



**BOARD OF DIRECTORS  
EAST BAY MUNICIPAL UTILITY DISTRICT**

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375 - 11th Street, Oakland, CA 94607

Office of the Secretary: (510) 287-0440

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**Notice of Special Meeting**

**Recycled Water Strategic Plan Workshop No. 2**

**Tuesday, September 24, 2024**

**10:00 a.m.**

**Boardroom**

**375 11th Street**

**Oakland, CA 94607**

At the call of President Lesa R. McIntosh, the Board of Directors has scheduled the Recycled Water Strategic Plan Workshop No. 2 for 10:00 a.m. on Tuesday, September 24, 2024, in the Administration Building Boardroom at 375 11th Street, Oakland, California.

Staff will provide recommendations for future recycled water projects to meet the District's recycled water goal and information requested by the Board during the March 26, 2024 Recycled Water Strategic Plan Workshop.

Dated: September 19, 2024

A handwritten signature in blue ink that reads "Risha S. Cole".

Risha S. Cole

Secretary of the District

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**AGENDA**  
**Special Meeting**

**Recycled Water Strategic Plan Workshop No. 2**  
**Tuesday, September 24, 2024**  
**10:00 a.m.**  
**Boardroom**  
**375 11th Street**  
**Oakland, CA 94607**

**\*\*\* Please see appendix for public participation instructions\*\*\***

**ROLL CALL:**

**PUBLIC COMMENT:** Members of the public shall have the opportunity to provide public comment on Agenda Item 1.

**DISCUSSION:**

1. Staff will provide recommendations for future recycled water projects to meet the District's recycled water goal and information requested by the Board during the March 26, 2024 Recycled Water Strategic Plan Workshop. (Tognolini)

**ADJOURNMENT:**

**Disability Notice**

*If you require a disability-related modification or accommodation to participate in an EBMUD public meeting, please call the Office of the Secretary (510) 287-0404. We will make reasonable arrangements to ensure accessibility. Some special equipment arrangements may require 48 hours advance notice.*

**Document Availability**

*Materials related to an item on this Agenda that have been submitted to the EBMUD Board of Directors within 72 hours prior to this meeting are available for public inspection in EBMUD's Office of the Secretary at 375 11th Street, Oakland, California, during normal business hours, and can be viewed on our website at [www.ebmud.com](http://www.ebmud.com).*

W:\Board of Directors - Meeting Related Docs\Agendas 2024\Special Mtgs\Workshops\09242024 Recycled Water SP Workshop.docx



## APPENDIX

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### Recycled Water Strategic Plan Workshop No. 2 Tuesday, September 24, 2024 - 10:00 a.m.

*EBMUD public meetings of the Board will be conducted in person and via Zoom.  
These meetings are recorded, live-streamed, and posted on the District's website.*

#### Online\*

<https://ebmud.zoom.us/j/94804788254?pwd=Z2duWU9RZzVqb3RMd1RlNXVISjNsUT09>

Webinar ID: 948 0478 8254

Passcode: 467920

#### By Phone

Telephone: 1 669 900 6833

Webinar ID: 948 0478 8254

Passcode: 467920

International numbers available: <https://ebmud.zoom.us/j/94804788254?pwd=Z2duWU9RZzVqb3RMd1RlNXVISjNsUT09>

\*To familiarize yourself with Zoom, please visit <https://support.zoom.us/hc/en-us/articles/201362193-Joining-a-Meeting>

**Providing public comment** - *The EBMUD Board of Directors is limited by State law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.*

- Each speaker is allotted 3 minutes to speak; the Board President has the discretion to amend this time based on the number of speakers
- The Secretary will track time and inform each speaker when the allotted time has concluded
- Comments on **non-agenda items** will be heard at the beginning of the meeting
- Comments on **agenda items** will be heard when the item is up for consideration
- The Secretary will call each speaker in the order received

#### In person

- Fill out and submit a blue speaker card which is available in the meeting room

#### Via Zoom

- Use the raise hand feature in Zoom to indicate you wish to make a public comment  
<https://support.zoom.us/hc/en-us/articles/205566129-Raising-your-hand-in-a-webinar>
  - If you participate by phone, press \*9 to raise your hand
- When prompted by the Secretary, please state your name, affiliation if applicable, and topic

#### Submitting written comments or materials

- Email written comments or other materials for the Board of Directors to [SecOffice@ebmud.com](mailto:SecOffice@ebmud.com)
- Please indicate the meeting date and agenda item number or non-agenda item in the subject of the email. Contact information is optional.
- **Please email by 4 p.m. the day prior to the scheduled regular meeting;** written comments and other materials submitted to the Board of Directors will be filed in the record.
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To view the livestream of meetings of the Board, please visit:  
<https://www.ebmud.com/about-us/board-directors/board-meetings/>

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## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: September 24, 2024

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager *CCC*

FROM: Michael T. Tognolini, Director of Water and Natural Resources *MTT*

SUBJECT: Recycled Water Strategic Plan Workshop No. 2 – September 24, 2024

The Recycled Water Strategic Plan Workshop No. 2 will be held on September 24, 2024. Attached is the workshop presentation. During the workshop, staff will present the following topics:

- Background information on potable reuse
- 2024 Recycled Water Strategic Plan process update
- Recycled Water Strategic Plan draft report findings
- Recommendations and next steps

CCC:MTT:dec

Attachment: Recycled Water Strategic Plan Update Workshop No. 2 Presentation

I:\Sec\2024 Board Related Items\Workshops 2024\092424\WNR – Recycled Water Strategic Plan Workshop No. 2.docx

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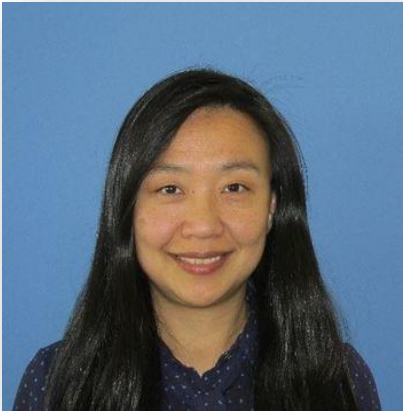


