

Water Security Lessons from Water Scarce Cities in the United States

David L. Sedlak

Department of Civil & Environmental Engineering

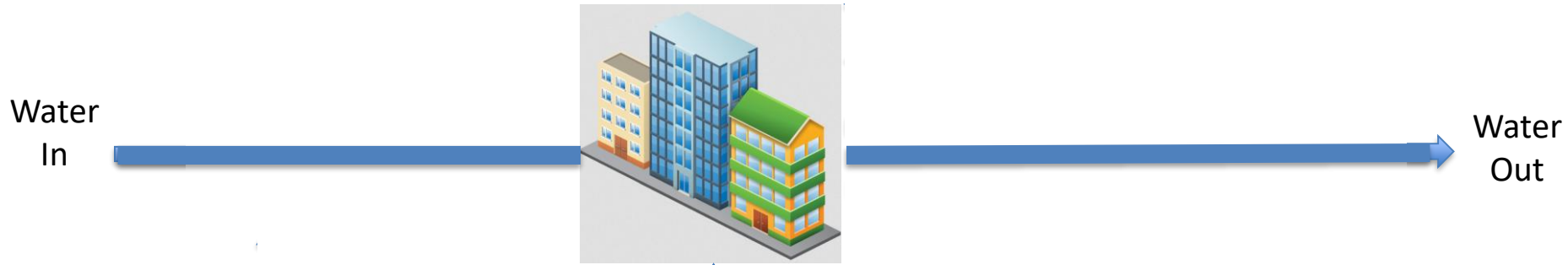
University of California, Berkeley

World Water Week

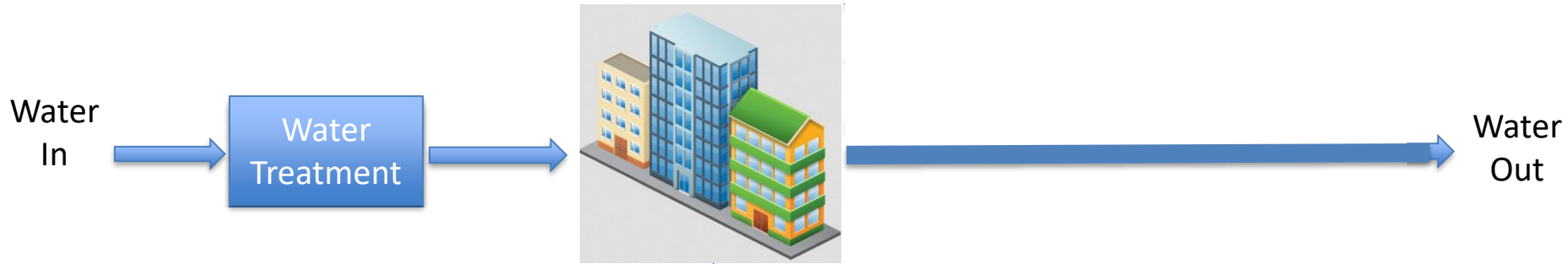
August 30, 2017



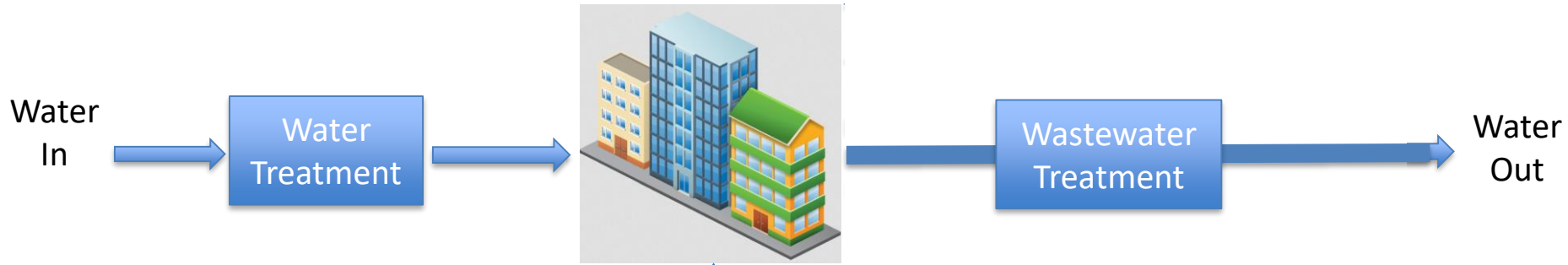
First Water Revolution (Water 1.0)



