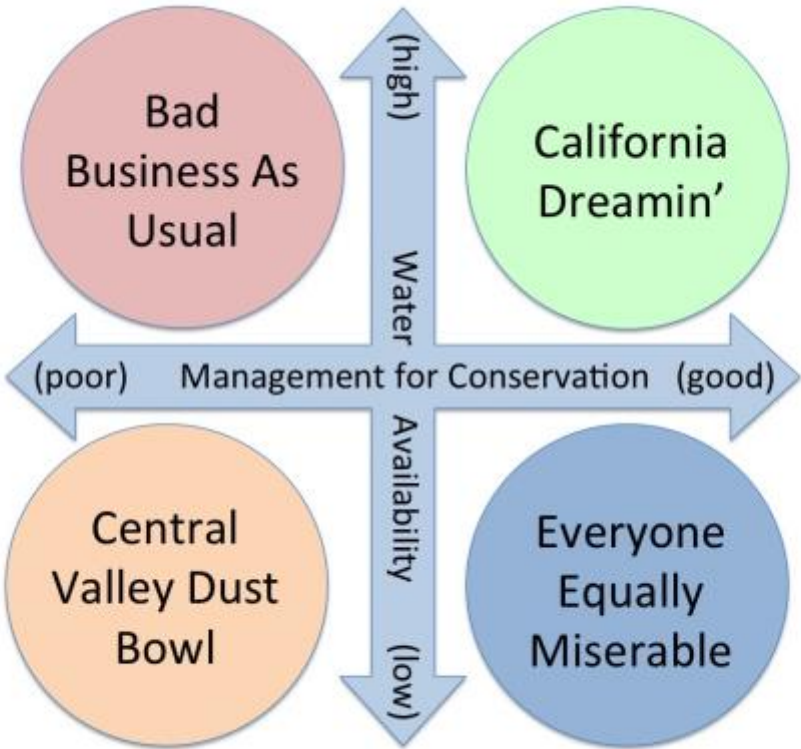


Central Valley Future Scenarios



*California Landscape Conservation Cooperative
Central Valley Landscape Conservation Project
March, 2015*



Central Valley Future Scenarios

*Results of the Central Valley Landscape Conservation Project
Scenario Planning Workshop, March 3, 2015*

Introduction: The Making of the Scenarios

On March 3, 2015, The California Landscape Conservation Cooperative conducted a scenario planning workshop as a part of the Central Valley Landscape Conservation Project (CVLCP). The goal of this scenario planning exercise was to “develop a common understanding of a range of future conditions in the Central Valley as a basis for identifying priority natural resources and adaptation strategies and actions.”

Workshop participants worked in small groups to develop two major axes of landscape-scale change in the Central Valley that would then be used to develop four plausible future scenarios for the Central Valley. All groups agreed on a water-related axis, and there were two distinct versions of a “human-driven” axis. CA LCC staff synthesized these into one axis to create four divergent futures.

The axes and their two extremes are described below, followed by a summary of the four scenarios. These future scenarios will be used by the project teams to envision possible changes for the Central Valley region’s future and guide the selection of priority resources and the development of data products, quantitative vulnerability analyses, and climate adaptation strategies.

For in-depth documentation of the workshop and scenario planning methodology, please see the Workshop Summary on the [CVLCP project website](#).

Time Horizon

Workshop participants were asked to describe the conditions 50 years in the future.

Axes and Assumptions

Axis: Water Availability

Extremes:

- Amount and seasonal timing of water similar to historical patterns with potential increase of extreme storms and drought (“high”).
- Reduced amount and seasonal timing of water compared to historical patterns,

and high increase of extreme storms and drought (“low”).

Axis: Management for Conservation

(Combines Societal Support for Project Objectives, and Integrated Regional Planning)

Extremes:

- Management that is favorable for functioning ecosystems and biodiversity as a result of integrated regional planning and good economic, legislative, and regulatory support (“good”).
- Management that is unfavorable for functioning ecosystems and biodiversity and as a result of uncoordinated planning and weak economic, legislative, and regulatory support (“poor”).

