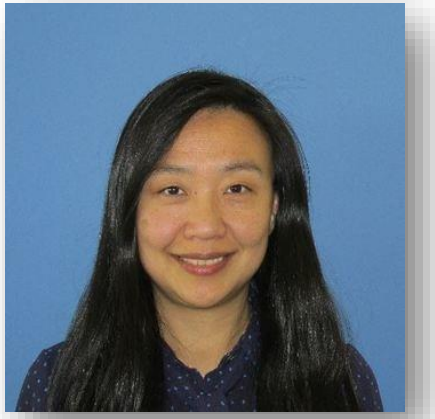
Recycled Water Strategic Plan Update Workshop

Board of Directors

March 26, 2024

Today's Speakers



Linda Hu
Manager *of* Water Supply Improvements

Florence Wedington
Supervisor *of* Water Recycling

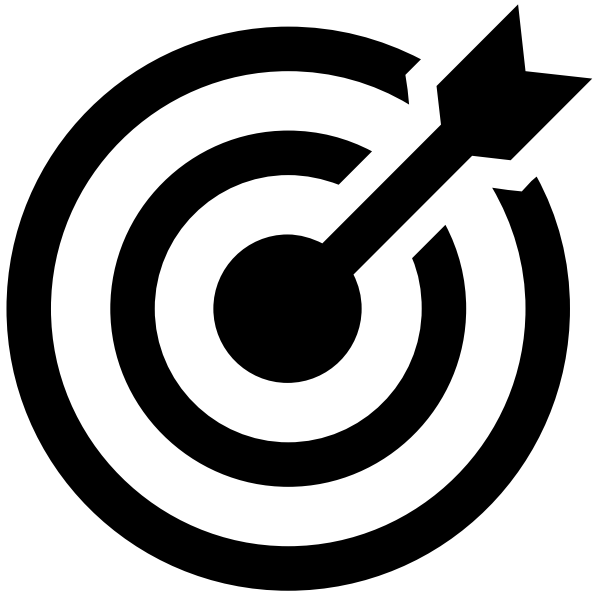
Reena Thomas
Associate Civil Engineer

Agenda

- Workshop goal and objective
- Background of recycled water goal
- Policy and regulatory impacts
- 2024 Recycled Water Strategic Plan update process
- Key project updates, challenges, and opportunities
- Changed conditions and considerations
- Next Steps

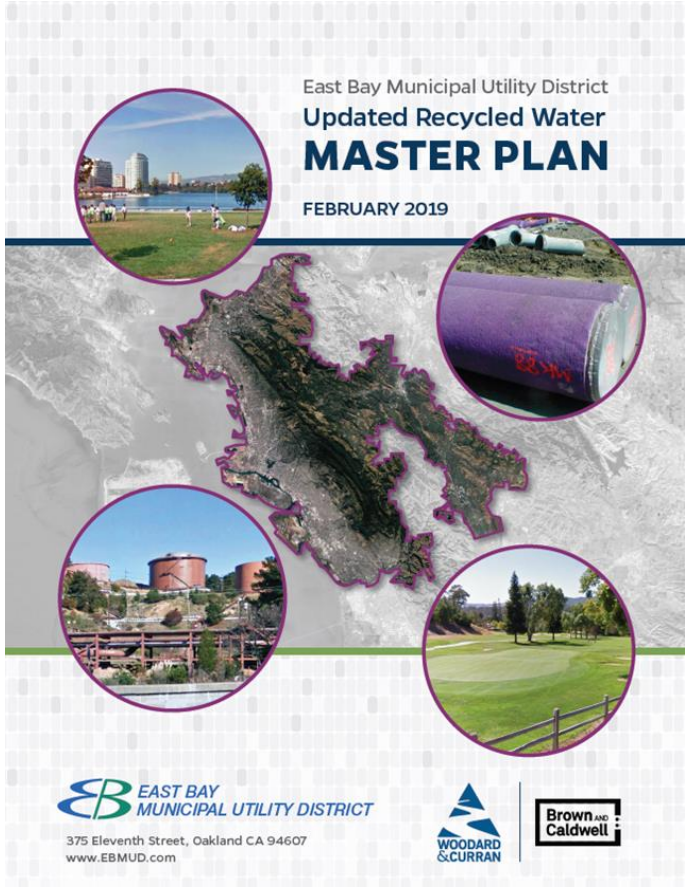
Workshop Goal and Objective

- Provide updates on the process and preliminary findings of the Recycled Water Strategic Plan Update
- Seek feedback from the Board on key elements to guide development of the Plan Update
- Brief the Board on final recommendations in September before completion of the Plan Update by end of 2024



