



# Metropolitan's 60 Years of Desalination Research

CalDesal Annual Summit

February 17, 2023

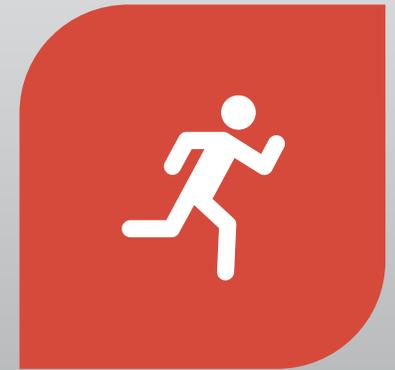
# Outline



HISTORICAL  
PERSPECTIVE



FUTURE SUPPLY ACTIONS  
FUNDING PROGRAM

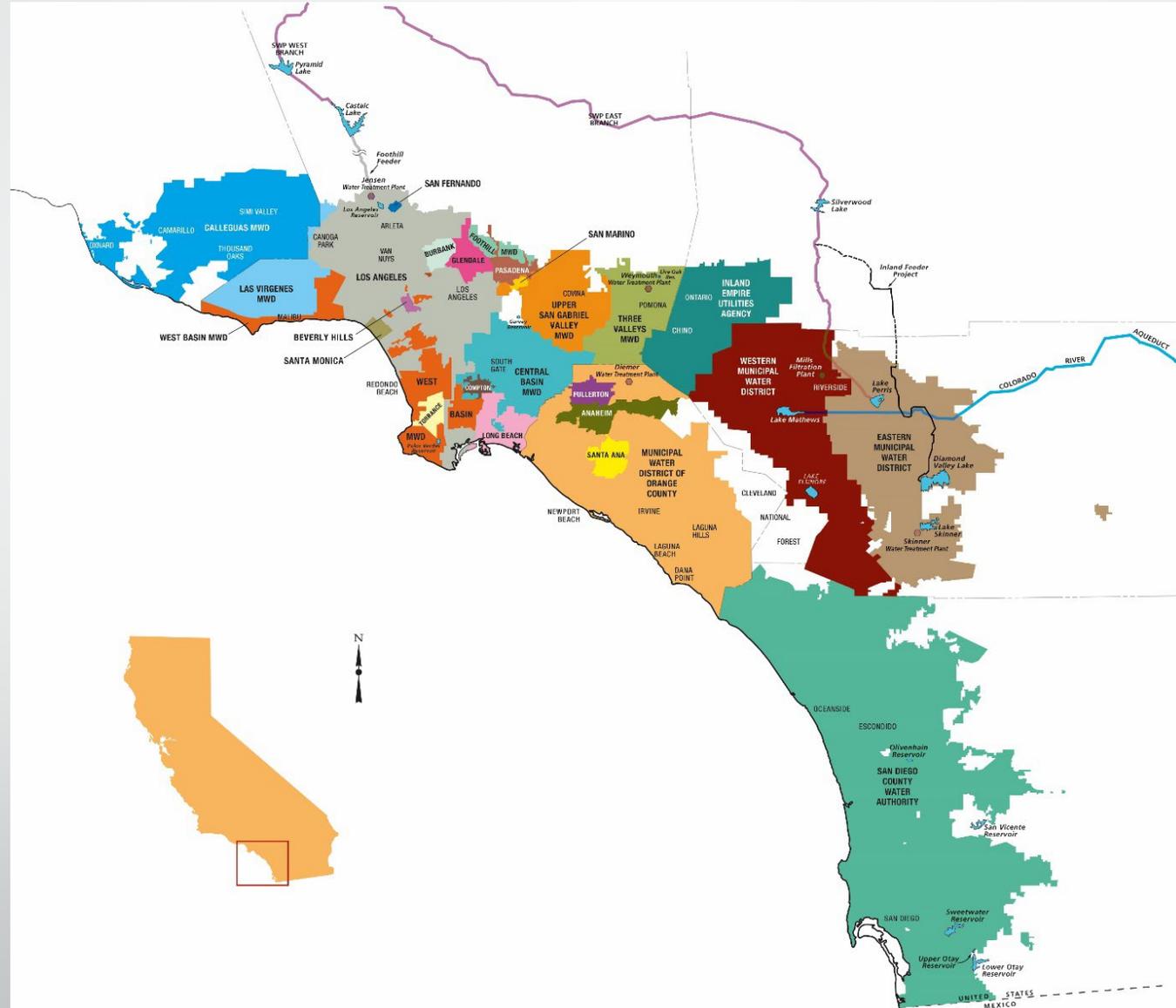


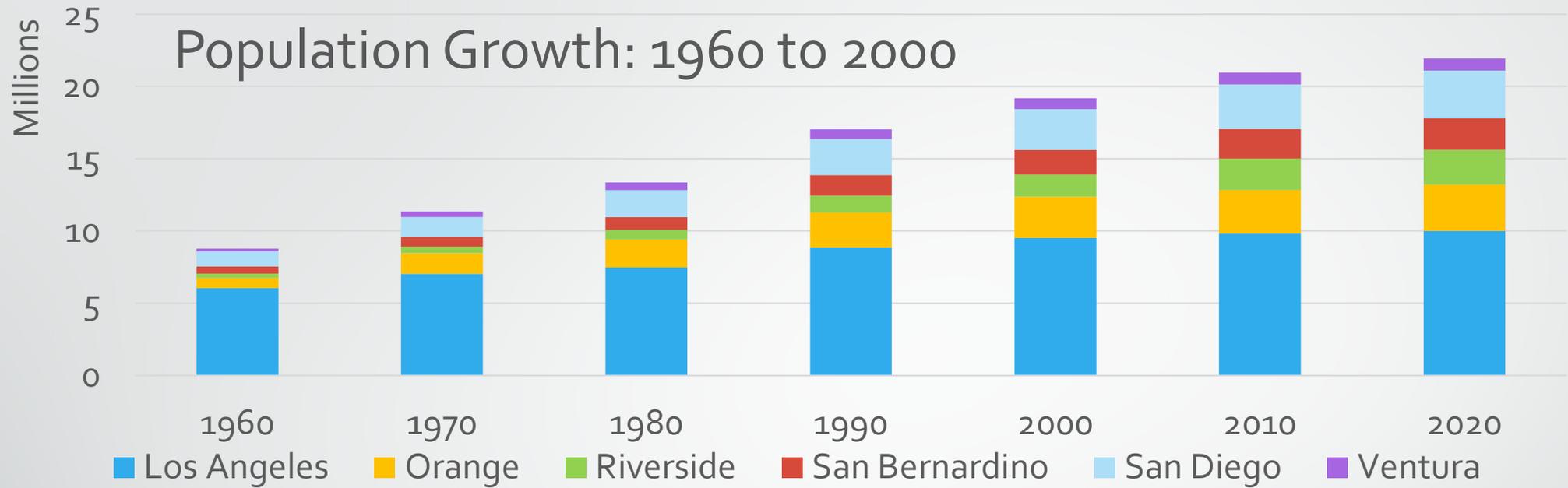
MOVING FORWARD



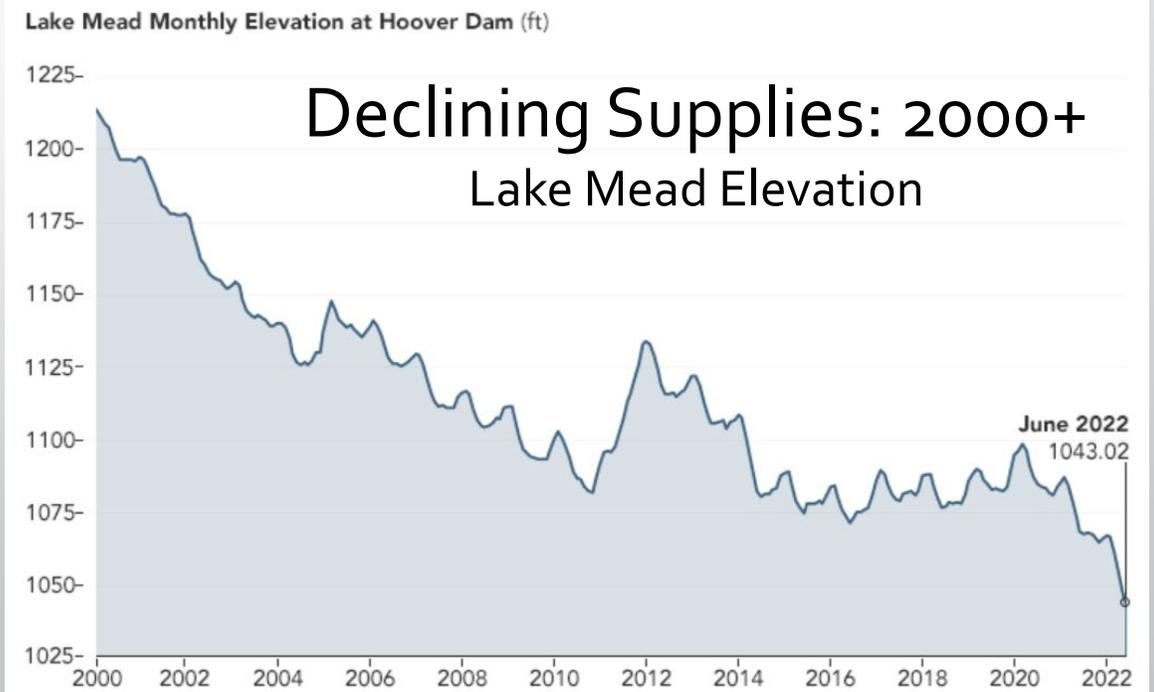
# The Metropolitan Water District of Southern California

