U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF INSPECTOR GENERAL

Catalyst for Improving the Environment

Evaluation Report

EPA Needs a Comprehensive Research Plan and Policies to Fulfill its Emerging Climate Change Role

Report No. 09-P-0089

February 2, 2009

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Abbreviations

BOSC	Board of Scientific Counselors
CCSP	Climate Change Science Program
CCTP	Climate Change Technology Program
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
GCRP	Global Change Research Program
OAR	Office of Air and Radiation
OIG	Office of Inspector General
ORD	Office of Research and Development

Cover Photos: Picture on left shows a hurricane striking a sea wall (photo courtesy National Oceanic and Atmospheric Administration). Middle picture shows solar and wind technologies (photo courtesy California Public Utilities Commission). Picture on right shows coastal erosion in Pacifica, California (photo courtesy National Aeronautics and Space Administration).

U.S. Environmental Protection Agency
Office of Inspector General

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At a Glance

Catalyst for Improving the Environment

Why We Did This Review

We sought to answer the question: how well do the policies, procedures, and plans of the U.S. Environmental Protection Agency (EPA) help ensure that its climate change research fulfills its role in climate change?

Background

EPA is 1 of 13 federal agencies that make up the U.S. Climate Change Science Program, which guides federal research through its strategic plan. Part of EPA's role is understanding the regional consequences of global change. EPA's Office of Research and Development (ORD) handles this function. EPA's Office of Air and Radiation conducts activities related to mitigating greenhouse gases. ORD manages EPA's climate change research function through its Global Change Research Program.

For further information, contact our Office of Congressional, Public Affairs and Management at (202) 566-2391.

To view the full report, click on the following link:
www.epa.gov/oig/reports/2009/20090202-09-P-0089.pdf

EPA Needs a Comprehensive Research Plan and Policies to Fulfill its Emerging Climate Change Role

What We Found

EPA does not have an overall plan to ensure developing consistent, compatible climate change strategies across the Agency. We surveyed EPA regions and offices and found they need more information on a variety of climate change topics. They need technical climate change research and tools as well as other climate change policy guidance and direction. We learned that, in the absence of an overall Agency plan, EPA's Office of Water and several regional offices have independently developed, or are developing, their own individual climate change strategies and plans. The lack of an overall climate change policy can result in duplication, inconsistent approaches, and wasted resources among EPA's regions and offices. EPA has not issued interim guidance to give its major components consistent direction to ensure that a compatible national policy – when it emerges – will not result in wasted efforts.

EPA's latest plan for future climate change research does not address the full range of emerging information needs. Specifically, the projected time of completion or the scope of some research projects do not match the timing or the scope of regions' needs. ORD does not have a central repository of its climate change research for its internal users, nor does it effectively communicate the results of its climate change research to EPA's internal users. While ORD collects research requirements from regions and program offices, the selection criteria for research topics are not transparent to the regions. Finally, ORD does not have a system to track research requests through completion, or a formal mechanism to obtain feedback from its users.

What We Recommend

We recommend that the Deputy Administrator direct Assistant and Regional Administrators on how to plan for climate change challenges in their media areas/regions until the Agency develops an overall strategy; and establish guidance for regularly entering their climate change scientific information in the Science Inventory. We also recommend that the Assistant Administrator for ORD establish various management controls to ensure EPA fulfills its emerging climate change role and related information needs. The Agency concurred with our recommendations.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
INSPECTOR GENERAL

February 2, 2009

MEMORANDUM

SUBJECT: EPA Needs a Comprehensive Research Plan and Policies to Fulfill its Emerging Climate Change Role
Report No. 09-P-0089

FROM: Wade Najjum
Assistant Inspector General, Office of Program Evaluation

TO: Lisa P. Jackson
Administrator

Lek Kadeli
Acting Assistant Administrator for Research and Development

This is our report on the Climate Change Program evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

The estimated cost of this report – calculated by multiplying the project's staff days by the applicable daily full cost billing rates in effect at the time – is $636,217.

Recommendations 2-1 and 3-1 of this report are addressed to the Deputy Administrator, and Agency comments were received from the Deputy Administrator. The Deputy Administrator position is currently vacant. Therefore, we are addressing this report to the Administrator.

Action Required

In accordance with EPA Manual 2750, you are required to provide a written response to this report within 90 calendar days. You should include a corrective actions plan for agreed upon actions, including milestone dates. We have no objections to the further release of this report to the public. This report will be available at http://www.epa.gov/oig.

If you or your staff has any questions regarding this report, please contact me at 202-566-0827; or Jeffrey Harris, Director of Cross Media, at 202-566-0831 or harris.jeffrey@epa.gov.

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Chapter 1
Introduction

Purpose

The overall purpose of this evaluation was to answer the question, "How well do the policies, procedures, and plans (i.e., internal/management controls) of the U.S. Environmental Protection Agency (EPA) help ensure that its climate change research fulfills its climate change role and related internal needs?"

To accomplish this objective, we answered the following questions:

(1) What research products or information do EPA's program and regional offices need to fulfill EPA's climate change role? Do EPA's Office of Research and Development (ORD) climate change research plans meet the information needs of EPA's program and regional offices?

(2) Does EPA have policies, procedures, or other internal/management control mechanisms in place to efficiently and effectively coordinate its climate change research, and to ensure expertise across the Agency is being used to fulfill its climate change role?

Background

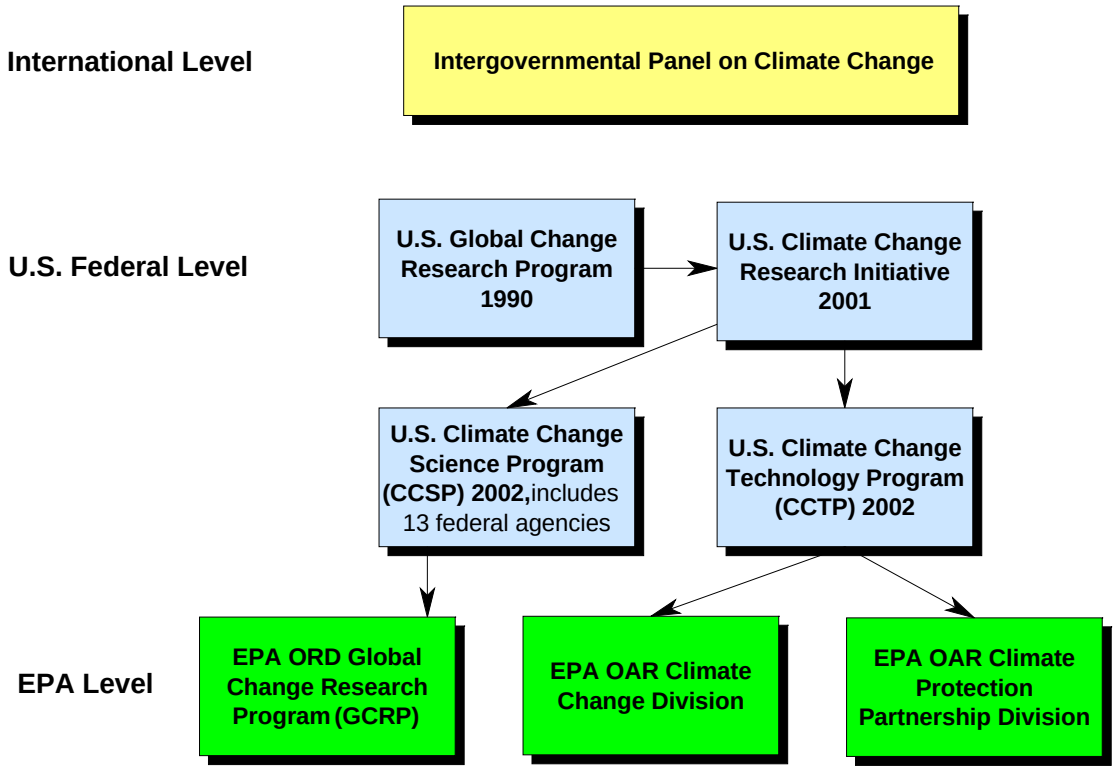
Since the enactment of the Global Change Research Act of 1990, EPA's research on climate change – also known as global warming – has been part of a national and international framework. EPA is 1 of 13 federal agencies that comprise the U.S. Climate Change Science Program (CCSP). The CCSP was launched in 2002. The CCSP incorporated both the U.S. Global Change Research Program (GCRP) and the U.S. Climate Change Research Initiative of 2001. The CCSP Strategic Plan guides federal research on climate change, and the 13 agencies focus their research on areas related to their unique missions in a collaborative effort.[1] Figure 1.1 on page 2 shows the relationships between these different organizations.