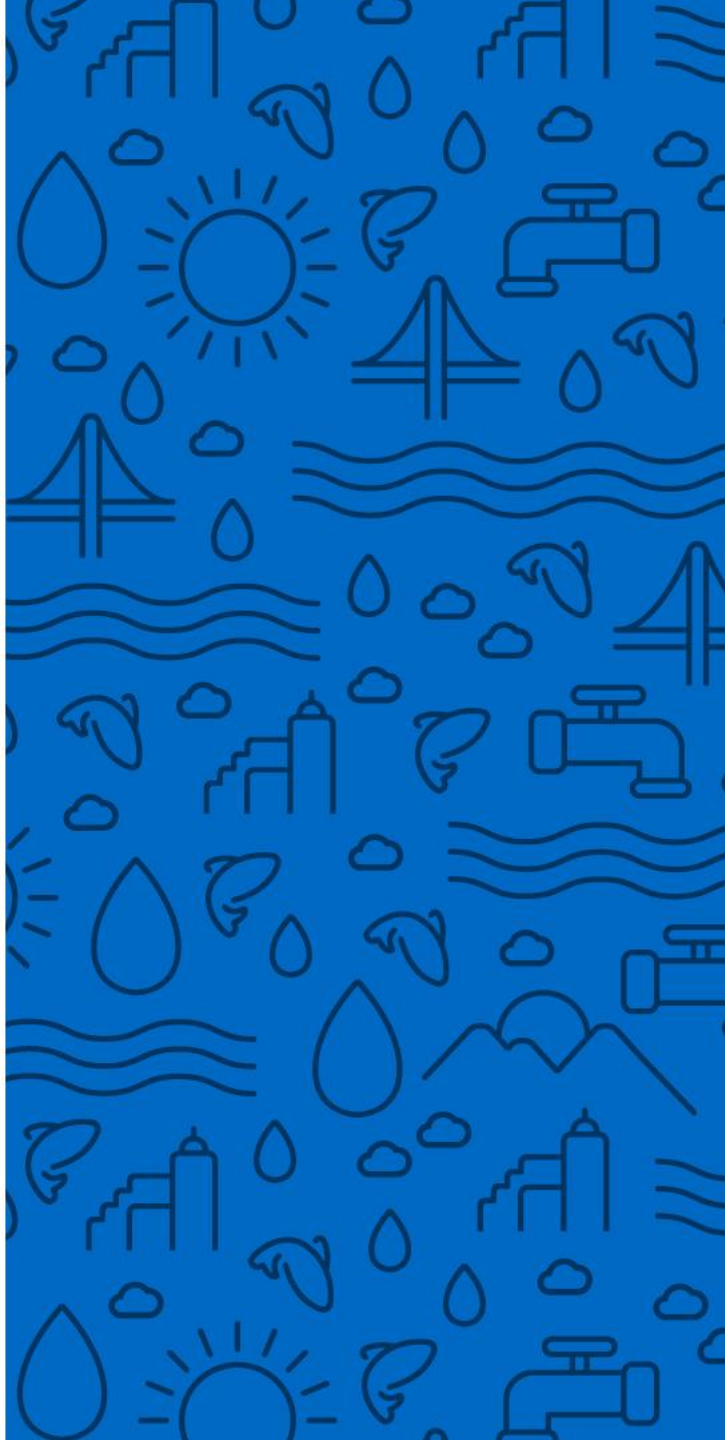
History of District Water Recycling Program and Goal

- 1971 – First use of recycled water at main wastewater treatment plant
- 1984 – First distribution of recycled water
- 1993 – Water Supply Management Program, water recycling goal of 14 million gallons per day (MGD) by 2020, Recycled Water Master Plan
- 2012 - Water Supply Management Program 2040, water recycling goal of 20 MGD by 2040
- 2019 – Recycled Water Master Plan Update, maintain water recycling goal of 20 MGD by 2040 with non-potable reuse, re-evaluate potable reuse in 5 years



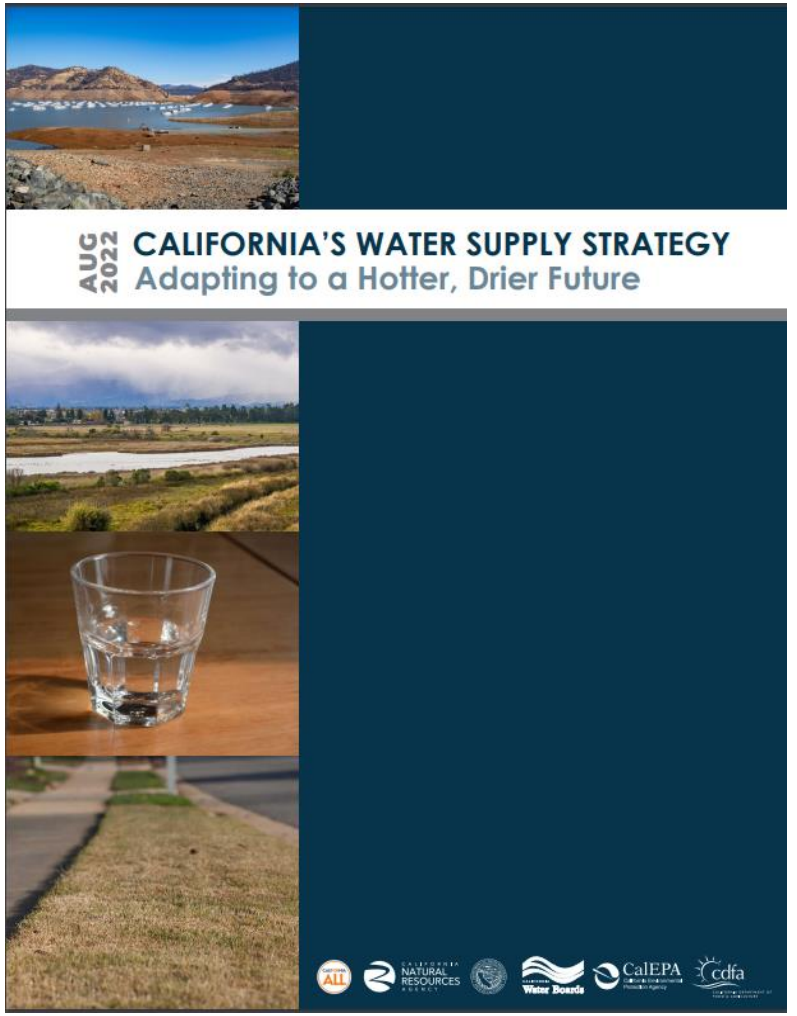
EBMUD, Updated Recycled Water Master Plan Report, 2019

