information on exposure and sensitivities are refined, vulnerability assessments may need to be revisited.

A Department-wide, science-based, rapid vulnerability assessment framework is needed to provide a more efficient mechanism to prepare assessments. A framework that complements and accounts for existing assessment approaches would provide a streamlined process for making climate-smart and resilient decisions in a timely manner. Collaboration with the Department's stakeholders and partners will facilitate development of shared tools to support vulnerability assessments and will accelerate the use of those tools in adaptation planning and decisions.

The Department has identified five vulnerabilities that directly impact its mission:

- Vulnerability #1: People, Communities, and Cultural Resources
- Vulnerability #2: Healthy Watersheds and Water Supplies
- Vulnerability #3: Biodiversity and Ecosystems
- Vulnerability #4: Coastal and Marine Resources
- Vulnerability #5: Infrastructure and Facilities

These vulnerabilities are tied to the Department's priority adaptation actions which are described in the Climate Change Adaptation Actions section of this document. The adaptation actions include a discussion of how the Department will address its five vulnerabilities by including implementation challenges, an estimated timeline, measures for tracking progress over time, and a determination if managing the risk and overcoming the barrier is achievable within existing agency resources.

**THE IMPACTS OF STORMS, SEA LEVEL RISE, AND COASTAL EROSION IN TRIBAL COMMUNITIES AND ALASKA NATIVE VILLAGES**

For thousands of years, Tribal communities and Alaska Native villages have been living along coastlines and rivers that sustain their livelihoods and needs. However, climate change has been causing increased flooding, permafrost melt, sea level rise, and erosion, causing homes, schools, buildings, and other community infrastructure to fail, succumbing to the eroding riverbanks and coastlines. The warmer waters are causing culturally significant species such as seals, whales, walrus, and salmon to shift their habitat range, threatening food security. To that end, Tribes and Alaska Native villages are being forced to make the difficult decision to choose among protect in place, managed retreat, or relocation options to adapt to a changing climate. A whole of government approach is needed to work with Tribes and Alaska Native villages facing these risks to identify and expedite resources and technical assistance, including risk assessments that will help Tribes to understand the changes and make appropriate decisions.

*Photo Credit: USFWS*

The Department is currently developing an Enterprise Risk Management (ERM) process, which will include appropriate risk management processes and systems to identify challenges and risks proactively and bring them to the attention of Agency leadership for action. The ERM process will be developed in parallel with the Department's forthcoming FY 2022-FY 2026 Strategic Plan, and together with the Climate Action Plan, will address risks and opportunities as an integrated portfolio. These three documents together will provide direction for how the Department will more effectively prioritize and manage risks to its strategic objectives.

### Vulnerability #1: People, Communities, and Cultural Resources

The Department is the primary Federal agency charged with carrying out the United States trust responsibility to American Indian and Alaska Native people, maintaining the nation-to-nation relationship with 574 Federally recognized Indian Tribes, and promoting and supporting Tribal self-determination. The Department also effectuates and implements the United States special legal relationship with the Native Hawaiian people and has administrative responsibilities for coordinating Federal policy for the communities in the Insular areas. The Department also plays a key role in stewarding the Nation's cultural resources, including archaeological sites, historic properties, and collections of museum objects, and is charged with promoting equity and environmental justice in its actions.

**Climate Risks**

Climate change impacts such as intensifying storms, sea level rise, coastal erosion, floods, droughts, wildfires, and invasive species threaten cultural resources and severely affect the socioeconomic, health, and environmental conditions of local communities. Vulnerable populations, including minority, low-income, rural, indigenous, Tribal, and Insular areas, are

disproportionately affected by these impacts. Climate change also alters the way people use the lands that the Department manages. For example, warming temperatures are causing shifts in public land visitation, which has direct and indirect effects (e.g., where, when, and how many people visit as a direct effect, and decreased water for recreation from snowmelt as an indirect effect) on the natural and cultural resources the Department manages.

The Department must understand and address climate change impacts on the cultural resources it manages and the people it serves, including vulnerable communities that have limited capacity to prepare for and cope with extreme weather and climate-related threats. Climate change poses an especially acute problem for managing cultural resources because they are unique and irreplaceable—once lost, they are lost forever. The potential effects of climate change on American Indians and Alaska Natives, the Native Hawaiian community, and Insular areas are highly relevant to the Department's mission areas. If no action is taken, the continued existence of some of these threatened communities is uncertain. Prioritizing adaptation actions that incorporate community-driven values, experiences, and needs will empower these communities to secure a more certain and equitable future.

**Highlights of Accomplishments to Date**

- Understanding Social Equity and Community Resilience: USGS funds innovative projects that advance understanding of risk reduction and social equity in communities that are disproportionately impacted by coastal hazards. USGS recently conducted coastal vulnerability assessments in Puerto Rico and focused on stakeholder engagement to foster equity and inclusion. One of the outcomes included a bilingual geo-narrative on shoreline change in Puerto Rico.
- Addressing Climate Adaptation and Vulnerability Assessment Needs in Indian Country: The Bureau of Indian Affairs (BIA) Tribal Climate Resilience Program (TCRP) facilitates climate preparedness and resilience in Indian Affairs programs for Federally recognized Indian Tribes and Alaska Native villages through technical and financial assistance, access to science, and educational opportunities through partnership with the CASC network. TCRP has funded over 700 awards totaling more than $60 million to assist with adaptation planning goals.
- Building Tribal and Insular Capacity for Adaptation Solutions: The Office of Insular Affairs (OIA) provides funds to underserved communities in the Insular areas to address climate risks such as higher intensity storms and sea level rise. For example, OIA's Technical Assistance Program funds vulnerability assessments of infrastructure in America Samoa and the built environment in Guam for transportation planning and other economic-related needs. In addition, the U.S. Fish and Wildlife Service (USFWS) works with Tribal and Pacific Island communities to implement adaptation actions to assist water security and support the traditional use of natural and cultural resources.
- Protecting Cultural Resources from Climate Change: The National Park Service (NPS) Cultural Resources Climate Change Strategy provides guidance on assessing the vulnerabilities of cultural and historical features and sites to protect resources from climate impacts. As some cultural sites experiencing extreme events cannot be relocated due to sensitivity, bureaus may choose to stabilize or excavate exposed archaeological sites due to wildland fire or erosion. Facilities holding DOI's museum collections are

assessed to determine needs for relocation away from areas prone to wildland fire and flooding. NPS also provides preservation assistance and administers historic preservation grants and has prepared guidance on adapting historic buildings to protect them from flooding.

- Engaging Marginalized Communities in Native Seed Production: The Bureau of Land Management (BLM) engages Tribes in the Western United States to collect and produce seeds of culturally important native plant species for ecosystem restoration, which provides jobs, educational opportunities, and training that build climate resilience across Indian trust lands.
- Mitigating Wildfire Risk: The Office of Wildland Fire (OWF) is investing in a data management and information-sharing system that identifies Federal, Tribal, State, and local lands at risk from wildfires. Sharing this information among partners supports collaborative efforts through fuels management and other mitigation actions that reduce carbon emissions and improve the resilience of lands and resources.

## Vulnerability #2: Healthy Watersheds and Water Supplies

Healthy watersheds provide sustainable, clean, and secure water resources, which are the foundation for healthy communities, ecosystems, and economies. The Department is the largest distributor of water in the country, bringing water to more than 31 million Americans. It manages water critical for many purposes, including supply for Tribal communities, irrigation, wildlife habitat, livestock on public lands, and hydropower production.

