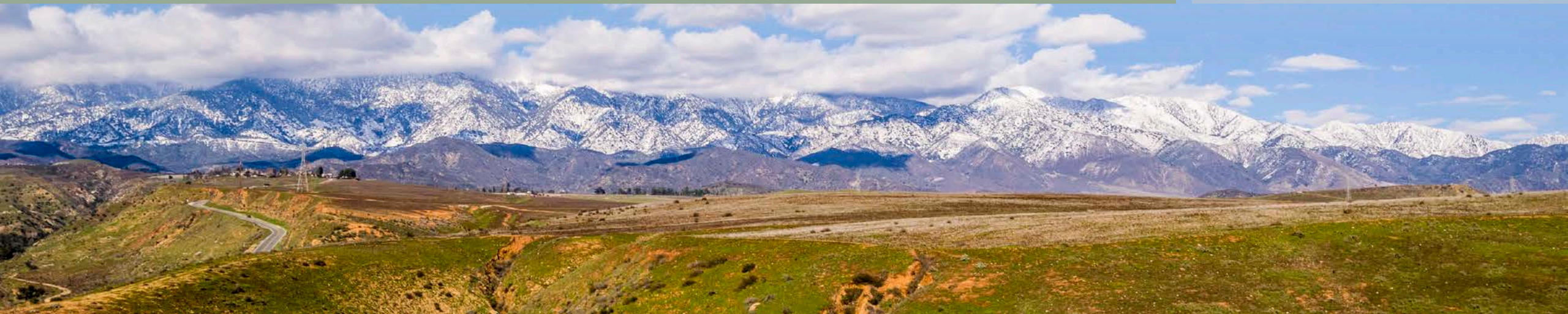
San Gorgonio IRWM

Stakeholder Advisory Committee # 4

Climate Change & Resource Management Strategies

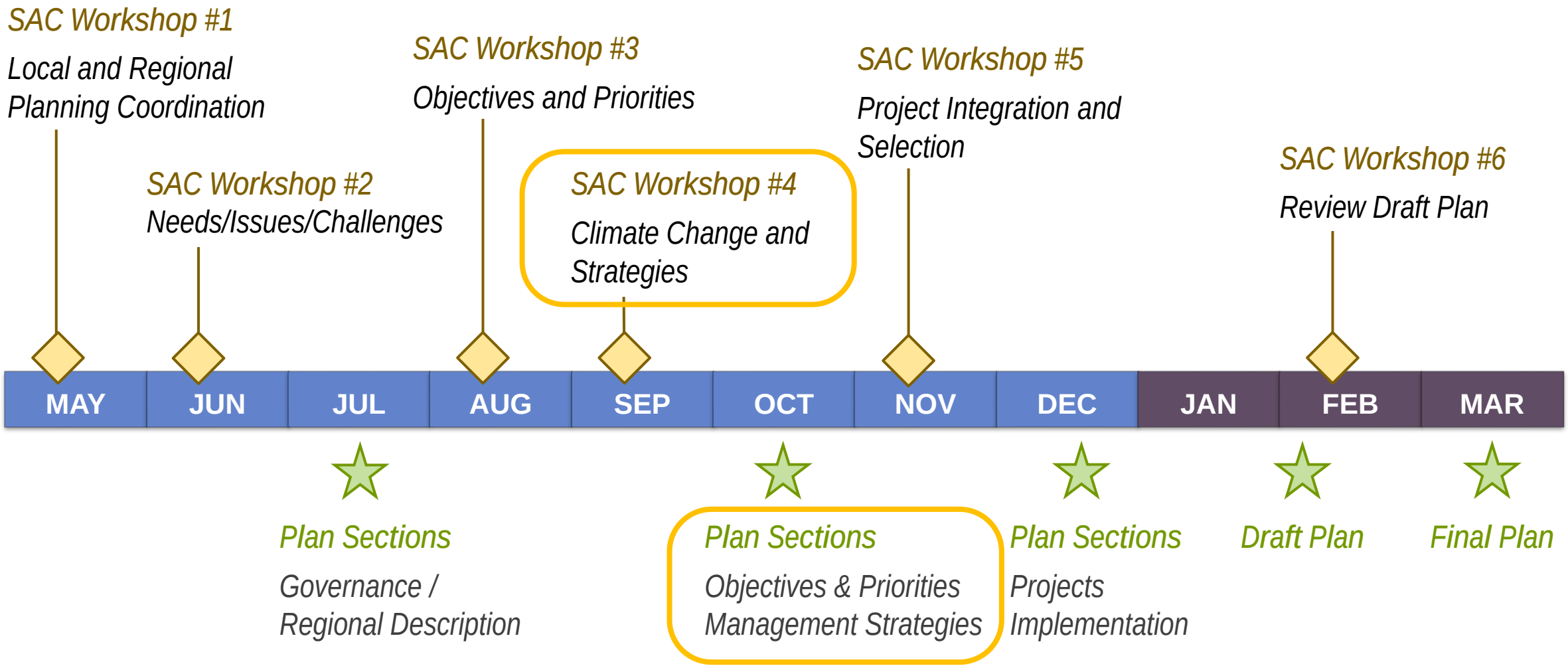
September 13, 2017



Agenda

1. Welcome and Introductions (5 min)
2. Schedule and Process Reminder
3. Climate Change Workshop
   a) Climate Change Impacts Research
   b) Climate Change Vulnerability Assessment
   c) Climate Change Vulnerability Issues
   d) Potential Climate Change Objective
4. Strategies Workshop
   a) Identify Relevant Water Resource Management Strategies
5. Next Steps
   a) Objectives and Vulnerability Prioritization

IRWM Plan Development Schedule



Climate Change/Strategies Process

Today

1. List Climate Change Vulnerability Issues