Policy and Regulatory Impacts



California Water Policy

- California Water Supply Strategy, August 2022
- Develop new water supplies by investing in recycling and desalination technology
- Reuse at least 800,000 Acre-Feet per Year (AFY) by 2030
- Reuse at least 1.8 million AFY by 2040 (25% of state projected new water supplies)



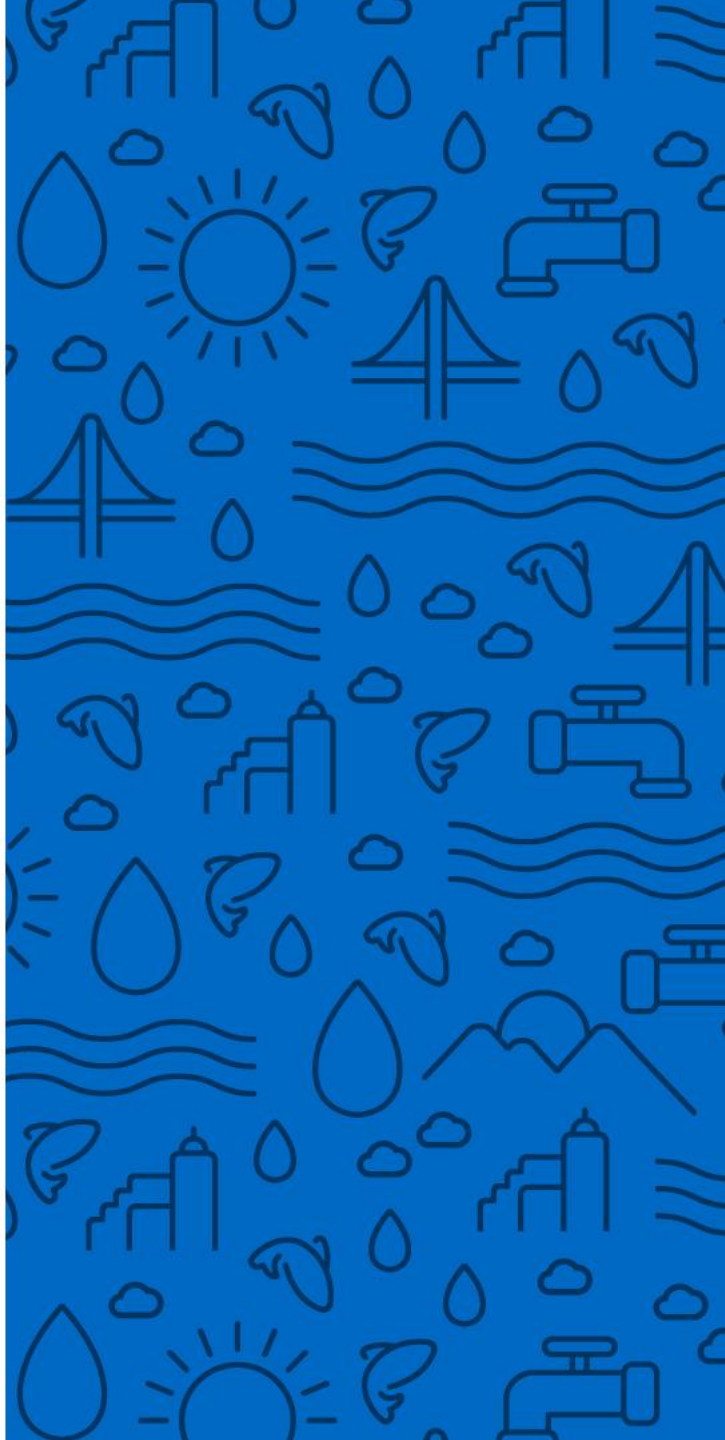
Source: SWRCB, 2022

Potable Reuse Regulations

- Indirect Potable Reuse (IPR)
  - Groundwater Augmentation approved June 2014
  - Reservoir Augmentation approved October 2018