# Recycled Water Strategic Plan Update Workshop No. 2

**Board of Directors**

September 24, 2024

# Today's Speakers



**Linda Hu**  
Manager of Water  
Supply Improvements



**Florence Wedington**  
Supervisor of Water Recycling

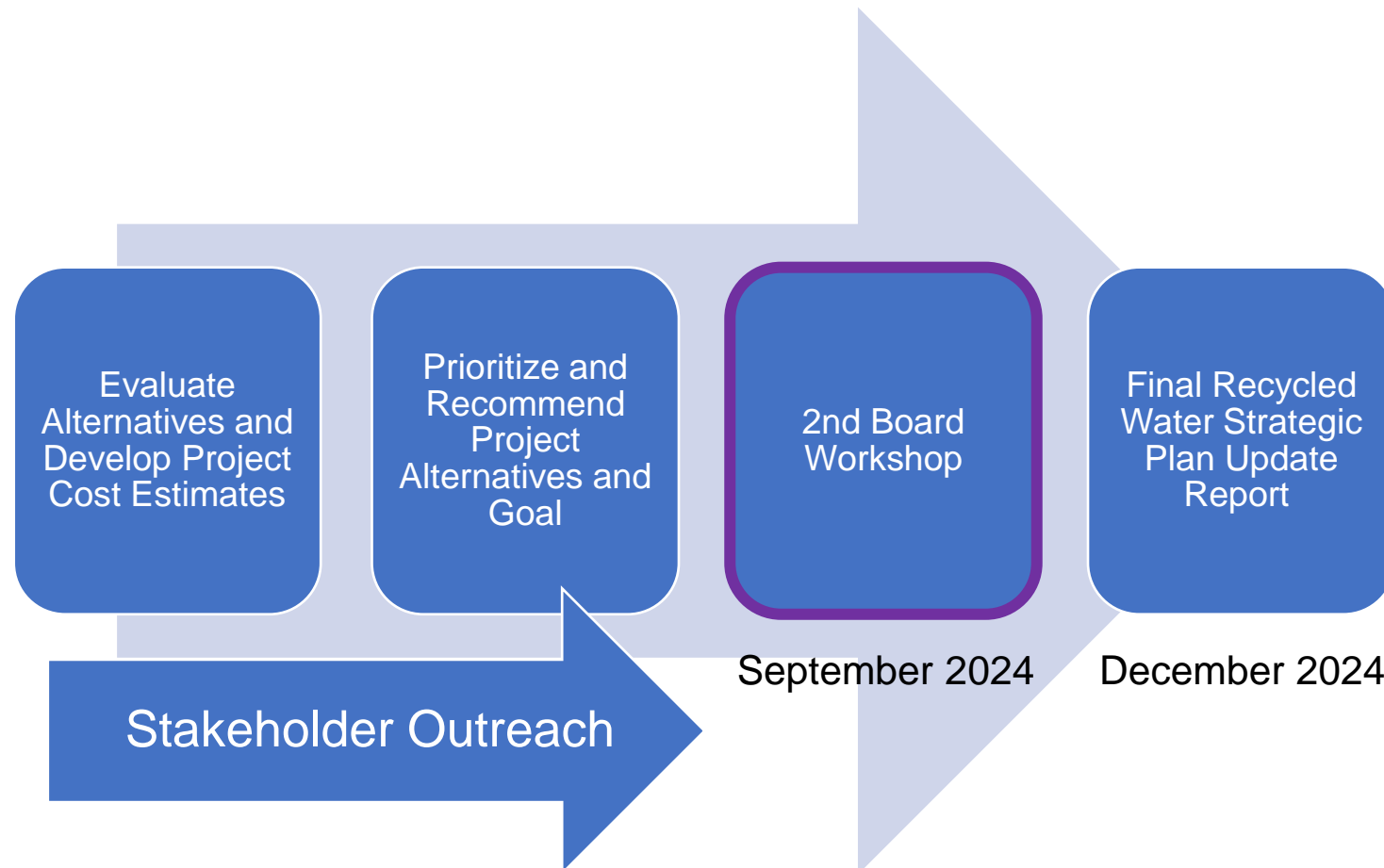


**Reena Thomas**  
Associate Civil Engineer

# Agenda

- Requested background information on potable reuse
- 2024 Recycled Water Strategic Plan (RWSP) Process Update
- RWSP Draft Report Findings
- Recommendations and Next Steps

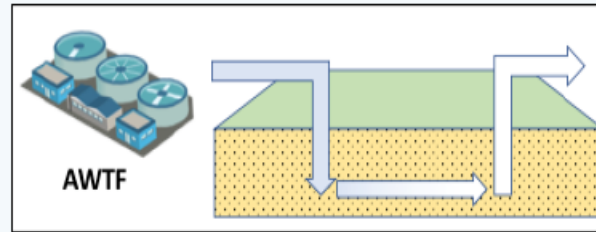
# Tasks Complete Since Last Workshop



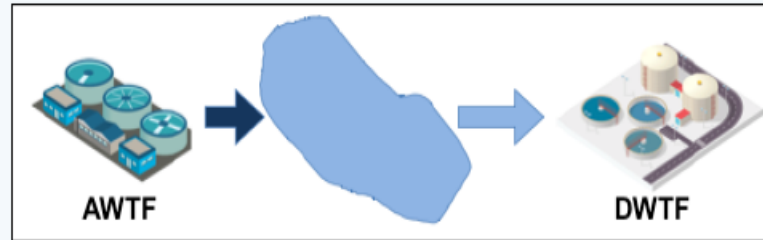
# All Types of Potable Reuse = Purified Water

