

Solutions for Building Water Resilience in California



Heather Cooley
Director of Research, Pacific Institute
Drought Preparedness and Response
Expert Panel California Water
Commission

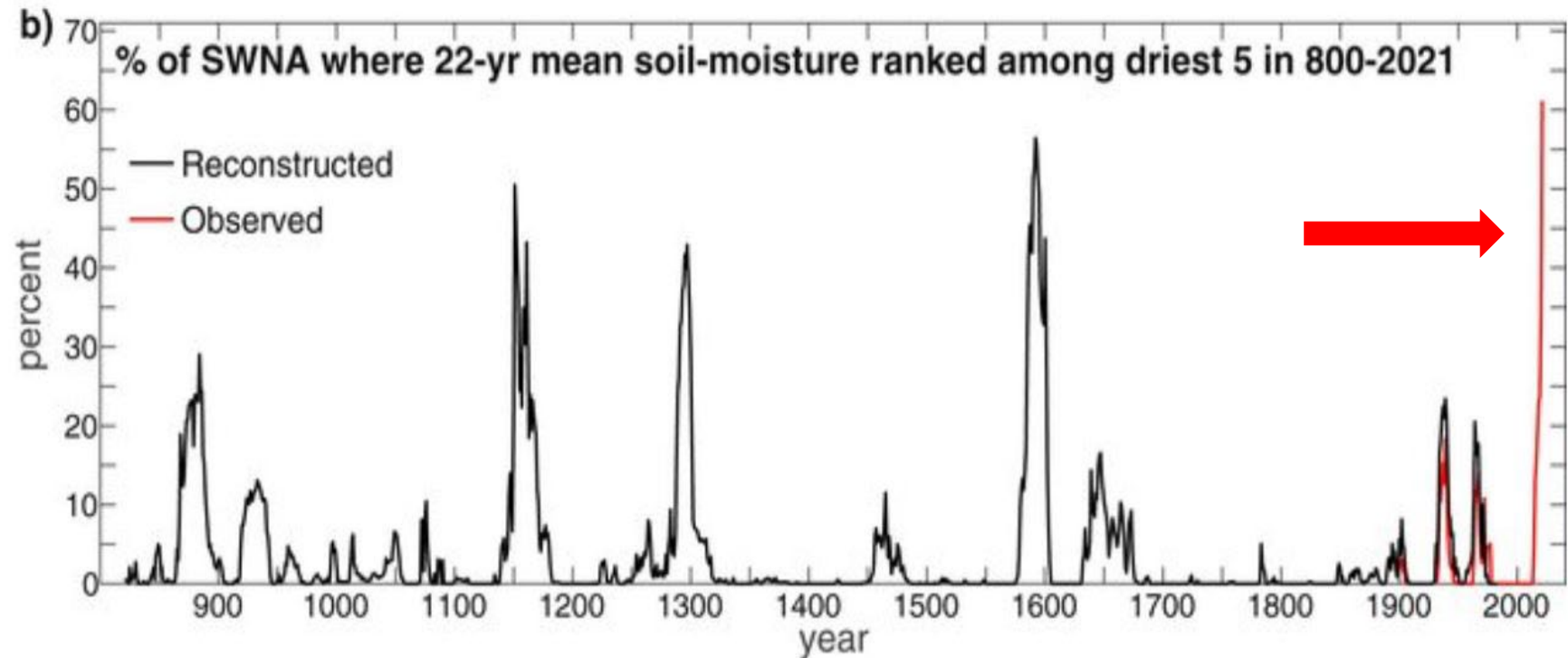
February 15, 2023

Overview

- Key shifts for enhancing water resilience
 - Rethink water demand
 - Rethink water supply
 - Rethink water management
- California's water use and supply trends
- Untapped potential of California's urban water supply
- Key takeaways

Climate change requires fundamental changes in how we use and manage water.

- Climate change has **worsened** severe drought in the Western US.
- Droughts are longer, more severe, and more widespread.

