



Sustainable Water Resources Roundtable **2008 Annual Report**

Presented by:
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SWRR Steering Committee



The Need

- **Communicate the Roundtable's contributions to the water resources community**
- **Enhance outreach to engage participants and advance the exchange of information**
- **Serves as a catalyst for future SWRR collaborations**

Overview of Annual Report

Composed of Five Chapters:

Chapter 1: SWRR History

Chapter 2: Principles of Sustainability

Chapter 3: Outreach Activities

Chapter 4: Applications and Case Studies

Chapter 5: Highlights of National Initiatives on Sustainable Water Management

Chapter 1: *SWRR History*

- **Authority**
- **Mission**
- **Vision**
- **Primary Goals and Objectives**

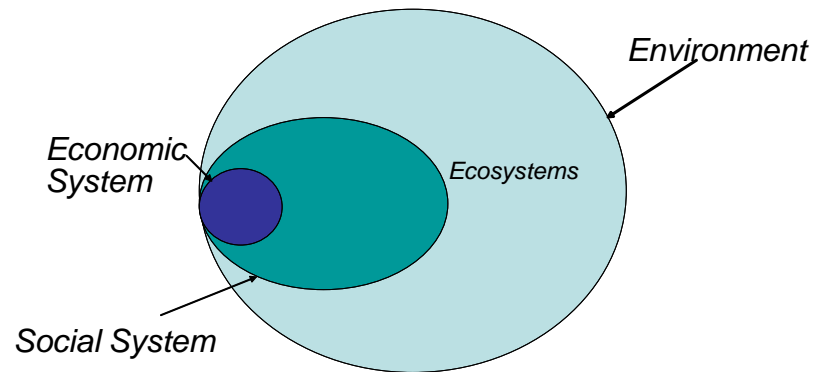


Chapter 2: *Principles of Water Sustainability*

- Sustainability as an evolving, multidisciplinary study
- No single definition or prescriptive solution
- SWRR illustrates principles of sustainability through use of Systems Concepts
 - Weak vs. Strong Sustainability Models

Essential Relationships of Sustainability

General Systems Perspective: Essential Relationships of Sustainability



Chapter 3: Outreach Activities, Presentations & Contributions

- Provides review of SWRR meetings held in 2008
- Presents abstracts by SWRR participants and other water resource professionals
- Presents paper on the energy/water nexus
 - Supported by DOE National Energy Technology Laboratory (NETL)
 - SWRR held several meetings on the links between water and energy.
 - Author: Stacy Tellinghuesen
UC Santa Barbara



Exploring the Energy/Water Nexus

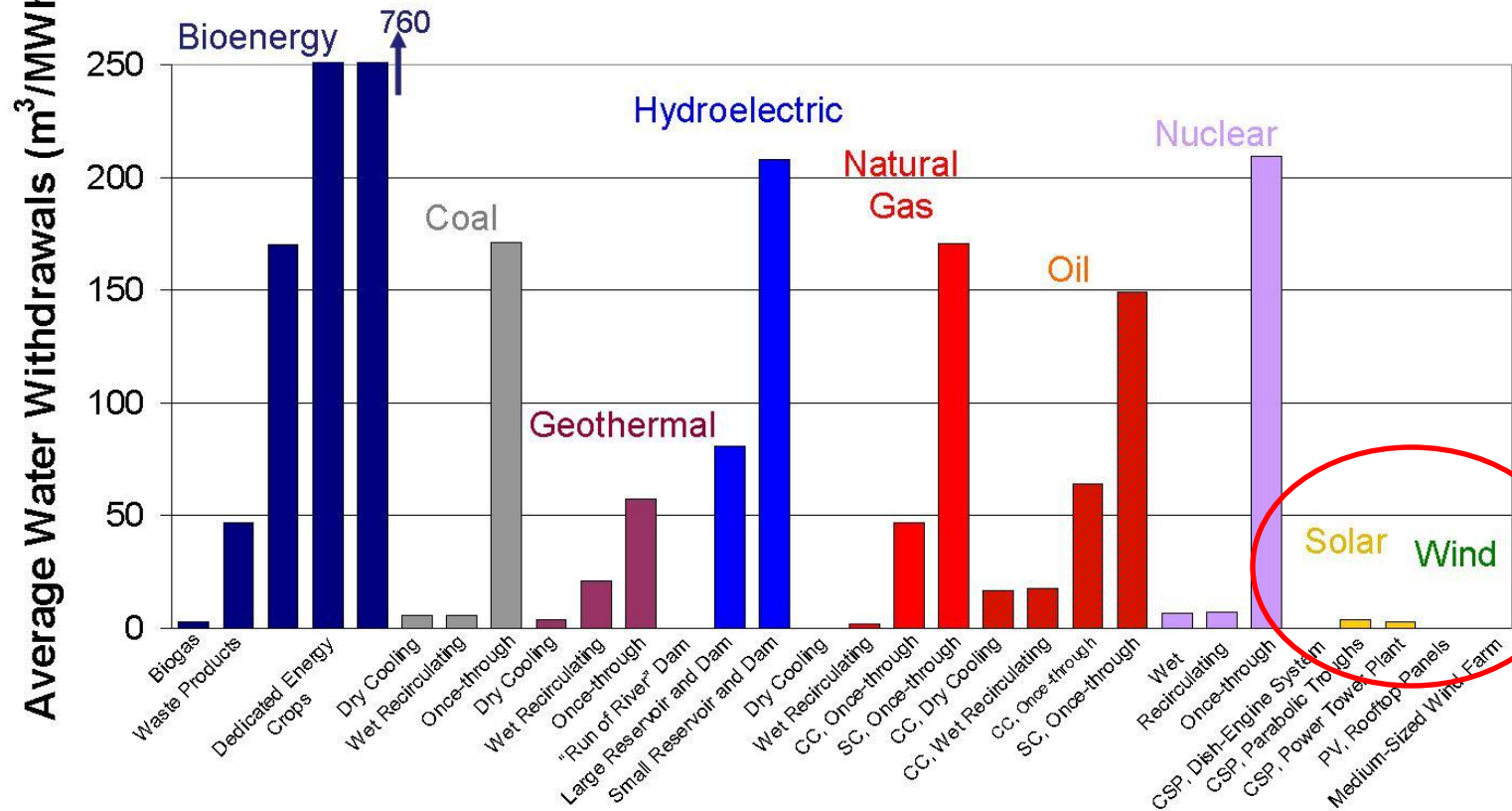
- Water and energy are inextricably linked
- **Thermoelectric power plants accounted for 39 percent of all water withdrawals in the U.S (USGS, 2000)**
- Electricity generation can require substantial volumes of water
- Providing water services including heating, cooling, pumping can require substantial energy.
- Water and Energy sectors collaborating and expanding strategic planning to increase efficiency of water and energy used in providing water/energy services

