Department of the Interior Climate Change Adaptation Plan for FY 2013

The Challenge – Climate Change Impacts to the Department of the Interior

Climate change has profound implications for the Department of the Interior (Department). Trends in climate-related environmental conditions, such as temperature, precipitation, frequency of extreme weather events, and sea level, directly affect our operations and achievement of our mission. The Department's areas of responsibility include managing 20 percent of the nation's lands; supplying water and hydropower in the 17 western states; conserving plants and wildlife; conserving 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 tribes as well as insular areas such as Guam and the U.S. Virgin Islands; and leasing for renewable and non-renewable energy development on public lands and the Outer Continental Shelf. To manage this broad spectrum of activities, the Department employs about 70,500 employees and more than 300,000 volunteers in approximately 2,400 locations spanning 12 time zones.

The realities of climate change require the Department to integrate adaptation into our diverse operations, programs, plans, and policies. We must adapt our management of natural and cultural resources; account for changing conditions and threats with respect to human and built assets; work with tribes across the nation in their adaptation efforts; and provide scientific information and tools to support the range of activities and programs we oversee in the face of climate change.

This plan builds on and supports numerous efforts by the Department to address climate change impacts. The Department's overall approach is underscored by Secretarial Order 3289, issued in September, 2009 (and amended February, 2010), entitled "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources," that establishes a Department-wide approach for applying scientific tools to "increase understanding of climate change and to coordinate an effective response to its impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources that the Department manages." A subsequent section in this plan describes the status of the Department's climate adaptation efforts.

Vulnerabilities to climate change impacts vary widely across the Department's mission areas. Bureaus' climate change adaptation priorities and needs depend on the particular vulnerabilities of their mission and assets. This adaptation plan focuses on actions in FY 2013 and beyond. The actions are framed by the Department's Guiding Principles for climate change adaptation, described below. Climate change adaptation plans and strategies developed by bureaus will articulate and prioritize vulnerabilities particular to their mission and operations. To frame the high-level Guiding Principles and actions in this plan, a broad overview of the Department's vulnerabilities to climate change follows.

Natural and Cultural Resources

The Department's key mission areas under this category are protecting natural, cultural, and heritage resources; improving land and water health; sustaining fish, wildlife, and plant species; providing recreation and visitor experiences; and managing the impacts of wildland fire. At a general level, some major potential impacts (risks and opportunities) to these resources associated with climate change include:

- *Increased temperature and evaporation* may lead to increased numbers of large wildland fires due to increased lightning activity and decreased fuel moisture; longer wildland fire seasons; earlier spring melt and loss of glaciers, permafrost, and sea ice; and increased air and water temperatures that may stress, extirpate, and otherwise affect some species and cultural practices, and damage or destroy cultural and heritage resources;
- *Changes in precipitation patterns* may lead to dramatic changes in moisture and stream flow that impact species, ecosystems, and infrastructure, as well as lead to more severe wildland fire seasons that may alter ecosystems and threaten species and cultural resources; and
- *Sea level rise and higher storm surge* may lead to inundation of, and damage to, coastal ecosystems and cultural and heritage resources.

The Department is responsible for sustainably managing the production of energy as well as the extraction and use of natural resources such as water, timber, and non-energy minerals. With respect to this mission area:

- *Changes in precipitation patterns may cause impacts to:*
  - Stream flow that affect water supply and hydropower production (e.g., via changes in reservoir levels, low summer flow levels, and dewatering in some areas);
  - Reclamation of areas used for production of energy and minerals;
  - Water infrastructure (e.g., drought reducing water levels);
  - Water resources and water quality, for example due to flooding in some areas, and water scarcity due to prolonged droughts;
  - Livestock forage, wood products, tree and forage species distributions; and
  - Channels and stream banks, due to erosion.
- *Increased temperature and evaporation* will reduce seasonal snow storage for water resources management, and will cause increased evaporation and transpiration that may affect public water supply and demand, lakes, streams, and cold water fisheries, and may stress timber and forage species.

People and Communities

With responsibility for about 70,500 employees and more than 300,000 volunteers, service to 1.7 million American Indians and Alaska Natives and as host to nearly 500 million visitors each year, the Department must understand and address the impacts of climate change on people. Much of the human activity of concern to the Department occurs outdoors, in places where climate change impacts will be felt most acutely. Example areas of concern include:

- *An increase in temperature and changes in precipitation patterns* may result in changes in the geographic range and incidence of diseases and health conditions affecting humans;
- *Changes in frequency and intensity of weather-related events, such as heat-waves, precipitation events, and floods* exacerbated by climate change may put lives, livelihoods, and homes and businesses at risk; and
- *These impacts as well as others such as sea level rise and higher storm surge* may affect employee, volunteer, and visitor safety, and recreational opportunities and experiences, with resulting impacts on local employment.

