

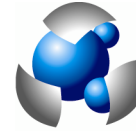


ASSOCIATION OF
METROPOLITAN
WATER AGENCIES



**American Water Works
Association**

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April 17, 2009

America's Climate Choices
Panel on Informing Effective Decisions and Actions Related to Climate Change
The National Academies
500 5th St. NW, W603
Washington, DC 20001

**RE: Summary of Comments to the Panel on Informing Effective Decisions and
Actions Related to Climate Change**

Dear Panel Members:

The Association of Metropolitan Water Agencies (AMWA), the American Water Works Association (AWWA), and the Water Research Foundation (Foundation) are submitting these joint comments to the America's Climate Choices Panel on Informing Effective Decisions and Actions Related to Climate Change. AMWA and AWWA together represent drinking water utilities of all sizes that serve more than 90 percent of the U.S. population. The Foundation sponsors research to enable water utilities to provide safe and affordable drinking water to consumers. In 2008 the Foundation established the Climate Change Strategic Initiative – a research program focused on impacts of climate change on water supplies.

Our associations are very concerned with the effects of climate change on water resources as many of the most critical impacts of global climate change will manifest themselves through the hydrologic system. Because the exact effects of climate change on water resources are uncertain and will vary by region, the drinking water, wastewater, flood management and stormwater utilities responsible for managing water resources for local communities face daunting challenges. These water utilities are already preparing to mitigate, adapt and plan for climate change in the midst of the uncertainties about the potential ranges of climate change impacts.

This joint letter summarizes the two documents being submitted in our attachment for consideration during the study process. The documents include:

- **Comments on the Key Questions:** We reviewed the sub-questions to be addressed by the Panel and provided responses, focusing on the types of climate-relevant information and tools necessary for the water sector to address climate change. The responses also include suggestions for improved information exchange between researchers and stakeholders. We submit these suggestions for the Committee to consider as recommended future actions.
- **Abstracts of Two Decision Support Projects sponsored by the Water Utility Climate Alliance (WUCA):** WUCA is a coalition of eight major water utilities (that are also members of AWWA and AMWA) formed to improve research into the impacts of climate change on water utilities. WUCA has commissioned two white papers on climate modeling and downscaling and decision support planning methods to better support utilities and also inform others in the research and academic communities.

AWWA and AMWA are also submitting overarching comments to the Committee on America's Climate Choices as well as detailed comment letters to each of the other three panels within the America's Climate Choices Study.

Sincerely,



Diane VanDe Hei
Executive Director, AMWA



Tom Curtis
Deputy Executive Director, AWWA



Robert C. Renner
Executive Director, Water Research Foundation

Attachments:

Comments to the Panel on Informing Effective Decisions and Actions Related to Climate Change

Abstracts of Two Decision Support Projects sponsored by WUCA

INFORMING EFFECTIVE DECISIONS AND ACTIONS RELATED TO CLIMATE CHANGE

What climate-relevant information and other support do different kinds of decision makers need to respond effectively to climate change (including mitigation and adaptation), and what approaches and tools are most effective at providing this information and support?

Decisions about water supply projects and programs often consider a much broader scope than climate change implications and models – and rightly so. The ability to represent degrees of certainty and to make decisions based on the best analysis of the flexibility and multi-purpose nature of water decisions needs to be modeled, presented as case studies, funded as pilot projects and worked on collaboratively in a larger context than has been the case up to now.

In the short term, there needs to be a paradigm shift toward planning with uncertainty using multiple models and scenarios to describe future possibilities and “no regrets” planning strategies. Having a set of possible scenarios for which to plan and putting some boundaries around the unknowns will help utilities to plan.

Climate change is often not evaluated throughout a geographic region such as a larger metropolitan area. This can lead to stove-piped decision making that rather than decisions based on holistic views of the potential impacts of climate change—including local land use, population growth and other factors. State water right structures, as well as federal project managers who have control over large storage projects, can also be impediments to creating flexible strategies that address these larger issues.

Water resource planning is regional and local, and current global climate model (GCM) scales are too large for most regional and local planning. The high degree of uncertainty associated with information about precipitation, sea level rise and the rate at which warming will occur, coupled with the need to plan for long time horizons currently render decision making difficult. Therefore, in the long term, there is a need to reduce the uncertainty of GCMs, particularly for projecting precipitation patterns and sea level rise models and/or enhancing decision support frameworks in order to accommodate this uncertainty.

Improvements in downscaling GCMs may be a way of better predicting the likely regional and local consequences of climate change. Also needed are methods for inexpensive rapid downscaling of precipitation to watersheds, using dynamic or statistical downscaling based on 100- to 1,000-year historical patterns, as appropriate. At the same time, an improved quality of the science and observations used to construct these models is needed.

The performance of other types of modeling - which include stream flows, ground water conditions and sea level rise as dependent on the local geography and hydroclimate – will be critical. These models can be used to gain insight into which adaptation strategies are likely to be effective. The technical feasibility and cost of both adaptation and mitigation measures are important in any alternatives analysis. The research required to fill these gaps is most likely to come through federal funding and should flow to a variety of federal agencies and research partners (including universities, research foundations and applied research occurring in both the

public and private sectors). It is critical, however, that the water sector is involved in articulating and framing the research agendas so that they are directed toward addressing the needs of the water sector. To have this research developed and executed independent of the water sector and then expect that it will be used broadly will likely lead to unmet expectations by the researchers.