Water Use in Generating Energy

Three types of thermoelectric cooling systems:

- Once through: high withdrawal, low consumption
- Wet recirculating: low withdrawal, high consumption
- Dry cooling: uses air to cool

Water Required for Electricity Production

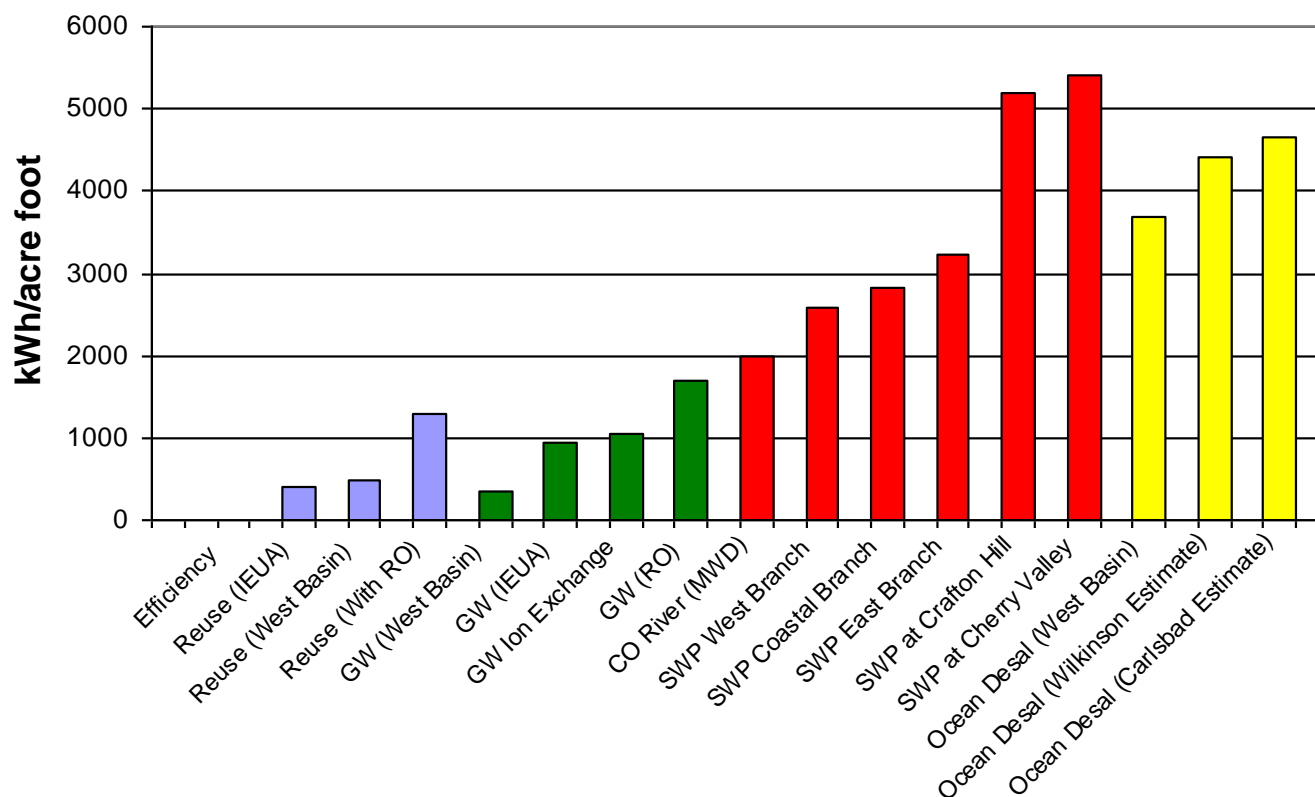




Energy Use in Providing Water Resource Services

- **Water and wastewater sectors require energy to pump, convey, treat, distribute potable water**
- **Increase in droughts, inconsistent water supplies and full allocation among end users reduces available water for energy use**
- **water providers are increasingly looking towards sources of water from more energy intensive supplies: deeper groundwater aquifers, seawater desalination, or desalination of brackish groundwater or surface supplies**

Energy Intensity of Selected Water Supply Sources in Southern California



■ Reuse
 ■ Groundwater
 ■ Imported Water
 ■ Seawater Desalination

Meeting Future Water and Energy Needs

- Integrated planning on behalf of both the energy and water sectors
- Both technological and policy-oriented solutions will play a role in meeting future energy and water needs
- **Climate change, population growth, competing demands among users** all work to compound challenges in bringing sustainable management to the water/energy nexus issue

National research and policy needs:

- Improved data on regional water availability and sustainability, including improved data collection, frequency, sensors and data management systems.
- Coordinated regional natural resources planning, including modeling and decision support tools, an assessment of ecological water needs, and modeling of climate, hydrology, meteorology variability and uncertainty.
- Improved materials, processes, and technologies to enhance water use efficiency and energy use efficiency, including applied research and more joint industry-government field demonstrations of emerging technologies.
- System-level consideration of energy-water solutions, such as energy and water transmission infrastructure improvements, and co-location of energy and water production facilities.

SWRR Participant Abstracts

Selected Abstracts:

- **Smith, Ethan T., *Water Resources Sustainability*. On-line essay in July 2008 AWRA Water Resources Impact**
- **Smith, Ethan T., Zhang, Harry T. Sustainability of Marine Resources: Fisheries Utilization, presented at the 2008 WEFTEC conference in Chicago, IL**
- ***Wells, John. 'Managing for Water Sustainability'. Presented at AWRA Annual Conference, New Orleans, Nov. 17-21, 2008***