CCSP's strategic plan defines EPA's role as having a primary focus on understanding the regional consequences of global change. Within EPA, ORD performs this role. ORD has the responsibility for assessing the potential impacts

[1] CCSP assessment activities, in turn, contribute to the work of the Intergovernmental Panel on Climate Change. Established by the United Nations and the World Meteorological Organization, the Intergovernmental Panel on Climate Change assesses scientific, technical, and socio-economic information to better understand climate change, its potential impacts, and options for adaptation and mitigation.

of climate change and evaluating adaptation options.[2] The Office of Air and Radiation (OAR) has responsibility for activities related to mitigating greenhouse gases. Both ORD and OAR communicate science findings and information about adaptation options.

Figure 1.1: Relationships between International, National (U.S. Federal), and EPA Climate Change Programs



Source: Office of Inspector General (OIG)

We focused primarily on ORD because it has the central responsibility for EPA climate change research under the CCSP, and because ORD is the scientific research arm of EPA. ORD's mission is to:

- perform research and development,
- provide responsive technical support to EPA,
- integrate the work of ORD's scientific partners, and
- provide leadership in addressing emerging environmental issues.

[2] While the primary focus of ORD climate research has been on assessing the potential impacts of climate change and alternative adaptation options, this is changing given the directives of the Fiscal Year 2008 Appropriations Bill. ORD also has some responsibility for mitigation. Further, as discussed in Chapter 3, EPA's draft 2008 GCRP multi-year plan synopsis addresses four different categories of regional mitigation research decisions/concerns: (1) Clean energy, (2) Renewables/Biofuels (wind & solar), (3) Mitigation models, and (4) Sequestration.

ORD manages EPA's climate change research function through its GCRP.[3] ORD's GCRP not only assesses the impacts of global change; it also focuses on the implications of climate change on EPA's ability to satisfy its statutory, regulatory, and programmatic requirements. EPA also has statutory obligations to provide scientific information to organizations other than EPA regional and program offices.

The scope of OAR's interest is similar to the scope of ORD's climate change work. However, OAR is focusing more on mitigation and the effect of regional air quality control strategies on climate change, as opposed to the effect of climate change on regional air quality.

EPA Climate Change Research Funding

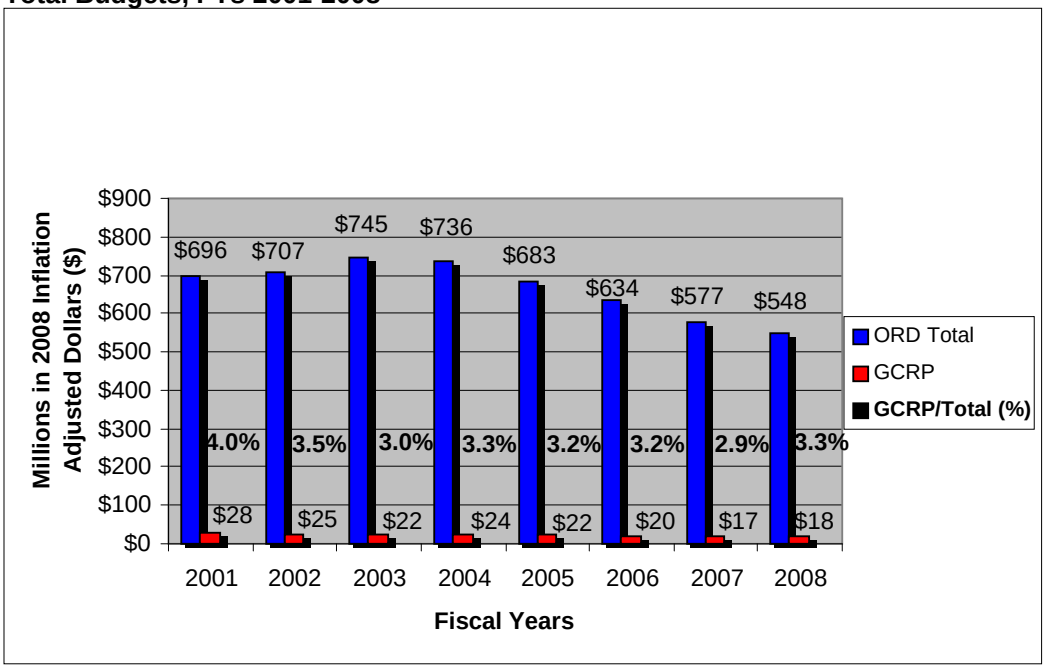
Relevant scientific and technical work is coordinated across the Federal Government by the CCSP and the U.S. Climate Change Technology Program (CCTP). CCSP received about $1.8 billion in Fiscal Year (FY) 2008, and CCTP received about $3.9 billion. In contrast, EPA received about $36.6 million in FY 2008 for Science and Technology funding for climate change. ORD's budget for GCRP, ranging between about $16 and $20 million annually over the last 3 years, is about 1 percent of the total CCSP budget.

ORD's overall budget for FYs 2001-2008 decreased (using inflation adjusted dollars) 20 percent from $696 to $548 million, while its GCRP budget declined 36 percent from $28 to $18 million during the same period. GCRP's budget has been about 3 percent, on average, of ORD's entire budget for the last 6 years as shown in Figure 1.2.[4]

[3] A 2008 GCRP Multi-Year Plan Synopsis describes EPA's GCRP as stakeholder-oriented, with primary emphasis on assessing the potential consequences of global change (particularly climate variability and change) on air quality, water quality, aquatic ecosystems, and human health in the United States.

[4] Congress' passed Science and Technology Omnibus FY 2008 spending bill specifically increases the GCRP's budget and stipulates that the new resources will be used to conduct research in support of the Agency's efforts to regulate greenhouse gas emissions.

