

**STATE WATER RESOURCES CONTROL BOARD  
BOARD MEETING SESSION – OFFICE OF RESEARCH, PLANNING AND PERFORMANCE  
FEBRUARY 19, 2008**

**ITEM 5**

**SUBJECT**

CONSIDERATION AND DISCUSSION OF WATER BOARD CLIMATE CHANGE ACTIVITIES

**DISCUSSION**

Climate change is a phenomenon that will fundamentally alter water availability and use in California. Increased levels of greenhouse gases (GHG) in the atmosphere are a significant contributor to global warming. The State of California has assumed a leadership role in efforts to slow global warming. The Governor signed [Executive Order S-3-05](#) in June 2005 establishing GHG reduction targets of 25% (to 1990 levels) by 2020, and 80% below that level by 2050. In 2006, the State enacted the California Global Warming Act of 2006 (AB32) which, among other charges, established the Climate Action Team to coordinate the efforts set forth under [Executive Order S-3-05](#).

The relationship between water and energy and the challenges to our water quality and supply are now well recognized as key factors in our response to climate change. The Water Boards are proceeding to develop climate strategies and measures as a part of our Strategic Plan Update and through our participation in all of the water-related subgroups of the Climate Action Team. This item summarizes our progress in implementing the actions directed by the State Water Board at its September 2007 meeting, the activities of the various Climate Action Team subgroups and requests direction regarding further development of Water Board initiatives. In particular, the oral presentation for this item will include a more detailed description of the four strategies being considered by the Climate Action Team's Water-Energy subteam in order to solicit Board Member and public input on the specific emission reduction measures under consideration.

**WATER BOARD AND DWR JOINT WORKSHOP**

On August 23, 2007, the State Water Board held a joint meeting with the Department of Water Resources (DWR) to solicit input on: (1) how both agencies could contribute to meeting the goals of AB32 and integrate climate change considerations into existing policies, regulatory responsibilities, and grant programs; and (2) how climate change directly impacts various programs and what could be done to address those impacts. After consideration of suggestions from panelists and the public, the State Water Board adopted [Resolution Number 2007-0059](#) at its meeting of September 18, 2007. The resolution established the intent of the Water Boards to adopt climate change measures and directed staff to proceed with initial evaluation of the recommendations received during the August 23, 2007 joint workshop, returning before the Board in January 2008 to summarize progress and recommend measures that the State Water Board may consider to reduce GHG emissions and promote adaptation responses.

Climate change recommendations submitted at the August 23, 2007 workshop have been evaluated by State Water Board and DWR staff. Based on this evaluation, staff has identified eleven measures that are recommended for further Water Board evaluation and two measures that should be collaboratively evaluated with DWR. DWR identified four measures that may warrant further evaluation as components of their climate change programs and activities. Measures recommended for further evaluation are presented in Attachment 1.

Water Board staff are requesting Board direction to proceed with further evaluation of the eleven recommended measures and direction to work with DWR on the two measures identified for collaborative evaluation. Further evaluation can include an assessment of the technical feasibility, potential costs, potential GHG emission reductions, and adaptation potential, along with actions required for implementation, estimation of resources required, and a preliminary implementation schedule for each action. Several of the recommended measures are already components of strategies being developed by Climate Action Team subgroups.

## **STATUS OF OTHER ACTION ITEMS CONTAINED IN THE STATE WATER BOARD'S SEPTEMBER 2007 RESOLUTION**

Regional Water Board collaboration with local agencies: The North Coast, San Francisco Bay and Central Coast Regional Water Boards along with U.S. EPA have convened a stakeholder group of key water management agencies, local government representatives and environmental interests to assess the connections between water quality and supply resulting from climate change on the coast from central California to the Oregon border. The purpose of the Bay Area/North Coast/Central Coast Water Quality and Sustainability Workgroup (BANCC) is to identify and prioritize measures focused on water quality that can help to reduce GHG emissions and promote adaptation measures in response to the problems created by climate change. The workgroup's first meeting was held in November and participants agreed to focus on Water Recycling Funding Strategies, development of state and national criteria for a "Seal of Sustainability", adaptive management, and emerging technologies and innovations.

Staff guidance: To support staff in the assessment of potential GHG contribution and/or adaptation responses in the implementation of the Water Boards' programs, the Office of Research, Planning & Performance (ORPP) has begun examining approaches for evaluating the potential contribution of Green House Gas emissions and potential adaptation strategies that should be considered as an element of Water Board decisions and actions. We are working with experts in the climate field to assist in the quantification of climate related impacts such as GHG contribution and will work with the internal working group to review suggested approaches. The Water Boards' Training Academy will develop, in consultation with the Air Resources Board (ARB) and DWR, training on the potential impacts that climate change will have on Water Board programs and the approaches for taking these impacts into consideration.