**INCORPORATING CLIMATE INTO DECISION MAKING FOR WATER AND POWER**

The Bureau of Reclamation is taking a lead role, with other agencies and non Federal partners, to develop sound and actionable science and tools needed to better understand climate impacts on water resources. Its WaterSMART Basin Studies and West Wide Climate Impact Assessments evaluate the risks and climate impacts to water supply and demand. Reclamation now is incorporating climate science into its decision making processes, using climate change as a foundation upon which policy decisions are made.

*Photo Source: Reclamation*

### Climate Risks

A changing climate is impacting the health and functionality of the Nation's watersheds, causing significant changes in water quantity and quality across the country. Temperature increases are resulting in decreased snowpack, differences in the timing and volume of spring runoff, and changes in peak flows in Western United States basins. Changes in precipitation patterns are impacting the capacity for dams to supply water and generate electricity, while severe flooding is dramatically altering water management. Aquatic ecosystems are increasingly affected by changes in streamflow and the loss of wetlands.

The severity of drought in the Western United States is creating water supply shortages for many such as agricultural, Tribal, municipal, and industrial water users. Intensifying drought is increasingly challenging the Bureau of Reclamation's (Reclamation) basic mission objectives to deliver needed quantities of water and power to a diversity of water users as well as

ensure water for environmental flows. Reclamation's response to the changing climate is essential to the sustainability of communities across the Western United States and the National economy. The SECURE Water Act authorizes Reclamation to issue vulnerability assessments that identify the impacts of climate on water supply and demand, and on its operational responsibilities.

The Department needs to implement adaptation actions to address and resolve competing needs by farmers, endangered species, Tribes, and municipalities which are amplified by severe drought conditions in the Western United States. The Department also needs to address environmental justice concerns in vulnerable communities where climate change is exacerbating existing water supply challenges. For example, Indian Country, where water holds a strong cultural significance for Tribes, continues to struggle with clean and adequate water supply. Most BIA-owned irrigation projects were constructed over 100 years ago and are in drastic need of modernization. Upgraded infrastructure projects such as re-regulating reservoirs, lining canals to mitigate seepage losses, and automating irrigation systems are needed to ensure BIA's ability to adapt and react to highly variable drought conditions. In addition, Insular areas, which are especially vulnerable because they cannot relocate, are also suffering from the consequences of drought, exacerbated by outdated infrastructure, and storms and hurricanes that are causing saltwater intrusion into aquifers which is limiting access to freshwater. Addressing drought is a cross-cutting issue that will require coordination across the Department, with other agencies, as well as with the communities it serves.

**Highlights of Accomplishments to Date**

- Collaborating with Partners to Improve Water Security: WaterSMART (Sustain and Manage America's Resources for Tomorrow) allows Reclamation to work cooperatively with States, Tribes, and local entities to promote management strategies that improve water use efficiency, and to facilitate actions to increase water supply through investments to modernize existing infrastructure. Both BIA and Reclamation offer Tribes assistance in managing, conserving, utilizing, and protecting trust water resources. Similarly, USGS works with partners to monitor, assess, research, and deliver information on a wide range of water resources and conditions.
- Addressing Climate Risks to Increase Tribal Resilience: Reclamation and BIA incorporate improved fish passage strategies into rehabilitation projects, including the rehabilitation of the Wapato Main Diversion Dam on the Yakima River in eastern Washington. BIA operates the dam and most of the water supply is received from the Reclamation-managed Yakima Project for irrigation needs.
- Analyzing Projected Risks to Water Supplies: Reclamation's 2021 SECURE Water Act report, finalized in March 2021, makes new tools and data resources available to water managers as they face uncertainties of a changing climate and drought. A synthesis of impacts of climate on groundwater recharge and discharge for eight case study areas, including a detailed analysis for the Colorado River Basin (done in collaboration with USGS), informs water managers on the future reliability of groundwater supplies.
- Conserving the Nation's Aquatic Resources: Coordinating with USGS, the USFWS Fish and Aquatic Conservation program conserves aquatic species, restores habitats, and

fulfills trust and subsistence responsibilities. USGS provides science and research support to make informed decisions on aquatic species response from climate change.

- Maintaining Healthy Forests for Healthy Watersheds: BLM manages forests to minimize climate-related threats of fire, drought, and insect infestations, while ensuring that source-identified native seed is available to build native plant communities that support healthy watersheds. Similarly, in coordination with Tribes, BIA implements forest management treatments that provide variations in forest canopy cover, stand density, and openings which have varying influences on the accumulation of snowpack. The effective management of Tribal forests is a positive contributor to the availability of water.

## Vulnerability #3: Biodiversity and Ecosystems

The Department is committed to enhancing biodiversity; sustaining ecological processes;promoting the health and function of ecosystems by sustaining fish, wildlife, andplant species; restoring native vegetation and natural ecosystem processes; preventing and addressing invasive species; and mitigating the impacts of wildland fire.

**Climate Risks**

Higher temperatures are leading to increased acres burned by wildland fires, resulting in longer and more severe fire seasons and changes in abundance, density, and range of invasive species. Long-term drought, especially in the Western United States, is impacting migratory waterfowl production and creating novel wildlife communities. Changes in water temperature, ocean acidification, and sea level rise are affecting ecosystem function as marine species change their geographic range. Subsistence hunting and fishing practices are being threatened as site access is lost, and culturally significant species are disappearing. Temperature fluctuations are also affecting lakes, streams, and cold-water fisheries, and limiting refugia for plant and animal communities. Climate change is driving ecosystems to irreversibly transform and displace species.

**INVASIVE SPECIES STRATEGIC PLAN**

The Department is strengthening efforts to manage invasive species more strategically in the face of climate change through improved Department wide leadership and collaboration, coordinated plans and policies, and extensive work led by bureaus. DOI's Invasive Species Strategic Plan, developed pursuant to the John D. Dingell, Jr. Conservation, Management and Recreation Act (Public Law 116 9), lays out a five year vision that includes promoting climate adaptation strategies and managing DOI lands and waters so they are resistant to invasive species infestations and resilient to disturbance.

*Photo Credit: R. Hagerty, USFWS*

The Department must continue to restore and reconnect degraded aquatic and terrestrial landscapes through its conservation and restoration initiatives which provide both direct and indirect benefits. These initiatives include enhancing ecological connectivity; preserving Nationally significant landscapes; protecting ecosystems, biodiversity, and native species; and providing sustainable resources to vulnerable communities. With USFWS as lead, the Department will use the National Fish, Wildlife and Plants Climate Adaptation Strategy (NFWPCAS) as key guidance to implement climate adaptation actions for priority species and habitats. Success requires coordination across boundaries at the regional, national, and international levels.

**Highlights of Accomplishments to Date**

- Pursuing Landscape Connectivity: USFWS uses landscape conservation design and other decision support tools developed with USGS to identify strategies and actions that connect lands and waters, accommodating species distribution shifts. National Conservation Lands, National Parks, Refuges, and other Department-protected areas serve as links for maintaining landscape connectivity.
- Developing Climate-Sensitive Resource Management Strategies: USGS, USFWS, BLM, and others are sustaining plant, fish, and wildlife communities by quantifying the sensitivity of ecosystems and characterizing responses to fire, drought, and other weather extremes. These strategies will inform terrestrial and aquatic resource conservation and management decisions by restoring habitatconnectivity and improving understanding of ecological responses to drought.
- Facilitating Complex Decisions Through Decision Science: USGS is creating a vulnerability framework linked to interventions to address multiple threats and toevaluate how interventions achieve conservation goals. Understanding climate impacts on species is vital for estimating their extinction risk and prioritizing conservation actions. These efforts are leveraged by the CASCs and the fire science community.
- Implementing the National Seed Strategy: Multiple bureaus including BLM, BIA, NPS, USFWS, and USGS implement the National Seed Strategy to ensure the

**SAGEBRUSH BIOME**

The sagebrush biome, 57% of which is managed by the Department, encompasses over 160 million acres in 14 Western States. It is one of the most imperiled ecosystems in the U.S., impacted by cropland conversion, energy development, and invasive grasses, all of which are exacerbated by climate change. An average of 1.2 million acres of sagebrush burn each year. The Department's Integrated Rangeland Fire Management Strategy (IRFMS) promotes science based adaptive management addressing fire, invasive species, restoration, sagebrush and sage grouse, and climate. The Sagebrush Conservation Strategy, expected by Spring 2022, will inform Federal decision making and coordination of effective responses to impacts on public lands and waters, wildlife, cultural and Tribal resources, environmental justice, and disadvantaged communities dependent on the sagebrush biome.