2. Discuss CA Water Plan Strategies
3. Decide on Climate Change Objective

Via Email

1. Prioritize Vulnerability Issues (at least 3 highest)

Next Meeting

1. Finalize Strategies
2. Discuss Project Concepts
3. Discuss IRWM Project Selection Process

Climate Change Requirements

Chapter 2: Region Description

- Climate change effects and impacts
- Climate change vulnerabilities

Chapter 3: Objectives and Priorities

- Climate change related objective

Chapter 4: Regional Water Mangement Strategies

- Strategies to adapt to and mitigate against climate change

Chapter 5: Projects

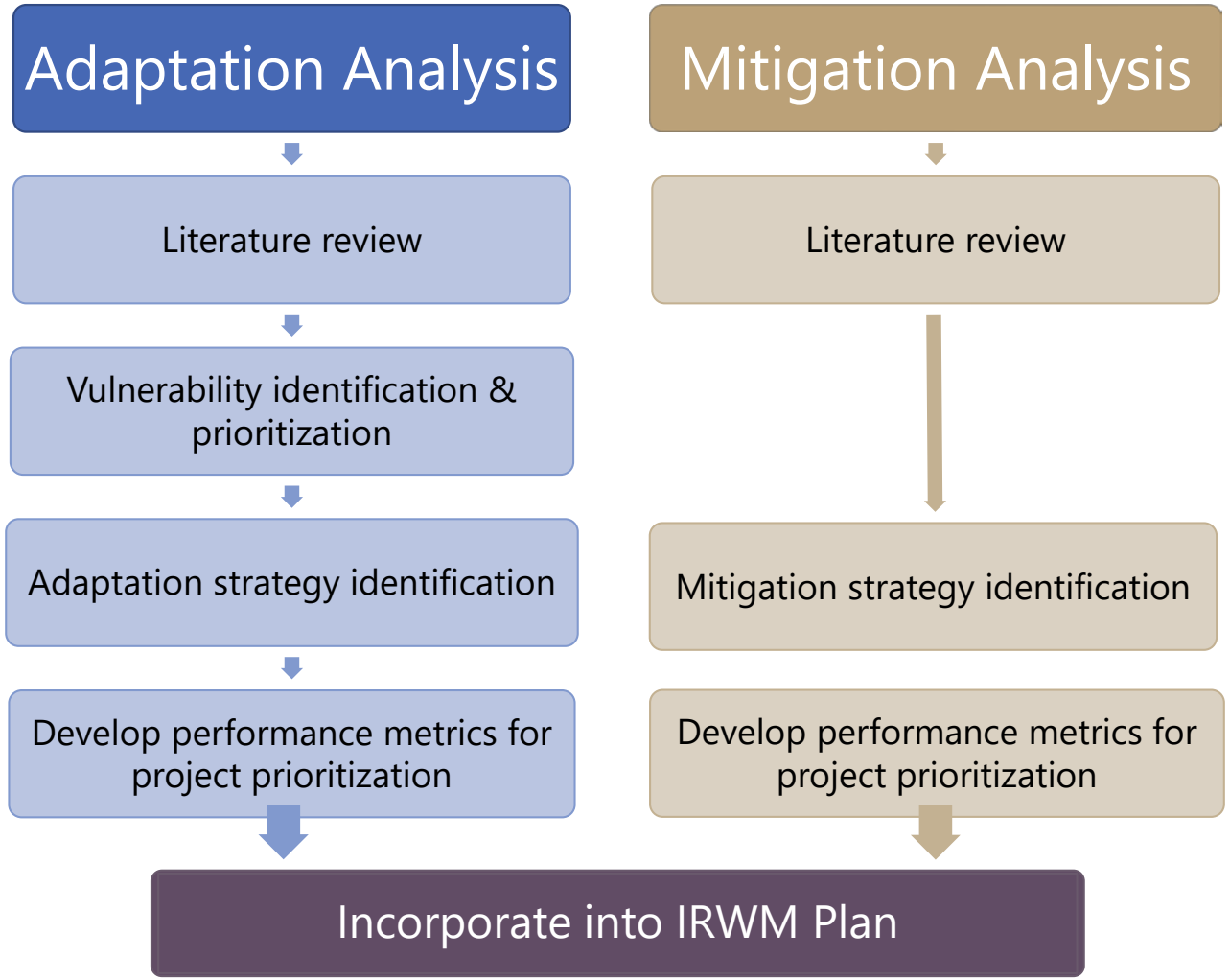
- Climate change adaptation and mitigation included as part of prioritization

