

# California Ocean Protection Council

Scripps Institute

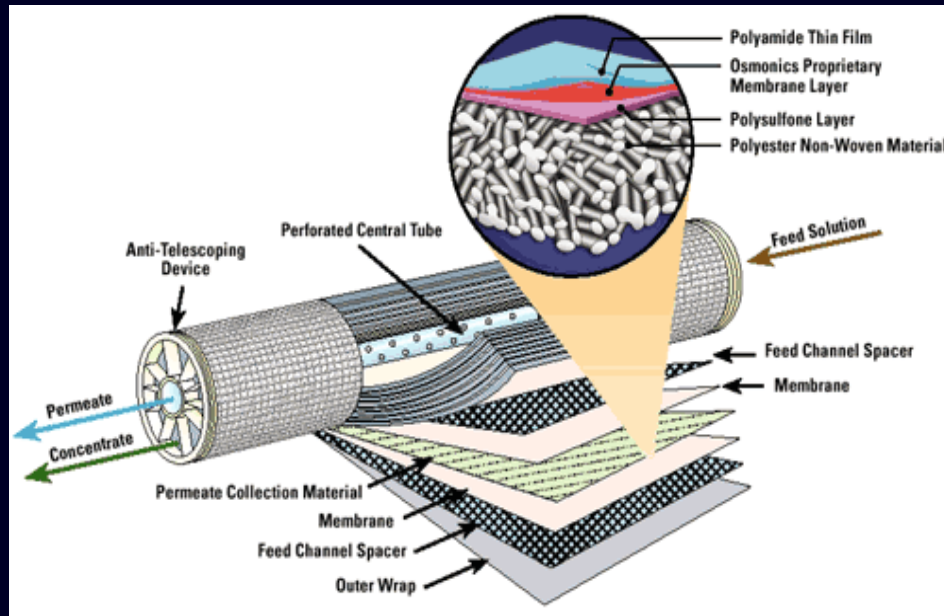
*UCSD*

*November 30, 2009*

# Desalination in California

- desal works
- almost half century in CA (1960s)
- RO the prevailing technology
- technology improving  
(membranes and pressure)
- 26 desalting plants (20 brackish, 6 ocean)

# Advanced Water Treatment



# Task Force Findings:

“Potentially, desalination can provide significant value and numerous benefits.

- Providing additional water supply to meet existing and projected demands
- Replacing water lost from other sources and relieving drought conditions
- Enhancing water reliability and supplying high quality potable water
- Reducing groundwater overdraft and restoring use of polluted groundwater
- Replacing water that can be used for river and stream ecosystem restoration”

# Desalination Task Force, Rec# 2

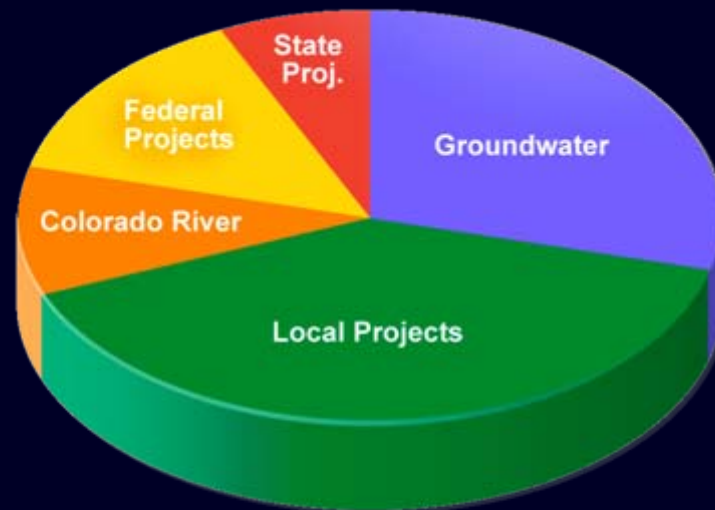
“Include desalination, where economically and environmentally appropriate, as an element of a balanced water supply portfolio, which also includes conservation and water recycling to the maximum extent practicable”.

# Water Supply

Every major water supply system in  
California (and many other places)  
is over-allocated.