*Photo Credit: BLM*

availability of native seeds. BLM leads the collection of native seed from areas vulnerable to natural hazards to increase native plant materials available for restoring and supporting resilientecosystems. This includes seed collections in areas prone to wildfire in the Great Basin and in coastal areas where native plant communities are damaged from storms.

- Increasing Ecosystem Resilience through Fire Preparedness and Fuels Management: The National Cohesive Wildland Fire Management Strategy, coordinated through OWF, identifies collaborative actions for all levels of government and partners to create fire-adapted communities. The Department's bureaus are implementing a variety of fuels management activities, and reviewing policies for fire preparedness, suppression, and disaster assistance payments. BIA is developing and implementing comprehensive fuels management strategies through forest, woodlands, and range management planning, which increases ecosystem resilience through the application of prescribed fire across landscapes with multiple landownerships.
- Preparing and Managing for Ecological Transformation – A consortium of Federal agencies including the NPS, USFWS, USGS, BLM, USFS, and NOAA, as well as States,non-governmental organizations and academia, developed a decision framework to help resource managers prepare for and manage ecosystems undergoing ecological transformation. The Resist-Accept-Direct (RAD) decision framework promotes analysis of the range of options to respond to ecological changes driven by climate change and other factors. The framework acknowledges that resisting ecological change driven by climate change may be infeasible in many instances. In such cases, managers may accept ongoing changes or direct ecologicaltrajectories toward a desired future state, but with a different ecological community (e.g., transition of a boreal forest to a temperate forest).

## Vulnerability #4: Coastal and Marine Resources

The Department manages, protects, and provides access to significant ocean, coastal, and Great Lakes resources, including 34 million acres in over100 coastal and tidally influenced National Parks, more than 35,000 miles of coastline, over 180 marine and coastal National Wildlife Refuges, andmore than a million square miles of marine National Monuments. In addition, the Department manages energy and mineral development on the 2.5-billion-acre Outer

**COASTAL CHANGE HAZARDS AND RESILIENCE**

USGS scientists integrate coastal maps and models with NOAA forecasts to deliver predictions of coastal erosion and shoreline inundation. The USGS developed the Coastal Storm Modeling System (CoSMoS) to enable decision makers to anticipate future coastal hazards challenges and evaluate adaptation strategies. USGS flooding and erosion vulnerability products have been used by diverse stakeholders, such as the Department of Defense's Missile Defense Test Site in the Marshall Islands, to inform long term infrastructure and operations plans and to assess the sustainability of the groundwater resources upon which the installation and the local community rely.

*Photo Credit: Meaghan Faletti, USGS*

Continental Shelf.

**Climate Risks**

The Nation's coasts face a diverse range of climatestressors and climate impacts. Ocean and coastal environments are experiencing sea level rise, ocean acidification, higher storm surges, more frequent extreme weather events, erosion, and flooding. These changes are transforming coastal ecosystems by putting ocean and marine species at risk, decreasing the productivity of fisheries, and threatening communities that rely on marine ecosystems for livelihoods and recreation. Climate-related impacts exacerbate pre- existing social inequities in coastal communities, ranging from subsistence fishing communities in Alaska, to rural and urban communities in the Great Lakes and on the Gulf Coast, and to everycommunity in the Insular areas.

The Department needs to plan for and adapt to climate impacts on coastal and marine resources. This includes protecting shorelines and conserving coastal ecosystems, which would decrease direct losses and cascading impacts on other sectors and parts of the country.

**Highlights of Accomplishments to Date**

- Anticipating and Preparing for Coastal Wetland Transformations: USGS is advancing understanding of the sensitivity, exposure, and adaptive capacity of coastal wetlands to climate change and accelerated sea level rise, which is information that improves efforts to restore and manage coastal marshes and mangrove forests.
- Coastal Adaptation Strategies Handbook: NPS published a Coastal Adaptation Strategies Handbook which summarizes the current state of climate adaptation and key approaches currently in practice or considered for climate change adaptation in coastal areas to guide adaptation planning in coastal parks. The chapters focus on policy, planning, cultural resources, natural resources, facility management, and communication/education. The handbook highlights processes, tools, and examples that are applicable to many types of NPS plans and decisions.
- Adapting to Sea Level Rise at Coastal Refuges: USFWS has a long history of addressing vulnerabilities in coastal National Wildlife Refuges as it rethinks business-as-usual management practices. For example, at the Blackwater National Wildlife Refuge, sea level rise is contributing to the spread of phragmites, an invasive wetland grass. USFWS is removing trees from certain areas of the refuge to promote the upslope migration of marshes, which may help reduce phragmites encroachment by establishing native salt marsh vegetation before phragmites can establish itself. This also would allow the marsh to better respond to sea level rise.
- Protecting Shorelines and Restoring Wetlands: BOEM manages OCS sand and sediment resources, which play a vital role in climate adaptation through shore protection, beach nourishment, and wetlands restoration projects along the Gulf of Mexico, Atlantic, and Pacific coasts.
- Producing U.S. Virgin Islands Climate Vulnerability and Risk Assessment Report: OIA provides financial assistance to the U.S. Territories and Freely Associated States. In 2019, OIA funded a grant through its Technical Assistance Program to conduct a vulnerability and

risk assessment for the U.S. Virgin Islands and develop a preliminary Territorial Adaptation Strategy and Action Plan. Grant funding assisted in the development of a multi-sector climate adaptation strategy that considers the U.S. Virgin Islands' vulnerability to natural hazards and effects of climate change.

Converting Decommissioned Offshore Oil and Gas Structures into Artificial Reefs: The Bureau of Safety and Environmental Enforcement (BSEE) facilitates the conversion of appropriate structures to artificial reefs through its Rigs-to-Reefs policy, which enhances offshore fish habitat and supports traditional coastal communities through fishing, jobs, and tourism dollars. Reefed offshore facilities have also proven to be resilient to extreme hurricanes. A total of 559 platforms previously installed on the OCS have been reefed in the Gulf of Mexico.

## Vulnerability #5: Infrastructure and Facilities

Critical to the Department's mission is the management of infrastructure and facilities and related property such as motor vehicles. The Department's real property inventory is diverse andincludes office buildings, visitor centers, schools, museums, scientific laboratories, dams, water delivery systems, fish hatcheries, roads, and trails. These assets require significant lifecycle investments in operations, maintenance, modernization, renewal, and potentially divestiture. Poorly maintained assets exacerbate existing vulnerabilities, placing them at higher risk of failure. In some cases, these assets are historic and include cultural resources that are irreplaceable due to their locations and sensitive construction materials.

