

Chapter 5. Managing an Uncertain Future

Related Sessions at the Water Plan Plenary

October 29th 10:15 am – Applying the Sustainability Indicators Framework

October 30th 11:15 am – Central Valley Vulnerability Analysis and Response Strategies

About This Chapter

Chapter 5, “Managing an Uncertain Future,” emphasizes the need for decision-makers, water and resource managers, and land use planners to use a range of considerations in planning for California’s water future in the face of many uncertainties and risks. It provides examples of uncertainties and discusses the need to assess risks in planning for actions with more sustainable outcomes. An approach is presented for evaluating resource management strategies for robustness by using multiple future scenarios. Water management vulnerabilities are presented. A framework is provided to measure the sustainability of water management policies and projects. This chapter describes the following topics:

- Recognizing and Planning for Risk and Uncertainty.
- Water Scenarios 2050: Possible Futures.
- Managing for Sustainability.

Recognizing and Planning for Risk and Uncertainty

1. Key features of text

Anticipate Change - California’s water and resource managers must recognize that conditions are changing and will continue to change. Traditional approaches for predicting the future based solely on projecting past trends will no longer work. Strategies for future water management must be dynamic, adaptive, and durable. In addition, the strategies must be comprehensive and integrate physical, biological, and social sciences, as well as consider risk and uncertainty.

2. What is new / different from Update 2009? / What has changed since last draft?

Section summarized with light update from Update 2009. Moved Update 2009 content on tools for accounting for risk and risk assessment examples to the Reference Guide, Volume 4.

3. What public input has been received to date?

Initial outline for Section discussed with the Water Plan public advisory committee as part of the Update 2013 scoping.

Water Scenarios 2050: Possible Futures

1. Key features of text

Highlights the use of multiple future scenarios to capture a broad range of uncertain factors that affect water management, but over which water managers have little control. Scenarios are used to test the robustness of strategies by evaluating how well strategies perform across a wide range of possible future conditions. The CWP organizes scenarios around themes of population growth, land use patterns, and climate change. Growth scenarios characterize a range of uncertainty surrounding how cities and other land managers will accommodate future population growth through infill development or expansion into areas of existing open space and agriculture. Climate scenarios explore how future climate change might influence timing, distribution, and amount of precipitation, storm runoff, and water supply.

2. What is new / different from Update 2009? / What has changed since last draft?

The CWP has gone away with the three scenario themes used in Update 2009; instead Update 2013 redefines and expands the number of growth scenarios reflecting population growth and development density from 3 to 9. CWP evaluates change in water demand from 2006 to 2050 for each of the ten hydrologic regions and statewide across 9 future growth scenarios and 13 climate scenarios. CWP also presents a test case for comprehensive analysis for the three regions in the Central Valley first envisioned in Update 2005 using Robust Decision Making. This approach explores key water management uncertainties, quantifies vulnerabilities using performance measures, and evaluates performance of selected resources management strategies to reduce vulnerabilities.

Table 5-1 Conceptual Growth Scenarios

Scenario	Population Growth	Development Density
LOP-HID	Lower than Current Trends	Higher than Current Trends
LOP-CTD	Lower than Current Trend	Current Trends
LOP-LOD	Lower than Current Trends)	Lower than Current Trends
CTP-HID	Current Trends	Higher than Current Trends
CTP-CTD	Current Trends	Current Trends
CTP-LOD	Current Trends	Lower than Current Trends
HIP-HID	Higher than Current Trends	Higher than Current Trends
HIP-CTD	Higher than Current Trends	Current Trends
HIP-LOD	Higher than Current Trends	Lower than Current Trends

Figure 5-6 California Hydrological Regions Highlighting Three Central Valley Regions Used in Test Case



