Approaches to Incorporate Climate Change into CWP 2013

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DWR Climate Change Team and Achievements

Future Steps: Companion Work and Plans
How many inches of Sea Level Rise have been measured along the CA coast in the past 100 years?

A. None  
B. 2 inches  
C. 4 inches  
D. 7 inches
Climate Quiz!

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Climate Quiz!

How much of a reduction in Sierra Nevada snowpack has been measured by DWR in the past 100 years?

A. It has actually increased 10%
B. 1 - 2 %
C. 5 %
D. 10%
Climate Quiz!

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Loss of 1.5 million acre-feet of snowpack storage
Snowpack Reduction

Source: Scripps Institute of Oceanography
In the Next 40 years....

- 3.5 - 11° F temp rise
- 25 - 40 % less snowpack
- More intense wet and dry periods
- Higher flood peaks
- Less summer runoff
- Sea Level rise: 4-16” (7-55” by end of century)
- Increased salinity in the Delta
Adaptation and Mitigation Both Necessary
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Adaptation
Actions that adjust to changes in hydrology
(respond to rising sea levels when building levees)

Mitigation
Actions that reduce or eliminate impacts
(reduce emissions of CO₂ from construction to reduce contribution to global warming)
EXECUTIVE SUMMARY

2009 CALIFORNIA CLIMATE ADAPTATION STRATEGY DISCUSSION DRAFT

A Report to the Governor of the State of California in Response to Executive Order S-13-2008

Public Review Draft

California Water Plan Highlights

INTEGRATED WATER MANAGEMENT

Update 2009 - Department of Water Resources

Public Review Draft

January 16, 2009

www.climatechange.gov/adaptation

www.waterplan.water.ca.gov
Comprehensive Strategy for Adaptation

Regional Strategies

- Fully implement Integrated Regional Water Management (IRWM)
- Aggressively increase water use efficiency
Comprehensive Strategy for Adaptation

Improving Management and Decision-Making Capacity

- Preserve, upgrade, and increase monitoring and data analysis and management
- Plan for and adapt to sea level rise
- Identify and fund focused climate change impacts and adaptation research and analysis
Comprehensive Strategy for Adaptation

Investment Strategies

- Provide sustainable funding for statewide and integrated regional water management
Water, Energy, and Climate Change

Manage water in a way that reduces emissions of greenhouse gases (mostly CO₂)
Statewide Strategies

- Greater flexibility in meeting competing objectives
- Flood management that accounts for higher variability, Central Valley Flood Protection Plan to address climate change impacts
- Emphasize environmental stewardship
- Practice and promote integrated flood management
- Enhance and sustain ecosystems
- Advance and expand conjunctive management of surface and groundwater resources
- Achieve a sustainable Delta
4 Approaches
1. Regional Reports

• Climate Change Specialists in each region
• Regionally-appropriate Adaptation Strategies
• Scientifically sound approach to address CC
1. Regional Reports

- Climate Change Specialists in each region
- Regionally-appropriate Adaptation Strategies
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2. Future SCENARIOS

- Thru Statewide Water Analysis Network
3. Within all Resource Management Strategies

- Climate Change Adaptation
- Greenhouse Gas Mitigation
3. Within all Resource Management Strategies

- Climate Change Adaptation
- Greenhouse Gas Mitigation

4. Statewide Strategies

- Highlights and Key Recommendations
SCENARIOS

Colored lines – greenhouse gas emissions scenarios
Black dots – actual greenhouse gas emissions
SCENARIOS

Global Modeling → Regional Downscaling → Rainfall & Runoff → Impacts Analysis
• GLOBAL CIRCULATION MODELS
  • 6 Future Climate Scenarios
  • 2 Emissions Scenarios

• DOWNSCALING

• HYDROLOGIC MODELS
  – irrigation demand
  – hydrologic flows

* Using the World Climate Research Programme's (WCRP's) Coupled Model Intercomparison Project phase 3 (CMIP3) multi-model dataset
Update 2009 Regional Water Demand Changes By Scenario
Companion Plans/Work

- Sea Level Rise Study

National Research Council, 2012
Companion Plans/Work

• **Sea Level Rise Study**
  National Research Council, 2012

• **CCTAG** - Climate Change Technical Advisory Group
  11 panel members; expertise areas
  First meeting of CCTAG for Q1, 2012
Companion Plans/Work

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- Internal **DWR Framework** for Climate Change
  Analysis Methods for DWR Planning Studies
Companion Plans/Work

- IRWM Handbook

Guidance for IRWM groups
Will be Released November, 2011

http://www.water.ca.gov/climatechange/
Future Steps

How can you stay involved?
CLIMATE CHANGE
In the California Water Plan Update 2013

- **Subject Expertise Coordination**
  - Full time DWR Climate Change Staff
  - CCTAG - Climate Change Technical Advisory Group
  - SWAN Statewide Water Analysis Network - Scenarios
  - Regional Reports
  - Resource Management Strategies
What percent of the most frequently published climate scientists concur that human activities are the main cause of modern global warming?

A. 25%
B. 50%
C. 75%
D. 97%
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