**Climate Risks**

Climate change is altering the operations, efficiency, and the safety of the Department's infrastructure and equipment. Other impacts from climate change include damages to energy infrastructure from extreme weather events, flood impacts to facilities and real property, loss of facilities and infrastructure from wildfire, and higher storm surges damaging coastal infrastructure and eliminating coastal access. These impacts can have severe ripple effects to the National and international economies as supply chains are interrupted. As such, the Department needs to consider existing stressors

**MOBILIZING NATURE BASED INFRASTRUCTURE FOR CLIMATE ADAPTATION**

Artificially constructed infrastructure solutions (e.g. sea walls, dunes, beach nourishment) do little to protect against the long term impacts of climate change because these projects do not adapt to changing conditions through time. USFWS has been increasingly using nature based infrastructure, such as living shorelines, oyster reefs, and barrier island restoration in coastal communities. These often cost significantly less than their hardened alternatives, while also growing through time and adapting to changing conditions when natural functions and processes are restored. Additional co benefits of nature based solutions include community protection, wildlife habitat conservation, and climate resilience. Pilot projects with traditional and nontraditional partners in small impacted areas using the RAD framework will inform and improve the long term value of specific ecosystem infrastructure projects, including the economic, ecologic, and social impacts on coastal communities.

*Photo Credit: Mary Conti, USFWS*

on aging infrastructure, develop appropriate tools and strategies for facility managers to readily assess climate risk, and evaluate potential future scenarios whereby structures may need to be retrofitted or relocated to ensurecontinuity of the Department's operations.

**Highlights of Accomplishments to Date**

- Applying the Resist-Accept-Direct (RAD)Framework: In addition to supporting managers in analyzing options for responding to ecological changes driven by climate change and other factors, the RAD Framework can also support decisions regarding adaptation of infrastructure. For infrastructure located in an area susceptible to flooding, "resisting" may be protecting theasset in place, "accepting" may be closing infrastructure due to high relocation costs, and"directing" could involve relocating the infrastructure to another site.
- Adapting Infrastructure: Bureaus consider the impacts of climate change when planning, siting, designing, and constructing real property assets. Innovative and unique solutions are being devised throughout the National Park System to adapt to climate change, especially in coastal parks. USGS also invests in elevating its observational equipment, such as its 10,300 stream gauges, which may be vulnerable to climate-related impacts.
- Identifying Modernization Needs of Irrigation Projects: BIA plans to modernize irrigation projects (e.g., re-regulating reservoirs, water measurement devices, and long-crested weirs), prioritizing vulnerable infrastructure. Most BIA-owned irrigation projects were constructed over 100 years ago and need modernization. Without improvements, there will be challenges to ensuring the equitable distribution of water. BIA completed irrigation project modernization plans to identify and prioritize vulnerable infrastructure.
- Using Data to Manage Offshore Energy Facilities: BSEE maintains a Structural Integrity Management (SIM) application that relies on data to identify offshore facilities with the greatest risk for structural failure due to extreme weather. Information from this tool is used to help inform risk-based inspection approaches and prioritize decommissioning of the most vulnerable, idle facilities. BSEE also monitors field reported data to ensure adequate facility preparation and response to curb significant environmental impacts during hurricanes, tropical storms, and other severe weather events.

## Cross-Cutting Issues

Cross-jurisdictional issues require coordination across the Department and other Federal agencies as well as collaboration with American Indian and Alaska Native communities; State, local, and territorial governments; and other entities. In the implementation of this plan, the Department will elevate these three priority cross-cutting issues holistically with our federal partners, stakeholders, and the broader community, and will advocate for a coordinated National climate adaptation approach.

### PUBLIC HEALTH

Changes in weather and climate can degrade air and water quality; affect the geographic range, seasonality, and intensity of infectious diseases; and increase stresses that affect mental health and well being. While all Americans are vulnerable to experiencing adverse climate related health outcomes, certain populations (including low income communities, communities of color, older adults, and children) are disproportionately vulnerable.[9] Public lands are public health resources that enable physical activity, promote mental health, and foster community through the preservation of ecosystems and interpretation of shared heritage. Moreover, native plants on public lands improve the air and water quality of the surrounding communities. Given the role that public lands play in supporting public health, it is importantfor the Department to incorporate public health considerations into its climate adaptation, resilience, and equity related activities.

*Photo Credit: NPS*

### INVASIVE SPECIES

Invasive species impose substantial costs on the environment and society: they outcompete native species and are a major contributing factor in native species extirpation and extinction, disrupt ecosystem functions, deplete resources important to cultural heritage and subsistence living, exacerbate the threat of wildfire, increase the cost of delivering water and power, damage infrastructure, diminish recreation activities, and spread pathogens that transmit disease in both wildlife and human populations. Climate change exacerbates risks from invasive species. It can accelerate their spread and amplify adverse impacts and costs. Invasive species can also dramatically reduce the resilience of lands and waters to climate change. It is important that Departmental actions for climate adaptation and resilience consider and mitigate the risk of invasive species introduction, establishment, impact, and spread.

*Photo Credit: NPS*

### WILDLAND FIRE

Wildfire is a natural and essential component of many healthy ecosystems. However, the rising temperatures, changing precipitation patterns, and resulting increased drought conditions caused by climate change can increase the frequency, extent, and severity of wildfires. As more than half of U.S. land area is covered by grasslands, shrublands, and forests that sequester carbon dioxide, wildfire can turn these carbon sinks into carbon sources and cause smoke emissions that harm human health. It is important that the Department's climate adaptation actions and resilience activities consider the impacts of changing wildfire as well as the need for wildfire preparedness, suppression, response, fuels management, and post fire recovery across the hundreds of millions of acres of National Parks, refuges, other public lands, and Indian Country.

*Photo Credit: Nick Pieper, BLM*

## Climate Change Adaptation Actions

Over the years, the Department has taken a variety of actions to implement climate change adaptation in its management of the Nation's lands, waters, and natural and cultural resources. Given the broad responsibilities of the Department, many of the Department's bureaus and offices have developed their own policies and actions to guide adaptation planning in the management of their resources. These actions range from larger, Department-wide initiatives to establish the USGS-administered CASCs and the Joint Fire Science Program (JFSP) Exchange Networks that share adaptation solutions across multiple landowners and agencies, to bureau-level initiatives such as BLM's Assessment, Inventory, and Monitoring Strategy; BIA's National network of Tribal Resilience Liaisons; and NPS toolkits to build an adaptative planning framework in park planning and management.

Adaptation actions, in conjunction with the Department's institutional approaches, have and will continue to shape the way the Department makes decisions and adapts to the effects of climate change. Adaptation will require that the Department examine climate projections and actively consider a range of plausible future scenarios, some of which may significantly differ from current conditions. This ensures Department decisions are forward-looking and consider climate change as a baseline scenario in the development of future management plans and actions. The Department will also evaluate how ongoing natural capital accounting efforts can be used and developed to measure changes in natural resource stocks and associated services from these adaptation actions.

For Fiscal Years 2021 – 2026, the Department has identified five adaptation themes and corresponding priority actions for integration into its mission, programs, and operations. These priorities represent the Department's commitment to address known vulnerabilities to climate change and to continue identifying other vulnerabilities its programs may have to climate change.

### Tracking Performance and Resource Considerations

The Department is currently developing a *Strategic Plan for Fiscal Years 2022 – 2026*, which will contain strategic goals that integrate climate considerations into Departmental activities. The Department will prepare an Annual Performance Plan and Report to track how climate change performance goals, measures, and associated actions contribute to overall strategic objectives. Progress will also be reported to the Department's Climate Task Force. Many of the actions described below may require additional resources and personnel. The Department will periodically evaluate resource considerations in its tracking of performance, recognizing that ERM and evidence-building plans may identify additional opportunities for evaluation. The Department will implement adaptation actions within available resources and the President's FY22 budget but will also look to partner with other Federal agencies to collaborate and share resources. Having a variety of tools and resources will enhance the Department's ability to increase its own resilience. For example, this can include pooling of resources across all land

management agencies for a whole-of-government approach to fire science and wildland fire management.

