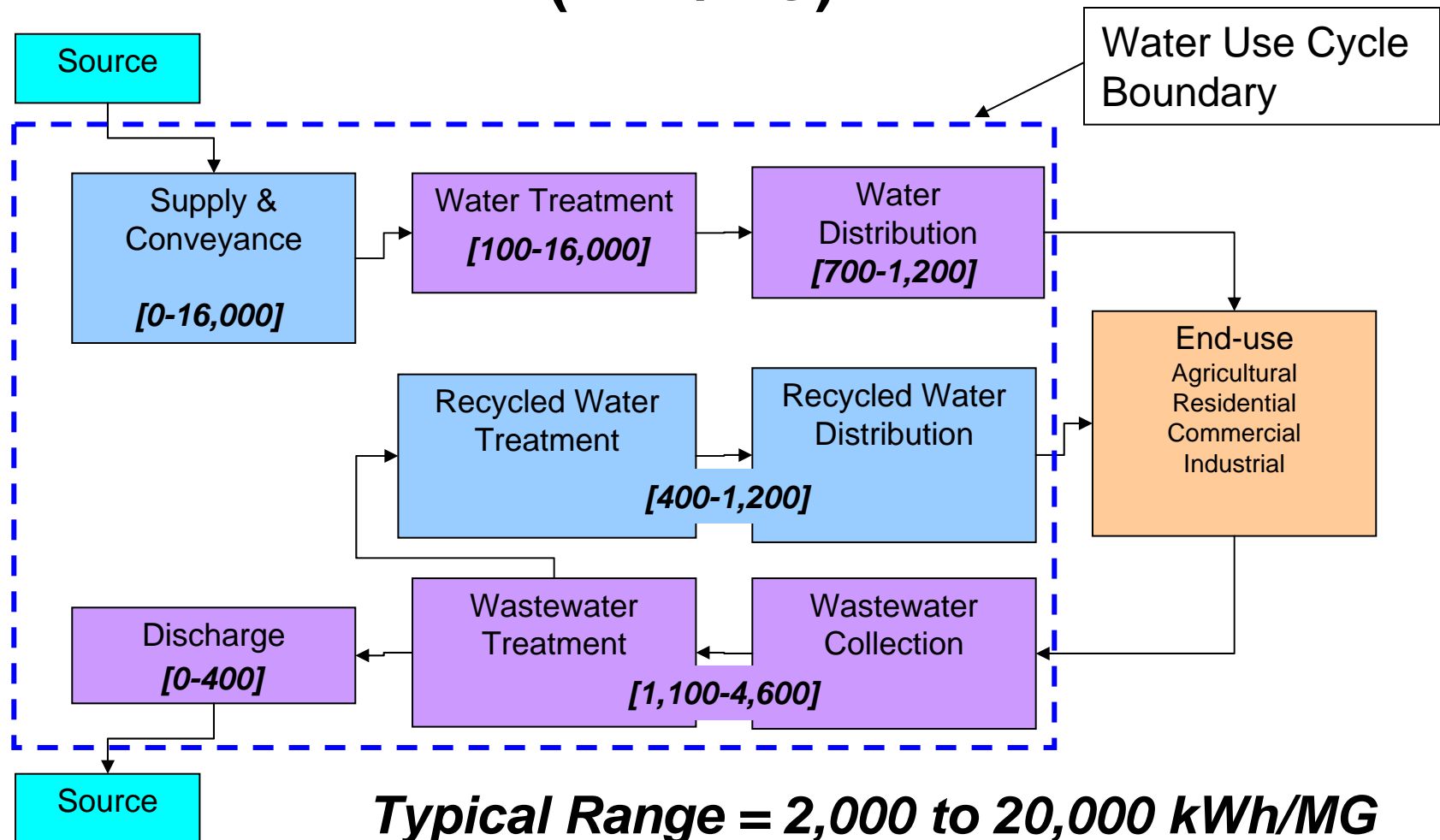


The Water-Energy-Greenhouse Gas Connection

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The Water-Energy Relationship

Water Use Cycle Energy Intensities (kWh/MG)



Source: California Energy Commission, 2005 Integrated Energy Policy Report

Water-Related Energy Use-CA 2001

	Electricity (GWh)	Natural Gas (Million Therms)	Diesel (Million Gallons)
Water Supply and Treatment			
Urban	7,554	19	?
Agricultural	3,188		
End Uses			
Agricultural	7,372	18	88
Residential	27,887	4,220	?
Commercial			
Industrial			
Wastewater Treatment	2,012	27	?
Totals	48,012	4,284	88
2001 Consumption			
	250,494	13,571	?
Percent of Energy Use			
	19%	32%	?