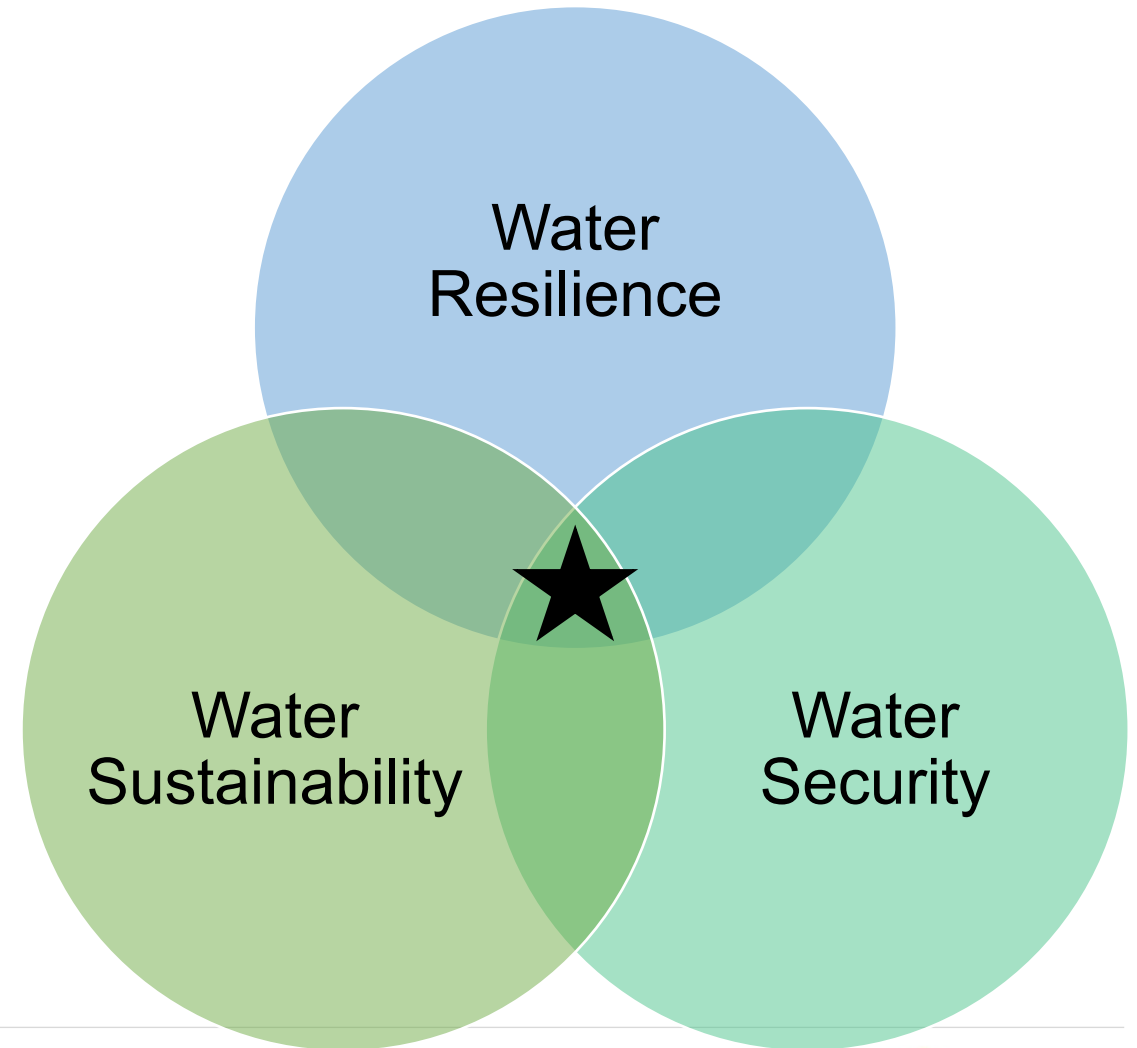


Williams, Cook, Smerdon 2022 Nature Climate Change

**The past 22 years in the Southwestern US
have been the driest in 1,200 years.**

What is water resilience?

Water resilience is the ability of water systems to function so that nature and people - including those on the frontlines and disproportionately impacted - thrive under shocks, stresses, and change.



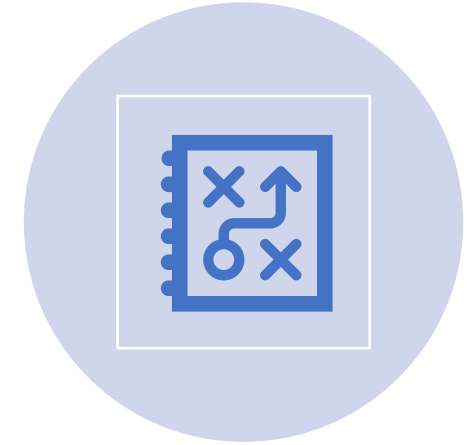
Key shifts needed to enhance water resilience