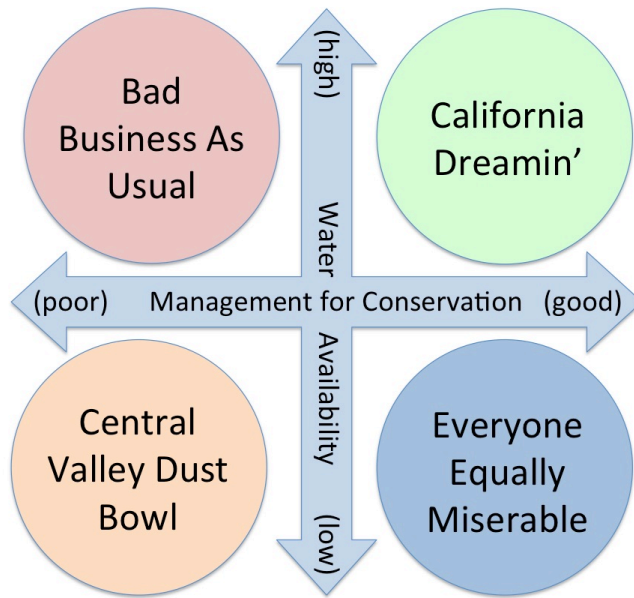
Assumptions

Assumed across all four scenarios are: increased temperatures, earlier timing of snowmelt runoff, and greatly reduced Sierra Nevada snowpack. Also assumed is an overall increase statewide in human population with its associated pressures, although regionally there is variability within scenarios due to water availability. (See [“Projections of Future Changes for the California Central Valley”](#)).

The Scenarios and Their Stories

All Scenarios:

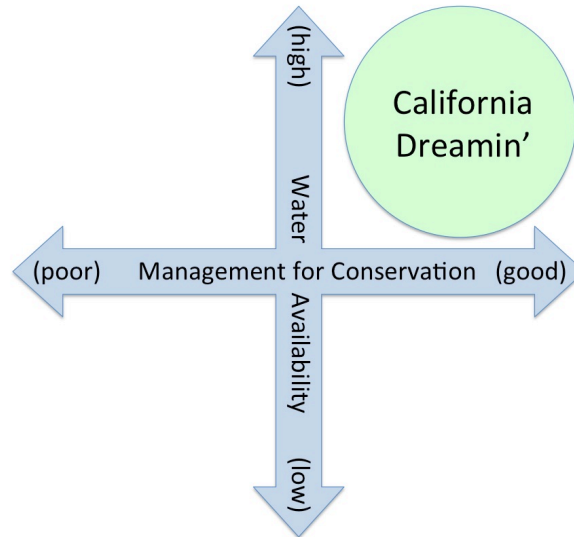
The graphic below shows all the scenarios together. Each is described separately below.



Scenario 1: “The Green Dream” or “California Dreamin’”

High Water Availability

Good Management for Conservation



In this future, California has become a world leader in integrated water management and makes optimal use of its water supply.

The human population has increased as more people move to the Central Valley with no significant increase in the urban footprint. County planning has been integrated, and greenbelts connect urban areas with open space. Farmers and fishermen have developed a landmark agreement for multi-purpose water resource management.

Due to progressive water resource management and water conservation, California survives 6-year droughts with ease. Levee set-backs reconnect waterways with their floodplains; groundwater recharge is increased and flood management is improved.

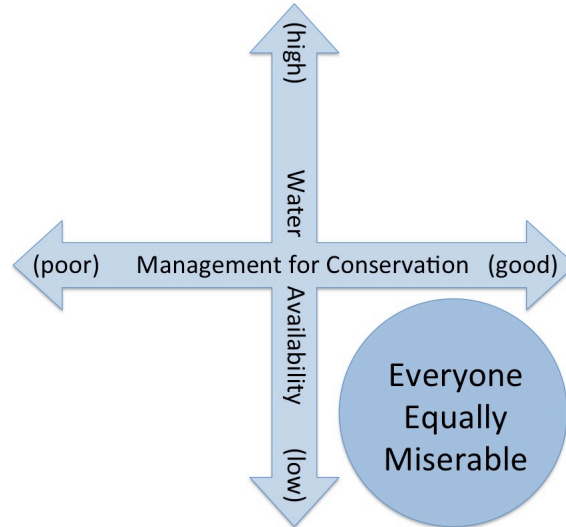
Sierra Nevada forests and meadows are an integral part of water planning, and Tulare Lake is part of the water infrastructure. Refuges are receiving their allotments of water, salmon and smelt fisheries are thriving as are farms and wildlife.

Aquatic and marine ecosystems are healthy, and there is increased riparian cover and habitat connectivity. The San Joaquin River flows consistently to the Delta and salmon runs increase to near-historic levels, contributing to a thriving economy. There is a shift in agriculture toward trees and vines.

Scenario 2: “Everyone Equally Miserable” or “Working Together to Overcome Some Dam Problems”

Low Water Availability

Good Management for Conservation



In this scenario there is progressive resource management and integrated regional planning due to an increase in funding and public support, but climate change impacts on water are extreme. California does its best with scarce water supplies and manages to balance human and ecosystem priorities.

There is slower population growth in the Central Valley region due to water resource limitation. Despite the scarcity of water, integrated regional planning across sectors results in a higher percentage of water allocated to ecosystems, leading to an increase in sustainability of natural resources. There are fish passage improvements and widespread levee setbacks as the Army Corps of Engineers, Department of Water Resources, and partners install wildlife-friendly flood protection.