# State Water Supply Systems



Lester Snow, California  
Department of Water Resources



# California's Water Portfolio

## Sources:

- surface water
- groundwater
- recycling
- seawater desalination

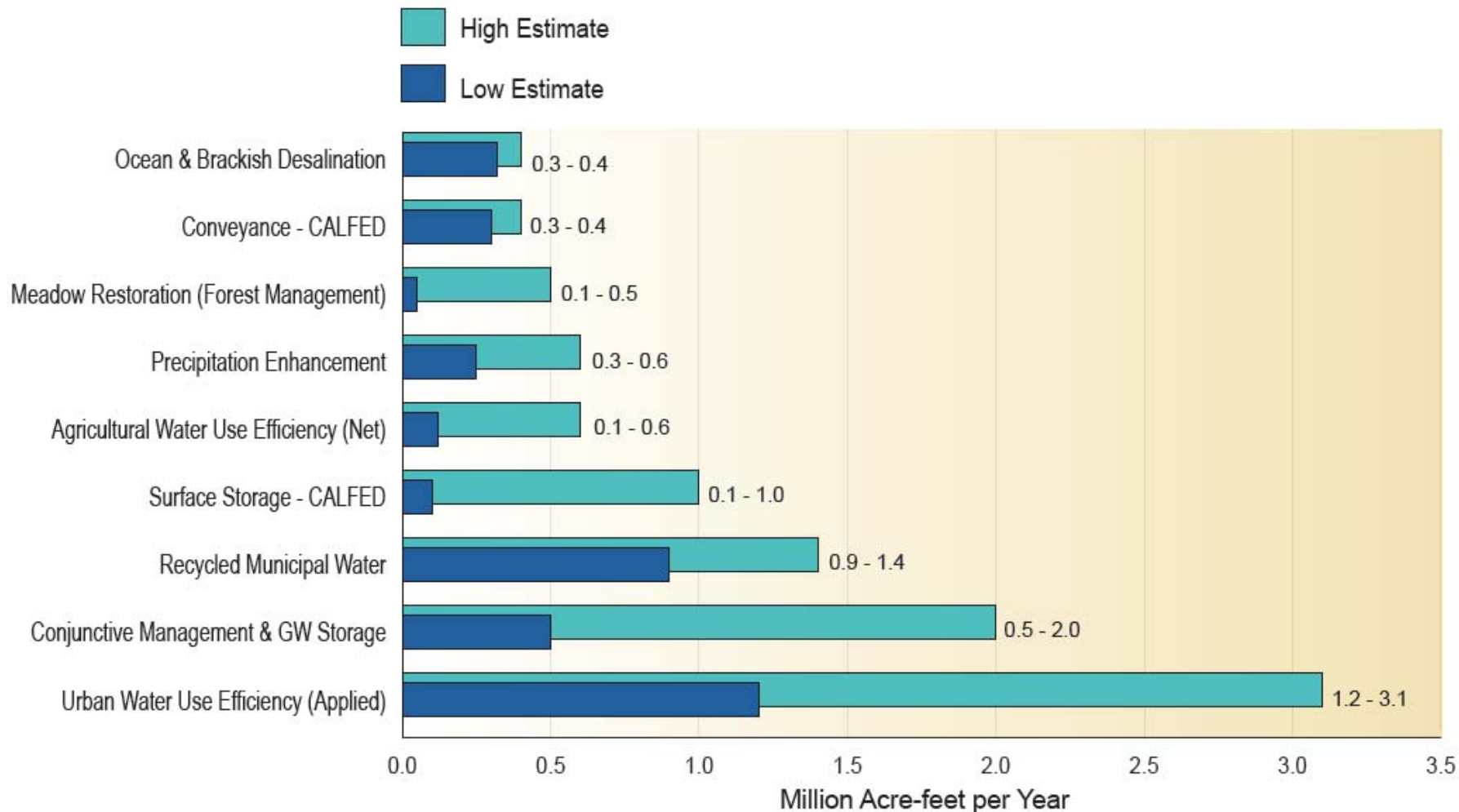
## Systems:

- surface and groundwater management
- interbasin transfers (CRA, SWP, CVP, LA, SF...)
- efficiency improvements / conservation
- rainwater harvesting
- treatment (all sources)