**RETHINK WATER
DEMAND**

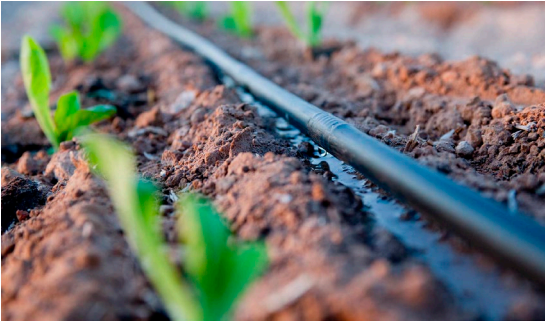


**RETHINK WATER
SUPPLY**

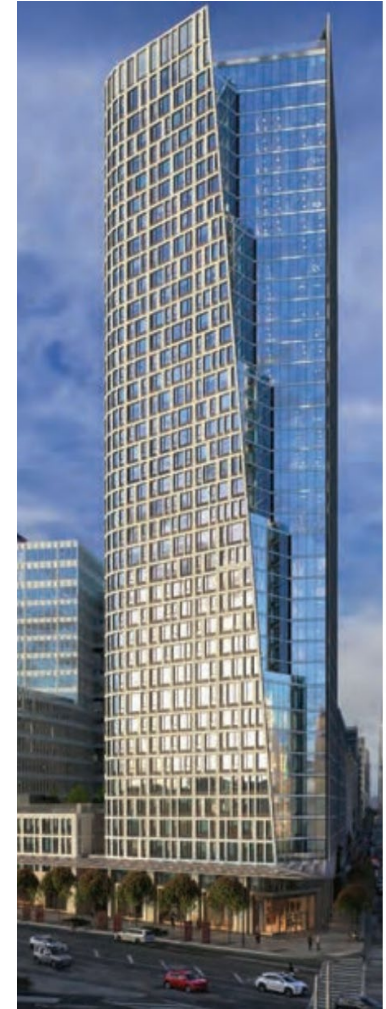


**RETHINK WATER
MANAGEMENT**

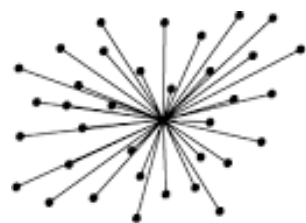
Rethink Demand