- Nation's largest wholesale water provider
- 26 member agencies
- 19 million people
- Supports \$1 trillion regional economy
- Imports water from Northern Sierra and the Colorado River, invests in local projects





Climate Change is  
the New Driver



# Changing Priorities

1960s

1970s

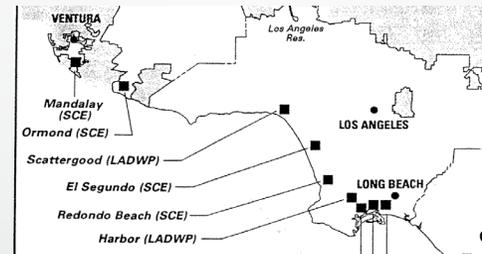
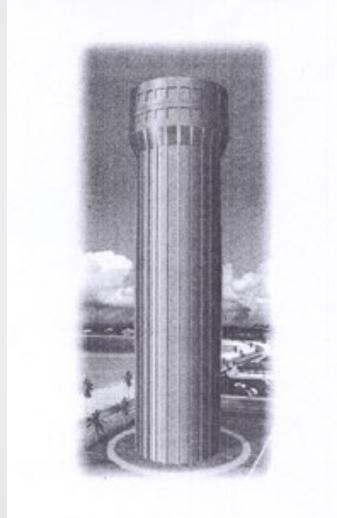
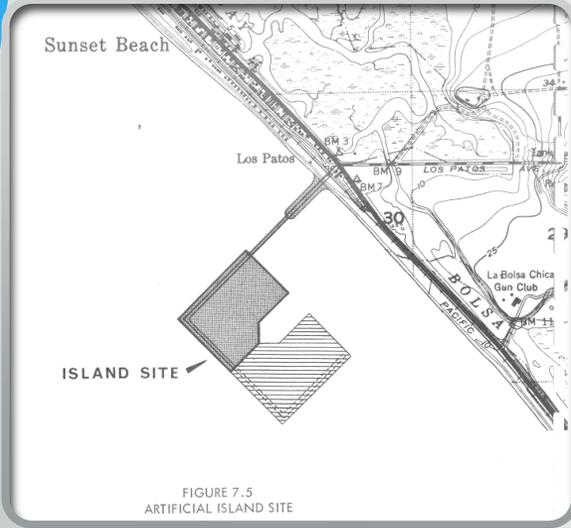
1980s

