


Regional Water Planning for Climate Resilience

Presentation to
San Diego IRWM Regional Advisory Committee

April 3, 2019

American Planning Association
Regional & Intergovernmental Planning Division



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Overall Project Goals




- Highlight water and climate issues in different geographic and ecological settings
- Illustrate integrated planning approaches at various scales
- Identify best practices



"One Water"

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Case Studies




- Miami-Dade County, FL
- Cape Cod, MA
- San Antonio, Texas
- Minneapolis – St. Paul, MN
- San Diego County, CA
- State of Oregon

San Diego County Case Study

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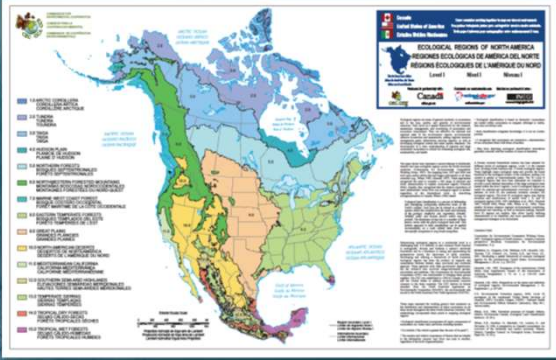


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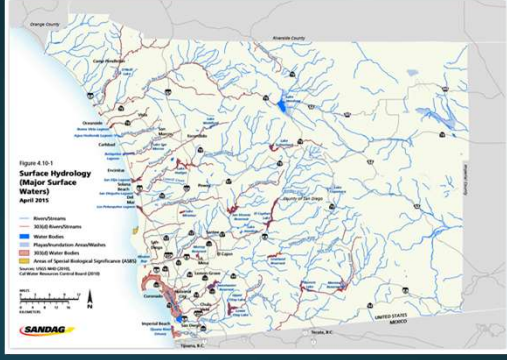
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San Diego County – Existing Setting

California Mediterranean Ecoregion (EPA Ecoregions Map)



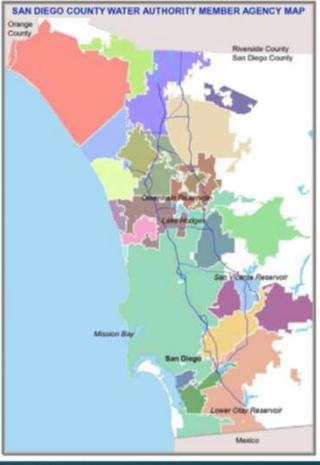
San Diego's Surface Hydrology

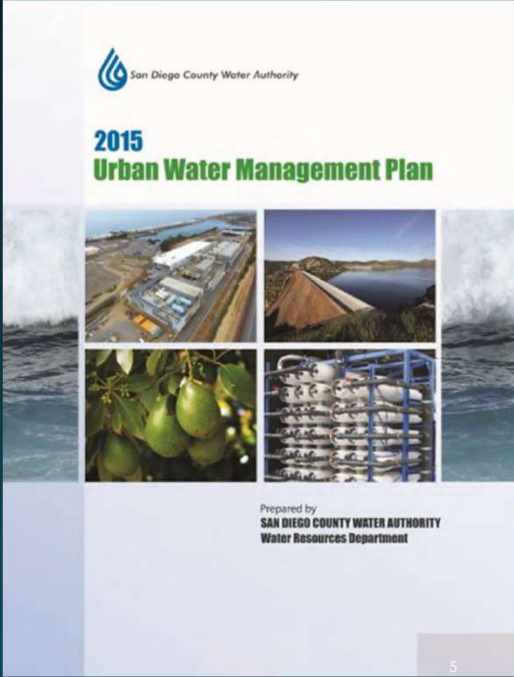


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Regional Water Resource Planning





Prepared by
SAN DIEGO COUNTY WATER AUTHORITY
Water Resources Department

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Regional Water Quality Planning

- **San Diego Regional Water Quality Control Board** (State Agency)
- **SD County MS4 Permit Copermittees:**
 - County of San Diego
 - 18 cities
 - Others
- **San Diego Basin Plan**
- **Water Quality Improvement Plans (WQIPs)** for 11 Watershed Management Areas



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Regional Habitat Conservation Planning

Four Primary Habitat Conservation Planning Areas:

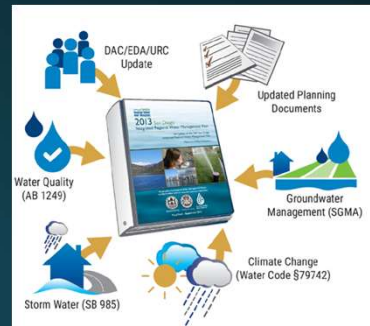
- MSCP South – City of San Diego
- MHCP North County – SANDAG
- North County MSCP – County of San Diego
- East County MSCP – County of San Diego



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San Diego Integrated Regional Water Management Planning



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IRWM Project Evaluation and Prioritization

How the IRWM Plan Goals Address Issues and Needs in the Region

- 1. Improve the reliability and sustainability of regional water supplies.** Expanding local water supply, supporting water supply reliability and security, reducing reliance on the Delta, and generally supporting improved water management help to sustain communities, economies, and the environment.
- 2. Protect and enhance water quality.** Maintaining healthy and safe water resources is critical to the Region's public and environmental health, supports compliance with regulatory requirements, and reduces risk in the Region.
- 3. Protect and enhance our watersheds and natural resources.** Protecting and enhancing our watersheds and natural resources help to promote public and environmental health, improve quality of life, support community engagement, protect threatened and endangered species, and provide opportunities for enriching experiences.
- 4. Enhance resiliency to climate change for local water resources.** Effective water resources management helps to mitigate risks associated with supply reliability, sea level rise, flooding, wildfire, drought, and other extreme weather events. Responding to climate change impacts may include implementing "climate-proof" water management projects or incorporating greenhouse gas emissions reduction into project implementation. Increasing resiliency to climate change supports the four other goals of the IRWM Plan.
- 5. Promote and support sustainable integrated water resource management.** Engaging stakeholders in water resource management is critical for achieving buy-in on integrated solutions, which can help resolve potential management challenges, promote efficiency and efficacy in management practices and projects, and achieve sustainable solutions.

SUN BECO
Integrated Regional
Water Management

Project Evaluation and Prioritization
November 2018

Table 9-1: Scoring Criteria for IRWM Grant Opportunities

Criterion	Scoring Procedure	Points Assigned	Percent of Total Score ¹
Addresses Multiple Objectives ¹	Score is based on # of objectives addressed ²	6+ objectives = 4 pts 5 objectives = 3 pts 4 objectives = 2 pts 3 objectives = 1 pt	TBD
Spans Multiple Watersheds	Score is based on the level of integration between watersheds	Multiple Watersheds = 4 pts Integration within a single Watershed = 2 pts	TBD
Addresses Multiple Beneficial Uses (BUs)	Score is based on # of beneficial uses addressed	4+ BUs = 4 pts 3 BUs = 3 pts 2 BUs = 2 pts 1 BU = 1 pt	TBD
Sustainable Water Development: Creates New Applied Water or Offsets Potable Demand ³	Score is based on yield of water created or offset	Creates new source of reliable, local, drought-proof supply or reduces demands – consistent yield in average and dry years = 4 pts Creates new water or reduces demands – average conditions only = 2 pts Interconnections/redundancy in supply but no additional yield created = 1 pt	TBD
Involves More than One Entity ⁴	Score is based on degree of partnership	2 project partners working jointly on a task = 4 pts 2 project partners not engaged in same activity, or multiple financial sponsors = 2 pts	TBD
Invest in Disadvantaged / Environmental Justice Communities and Systems	Score is based on the degree of benefit (direct vs. indirect)	Directly invests in DAC-EDA-URC-EJ water systems, consolidation, OR training = 4 pts Other direct benefits that improve overall conditions in DACs (e.g. habitat improvement) = 2 pts Indirect benefits = 1 pt	TBD
Resiliency to Climate Change	Score is based on extent of climate change adaptation or mitigation activity (Climate Change Conceptual Model ⁵)	Reduces very high or high priority vulnerability to climate change ⁶ AND improves knowledge and capacity AND implements climate change mitigation = 4 pts Reduces medium, low, or very low priority vulnerability to climate change ⁶ AND either 1) improves knowledge and capacity OR 2) implements climate change mitigation = 3 pts Improves knowledge and capacity AND implements climate change mitigation = 2 pts Improves knowledge and capacity OR implements climate change mitigation = 1 pt	TBD
Stormwater as a Resource	Score is based on benefit provided	Utilizes stormwater as a resource (e.g., environmental, source water replenishment) = 4 pts Implements onsite capture = 2 pts	TBD
Enhance Infrastructure	Score is based on the degree of benefit (regional vs local)	Enhances regional infrastructure (improved use of existing infrastructure) = 3 pts Enhances local infrastructure (improved use of existing infrastructure) = 2 pts Indirectly improves use of existing infrastructure = 1 pt	TBD
Other ⁷	TBD	TBD	TBD

1. % points may be applied if the project indirectly meets this criterion (see Table 9-3 example for 2019 IRWM Plan Objectives).