Rethink Supply



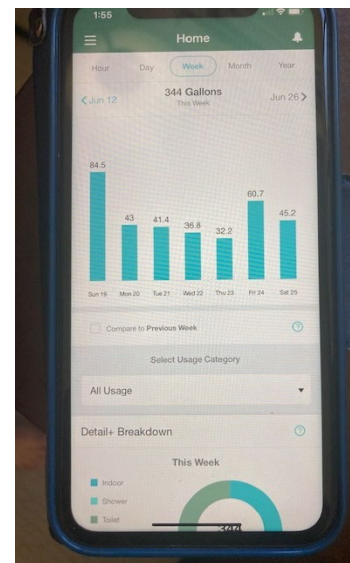
Rethink Management



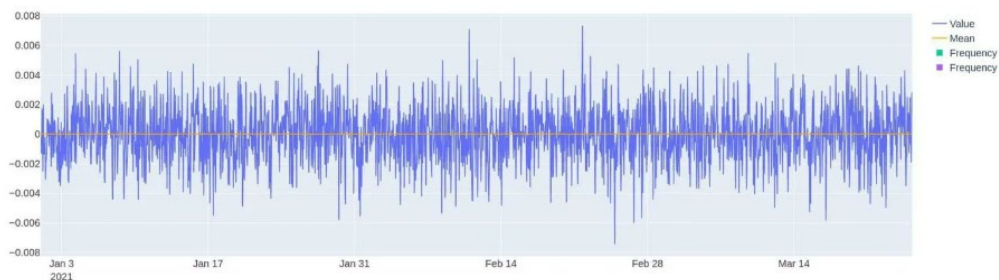
centralised



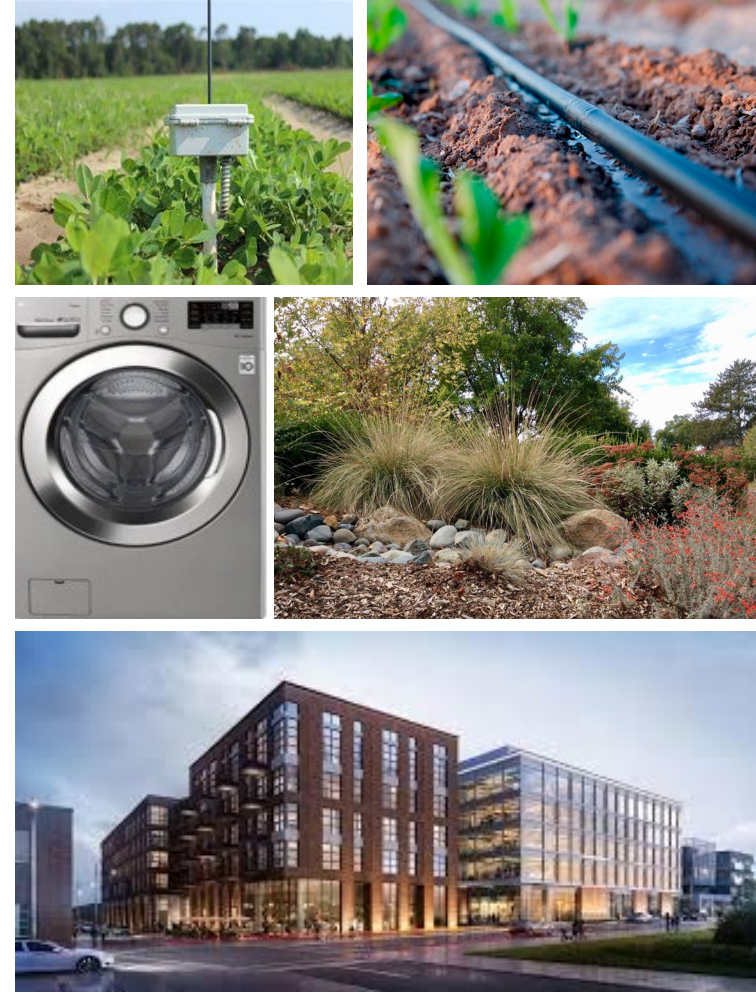
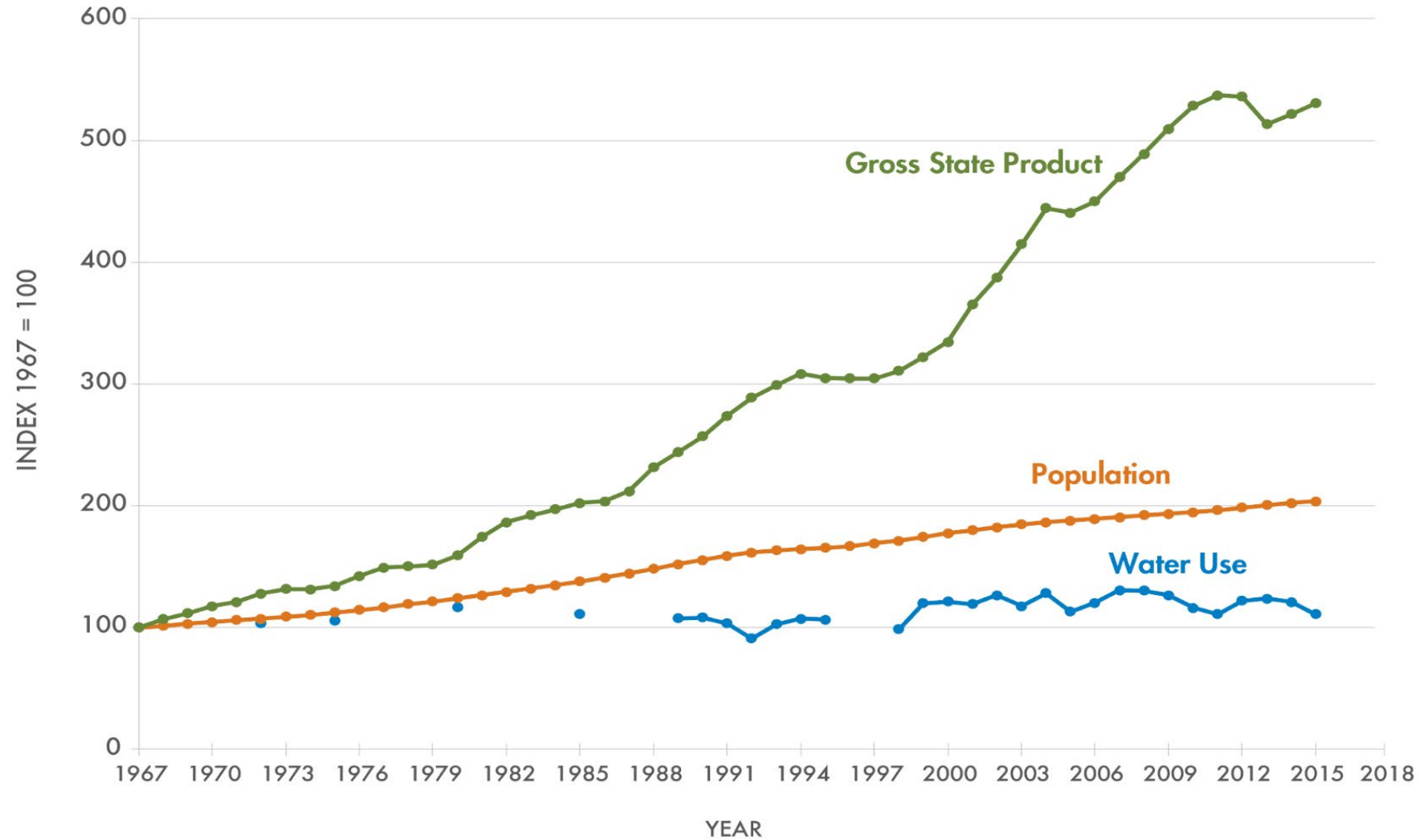
distributed