Chapter 6: Implementation

- Plan for further data gathering and analysis of vulnerabilities

Climate Change Analysis

Two types of analysis required:

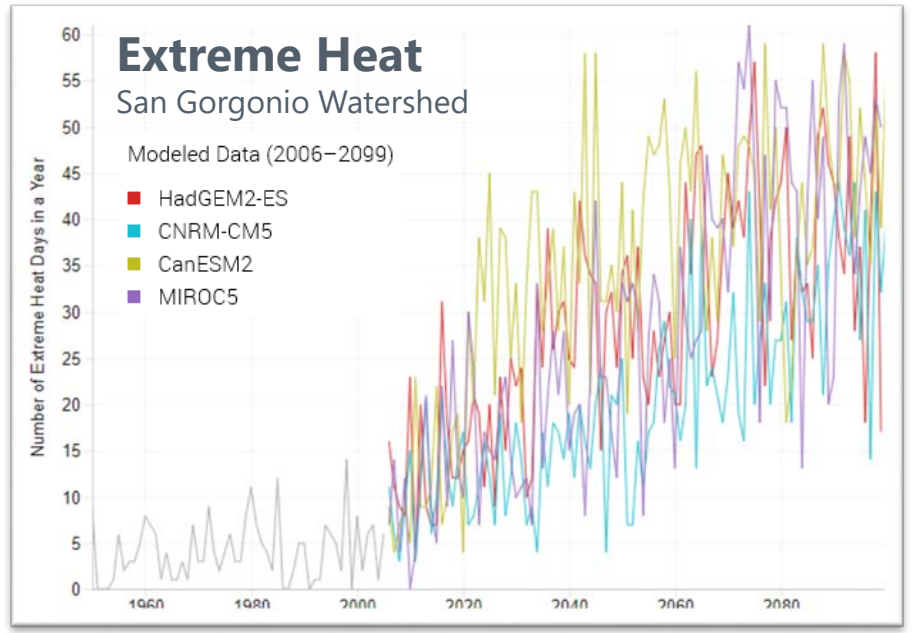


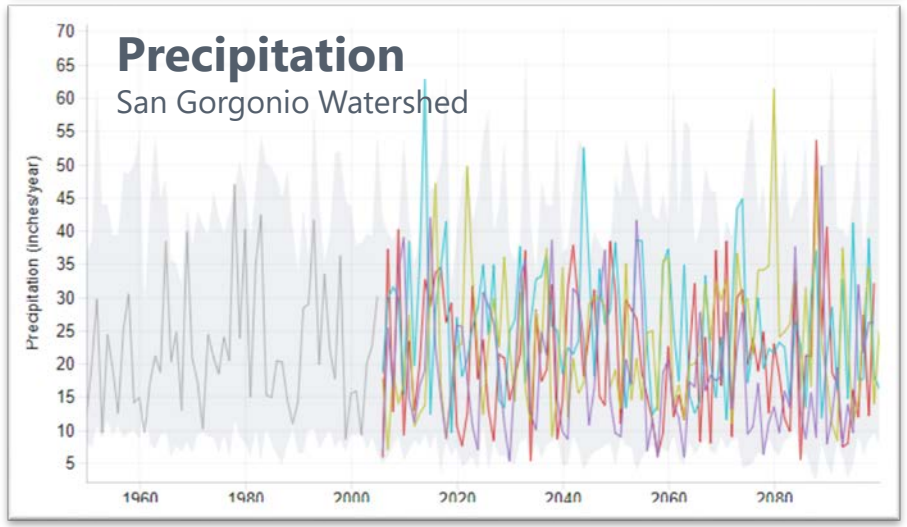
Relevant Climate Change Information

Document	Relevant Information
Statewide Planning Documents	
Preparing California for a Changing Climate (DWR, 2008)	• **Statewide** impacts to water, infrastructure, health, economics, wildfire
Climate Change Handbook for Regional Water Planning (EPA and DWR, 2011)	• Methods for assessing climate change impacts for **Local/Regional** planning
California Adaptation Planning Guide (CA Emergency Management Agency & CA Natural Resources Agency, 2012)	• **Regional** impacts • Strategies for climate change adaptation
Regional / Local Documents & Tools	
Cal-Adapt website managed by the California Energy Commission	• Downloadable data • **Localized** tools/models for climatic characterizations
Climate Change Analysis for the Santa Ana River Watershed (USBR, 2013)	• **Regional (Santa Ana River)** impacts • Covers water supply, demand, and flood
Additional documents have been examined, but typically refer to the above documents	

Effects of Climate Change on Regional Water Resources

Effect	Ranges
Temperature change	• Increase in average temperature by 2°F to 4°F by 2050 and 5°F to 10°F by 2100 • Large increase in the number of heat waves
Precipitation	• On average, projections show little change in total annual precipitation • Significant loss of snowpack
Wildfire Risk	• Slightly increased likelihood of wildfire risk
Flood Impacts	• Possible increases in the likelihood of extreme weather events
Water Supply Impact	• Up to 30% reductions in local Spring/Summer runoff • Statewide 25% decrease in SWP supply





Climate Change Vulnerability Questions and Issues

Handout

Vulnerability	Y/N	Justification	CC Vulnerability Issue
Water Demand			
Are there major industries that require cooling/process water in your planning region?	N	No major industries in the area	Industrial demand would increase
Are crops grown in your region climate-sensitive? Would shifts in daily heat patterns, such as how long heat lingers before night-time cooling, be prohibitive for some crops?	N	No crops grown in the area - are there tree crops that are looking for more water??	Crop demand would increase
Do groundwater supplies in your region lack resiliency after drought events?	Y	The groundwater table consistently decreases until another event occurs; however, there have been no water shortages to date	Inability to use groundwater storage to buffer drought
