

Sustainable Water Resources Roundtable

A State of Drought
California Surface and Groundwater
Sustainability Assessments

NASA Ames Research Center at Moffett Field

John Wells, SWRR Co-Chair

Sustainable Water Resources Roundtable

A national collaboration of federal,
state, local, corporate, non-profit
and academic interests

A committee of the USGS
Advisory Committee on Water
Information



Our Mission

To promote sustainability of the nation's resources through ...

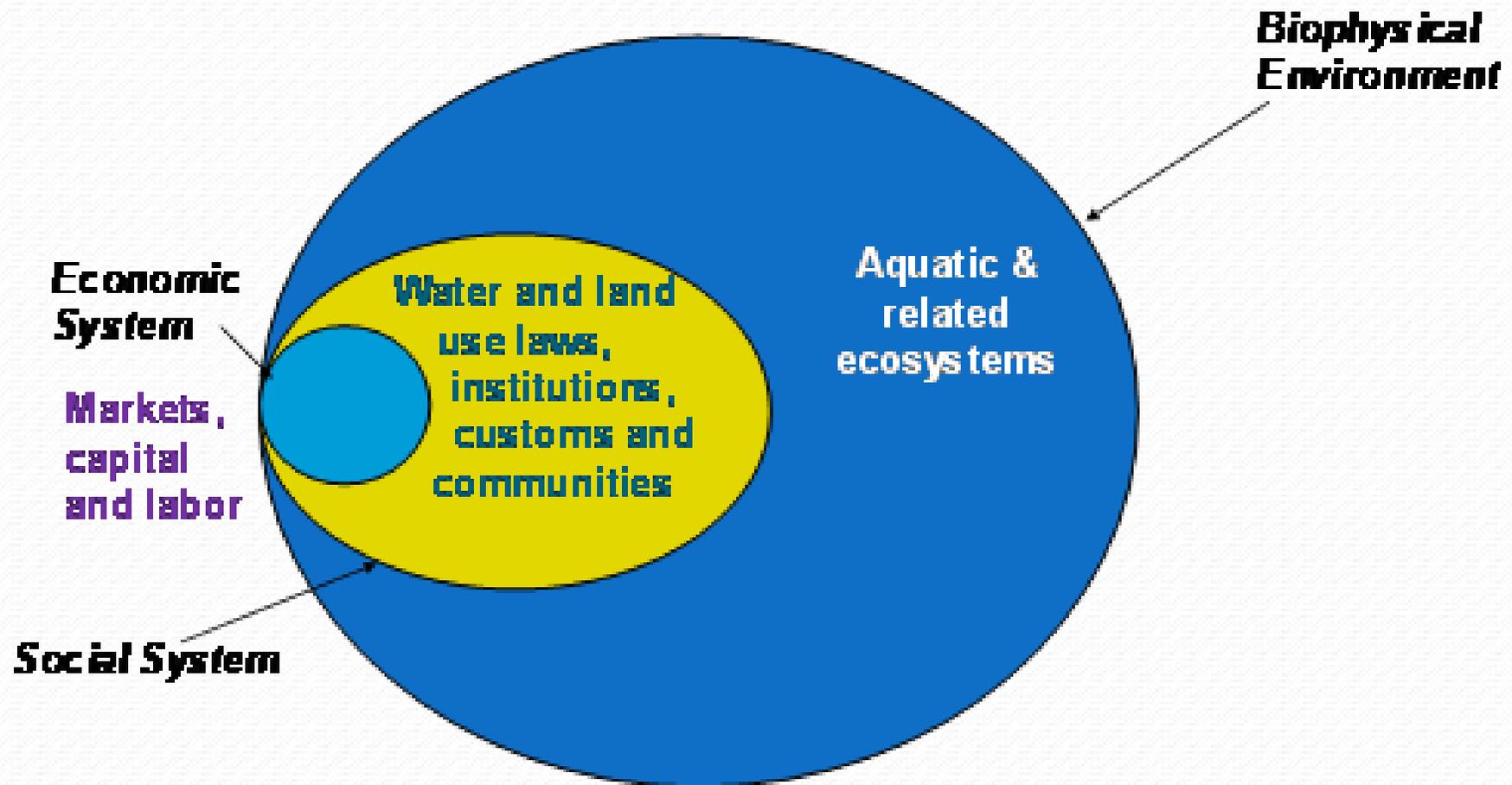
- **Evaluation of information**
- **Development & use of indicators**
- **Targeting of research**
- **Engagement of people & partners**