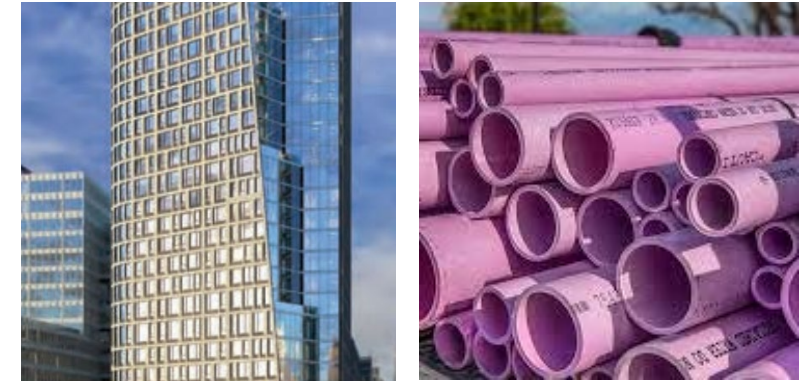
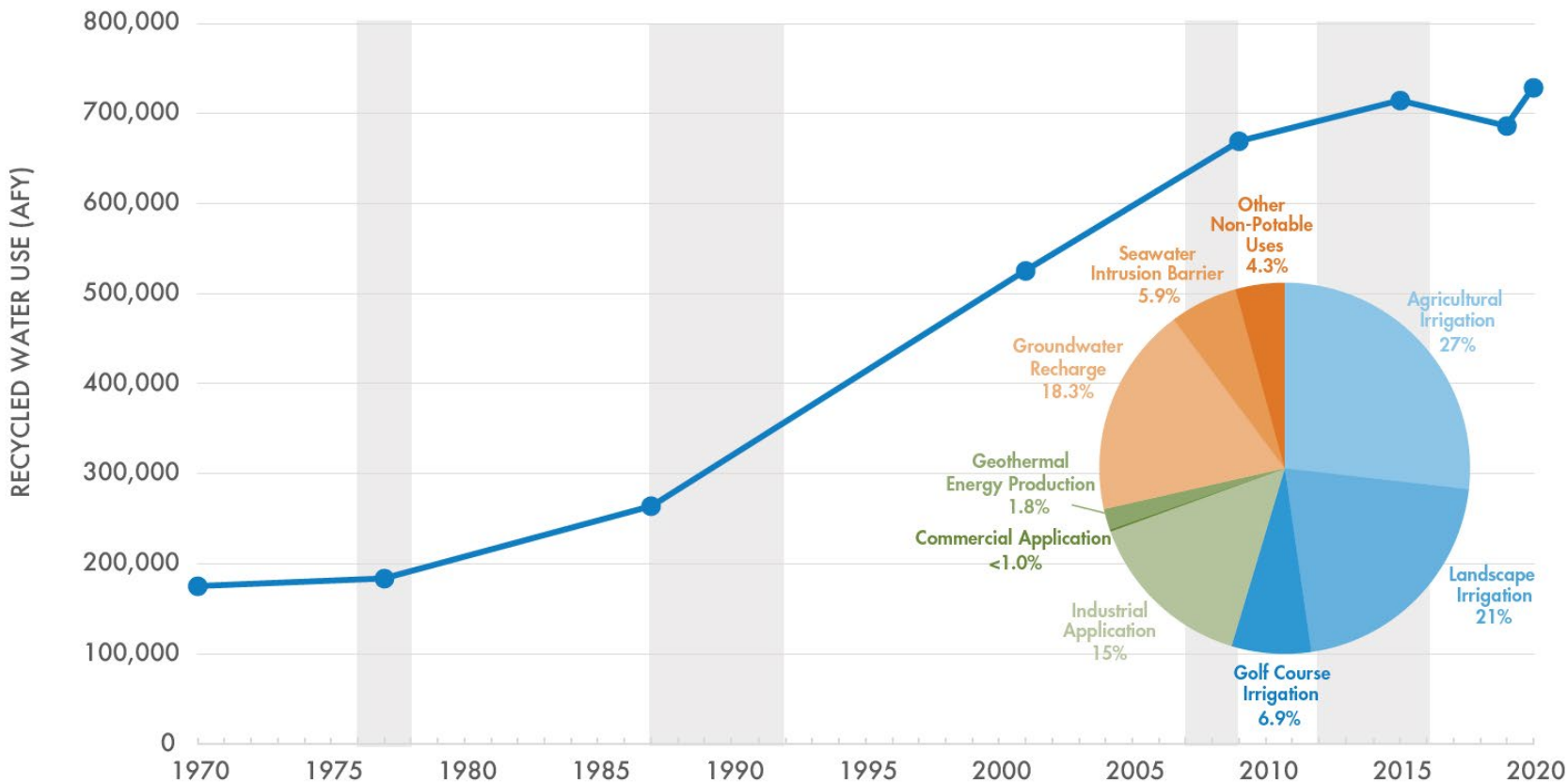
Stationary Time Series