## INDIRECT POTABLE REUSE (IPR)

Groundwater Augmentation

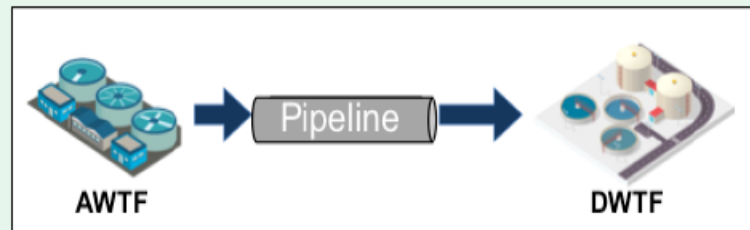


Reservoir Augmentation

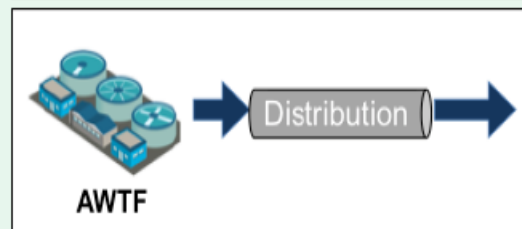


## DIRECT POTABLE REUSE (DPR)

Raw Water Augmentation



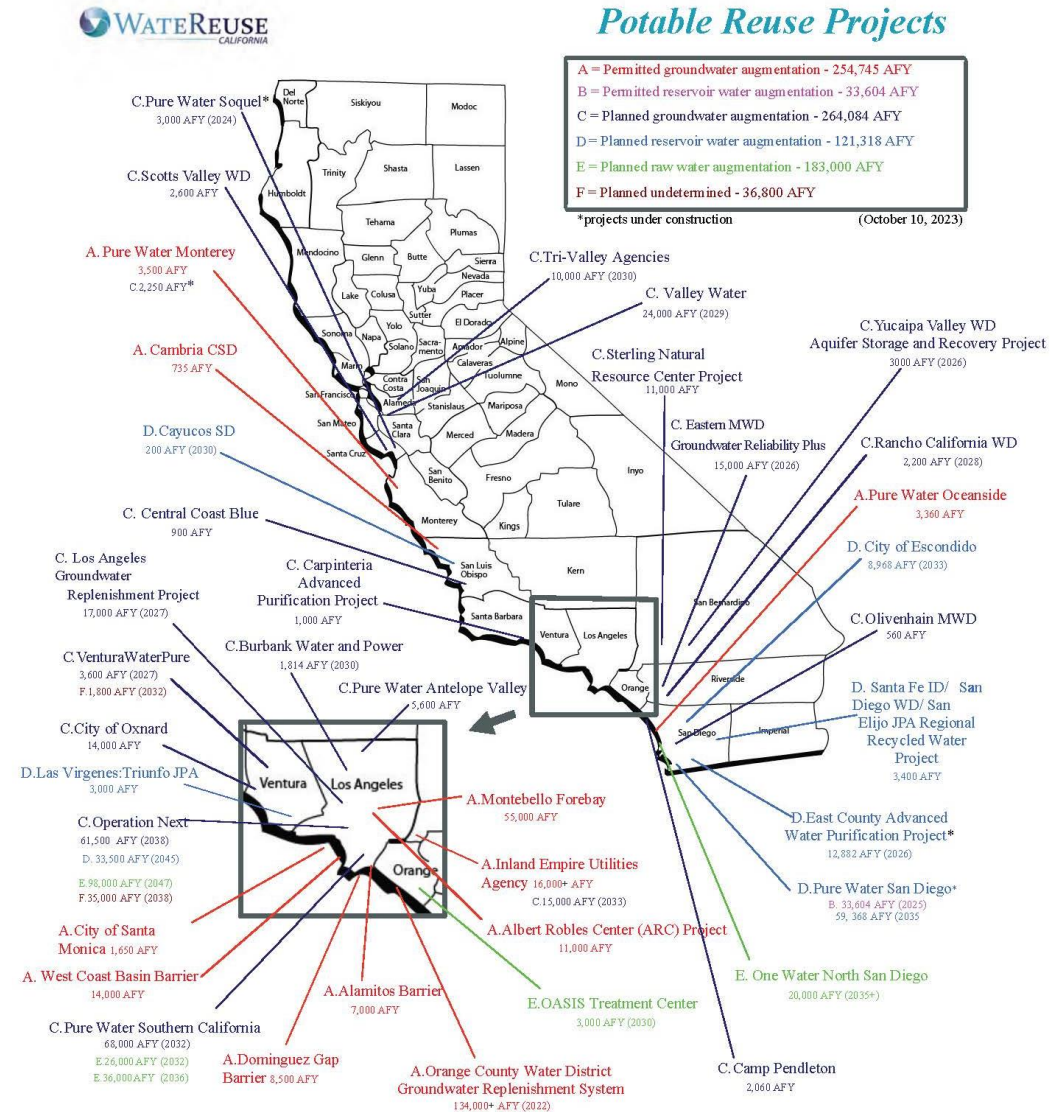
Treated Water Augmentation



# California Map of Potable Reuse

- Potable reuse projects in various levels of development, planning, permitting, and operations.

Augmentation Project Type	Total
A. Permitted groundwater	11
B. Permitted reservoir	1
C. Planned groundwater	21
D. Planned reservoir	7
E. Planned raw water	5
F. Planned undetermined	1



+ Volume indicated reflects facility online factor and may be less than volume permitted

# Potable Reuse Regulations and Significant Projects

- Indirect Potable Reuse (IPR)
  - Groundwater Augmentation approved June 2014
  - Reservoir Augmentation approved October 2018
- Direct Potable Reuse (DPR)
  - Raw and Treated Water Augmentation approved December 2023

Agency	Type	Capacity	Status
Orange County Water District and Orange County Sanitation District	Groundwater Augmentation	130 MGD	Operating since 2008
Monterey One Water	Groundwater Augmentation	5 MGD	Operating since 2020
City of San Diego	Reservoir Augmentation (future)	Up to 83 MGD	Demonstration facility operating since 2011. 7.5 MGD Phase 1 operational in 2027, full operation by 2035.
Pure Water Southern California	Groundwater/Raw Water Augmentation (future)	60 MGD/55 MGD	Groundwater and Phase 1 raw water operational in 2032; Phase 2 raw water operational in 2036
Valley Water (Pilot)	Groundwater Augmentation with potential for DPR (future)	18 MGD	8 MGD demonstration project operating since 2014. Additional 10 MGD in 2028.