Figure 1.2: ORD Global Climate Research Plan Budgets as a Percentage of ORD's Total Budgets, FYs 2001-2008



Source: OIG

EPA's Evolving Climate Change Role

The evolving mission for EPA includes a larger role in researching alternative strategies to mitigate climate change. In the January 2007 State of the Union Address, President Bush stated:

> *America is on the verge of technological breakthroughs that will enable us to live our lives less dependent on oil. And these technologies will help us be better stewards of the environment, and they will help us to confront the serious challenge of global climate change.*

Soon after the President emphasized that climate change was a "serious challenge," in April 2007, the Supreme Court held that "… the Clean Air Act authorizes EPA to regulate emissions from new motor vehicles on the basis of their climate change impacts…." [5] The Court decision contributed to shifting EPA's role from focusing not only on assessing impacts of and adaptation to climate change, but also on mitigation measures.

Shortly thereafter, on June 11, 2007, EPA issued a Working Paper, *EPA Administrator's Priorities: Clean Energy and Climate*, "…to help accelerate environmental protection, reduce greenhouse gases, and strengthen energy security." Subsequently, EPA programs and regions (and their respective States)

[5] *Massachusetts et al. v. EPA* (Case No. 05-1120).

began identifying additional needed climate change research, information, and related products.

Noteworthy Achievements

The Board of Scientific Counselors (BOSC) is a public advisory committee chartered under the Federal Advisory Committee Act that provides advice, information, and recommendations about the ORD research program. A BOSC subcommittee performed a review of ORD's GCRP and published its final report on March 27, 2006. The review found that within the context of what GCRP had been asked to do so far, it had done the "right work" and that it had done it "well."

Scope and Methodology

To determine how well EPA's policies, procedures, and plans (i.e., internal/management controls) help ensure that its climate change research fulfills EPA's climate change role and related internal needs, we reviewed documents relating to:

- ORD's and EPA's responsibilities and policies on climate change,
- EPA's 2006-2011 Strategic Plan,
- GCRP's 2008-2012 Draft Multi-Year Plan,
- BOSC's Mid-Cycle Review of GCRP, and
- legislation regarding climate change.

We also reviewed documents provided by the GCRP National Program Director and attended several relevant conferences concerning climate change.

We conducted two surveys to identify what research products or information EPA's program and regional offices need to fulfill EPA's climate change role. We sent the first survey to regions and program offices to identify the universe of specific climate change decisions and concerns, and to determine the adequacy of EPA's climate change policies and procedures.

We sent a second survey to selected ORD managers and staff to obtain information on ORD's existing and planned climate change research products as well as EPA's policies. We analyzed responses from the 10 EPA regions, OAR, and ORD's GCRP. We judgmentally chose five climate change decisions and products to use as case studies for more detailed follow-up. The five case studies came from five different EPA regions. We then conducted follow-up interviews with representatives of the five regions.

To determine whether GCRP's climate change research plans meet the information needs of EPA's programs and regional offices, we analyzed and compared GCRP planned research product topics and timeframes to the decisions and concerns identified by regions. We also reviewed ORD's budgets for the last

8 years and compared them to annual ORD and GCRP budgets to identify any funding trends. Further, we interviewed selected external stakeholders concerned with climate change or research.

We conducted this review in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the review to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based upon our objectives. We performed our evaluation between November 2007 and April 2008.

Chapter 2
EPA Regions Have Multiple Climate Change Needs

EPA does not have an overall plan or other means to ensure the development of consistent, compatible climate change strategies across EPA or to make the best use of declining research dollars. EPA regions have multiple climate change needs, including the need for information on a variety of different climate change topics. Regions stated that they needed technical climate change research and tools, as well as other climate change policy guidance and direction. In the meantime, EPA's Office of Water and regional offices have independently developed, or are in the process of developing, individual climate change strategies and plans. The lack of an overall climate change policy can result in duplication, inconsistent approaches, and wasted resources among EPA's regions and offices.

EPA Regions Need Differing Climate Change Information

Regional respondents to our survey identified a variety of different, emerging climate change information needs. They need technical climate change research or information, as well as related policy guidance and direction.

Regions Need Technical Information

Regions stated they would like technical information on:

- impacts of climate change,
- mitigation or greenhouse gas emissions reduction/energy efficiency technologies,
- tools to assess the effectiveness of emissions reduction technologies and climate change policy decisions, and
- adaptation strategies to moderate potential climate-related damage and preventive measures.

Table 2.1 shows the types of climate change information regions require. Regions 2 and 8 were in the process of identifying climate change research and information needs, and did not identify specific needs at the time of our survey.

Table 2.1: Regional Climate Change Information Needs

Region	Impact of Climate Change	Mitigation Technologies	Effectiveness of Mitigation Technologies and Climate Change Policies	Adaptation Strategies
1	x	x	x	
3	x	x		
4	x		x	x
5			x	
6	x	x	x	
7	x			
9	x	x	x	x
10	x		x	x

Source: OIG

Seven regions stated they require a variety of technical information on the impact of climate change. For example, they need information on the potential impacts of temperature and health effects, food supply considerations, and local and regional impacts. Region 6 stated that it would like information on the impact of rising water on aquifers and ground water monitoring. Region 7 stated it would like information on the impacts on agricultural processes. Region 9 stated that it would like information on the impacts on water bodies and agriculture due to changing pest pressures and invasive species.

Several regions identified information needs on mitigation technologies. Regions stated that they would like additional information on alternative energy sources such as biofuel, solar, and wind technologies. Regions 6 and 9 require information on carbon sequestration, specifically regarding the feasibility of sequestration at Superfund sites. They also need information on the safety and efficacy of geologic carbon sequestration.

Regions stated they require tools to assess the effectiveness of mitigation technologies along with anticipated climate change policies. For example, Regions 2 and 6 needed computer models to determine the effectiveness of mitigation technologies and their impact on policy decisions and planning processes. Regions 5 and 6 stated that they would like information on the effectiveness of using bio-fuels, such as corn ethanol, as a method for reducing greenhouse gases. Regions 1 and 6 would like to develop emissions inventories to monitor reducing greenhouse gases, and would like to have a common protocol to quantify the benefits of energy efficiencies.

Regions also stated they would like information on adaptation strategies, including tools to asses their effectiveness. For example, Region 1 stated that, "As the likely impacts of climate change become better understood, we have become more and more interested in science-based tools (e.g., predictive models of coastal impacts) to assist states and communities in preparing for those impacts (e.g., predictive models of impacts on coasts)." Region 9 stated that it wanted information on how to develop alternative approaches to storing surface water for

dry seasons. Region 10 listed several adaptation information needs such as identifying appropriate water infrastructure, and ensuring the integrity of drinking water systems in case of sea level rise and episodic flooding, both potential hazards of climate change. Region 10 also stated its tribal communities require information and adaptation strategies that are consistent with tribal cultural perspectives.

Regions Need Policy Guidance and Direction

Regions stated in survey responses that they need additional policy guidance and direction on climate change and related research. They said they need this information in anticipation of any new climate change legislation. They need the information not necessarily from ORD, but from other EPA program offices. For example, Region 1 anticipates needing to provide effective technical guidance to operators of wastewater treatment plants to ensure the greatest possible energy efficiency. Region 1 anticipates needing presentations, brochures, and other outreach material to educate the regulated community and the public about specific requirements. Region 9 staff need guidance on whether to allow permitting of new coal-power electricity plants.[6] Region 10 needs guidance on air quality programs and how to align timelines and schedules of implementing these programs when addressing climate change impacts. Some regional representatives need guidance on how to assess climate change from a tribal perspective along with plans to attain and maintain air quality standards.