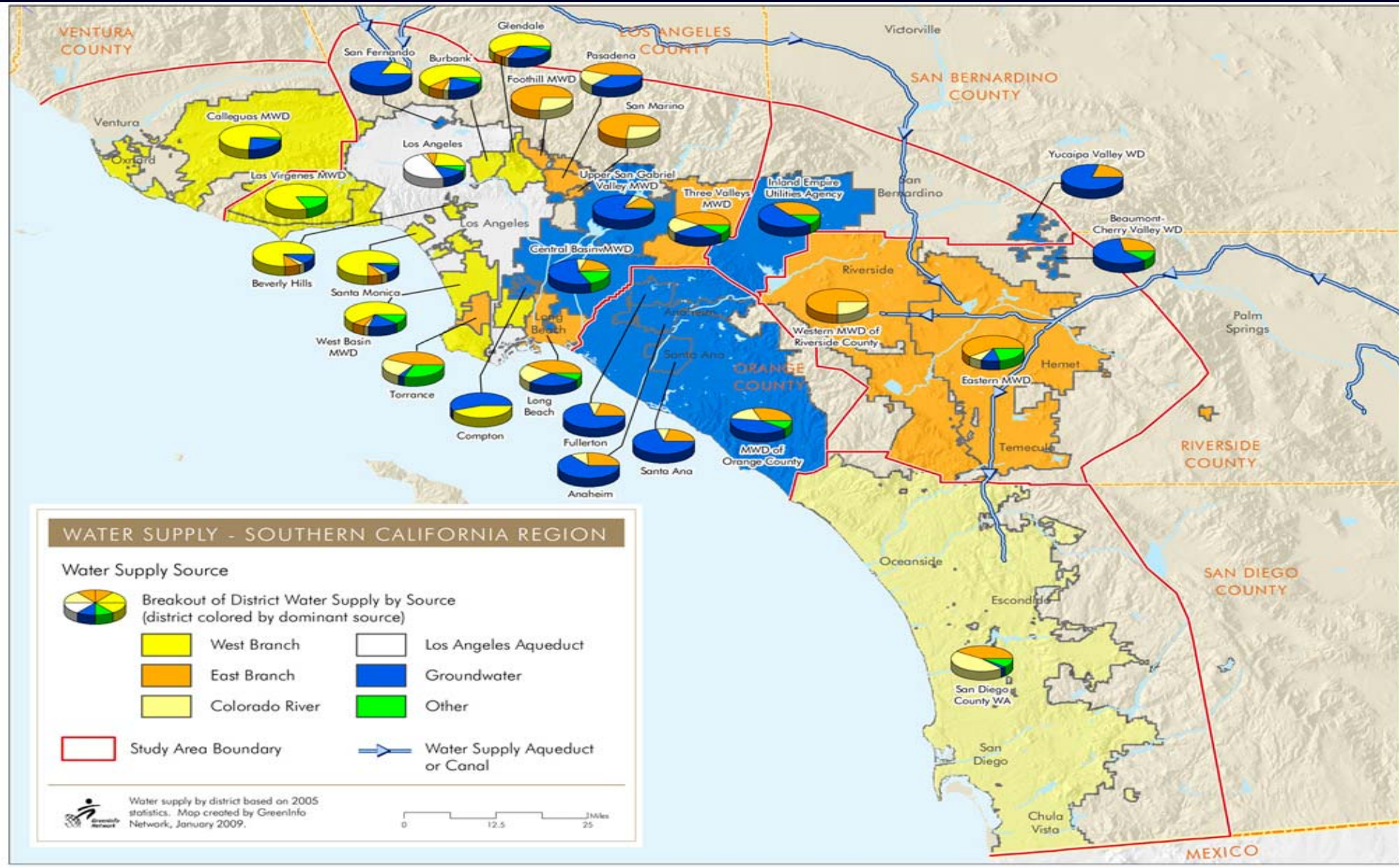


# New Water Sources to 2030: DWR B-160 09

## Resource Management Strategies



# Primary Water Sources in South Coast



# Southern California Leadership Council

“Reduced reliance on imported water is key to Southern California’s future.”

Sustainable Water Supplies, 2008 Position Summary

# Portfolio Attributes

- Technologies, and prospects for improvements
- Energy intensity of systems
- Treatment requirements and options
- Source and system reliability
- Vulnerability and resilience
- Economics



# Waste = Opportunity



# Irrigation Efficiency





# Efficiency Options





# Stormwater Flows





# Infiltration Islands



Courtesy of Bruce Ferguson

**FINDINGS FOR SOUTHERN CALIFORNIA AND SAN FRANCISCO BAY REGION WATER SAVINGS—2030**  
**(Acre-feet per year, af/yr)**

	Southern California	San Francisco Bay	TOTAL
Low	194,500	34,500	229,000
Medium	265,500	49,000	314,500
High	342,000	63,000	405,000

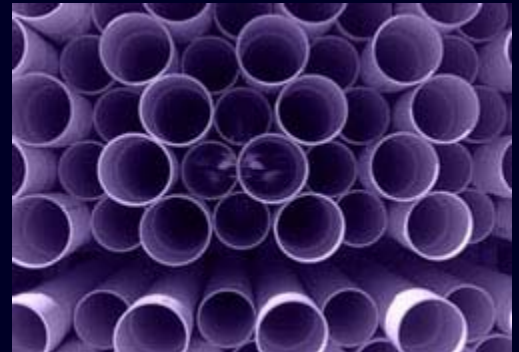
**FINDINGS FOR SOUTHERN CALIFORNIA AND SAN FRANCISCO BAY REGION ENERGY SAVINGS—2030**  
**(Megawatt-hours per year, MWh/yr)**