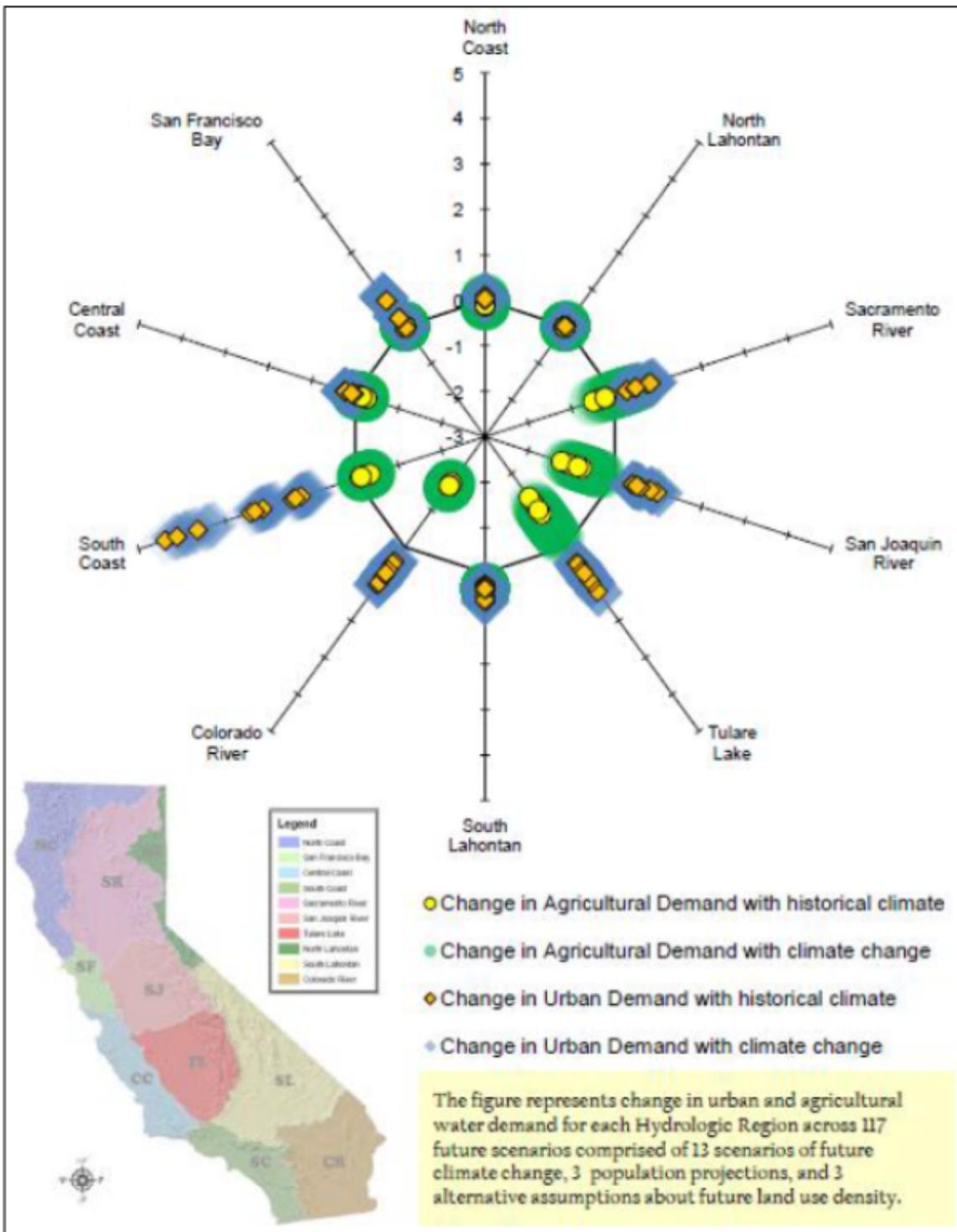
Figure 5-17 Change in Statewide Agricultural and Urban Water Demands for 117 Scenarios from 2006-2005 (million acre-feet per year)



Climate

- Historical
- Future

Figure 5-18 Change in Regional Agricultural and Urban Water Demands for 117 Scenarios from 2006-2005 (million acre-feet per year)



3. What public input has been received to date?

- The Water Plan conducted workshops in January and June of 2012 with land use subject matter experts to review growth scenarios.
- The Water Plan conducted four workshops during 2011, 2012, and 2013 with the Statewide Water Analysis Network technical experts to review the approach and results evaluating Central Valley water management vulnerabilities.
- Approach discussed with the Water Plan public advisory committee as part of the Update 2013 scoping.
- Presented approach and preliminary results at the 2012 Water Plan Plenary meeting.

Managing for Sustainability

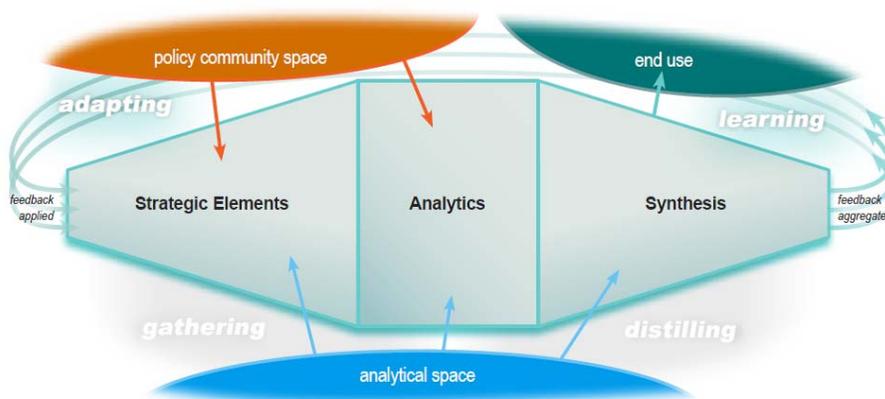
1. Key features of text

Section presents the California Water Sustainability Indicators Framework, developed as part of Update 2013, to bring together indicators that provide information regarding water system conditions and their relationships to ecosystems, social systems, and economic systems. Section presents pilot study results of the Framework applied at a statewide and Regional scale.

2. What is new/different from Update 2009? / What has changed since last draft?

Greatly expands the discussion of water sustainability in the CWP and provides a statewide and regional pilot study application for quantifying indicators of water sustainability. Provides first ever water footprint assessment of California.

Figure 5-19 The California Water Sustainability Indicators Framework - Process



3. What public input has been received to date?

- Presented approach during December 2011 annual meeting of the Sustainable Water Resources Roundtable held on the UC Davis campus.
- Reviewed approach and content through multi-agency Water Sustainability work team meetings in 2011 and 2012.
- Presented approach at the 2012 Water Plan Plenary meeting.

Questions to Consider

1. What general questions do you have about the purpose and motivation of Chapter 5, Managing an Uncertain Future, and each of the subsections? Refer to the section above, “About this Chapter”, and the “Key features of text” sections.
2. Focusing on the Water Scenarios 2050 section:
 - a. Do you have questions of clarification about the application of scenarios in Update 2013?
 - b. Can you suggest ways to clarify how we are presenting the growth scenarios in Table 5-1?
 - c. Do you have suggestions for improving the presentation of the statewide water demand results shown in Figure 5-17?
 - d. Do you have suggestions for improving the presentation of regional water demand results shown in Figure 5-18?
3. What other comments would you like to share about this Chapter?