Outreach

- 1,000 participants from federal, state and local governments; corporations; nonprofits and academia
- Meetings in California; Colorado; Florida; Maryland; Michigan; Minnesota; New Hampshire; Virginia; Washington, D.C.
- Web site <http://acwi.gov/swrr/index.html>
- 2005 Preliminary Report
http://acwi.gov/swrr/Rpt_Pubs/prelim_rpt/index.html
- 2010 SWRR Report
http://acwi.gov/swrr/Rpt_Pubs/SWRRReportMarch2010.pdf

Essential Relationships of Sustainability with Water Use



Capital and System Capacities

- **Capital is the capacity to produce value over time**
- **Environmental, social and economic systems produce value through flows of services, experiences, or goods that meet human and ecosystem needs over time**
- **We achieve sustainability by maintaining capital to meet needs**



Indicators

Measures that present trends information relevant to water sustainability in a readily understandable way



Factors

- **Condition & capacity of ecological, social and economic systems**
- **A focus on what's most relevant to sustainability**
- **Appropriate time horizons and scale**
- **Information integrity**
- **Understandability**



The SWRR Indicator Framework

- Water availability
- Water quality
- Human uses and health
- Environmental health
- Infrastructure and institutions

Water Availability

- **Renewable water**
 - **Upper limit of water availability**
- **Water in the environment**
 - **Water remaining after human uses**
- **Water use sustainability**
 - **Degree to which water use meets current needs while protecting ecosystems and the interests of future generations**



Availability v. Sustainability

- **Availability is short term; sustainability is long term**
- **Availability may not consider impacts on ecosystems or future generations**
- **Availability does not factor in long term consequences of depletion**
- **Rates available for use today may not be possible long term**

Availability vs. Sustainability

- **Sustainability implies long term availability over decades – not just this year – and with quality left unchanged**
- **Availability evaluates whether you can get the water out of the ground in useful quantities; sustainability evaluates whether you should**

California Water Plan

Blueprint for Integrated Water Management & Sustainability



California Water Plan

Sustainability Objective	Related CWP Objective and RMS	Example Indicators	Relevance to Sustainability Objective
1. Improve water use efficiency, increase water recycling, and increase water conservation in order to improve water supply reliability, reduce energy demand, and restore and maintain aquatic ecosystems and processes.	CWP Objective 2, 9; RMS Reduce demand	Energy required per unit of clean drinking water	Reduce energy demand for providing water
		Average water use per household, /capita, 20% reduction by 2020	Increase water conservation
		Sufficient flows and timing of flows for maintaining historically-present native aquatic fauna	Restore and maintain native ecosystems

California is not alone

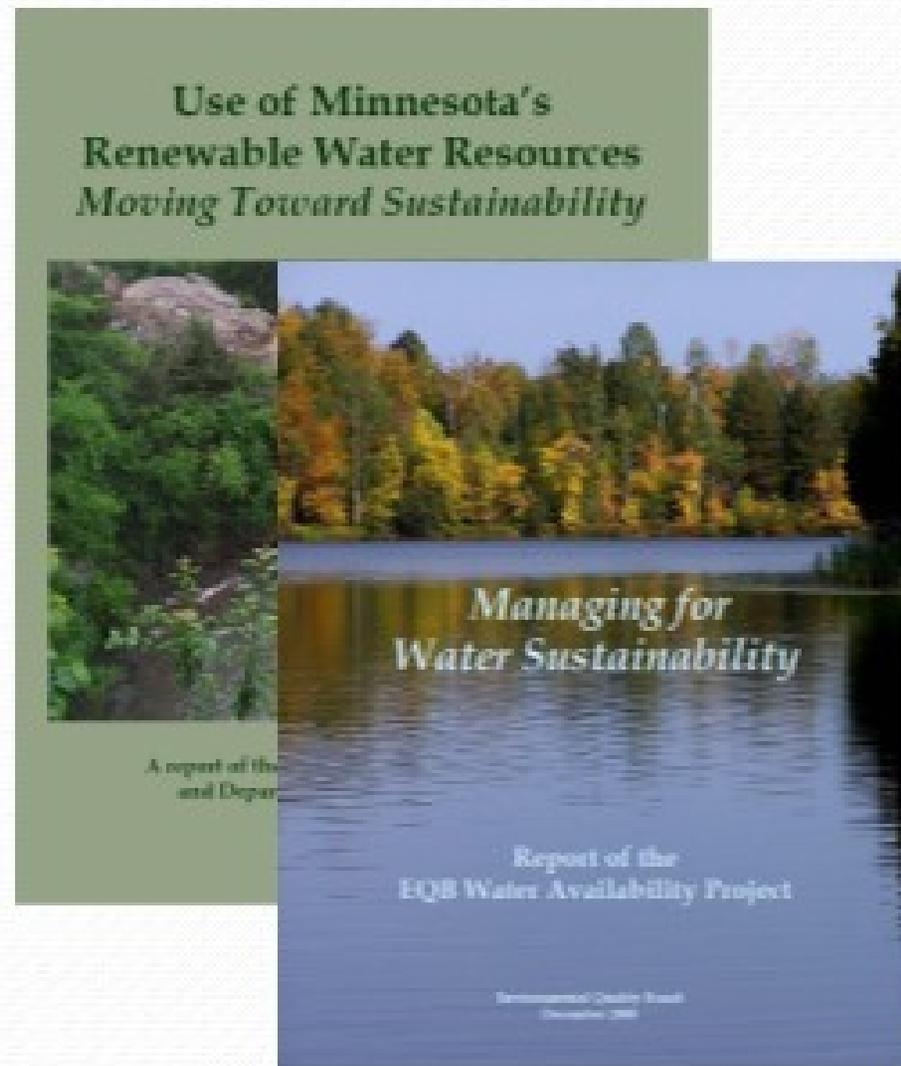
- **The Great Lakes Compact states have agreed to manage basin water use collectively for current and future generations with routine system-wide cumulative impact assessments designed to protect and restore the hydrologic and ecosystem integrity of the basin**
- **Illinois State Water Survey has a plan for scientific assessment of water supplies, including ability to meet existing and projected demands**