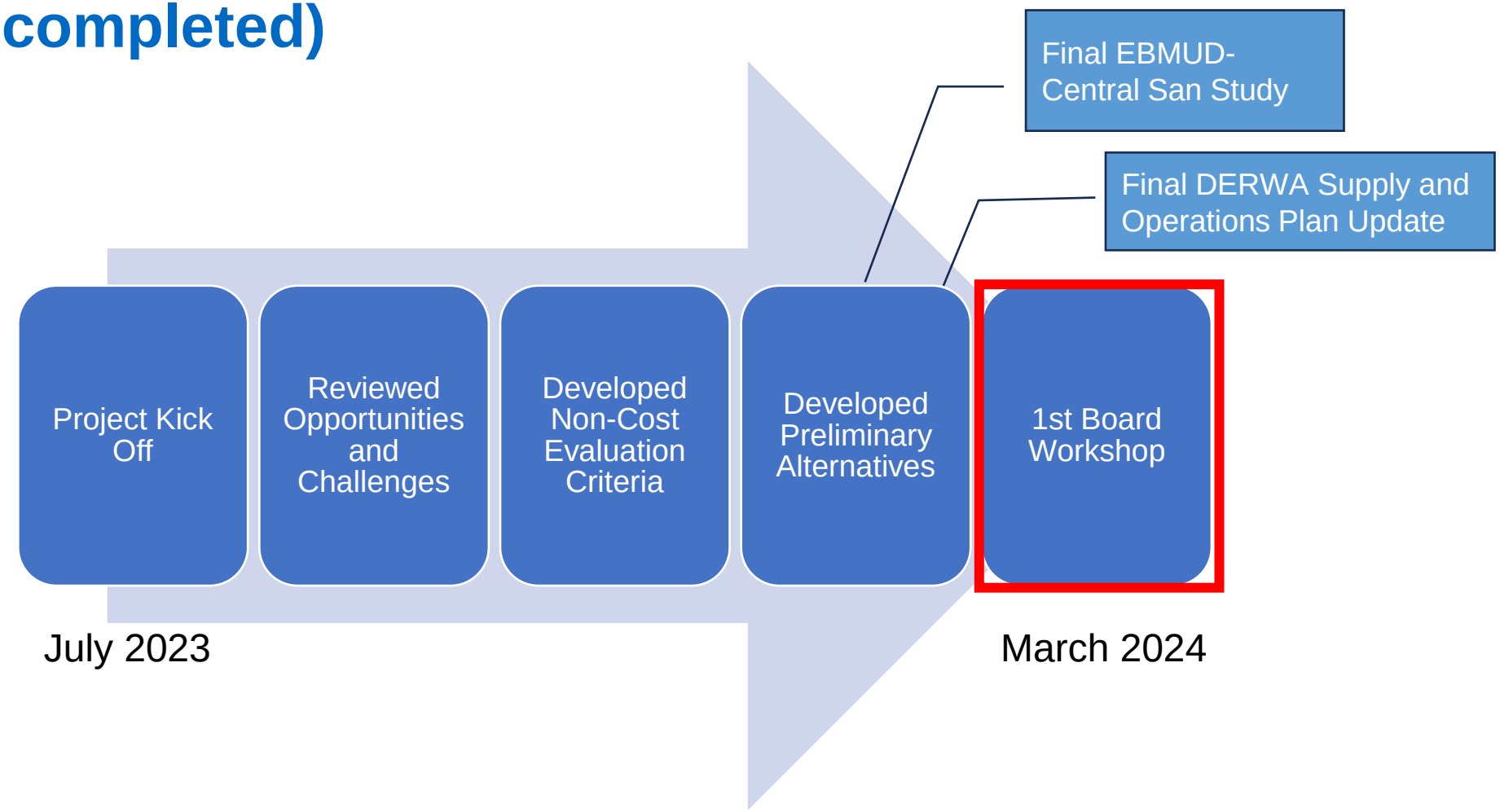
- Direct Potable Reuse (DPR)
  - Raw and Treated Water Augmentation approved December 2023