American Indians, Alaska Natives, and Insular Areas

The Department is responsible for advancing government-to-government trust relationships with American Indians and Alaska Natives and honoring commitments to insular areas.[1] With respect to these responsibilities:

- *Increased temperature* would cause:
  - Changes in the incidence of heat-related illnesses and deaths and, in combination with changes in cloud-cover, may affect the incidence of adverse health outcomes related to poor air quality; and
  - *Melting permafrost and reduced sea ice,* threatening livelihoods of Alaska Natives.
- *Sea level rise and higher storm surge* will lead to inundation of and damage to shore ecosystems, dwellings, infrastructure, and cultural and heritage resources (inundation threatens the existence of low-lying island societies).
- Several climate change-related impacts may threaten traditional ways of life that are tied closely to nature, such as increased susceptibility of ecosystems to invasive species and potential migration and extirpation of plant and animal species of importance to native people and indigenous communities.

Infrastructure and Equipment

The Department has significant investments in infrastructure and equipment, including buildings, dams, roads, vehicles, fences, scientific labs, and equipment. These assets typically require significant investments and long-term commitments, and modifications and repairs can be costly. Climate change impacts could alter the operations, efficiency, and safety of infrastructure and equipment, making it more difficult for the Department to achieve its mission and fulfill its responsibilities. Climate change impacts on infrastructure include:

- *Sea level rise and higher storm surge* may damage or reduce the effectiveness of offshore and coastal infrastructure, potentially eliminating access to coastal areas, for example;
- *Changes in precipitation patterns and increased temperature* in some areas may impact operations of buildings, vehicles, and other equipment, and may impact the capacity for dams to supply water and generate electricity;

[1] Insular areas include: The territories of American Samoa, Guam, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands; and the Freely Associated States of the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau.

- *Flooding* may damage buildings, roads, vehicles, and other equipment and dramatically alter water supply planning; and
- *Changes in intensity, timing, and location of weather events* may disrupt energy conversion, generation, transmission, and transportation, and may impose different stresses on the Department's disaster preparedness infrastructure.

Guiding Principles

It is the policy of the Department to anticipate and adapt to challenges posed by climate change to its mission, programs, operations, and personnel. The Department and its component bureaus and offices adhere to the following Guiding Principles for climate change adaptation.[2] Not all Guiding Principles apply to all components within the Department.

A. Science: The Department will use the best available science to increase understanding of climate change impacts, to inform decision making, and to coordinate an effective response to impacts on land, water, wildlife, cultural, heritage, and tribal resources, and other assets. To ensure that climate science and services meet internal decision-making needs, bureaus should:

   - Ensure that management decisions made in response to climate change impacts are informed by science.
   - Build or access regional and local capacity to interpret climate science to inform adaptation plans for infrastructure and natural and cultural resources.
   - Where appropriate, coordinate with other regional science resources in order to inform adaptation plans and actions – e.g., co-locating or integrating scientific efforts with regional climate change science hubs such as the Department of the Interior Climate Science Centers (DOI CSCs) and the National Oceanic and Atmospheric Administration (NOAA) Climate Program Office Regional Integrated Science and Assessment centers.
   - Where appropriate, ensure representation at the executive level on the Stakeholder Advisory Committee for each DOI CSC and the Steering Committee for each Landscape Conservation Cooperative (LCC).
   - Facilitate and support data integration and access to enable broad use of scientific information for management decisions.
   - Consider and incorporate Traditional Ecological Knowledge and long-term observational information as data sources.
   - Ensure that scientific activities conform to appropriate laws and regulations (e.g., Information Quality Act) and apply best scientific practices (e.g., peer review).