**Action #1. Promote Climate-Resilient Lands, Waters, and Cultural Resources**
***Outcome: Lands, waters, and cultural resources threatened by climate change are managed, protected, and/or preserved for current and future generations***

**Action #2. Advance Climate Equity**
***Outcome: Vulnerable communities disproportionately impacted by climate change have equitable access to opportunities, services, and resources.***

**Action #3. Transition to a Resilient Clean Energy Economy**
***Outcome: Climate-resilient infrastructure supports current energy and mineral resource needs and future energy needs will be increasingly met through renewable and sustainable sources.***

**Action #4. Support Tribal and Insular Community Resilience**
***Outcome: Tribes and Insular areas are provided technical and financial resources to support climate-resilient investments.***

**Action #5. Empower the Next Generation of Conservation and Resilience Workers**
***Outcome: A new generation of Americans are empowered and equipped to bolster resilience and tackle the climate crisis.***

## Action 1: Promote Climate Resilient Lands, Waters, and Cultural Resources

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| **Outcome:** Lands, waters, and cultural resources threatened by climate change are managed, protected and/or preserved for current and future generations | | |
| **Department Leads:** Assistant Secretary for Policy, Management and Budget; Assistant Secretary for Water and Science; Assistant Secretary for Fish and Wildlife and Parks; Assistant Secretary for Land and Minerals Management | | |
| **Intergovernmental Coordination**: Federal (e.g., USDA, USACE, NOAA), States, Local, Tribes | | |
| **Scale:** National | **Timeframe:** Strategies to foster resilience on lands, waters, and cultural resources are currently being implemented across the Department. However, these efforts will continue to evolve into the foreseeable future as the Department increases its understanding of climate science and potential impacts. | **Resource Implications:** Strategies will build on use of existing resources. The President's FY 2022 Budget will support an expansion of efforts to conserve, protect, and restore public lands and waters and engagement in climate adaptation practices. |
| **Climate Change Risks / Vulnerabilities** | **Example Implementation Strategies** | **Measuring Performance** |
| Wildfire<br>Sea Level Rise<br>Drought<br>Invasive Species<br>Shoreline Erosion<br>Flooding<br>Heavy Precipitation Events<br>Higher Storm Surges<br>Water Supply Shortage<br><br>*Further description of climate risks in:*<br>*--Vulnerability #1- People, Communities, and Cultural Resources*<br>*--Vulnerability #2- Healthy Watersheds and Water Supplies*<br>*--Vulnerability #3- Biodiversity and Ecosystems* | **1.1 Resource Resilience.** Engage Department bureaus and offices to identify, assess, and prioritize lands, waters, and cultural resources threatened by climate change for management, conservation or restoration actions that promote climate resilience.<br><br>**1.2 Landscape Mitigation.** Implement a landscape approach to mitigation that promotes landscape connectivity to increase ecosystem resilience and adaptability.<br><br>**1.3 Ecosystem Services.** Enhance land and water management to expand beneficial ecosystem services and build resilience. | The Department proposes to review and update performance metrics as adaptation implementation continues. Example metrics include:<br>1) Lands, waters, cultural resources identified as degraded or at-risk priority areas due to climate-related impacts (e.g., drought, wildfire, sea level rise, etc.)<br>2) Adaptation actions developed for priority areas identified for conservation, restoration, and management to build regional resilience<br>3) Acres of abandoned mine lands reclaimed to support ecosystem and watershed health<br>4) Partnerships (e.g., Federal, state, tribal) and strategies developed (e.g., National Fish, Wildlife, and Plants Climate Adaptation Strategy) to address habitat |

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| *--Vulnerability #4- Coastal and Marine Resources* | | fragmentation and connect the Nation's lands and waters<br>5) Policies and guidance developed to incorporate observed and expected climate change in land, water, and cultural resource management decisions |
| **Challenges/Further Considerations:** To be effective at the landscape scale, natural and cultural resource managers at the Federal, state, tribal, and local levels must coordinate to better understand resilience as it applies to: 1) resources being managed; 2) actions to build resilience for those resources; 3) areas and resources most important to protect and restore; and 4) incorporate relevant information into decision-making. This may require new information, tools, and policy approaches to ensure these considerations are taken into account. | | |
| **Action 2: Advance Climate Equity** | | |
| **Outcome:** Vulnerable communities disproportionately impacted by climate change have equitable access to opportunities, services, and resources. | | |
| **Department Leads:** Assistant Secretary for Policy, Management and Budget; Office of Environmental Policy and Compliance | | |
| **Intergovernmental Coordination:** Federal (e.g., CEQ, EPA), States, Local, Tribes | | |
| **Scale:** National | **Timeframe:** Strategies to advance equity are currently being implemented. However, these efforts will continue to evolve into the foreseeable future as the Department increases its understanding of climate science and potential impacts, how the benefits of its investments flow toward disadvantaged communities, and how those investment might be adjusted to achieve the goals of the Justice40 Initiative. | **Resource Implications:** Strategies will build on use of existing resources. The President's FY 2022 Budget will support an expansion of environmental justice, equity, and engagement in climate adaptation practices. |
| **Climate Change Risks / Vulnerabilities** | **Example Implementation Strategies** | **Measuring Performance** |
| Flooding<br>Heavy Precipitation Events<br>Extreme Temperatures<br>Heat-Related Illness<br>Incidence of Diseases<br>Higher Storm Surges<br>Poor Air Quality<br>Water Supply Shortage<br><br>*Further description of climate risks in:*<br>*--Vulnerability #1- People, Communities, and Cultural Resources* | **2.1 Prioritizing Vulnerable Communities.** Update Departmental guidance to advance policies that assist bureaus and offices in identifying priority needs for vulnerable communities. Ensure that future guidance and policies do not increase community vulnerability to climate change.<br><br>**2.2 Providing Equitable Access.** Ensure that climate equity and fairness are embedded in Department mission, policies, and programs. Provide equitable access to funding opportunities, technical services, and resources.<br><br>**2.3 Collaboration.** Develop partnerships with other government agencies, nonprofit organizations, and community leaders to facilitate training, create jobs, and increase resilience in vulnerable areas and populations. | The Department proposes to review and update performance metrics as adaptation implementation continues. Example metrics include:<br>1) Departmental guidance and resources updated (e.g., EJ data gap analysis, geographic information system (GIS) data, data-driven community needs assessments)<br>2) EJ screening tools developed.<br>3) Funding streams and academic partnership programs/grants developed or reprioritized to address EJ |

