



**Climate Change Workgroup  
Meeting No. 1**

**June 28, 2012 ○ 9:00am - 11:00am**

**County Operations Center – Forensic Center**

**5570 Overland Ave, San Diego 92123**

**MEETING NOTES**

**Attendees**

Peter Livingston, County of SD	Sarah Harvey, Equinox Center
Tim Bombardier, SDCWA	Donna Chralowicz, City of San Diego
Brendon Reed, City of Chula Vista	Anna Lowe, City of San Diego
Linda Flournoy, Planning & Engineering for Sustainability	Linda Pratt, City of San Diego
Goldy Thatch, City of San Diego	
Persephene St. Charles, Rosalyn Prickett, Dawn Flores, RMC	

**1. Workgroup Objectives**

The objectives of the climate change workgroup were presented to the group as follows:

- Summarize available information on climate change for Region
- Prioritize water-related vulnerabilities to climate change
- Prioritize strategies to mitigate/adapt given climate change impacts
- Clarify climate change in project evaluation/prioritization process
- Review Climate Change Planning Study

**2. Meeting No. 1 Objectives**

The objectives of this meeting were to:

- Understand IRWM climate change requirements
- Provide input on climate change information pertinent to Region
- Identify and prioritize water-related vulnerabilities to climate change

### 3. Workgroup Organization

- Linda Flourinoy was elected to chair the climate change workgroup. Should Linda be unavailable to present progress of the workgroup at RAC meetings, Rosalyn will present.
- Meeting rules/procedures and the project schedule were presented, and can be found in the attached PowerPoint presentation.
- The next meeting will be held July 26<sup>th</sup> from 9:00am to 11:00am at the Water Authority Library Conference Room.

### 4. IRWM Overview

An overview of the IRWM process, and how climate change will fit into the IRWM Plan update was presented. Slides can be found in the attached PowerPoint presentation.

### 5. Review of Planning Study Outline

The Planning Study outline was presented to the group. It was emphasized that the process used to develop the study is the process recommended by DWR.

### 6. Summarize Relevant Climate Change Information

Information regarding climate change as related to IRWM planning was presented to the group.

- Documents that will provide the basis for understanding how climate change may affect the Region were presented and are listed with links below:
  - Preparing California for a Changing Climate (2008),  
[http://www.ppic.org/content/pubs/report/R\\_1108LBR.pdf](http://www.ppic.org/content/pubs/report/R_1108LBR.pdf)
  - Using Future Climate Projections to Support Water Resources Decision Making in California (2009),  
[http://www.water.ca.gov/pubs/climate/using\\_future\\_climate\\_projections\\_to\\_support\\_water\\_resources\\_decision\\_making\\_in\\_california/usingfutureclimatepr ojtosuppwater\\_jun09\\_web.pdf](http://www.water.ca.gov/pubs/climate/using_future_climate_projections_to_support_water_resources_decision_making_in_california/usingfutureclimatepr ojtosuppwater_jun09_web.pdf)
  - A Multi-model Ensemble Approach to Assessment of Climate Change Impacts on the Hydrology of the Colorado River (2007),  
<https://portal.azoah.com/oedf/documents/08A-AWS001-DWR/Omnia/20070709%20Christensen%20et%20al%20Multimodel%20Approach%20Climate%20Change%20Impacts%20Colorado%20River%20Basi.pdf>
  - Regional Focus 2050 (2008),  
[http://www.cleantechsandiego.org/reports/Focus2050\\_Technical%20Assesment.pdf](http://www.cleantechsandiego.org/reports/Focus2050_Technical%20Assesment.pdf)
  - California Climate Change Adaptation Policy Guide (2012),  
[http://resources.ca.gov/climate\\_adaptation/docs/DRAFT\\_APG\\_Public\\_Review\\_April\\_2012.pdf](http://resources.ca.gov/climate_adaptation/docs/DRAFT_APG_Public_Review_April_2012.pdf)
  - Sea Level Rise Adaptation Strategy for San Diego Bay (2012),  
[http://www.icleiusa.org/climate\\_and\\_energy/Climate\\_Adaptation\\_Guidance/san-diego-bay-sea-level-rise-adaptation-strategy-1/san-diego-bay-sea-level-rise-adaptation-strategy](http://www.icleiusa.org/climate_and_energy/Climate_Adaptation_Guidance/san-diego-bay-sea-level-rise-adaptation-strategy-1/san-diego-bay-sea-level-rise-adaptation-strategy)

- Climate Mitigation and Adaptation Plans
  - i. Chula Vista, <http://www.chulavistaca.gov/clean/conservation/Climate/ccwg1.asp>
  - ii. City of San Diego, <http://www.sandiego.gov/environmental-services/sustainable/eestf.shtml>
  - iii. Port of San Diego, <http://www.portofsandiego.org/climate-mitigation-and-adaptation-plan.html>
- Climate Action Plans
  - i. County of San Diego, [http://www.sdcounty.ca.gov/dplu/advance/Draft\\_Climate\\_Action\\_Plan.pdf](http://www.sdcounty.ca.gov/dplu/advance/Draft_Climate_Action_Plan.pdf)
- Recommended to add Scripps *California Climate Extremes Workshop Report* to the documents used to develop the Region’s climate change impacts
- As a result of reviewing the above documents, a summary of effects of climate change on the Region were presented, and are shown in the below table. These effects represent changes between now and 2050.