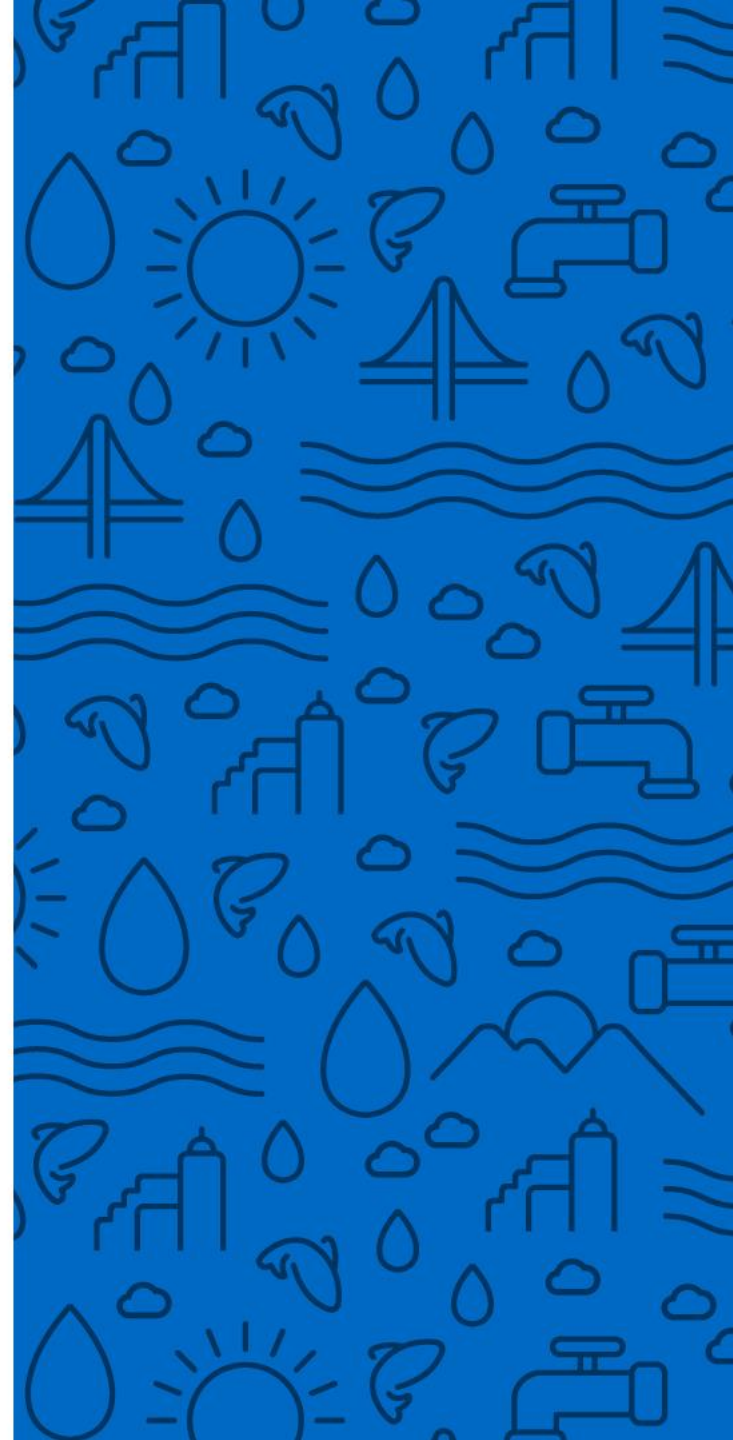
# Timeline of San Diego Purified Water Project

- 1993 – Initial proposal of potable reuse project
- 1994 – DHS granted conditional approval; supported by the EPA, Sierra Club, USBR, San Diego Medical Society, citizen’s advisory panel, businesses and community interest
- 1995 to 1998 – Public and media raised concerns; negative slogans popularized; inaccurately portrayed as targeting poor/ethnic communities; affected political campaigns
- 1999 – Project cancelled by the Council
- 2015 - City restarted the project planning and updated the public outreach program
- 2024 – Constructing a 30 MGD reservoir augmentation project



Pure Water San Diego construction site  
Photo courtesy of F. Wedington

# 2024 Strategic Plan Update Process and Findings



# Stakeholder Coordination

Provided project updates to stakeholder agencies, customers and non-governmental organizations including:

- Central Contra Costa Sanitary District
- Chevron Refinery
- Chuck Corica Golf Course (Alameda)
- City of Alameda
- City of Albany
- City of Berkeley
- City of Pinole
- City of Richmond
- City of San Leandro
- Dublin San Ramon Services District
- East Bay Dischargers Authority
- Oro Loma Sanitary District
- Phillips 66 Refinery
- San Francisco Save the Bay
- Sierra Club
- UC Berkeley
- West County Wastewater District