Strategic Plan: The State Water Board recognized the importance of climate change on the development of the Water Boards Strategic Plan Update 2008-2012 and directed staff, to ensure that climate change and other Water Board priorities are appropriately balanced and integrated. The newly revised draft update contains specific measures to assess the effects of climate change on water quality and water supply and integrates broadly the concepts of water use efficiency to support a sustainable water supply. More importantly, stakeholders and staff have acknowledged this trend as an overarching issue that the Water Boards must consider throughout all of our programs.

## **CLIMATE ACTION TEAM**

The California Global Warming Solutions Act of 2006 (AB32) created the Climate Action Team (CAT) to coordinate the efforts set forth under [Executive Order S-3-05](#). The California Environmental Protection Agency (Cal/EPA) oversees the Climate Action Team (CAT). There are numerous CAT subteams, each evaluating a particular sector. The sectors include: Agriculture, Electricity, General Combustion, Goods Movement, Government, High Global Warming Potential (GWP), Oil and Gas Refining, Forestry, Green Building, Recycling and Waste, Vehicles and Engines, Land Use, and Water-Energy.

The CAT subteams have been meeting regularly to identify strategies that will reduce GHG emissions. Lists of proposed strategies and measures formulated by the CAT subteams were forwarded to the ARB in January for preliminary ARB consideration. A finalized list that includes GHG reduction calculations are due in early March for inclusion in the draft AB32 Scoping Plan to be released in the summer for public review and comment. The final draft AB32 Scoping Plan is scheduled for completion in October and consideration by the ARB in November 2008.

CAT strategies are broad efforts, typically including multi-agency participation. Each strategy consists of measures that contribute to the overall objective of the strategy. The following list of draft strategies illustrates the concepts being considered. This list is limited to strategies that are envisioned to provide opportunities for Water Board participation and contribution. The draft CAT strategies and measures currently being reviewed are preliminary and will likely change or be further refined in response to review and comment.

#### Draft CAT Strategies (Water Board Related)

*Amend Grant Selection Criteria.* New grant programs will include criteria for how well a proposal incorporates climate strategies. (Land Use subteam)

*Calculate Lifecycle GHG in Cleanup.* Require that the lifecycle greenhouse gas emissions be calculated for subsurface cleanup technology and that these emissions be taken into consideration when evaluating the preferred technology for a given cleanup site and 2) require that periodic cleanup include actual greenhouse gas emissions to allow operational evaluation against the cleanup progress. (Land Use subteam)

*Reforestation/Afforestation.* Proposal to reforest (replanting previously forested areas that have had less than 10% canopy cover for at least 10 years) of 430,000 acres over 12 years. (Forestry subteam)

*Forest Conservation.* Support conservation purchases that would prevent emissions from vegetation conversion and allow additional growth and carbon sequestration. (Forestry subteam)

*Forest Management.* Improve forest stand management practices to increase carbon storage and growth. (Forestry subteam)

*Fuels Management /Biomass.* Reduce high forest fuel loads (too many stems per acre). Forest fuel management projects will reduce GHG emissions from wildfires and can support bioenergy production. (Forestry subteam)

*Urban Forestry.* This strategy would propose planting 5 million trees by 2010 in urban areas statewide to sequester CO<sub>2</sub>, increase shading of buildings which will reduce energy use for cooling, and provide wood waste biomass for bioenergy, producing GHG benefits from fossil fuel substitution. (Forestry subteam)

*Reduce Emissions from Livestock.* Livestock emissions include significant amounts of methane from manure. Use of digesters, modification of feedstock and/or nutrient management plans can be implemented to reduce emissions. (Agricultural subteam)

*Improve Operational Efficiency.* Increase crop management practices that rely less on synthetic inputs and more on natural processes such as crop rotation and cover crops. (Agricultural subteam)

*Increase Renewable Energy Production.* Agricultural biomass represents a source of alternative energy. Planting of “bioenergy” crops could be increased. Encourage the adoption of alternative technologies such as solar and wind for farming operations. (Agricultural subteam)

*Increase Carbon Sequestration and Reduce Emissions through Land Management.* Increased emphasis on riparian and vegetated buffers, grassland management, reforestation, conservation tillage, and agricultural conservation easements can be implemented to sequester carbon. (Agricultural subteam)