California is not alone

- Florida is focused on the interplay between water quality, water use and land use; climate change and sea level rise
- Michigan's water withdrawal *Impact Assessment Model* links water use and water withdrawal to maintenance of the ecological integrity of streams
- New Hampshire's Water Sustainability Commission goal is to ensure that quality and availability of water in 25 years will be as good as or better than today

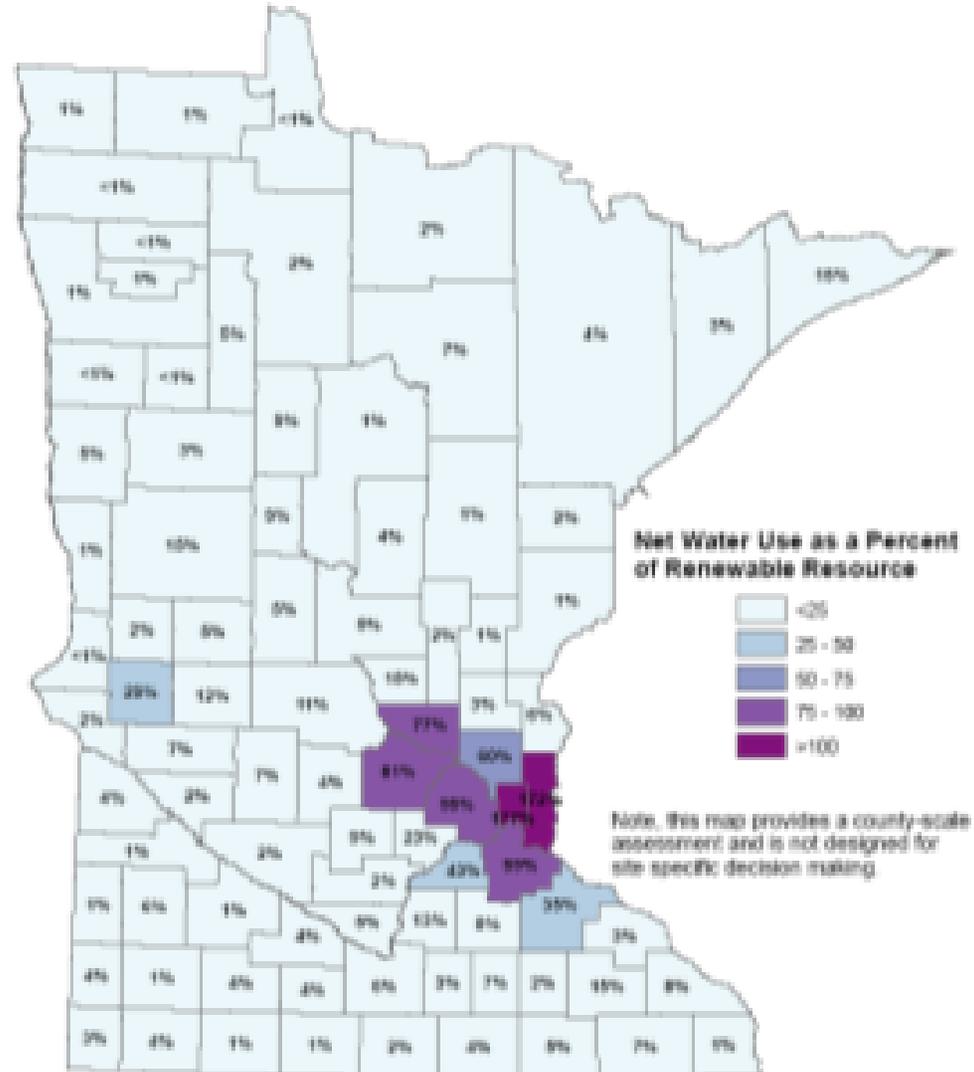
Minnesota Water Sustainability Efforts

- **2007 – Use of Minnesota’s Renewable Water Resources: Moving Toward Sustainability**
- **2008 – Managing for Water Sustainability: A Report of the EQB Water Availability Project**