# Non-Potable and Purified Water Alternatives Evaluation

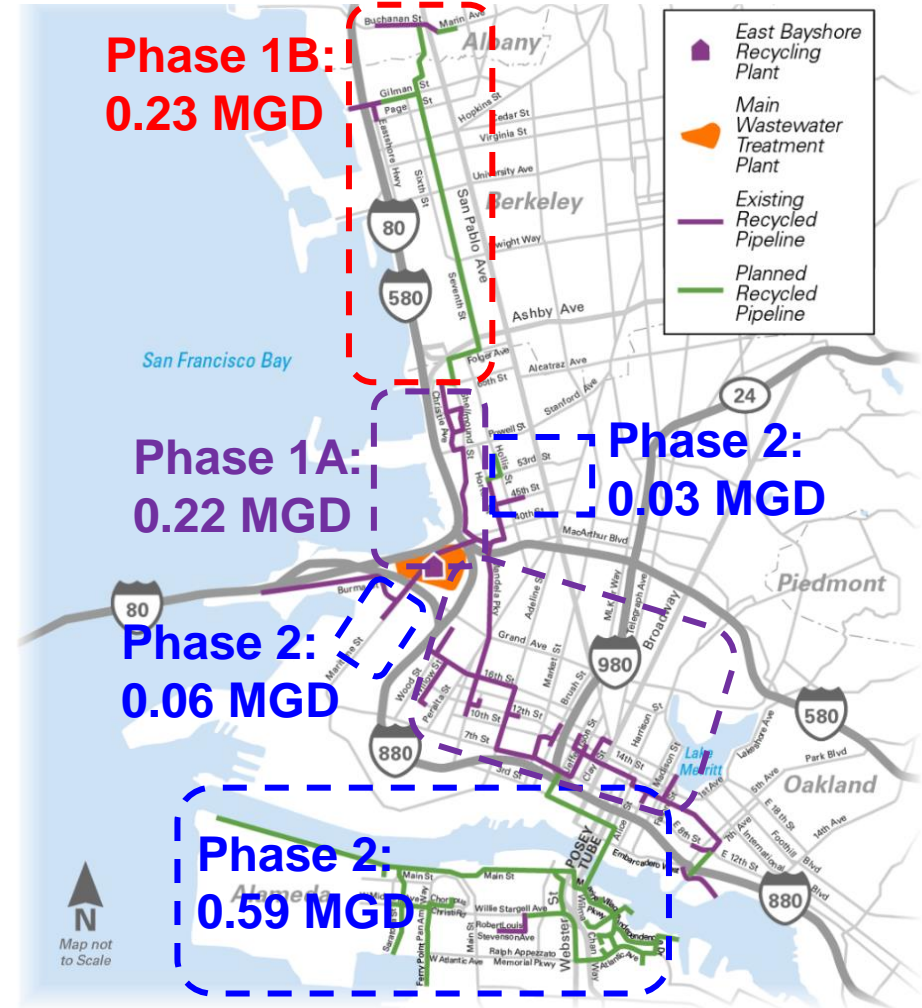
- Non-cost criteria: environmental and social objectives, complexity and risks

Criteria	Recommended Weighting Factor
Distribution of Benefits	15%
Environmental Challenges	10%
Chemical and Energy Use	10%
Wastewater Discharge	10%
Institutional	10%
Regulatory	15%
Design and Construction	10%
Long-Term Operational Viability	20%

- Cost criteria: capital costs, operations and maintenance costs, and relative unit costs

# Significant Changes to Non-Potable Reuse Irrigation Projects

- East Bayshore Recycled Water Project
  - Recycled water demands decreased significantly due to conservation and customer use changes
    - Original Phase 1B anticipated demand = 0.51 MGD
    - Updated Phase 1B demand = 0.23 MGD
    - Golden Gate Field closure reduced Phase 1B demands by 0.16 MGD
  - Project capital cost and unit cost have increased
    - Difficult construction conditions and contaminated soils
    - Phase 1B every year unit cost = \$16,100/AF
  - Start with the most cost-effective phase of expansion into Alameda, Emeryville, and Oakland with federal funding
    - Phase 2 every year unit cost = \$3,500/AF



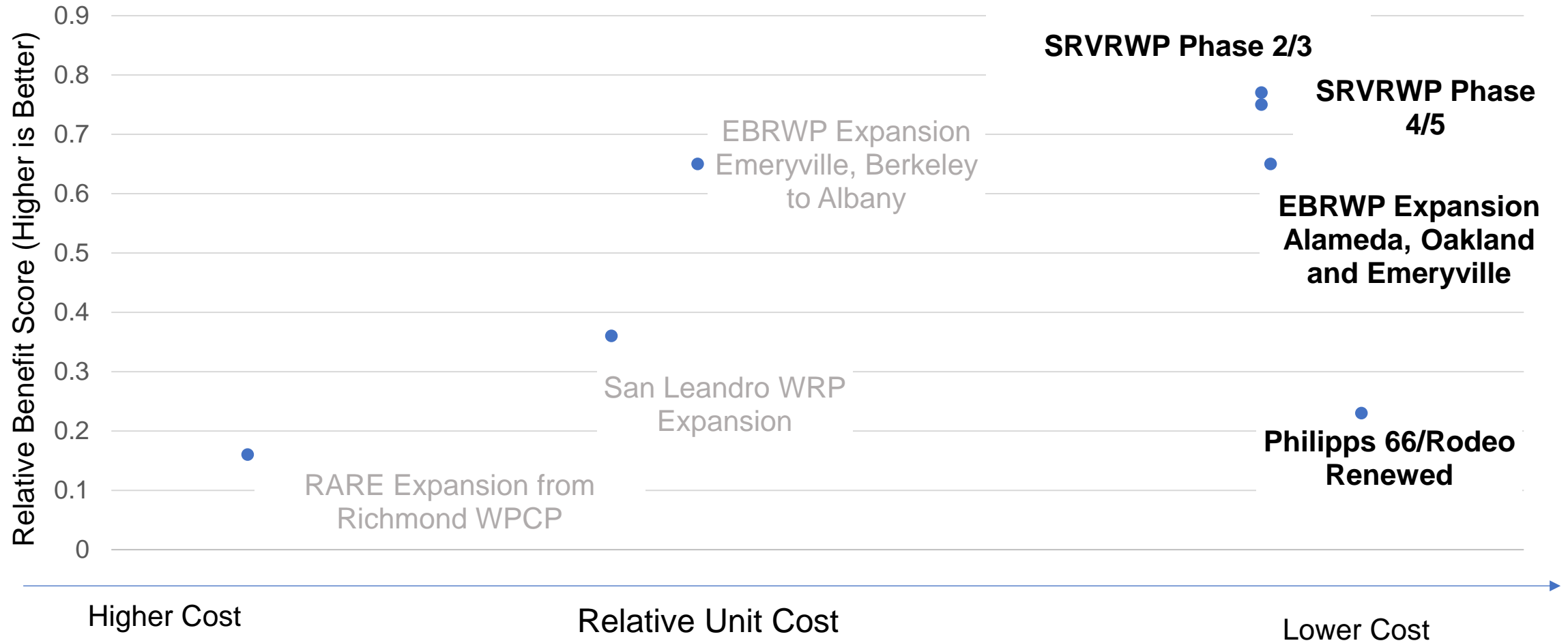
# Significant Changes to Non-Potable Reuse Irrigation Projects

