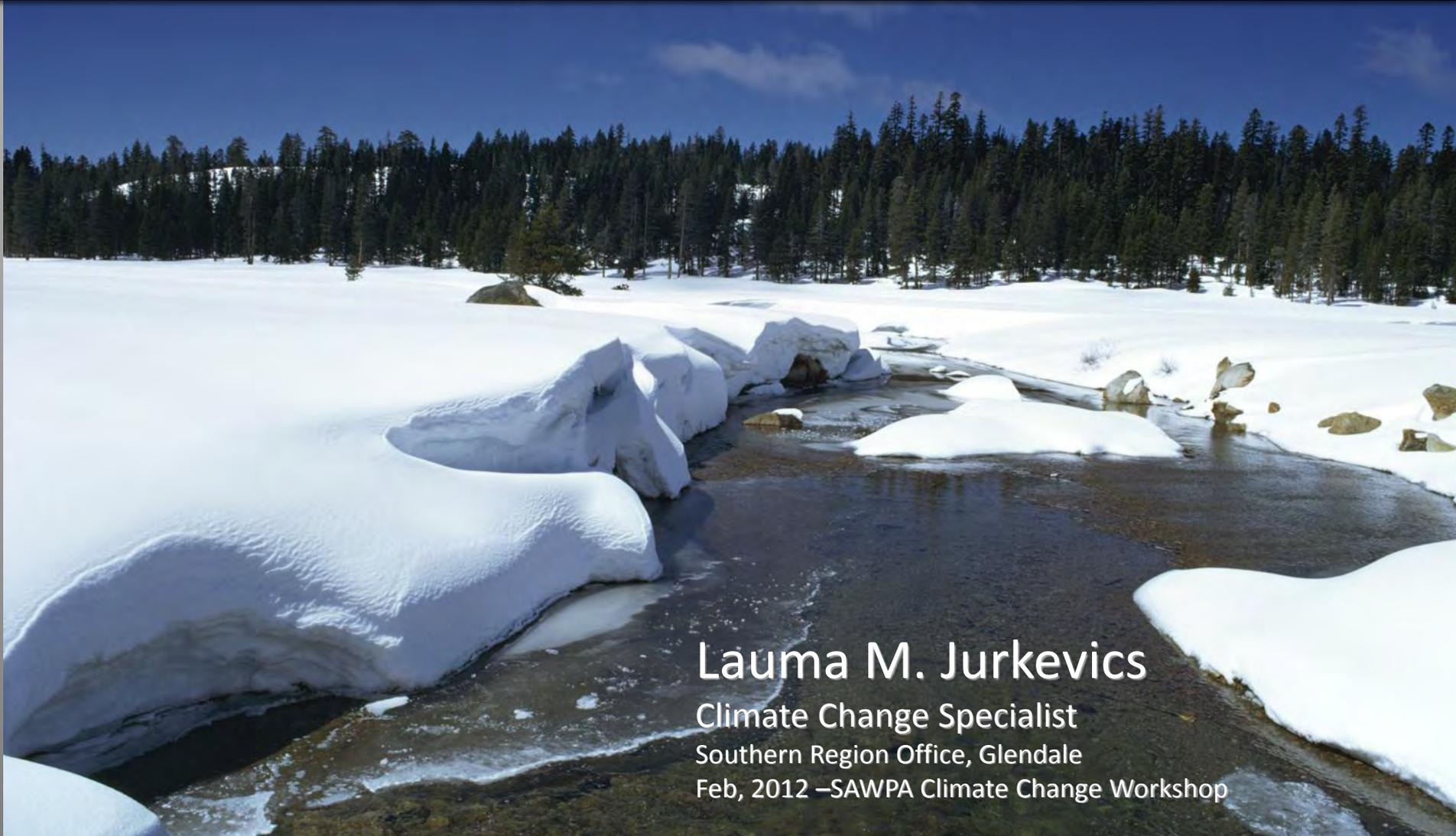




# Climate Change at DWR

What We're Doing to Mitigate and Adapt

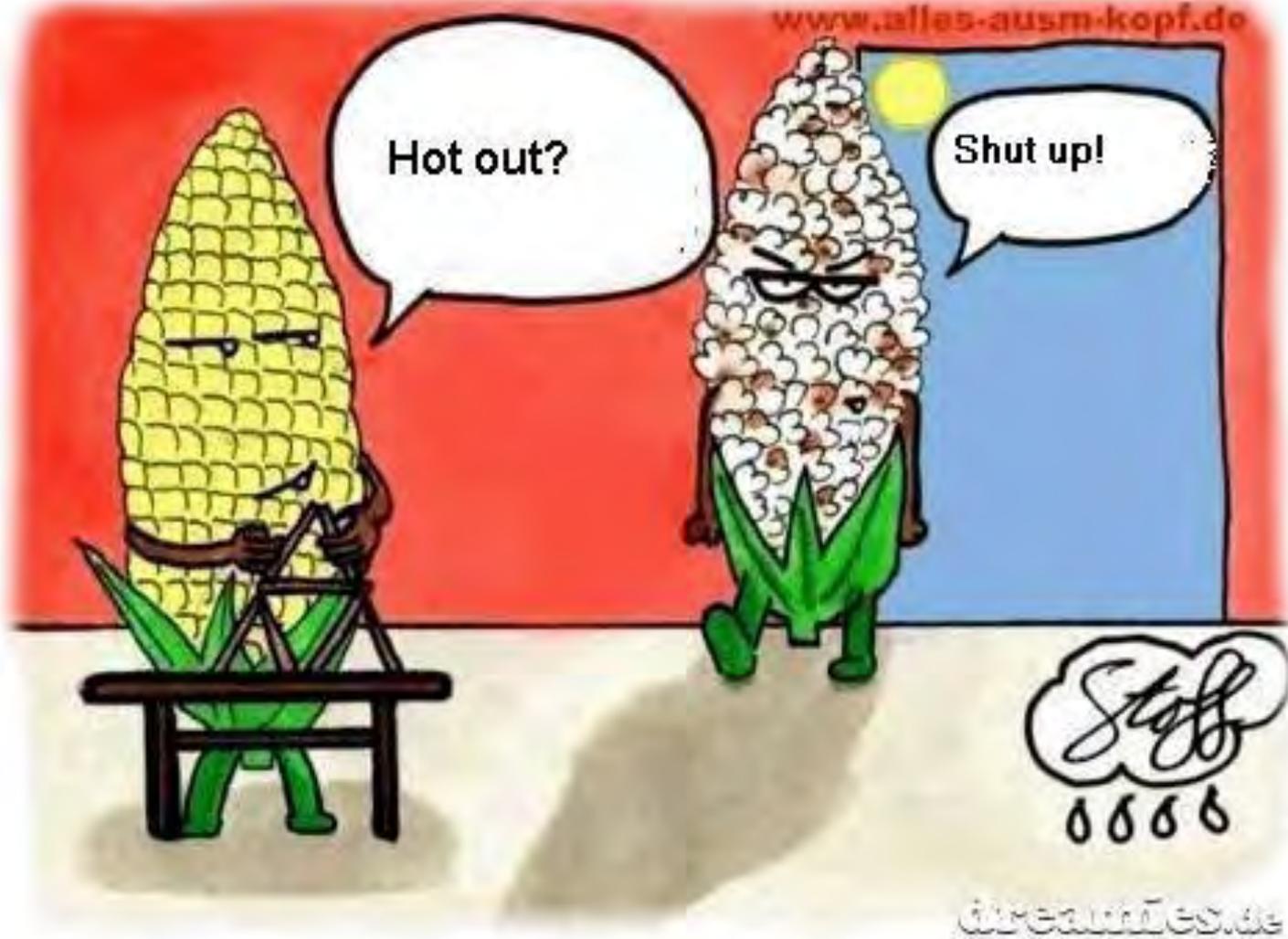


**Lauma M. Jurkevics**

Climate Change Specialist

Southern Region Office, Glendale

Feb, 2012 –SAWPA Climate Change Workshop



Hot out?