CO₂ e (Million Metric Tons)

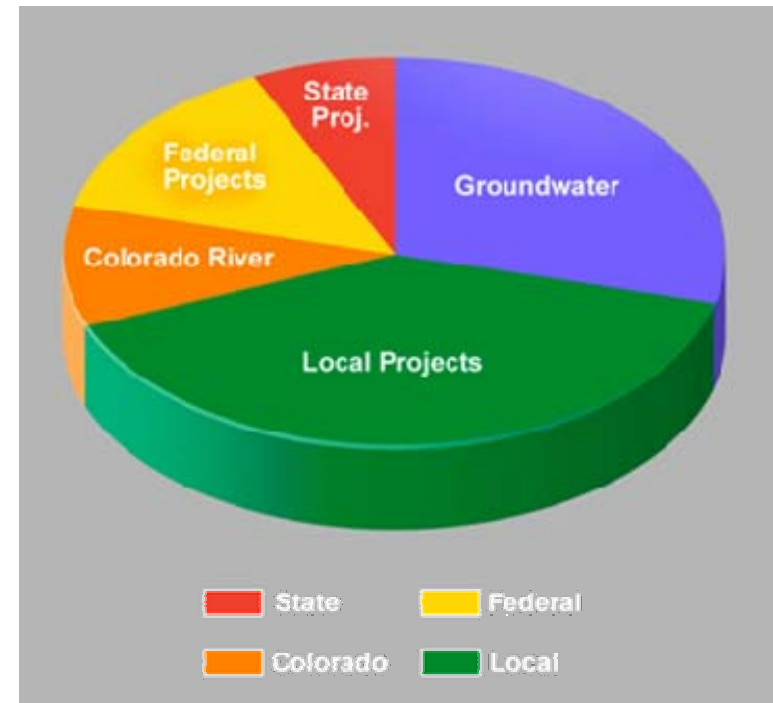
56

50

Approximately 25% of the nation's stationary energy use goes to water in some form.

Source: California Energy Commission, 2005 Integrated Energy Policy Report

California's Water Supply Systems



Lester Snow, California
Department of Water
Resources

Regional Differences

Northern California	Southern California
kWh/MG	kWh/MG

Supply & Conveyance	150	8,900
Water Treatment	100	100
Distribution	1,200	1,200
Wastewater Treatment	<u>2,500</u>	<u>2,500</u>
Regional Total	3,950	12,700

Source: California Energy Commission, 2005 Integrated Energy Policy Report

**What is the Water-Energy Relationship
where you live or work?**

Climate Change

The World's Largest Experiment

Do you want to bet on the outcome?
Would you like to buy some insurance?

The 2030 °C Challenge

Ed Mazria, Inc.