- San Ramon Valley Recycled Water Project
  - Supplemental supply is needed to expand project
  - Central San open to developing long-term agreement to divert wastewater flows to DERWA
  - Additional flows will allow EBMUD to expand to future phases
  
- Satellite Projects
  - Slower than anticipated pace for customer development of projects
  - Consider removing these projects from recycled water goal but continue to support their efforts
    - Diablo Country Club = 0.2 MGD
    - Rossmoor = 0.5 MGD
    - Sequoyah Country Club = 0.1 MGD
    - University of California at Berkeley = 0.4 MGD

# Significant Changes to Non-Potable Reuse Industrial Projects

- **Chevron/RARE Water Project**
  - Insufficient wastewater supply from West County Wastewater District to meet demands
  - Expensive supply alternatives to route flows from other sources
  - Uncertainty in refinery industry water demands
  - Consider Chevron funding for any project expansion
- **Phillips 66/Rodeo Renewed Project**
  - Refinery looking to possibly develop on-site reuse project (phase 1)
  - After phase 1 is complete, EBMUD will coordinate with refinery to evaluate phase 2
  - Refinery demands have decreased and there is uncertainty in refinery industry in the future
  - Project approach should avoid stranded assets

# Non-Potable Reuse Projects Evaluation Results



EBRWP = East Bayshore Recycled Water Project  
 SRVRWP = San Ramon Valley Recycled Water Project  
 RARE = Richmond Advanced Recycled Expansion  
 WRP = Water Recycling Project  
 WPCP = Water Pollution Control Plant

# Non-Potable Reuse Projects Evaluation Results

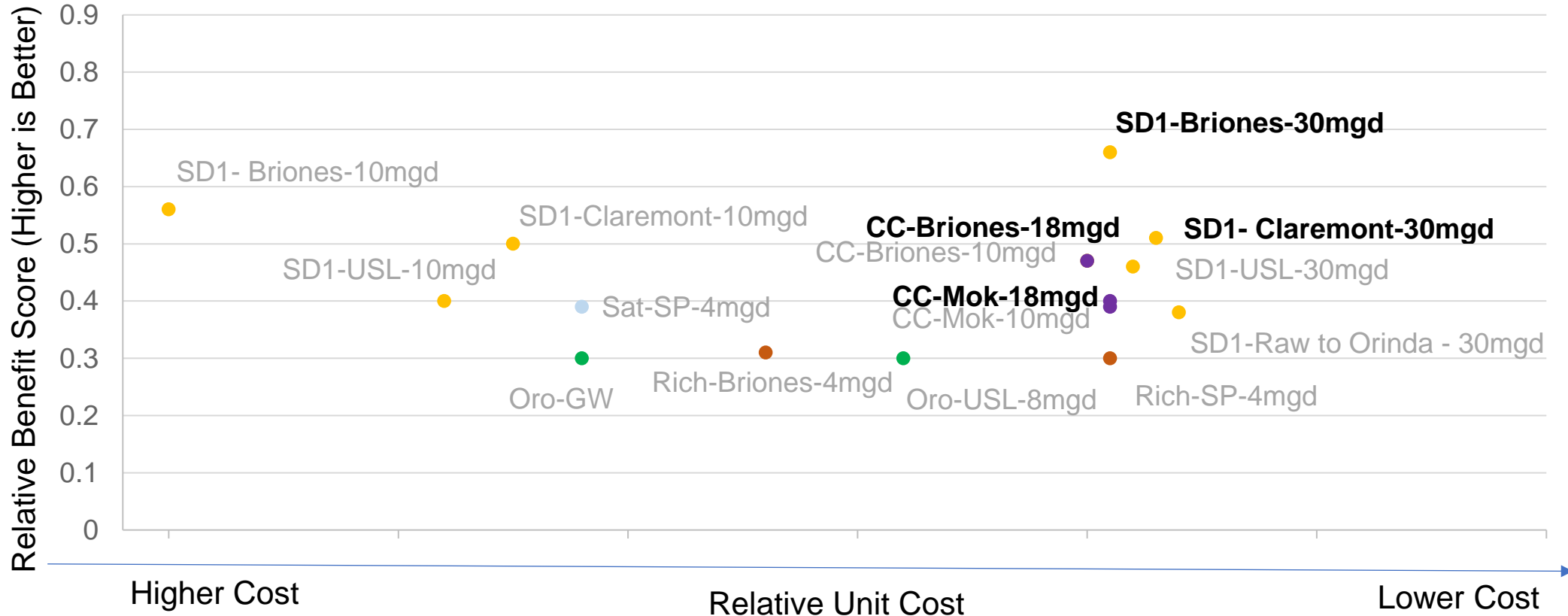
Non-Potable Reuse	Outside Funding Source	Future Demand (MGD)	Capital Cost (\$)	Every Year Unit Cost (\$/AF)	Dry Year Unit Cost (\$/AF)
East Bayshore Expansion to Oakland, Alameda, Emeryville	Federal funding authorized (existing \$25 M and seeking additional \$20 M)	0.7	\$34 M (after \$25M federal funding)	\$3,500	\$11,550
Phillips 66/Rodeo Renewed	Potential for refinery funding	2.8	\$41 M	\$1,500	\$5,000
SRVRWP Phases 2 & 3 – San Ramon & Danville		0.8	\$32 M	\$3,700	\$12,200
SRVRWP Phases 4/5 - Blackhawk		0.5	\$27 M	\$3,700	\$12,200
Total		4.8	\$134 M		