Hazard Mitigation and Climate Change Adaptation Planning

Climate Change Adaptation and Resilience

Requirement Description:

In accordance with the requirements of SB 379, codified at Government Code section 65302(g)(4), climate change adaptation and resilience must be addressed in the safety element of all general plans in California. Specifically, "upon the next revision of a local hazard mitigation plan, adopted in accordance with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), on or after January 1, 2017, or, if a local jurisdiction has not adopted a LHMP, beginning on or before January 1, 2022, the safety element shall be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to the city or county. This review shall consider advice provided in the Office of Planning and Research's General Plan Guidelines..." (Gov. Code § 65302(g)(4)). This section provides advice to support a jurisdiction's compliance with the requirements of Government Code section 65302(g)(4).

Hazard Mitigation and Climate Change Adaptation Planning (Per SB 379)

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
SAN DIEGO COUNTY, CALIFORNIA

Participating Jurisdictions:

Carlsbad	National City
Chula Vista	Oceanside
Coronado	Poway
Del Mar	San Diego
El Cajon	San Marcos
Escondido	Santee
Encinitas	Solana Beach
Imperial Beach	Viola
La Mesa	County of San Diego
Lemon Grove	Alpine FPD
Maricopa	Santa Fe FPD
Padre Dam FPOD	

OES OFFICE OF EMERGENCY SERVICES
COUNTY OF SAN DIEGO

UDC UNIFIED DISASTER COORDINATOR
SAN DIEGO COUNTY

October 2017

Local Hazard Mitigation Plan → Climate Planning Analysis → General Plan Safety Elements

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California's Fourth Climate Change Assessment

Statewide Summary Report

San Diego Region Report

Contributing Agencies:

www.climateassessment.ca.gov/state/docs/20190116-StatewideSummary.pdf

www.climateassessment.ca.gov/regions/docs/20190321-SanDiego.pdf

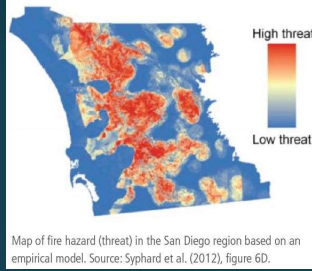
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San Diego Region Report: Regional Climate Variability and Change

CHAPTER HIGHLIGHTS

- Temperature is projected to increase by 5°F to 10°F by the end of the 21st century.
- Heat wave frequency, intensity, and duration will increase.
- Precipitation will remain highly variable from year to year and decade to decade. Additionally, variability might be intensified with wetter winters, drier springs, and more frequent and severe droughts punctuated by more intense individual precipitation events.
- Altered precipitation regimes will impact ecosystems, water demand and supply, water quality and flooding emergencies.
- Wildfire risk will likely increase with warmer temperatures and a longer dry season.
- The risk for large catastrophic wildfires driven by Santa Ana wind events will also likely increase.
- Marine layer clouds can help to reduce the impacts of extreme temperature in coastal regions.



Map of fire hazard (threat) in the San Diego region based on an empirical model. Source: Syphard et al. (2012), figure 6D.

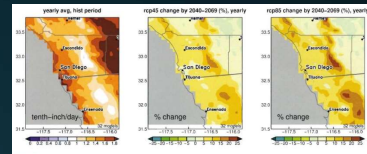
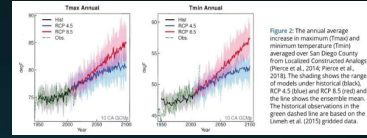


Figure 4: Moisture deficit, potential evapotranspiration - actual evapotranspiration for historical (left) and the percent change in the mid century (2040-2069) under both RCP 4.5 (middle) and RCP 8.5 (right). A positive value indicates increase in the amount of the landscape.

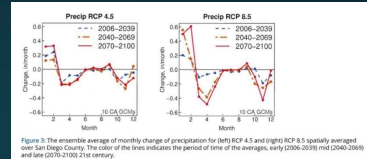


Figure 3: The ensemble average of monthly change of precipitation for (left) RCP 4.5 and (right) RCP 8.5 spatially averaged over San Diego County. The color of the lines indicates the period of time of the averages, early (2006-2039) and late (2070-2100) 2nd century.