B. Ecosystem-Based Management: Integrating the management of natural and human systems and balancing trade-offs to ensure sustainability is essential to success in the face of rapid changes. Ecosystem-based management (EBM) is a science-driven alternative to sector-based or species-based management approaches that are poorly suited to address such

[2] DOI's Guiding Principles are informed by the Interagency Climate Change Adaptation Task Force's "Guiding Principles" and "National Action Plan: Priorities for Managing Freshwater Resources in a Changing Climate;" the National Fish, Wildlife, and Plants Climate Adaptation Strategy; and the National Ocean Council's "Draft National Ocean Policy Implementation Plan."

changes. Effective EBM integrates multiple objectives (ecological, cultural, economic), provides guidance at multiple scales, and requires meaningful input from a broad range of stakeholders, including indigenous communities. While implementing EBM, bureaus should consider employing the following strategies:

- Climate change is a threat multiplier, in that it amplifies and adds complexity to existing impacts and the interactions among them. Bureaus should incorporate into adaptation planning and decision-making consideration of climate change impacts as a component of **cumulative impacts**.
- Climate change adaptation actions cannot be delayed to wait for a complete understanding of climate change impacts; bureaus can use **adaptive management**, as appropriate, for managing resources in the face of uncertainty. Adaptive management can provide feedback to managers as conditions change, by setting project goals carefully and monitoring progress toward stated goals.[3]
- Targeting a single preferred outcome under a single presumed future is not an adequate management strategy in a rapidly-changing environment. Bureaus should employ **scenario planning** to allow planners and managers to explore the effectiveness of various strategies across a range of plausible futures.[4]
- The timing, likelihood, and nature of specific climate risks are difficult to predict. **Risk management** provides an effective means to assess and respond to climate change. Risk management approaches are already used in many critical decisions (e.g., for fire, flood, and disease outbreaks), and can aid in understanding the potential consequences of inaction as well as options for risk reduction.

C. Ecosystems and Wildlife: Bureaus should implement the following general approaches to enhance the ability of ecosystems and wildlife populations to absorb change and maintain key qualities and services:

- Protect diversity of habitat, communities, and species.
- Develop adaptation plans that protect and restore contiguous blocks of un-fragmented habitat and enhance connectivity among habitat blocks.
- Identify and protect resilient ecosystems (i.e., places that can absorb change and maintain healthy community structure and function) and climate refugia (i.e., places that do not exhibit as much change as surrounding landscapes).
- Monitor invasive species (defined as alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health) and coordinate with other agencies to prevent new introductions and stop the spread of such species.
- Consider the landscape context of adaptation actions: Bureaus should work together and with other partners to jointly identify large landscape features (specific corridors, etc.) and mutual conservation goals for their protection.

[3] http://www.doi.gov/ppa/Adaptive-Management.cfm

[4] The principles and general approach for scenario planning in the context of natural resource management are discussed in: Peterson, G.D., G.S. Cumming, and S.R. Carpenter. 2003. Scenario Planning: a Tool for Conservation in an Uncertain World. Conservation Biology 17: 358-366.

- Reduce non-climate stressors that interact with climate change impacts, e.g., pollution, invasive species, habitat fragmentation, and human activities contributing to resource scarcity or degradation of natural resources.

These general approaches reflect "best practices" at the present time; they should be tailored to specific locations and issues and informed by climate-related studies to ensure maximum benefits.

D. Energy, Mining, and Water: The Department is responsible for managing water supplies and leasing areas for mining and development of renewable and non-renewable energy sources. In addition to the implementation of EBM as described above, bureaus should ensure the sustainability of these efforts by adopting the following approaches:

- Employ a basin-wide approach to achieve sustainable water management and to address current and future water shortages, including the potential for decreased water availability due to drought and climate change.
- Focus development activities in ecologically disturbed areas when possible, and avoid ecologically sensitive landscapes, culturally sensitive areas, and crucial wildlife corridors.
- Strengthen and enhance assessments of the vulnerability of water resources to climate change.
- Expand and encourage efficiency measures for water and energy use.

E. Cultural and Heritage Resources: Human societies have inhabited the areas that are now the United States, including affiliated states and insular areas, for many thousands of years. Consequently, many ecosystems and plant, fish, and wildlife species hold cultural significance, as do fixed-place cultural and heritage resources including archaeological sites, prehistoric and historical period structures, districts, cultural and sacred landscapes, and museums and curation facilities. In addition, there are various intangible cultural heritage resources, including inherited traditions or living expressions such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts.[5] To address impacts to these resources and the information they provide regarding long-term human interactions with variable environments, managing bureaus should:

- Integrate cultural resources into climate change vulnerability assessments to identify both inventoried resources and uninventoried areas (if any) at risk from projected impacts.
- Use projected climate change impacts as a factor to prioritize completion of cultural resource inventories pursuant to bureau responsibilities under the National Historic Preservation Act (NHPA) Sections 110 and 106, respectively.
- Update or implement cultural resource monitoring systems to track environmental effects that may vary under altered climate regimes and adversely affect cultural resources. Some monitoring needs may overlap partially or fully with natural resource

[5] http://www.unesco.org/culture/ich/index.php?lg=en&pg=00001

monitoring. For example, monitoring of changes in water tables can inform wetland and drainage issues as well as alteration of archaeological sites.