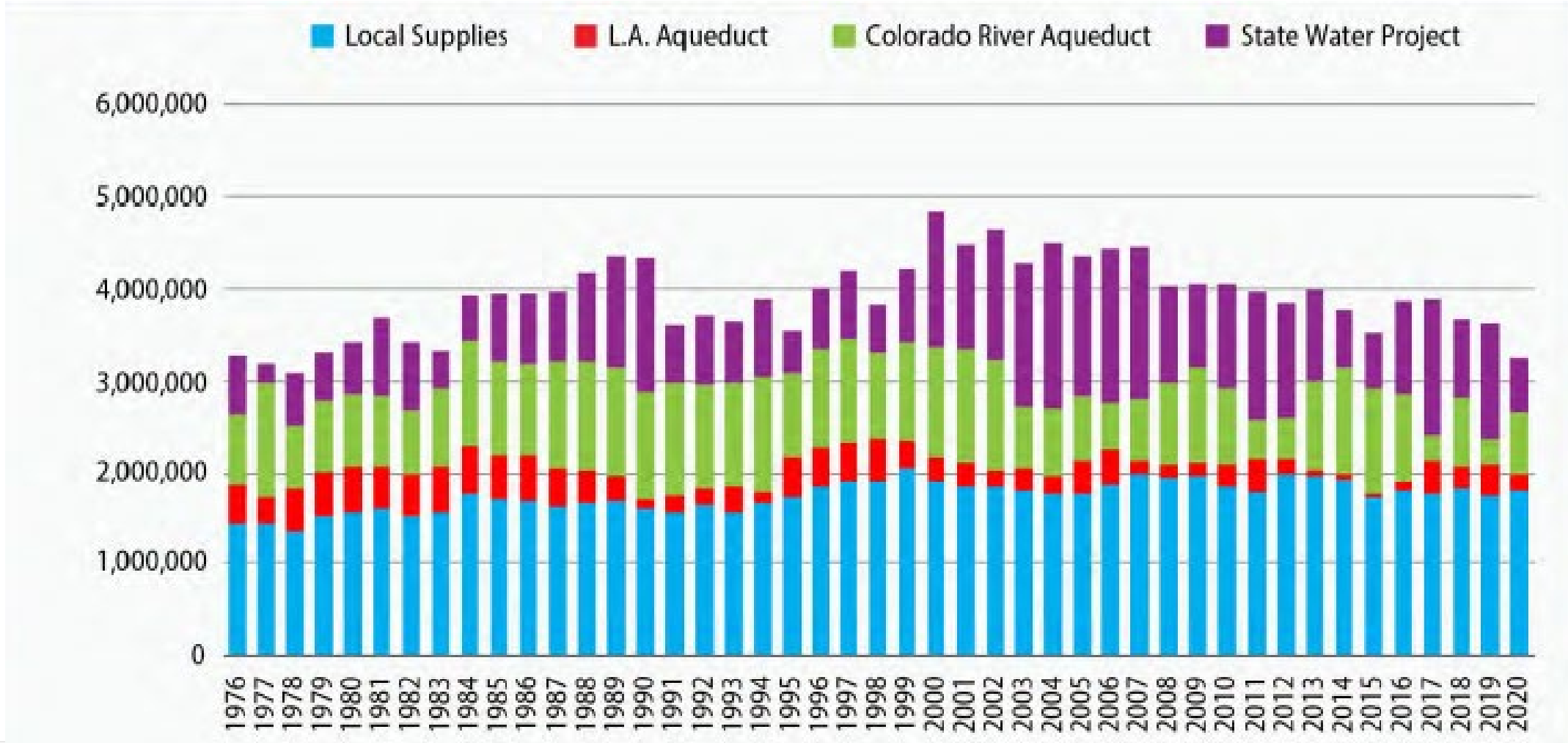
California has experienced a dramatic decoupling of water use and growth.