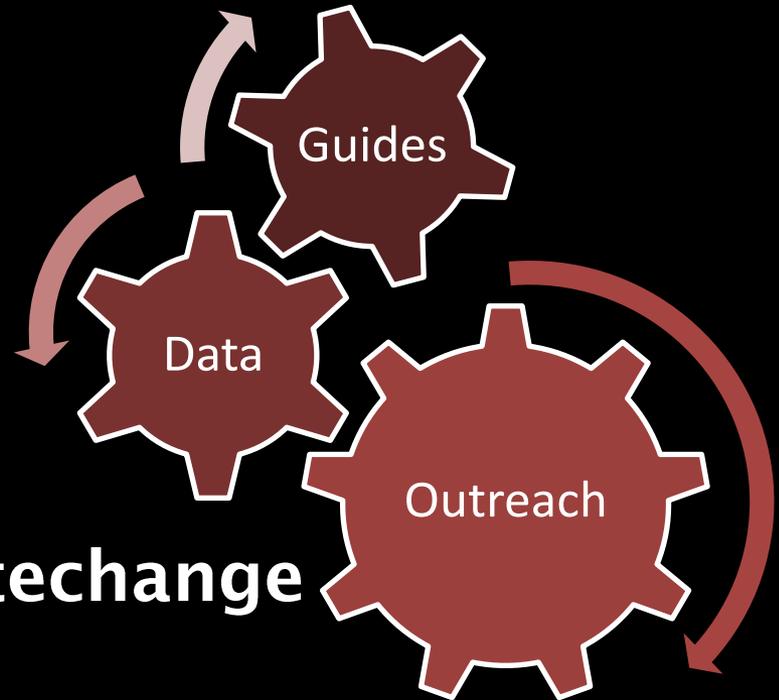
Shut up!

Stoff  
0000

# DWR Climate Program

Team of managers, scientists, engineers, administrators, and interns from headquarters and the regional offices.

- Develop guidance on addressing CC & GHGs
- Provide outreach & technical assistance



[www.water.ca.gov/climatechange](http://www.water.ca.gov/climatechange)

Climate Change

- » Climate Change Home
- » Climate Change 101
- » Climate News
- » Current Perspectives Blog
- » Publications
- » Local and Regional Resources
- » Videos
- » Events
- » Related Links
- » Internal CC Website
- » Contact Us
- » Contact Us for Local and Regional Resources Assistance



Climate change is having a profound impact on California water resources, as evidenced by changes in snowpack, sea level, and river flows. These changes are expected to continue in the future and more of our precipitation will likely fall as rain instead of snow. This potential change in weather patterns will exacerbate flood risks and add additional challenges for water supply reliability.

The Sierra snowpack provides as much as 65 percent of California's water supply by accumulating snow during our wet winters and releasing it slowly when we need it during our dry springs and summers. Warmer temperatures will cause what snow we do get to melt faster and earlier, making it more difficult to store and use. By 2050, scientists project a loss of at least 25 percent of the Sierra snowpack. This loss of snowpack means less water will be available for Californians to use.

Climate change is also expected to result in more variable weather patterns throughout California. More variability can lead to longer and more severe droughts. In addition, the sea level will continue to rise threatening the sustainability of the Sacramento-San Joaquin Delta, the heart of the California water supply system and the source of water for 25 million Californians and millions of acres of prime farmland.

The Department of Water Resources (DWR) is addressing these impacts through mitigation and adaptation measures to ensure that Californians have an adequate water supply, reliable flood control, and healthy ecosystems now and in the future. Below are some of DWR's climate change activities.

