

Emerging State Policies on Climate Change

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Policies relating to climate change have historically been articulated primarily by the federal government. Recently, however, some states have begun setting their own policies that augment the existing federal framework, particularly focusing on the areas of greenhouse gas reduction and improving resiliency to climatic extremes.

The Federal Framework

The Global Change Research Act of 1990 authorized the U.S. Global Change Research Program to “provide for the development and coordination

of a comprehensive and integrated United States research program which will assist the nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change.”

In fiscal 2001/2002, federal agencies’ climate-related activities were refocused through creation of the Climate Change Research Initiative, Climate Change Science Program (CCSP), and Climate Change Technology Program. The Science Program was intended to integrate the federally supported research on climate and global change administered by 13 federal agencies. Similarly, the Technology Program addresses research and development of technologies associated with reducing, avoiding, or sequestering greenhouse gas emissions.

According to CCSP, the federal research programs have invested almost \$20 billion in climate change and global change research since the inception of the Global Change Research Program. The investment in research has resulted in significantly improved capabilities in areas such as climate modeling.

CCSP adopted a 2003 Strategic Plan that set forth five major goals for the program. Two of those goals are particularly relevant to water and natural resource managers:

- CCSP Goal 4: Understand the sensitivity and adaptability of different natural and managed ecosystems and human systems to climate and related global changes.
- CCSP Goal 5: Explore the uses and identify the limits of evolving knowledge to manage risks and opportunities related to climate variability and change.

Recent Interstate Developments

In June 2006 the Western Governors’ Association (WGA), which represents 19 states and three territories, adopted a report, “Water Needs and Strategies for a Sustainable Future,” which recommended focusing on climate vulnerabilities and building increased resiliency to climatic extremes. Specific recommendations included:

- WGA should urge CCSP to fund research for improving climate change predictive capabilities, and for assessment and mitigation of climate change impacts. Specifically, the federal government should implement research funding recommendations associated with CCSP Strategic Plan Goals 4 and 5, including increasing partnerships with users such as resource management agencies, states, and local governments.
- States should include climate change scenarios in their water-related planning (state water plans, watershed plans, drought plans), and should include local governments in climate change planning efforts.
- States should evaluate their legal frameworks for water management and revise them as necessary to ensure sufficient flexibility for responding to climate change.
- The governors should convene ongoing meetings between water managers and the scientific community to foster exchange of information on research outcomes and research needs.

The Western States Water Council is presently preparing workplans for implementing the WGA report on behalf of the governors. The WGA report follows

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an earlier partnership launched in 2003 by the governors of California, Washington, and Oregon, known as the West Coast Governors Global Warming Initiative. In that effort, the governors approved a series of recommendations on subjects such as reducing greenhouse gas emissions and increasing energy efficiency. Examples of ongoing state actions related to the initiative are described below.

On the opposite side of the country, seven governors from northeastern states signed a 2005 memorandum of understanding to implement a Regional Greenhouse Gas Initiative for reducing greenhouse gas emissions from power plants. The initiative calls for implementing a multi-state emissions cap and trade program, initially focusing on carbon dioxide emissions. Key provisions of the effort include an agreement to stabilize carbon dioxide emissions from the region's power plants at current levels from 2009 to early 2015, followed by a 10 percent reduction in emissions by 2019.

Two State-Specific Examples

In 2005, California Gov. Arnold Schwarzenegger signed an executive order setting greenhouse gas reduction targets for the state and directing state agencies to prepare a report on global warming impacts in California. The report, to be updated biannually, was to cover impacts, including "impacts to water supply, public health, agriculture, the coastline, and forestry," and was to include mitigation and adaptation plans to combat identified impacts.

Greenhouse gas reduction targets were subsequently set by statute through adoption of legislation in 2006 requiring development of regulations providing for mandatory reporting and verification of greenhouse gas emissions and limiting, by 2020, emissions to the level estimated to have occurred in 1990.