2024 Recycled Water Strategic Plan Update Process



2024 RW Strategic Plan Process

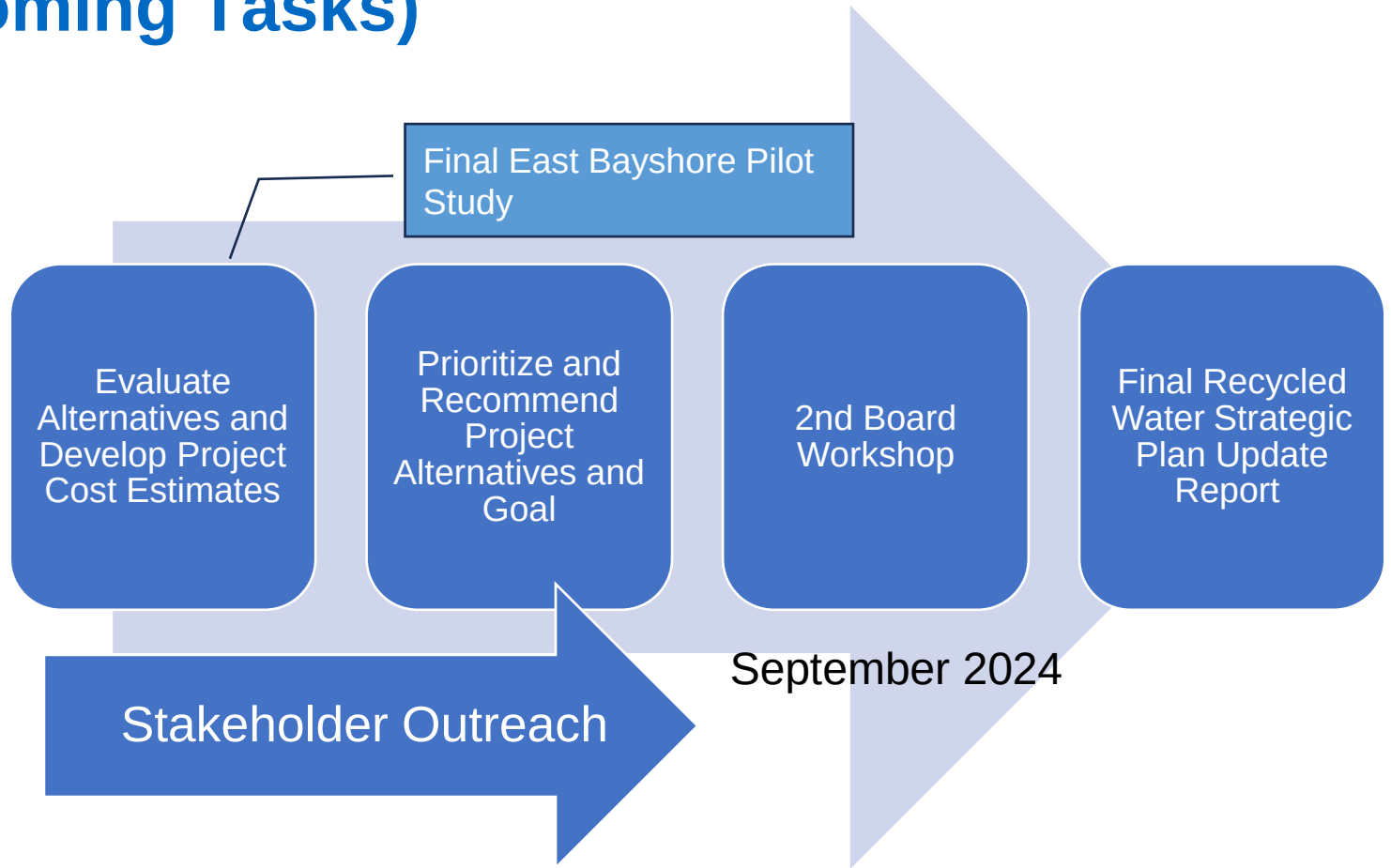
(Tasks completed)