- » DWR released summaries of its climate change achievements as a [Poster](#) and [Brochure](#) (2010)
- » DWR adopted its own [Sustainability Policy](#) to promote a departmental change in the way DWR does business (2009), and established clear and measurable [Goals](#) for sustainability implementation (2010).
- » DWR is a member of the California Climate Action Registry and has made the list as a [Climate Action Leader](#) for three straight years by reporting its GHG emissions and having the data verified through a third party audit. (2007, 2008, 2009)
- » DWR adopted a [Climate Change Adaptation Strategy](#) (2008)
- » DWR announced plans to use lower carbon fuel sources for State Water Project energy supplies instead of a coal fired power plant, currently being used (2007)

[Other Climate Change Activities](#)

Adapting to the current and future effects of climate change is essential for DWR and California's water managers. DWR addresses climate change in its California Water Plan, which is updated every five years. The California Water Plan provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. DWR continues to improve and expand the analysis of climate change in the California Water Plan. The [2009 California Water Plan Update](#) includes multiple scenarios of future climate conditions and stresses the inclusion of uncertainty, risk, and sustainability.

[Climate Change Technical Advisory Group](#)

- » [DWR Proposal for Climate Change Technical Advisory Group \(October, 2011\)](#)
- » [DWR Invites Statements of Qualifications for Climate Change Technical Advisory Group \(November, 2011\)](#)



**Climate ACTION TEAM**

Department of Water Resources  
 1416 Ninth Street  
 Sacramento, CA 95814  
 Mailing Address:  
 P. O. Box 942836  
 Sacramento, CA 94236

**Featured Link**

**Climate Change Handbook for Regional Water Management**

RESOURCES LEGACY FUND

US Army Corps of Engineers

Climate Change Handbook for Regional Water Planning

The Climate Change Handbook for Regional Water Planning provides key decision considerations, resources, tools, and decision options that will guide resource managers and planners as they develop their own solutions for how to adapt their programs to a changing climate.

# Mitigation vs. Adaptation

## Mitigation

**Actions that reduce or eliminate impacts**  
(reduce emissions of CO<sub>2</sub> from construction to reduce our contribution to global warming )