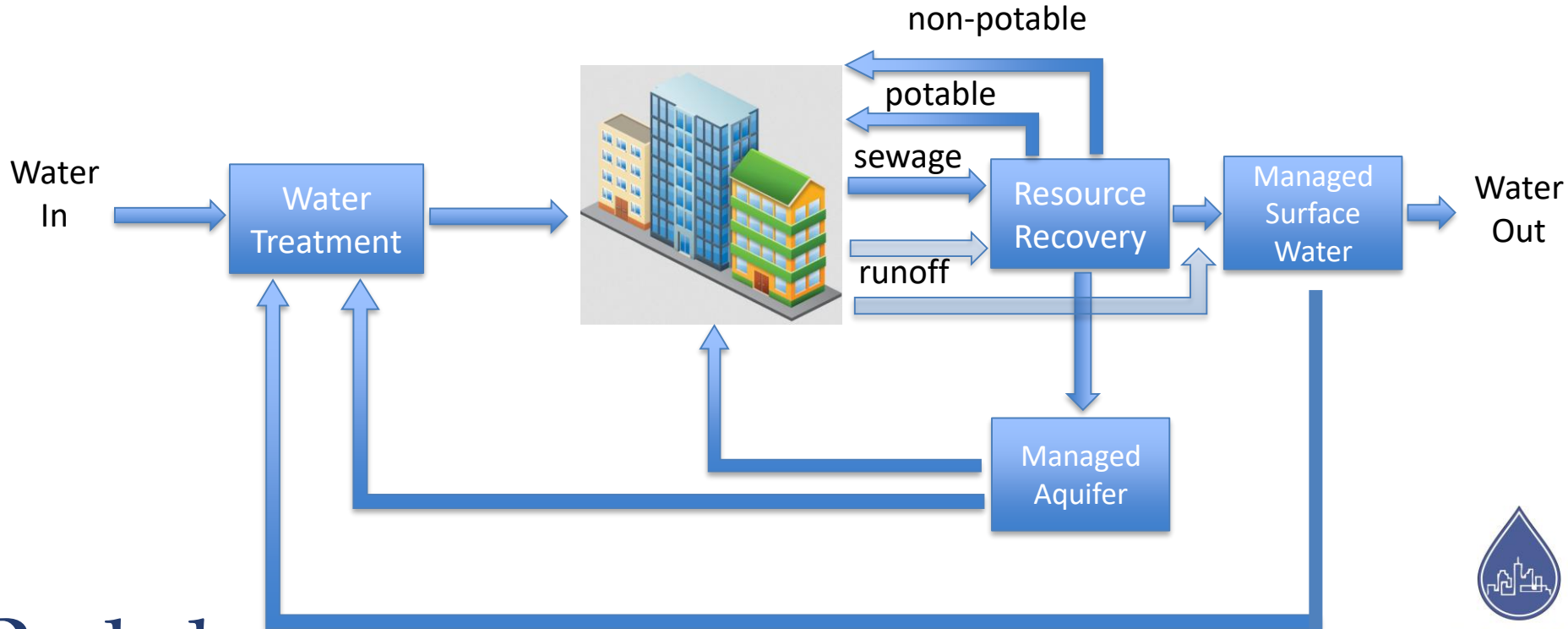
Second Water Revolution (Water 2.0)



Third Water Revolution (Water 3.0)



Fourth Water Revolution (Water 4.0)