1990s

2000s

2010s

2020s



Seawater Desal Program  
Local Resource Program  
Future Supply Actions



Feasibility

Technology

Integration

Local Agency Support

# Future Supply Actions Funding Program

Future Supply Actions established in 2010 IRP



Drive innovation

Pilot new approaches  
and technologies

Remove barriers to  
supply development

Benefit the region



Local Resources

Groundwater

Stormwater

Reuse

Desalination

# Current FSA Program

## Member Agencies

- 14 studies
- \$3.1 million

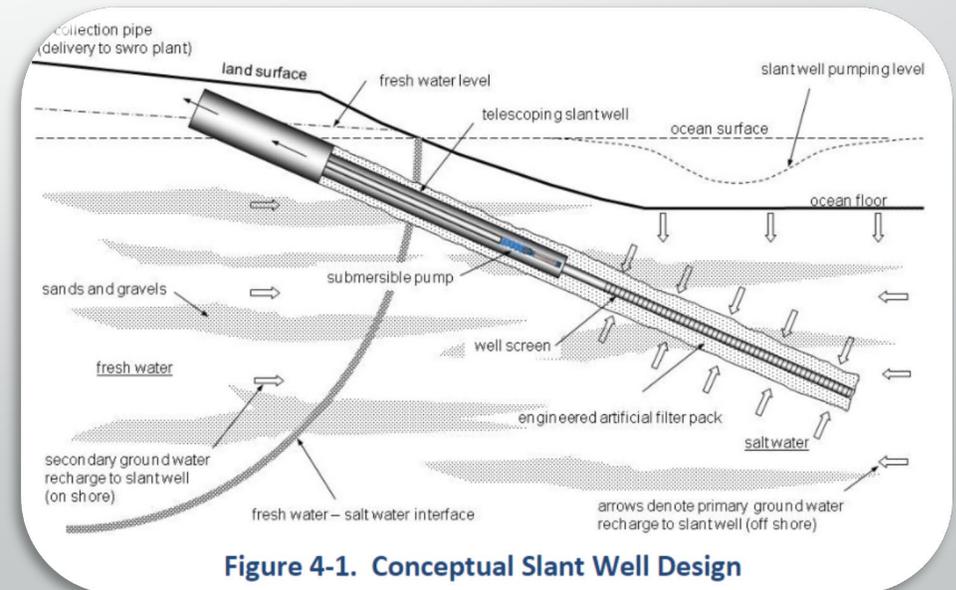
## Water Research Foundation

- 6 potable reuse studies
- 1 agricultural reuse study
- \$975k

# 2013 FSA Seawater Desalination Studies

- Funded 13 studies
- ~\$3.0 million invested
- West Basin MWD
  - Wedge wire screen materials and corrosion test
- MWD of Orange County
  - Slant well guidebook

## INTAKE SCREENS - CORROSION



# 2018 FSA: Calleguas MWD: Thousand Oaks Groundwater Utilization Pilot Study

- Evaluated CCRO for brackish groundwater
- Tested greensand as pre-treatment to RO
- **Key finding:** CCRO recovery up to 82% vs. 76% for RO



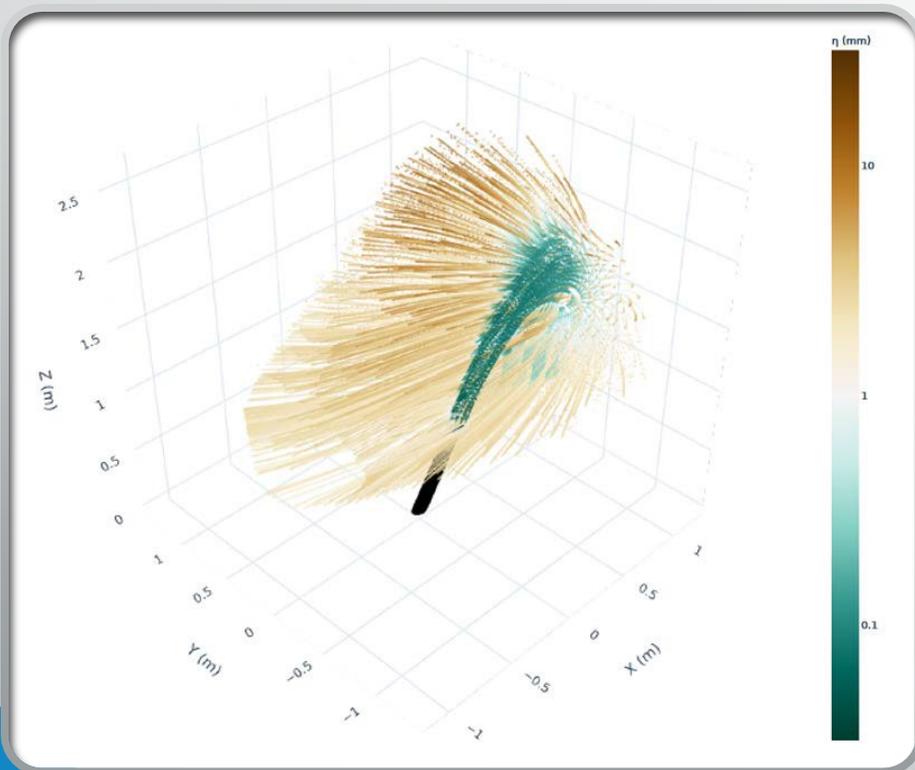
# 2018 FSA: SDCWA: Carlsbad Desalination Plant Wedge Wire Screen Pilot Study

- Evaluated site-specific performance of WWS
- Compared the performance of passive and active WWS
- **Key finding:** superior performance with active cleaning vs. passive



# 2018 FSA: West Basin MWD

## Approach for the Evaluation of Brine Diffuser Shear Mortality



- Understand the relationship between discharge plumes and shear mortality
- Microscale turbulence modeled using computational fluid dynamics
- **Key finding:** conservative mortality assumption: 50%

# FSA Lessons Learned

- Flexibility is essential: COVID-19
- Webinars reach target audiences
  - But Zoom fatigue is real
- Lower participation from smaller districts
- Grant programs are resource intensive
  - Funding agreements are the weak link
- How can we amplify program impacts?