EPA's Office of Water and Most Regional Offices Are Independently Developing Climate Change Strategies

EPA's Office of Water and most regional offices are independently developing their own climate change strategies or plans. Although the Administrator issued a working paper on energy and climate, as discussed in Chapter 1, EPA does not have an overall climate change policy. EPA's Office of Water has developed its own draft climate change strategy, and 7 of 10 EPA regions responded to surveys that they had or were working on their own climate change plans or strategies.

The Office of Water did not respond to our survey because at the time it was developing a strategy to deal with the impact of climate change. Office of Water staff stated that they are in the early stages of understanding how climate change will affect different water programs. Although the Office of Water has an idea of how climate will affect water resources based on best professional judgments, the Office is waiting to receive scientific feedback to better understand the nature of the problem.

[6] Some new power plants had designs to utilize geologic carbon sequestration. However, because the safety and efficacy of carbon sequestration has not been established, Region 9 cannot determine if it can issue permits to the power plants.

EPA Regions 1, 2, 5, 6, 8, 9, and 10 have either developed draft strategies or are developing draft climate change action plans or strategies.[7] However, climate change poses a new set of challenges. Region 9, for example, stated that two major challenges are "deciding what degree to implement the highest priority activities and how to accomplish the work." In general, the regions are looking into how they can further reduce greenhouse gas emissions and how to create strategies to help them adapt to climate change.

Conclusions

EPA regional offices stated they need a variety of research products, technical information, or tools on climate change impacts, adaptation, and mitigation. Moreover, regions require policy guidance and direction on how to implement any new climate change legislation. In the meantime, some program and regional offices are independently creating separate, individual climate change action plans and strategies.

An overall EPA strategy for climate change should:

- lead to clear research requirements,
- help the Agency fulfill its climate change role, and
- provide "unity" of action so regions and program offices can proceed with confidence in establishing their own climate change strategies and plans.

Such a national strategy does not yet exist. The lack of an overall climate change policy can result in duplication, inconsistent approaches, and wasted resources among EPA's regions and offices. EPA has not issued interim guidance to give its major components consistent direction so that a compatible national policy – when it emerges – will not result in wasted efforts.

Recommendation

We recommend that the Deputy Administrator:

2-1 Direct Assistant and Regional Administrators on how to plan for climate change challenges in their media areas/regions until the Agency develops an overall strategy.

Agency Comments and OIG Evaluation

The Agency concurred with our recommendation. Recently, the Agency initiated a process that will contribute to an Agency approach on climate change. Additionally, the Agency agreed to provide the OIG with progress updates. To

[7] One region did not indicate whether it had developed a strategy or was developing a climate change action plan or strategy.

meet the OIG's requirements, the Agency's approach should also include milestones for each specified action. The Agency's written response, as well as our evaluation of Agency comments, is in Appendix A.

Chapter 3
Research Plan Does Not Address All Regions' Climate Change Needs

GCRP's January 2008 draft research plan does not address the full range of EPA's climate change information needs. Regions need climate change tools and information to fulfill EPA's regulatory responsibilities. In addition, the timing or the scope of GCRP's planned research projects do not match the timing or the scope of regions' needs. Finally, ORD lacks procedures to ensure it meets internal EPA climate change information needs effectively.

Regions Need Climate Change Information and Tools Directed at Regional and Local Levels

EPA regions need climate change information and tools directed at regional and local levels. They need this information and these tools, in part, to fulfill EPA's regulatory responsibilities related to their programs. Regions' areas of concern include air quality; projections of sea level rise affecting their regions; and impacts of episodic flooding on water infrastructure, wetlands, and critical habitat for endangered species in their local areas.

GCRP completed a national level preliminary assessment of the implications of climate change for air quality across the United States in September 2007. GCRP plans to complete a more comprehensive assessment and report on the climate change impact on national and regional air quality by 2012. However, regions need information and tools to fulfill EPA's regulatory responsibilities related to their specific programs and activities, such as approving State Implementation Plans[8] and permits. Regions require tools and models that they can use to assess the climate change impact on air quality at a more local level. In many cases, air quality problems are localized, and climate change impacts on air quality vary from one geographic area to another.

Seven regions (Regions 1, 4, 5, 6, 7, 9, and 10) stated that they require regional or local scale models to develop adaptation strategies that would work for their cities, States, and regions. For example, Regions 6, 9, and 10 need research on sea level rise specific to their geographic region. Their concerns include the impact of sea level rise on the quality and quantity of drinking water, and on waste water treatment plants. These regions are also concerned about sea level rise near Superfund sites in their coastal areas. Regions 6 and 9 need regional

[8] State Implementation Plans identify how each State will attain and/or maintain the primary and secondary National Ambient Air Quality Standards.

level analysis on the severity and frequency of drought, and the decrease in mountain snow pack.

Similarly, regions need geographic-specific predicted impacts in other areas for resource planning and management. For example, Region 7 needs research on disaster-related weather events, and the impact of climate change on agricultural processes in its region. Region 10 needs region-specific climate change impact information to inform local decision makers on building adaptation infrastructure, such as additional sea walls or dikes. This infrastructure could be impacted by increased storm intensity and tidal surges that can cause damage to facilities, as well as damage due to sea level rise.

The Timing and Scope of ORD's Planned Projects Do Not Meet Key Regional Needs

Although GCRP's draft 2008-2012 Multi-Year Plan addresses most of the topic areas identified by regions, the timing and scope of the planned research projects do not meet key regional needs. We compared research topics and delivery dates of the planned research topics to the information needs the regions identified in response to our survey in December 2007. We concluded that the planned completion dates for many of GCRP's planned research topics do not meet all of the regions' needs. Regions started developing their climate change strategies and plans after the EPA Administrator added climate change to his list of priorities for regions in June 2007. However, the survey responses show that the regions need information on many climate change topics within the next year or even immediately.

We asked in our survey for the regions to list five current or future climate change-related decisions or areas of concerns. The regions listed 57 decisions or areas of concerns. We then summarized these 57 decisions or concerns into 11 summary categories, and compared them to the draft 2008-2012 Multi-Year Plan, as shown in Table 3.1.