A Portfolio Approach



**Imported
Water**



**Water
Reuse**



**Stormwater
Harvesting**



**Seawater
Desalination**

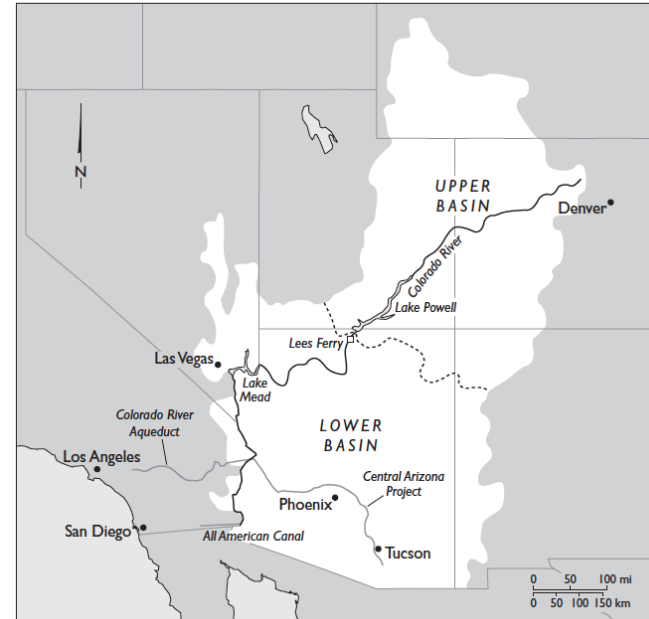


**Water Use
Efficiency**

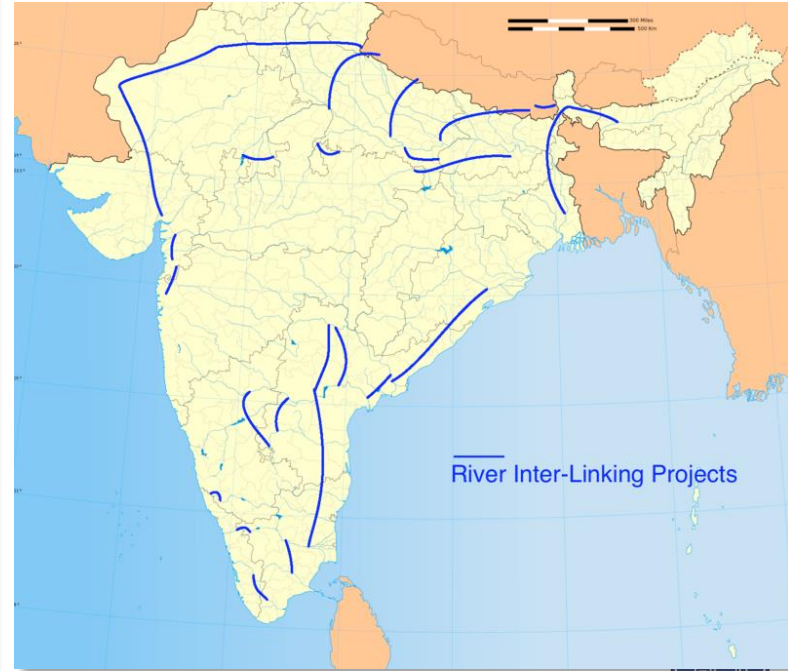
Imported Water Supplies



Imported
Water



Imported Water Supplies



Barnett et al. (2015)

Reusing Municipal Wastewater



**Water
Reuse**



Potable Water Reuse: California

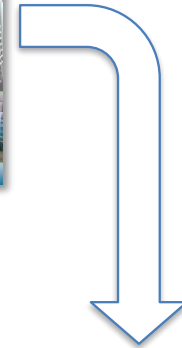
Wastewater Effluent?



Reverse Osmosis?



UV/H₂O₂?



Drinking Water
Supply?



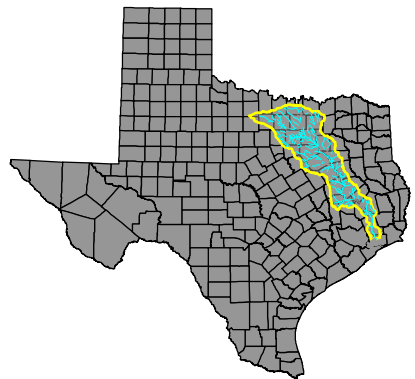
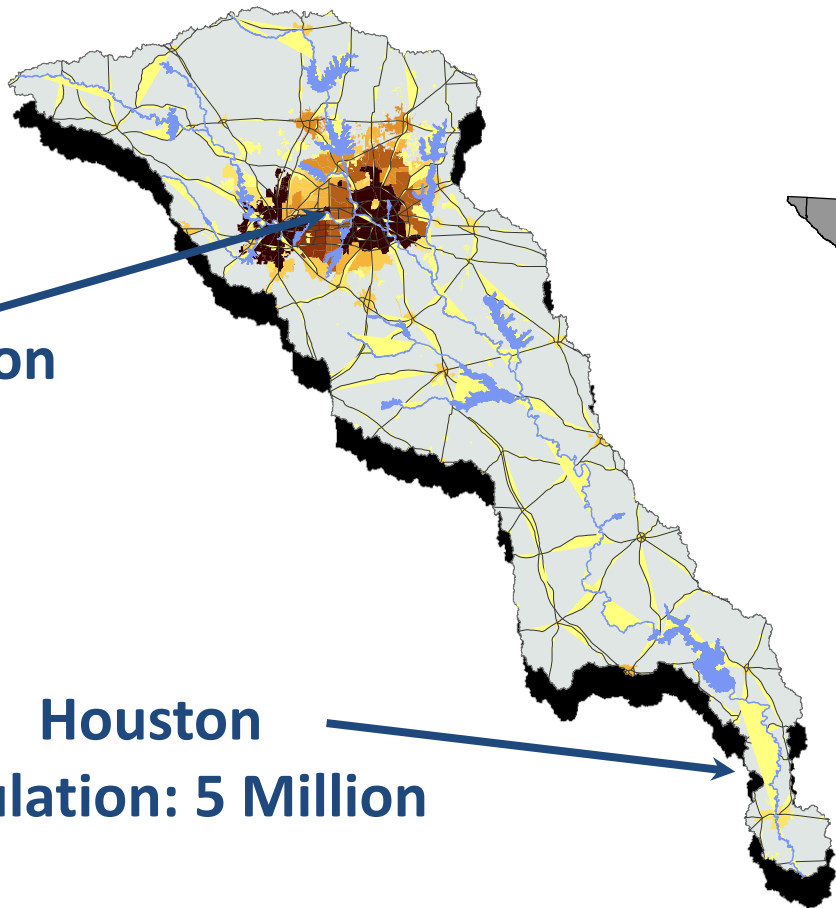
ReNUWIt
Re-inventing the Nation's
URBAN WATER
INFRASTRUCTURE