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| *--Vulnerability #2- Healthy Watersheds and Water Supplies*<br>*--Vulnerability #4- Coastal and Marine Resources* | | 4) Revised DOI EJ Action Plan and implemented Stakeholder Engagement Strategy<br>5) Percent of benefits delivered to EJ communities<br>6) Multilingual communications to reach populations with limited English proficiency |
| **Challenges/Further Considerations:** Addressing climate equity requires meaningful community engagement. The Department will need to establish additional outreach to promote awareness of potential funding opportunities among EJ organizations and communities. Additionally**,** the Department will need to coordinate with other federal agencies to address barriers in the application process, as many eligible grantees may not have the capacity or technical expertise to complete complex applications. | | |
| **Action 3: Transition to a Resilient Clean Energy Economy** | | |
| **Outcome:** Climate-resilient infrastructure supports current energy and mineral resource needs and future energy needs will be increasingly met through renewable and sustainable sources. | | |
| **Department Leads:** Assistant Secretary for Policy, Management and Budget; Assistant Secretary for Water and Science; Assistant Secretary for Land and Minerals Management | | |
| **Intergovernmental Coordination:** Federal (e.g., FERC, DOE), State, Local, Tribes | | |
| **Scale:** National | **Timeframe:** Strategies to transition to a clean energy economy are currently being implemented. However, these efforts will continue to evolve into the foreseeable future as the Department increases its understanding of climate science and potential impacts. | **Resource Implications:**<br>Strategies will build on existing use of resources. The President's FY 2022 Budget will support an expansion of efforts to transition to a clean energy economy and engagement in climate adaptation practices. |
| **Climate Change Risks / Vulnerabilities** | **Example Implementation Strategies** | **Measuring Performance** |
| Water Supply Shortage<br>Flooding<br>Heavy Precipitation Events<br>Sea Level Rise<br>Higher Storm Surges<br>Extreme Temperatures<br><br>*Further description of climate risks in:* | **3.1 Climate-Resilient Energy Infrastructure.** Assess the viability of current energy infrastructure to operate in extreme climate conditions, including drought, severe weather, and temperature extremes. Identify opportunities to promote climate-resilient infrastructure or adopt new technologies to improve climate resilience.<br><br>**3.2 Clean Energy Expansion.** Build the future clean energy economy by providing an environment that facilities the expansion of renewable energy development (e.g., solar, wind, hydropower). Ensure that renewable energy | The Department proposes to review and update performance metrics as adaptation implementation continues. Example metrics include:<br>1) Actions taken to enhance energy security, reliability, and resilience to establish a climate-ready energy system that addressed present and future risks<br>2) Studies conducted to evaluate renewable energy development on |

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| *--Vulnerability #1- People, Communities, and Cultural Resources*<br>*--Vulnerability #2- Healthy Watersheds and Water Supplies*<br>*--Vulnerability #4- Coastal and Marine Resources*<br>*--Vulnerability #5- Infrastructure and Facilities* | resources can connect to the grid to diversify our national energy portfolio while at the same time combatting climate change and investing in communities.<br><br>**3.3 Balanced Resource Use.** Evaluate diverse energy and water needs of communities and collaborate with States, local and Tribal governments to promote climate-resilient investments that meet current and future demand. | public lands and waters (e.g., tradeoffs, hydropower valuation, grid optimization, electric vehicle charging assessment)<br>3) Mitigation strategies developed to offset potential adverse effects of renewable energy development<br>4) Lands and future predicted water supplies mapped for potential renewable energy development |
| **Challenges/Further Considerations:** The Department plays a critical role in meeting our Nation's energy demand and national security. While conventional energy will continue play a major role in America for years to come, the expansion of renewable energy opportunities will need to be carefully evaluated to minimize impacts to the communities that the development proposes to support. The Department will work with all stakeholders to employ a broad engagement strategy that includes fishermen, outdoor enthusiasts, sovereign Tribal nations, States, U.S. Territories and Freely Associated States, local officials, agricultural and forest landowners, and others to identify strategies and goals that reflect the priorities of all communities. | | |
| **Action 4: Support Tribal and Insular Community Resilience** | | |
| **Outcome: Tribes and Insular areas are provided technical and financial resources to support climate-resilient investments.** | | |
| **Department Leads:** Assistant Secretary for Policy, Management and Budget; Assistant Secretary for Insular and International Affairs; Assistant Secretary for Indian Affairs | | |
| **Intergovernmental Coordination: Federal (e.g., HUD, FEMA, NOAA), State, Tribes, U.S. Territories and Freely Associated States** | | |
| **Scale:** National | **Timeframe:** Strategies to support climate-resilient investments for Tribes and Insular areas are currently being implemented. However, these efforts will continue to evolve into the foreseeable future as the Department increases its understanding of climate science, traditional knowledge, and potential future impacts. | **Resource Implications:** Strategies will build on existing use of resources. The President's FY 2022 Budget will support an expansion of resources provided to Tribes and Insular areas, and engagement in climate adaptation practices. |
| **Climate Change Risks / Vulnerabilities** | **Example Implementation Strategies** | **Measuring Performance** |
| Flooding<br>Heavy Precipitation Events<br>Extreme Temperatures<br>Heat-Related Illness | **4.1 Technical and Financial Resources.** Provide technical and financial resources, as well as planning and design tools needed, to Tribes and Insular areas to advance climate adaptation strategies. Ensure that investments will improve quality of life, create economic opportunity, and promote efficient and | The Department proposes to review and update performance metrics as adaptation implementation continues. Example metrics include: |

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| Incidence of Diseases<br>Higher Storm Surges<br>Loss of Sea Ice<br>Poor Air Quality<br>Water Supply Shortage<br>Coastal Erosion<br>Permafrost Degradation<br>Flooding<br><br>*Further description of climate risks in:*<br>*--Vulnerability #1- People, Communities, and Cultural Resources*<br>*--Vulnerability #2- Healthy Watersheds and Water Supplies*<br>*--Vulnerability #3- Biodiversity and Ecosystems*<br>*--Vulnerability #4- Coastal and Marine Resources*<br>*--Vulnerability #5- Infrastructure and Facilities* | effective governance, especially those facing relocation, managed retreat, and protect-in-place decisions in response to changing climatic conditions.<br><br>**4.2 Tribal Consultations.** Promote Tribal sovereignty and self-determination by empowering Tribes and engaging in meaningful consultation, to ensure Tribal voices are part of decision-making related to climate resilience. | 1) Identification of Tribal and Insular areas most at risk of climate change impacts<br>2) Number of Tribes and Insular areas with completed adaptation plans, risk assessments, hazard mitigation plans<br>3) Number of infrastructure/facilities moved to or built in a new community site for vulnerable communities desiring relocation or managed retreat.<br>4) Number of communities that have access to science and data to inform planning and resource management decisions<br>5) Number of communities that receive financial and technical assistance to address climate resilience |
| **Challenges/Further Considerations:** Funding limitations are often identified as a barrier to the planning or implementation of climate adaptation or mitigation actions. As such, increased economic revenues could create opportunities for Tribes and Insular areas to choose to pursue climate actions. Additionally, the Department may not have sufficient staff capacity to support funding recipients in applying for financial assistance and developing projects. | | |
| **Action 5: Empower the Next Generation of Conservation and Resilience Workers** | | |
| **Outcome:** A new generation of Americans are empowered and equipped to bolster resilience and tackle the climate crisis | | |
| **Department Leads:** Assistant Secretary for Policy, Management and Budget; Assistant Secretary for Fish, Wildlife and Parks; Assistant Secretary for Water and Science | | |
| **Intergovernmental Coordination:** Federal (e.g., OPM, USDA), State, Local, Tribes | | |
| **Scale:** National | **Timeframe:** Strategies to foster resilience on lands, waters, and cultural resources currently being implemented. However, these efforts will continue to evolve into the foreseeable future as the Department increases its understanding of climate science and potential impacts. | **Resource Implications:**<br>Strategies will build on existing use of resources. The President's FY 2022 Budget will support an expansion of efforts to empower the next generation of |