Impact	Effect
<b>Temperature</b>	<ul style="list-style-type: none"> <li>• 1.5°F to 4.5°F average temperature increase</li> </ul>
<b>Rainfall</b>	<ul style="list-style-type: none"> <li>• Variable projections (between 35% drier and 17% wetter)</li> <li>• Increase in variability between years</li> </ul>
<b>Supply</b>	<ul style="list-style-type: none"> <li>• 7 in/yr decline in surface and groundwater</li> <li>• Up to 25% decrease in SWP supply</li> <li>• Up to 24% decrease in Colorado River supply</li> <li>• 164,000 afy shortfall in imported supply</li> </ul>
<b>Demand</b>	<ul style="list-style-type: none"> <li>• 7% increase</li> </ul>
<b>Sea level rise</b>	<ul style="list-style-type: none"> <li>• 12 to 18 inch rise in mean sea level</li> </ul>
<b>Wildfires</b>	<ul style="list-style-type: none"> <li>• 40% increase in California Coastal Shrub acreage burned</li> </ul>

## 7. Discuss and Prioritize Regional Vulnerabilities

Prior to the workgroup meeting, a vulnerability strawman based on DWR’s climate change vulnerability checklist (Box 4-1 in DWR’s Climate Change Handbook) was completed by the consultant team. The checklist consists of a series of questions that are meant to help a region determine what water resource areas are vulnerable as a result of climate change, and are shown in the first column of the attached table. The consultant team answered these questions prior to the meeting, and provided justification for the answers, as shown in the second and third columns of the table. In addition, to provide further analysis, the consultant team determined what the underlying climate change vulnerability issue is for each question; in other words, why is this question being asked? Some questions pointed to the same vulnerability issue, which is reflected in the table.

During the meeting, the workgroup was walked through the vulnerability strawman to determine whether they agreed with the answers and justification for each question. Revisions to the strawman are reflected in the attached table.

The workgroup then completed an activity to prioritize the vulnerability issues. Each member was given five “sticky notes” and asked to vote on their top climate change vulnerability issues by posting their vote on posters showing the vulnerability issues. The members were given the following instructions:

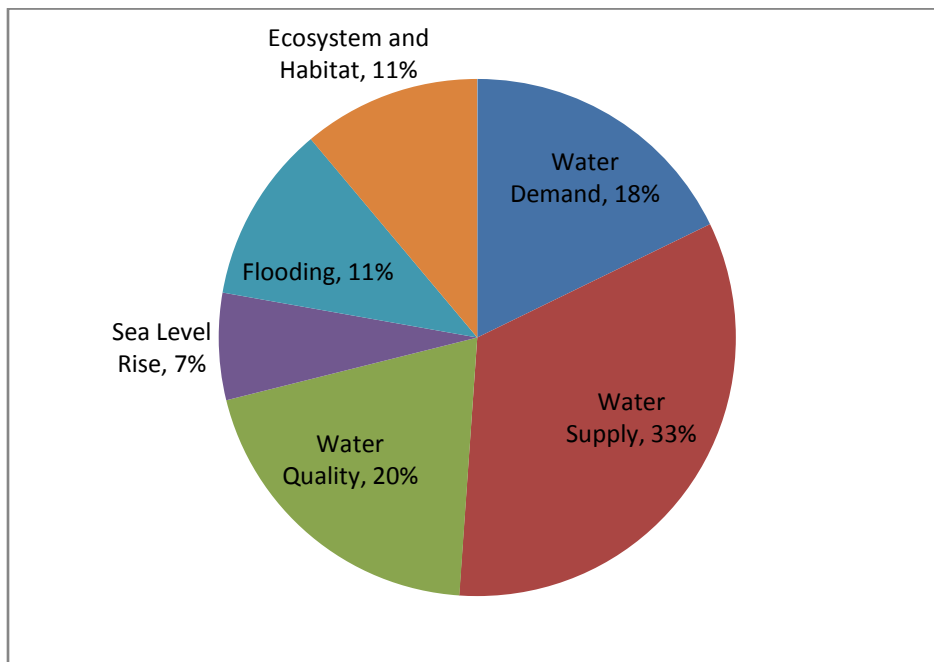
- Select your top 5 vulnerability issues
- Write the reason for your choice on the sticky note and place under the issue
- Keep in mind risk to the overall Region
- Ok to echo other’s comments
- Ok to change your mind
- Ok to emphasize your most important

In total, the nine members of the workgroup resulted in 45 votes.