Potable Water Reuse: Texas

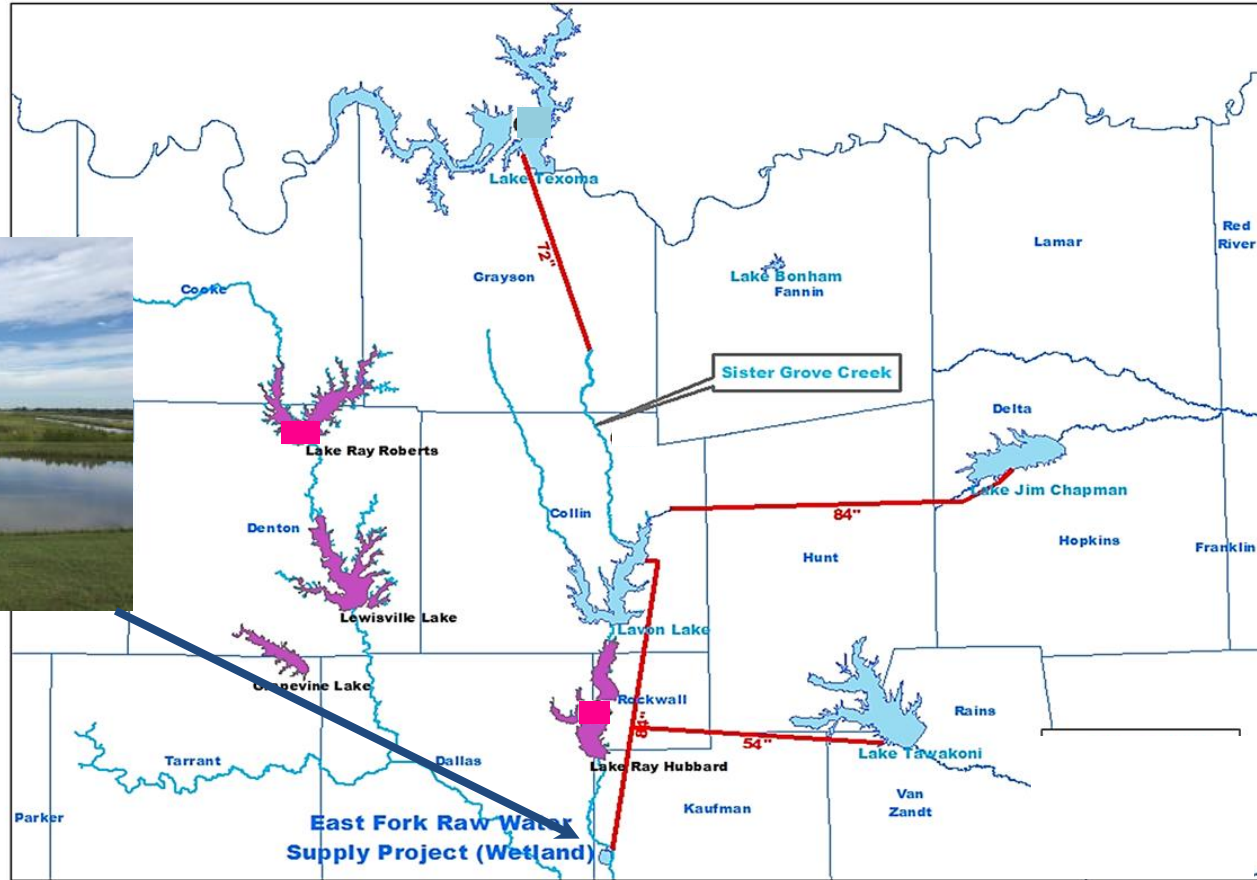
Dallas/Ft. Worth
Population: 5.5 Million

