

WATER IN THE WEST

Creating solutions to address water scarcity in the West

A program of the Stanford Woods Institute for the Environment
and the Bill Lane Center for the American West



Stanford



STANFORD UNIVERSITY
THE BILL LANE CENTER
FOR THE AMERICAN WEST



Water in the West bridges the gap between research and practice to create and promote effective solutions for more sustainable water management in the American West.

“ When the well is dry, we learn the worth of water.”

— Benjamin Franklin



THE POWER OF STANFORD: ACADEMIC RESEARCH, APPLIED SOLUTIONS

Stanford University established Water in the West in 2010 to address the West's growing water crisis and to create new solutions that move the region toward a more sustainable water future. A joint program of the Stanford Woods Institute for the Environment and the Bill Lane Center for the American West, Water in the West marshals the resources of one of the world's preeminent research institutions to address one of the most urgent questions about the West's future—how can the region continue to thrive despite growing water scarcity?

The American West is an arid region to begin with; explosive growth and increased drought are creating a water crisis. Research can help solve this crisis, but research alone is not enough. Water in the West bridges the gap between academic research and applied solutions by creating new practical tools and forming strong partnerships to inform policy makers, water managers, businesses and environmental groups. Stanford University brings four unique assets to solving the West's water scarcity challenge:

- World-class faculty, researchers and students across an extraordinary breadth of disciplines

- Experience and a proven track record of fostering innovative and interdisciplinary solutions
- Geographic focus that spans the entire West
- Reputation and credibility capable of unifying and influencing a broad range of leaders

Water in the West focuses expertise from the fields of engineering, law, economics, political science, business administration, geophysics, hydrology, environmental systems and communications on a single goal: solving the West's growing water scarcity problem.



AN INTEGRATED VISION FOR SUSTAINABLE WATER MANAGEMENT

To deal with water scarcity, the West needs new technologies, practices and laws that are more flexible and efficient than our current systems. Across Stanford's departments, Water in the West focuses on meeting these needs with practical, timely and relevant solutions that shape policy and support water managers. Water in the West is guided by a **Theory of Change** with four key elements:

- **Create innovations that solve water scarcity problems** through research in policy, management, and technology.
- **Engage Stanford students in creating water management solutions**, addressing water scarcity today and educating the next generation of leaders.
- **Use communications to advance new ideas and create tools for sharing research** in ways that respond to water shortages and are useful for water managers, policy makers and partner organizations.
- **Build strong partnerships to inform policy makers, water managers and NGOs**, providing a direct path for disseminating new solutions and technologies.

How We Work

Convene to inform research, tools and dissemination

Translate to bridge gaps between research and practice

Work directly with policy makers and district managers

Create innovations that solve water scarcity problems

Engage Stanford students in creating water management solutions

Use communications to advance new ideas and create tools for sharing research

Build strong partnerships to inform policy makers, water managers, and NGO's

Outcome: Solutions to Water Scarcity

Improved Policy Decisions | More Sustainable Management | More Efficient Water Use

MAKING A PERMANENT IMPACT ON OUR MOST PRECIOUS RESOURCE

Water in the West's interdisciplinary work is organized around four main program areas:

Sustainable Groundwater

Throughout the West we are pumping groundwater at unsustainable levels, jeopardizing the primary water supply for many communities and making groundwater unavailable during times of drought when it plays a critical role as a buffer against surface water shortages.

Water in the West integrates law and policy, geophysics, engineering and economics to develop comprehensive solutions to the challenges facing groundwater management.

Water and Energy

Water and energy use are strongly linked, since withdrawing, transporting and treating water require large amounts of energy. Energy production and extraction can also use large amounts of water. Despite these interdependencies, energy and water are managed separately.

Water in the West explores new tools to better integrate water and energy management, and to find ways to increase efficiency on both fronts. In 2014, Water in the West began a joint program with ReNUWIit, an NSF-funded consortium focused on the nation's urban water infrastructure. This program evaluates strategies to encourage adoption of innovative technologies and management tools. The goal is to promote energy efficiency through water conservation, while reducing energy consumption in the treatment and use of water.

Watershed Health

People have heavily manipulated the rivers of the West, first to sustain settlement and agriculture, and then to meet explosive economic and population growth. Dams, water withdrawals, changes in hydrology, degraded physical habitat and other factors have altered western watersheds and profoundly harmed their ecological health.

Water in the West focuses on new technologies and policies that can preserve rivers and streams while supplying adequate water to cities, farms and ranches.

Water Management and Allocation

Efforts to rationally manage water in the West—allocating it to the most valuable uses, both human and ecological—are hampered by a lack of data, fragmented governance and the West's rigid prior appropriation system. This lack of flexibility is now colliding with, and potentially exacerbating, increased water shortages.

To make water management more effective and efficient, Water in the West conducts research on governance, policies and new models for water pricing and marketing.

IMPLEMENTING OUR VISION

To achieve sustainable water management in the western United States, Water in the West will focus on the following objectives:

- **Develop new ideas and tools through interdisciplinary research** that will revolutionize the way we manage, use and allocate water in the West.
- **Provide practical, timely and focused solutions** to a diverse mix of nonprofit, government and business partners, including new applied research, publications and web tools that provide digestible and useful syntheses of Stanford's core research.
- **Convene diverse groups of leaders, researchers and managers** on water issues to advance Stanford's research and education mission and to contribute to solving the West's water challenges.
- **Create a western water curriculum to engage Stanford students** and give them the opportunity to engage in addressing the West's water scarcity challenges.



OUR TEAM

Program Staff

Leon Szeptycki	Executive Director
Newsha Ajami	Director of Urban Water Policy, Water and Energy Program Lead
Tara Moran	Research Associate
Janny Choy	Research Analyst
Geoff McGhee	Bill Lane Center, Creative Director for Media and Communications

Core Faculty

Bruce Cain	Political Science / Lane Center
Craig Criddle	Civil and Environmental Engineering / Woods
David Freyberg	Civil and Environmental Engineering / Woods
David Kennedy	History / Lane Center
Peter Kitanidis	Civil and Environmental Engineering
Rosemary Knight	Geophysics / Woods
Dick Luthy	Civil and Environmental Engineering / Woods
Buzz Thompson	Law School / Woods
Frank Wolak	Economics

Non-Resident Water in the West Fellows

Rebecca Nelson	Law (Australia)
Burke Griggs	Law (Kansas)

PhD Students and Early Career Fellows

Vanessa Casado-Perez	Teaching Fellow
Debra Perrone	Postdoctoral Fellow
Nicola Ulibarri	PhD Student
Philip Womble	PhD Student

“Anyone who can solve the problems of water will be worthy of two Nobel prizes — one for peace and one for science.”

— John F. Kennedy

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