DERWA: Dublin San Ramon Services District – EBMUD Recycled Water Authority

2024 RW Strategic Plan Process

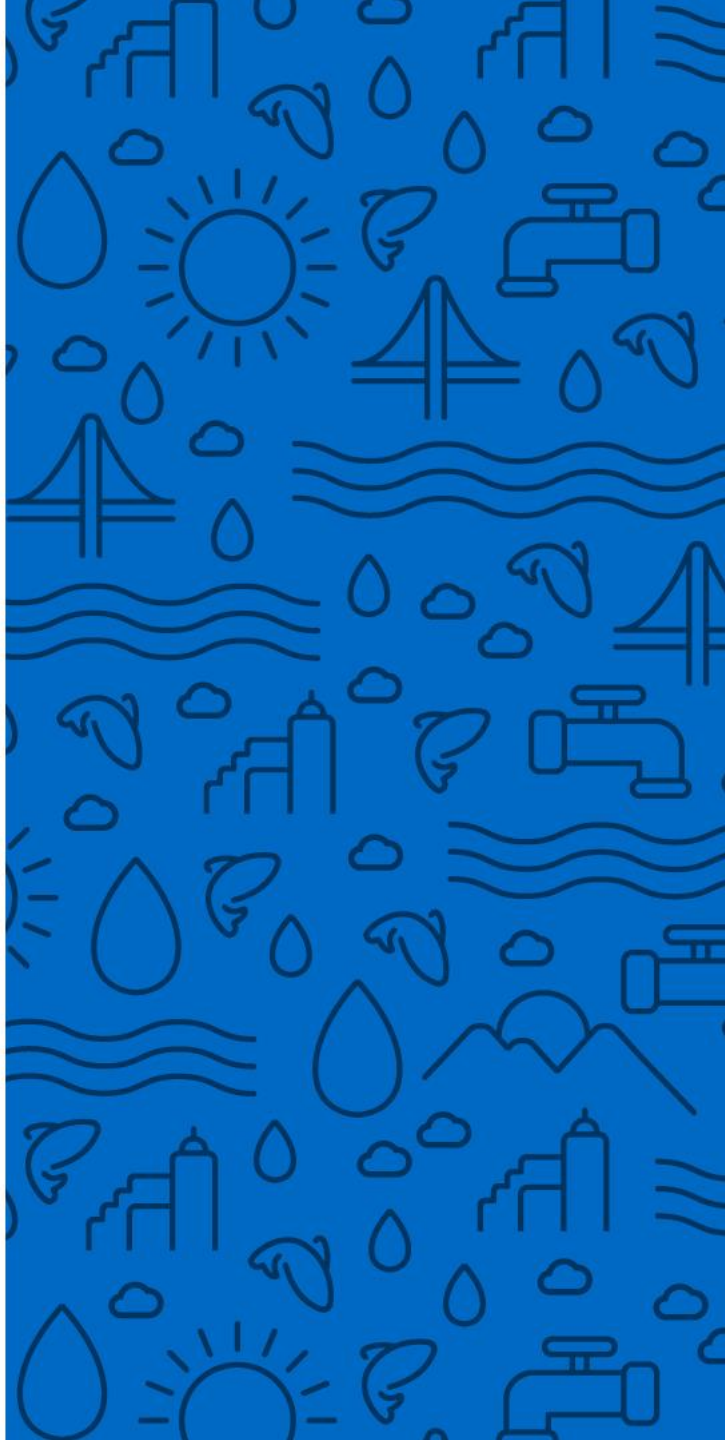
(Upcoming Tasks)



Areas of Board Feedback for Plan Update

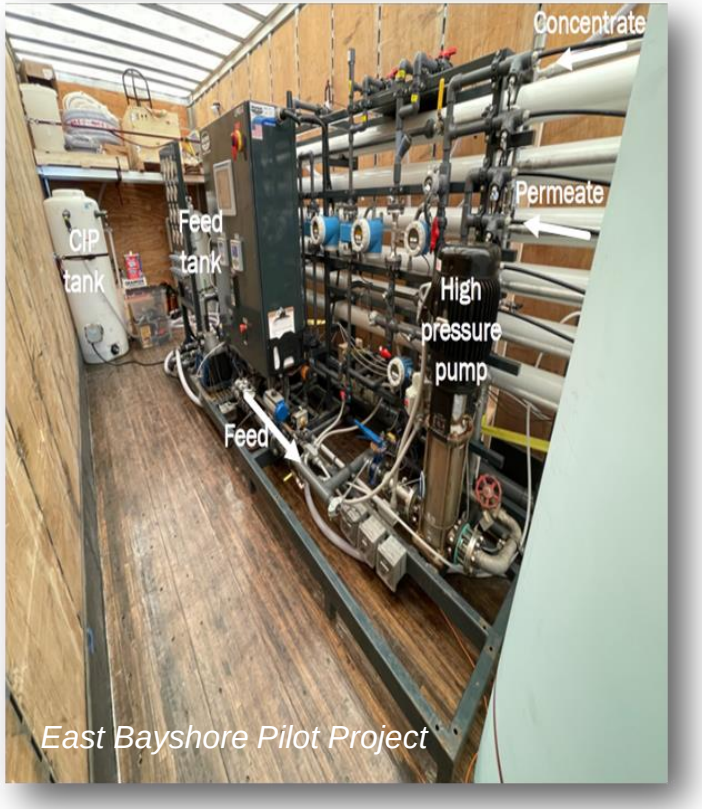
- Project evaluation criteria and weighting factor
- Potential changes to recycled water goal
- Level of interest in developing potable reuse
- Consideration of potable reuse in future recycled water goal