Houston
Population: 5 Million

Trinity River
Watershed



Wetlands as Low-Cost Treatment



Changing a Nuisance into a Resource



**Stormwater
Harvesting**

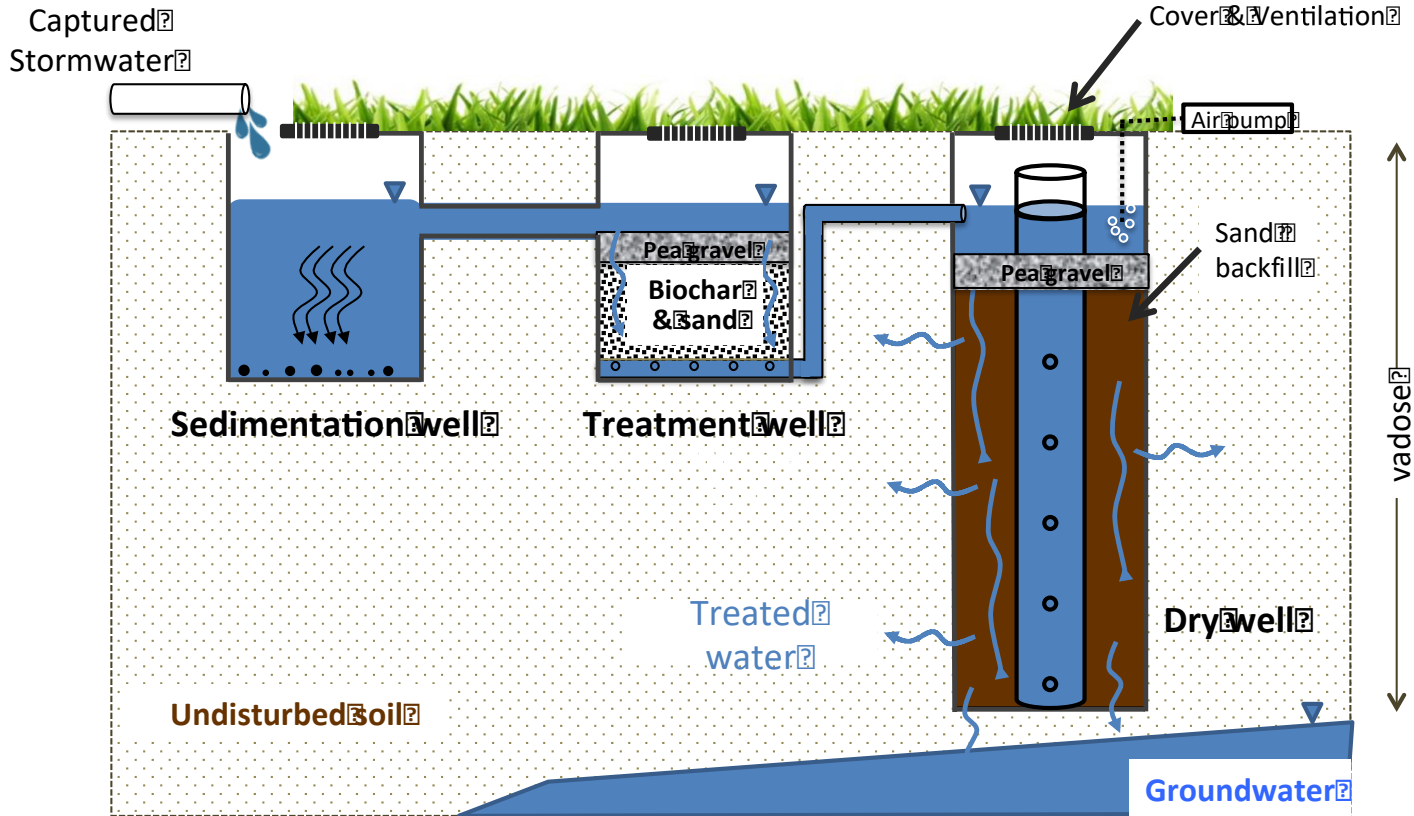
Stormwater Capture Basins



Rory M. Shaw
Wetland Park
(Burbank, CA)