California's state agency Climate Action Team finalized its initial report to the governor and to the state legislature on impacts of global change in March 2006. The report is available at California's climate change portal,

www.climatechange.ca.gov. Of particular interest are descriptions of impacts to water resources. For example, the report notes that "although precipitation is projected to change only modestly over this century, rising temperatures are expected to diminish snow accumulation in the Sierra Nevada ... By the 2035-2064 period, snowpack in the Sierra Nevada could decrease 10 to 40 percent depending on the amount of warming and precipitation patterns." The report further notes that, after mid-century, changes in runoff volume and timing reduce the ability of major water projects relying on runoff from the Sierra Nevada to make deliveries to agricultural users south of the Sacramento-San Joaquin River Delta. Detailed technical analyses performed to assess climate change impacts on water supplies are described in a California

Department of Water Resources (CDWR) report (see box below).

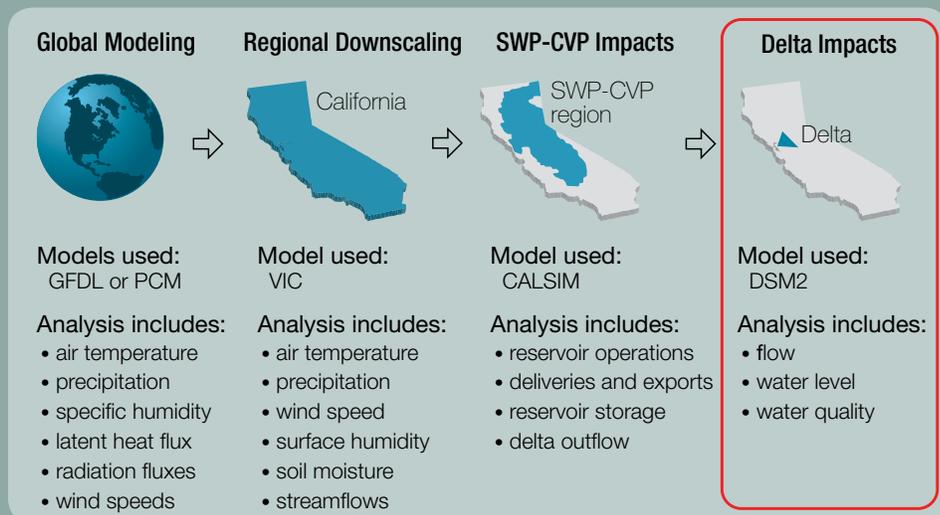
In 2006, Oregon's governor established a Governor's Climate Change Integration Group, charged with expanding the work of an earlier Governor's Advisory Group on Global Warming, which had prepared the 2004 Oregon Strategy for Greenhouse Gas Reduction. The Integration Group's immediate task is to prepare a report to the governor describing how the state should prepare for adapting to climate change impacts. The group also aims to stimulate new research programs on adaptation and mitigation strategies as described in the federal CCSP goals.

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Progress on Incorporating Climate Change into Management of California's Water Resources

The July 2006 CDWR report focused on methodologies for assessing climate change impacts and on preliminary assessment results for California's Sierran water supplies. The report is available at baydeltaoffice.water.ca.gov. Briefly, the report's analyses (shown schematically at left) included downscaling selected global climate model outputs (at a grid of roughly 2 degrees latitude/longitude) through use of a macro-scale hydrologic model that yielded

runoff data at a 1/8th-degree grid. Runoff data were further processed to provide streamflow information for the planning simulation model used to assess impacts on California's two largest water projects that rely on Sierran runoff: the federal Central Valley Project (CVP) and the State Water Project (SWP). Also evaluated were water quality impacts and sea level rise impacts in the Sacramento-San Joaquin River Delta, and flood management impacts.



CDWR's impact analysis approach downscaled global model output to assess regional and local impacts (figure courtesy of CDWR).