Other Reports in Progress



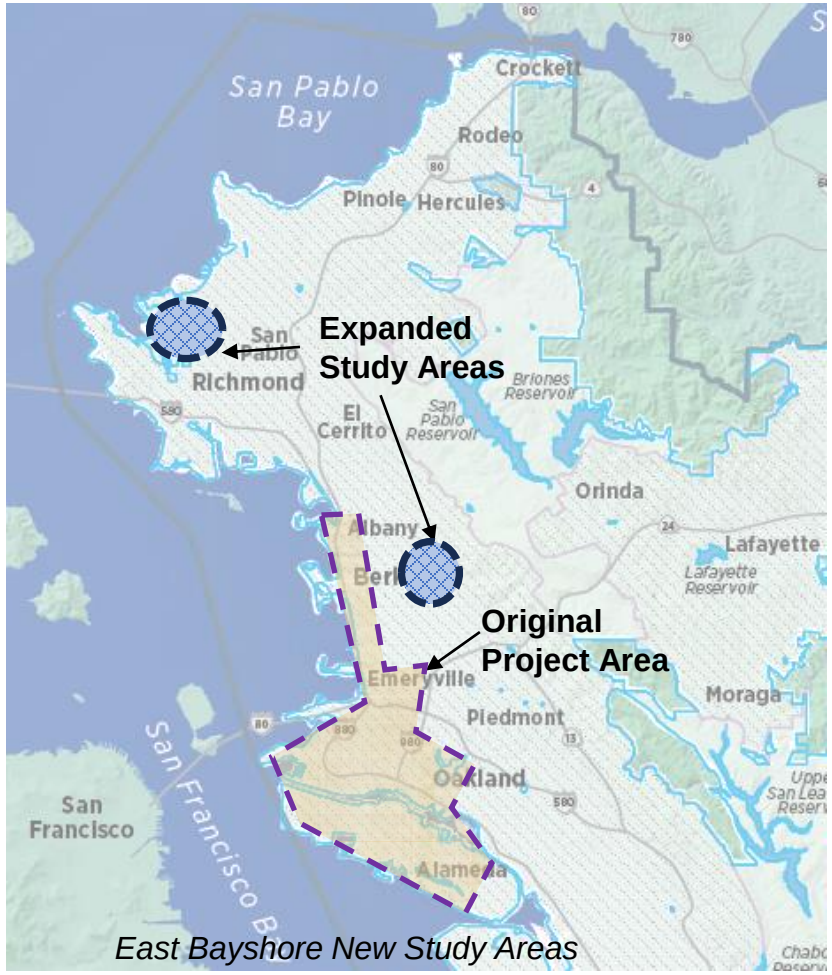
East Bayshore Water Quality Pilot

- Determine options to reduce total dissolved solids and ammonia to be able to serve cooling towers and improve landscape irrigation and pipeline corrosion
  - ➢ Side stream reverse osmosis
  - ➢ Alternative supply sources



East Bayshore Pilot Project

East Bayshore Recycled Water Project Hydraulic Model



East Bayshore New Study Areas

- Review system ability to serve customers outside of original project service area
- Update of pipeline alignments
- Update of existing and potential future demands

EBMUD-Central San Recycled Water Project Concept Evaluation Study

- Central San identified as a potential partner for regional recycled water opportunities
- 2022 MOU to prepare a Feasibility Evaluation
- Collaboration to document, evaluate and rank potential project concepts
- Presented study results to Planning Committee in December 2023, DERWA Board in February 2024, and Central San Board in March 2024

MOU: Memorandum of Understanding

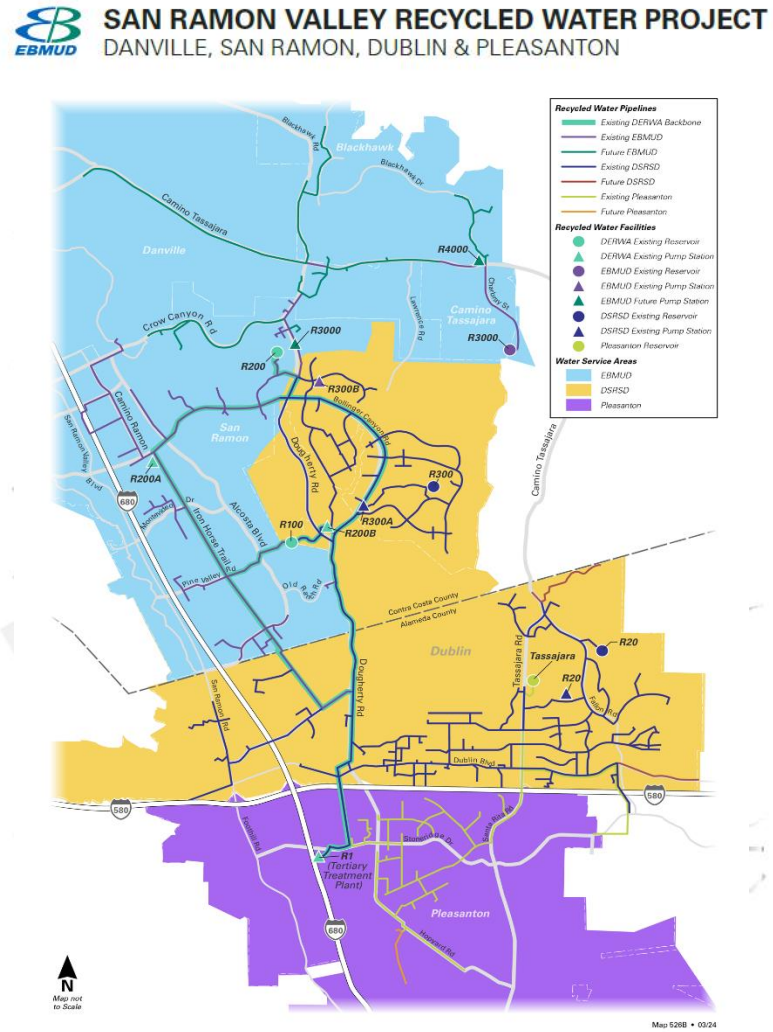
EBMUD-Central San Recycled Water Project Concept Evaluation Study (Continued)