- Coordinate cultural resource preservation and research priorities across local, regional, and national scales (such as through LCC and DOI CSC networks).
- Engage indigenous communities in dialogue and incorporate traditional knowledge in assessing climate change effects on cultural, natural, and heritage resources and developing appropriate adaptation strategies.
- Engage federal stakeholders to coordinate requirements and processes of compliance with NHPA, such as programmatic agreements, for all climate change response actions.
- Incorporate cultural resource significance as a factor in management decisions and adaptation actions for vulnerable resources. Significance determinations may require stakeholder consultation.
- Incorporate knowledge from prehistoric and historic human adaptation (contained in cultural and heritage resources) into contemporary adaptation planning, decision-making, and communication.

F. American Indians, Alaska Natives, and Insular Areas: It is a priority of the Department to work with American Indians, Alaska Natives, and residents of Insular Areas to anticipate and prepare for climate change impacts to their lands, communities, and ways of life. To do so, bureaus should:

- Provide tribes, communities, and Insular Areas with the most recent climate change information and climate adaptation guidance.
- Solicit traditional knowledge from tribes, communities, and villages to complement existing scientific resources on past and present ecological and sociological changes.
- Ensure ongoing inclusion of indigenous groups in any EBM implementation by providing avenues for participation and soliciting information on areas of cultural value.

G. Coordination and Partnerships: Adaptation requires coordination across multiple sectors, geographical scales, and levels of government and should build on the existing efforts and knowledge of a wide range of stakeholders. Bureaus should:

- Coordinate and collaborate with federal, state, tribal, and local governments, and with private landowners, in support of activities that contribute to effective management of species, natural communities, cultural resources, lands, waters, and other assets placed at risk by changing climate conditions.
- Ensure consistent and in-depth government-to-government engagement with tribes and Alaska Natives to address climate change impacts on natural and cultural resources and to apply adaptation strategies.
- Engage with the relevant LCCs to ensure integration with local and regional climate adaptation priorities.
- As appropriate, coordinate with and undertake actions consistent with the National Ocean Policy Implementation Plan; the National Fish, Wildlife, and Plants Climate Adaptation Strategy (NFWPCAS); and the National Action Plan: Priorities for Managing Freshwater Resources in a Changing Climate (Freshwater Action Plan).

- Coordinate scientific activities and plans with the relevant DOI CSCs or the National Climate Change and Wildlife Science Center, and with federal, state, tribal, university, and other science partners to ensure maximum efficiency.
- Adjust partnerships to the scale of the adaptation action. For example, a local adaptation action will be most effective when driven by local interests, risks, and needs, but must also be congruent with regional or landscape-level actions.
- To the extent feasible, include participation from those charged with implementing adaptation plans.
- Support local capacity building since adaptation actions will mainly be implemented at the local level.
- Incorporate outreach efforts into adaptation strategies and actions; tailor adaptation communications to the local context. Communicate information about adaptation plans and projects to stakeholders using clear language that addresses local concerns.
- Provide training bureau staff and managers on climate change, adaptation, and mitigation to increase climate change knowledge within the Department.
- Where possible, implement adaptation strategies and actions that complement or directly support other related management goals such as efforts to improve disaster preparedness, promote sustainable resource management, and reduce greenhouse gas emissions.
- Minimize maladaptation, that is, actions to avoid or reduce vulnerability to climate change that negatively impact, or increase the vulnerability of other systems, sectors, or social groups.

H. Human Health and Safety: The Department will anticipate, prepare for, and develop cost-effective approaches to ameliorate adverse impacts that climate change may have on employees, contractors, volunteers, visitors, and others for whom it has special responsibilities.

I. Infrastructure and Equipment: All components of the Department should consider potential climate change impacts when planning, designing, building, purchasing, leasing, upgrading, maintaining, and decommissioning infrastructure and equipment. The Department should identify and avoid investments that are likely to be undermined by climate impacts, such as investments in infrastructure likely to be subject to repeated floods or inundation.