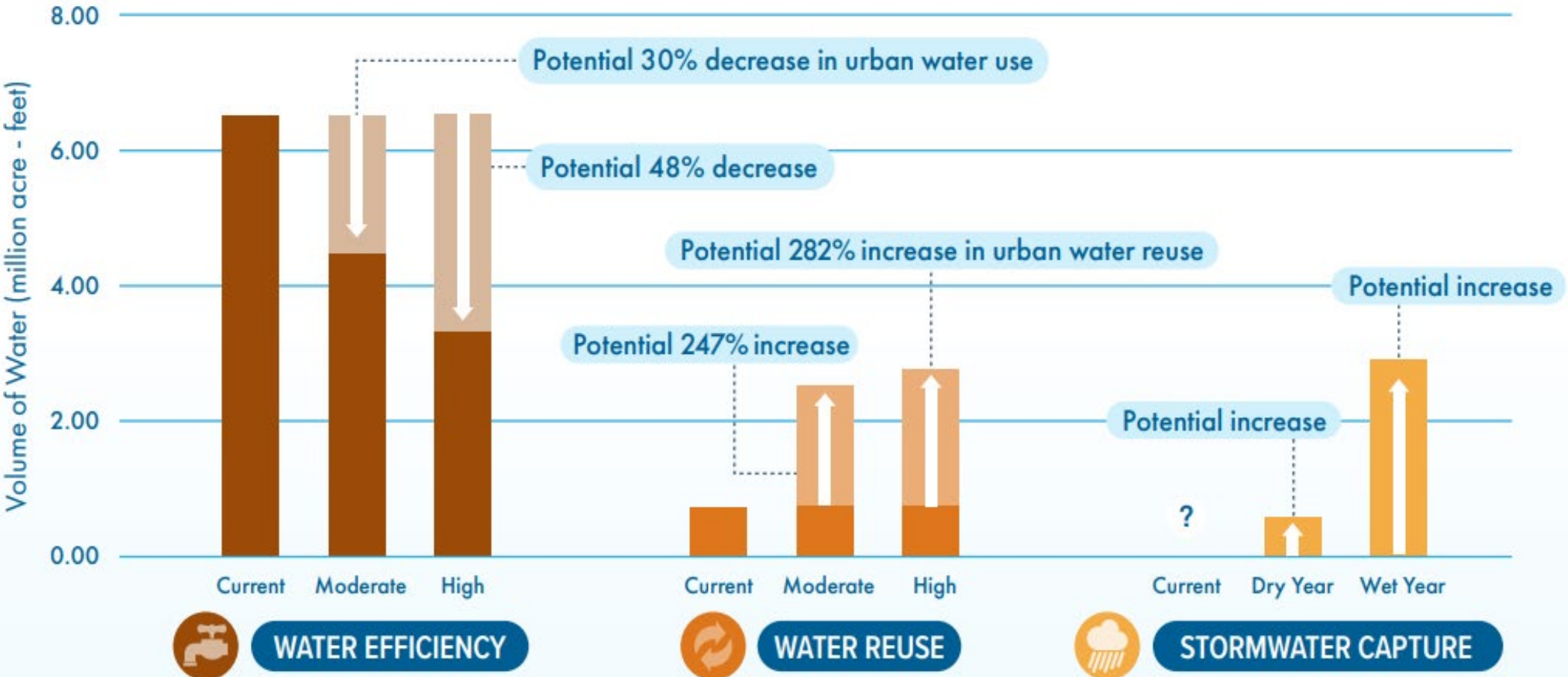
Recycled water use has tripled over the last 50 years.



Water Supply Trends for the Metropolitan Water District of Southern California's Service Area, 1976-2020



Innovative urban strategies can reduce drought pressures and build long-term water resilience.