- **Zhang, Harry, et al, '*Managing Water Risks in a Water Scarce World: Use of WBCSD Global Water*' Tool for Sustainable Water Management, Proceedings, WEFTEC.08, Water Environment Federation, October 2008**

Chapter 4: *Applications and Case Studies*

- Provides key insights into host of water resource challenges on various scales
- Illustrates the value of indicators to understand sustainable ecosystem conditions

GOALS:

- provide dialogue on the evolution of the study of sustainability
- Provide lessons learned by other organizations to advance the sustainable management of the nations water resources
- Emphasize the formulation of local and regional policy considerations, and help to guide future initiatives.
- Stimulate future roundtable collaborations.

Case Studies on Sustainable Water Resource Management

- **Chesapeake Bay: An Example of Integrated Success,** *Warren Flint, President 5 E's Unlimited*
- **Missouri River Basin: The Need for Sustainable Management,** *Warren Flint*
- **Sustainability in the Land of 10,000 Lakes,** *John Wells, Strategic Planning Director, Minnesota Environmental Quality Board*
- **Michigan Innovations in Water Management,** *Al Steinman, Annis Water Resources Institute, Grand Valley State University*

Case Studies on Sustainable Water Resource Management

- **Highlights four case studies that demonstrate the use of indicators to understand sustainable ecosystem conditions**
- **Illustrates lessons learned by other organizations to advance the sustainable management of the nation's water resources management efforts**
- **emphasize the formulation of local and regional policy considerations, and help to guide future initiatives**
- **stimulate future roundtable collaborations**



Chapter 5: *Highlights of National Initiatives on Sustainable Water Management*

- **Heinz Center Work of Water Indicators**
 - State of the Nations Ecosystem Report
 - Mr. Robin O'Malley, Director of Program Development, Heinz Center
- **National Environmental Status and Trends (NEST)**
 - Rich Guldin, Director of Science, Policy, Planning, Inventory and Information, US Forest Service



Chapter 5: *Highlights of National Initiatives on Sustainable Water Management*

- **USGS Water for America Initiative**
 - Erik Evenson, Coordinator, Water for America Initiative
- **Water Environment Federation 2008**
 - WEF Managing Director, Mr. Matthew Ries
- **EPA Report on Environment Water Chapter**



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