Status of climate change adaptation at the Department of the Interior

The Department's approach to climate change adaptation is underscored by Secretarial Order 3289, issued September, 2009 (amended February, 2010). The Department and its bureaus have established programs to understand and address climate change impacts, and have begun to integrate adaptation into operations, programs, planning, and policies.

In April 2011, the Bureau of Reclamation (Reclamation) issued a report assessing climate change impacts to western water supplies.[6] The National Park Service (NPS) finalized its Climate

[6] Bureau of Reclamation, SECURE Water Act Section 9503(c) – Reclamation Climate Change and Water, Report to Congress, 2011. http://www.usbr.gov/climate/SECURE/docs/SECUREWaterReport.pdf

Change Response Strategy[7] in 2010 and its Climate Change Action Plan[8] in 2012. In 2010, the U.S. Fish and Wildlife Service (FWS) finalized its Strategic Plan for Responding to Accelerating Climate Change.[9] In 2012, the U.S. Geological Survey (USGS) released a draft science strategy for public comment in advance of a planned 2013 release date of the strategy in final form. The strategy provides a broad set of goals and research priorities that will be used as a key input for USGS Climate and Land Use Change science directions. Other inputs include external stakeholders, DOI Bureaus, other federal and local government agencies, and Congress.

The Department has identified addressing climate change as one of its High Priority Performance Goals: "By September 30, 2013, for 50 percent of the Nation, the Department of the Interior will identify resources that are particularly vulnerable to climate change and implement coordinated adaptation response actions."[10] These assessments are yielding important information to contribute to the understanding of climate change impacts on the Nation's resources and are facilitating the design and implementation of adaptive management strategies for land, water, marine, fish and wildlife, cultural heritage, and tribal resource managers in the face of a changing climate.

The Department recognizes collaboration as fundamental to success in climate change adaptation. In this vein, the Department and its bureaus have initiated and participated in a variety of partnerships at the national, regional, and local levels. DOI CSCs and the nationwide network of LCCs are flagship examples of collaborative efforts that support climate change adaptation by the Department and other land and resource managers across the U.S.

The LCC network consists of 22 landscape-scale partnerships across the nation. Each LCC is led by a steering committee of resource managers. Steering committees identify common priorities, align conservation efforts, and identify key unmet science needs to support and enhance on-the-ground conservation efforts. DOI CSCs function as part of a nationally-coordinated network and provide region-focused management-related climate science. Their scope includes the full range of natural and cultural resources, and their focus is on information needed to manage these resources in the face of climate change and other stressors such as invasive species and changing land use. Working closely with the LCCs, the DOI CSCs are helping to build five- to ten-year strategic science plans that focus on key fundamental science questions needed to develop adaptation strategies.[11]

The Department and its bureaus have also participated in other collaborative climate change adaptation efforts, including, but not limited to:

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[7] National Park Service Climate Change Response Strategy. September 2010. http://www.nps.gov/climatechange/docs/NPS_CCRS.pdf

[8] National Park Service Climate Change Action Plan. 2012. http://www.nps.gov/climatechange/docs/NPS_CCActionPlan.pdf

[9] U.S. Fish and Wildlife Service. September 2010. Rising to the Urgent Challenge – Strategic Plan for Responding to Accelerating Climate Change. http://www.fws.gov/home/climatechange/pdf/CCStrategicPlan.pdf

[10] http://goals.performance.gov/agency/doi

[11] More information on LCCs and DOI CSCs can be found at: http://www.doi.gov/lcc/index.cfm and http://www.doi.gov/csc/index.cfm.

- The Department and bureaus participate in various national-level interagency efforts including the Climate Change Adaptation Task Force, the National Ocean Council, the U.S. Global Change Research Program, and others.
- FWS has co-led development of the Congressionally-mandated NFWPCAS.[12]
- Reclamation and USGS are working with the U.S. Army Corps of Engineers and NOAA to improve understanding of, and preparedness for, climate change impacts to water resources.[13] These bureaus are also working with others to establish a core training program related to climate change science for local, tribal, state, and federal water resources managers (a recommendation in the Freshwater Action Plan).
- With support from the Bureau of Land Management, FWS, NPS, and others, the Bureau of Indian Affairs launched a competitive climate change tribal grant program in 2011.

In addition to those described here, the Department has initiated and supported numerous climate change adaptation activities, including many by regional and field offices. In this Adaptation Plan, the Department identifies high-level actions for implementation in FY 2013 and beyond.