Key Takeaways

- Climate change – marked by hotter and drier conditions and more intense droughts – means we must fundamentally change how we use and manage water.
- We must embrace resilience, including:
 - Prioritizing water conservation and efficiency to reduce **water demand**;
 - Diversifying **water supplies**, including through water reuse and stormwater capture; and
 - Shifting to more integrated **management** that values green infrastructure and relies on better data and planning.

Thank you!

To learn more about the Pacific Institute's work, please visit us at www.pacinst.org.

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Issue Brief

Water Resilience

Definitions, Characteristics, Relationships to Existing Concepts, and Call to Action for Building a Water Resilient Future

Water is a nexus issue tied to energy, agriculture and food security, industry, human health, biodiversity and ecosystem health, peace and stability, human rights, and many other priorities. Water is also central to meeting the United Nations' Sustainable Development Goals (SDGs) by 2030. However, we face a global water crisis marked by growing competition for freshwater resources, rapidly deteriorating water quality, poor and declining ecosystem health, unprecedented biodiversity loss, and a failure to meet basic water and sanitation needs. This crisis is exacerbated by population growth, unsustainable consumption patterns, and, increasingly, climate change.

The Pacific Institute is globally recognized for its thought leadership on water. This reputation is built upon more than 30 years of water-related research to identify innovative solutions and influence policy and practice for the public and private sectors. Moving forward, the Pacific Institute is significantly scaling its reach and impact to address mounting water challenges.

The Pacific Institute's 2030 goal is to catalyze the transformation to water resilience in the face of climate change.

In this brief, the Pacific Institute presents a working definition of "water resilience." The concept of water resilience has emerged recently in response to growing recognition of a more variable and uncertain future. While climate change is a primary driver of the emerging focus on water resilience, the concept responds to a wide range of environmental, social, economic, and political pressures on water.

The definition of water resilience in this brief informs the Pacific Institute's 2030 organizational goal and related work. Additionally, this definition may also help advance understanding and achievement of water resilience by businesses, governments, NGOs, policymakers, and other water policy and practice actors beyond the Pacific Institute.

DEFINING WATER RESILIENCE

The Pacific Institute defines "water resilience" as the ability of water systems to function so that nature and people, including those on the frontlines and disproportionately impacted, thrive under shocks, stresses, and change.

Pacific Institute October 2021

PACIFIC INSTITUTE

The Untapped Potential of California's Urban Water Supply: Water Efficiency, Water Reuse, and Stormwater Capture

Heather Cooley, Anne Thebo, Sonali Abraham, Moegam Shamabuka, Peter Gleich, Sarah Dirfinger

April 2022

Untapped Potential

Innovative water efficiency, water reuse, and stormwater capture approaches for

Leading the Way

Communities across California are already implementing these innovative urban water solutions with success!

Rapidly scaled across the state, these solutions can provide shorter-term drought relief and longer-term water resilience for millions more Californians. They can also inspire water decisions across the United States and beyond.

CHALLENGE: Mismatch between water supply and demand

ANNUAL URBAN WATER USE: 6.6 trillion gallons (23 billion acre-feet)

DEMAND CHANGE: 14-21 year Water Use & Demand Outlook

URBAN WATER SOLUTION: Innovative strategies can net 6.0 trillion gallons (22 billion acre-feet) of water through 2045.

WATER EFFICIENCY: Reduce urban water use through water efficiency improvements

KEY REGIONAL OPPORTUNITIES:

- 1 SOUTH COAST HYDROLOGIC REGION:** Home to major cities including Los Angeles and San Diego, the South Coast hydrologic region has the greatest potential for all three strategies.
- 2 SAN FRANCISCO BAY HYDROLOGIC REGION:** Water efficiency: 1.22 billion to 1.24 billion acre-feet (17 billion to 17.6 billion gallons) per year of water savings. Water Reuse: 100,000 acre-feet (140 billion gallons) per year. Stormwater Capture: 12,000 acre-feet (160 billion gallons) per year.
- 3 SACRAMENTO RIVER HYDROLOGIC REGION:** Water efficiency: 1.24 billion to 1.26 billion acre-feet (17.6 billion to 18 billion gallons) per year. Water Reuse: 75,000 acre-feet (103 billion gallons) per year. Stormwater Capture: 8,000 acre-feet (107 billion gallons) per year.

THESE STRATEGIES PROVIDE IMPORTANT CO-BENEFITS:

- Reduce reliance on imported water
- Protect ecosystems and species
- Reduce greenhouse gas emissions
- Improve water access and affordability

Read the full report

www.pacinst.org to learn more about the Pacific Institute

Water Resilience Issue Brief

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Untapped Potential of California's Urban Water Supply