Capture, Treat & Recharge



An Expensive but Reliable Approach



**Seawater
Desalination**

Pipe Parity Challenge

the WHITE HOUSE PRESIDENT BARACK OBAMA

Contact Us



BRIEFING ROOM

ISSUES

THE ADMINISTRATION

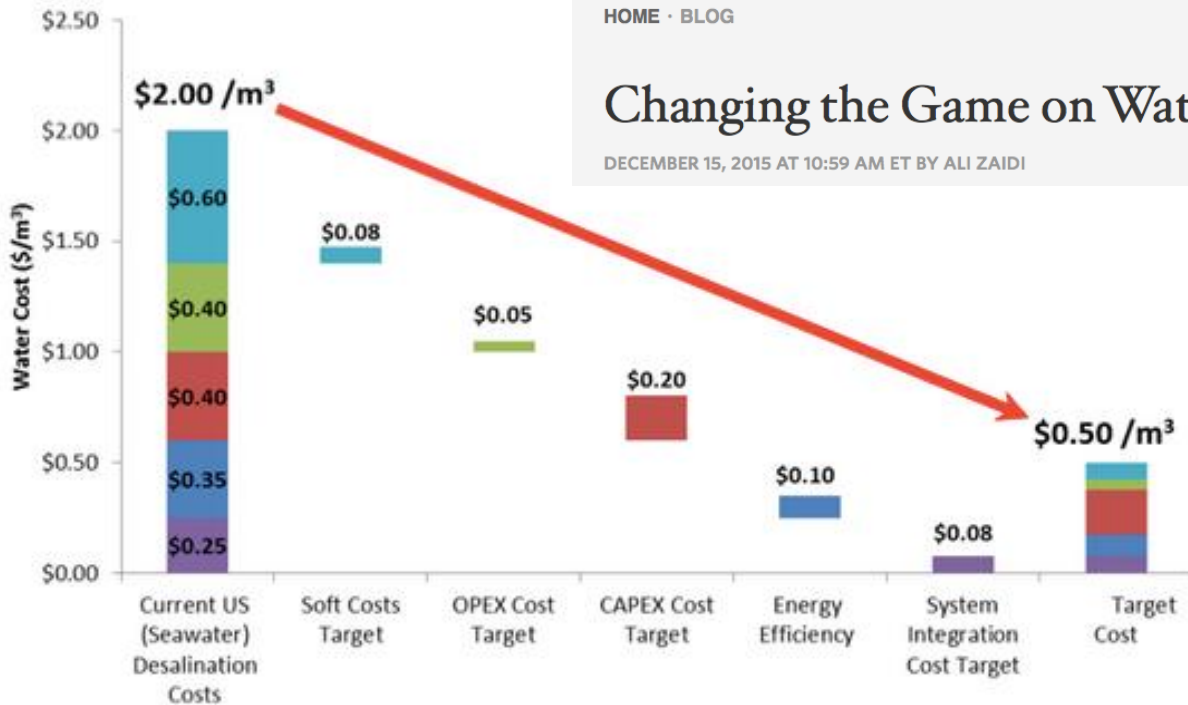
PARTICIPATE

1600 PENN

HOME · BLOG

Changing the Game on Water Supply

DECEMBER 15, 2015 AT 10:59 AM ET BY ALI ZAIDI



Necessary Cost Reductions

Soft Costs	87%
OPEX	88%
CAPEX	50%
Energy	71%
System Integration	68%



ReNUWIT

Re-inventing the Nation's
URBAN WATER
INFRASTRUCTURE

Distributed Treatment/Reuse



San Francisco's Non-potable Water System Projects

San Francisco Public Utilities Commission
May, 2014



Take Home Messages

Water Security Requires Diversification Strategies

- Each city is unique
- Ancillary benefits of alternative supplies



Take Home Messages

Water Security Requires Diversification Strategies

- Each city is unique
- Ancillary benefits of alternative supplies

New Water Supplies are Local

- Potable water reuse
- Stormwater capture, treatment & recharge
- Distributed Treatment/Reuse