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| | | conservation and resilience workers and engagement in climate adaptation practices. |
| **Climate Change Risks / Vulnerabilities** | **Example Implementation Strategies** | **Measuring Performance** |
| Wildfire<br>Sea Level Rise<br>Flooding<br>Heavy Precipitation Events<br>Biodiversity Loss<br><br>*Further description of climate risks in:*<br>*--Vulnerability #1- People, Communities, and Cultural Resources*<br>*--Vulnerability #2- Healthy Watersheds and Water Supplies*<br>*--Vulnerability #3- Biodiversity and Ecosystems*<br>*--Vulnerability #5- Infrastructure and Facilities* | **5.1 Civilian Climate Corps.** Utilize the Civilian Climate Corps to tackle the issues of the 21st century, such as: 1) conserving and restoring public lands and waters, 2) bolstering community resilience, 3) increasing reforestation, 4) increasing carbon sequestration in the agricultural sector, 5) protecting biodiversity, 6) improving access to recreation, and 7) addressing the changing climate.<br><br>**5.2 Climate Professional Pipeline.** Leverage internship programs and other opportunities to provide a pathway to permanent positions in climate, conservation, and science.<br><br>**5.3 Capacity Building.** Prioritize funding streams and academic partnership programs/grants, such as the CASCs, that allow for training, capacity building, and economic investments in local communities. | The Department proposes to review and update performance metrics as adaptation implementation continues. Example metrics include:<br>1) Number of Civilian Climate Corps workers employed and/or the number of hours worked<br>2) Number of accessible training opportunities developed for Civilian Climate Corps workers<br>3) Number of jobs created for Civilian Climate Corps workers<br>4) Internship programs with pathways for permanent employment |
| **Challenges/Further Considerations:** With the establishment of the Civilian Climate Corps, the Department stands ready to support efforts to create good-paying jobs, rebuild the Nation's infrastructure, and address pressing climate challenges. The Department will strive to ensure climate workers receive climate education and training appropriate for their occupations. Collaboration with academic programs, universities and CASCs will ensure the next generation of conservation and resilience workers are equipped with the knowledge and tools necessary to respond to changing climatic conditions. | | |

## Climate Literacy

A comprehensive, coordinated workforce training program across all bureaus and offices is necessary to effectively meet challenges posed by climate change.

The Department will build adaptive capacity through a national climate education and training program that has the capability to be tiered to regions and local communities. A special emphasis will be placed on training decision-makers within the Department's various bureaus and offices that have responsibilities associated with land use and resource management. Decision-makers will be equipped with an understanding of anticipated climate change scenarios, adaptation best management practices, and other decision support tools developed by the Department and CASCs. The CASC network supports early-career scientists and managers through 10+ fellowship and training programs, where they can conduct research on climate impacts and adaptation, develop skills in science communication and partner engagement, and build networks of peers and mentors to support their career development. In addition, the Department will convene a standing Departmental Climate Training Working Group with representation from all bureaus and offices. The working group will be chaired by training leads from designated bureaus and offices across the Department. Meeting at least quarterly, the working group will incrementally advance key steps for building a more robust climate training program including the following:

**CLIMATE ADAPTATION SCIENCE CENTERS**

The CASC network supports early career scientists and managers through 10+ fellowship and training programs, where they can conduct research on climate impacts and adaptation, develop skills in science communication and partner engagement, and build networks of peers and mentors to support their career development. South Central CASC affiliated researchers developed hands on training to improve planners' and decision makers' confidence in incorporating climate model projections into their adaptation plans. The CASC network places emphasis on generating actionable science, information, and products that address identified science needs and are directly usable in supporting resource management decisions, actions, and plans.

*Photo Credit: USGS*

- Inventory of Current Climate Training: Current climate training efforts are diffused widely across bureaus and offices and few efforts are coordinated between providers. The working group willdevelop a comprehensive inventory of existing curricula with the goal of identifying opportunities to collaborate across bureaus and jointly develop trainingmaterials and events.
- Promotion of Holistic Understanding: In the development and delivery of training, the working group willpromote a more expansive understanding of climate change as an issue that intersects with nature's contributions to people, human health, systems of production, the

economy, the importance of cultural resources, and environmental justice. Fully understanding the implications of the climate crisis for communities helps reckon with causes and inequities and highlights opportunities and strategies for collaborative solutions for the benefit of all.

- Subject Area and Competency Mapping: Current climate training efforts span a wide variety of depth, focus, and content. The working group will create conventions for cataloging existing and intended climate change training across subject areas and mapping relevant training to common competencies. Cataloging will lend itself to the development of climate literacy "learning progressions" to guide training for occupational categories across the Department.
- Identification of Gaps and Priorities: Considering existing and intended course offerings—as well as Departmental priorities and core operations—the working group will identify known gaps in workforce climate literacy for which training development should be prioritized.
- Training Development Coordination: Workforce literacy efforts should be developed with an eye to serve the widest possible cross-section of employees. The working group will collaborate on the development, delivery, and refinement of training curricula to foster knowledge transfer and skill development across bureaus and offices to the fullest extent practicable. The working group will also develop agreed-upon means to track Department-wide training efforts and employee engagement.
- Building Technical Competency in Climate Adaptation: Climate adaptation action will require a new approach to adaptive management. Building capacity will require a case- or problem-based approach to training, supported by a network of practitioners committed to continuing education and learning. The Department will explore ways to create a network of practitioners, who would provide training through a series of steps that begin with facilitated case study learning, followed by smaller-group collaborative learning, and individual problem presentation by participants.

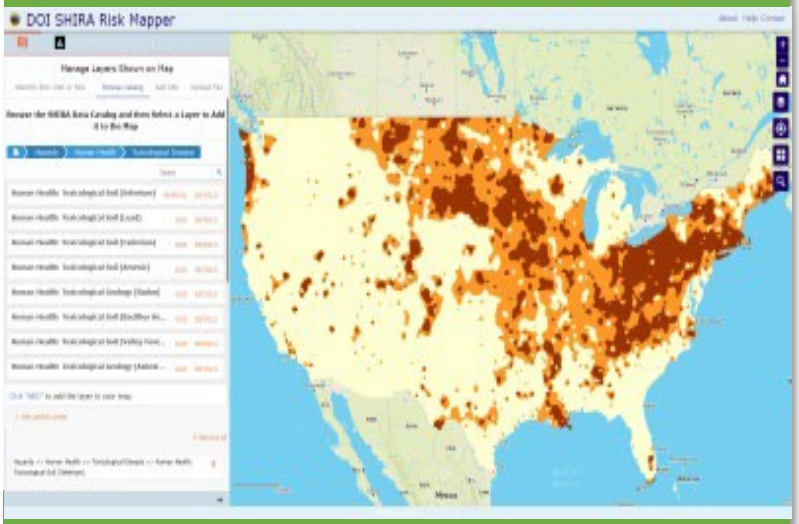
## Climate-Ready Sites and Facilities

The Department owns more than 42,000 buildings and 80,000 structures. Recognizing that the potential effects of climate change can be significant to some of these buildings and structures, and unevenly distributed across Departmental regions, there is a need to ensure that adaptation and resilience are factored into management decisions at the National, regional, and local level, particularly in areas more susceptible to extreme weather events and sea level rise.

The Department also proposes to undertake the following actions to address climate change vulnerability and resilience broadly across its facilities and infrastructure portfolio:

- Revitalize a Facilities and Infrastructure Climate Change Working Group to coordinate efforts across bureaus and offices and align with the goals and efforts of the existing Sustainability Council.
- Address vulnerabilities of mission-critical buildings and structures to climate change, taking a whole-of-lifecycle approach to identify opportunities to increase resilience.
- Continue implementation of mitigation actions reported in the Department's annual Sustainability Plan, such as energy and water conservation measures, carbon-free renewable energy, and sustainable buildings.
- Develop strategies to identify, quantify, and estimate the costs associated with risks to existing infrastructure and compare those costs to the potential costs associated with adaptation measures.
- Evaluate, prioritize, and share available adaptation options, and ensure that investments associated with Department-managed facilities meet the Federal standards for energy efficiency and greening applications per Secretary's Order 3399.