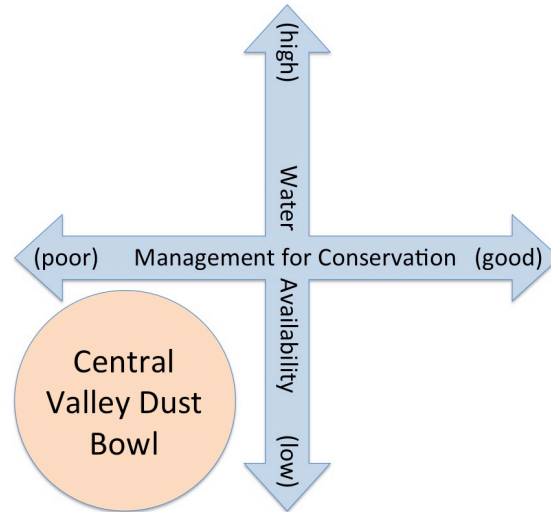
Agriculture shifts toward less water-intensive crops; production is constrained or optimized. Crop values rise in concert with high water value and prioritized use. Low-value wildlife friendly crops are subsidized and high-value crops integrate ecosystem function (example: hedgerows).

Lands are dedicated for conservation, and shifting ecosystems due to climate change drives success or extinction of threatened and endangered species more than human-caused habitat fragmentation. Terrestrial species may do relatively well, but aquatic species suffer.

Scenario 3: “Central Valley Dust Bowl: Grapes of Western Wrath” or “Survival of the Highest Bidder”

Low Water Availability

Poor Management for Conservation



In this future we face the worst case of all our scenarios: severe water scarcity combined with poor planning and management.

There are few alliances for planning and water management, and increased conflicts over resources. Urban landscapes sprawl and large population areas merge. Air quality is poor and asthma rates increase. Rural residents and farmers migrate out of the Central Valley.

The value of water has increased to the point that only the wealthy can buy water. Surface and groundwater quality is poor and groundwater is unusable in many places, or wells must be drilled deeper to reach it. This leads to increased subsidence. Dams are raised ever higher; Tulare Lake alternates between filling with storm water and being pumped dry for use in irrigation.

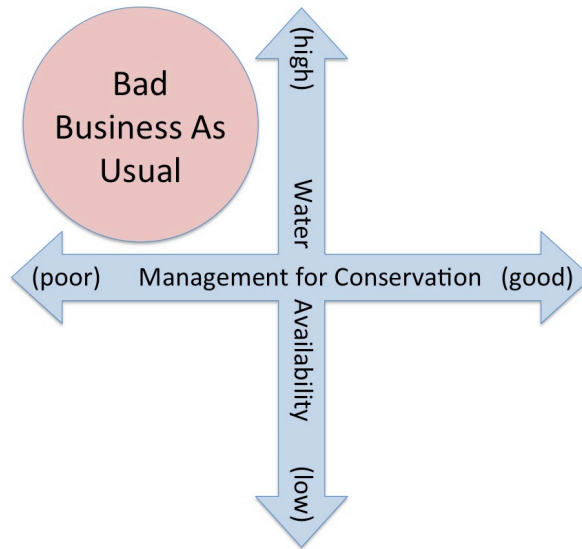
Land use shifts toward solar and oil production. Fewer crop types are grown and soil is lost in the next great dust bowl. There is widespread fallowing. Air quality declines as soil blows off of dry fields.

This scenario results in severe impacts to species and ecosystems. Anadromous fisheries are vulnerable to crashing, there may be massive bird die-offs and migratory birds most likely by-pass the Central Valley, species shift upslope and sage brush invades the valley. Habitats have become more fragmented, shrunken, and isolated. Most of the refuges in the Southern Central Valley and Delta provide minimal habitat value. Xeric and urban-adapted species become dominant.

Scenario 4: “Bad Business as Usual” or “Pulling Defeat from the Jaws of Victory”

High Water Availability

Poor Management for Conservation



In this future, climate impacts on water availability are less severe but human management is disorganized and there is less emphasis on conservation and ecosystems. The Central Valley squanders its best chance for adaptation and sustainability.

Planning is conducted by independent, uncoordinated, and competing local agencies and consequently there is little regional-scale planning. The population grows, there is uncontrolled development, and water is overused and prioritized for human uses solely. Land use decisions are made with little regard for water availability, resulting in increased urban sprawl, fragmentation, and habitat loss with associated losses in native biodiversity.

Water is managed for human use rather than ecosystems, and there is complete loss of remaining riparian habitat to the levee system. More dams are built to support human uses in the face of decreased snowpack and increased agriculture and urban demand.

Agriculture intensifies, following commodity-price production, shifting toward orchards and vineyards. There is less emphasis on wildlife-friendly agriculture, and rangelands are lost.

Despite the potential for water for ecosystems, there are severe impacts to terrestrial species, migratory waterbirds, and fish. Wetlands and wetland species hang on in wetlands that survive but go unimproved.