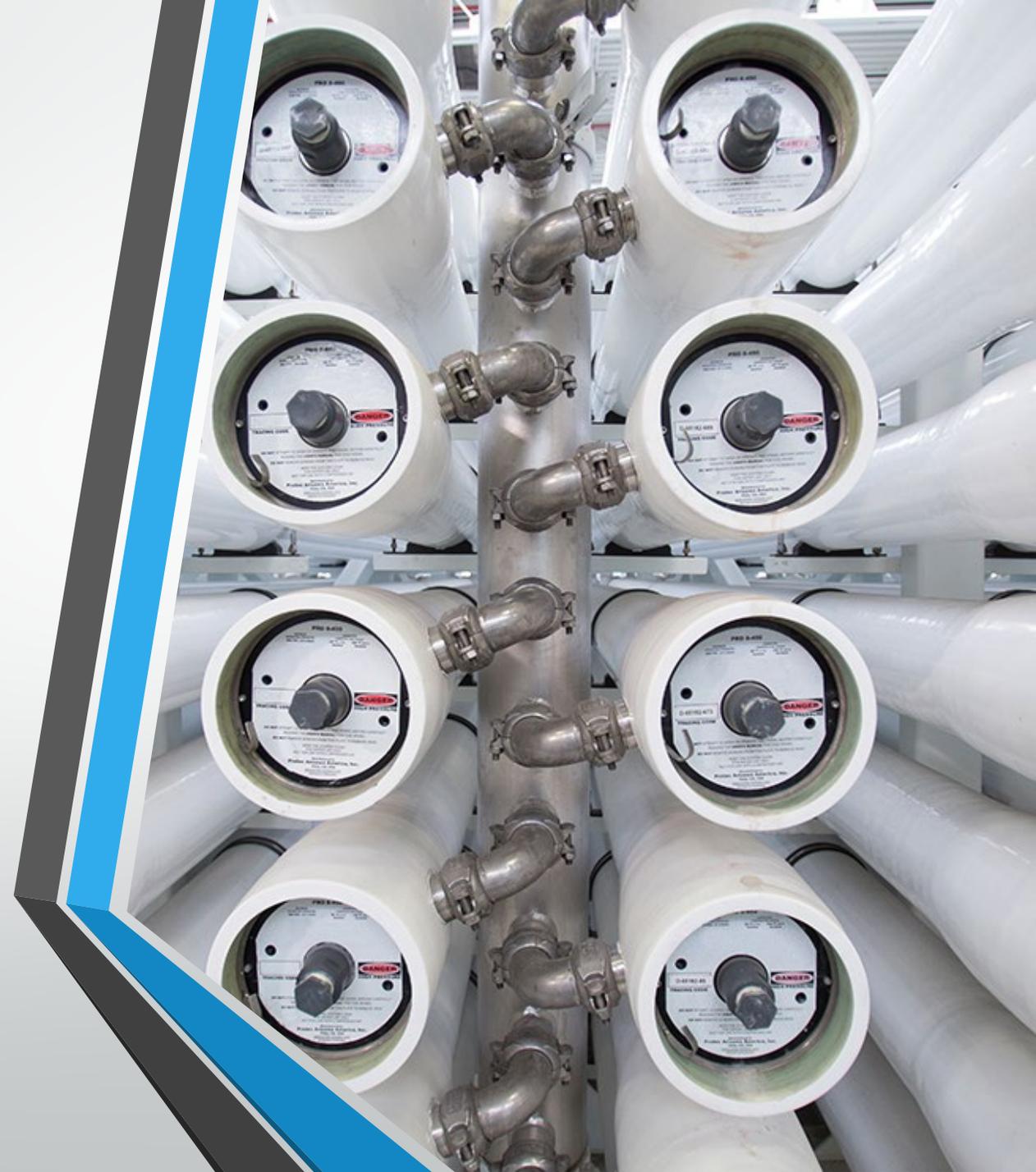
# Inspiration for 2030

- Keppel Marina East Desalination Plant, Singapore
  - 30 MGD
  - Treats freshwater and seawater
  - Community amenities
- **Research is crucial, but not enough!**



# Moving Forward

- One Water approach
  - Pure Water Southern California
- Regional studies
  - Brackish and SWRO siting
  - Partnerships and delivery
  - Technology scan
- Future Supply Actions Round III
- Webinar on AI for Potable Reuse
  - March 23 2:00
  - Las Virgenes MWD
  - [www.mwdh2o.com/fsa](http://www.mwdh2o.com/fsa)





*Water purified, force applied  
Reverse osmosis, nature defied  
Clean water gained, cost to the tide.  
ChatGPT, 2023*

## Questions?

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