Are water use curtailment measures effective in your region?	Y	The Region responded well to conservation mandates during the last drought	Limited ability to conserve further
Does water use vary by more than 50% seasonally in parts of your region?	Y	The area is characterized by high summer and low winter use; up to four times in urban areas, and approximately doubled in other areas.	Limited ability to meet summer demand
Are some instream flow requirements in your region either currently insufficient to support aquatic life, or occasionally unmet?	N	There are no stream flow requirements in the area, but there could be in the future (according to USFS)?	Habitat demand would be impacted
Water Supply			
Does a portion of the water supply in your region come from snowmelt?	Y	The Whitewater flume provides spring and summer snowmelt from San Bernardino Mountains as well as some from the San Gorgonio River	Decrease in local surface supply
Does part of your region rely on water diverted from the Delta, imported from the Colorado River, or imported from other climate-sensitive systems outside your region?	Y	SGWPA supplies SWP water to the Region	Decrease in imported supply
Would your region have difficulty in storing carryover supply surpluses from year to year?	Y	Our region has sufficient physical storage to carry over supply surpluses from year to year.	Decrease in seasonal reliability
Does part of your region rely on coastal aquifers? Has salt intrusion been a problem in the past?	N	This Region is not on the coast	
Has your region faced a drought in the past during which it failed to meet local water demands?	N	The Region has always been able to meet demands - but this has required some levels of conservation to be employed.	Sensitivity due to higher drought potential
Does your region have invasive species management issues at your facilities, along conveyance structures, or in habitat areas?	N	None have been identified.	Invasives can reduce supply available
Water Quality			
Are increased wildfires a threat in your region? If so, does your region include reservoirs with fire-susceptible vegetation nearby which could pose a water quality concern from increased erosion?	Y	Yes increased wildfires are a threat, and surface facilities (Whitewater Fluvm) could be impacted.	Increased erosion and sedimentation
Does part of your region rely on surface water bodies with current or recurrent water quality issues related to eutrophication, such as low dissolved oxygen or algal blooms? Are there other water quality constituents potentially exacerbated by climate change?	N	Most natural surface water is ephemeral (except the Whitewater River is perenial) in the region and there are no surface water storage facilities.	Poor water quality in surface waters