Table 3.1: Regional Research Needs versus GCRP's Planned Research Projects

Regional Decision or Concern Category	Regions That Cited the Decision or Concern	Addressed in GCRP Multi-Year Plan?	Regional Timeline When Information Is Needed	GCRP Timeline Satisfies Regional Needs?
1. Air quality impacts	9, 10	Yes	Ongoing, 1 to 2 years, immediately	Yes
2. Clean energy/ efficiency	1, 6	Yes	Immediately, medium term	Yes
3. Water quality/ Quantity/ Wastewater	1, 5, 6, 10	Yes	Ongoing, Jan/2010, short-term	Yes
4. Sea level changes	6, 9	Yes	Short term, Jan/2010, 3-5 years	Yes
5. Ecosystem services	6, 9, 10	Yes	2008, June 2011, within 3-5 years	Yes
6. Droughts/ water variability	6, 9	Yes	Jan/2010, 3-5 years, 5-10 years	Yes
7. Adaptation strategies	4, 8	Yes	ASAP	No
8. Renewables/ Biofuels (wind & solar)	3, 5, 6, 9	Yes	Ongoing, ASAP, presently, Jan/2009 immediately	No
9. Mitigation models	4, 6	Yes	ASAP	No
10. Impact models	1, 3, 4, 6, 9	Yes	Continuous, presently, ASAP, Jan/2012, June 2012, immediately	Cannot determine
11. Sequestration	3, 5, 6, 9	Yes	Presently, ASAP, long-term, 2-5 years	Cannot determine

Source: OIG analysis of survey responses and GCRP's Draft Multi-Year Plan. The 11 numbered categories do not represent any priority.

We compared regional research needs and desired timeframes to GCRP's planned products and their estimated completion dates. We found that GCRP's draft plan addressed 6 of the 11 summary categories in some manner. As shown above in Table 3.1, GCRP is planning to provide the type of information requested by the regions in the first six categories soon enough to meet the regions' needs. However, GCRP's timeframe for delivery did not match the regions' needs in at least three categories. In the last two categories above, we could not determine for certain whether GCRP was planning to provide the type of information requested by the regions soon enough to meet the regions' needs.

As shown in Table 3.1, GCRP plans to satisfy the regions' air quality impact needs on time. GRCP is researching climate change air quality impact measures, and plans other similar projects. The research topics include the impact of climate

change on U.S. particulate matter concentrations, and the human health impacts due to global change effects on air quality. GCRP plans projects in these two topic areas for 2009 and 2011, respectively. The regions stated that they needed these types of products either immediately, "ongoing," or in 1-2 years. GCRP plans to satisfy these needs on time.

On the other hand, the regions are also asking for information on bio-fuel, solar, and wind farm technologies. The regions also need information on the possibility of widespread environmental damage associated with large-scale increased corn production for use in ethanol production. Responses from different regions listed the time they need this information as immediate, "ongoing," and "ASAP." However, according to the draft Multi-Year Plan, GCRP does not plan to complete its renewable fuels research until 2011. In the interim, ORD has established a work group on bio-fuels that includes participants from regions, OAR, and ORD. ORD representatives stated that regions can obtain interim results by joining the workgroup.

EPA Lacks Policies to Meet Internal Climate Change Information Needs Effectively

EPA's policies and procedures do not ensure that it can meet the climate change research information needs of its program offices and regions. EPA does not have a repository of climate change research conducted by the other agencies. While ORD has set up processes for communicating with regions, the processes do not have the force of policy. As a result, ORD's communication of research results is not coordinated or consistent. Finally, EPA does not have a policy to ensure that climate change research is effectively coordinated between ORD, program offices, and regions.

EPA Does Not Have a Central Repository of Climate Change Information

EPA does not have a central repository of climate change-related research information. ORD does not systematically or comprehensively collect climate change research information and make it available to EPA's internal users. EPA regions and program offices regularly need and obtain climate change research information from external sources.

Responses to the survey showed that regions and program offices use a variety of sources outside of EPA for obtaining climate change research information they need to carry out their responsibilities. Regions obtain this information through their own informal networks and contacts. The sources they turn to include other federal agencies, non-governmental organizations, academic researchers, and international organizations. Fourteen of 16 respondents stated that they get climate change research information from other federal agencies. Survey respondents stated that the information they need to carry out their responsibilities

may be located at the Department of Energy, the National Oceanic and Atmospheric Administration, or the Department of Agriculture. However, ORD does not systematically collect that information and make it available to EPA users. For example, Region 10 uses regional sea level rise information from the National Oceanic and Atmospheric Administration because ORD focuses on sea level rise from a national perspective. Region 5 uses research from the Department of Agriculture related to land use and bio-fuels. Region 6 gets emissions research information from the Department of Energy. However, survey respondents also mentioned informal methods and networks staff use to obtain information from external sources. The potential for duplication of effort and inefficiency exists when EPA staff in regions and program offices independently collect information from external sources.

ORD Does Not Systematically Communicate Research Results

ORD does not systematically communicate all relevant research results to its users. ORD uses formal and informal mechanisms to share results of its research. Formal mechanisms include publishing reports in technical journals, reporting to the CCSP, and publishing information on EPA Websites. GCRP's research products are also published in CCSP reports and posted on the CCSP Website. ORD established a Science Inventory with the intent of compiling all ORD research reports. According to ORD, each EPA office is responsible for adding its own science activities to the inventory. However, the Science Inventory is not current because it has not been consistently updated or maintained.

ORD's GCRP recently established a new Web-based climate change-related tool called the Environmental Science Connector. This tool is accessible to all EPA users. This Web-based tool contains a variety of GCRP climate change research-related information. However, it contains only GCRP documents, is still in the early stages of implementation, and is still being refined. According to ORD, they also have other systematic methods of communicating the results of their research, including:

- a new public Website, Science to Achieve Results,
- regularly-scheduled Science to Achieve Results progress review sessions,
- fact sheets, and
- public lectures and presentations.

Nonetheless, EPA survey respondents indicate that these methods are not entirely effective.

ORD's informal processes to communicate climate change research information to regions and program offices include workshops, meetings, and weekly telephone calls with the GCRP National Program Director in which regions and program offices can participate. However, since these processes are informal, participation is inconsistent and only partly effective.

EPA Does Not Have a Policy to Ensure Research is Effectively Coordinated

ORD routinely included the regional offices when developing its new draft Multi-Year Plan through Research Coordinating Teams. However, EPA does not have a formal policy to ensure that climate change research is effectively coordinated among ORD, program offices, and regions.

ORD's research selection process is not transparent to the regions. The March 2006 BOSC report stated that ORD should have a transparent priority setting process so stakeholders understand how ORD chooses issues to address. Transparency is necessary so stakeholders understand how they can participate in the process. In developing its new draft Multi-Year Plan and research strategy, ORD coordinated with regions by asking them for their research requirements. However, regions do not know why some topics were selected and others were not. In some instances, when a research topic is not chosen, the reason is not documented or communicated. Survey results and our follow-up interviews with regional representatives show that the regions did not know how and why topics were selected or not selected for research.

We also found that ORD does not have a system to track regional research requirements from the time they are received to the time a decision is made about whether and how the requirement will be met. ORD also does not track research requests or products by requestor. However, managers from ORD's Office of Science Policy told us that a project is underway to establish a database that will track research needs to completion and to the requestor.

Additionally, ORD does not have a formal, systematic mechanism to obtain feedback on how well its research products meet users' requirements. The March 2006 BOSC report stated that ORD needed to focus more on ensuring that information provided to decision makers is valuable, applicable, and understandable. In response to our discussion draft, ORD indicated that it will conduct a survey before the next BOSC review.

Conclusions

In 2007, EPA program offices and regions began identifying their research and information needs to fulfill their responsibilities. However, EPA does not yet have a comprehensive climate change research plan that matches EPA's evolving climate change role. ORD's current climate change research products and plans do not meet users' needs in timeliness or scope. Some changes in policy and procedures are needed to ensure ORD can meet regions' climate change research information needs.