*Water Recycling.* Promote water recycling through efforts such as requiring water recycling as a component of the NPDES permitting for wastewater treatment plants, modifying grant selection criteria to prioritize projects that include water and energy conservation measures and conduct research and demonstration projects that reduce the energy intensity of the water recycling process while improving overall quality. (Water-Energy subteam)

*End Use Water Conservation.* Water conservation and efficiency standards could be established for buildings and appliances that save both water and energy, implementation of water conservation measures and best management practices to improve efficiency could be promoted and landscape and agricultural irrigation efficiency and conservation could be increased. (Water-Energy subteam)

*Energy Intensity of Water System.* Water and energy interdependencies could be identified and measured, a valuation and protocol methodology could be constructed for the measurement and verification of efficiency and conservation activities/programs, water and energy balances could be developed and future savings projected and research and demonstration projects that explore ways to reduce the energy intensity of the water use cycled and better manage the energy demand of the water system. (Water-Energy subteam)

*Increasing Renewable Energy Production.* The traditional generation of energy, primarily from fossil fuels, is a significant source of GHG emissions. Increased development and application of renewable energy technologies, such as wind, solar, and geothermal, could reduce the demand for traditional energy, reducing GHG that would otherwise be emitted from traditional power generation facilities. (Water-Energy subteam)

## **DRAFT STRATEGIC PLAN MEASURES**

The Strategic Plan for the Water Boards is nearing completion. The recently updated (January 25, 2008) draft Strategic Plan includes actions that are consistent with and will support climate change efforts. The most applicable Strategic Plan actions are presented in Attachment 2.

## **POLICY ISSUE**

AB32 (Statutes of 2006, Chapter 488) stipulates that all state agencies “shall consider and implement strategies to reduce their greenhouse gas emissions.”

## **FISCAL IMPACT**

None (related to analysis of suggested measures; this does not include implementation)

## **REGIONAL BOARD IMPACT**

All Regional Water Quality Control Boards.

## **STAFF RECOMMENDATION**

Staff recommends that the State Water Board provide direction to staff to:

Proceed with the development of the suggested measures, listed in the table in Attachment 1, that are recommended for further evaluation by the Water Board and Water Board/DWR jointly. Further evaluation can include an assessment of the technical feasibility, potential costs, potential GHG emission reductions, and adaptation potential, along with measures required for implementation, estimation of resources required, and a preliminary implementation schedule for each action.

**MEASURES RECOMMENDED FOR FURTHER EVALUATION**  
**(based on suggestions received at the August 23, 2007 joint workshop)**

**MEASURES RECOMMENDED FOR FURTHER EVALUATION BY THE WATER BOARD**

1. Consider GHG emissions that could be produced in the development of water quality standards.
2. Promote, incentivize, and/or require the use of sustainable energy sources (methane, solar, wind) at water and wastewater treatment facilities.
3. Develop partnerships (pilots) with local entities to evaluate strategies and measures on the local level before recommending for statewide consideration.
4. Increase research and adopt standards that address potential (emerging) contaminants and public concerns of recycled water, such as of xenobiotics, in order to ensure a safe supply and increase public confidence and acceptance.
5. Review internal processes and organizational structure that impairs the Water Boards' ability to consider the impacts of climate change in decision-making. Establish an internal training program to educate staff in the subject of climate change and the significant role of water and energy.
6. Address climate change in Basin Plans in order to reduce energy use, enhance local water supply. Incentivize water conservation and recycling through the setting of policy.
7. Promote research to identify ways to reduce GHG emissions from septic tanks and increase regulation to limit those emissions accordingly.

**MEASURES CURRENTLY UNDER EVALUATION BY THE  
CAT SUBTEAMS THAT ARE WATER BOARD RELATED**

8. The Water Boards should improve Best Management Practices BMPs and ensure that they are implemented (make them mandatory).
9. Review and revise regulations to facilitate increased use of groundwater for municipal drinking water storage and supply, including injection of potable water into groundwater for storage and subsequent withdrawal.
10. Promote LID approaches that can reduce wasteful discharge and contribute to local groundwater supplies. Look at opportunities to reduce water use for landscape irrigation in the urban sector. Promote the use of permeable surfaces, rain gardens, etc.
11. Exercise existing water rights authority to ensure protection of beneficial uses during periods of water shortage. The Water Boards should mandate water conservation measures through water rights. Review water rights allocations to account for climate change implications.

**MEASURES RECOMMENDED FOR FURTHER EVALUATION BY THE WATER BOARD  
IN COLLABORATION WITH DWR**

1. Promote partnerships with energy providers to create the connection in the public's mind that by saving water they also save energy and reduce carbon emissions. As an example, promote a "flex your water" campaign.
2. Modify grant selection criteria to prioritize water quality improvement projects that incorporate water conservation, water recycling, energy efficiency and other measures that reduce GHG emissions.