Implementation

The near-term actions identified herein are part of DOI's effort to integrate climate change adaptation into relevant operations, plans, programs, and policies. Ultimately, it is DOI's goal to integrate climate change adaptation agency-wide, including, but not limited to: park, refuge, and public land management; restoration; conservation of species and ecosystems; services and support for tribes and Alaska Natives; protection of cultural, archaeological, and tribal resources; water management; energy and minerals leasing; scientific research and data collection; land acquisition; management of employees and volunteers; visitor services and recreation; and construction and facilities maintenance.

The group responsible for ensuring implementation of this Action Plan is the Energy and Climate Change Council which was established by Secretarial Order 3289 and is led by the Secretary of the Interior. The Department will annually revisit this plan and make revisions and updates, as appropriate.

DOI's Climate Change Adaptation Actions for Fiscal Year 2013 and Beyond

Develop and implement a Departmental Manual Chapter on climate change adaptation outlining the Department's policy and identifying roles and responsibilities for DOI's bureaus and offices

Bureaus and offices within the Department will anticipate and address climate change impacts to their individual mission, programs, and resources. The Department recognized the need for overarching direction and guidance for climate change adaptation and in December, 2012, provided in the Departmental Manual the common policy and components that apply to all bureaus and offices. The Departmental Manual Chapter provides guidance to ensure

[12] http://www.wildlifeadaptationstrategy.gov/
[13] Products from this effort include: "Climate Change and Water Resources Management: A Federal Perspective" (http://pubs.usgs.gov/circ/1331/) and "Addressing Climate Change in Long-Term Water Resources Planning and Management: User Needs for Improving Tools and Information" (http://www.usbr.gov/climate/userneeds/).

accountability, engender a consistent approach, foster internal and external coordination, and allow for monitoring and evaluation of climate change adaptation efforts. Implementation of the new policy is underway.

Review progress in meeting DOI's climate change High Priority Performance Goal and assess next steps beyond FY 2013

DOI's climate adaptation High Priority Performance Goal is one of a limited number of performance goals put in place to measure progress for the Department's high priority activities. The climate adaptation High Priority Performance Goal identifies milestones to be achieved through FY 2013. As part of the continuing review of all of the Department's performance goals, the Department will determine appropriate steps for FY 2014 and beyond based on progress to date and priority needs.

This assessment, and any recommendations for revision, will be complete by the end of FY 2013.

Address priorities and actions called for in cross-cutting planning efforts

Adapting to climate change requires an integrated approach. Taking advantage of past and ongoing collaborative efforts, the Department's bureaus will:

- Identify bureau priority adaptation-related actions called for in relevant cross-cutting planning documents, including the NFWPCAS, the Freshwater Action Plan, and the National Ocean Policy Implementation Plan;
- Plan and/or implement bureau priority adaptation-related actions they have identified; and
- To the extent feasible, avoid actions that are inconsistent with, or contradictory to the goals of relevant cross-cutting planning documents.

This activity will be ongoing, and the Department's bureaus will ensure full implementation of this action by the end of FY 2013.

Implement and update Department of the Interior Climate Science Center strategic science plans

In coordination with DOI bureaus and other partners, all eight DOI CSCs will implement and as necessary update their 5-10 year strategic science plans that focus on key fundamental science questions needed by resource managers to develop adaptation strategies.

All eight plans will be complete in early 2013; plans completed earlier are in implementation, and newly completed plans will move to implementation immediately. The Department will update the plans as necessary.

Develop a chapter for the FY 2012 DOI Economic Report addressing the role of economics in DOI's climate change adaptation efforts

Each year since 2009 DOI has published a report that discusses economic issues relevant to the Department, including the economic impact of its programs and activities. The report covering FY 2012 will include a chapter that evaluates how economics can play a role in the Department's climate change adaptation activities.

The chapter will be complete by the end of the FY 2013.

Conclusion

Climate change adaptation is a long-term endeavor requiring immediate action in combination with investments in monitoring, assessment, flexibility, collaboration, and improved scientific information. This climate change adaptation plan describes, at a high level, the current state of knowledge about the Department’s climate change vulnerabilities and adaptation needs, and steps to address them in the near-term. The Department is committed to incorporating adaptation into planning and operations and looks forward to working with federal and nonfederal partners to improve understanding, develop effective tools, and identify and implement best practices.