# Other Non-Potable Reuse Projects Included

Non-Potable Reuse	Outside Funding Source	Future Demand (MGD)	Capital Cost (\$)	Every Year Unit Cost (\$/AF)	Dry Year Unit Cost (\$/AF)
SRVRWP Future Infill		0.3	No District Capital Cost		
RARE (Chevron)	Refinery funding	0.5	No District Capital Cost		
Satellites (On-site)	Customer funding	1.2	No District Capital Cost		
Total		2.0			



# Purified Water Project Alternatives Evaluation Results



USL = Upper San Leandro Reservoir  
 Mok = Mokelumne Aqueduct  
 CC = Central Contra Costa Sanitary District  
 Oro = Oro Loma Sanitary District  
 Rich = Richmond  
 Sat = Satellite Plant at Pt Isabel  
 GW = Groundwater  
 SP = San Pablo Reservoir  
 Note: Production shown in Million Gallons per Day

Alternative abbreviations:

- Source water – Integration point – Production capacity (mgd)
- Example: SD1 – Briones – 30 = advanced treatment at SD1, supply conveyed to Briones Reservoir, 30 mgd production capacity

# Purified Water Projects Evaluation Results (Potential Alternatives for Further Evaluation)

Purified Water Project	Production (MGD)	Capital Cost (\$)	Every Year Unit Cost (\$/AF)	Dry Year Unit Cost (\$/AF)
Central San to Briones Reservoir (IPR - Reservoir Augmentation)	18	\$740 M	\$3,700	\$12,200
Central San to Mokelumne Aqueduct (DPR - Raw Water Augmentation)	18	\$655 M	\$3,600	\$11,900
SD-1 to Briones Reservoir (IPR - Reservoir Augmentation)	30	\$1,210 M	\$3,600	\$11,900
SD-1 to Claremont Center (DPR - Treated Water Augmentation)	30	\$990 M	\$3,500	\$11,600

# Changed Conditions

Program	Current RW Demand (MGD)	Previous Forecast of 2040 RW Demand (MGD)	Workshop #1 Draft Forecast of 2040 RW Demand (MGD)	Workshop #2 Updated Forecast of 2040 RW Demand (MGD)
East Bayshore	0.2	2.4	1.8	0.9
San Ramon Valley*	0.8	2.4	2.4	2.4
Chevron Refinery*	6.4	11	11	6.9
Phillips 66/Rodeo Renewed	0	3.7	1.4 to 2.8	1.4 to 2.8
San Leandro Facility	0	0.2	0	0
Satellite Projects	0	0.2	1.1	1.2
<b>Total – Non-Potable Reuse</b>	<b>7.4</b>	<b>20</b>	<b>Up to 19</b>	<b>Up to 14.2</b> <b>Up to 13</b> (excluding satellite projects)
Potential Range of Potable Reuse	0	0	8-30	18-30

\*Supplemental recycled water supply needed to meet recycled water demand.  
RW = Recycled Water

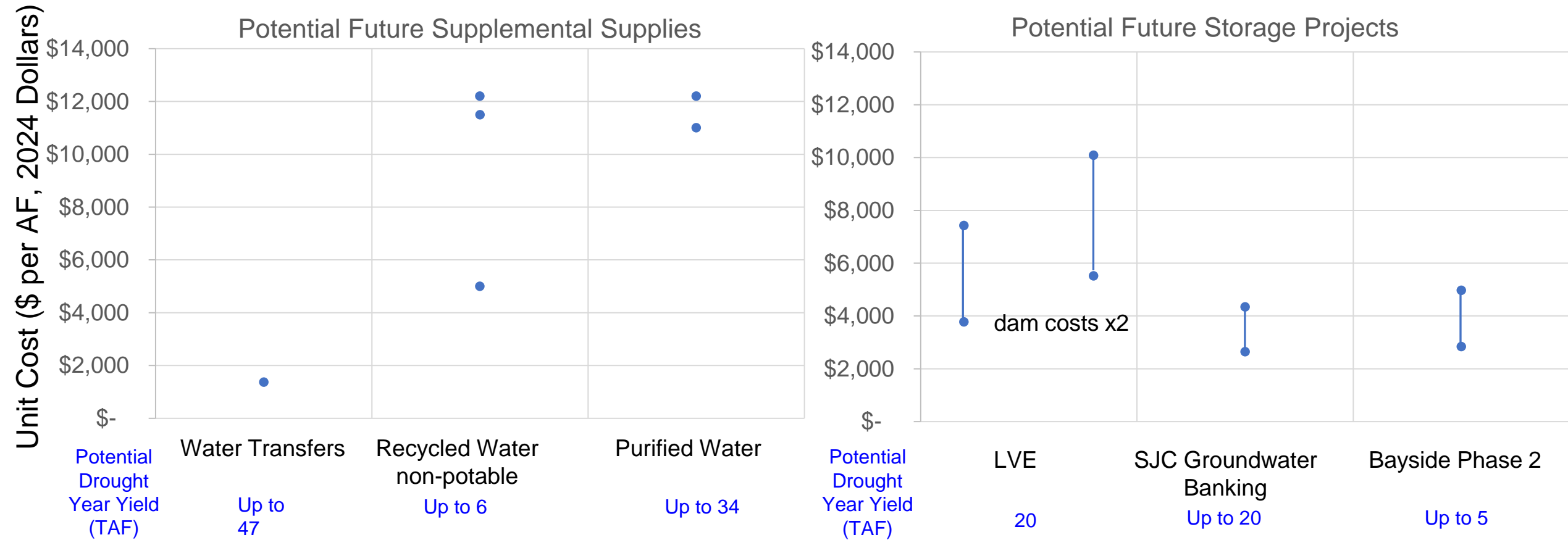
# Considerations and Challenges

- Due to conservation, declining wastewater flows, and refinery changes:
  - Existing recycled water deliveries have decreased to 7.4 MGD
  - Additional future non-potable reuse is projected at up to 5.6 MGD, excluding satellite projects, instead of 11 MGD
  - Challenging to achieve even the 5.6 MGD of additional non-potable reuse due to future uncertainties and changes
- Reduction in recycled water goal to less than 20 MGD is offset by increase in conservation, so the combined net reduction in demands remains approximately the same
- Purified water is a future opportunity but has significant challenges including high project capital cost (\$660 million to \$1.2 billion), complex permitting and operations, and need for extensive public outreach