**MEASURES IDENTIFIED BY DWR FOR FURTHER EVALUATION**

The Department of Water Resources has identified the following four suggestions from the workshop for consideration. After further evaluation by DWR, these suggestions may be incorporated into DWR climate change activities and CAT strategies as determined appropriate.

1. Promote IRWMPs. Consider the inclusion of objectives for:
  - energy efficiency;
  - GHG emissions reduction; and
  - resource sustainability.
2. Consider modeling of climate change impacts at regional and local scales to assess impacts in local watersheds.
3. Obtain direction to define the balance between the State Water Contractors' interest in minimizing the cost of water and the State's interest in meeting its climate and water conservation goals.
4. As part of the Water Plan Update, emphasize flood control designs that provide for groundwater recharge.

**PROPOSED STRATEGIC PLAN ACTIONS (abbreviated)  
THAT SUPPORT CLIMATE CHANGE STRATEGIES**

Encourage the development of a local/regional strategy to protect groundwater, for high-use groundwater basins.

When no local/regional strategy has been developed and a Regional Water Board concludes that limits on extractions are appropriate to improve groundwater quality, the Regional Water Board shall request that the State Water Board initiate a groundwater adjudication, in accordance with Water Code Section 2100, to protect the quality of the groundwater.

Develop an integrated groundwater protection for high use basins to (1) evaluate and regulate activities that impact or have the potential to impact beneficial uses, and (2) recognize the effects of groundwater and surface water interactions on groundwater quality and quantity. Encourage and facilitate local management of groundwater resources.

Identify all contaminated groundwater that serves as primary drinking water source for communities, and develop a strategy for identifying all impaired groundwater.

Create incentives in the water quality program to conserve and recycle, including incentives for stormwater permits that encourage cities and counties to implement LID/Smart growth.

Establish a Low-Impact Development Center in the Central Coast Region to provide expertise that can be tailored to the needs of site-specific projects, assist the Water Boards in identifying impediments to stormwater reuse and will be a pilot for longer range expansion of centers throughout the State.

Describe the connections between water quality and climate change on the coast from central California to the Oregon border and identify and prioritize actions that can help reduce greenhouse gases and address the problems created by climate change.

Pilot an integrated water quality and water rights watershed management approach in a suitable watershed.

Require Water Recycling Plans, through the permit/WDR renewal cycle, for wastewater treatment plants located in areas using imported water supplies.

Develop a stormwater reuse target that takes into account data regarding stormwater flows, locations, and timing.

For priority streams where minimum flow standards have been developed and are not being met, determine what State Water Board-mandated actions (such as conservation, recycling, and limiting amount of water diverted) are necessary to protect the public trust by preventing waste or unreasonable uses or methods of diversion

Work with the Department of Water Resources to ensure effective implementation by urban water suppliers of water demand management measures and to take action, where appropriate, to limit waste and unreasonable use of water.

Validate existing water conservation plans and actions required by the terms of the water rights permit or license issued by the State Water Board.

# DRAFT

## STATE WATER RESOURCES CONTROL BOARD RESOLUTION NO. 2008-

### CONSIDERATION OF CLIMATE CHANGE ACTIVITIES

#### WHEREAS:

1. Assembly Bill 32, The California Global Warming Solutions Act of 2006, signed by the Governor on September 27, 2006, states that all state agencies shall consider and implement strategies to reduce their greenhouse gas emissions.
2. On August 23, 2007, the State Water Board and the Department of Water Resources held a joint workshop soliciting suggestions to reduce Green House Gas emissions and identify adaptations to accommodate changing climatic conditions.
3. Suggestions presented at the joint workshop were extensive, including but not limited to, water-energy relationships, water recycling and conservation, water quality regulation, basin planning, Best Management Practices, and land use policies.
4. On September 18, 2007, the State Water Board adopted [Resolution 2007-0059](#) directing staff to proceed with an evaluation of the recommendations for action provided by panelists and the public at the August 23, 2007 joint workshop.

#### THEREFORE BE IT RESOLVED THAT:

Staff is directed to proceed with the development of the suggested measures, listed in Attachment 1, that are recommended for further evaluation by the Water Board and Water Board/DWR jointly. Further evaluation can include an assessment of the technical feasibility, potential costs, potential GHG emission reductions, and adaptation potential, along with measures required for implementation, estimation of resources required, and a preliminary implementation schedule for each action.

#### CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on February 19, 2008.

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Jeanine Townsend  
Clerk to the Board