Climate Change Vulnerability Issue	Notes
r storage to buffer drought	
further	
mer demand	
supply	
ply	
ability	
eds and costs	
ncrease (due to more water)	
rds (due to debris from fire)	
at	
ater dependent species	
ecessary habitat	
r potential	

Potential Climate Change Objectives

Upper Santa Margarita IRWMP

- Adapt to and mitigate against climate change by promoting adaptation strategies and reducing water related greenhouse gas emissions

San Diego IRWMP

- Effectively address climate change through adaptation and mitigation in water resource management.

Santa Clara IRWMP

- Implement strategies, that adapt flood management, water supply, water quality, water dependent recreation, water-dependent habitat, and fire risk for climate change, but also have other benefits that would occur in the absence of climate change ("no regret strategies")

Resource Management Strategies

Handout

2013 CA Water Plan Resource Management Strategies	Supported (S) and/or Implemented (I)	Adapt to climate change	Mitigate GHGs
Reduce Water Demand			
Agricultural Water Use Efficiency			
Urban Water Use Efficiency		✓	✓
Crop Idling for Water Transfers		✓	
Water Meter Installation		✓	✓
Rainfed Agriculture			
Graywater use		✓	✓
Improve Operational Efficiency and Transfers			
Conveyance – Regional/Local		✓	
Conveyance – Delta			
System Reoperation		✓	
Water Transfers		✓	
Optimize Sewer Systems			✓
Conduct emissions inventory and target			✓
Agricultural)			✓
Increase use of renewable energy sources			✓
Increase Water Supply			
Conjunctive Management and Groundwater Storage		✓	✓
Desalination			
Precipitation Enhancement		✓	
Municipal Recycled Water		✓	✓
Surface Storage – Regional/Local		✓	✓
Surface Storage – CALFED (/SWP)			
Dewvaporation or Atmospheric Pressure Desalination			
Fog Collection			
Irrigated Land Retirement			
Waterbag Transport/Storage Technology			
Improve Water Quality			
Drinking Water Treatment and Distribution		✓	
Groundwater Remediation/Aquifer Remediation			
Matching Water Quality to Use		✓	
Pollution Prevention		✓	✓
Salt and Salinity Management			
Urban Runoff Management		✓	
Practice Resources Stewardship			✓
Agricultural Lands Stewardship			
Ecosystem Restoration			
Forest Management		✓	
Land Use Planning and Management		✓	✓
Recharge Areas Protection		✓	✓
Sediment Management		✓	✓
Watershed Management		✓	✓
People and Water		✓	✓
Economic Incentives Policy			✓
Outreach and Education			
Water and Culture			
Water-Dependent Recreation		✓	
Improve Flood Management		✓	✓
Flood Risk Management		✓	✓
		✓	
			✓

Summary and Next Steps

- **Via Email**
  1. *Objectives* and *Vulnerability* Prioritization
- **Next SAC Workshop:** ***November 8, 2017***
  1. Finalize Strategies
  2. Discuss Project Concepts
  3. Discuss IRWM Project Selection Process