When the EPA Administrator added climate change as a regional priority in June 2007, regions began identifying new climate change information needs. Before

that time, regions generally did not request specific climate change-related research. To address the new priority, regions need some climate change information immediately or in the very near future.

Compounding the situation, ORD does not maintain a central repository of climate change research information from other sources that EPA's internal users frequently need. Nor does ORD have a formal policy to systematically communicate climate change research to regions or other interested parties. The Science Inventory database is not current, and the new Environmental Science Connector is in the early implementation stage and still being refined. In addition, ORD's research selection process is not transparent, and ORD does not yet have a system to track regional research requirements to completed research products or to requestors. Finally, ORD does not have a formal mechanism to obtain feedback from regions and program offices on how well its research products meet users' requirements or information needs. These issues can result in an ineffective use of resources, which could be avoided through better management controls. Implementation of our recommendations will also help make the best use of declining resources.

Recommendations

We recommend that the Deputy Administrator:

3-1 Establish guidance to programs and regional offices for regularly entering their climate change scientific information in the Science Inventory.

Further, we recommend that the Assistant Administrator for the Office of Research and Development:

3-2 Ensure that ORD continues to routinely update the Science Inventory to include the latest information from its laboratories and centers.

3-3 Establish a formal, transparent research requirements determination process that includes well-defined procedures for identifying a unified set of priority climate change research needs.

3-4 Establish a formal mechanism to track regional research needs from research project selection to completion, and to requestor.

3-5 Establish a formal method for coordinating GCRP's research work with regions and program offices, communicating research results, and collecting feedback on research products. The feedback requested should include the accessibility, usability, value, and awareness of updates to the Science Inventory and the Environmental Science Connector.

Agency Comments and OIG Evaluation

ORD concurred with our recommendations; however, many of the responses include prospective actions. The Agency must submit a Corrective Action Plan including milestones and dates for these proposed actions. The Agency's complete final written response and OIG evaluation are in Appendix A. EPA's preliminary memorandum response and OIG comments are in Appendix B.

In response to the first recommendation, EPA agreed that Agency's scientific results must be readily accessible, and agreed to establish guidance for EPA's regional and program offices. Similarly, in response to the second recommendation, ORD agrees to ensure that its labs and centers use the Science Inventory and the Environmental Science Connector to share their current research across the Agency. ORD will also evaluate the effectiveness of the mechanisms for providing current scientific information. In response to the third and fourth recommendations, ORD plans to formalize and document the process for selecting and prioritizing research requirements from EPA's program and regional offices and share it Agency wide. ORD plans to issue a memorandum document with details on the selection and tracking processes to Deputy Assistant Administrators, Deputy Regional Administrators, Research Coordinating Teams, Regional Science Liaisons, and Climate Coordinators in December 2009. In response to the fifth recommendation, ORD stated that it will document and formalize the mechanisms ORD uses for communication and collecting feedback in a fact sheet and share it with stakeholders within the Agency. Additionally, ORD stated that GCRP plans to issue a survey to assess the timeliness and usefulness of its research products prior to the next BOSC review in 2010.

Status of Recommendations and Potential Monetary Benefits

RECOMMENDATIONS						POTENTIAL MONETARY BENEFITS (in $000s)	
Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Claimed Amount	Agreed To Amount
2-1	10	Direct Assistant and Regional Administrators on how to plan for climate change challenges in their media areas/regions until the Agency develops an overall strategy.	O	Deputy Administrator			
3-1	18	Establish guidance to programs and regional offices for regularly entering their climate change scientific information in the Science Inventory.	O	Deputy Administrator			
3-2	18	Ensure that ORD continues to routinely update the Science Inventory to include the latest information from its laboratories and centers.	O	Assistant Administrator, Office of Research and Development			
3-3	18	Establish a formal, transparent research requirements determination process that includes well-defined procedures for identifying a unified set of priority climate change research needs.	O	Assistant Administrator, Office of Research and Development			
3-4	18	Establish a formal mechanism to track regional research needs from research project selection to completion, and to requestor.	O	Assistant Administrator, Office of Research and Development			
3-5	18	Establish a formal method for coordinating GCRP's research work with regions and program offices, communicating research results, and collecting feedback on research products. The feedback requested should include the accessibility, usability, value, and awareness of updates to the Science Inventory and the Environmental Science Connector.	O	Assistant Administrator, Office of Research and Development			

[1] O = recommendation is open with agreed-to corrective actions pending
C = recommendation is closed with all agreed-to actions completed
U = recommendation is undecided with resolution efforts in progress

Appendix A

Agency Response and OIG Evaluation

This Appendix provides the Agency's January 8, 2009, response to our recommendations followed by OIG evaluation of each response. We provide the Agency's October 21, 2008, memorandum in Appendix B.

MEMORANDUM

SUBJECT: Final Response to Recommendations in the Office of the Inspector General's Draft Evaluation Report on Climate Change, Assignment No. 2007-0731

FROM: Marcus Peacock
Deputy Administrator

TO: Wade T. Najjum
Assistant Inspector General for Program Evaluation

Thank you for providing the updates to your recommendations pursuant to staff discussions at the November 25, 2008 exit conference. We concur with your recommendations and have begun to take actions to implement them. Please see the Attachment for our revised responses to your recommendations.

For comments on specific findings in your report, please refer back to my October memorandum to Jeffrey Harris, OIG Director of Special Studies.

I look forward to reviewing your final report and working with you to enhance EPA's climate change efforts.

Attachment

Attachment: Response to OIG Recommendations

Introductory Note: As requested, we are providing our response in the Office of Inspector General's desired "concurrence/non-concurrence" format in accordance with your memorandum and the U.S. Environmental Protection Agency's Audit Management Process.[9] It is important to note that EPA is already implementing, or has begun to implement, appropriate actions consistent with the intent of all of your recommendations. We propose "supplementary actions" where we believe EPA can further enhance its work in response to OIG's findings.

Recommendation 2-1: "…that the Deputy Administrator…direct AAs and RAs on how to plan for climate change challenges in media areas/regions until the Agency develops an overall strategy."

>> **Concurrence:** The Deputy Administrator has initiated a process contributing to an Agency approach on climate change. The OIG report properly recognizes the importance of cross-Agency coordination in the development of program policy and information needs to address the challenge of climate change. Recognizing the importance of a more comprehensive approach, the Deputy Administrator recently convened EPA's Deputy Assistant Administrators and Deputy Regional Administrators to follow up on the key coordination issues identified in the July 2008 Senior Leadership Council meeting. DAAs and DRAs will develop an Agency approach to this important environmental challenge. This process is in its initial stages and, as it moves forward, we would be pleased to provide the OIG with an update on its progress.

OIG Response: Subsequent to our discussion draft, the Deputy Administrator initiated a process to develop an Agency approach to climate change challenges. OIG believes that the initial steps taken by the Deputy Administrator with the Deputy Assistant Administrators and Deputy Regional Administrators are necessary for the development of a comprehensive Agency strategy on climate change. The OIG accepts development of an Agency approach by the Deputy Assistant Administrators and Deputy Regional Administrators as meeting the intent of the recommendation. This approach should also include milestones for each specified action.

Recommendation 3-1: "…that the Deputy Administrator …establish guidance to programs and regional offices for regularly entering their climate change scientific information in the Science Inventory."