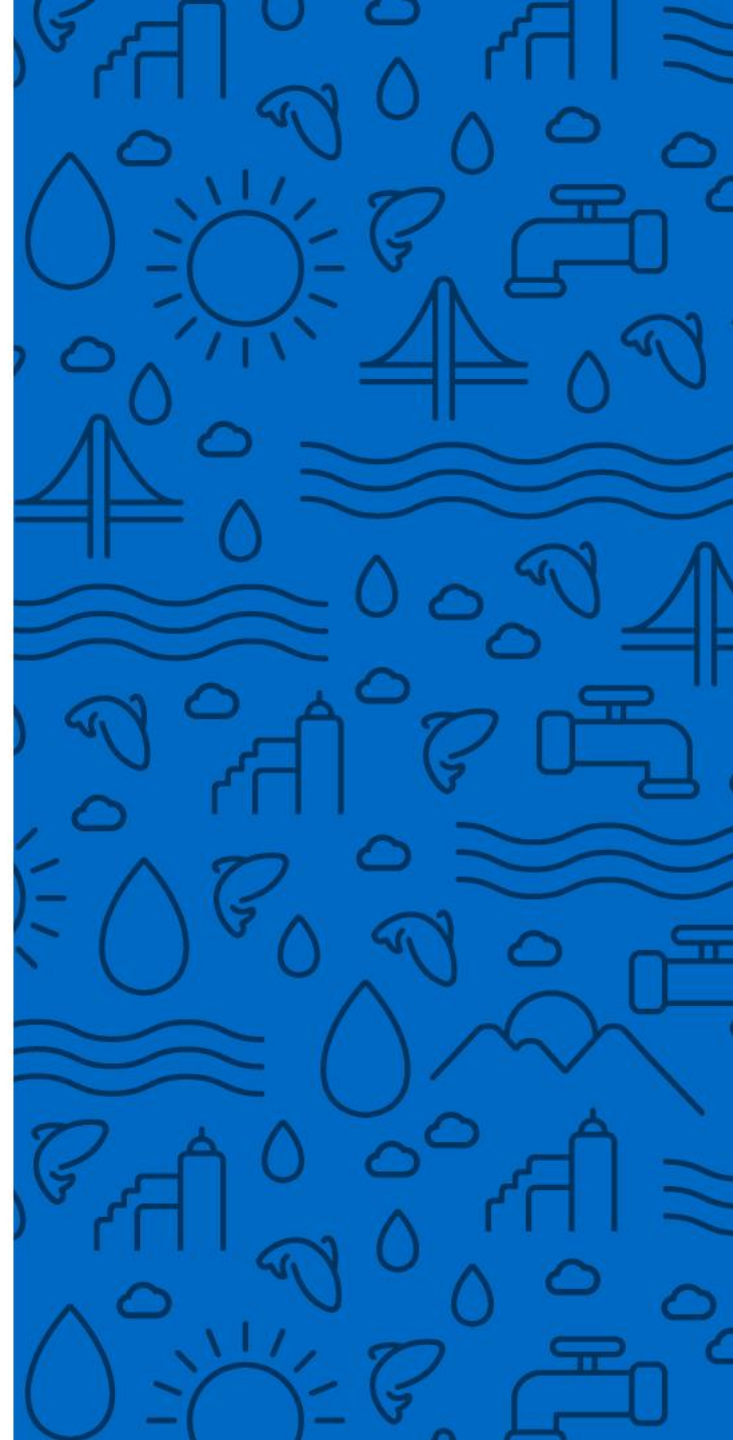
# Future Analyses

- Upcoming near-term studies:
  - Update need for water analysis to 2050 to reflect demand changes, availability of supplies, and climate change, to be completed by 2025
  - Update water supply management portfolio (recycled water, conservation, CVP availability, water transfers, groundwater, Los Vaqueros, etc.)
  - Compare recycling to other water supply portfolio elements
  - Update 2025 Urban Water Management Plan (UWMP) with recommendations
- Future studies:
  - 5-year UWMP updates
  - Comprehensive update of the Water Supply Management Program in 2032-2033 with updated need for water and supply options, depending on status of voluntary agreements and conditions of FERC relicensing

# Preliminary Water Supply Option Costs and Potential Yields (Dry Year Unit Costs)



# Recommendations and Next Steps



# Options and Considerations

- Option 1: Reduce recycled water goal to 13 MGD of non-potable reuse by 2050
  - Recycled water reduction offset by increase in water conservation savings
  - By 2033 through the comprehensive Water Supply Management Program Update, re-evaluate need for water and supply options, and determine when potable reuse is needed
  - Revise the goal in the future as needed
- Option 2 (Staff's Recommendation): Maintain recycled water goal of 20 MGD, extend to 2050
  - Will need to add potable reuse in the long-term to meet goal
  - By 2033 through the comprehensive Water Supply Management Program Update, re-evaluate need for water and supply options, and determine when potable reuse is needed
  - Revise the goal in the future as needed
- For Options 1 and 2, Develop and implement outreach and education plan in advance to support potential purified water in the future

## Next Steps

- Incorporate Board Feedback
- Finalize the Recycled Water Strategic Plan Update by December 2024
- Results and recommendations to be included in the 2025 Urban Water Management Plan

# Board and Public Comments



**FLOWING  
INTO  
THE  
FUTURE**