### STRATEGIC HAZARD IDENTIFICATION AND RISK ASSESSMENT




In collaboration with USGS, the Department's Office of Emergency Management is building the tools and capabilities of the Strategic Hazard Identification and Risk Assessment (SHIRA) project to better understand hazards and threats that affect employees, visitors, facilities, and resources, and to support emergency management and resilience planning. Once completed, a suite of SHIRA products will collectively aim to help Department managers identify and plan for potential hazards and threats to Department employees, lands, and other assets. The products will allow users to:

- Visualize hazard exposure for units, facilities, personnel, assets, and resources;
- Prioritize threats;
- Identify buildings, personnel, office sites, and lands exposed to hazards in real time for slow and rapid onset incidents; and
- Develop emergency response and other contingency or resilience plans.

*Photo Source: OEM, USGS*

- Engage the Department's Museum and Cultural Resources Program to incorporate a broad range of adaptation strategies that include documentation and consultation for at-risk cultural resources and historic structures.
- Consider scenarios for managed retreat, relocation, protect-in-place, and other adaptation strategies for assets exposed to encroaching and expanding hazards (e.g., sea level rise, flooding, fire) and changing environmental conditions.
- Promote use of nature-based solutions wherever appropriate, feasible, and cost-effective.
- Ensure that adaptation actions for facilities are not maladaptive and do not increase the environmental burden on vulnerable communities.
- Explore the development of a Department-wide rapid vulnerability and risk assessment framework, building on existing approaches as a foundation to streamline the process and allow for expedited decision-making for more resilient facilities and infrastructure.

Undertaking actions such as these to enhance the climate resilience of the Department's assets will not only protect facilities, but also the people who use these facilities. The Department will continue to work with the Council on Environmental Quality, General Services Administration, Federal Real Property Council, and other interagency partners to account for climate change when new facilities are designed, constructed, or leased to ensure protection of the Department's employees and visitors.

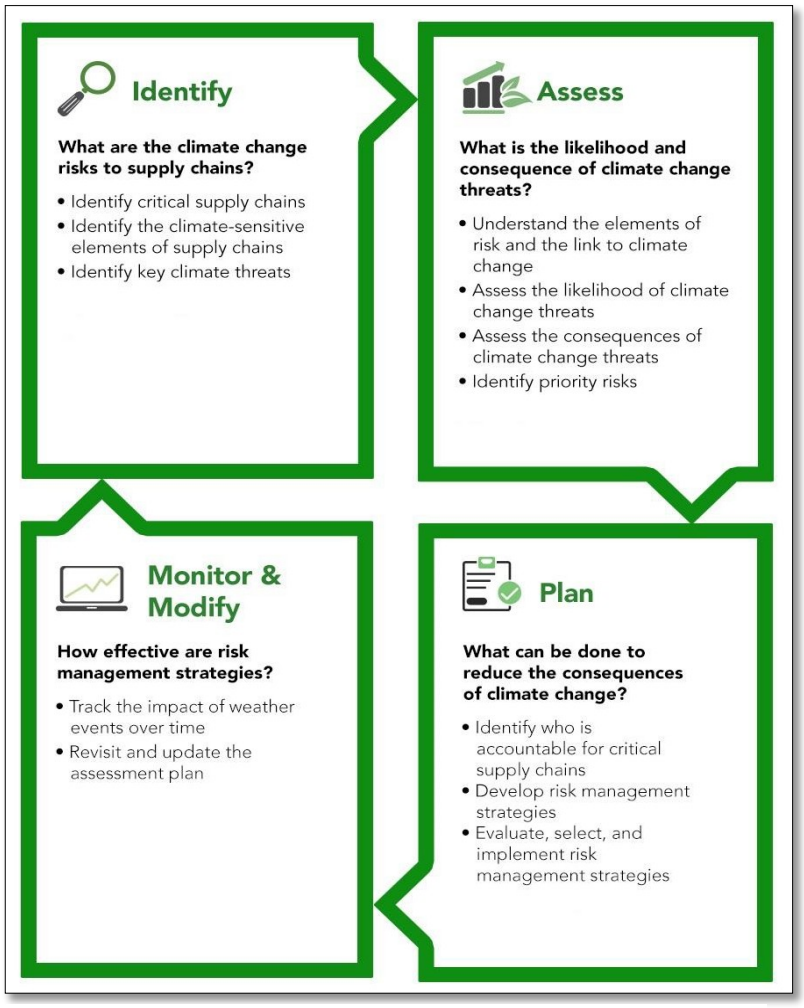
## Climate-Ready Supply of Products and Services

Supply chains cover the entire network of goods and processes that originate with raw materials and end with the delivery of goods and services. A climate-ready supply chain ensures that key suppliers for the Department can still operate despite changing climatic conditions. The Department is taking steps to assess and manage the climate change risks to its supply chain, starting with the evaluation of procurement processes for goods and services that allow the Department to meet mission needs.

In order to understand risks to the supply chain more broadly and how these risks can impact the Department's mission areas, the Department will utilize the Framework for Managing Climate Risks to Federal Agency Supply Chains developed by GSA.[9] The framework will help determine whether changes to existing risk management practices may be necessary to accommodate observed and expected climate and weather-related risks. At a high level, the steps include:

1. Identify climate change risks to critical supply chains.

2. Assess likelihood and consequence of climate change threats.
3. Develop plans to mitigate impacts of climate change.
4. Monitor and modify risk management strategies.




Five critical supplies or services at risk of disruption from extreme weather events or long-term climatic change have been identified to pilot the framework:

- **Data Centers:** Dependable and fast transmission of data, as well as secure storage of data, is essential to carrying out the Department's mission. Data centers may be located in areas that are more susceptible to climate risk. Facilities susceptible to flooding and frequent storms will need to be prioritized to ensure resilience and continuity of the Department's operations.
- **Construction Materials:** The reliance of the construction industry on the global supply chain makes it particularly sensitive to external factors such as extreme weather events. Physical damage to facilities, production equipment, and inventories can lead to shortages in supplies of materials such as steel, resulting in delayed or higher costs for construction projects managed by the Department.
- **Electric Fleet Vehicles:** The Department is increasing its deployment of electric vehicles (EV). These vehicles will require a dependable network of charging stations, which could be impacted by storms, flooding, and other climate-related events. Additionally, the proliferation of EVs will result in greater demand for the raw materials used in batteries (i.e., lithium, cobalt, nickel), much of which is produced abroad. Extreme weather events may impact the production of these materials, leading to uncertainty in availability of supply in the short- and long-term.
- **Emergency Management Services:** Availability of emergency management services, such as aerial support contracts for fire suppression, may be strained from extreme

weather and climate change impacts. Increases in the frequency, severity, and duration of storms and wildfires will significantly impact the Department's resources, contracts, and personnel supporting emergency management.

- **Communications Infrastructure:** Communications infrastructure, particularly in the field, is vulnerable to climate change impacts, creating gaps in the ability to acquire, move, and process information vital to decision support, community awareness, and securing Department lands during emergency management events. Increases in the severity and frequency of storms, flooding, and wildland fire risk may damage existing infrastructure and drive the need to implement resilient modern connectivity communications and IT solutions to for real time distribution of information.

The Department plans to evaluate these five critical supplies and services using the GSA framework to develop and implement risk management strategies in a changing climate. Future adaptation actions may also include the development of acquisition strategies that evaluate the critical minerals supply chain used to advance renewable energy production and the Department's renewable energy goals, as well as transportation routes that may be impacted by climate change. The Department can work with major suppliers to identify risks and appropriate measures to support climate resilience.

## Conclusion

The Climate Action Plan describes the Department's ongoing and planned activities to address climate change by building resilience in natural and cultural resources and the communities impacted by the Department's management and operations. Climate change adaptation is a long-term endeavor requiring scientific understanding of vulnerabilities and a sound, yet flexible, plan to address the impacts. The Department is committed to incorporating adaptation and resilience into planning and operations and looks forward to working with Federal and other partners to improve understanding, develop effective tools, and identify and implement best practices.

# Endnotes

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