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[9] ***http://intranet.epa.gov/rmpolicy/ads/manuals/2750_2_t.pdf***
"In responding to the draft report, the Action Official can concur with the findings or provide explanations for any disagreements. The Action Official may comment on the accuracy of findings and conclusions, the appropriateness of the recommendations, or offer alternative recommendations. Responding to the draft report also offers the opportunity for the Action Official to provide new documentation or information to the auditors. Generally, the OIG will include the Action Official's response to the draft report as an appendix to the final report." (8-1)

>> **Concurrence:** EPA agrees that the results of its scientific research must be readily accessible. The Deputy Administrator will continue to issue guidance to program and regional offices, which have the responsibility of entering and maintaining their own scientific information in the Science Inventory.

OIG Response: The Agency concurred with Recommendation 3-1 and agrees to issue guidance to program offices and regions, which have the responsibility of entering and maintaining their own scientific information in the Science Inventory. Similarly, ORD agreed to evaluate the effectiveness of its mechanisms and to ensure that its labs and centers provide their most current information. EPA should provide a Corrective Action Plan with completion dates and details of plans for updating the Science Inventory, and maintaining the Environmental Science Connector.

Recommendation 3-2: "…that the AA/ORD ensures that ORD continue to routinely update the Science Inventory to include the latest information from its laboratories and centers."

>> **Concurrence:** The Office of Research and Development provides the Science Inventory and the Environmental Science Connector as Agency-wide depositories for EPA's scientific information. ORD will continue to evaluate the effectiveness of these mechanisms and will continue to ensure that its labs and centers provide their most current information.

OIG Response: Same as for Recommendation 3-1.

Recommendation 3-3: "…that the AA/ORD establish…a formal, transparent process to determine research requirements that includes well-defined procedures for identifying a unified set of priority climate change research needs."

>> **Concurrence:** ORD's Global Change Research Program has an effective process in place to determine the highest-priority research requirements of EPA programs and regions and of the Climate Change Science Program. GCRP's prioritization process includes the Research Coordination Team, Regional Science Liaisons, Climate Coordinators, weekly cross-Agency conference calls, and other formal and informal mechanisms.

The GCRP Research Coordination Team consists of representatives from ORD, program offices, and all regional offices. The RCT facilitates research planning and communication and prioritizes both individual and collective research needs. RSLs are regional employees who have a well-defined role to coordinate and communicate with ORD. In addition to the RSLs, Climate Coordinators in select regions are actively engaged in prioritizing research activities.

When determining priorities, GCRP must consider the individual requests of programs and regions, as well its interagency responsibilities under the Climate Change Science Program. For example, in Fiscal Years 2007 and 2008, the highest-priority research activity for ORD's GCRP was the production of two CCSP Synthesis and Assessment Reports.

>> **Supplementary action planned:** See the "supplementary action" under Recommendation 3-4, which we believe will further formalize and communicate ORD's current process.

OIG Response: The Agency concurred; however, we consider this item open, pending review of the detail in the Corrective Action Plan with completion dates and details of formal documentation of the selection process. We acknowledge that ORD uses some informal processes regularly to involve regional offices in obtaining their research needs. We also acknowledge that ORD has to balance the information needs of regions and program offices with its inter-agency responsibilities. However, the regions need to understand how and why certain topics are selected and others are not, to improve their own planning. Therefore it is important that ORD document and share its research prioritization process with EPA's internal users.

Recommendation 3-4: "…that the AA/ORD establish…a formal mechanism to track Regional research needs from research project selection to completion, and to requestor."

>> **Concurrence:** GCRP has mechanisms in place with programs and regions to track research needs from selection to completion (see response to Recommendation 3-3). To complement these mechanisms, GCRP maintains current information on its Environmental Science Connector site and makes this resource available to the entire Agency. GCRP will continue to focus its resources on the highest-priority research needs in global change.

>> **Supplementary action planned:** To supplement its ongoing efforts to help partners in program and regional offices better understand ORD's mechanisms and criteria for selecting research projects, ORD will provide additional information in a memo to Deputy Assistant Administrators, Deputy Regional Administrators, Research Coordination Teams, Regional Science Liaisons, and Climate Coordinators. This memo, to be sent in December 2009, will formally document the selection process and explain how the Science Connector tracks projects from selection to completion and communication.

OIG Response: The Agency concurred. However, we consider this item open, subject to our review of a Corrective Action Plan with completion dates and details of the formal documentation of the tracking of projects from selection to completion and communication, proposed as a supplementary action plan.

<u>Recommendation 3-5</u>: "…that the AA/ORD establish…a formal method for coordinating GCRP's research work with Regions and Program Offices, communicating research results, and collecting feedback on research products. The feedback requested should include the accessibility, usability, value, and awareness of updates to the Science Inventory and Environmental Science Connector."

>> **Concurrence:** ORD/GCRP already uses several mechanisms to coordinate, communicate, and collect feedback. The Environmental Science Connector's "Global Change Resource Center" and GCRP's new public website[10] are two tools used by ORD to coordinate and communicate its global change research. In addition, GCRP's National Program Director uses weekly Global Conference Calls to obtain feedback from all program and regional offices.

>> **Supplementary action planned:** To further formalize its ongoing efforts, ORD/GCRP will develop an internal fact sheet summarizing the mechanisms that ORD has already put in place to communicate and coordinate GCRP's work with the programs and regions. ORD will share this factsheet with stakeholders across the Agency to improve their awareness of GCRP's resources, and GCRP will update the factsheet as new mechanisms are developed.

Additionally, ORD has begun to survey EPA stakeholders about the timeliness and usefulness of its products in order to enhance research planning. GCRP plans to issue such a survey prior to its next Board of Scientific Counselors review in 2010. The survey will include a request for feedback on the accessibility, usability, value, and awareness of updates to the Science Inventory and Environmental Science Connector.

OIG Response: The Agency concurred; however, we consider this recommendation as an open item, subject to a Corrective Action Plan. We recognize that ORD uses tools and informal processes to communicate and coordinate its global change research. However, according to survey responses from both ORD and regional staff, these are informal practices, and they are ad hoc and inconsistent. The Corrective Action Plan should include the date and details about the fact sheet ORD plans to send to EPA's offices, as well as how frequently it plans to update the fact sheets. It should also include the dates for the planned survey, and the type of staff ORD plans to survey.

[10] ***http://www.epa.gov/ord/npd/globalresearch-intro.htm***

Appendix B

Agency Preliminary Comments and OIG Evaluation

This appendix provides the October 21, 2008, memorandum comments mentioned in the EPA Deputy Administrator's final response in Appendix A. The October comments have been superseded by the Agency's January 8, 2009, memorandum and attachment. The following includes OIG evaluation and the Agency comments.

MEMORANDUM

SUBJECT: OIG Evaluation Report on EPA's Climate Change Research Activities

FROM: Marcus Peacock
Deputy Administrator

TO: Jeffrey Harris
Director, Special Studies, Office of Program Evaluation

Thank you for your draft report on how well the U.S. Environmental Protection Agency's policies, procedures, and plans help ensure that EPA's Global Change Research Program (GCRP or Program) fulfills its role in meeting environmental decision-makers' climate change information needs. The insights and recommendations you provide in the report will help the Agency continue to improve its efforts to address the challenges posed by climate change. I am pleased to say that, with your help, we are already implementing a number of your recommendations.