	Southern California	San Francisco Bay	TOTAL
Low	443,500	129,500	573,000
Medium	676,500	190,500	867,000
High	974,500	251,000	1,225,500

**FINDINGS FOR SOUTHERN CALIFORNIA AND SAN FRANCISCO BAY REGION CO<sub>2</sub> SAVINGS—2030**  
**(Metric tons per year)**

	Southern California	San Francisco Bay	TOTAL
Low	194,000	56,500	250,500
Medium	295,500	83,500	379,000
High	426,000	109,500	535,500

# Recycled Water



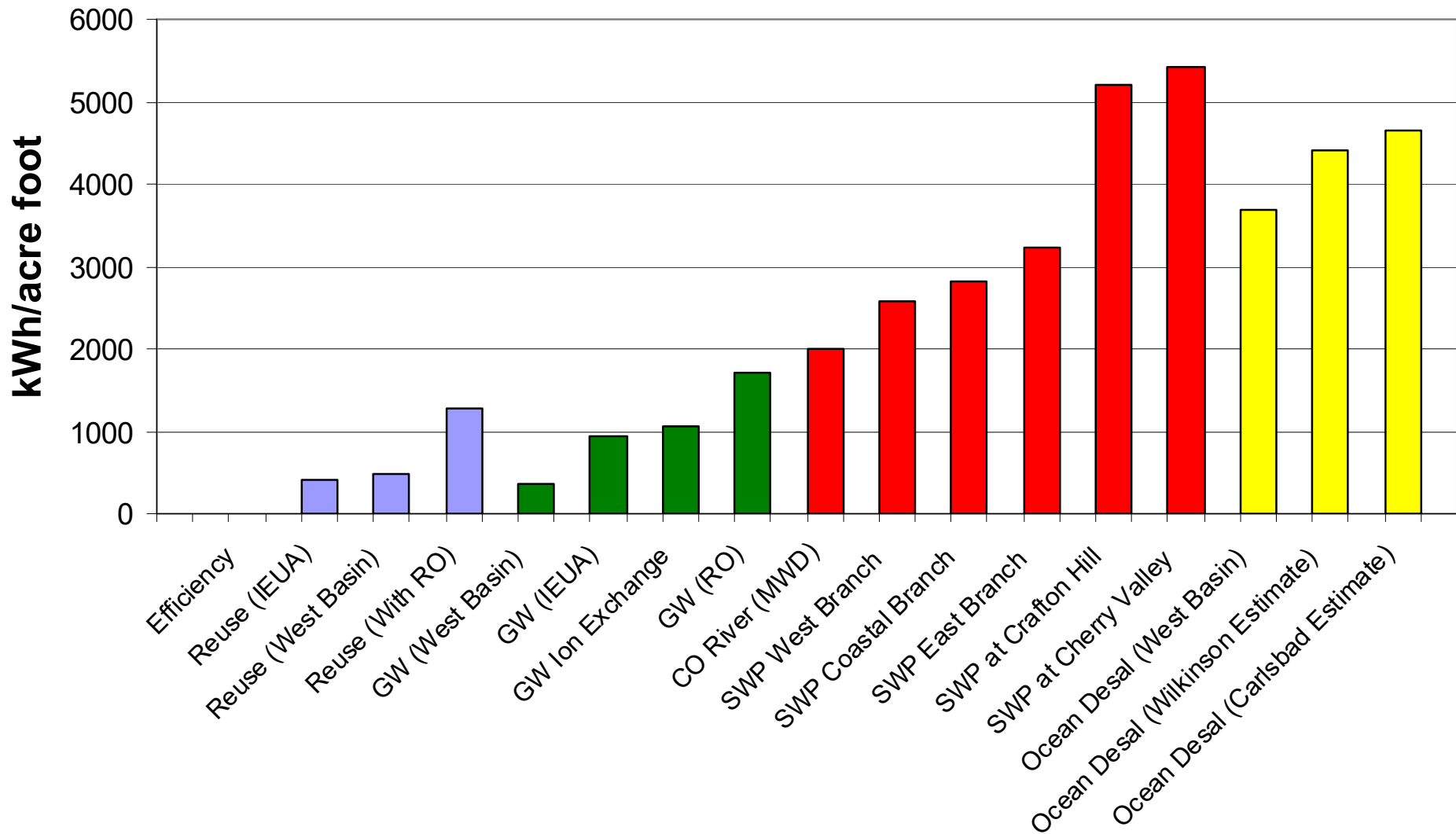
# Energy Intensity of Water

California:

19% electricity

33% natural gas (non-power plant)

# Energy Intensity of Selected Water Supply Sources in Southern California





# Conclusion





# Stein's Law

“Things that can't go on forever, don't.”

*Herb Stein*

# Economics Matters



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