### ***Results of Prioritization Activity***

The following results were compiled after the meeting by the consultant. The results of the prioritization voting are shown in the columns marked “Votes” and “Comments” of the attached table.

Votes were spread across nearly all of the categories, indicating the work group members perceived there to be a wide range of climate change vulnerabilities. In general, results indicated that water supply is of the greatest concern (receiving 33% of votes), followed by water quality (20%) and water demand (18%). Ecosystem and habitat, and flooding categories each received 11% of the votes, while sea level rise received 7%. The hydropower category received no votes. The chart below shows the breakdown of votes.



The consulting team examined the votes to determine where natural breaks existed among the ranking of each vulnerability issue, and created the following priority levels:

Priority Level	Number of Votes
Very High	9
High	3.5-4
Medium	2-3
Low	1-1.5
Very Low	0-0.5

The attached table reflects the above priority level color coding. The vulnerability issues are also listed below according to priority level.

Priority Level	Category and Vulnerability Issue
Very High	<ul style="list-style-type: none"> <li>• Water Supply: Decrease in imported supply</li> </ul>
High	<ul style="list-style-type: none"> <li>• Water Demand: Industrial demand would increase</li> <li>• Water Supply: Sensitivity due to higher drought potential</li> <li>• Water Quality: Increased constituent concentrations</li> <li>• Flooding: Increases in flash flooding</li> <li>• Ecosystem/Habitat: Decrease in available necessary habitat</li> </ul>
Medium	<ul style="list-style-type: none"> <li>• Water Demand: Crop demand would increase</li> <li>• Water Supply: Decrease in groundwater supply</li> <li>• Water Quality: Increase in treatment cost</li> <li>• Sea level rise: Damage to coastal infrastructure / recreation / tourism</li> </ul>
Low	<ul style="list-style-type: none"> <li>• Water Supply: Lack of groundwater storage to buffer drought</li> <li>• Water Supply: Limited ability to conserve further</li> <li>• Water Quality: Increased eutrophication</li> <li>• Flooding: Increases in inland flooding</li> <li>• Ecosystem/Habitat: Increased impacts to coastal species</li> </ul>
Very Low	<ul style="list-style-type: none"> <li>• Water Supply: Limited ability to meet summer demand</li> <li>• Water Supply: Invasives can reduce supply available</li> <li>• Water Quality: Decrease in recreational opportunity</li> <li>• Sea level rise: Decrease in land</li> <li>• Sea level rise: Damage to ecosystem/habitat</li> <li>• Ecosystem/habitat: Decrease in environmental flows</li> <li>• Hydropower: Decrease in hydropower potential</li> </ul>

The following is a discussion of those vulnerability issues ranked “very high” and “high”.

The highest rated concern in the Region in terms of climate is a decrease in imported supply. The Region is especially vulnerable to decreases in imported supply as 80% of the Region’s supplies come from imported water. In addition, a decrease in imported supply availability is expected to increase the cost of imported water, which will in turn cause rates to increase.

Following imported water concerns, the next highest ranked vulnerability issues generally relate to the effects of increasing temperatures on local supply and demand. Increasing temperatures are expected to increase industrial demand, which is expected to be compounded by industrial growth in the future.

The sensitivity of the Region to drought is also a highly ranked concern as in the past, droughts have resulted in the necessary use of water supply shortage measures by water purveyors. Since the region is anticipated to be drier in the future as a result of climate change, it would then be assumed that the need to implement even more restrictive water shortage measures in the future could be necessary.

Increased constituent concentrations in local water sources was a highly ranked vulnerability issue as well. With increased temperatures it's expected that flows in local streams will decrease, increasing concentrations of constituents, which will in turn increase treatment costs and impact compliance.

Increases in flash flooding was also a priority vulnerability. Increases in flash flooding caused by changes to precipitation patterns are a concern as there is already a lack of capacity in some flood control facilities in the Region, and cities and the county could incur the cost of liability and infrastructure due to the flooding.

Lastly, decreases in available necessary habitat are ranked highly. The Region contains numerous types of habitat that are depended upon by various endangered and threatened species. Changes to temperature, precipitation and sea level have the potential to cause habitat shifts and loss that will impact sensitive species management.

## **8. Public Comments**

There were no comments beyond those captured above.

## **9. Summary and Action Items**

- RMC will compile and email vulnerability prioritization exercise results and presentation (done as part of this summary)
- RMC will provide materials to review prior to next workgroup meeting
- Workgroup members will review/provide comments and prepare for Meeting #2