As an overall point, I think the "At-a-Glance" section and aspects of the report could more accurately represent the breadth, scope, and effectiveness of EPA's Global Change Research Program in the Office of Research and Development (ORD). I have provided clarifications in the discussion below and in the Attachment, and I ask that you revise the "At-a-Glance" section and the report accordingly.

You correctly note in the report that ORD has responsibility for managing EPA's global climate change research function through its Global Change Research Program. GCRP is subjected to regular, external peer reviews by the independent Board of Scientific Counselors (BOSC). As you acknowledge in your report, the past two BOSC reviews of the GCRP (in 2006 and 2008) affirm that the Program is doing the "right work" and is doing it "well." In addition, the BOSC made recommendations for improvements in the Program, which have already been implemented. Your review, combined with the BOSC reviews, will help further strengthen the effectiveness of the GCRP.

It is important to emphasize in the report that ORD is responsible for only a subset of the climate change information developed and used by the Agency. Other EPA program offices conduct work related to GCRP activities that are coordinated with ORD. For example, the Office of Water's (OW) new Climate Change Strategy formally integrates ORD and OW activities to address the implications of climate change for the Agency's statutory, regulatory, and programmatic requirements under the Clean Water Act and Safe Drinking Water Act.

OIG Response: We reported that ORD is not the only responsible program office regarding climate change. For example, in the report Introduction we state, "The Office of Air and Radiation (OAR) has activities related to mitigating greenhouse gases." We also reported that Office of Water was developing a strategy to address the impact of climate change on its programs; however, it had not been finalized at the time our field work was completed.

Recognizing the importance of a more comprehensive approach to climate change, I recently convened EPA's Deputy Assistant Administrators (DAAs) and Deputy Regional Administrators (DRAs) to follow up on key coordination issues identified at the July 2008 Senior Leadership Council meeting. The DAAs and DRAs will further develop an Agency-wide approach to climate change. Ultimately, I anticipate that this effort will lead to the development of an overall Agency strategy.

An Agency-wide strategy needs to consider EPA's role as part of the broader federal structure. The respective roles and responsibilities of all federal agencies are clearly defined and distinguished under the U.S. Climate Change Science Program (CCSP) and U.S. Climate Change Technology Program (CCTP). These two programs coordinate and integrate climate change science and technology activities across the entire Federal Government, ensuring that resources are used efficiently and duplication of effort is avoided. Your report recognizes the respective roles of the CCSP and CCTP, but it should also acknowledge the importance of aligning an Agency-wide strategy with these interagency programs.

Considering the climate change information generated by other federal agencies as well as other EPA program offices, a number of the Office of Inspector General's (OIG) findings extend beyond the purview of ORD/GCRP. For example, OIG's chart on page 13 compares regional information needs with GCRP plans. However, GCRP does not have lead responsibility for a number of the areas listed (e.g. renewable energy, sequestration) and thus others are in a better position to distribute this information to the regions.

Similarly, OIG's recommendation that ORD develop a central depository for climate information is beyond the purview of ORD/GCRP. In many cases, EPA program offices and regions need to look beyond GCRP to other parts of EPA and to interagency repositories to access some of the information they seek.

OIG Response: Recommendations 3-1 and 3-2 are directed at making **EPA's** scientific information available to **EPA's** internal users; it does not require collecting information developed by other federal agencies. During our field work, we found that EPA's Science Inventory was not current. Internal sharing and maintaining EPA's research information is necessary in order to avoid duplication of research effort and maximizing available resources. The Agency states that OAR is in better position to distribute information to the regions on renewables and sequestration. We note that ORD has included renewable energy and sequestration as research projects in its strategic plan. ORD and Office of Water were able to formally integrate activities addressing the implications of climate change. Similarly, ORD and OAR should coordinate their research and activities related to renewables and sequestration.

The report should acknowledge that any EPA policies and procedures for meeting the Agency's information needs must ensure that available resources are directed to their highest-valued uses. Therefore, ORD/GCRP must consider the requests it receives from EPA's program and regional offices along with those of multiple other partners (e.g. other agencies), and GCRP must allocate its resources to meet the highest-priority needs. For example, in Fiscal Years 2007 and 2008, the highest-priority research activity for GCRP was the production of two CCSP Synthesis and Assessment Reports.

In contrast with the findings in your report, we believe ORD does have formal mechanisms in place to prioritize its research activities (see Attachment for additional information). New processes are already in place for making these mechanisms more transparent to regional and program offices. At the same time, program and regional offices have the responsibility to prioritize their research needs and communicate them to ORD. For example, the regional climate change information needs presented in Table 2.1 of your report are not prioritized, nor, as mentioned above, does the GCRP have the lead responsibility for a number of these areas. The Global Change Research Coordination Team provides the venue for such prioritization, consistent with an appreciation of the GCRP's role in the context of the larger federal effort.

OIG Response: We acknowledge that ORD has to balance the information needs of regions and program offices with its inter-agency responsibilities. However, ORD does not have a "formal" mechanism for research prioritization that assures available resources are directed to their highest-valued uses. A "formal" mechanism or process would be documented and shared with the regions. While we noted that ORD uses several informal mechanisms to collect research needs from regions, participation in calls and workshops is not required by EPA policy, resulting in inconsistent participation. A formal EPA policy is needed. According to the Agency response to Recommendation 3-4, ORD plans to send such a memorandum in December 2009.

It is important also to note that EPA will need a strong research and analytic capability in the economics, as well as the science, of climate change. Going forward, EPA will need to analyze the economic effects of any regulations promulgated under the Clean Air Act; to provide

technical expertise to the Congress as it develops and evaluates various legislative proposals; and to help inform negotiations of any international accord to reduce greenhouse gas emissions worldwide. All of these efforts will demand unprecedented economic modeling and analytic efforts from the Agency. In the regulatory arena, most, if not all of the anticipated climate change regulations will be economically significant, and therefore will require benefit-cost analysis per Executive Order 12866. More importantly, analysis will be needed to provide policy makers with key information about the most cost-effective and fair ways to reduce greenhouse gases. This is equally true in the international arena: EPA will need to provide the United States delegation and the world community with economic modeling that credibly demonstrates the likely impacts of climate change as well as the economic impacts of taking action under various approaches. Efforts to build these needed economic research capabilities are already underway, primarily in the Office of Air and Radiation and the Office of Policy, Economics, and Innovation.

Most importantly, we agree with the spirit of your recommendations and have begun to implement appropriate actions consistent with their intent. Please see the Attachment for our responses to each of your specific recommendations.

I look forward to working with you to ensure that the Agency has the necessary policies, procedures, and plans in place so that the GCRP fulfills its role in the Agency's and Federal Government's overall efforts to address global climate change. Thanks again for your help on this effort.

Appendix C

Distribution

Office of the Administrator
Deputy Administrator
Acting Assistant Administrator for Research and Development
Acting Principal Deputy Assistant Administrator for Air and Radiation
Office of General Counsel
Agency Follow-up Official (the CFO)
Agency Follow-up Coordinator
Acting Associate Administrator for Congressional and Intergovernmental Relations
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Deputy Inspector General