San Diego Region Report: Climate Impacts and Adaptation on San Diego Coast

CHAPTER HIGHLIGHTS

- Sea level is expected to rise approximately 1 ft by mid-21st century and 3 ft, or potentially higher, by 2100.
- Strongest factors driving high sea level events will be high tides combined with El Niño events and wind-driven waves.
- Increasing sea level will impede existing infrastructure, buildings, and ecosystems with increasing frequency, especially in the second half of the 21st century.
- Sustained and improved observations in combination with physics based modeling are needed to support adaptation.

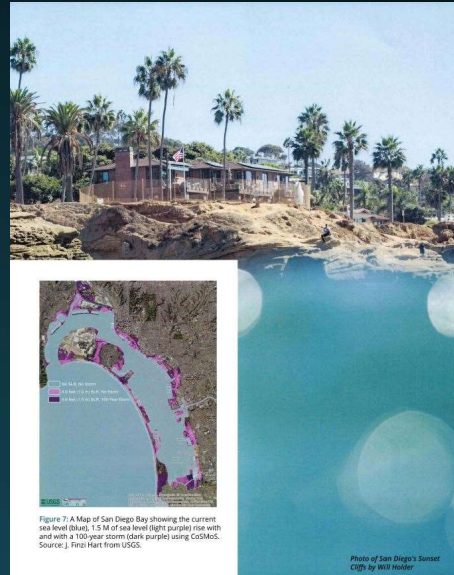
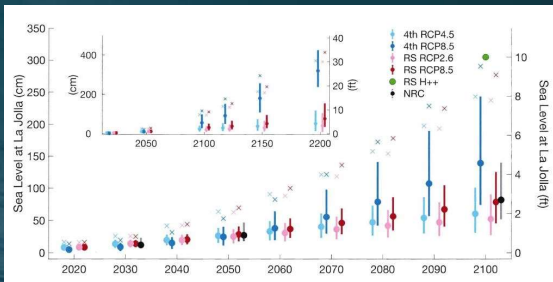
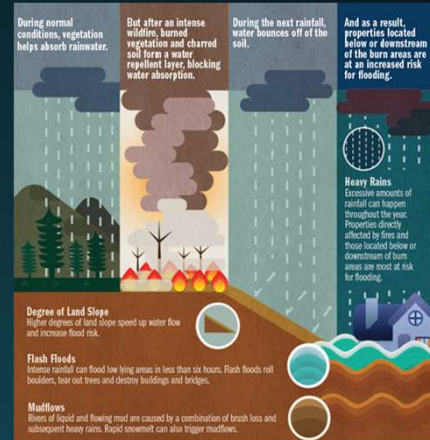
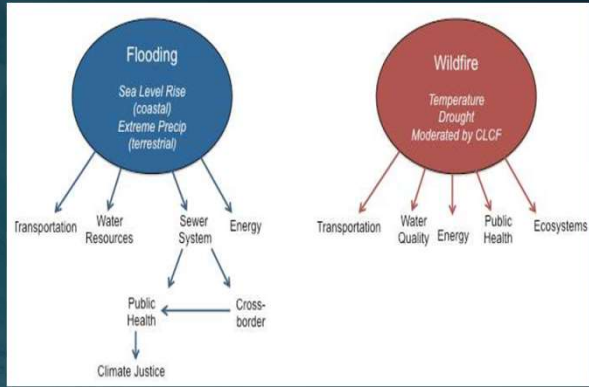


Figure 7: A Map of San Diego Bay showing the current sea level (blue), 1.5 m of sea level (light purple) rise with and with a 100-year storm (dark purple) using CoSARCS. Source: J. Finzi Hart from USGS.

Photo of San Diego's Sunset City, by Will Houser

Cross-Jurisdiction and Cross-Sector Issues



Source: www.fema.gov/flood-after-fire

Next Steps: Short-term Actions



- Outreach and Community Engagement
- Regional and Local Hazard Mitigation Planning
- Integrated Regional Water Management and Climate Resilience Planning

Longer-term Actions: *Regional Greenprint Planning*

What is a greenprint?

Strategic conservation plan or assessment tool that reveals the economic and social benefits that parks, open space, and working lands provide communities.



Source: www.greenprinthub.org



BAY AREA GREENPRINT "Life Cycle"

- Impact:** New land acquisition, Restored waterway, Litigation-free development
- Uses:** PCAs and project reviews, General plan updates, Scenario planning, Partnerships
- Decision Makers:** Planners, Infrastructure agencies, Conservation agencies, Advocates, Developers
- Current Data:** Conservation Lands Network, Regional Advance Mitigation, Greenbelt Policy
- Bay Area Greenprint** (Central Hub)

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Questions?

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