## Adaptation

**Actions that adjust to existing or anticipated conditions** (respond to rising sea levels when building levees)

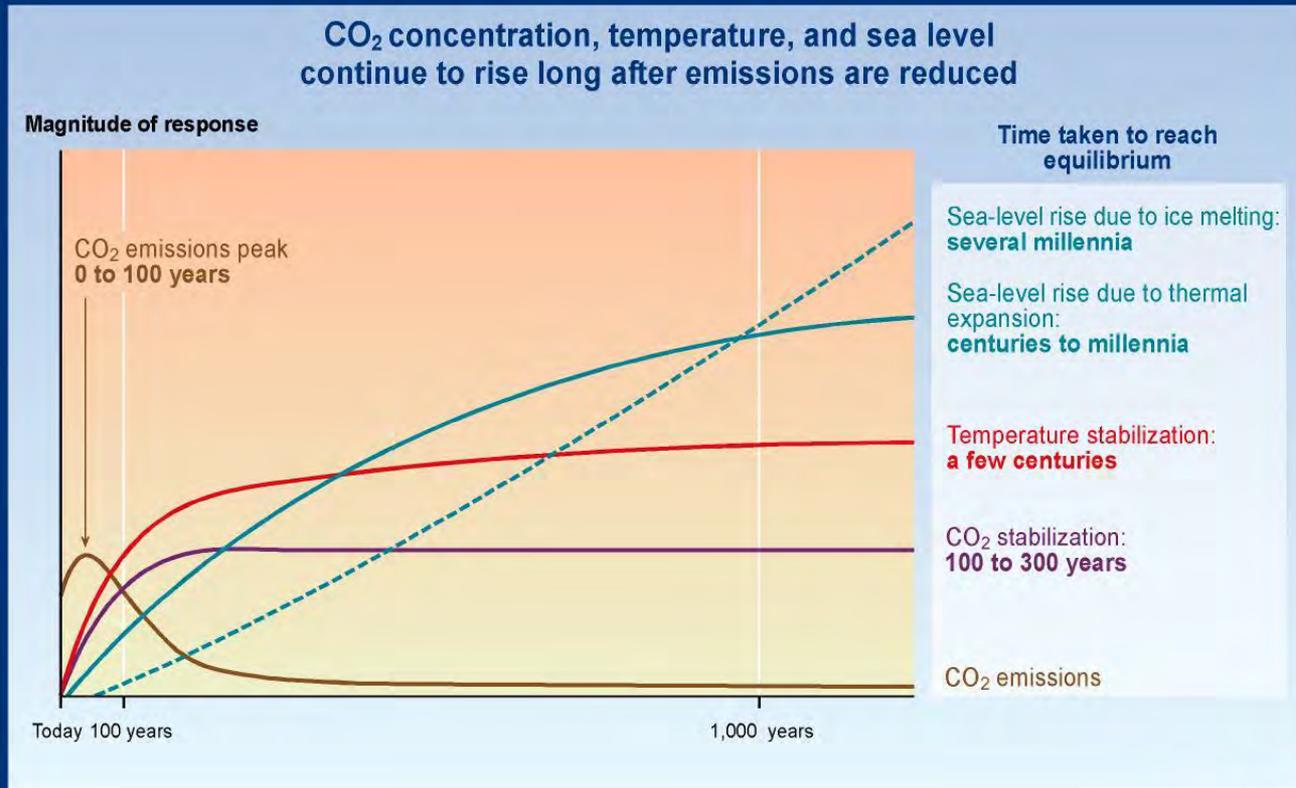
# Water, Energy, and Climate Change



**MITIGATION**

*Manage water  
in a way that reduces  
emissions of greenhouse  
gases (mostly CO<sub>2</sub>)*

# Adaptation is a Necessity

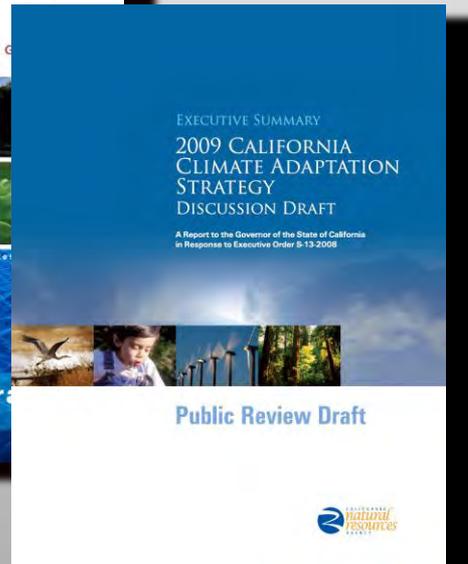
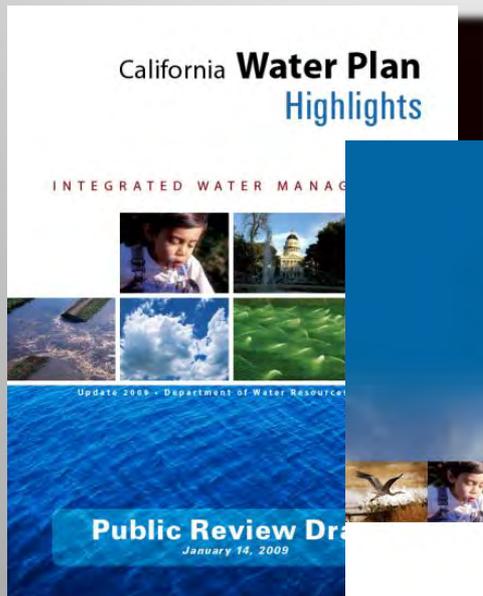


SYR - FIGURE 5-2

# Planning for Adaptation

[www.waterplan.water.ca.gov](http://www.waterplan.water.ca.gov)

[www.climatechange.gov/adaptation](http://www.climatechange.gov/adaptation)