The Water Utility Climate Alliance, an organization of eight large publicly owned water utilities, has commissioned two white papers to inform utilities' decision support needs. These papers are described in attachment ED-2.

What roles can federal, state, and local governments and other groups (e.g., the academic community) play in providing effective “climate services”—the timely production and delivery of information, data, and knowledge to decision makers affected by climate?

A more robust and focused research effort is needed to enable decision makers at all levels of government to analyze options and make decisions now in anticipation of conditions that may occur decades from now. Land use decisions, historically made at the local government level, are probably among the most important and long-lasting decisions that are made, so it is particularly important to get these right in the context of climate change.

Information exchange between researchers and users of climate change data is critical. As described in many other previous forums and documents about the Climate Change Science Program (e.g., [CCSP Workshop Report, November 2005](#), [Restructuring Federal Climate Research to Meet the Challenges of Climate Change](#)), information must be communicated in a way that stakeholders and decision makers can understand and use. This process should encourage the role of intermediaries and bridging organizations to work with users to help them develop the capacity to employ the information effectively, in part by relating the information to their unique decision-making approaches. Federal research programs should move from the paradigm of disseminating information to the water sector after it is completed toward involving the sector in the development of the agendas and programs and asking for feedback at intervals during project development.

Sector associations, such as AMWA and AWWA, can serve as key partners to help improve communication and input between research organizations and local decision makers in the various sectors, such as the water sector.

What information and tools (e.g., monitoring, metrics, integrated assessment models, etc.) do we need to evaluate the progress of different responses to climate change?

For the water sector, continuation and expansion of water quantity (e.g., stream gaging stations) and water quality monitoring, in addition to weather monitoring, is essential to understanding how climate change may affect water sources in the future. The failure of a recent weather satellite launch and its potential consequential loss of a continuous record of significant weather data underscores the importance of maintaining long-term data sets that can capture subtle changes and patterns emerging in the world climate system. This is a much more complex problem than the hole in the ozone caused by chlorofluorocarbons, for example, and it requires

much more data and analytical horsepower to understand the present and project the future. Significant resources are required and should be devoted to these efforts.

How can decisions and actions related to climate change be made more flexible and responsive to changing conditions and new information?

Analysis of options over a variety of possible future conditions may reveal some strategies that are common to all of the options. These become “no regrets” strategies that do not involve “stranded resources” in the event that one climate future begins to prevail over another. Systematic monitoring is needed to determine which climate future is actually occurring and thereby confirming the optimal future path. Non-structural approaches or incremental investments might also introduce greater flexibility and responsiveness.

What can current efforts and past experiences (both failures and successes) teach us about responding effectively to climate change?

A critical mass of political will is needed to advance the response to climate change. This can come in part from a greater degree of understanding and certainty regarding the process, effective communication of that understanding across all of the sectors and to the public at large, and the subsequent investment necessary to continue the effort to assess impacts and plan for adaptation to climate change. In public policy, catastrophic events are very often the impetus for major policy shifts, so one key to success is being prepared to utilize such events to bring about needed change. Hurricanes have led to building code revisions. Droughts have led to effective water conservation programs. These and other events can lead to effective climate change strategies.



Project: Climate Modeling and Downscaling White Paper

Status: Scheduled for completion in June 2009.

This white paper is intended to provide the Water Utilities Climate Alliance with a detailed but non-technical overview of the current state of climate modeling, how modeling activities are evolving, and where the best investments in these predictive tools should be made in the future to assist water utilities in their long-range planning efforts. Answering these questions will include discussion of both the sources of uncertainty in the models and the degree to which modeling advances may narrow the range of uncertainties in the future. Climate change parameters of interest include precipitation (intensity, frequency, volume, phase, and temporal and spatial distribution), temperature, hydrologic variability, evapotranspiration, streamflow, snowmelt runoff patterns, soil moisture, wind patterns, and other watershed conditions. The spatial scale water managers work with is at the watershed level. Therefore all the above climate parameters, understood at finer-grid predictability than that provided by GCM's, are key areas of inquiry for this paper, prepared under the guidance of the WUCA Research and Science Committee.

The final report will be developed primarily for WUCA, but will also be presented to the greater water utility community, decision-makers (e.g. Congressional staff, agency officials), and the research and academic communities.

Project: Decision Support Planning Methods White Paper

Status: Scheduled for completion in May 2009.

Water utilities performing assessments of their vulnerability to climate change are faced with a large range of future climate projections and the dilemma of how to develop short and long range plans for their water systems that address and incorporate this uncertainty about future conditions. Water planning has traditionally been performed using past observed climate as the estimate of future climate. This traditional method may fail to properly treat the uncertainties from climate change. Several approaches are emerging for incorporating climatic uncertainty into water planning including decision analysis, scenario planning, real options planning and robust decision making. The WUCA Decision Support Committee is managing preparation of a white paper on climate change decision support planning methods to determine the value and limitations of these methods for addressing the uncertainties of climate change and other sources in water planning.

The final report will be developed primarily for WUCA, but will also be presented to the greater water utility community, decision-makers, and the research and academic communities.