www.2030challenge.org

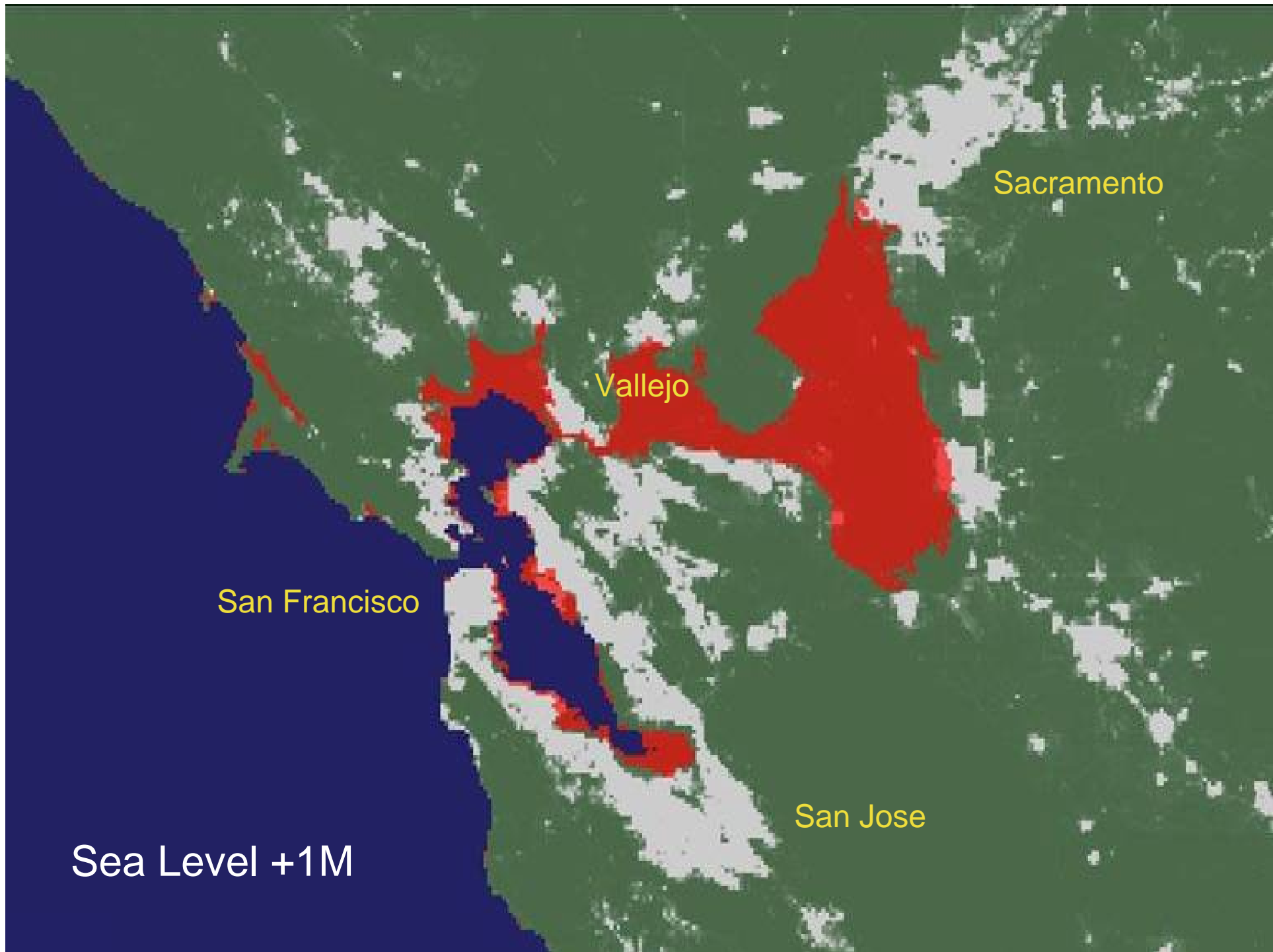


Sacramento

Vallejo

San Francisco

San Jose



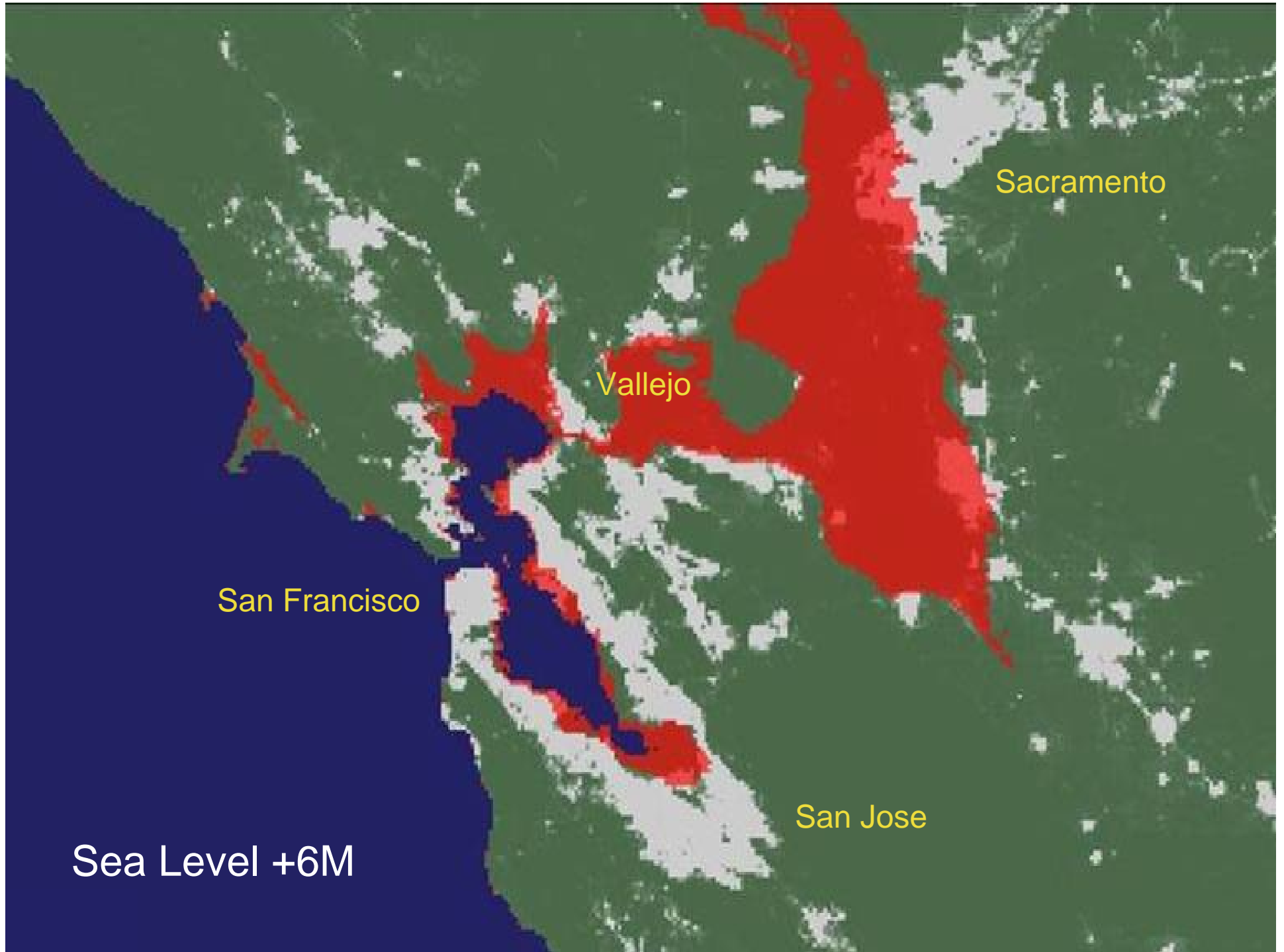
Sacramento

Vallejo

San Francisco

San Jose

Sea Level +1M



Sacramento

Vallejo

San Francisco

San Jose

Sea Level +6M

Adopt these Targets

1. All new buildings, developments and major renovations meet a fossil fuel energy-consumption performance standard of **50%** of the regional (or country) average for that building type.
2. That at a minimum an equal amount of existing building area be renovated annually to use **50%** of the fossil fuel energy they currently consume.
3. Increase Fossil Fuel Reduction Standard to:
 - 2010 – 60%
 - 2015 – 70%
 - 2020 – 80%
 - 2025 – 90%

Goal is to be Carbon Neutral by 2030

No Fossil Fuel to Operate our Buildings

California's Energy Efficiency Programs' Resource Value Compared to a Potential Water Use Efficiency (WUE) Program

	Energy Efficiency Programs		<u>WUE</u>
	<u>2004-2005</u>	<u>2006-2008</u>	
GWh (Annualized)	2,745	6,812	6,500
MW	690	1,417	850
Funding (\$ million)	\$762	\$1,500	\$826
\$/Annual kWh	\$0.28	\$0.22	\$0.13
WUE Relative Cost	46%	58%	

How do your energy efficiency programs compare to the potential energy savings due to water use efficiency?

Water-Energy Relationship: Synergies

✓ End-User Water and Energy Conservation

- ✓ Saving water can save energy
- ✓ Saving energy can save water

✓ Improve Price Signals

- ✓ Time of use water rates and meters
- ✓ Time of use electric rates and meters

✓ Water and Wastewater Utility Operational Efficiency

- ✓ Increasing water and wastewater system efficiency reduces energy in the water use cycle

✓ Water Storage

- ✓ Increased water storage and more flexible water storage shifts peak energy requirements
- ✓ Pumped storage increases peak electric generation and improves electric system efficiency