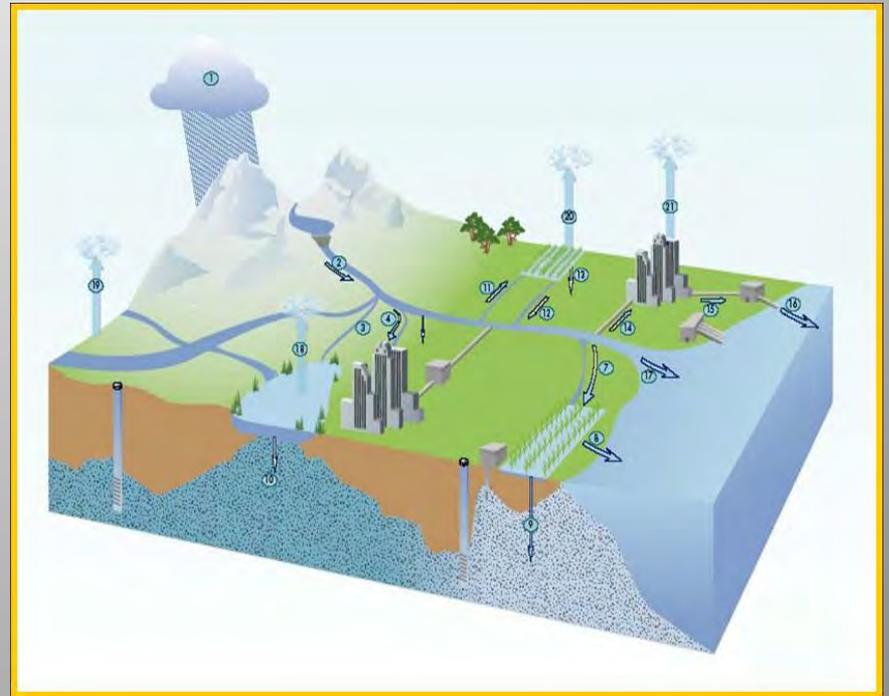
# DWR White Paper on Climate Change Adaptation Strategies



[www.  
water.ca.gov/  
climatechange/](http://www.water.ca.gov/climatechange/)

# Using Regional and Statewide Integrated Approaches

- **Creating flexible water operations**
- **IRWM**
- **Efficient water use**
- **Enhanced flood systems**