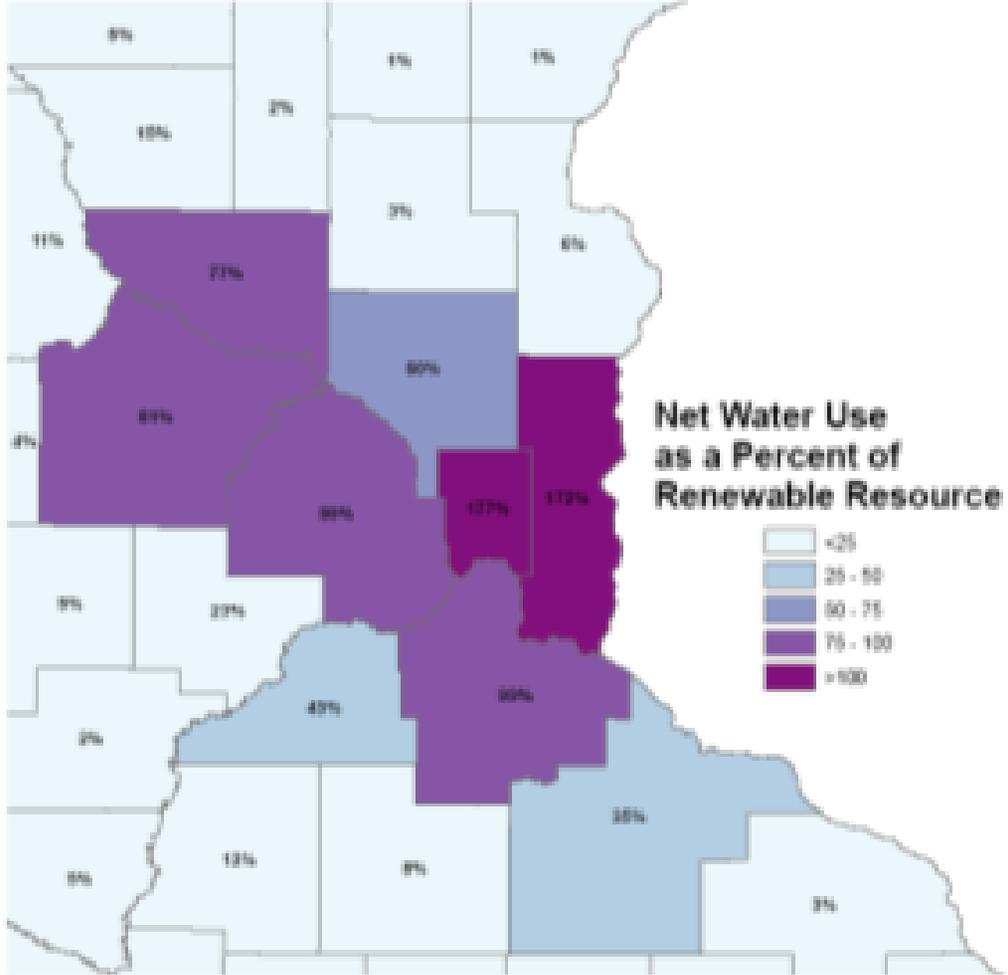
- **Seven counties used more than 50%**
- **Metro range was 23% to 177%**
- **Greater Minnesota range was 1% to 81%**

2030 Net Water Use as a Percent of the Renewable Resource



2030 Net Water Use as a Percent of the Renewable Resource

- **Ramsey County 177%**
- **Washington County 172%**
- **Seven counties used more than 50%**





California's Sustainability Solutions Require ...

- **Systems Thinking & a Holistic Approach**
- **Awareness of Time Horizons, Scales, Trajectories**
- **Managing Risk & Uncertainty**
- **New Tools**
- **Common Ground for Solutions**
- **Continuous Education**

Contact Information

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Questions?