✓ Renewable Generation by Water and Wastewater Utilities

- ✓ Increase generation from in-conduit hydro and biogas. Add generation from solar and wind.
- ✓ Assist in meeting California's renewable generation goals

**If we did all this,
what would be the combined impact on GHG emissions?**



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Caring For Our Water



Solar Hot Water



Water Efficient Technology





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- Environmental impacts of plumbing services, appliances and household practices
- Rebates, incentive programs, and consumer information
- Energy/water/cost savings (short term and long term cost comparisons and environmental benefits)



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= 33 Million Houses Per Year**



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Contact:

Megan Lehtonen

1-888-929-6207

megan@greenplumbersusa.com





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Resources

California Energy Commission

www.energy.ca.gov

2005 Integrated Energy Policy Report,
Chapter 8 Integrating Water and Energy Strategies

<http://www.energy.ca.gov/2005publications/CEC-100-2005-007/CEC-100-2005-007-CMF.PDF>

California's Water-Energy Relationship-Final Staff
Report

<http://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF>

Resources

California Public Utilities Commission

www.cpuc.ca.gov

- Water Action Plan

http://www.cpuc.ca.gov/static/hottopics/3water/water_action_plan_final_12_27_05.pdf

- Joint Agency Symposium: “*The Regulatory Challenge Linking Water and Energy*” March 28, 2006. http://energy.ca.gov/process/water/2006-03-28_symposium/index.html

- Water-Energy Partnership

- CPUC Rulemaking 06-04-010 on Energy Efficiency –Proceedings

<http://www.cpuc.ca.gov/Published/proceedings/R0604010.htm>