# Central Valley Flood Protection Plan

**Evaluating the effects of climate change on projects protecting against floods & adapting to them**

**Involving a workgroup of top climate scientists and planners**

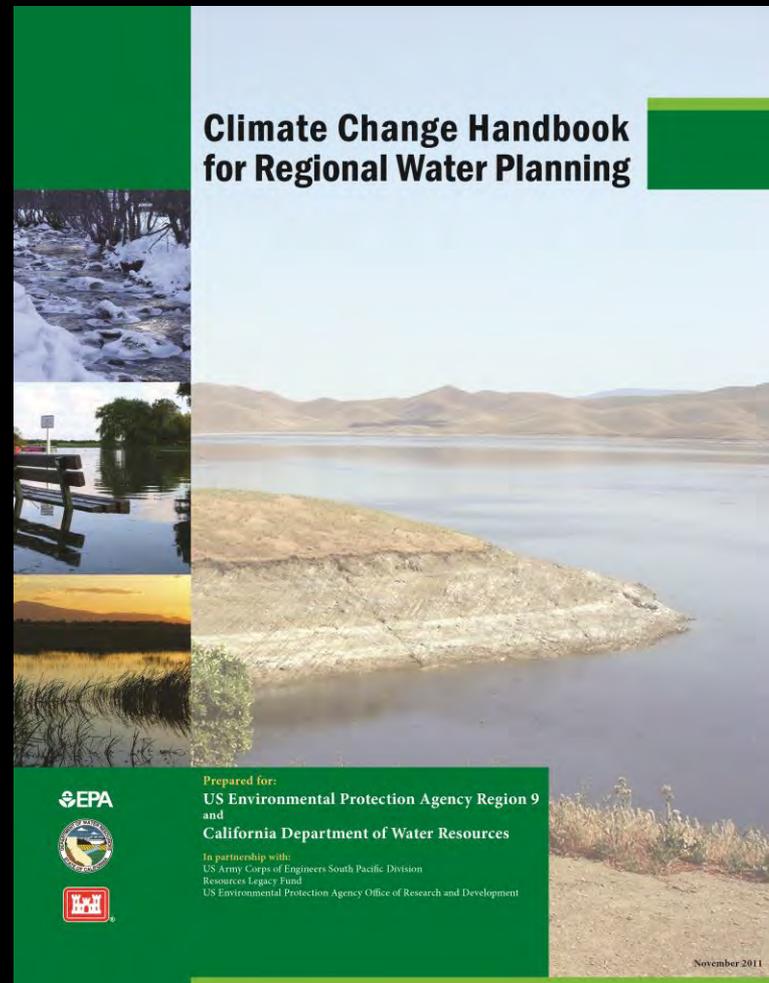


# Climate Change Guidance for IRWM

- **Requiring those who want money for water projects to prepare for climate change**
- **Providing online clearinghouse of documents on climate change planning, mitigation, adaptation, and research**
- **Providing an on-line handbook to assist IRWM groups in adapting to climate change**



# Climate Change Handbook for Water Planning



# Handbook's Purpose

- **Outline the general process for accounting for climate change in water planning**
- **Synthesize available literature in a way that is useful for regional water planning**
- **Support IRWM planning in California**

# What the Handbook is NOT

- **A cookbook**
- **A one-size-fits-all methodology or approach**
- **An extension of or an addition to the IRWM Guidelines**
- **A requirement**

# Climate Change Analysis

- **Assess Vulnerability**
- **Measure Impacts**
- **Greenhouse Gas Emissions Inventory**
- **Evaluate Strategies (including adaptation and mitigation)**
- **Implement Under Uncertainty**

# Sustainability Policies to Mitigate and Adapt



- Foundation of DWR “greening” activities
- Env stewardship & business practices foundational policies
- Pending guidelines for purchasing, water, and waste

# Sustainability Targets

- Reduce water use by 20% per capita
- Incorporate wastewater reuse into facilities when technically feasible and cost effective
- Acquire 360 GWh/yr of renewable energy resources by 2020 and reduce grid-based retail energy demand 20% by 2015
- Reduce carbon emissions to 50% below 1990 levels by 2020 and 80 percent below 1990 levels by 2050
- Divert 50% of waste by 2020

# Implementing 20 X 2020 Water Conservation Plan

- Reduce urban water use by 20% per capita by 2020
- Report on water use efficiency by agriculture
- Monitor groundwater levels



# Sustainability Projects to Mitigate & Adapt



- **Buying renewable energy**
- **Printing double-sided**
- **Checking tire pressures**
- **Evaluating where we use water in our buildings, and reducing its use**

# Looking for Green Energy



- **State Water Project, >50% of power from hydroelectricity (zero carbon)**
- **Replacing coal fired electricity with natural gas and renewable energy**

# Complying with Environmental Laws



- Identifying, quantifying GHG emissions from DWR projects
- Developing a plan to reduce emissions
- Documenting progress

# CEQA guidance

## 2010 DWR CEQA GHG Internal Guidance

- For addressing GHGs in DWR CEQA documentation
- Quantifying GHG emissions & determining their significance to global climate change
- Project-by-project analysis

## Appendix B, pg 14

Mitigation measures that could be applied to DWR projects

- Energy efficiency
- Renewable energy
- Water conservation
- Solid waste measures
- Transportation
- Carbon offsets
- Blended cements

# Climate Action Plan

## Draft Phase 1: GHG Reduction Plan

- Addressing GHGs on a programmatic level for DWR CEQA documents
- Complying with legislation
- Including measures into the project design or plan
  - Construction BMPs
  - Equipment & Fuel Regulations

## Draft Phase 2: Climate Change Analysis for Planning

- Developing measurable goals to achieve objectives from CA's *Climate Adaptation Strategy*
- Guiding DWR in choosing approaches and tools to address adaptation in planning documents

# Climate Action Plan

## Phase 1: GHG Reduction Plan

- Comprehensive analysis of DWR's GHG emissions past, present, and future
- GHG emissions reduction goals
- 10 GHG emissions reduction measures to meet the goals

# DWR: Climate Action Leader

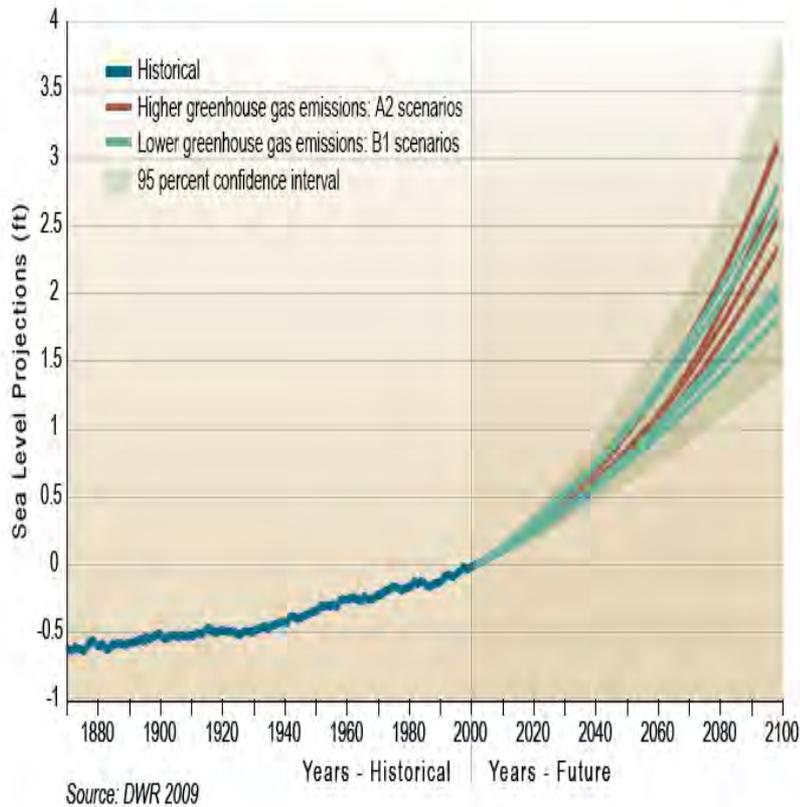
- Verified & reported “carbon footprint” to CA Climate Action Registry since 2007
- Ahead of schedule in meeting state goals for reducing GHG emissions



<b>GHG Emission Reduction Measures</b>	<b>2020 Annual Emission Reduction (mtCO<sub>2</sub>e)</b>
<b>OP-1</b> Reid Gardner Power Substitution	920,000
<b>OP-2</b> Energy Efficiency Improvements	48,500
<b>OP-3</b> Renewable Energy Procurement Plan	101,500
<b>OP-4</b> Distributed Renewable Generation	10
<b>OP-5</b> Carbon Sequestration Actions	Unknown
<b>CO-1</b> Construction Best Management Practices	1,950
<b>CO-2</b> Statewide Equipment and Fuel Regulations	900
<b>BP-1</b> SMUD Commercial Greenergy Program	1,020
<b>BP-2</b> SMUD Carbon Offset Program	2,580
<b>BP-3</b> Implement DWR Sustainability Initiatives	Not quantified
<b>Total Annual Reductions</b>	<b>1,076,450</b>

# Collecting and Understanding Data to Better Adapt

- **Sharing resources for monitoring and collecting data**
- **Working with Ocean Protection Council**
- **Focusing research on sea level rise and other topics to narrow uncertainty**



*Sea Level Rise projection*

# Sea Level Rise Study

- Partnering with others (CA, OR, WA, National Research Council)
- Evaluating the range in sea level rise and its impacts to California's coast
- Planning for future sea level rise



# Moving Forward

- Nearly every part of DWR is involved in climate change in some way.
- DWR is moving towards a more sustainable future to adapt to changes that affect the way we live with water and each other.



Questions?

Comments?

Discussion?