Project concept	Average Capacity/Yield	Recommend for Further Consideration
Lamorinda Project	<1 MGD/1,000 AFY	No
Satellite Water Recycling Facilities	<0.5 MGD/250 AFY per customer	Continue to support customers
San Ramon Valley/DERWA Expansion	**Up to 3 MGD/2,200 AFY**	**Yes**
Refinery Recycled Water Exchange	Up to 13 MGD/14,600 AFY to refineries; Up to 6.5 MGD/7,300 AFY to EBMUD	No
Indirect Potable Reuse – Los Vaqueros Reservoir	Up to 17.9 MGD/20,000 AFY	No
Indirect Potable Reuse –Briones Reservoir	**Up to 17.9 MGD/20,000 AFY**	**Yes**
Direct Potable Reuse – Mokelumne Aqueducts	**Up to 17.9 MGD/20,000 AFY**	**Yes**
Direct Potable Reuse - Walnut Creek WTP	**Up to 17.9 MGD/20,000 AFY**	**Yes**

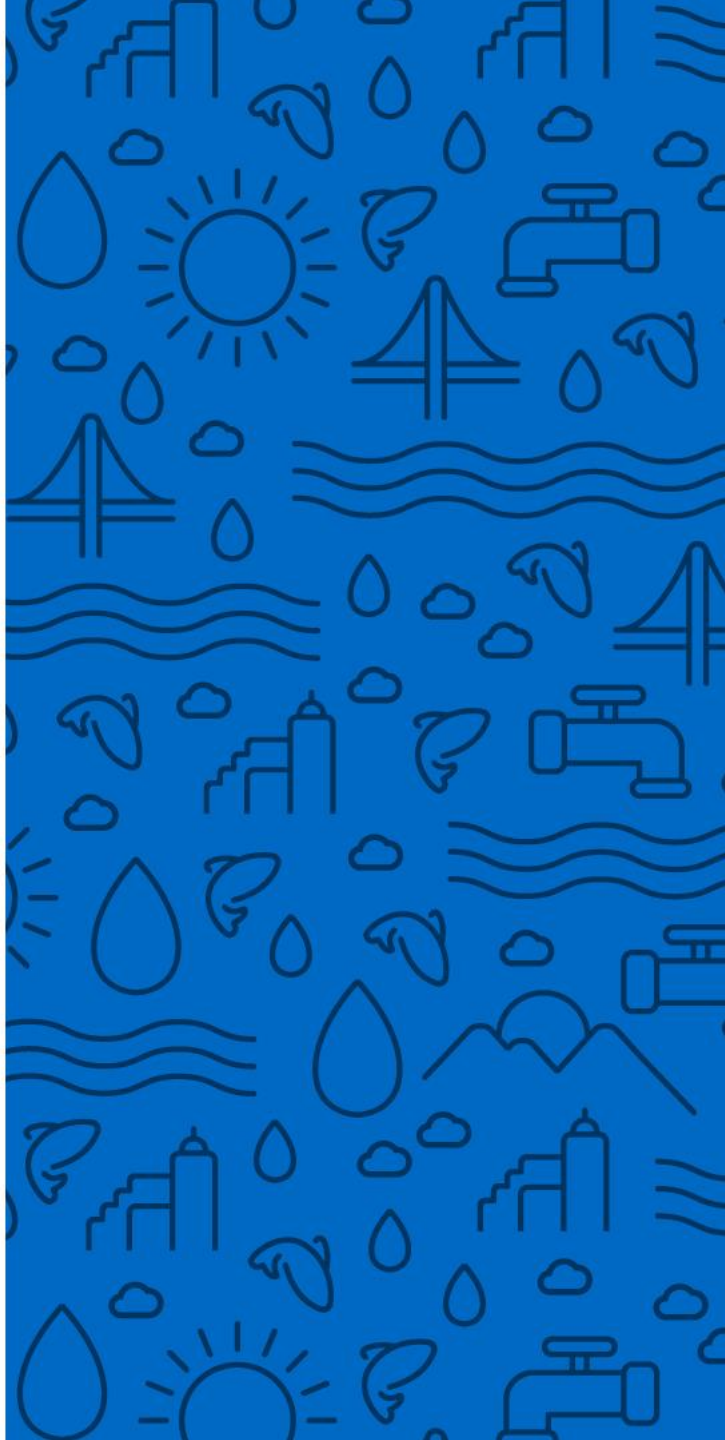
MGD = million gallons per day
AFY = acre-feet per year

DERWA Supply and Operations Plan Update

- Review treatment plant and distribution system operations
- Evaluate supplemental supply options
- Evaluate demand management options



Recycled Water Strategic Plan Evaluation Criteria of Projects



Recycled Water Strategic Plan Evaluation Criteria

- Non-Cost Criteria applicable to both non-potable and potable reuse projects
- Update of proposed Weighting Factors with coordination across District departments
- Review of Environmental and Social Objectives
- Review of Project Complexity and Risk

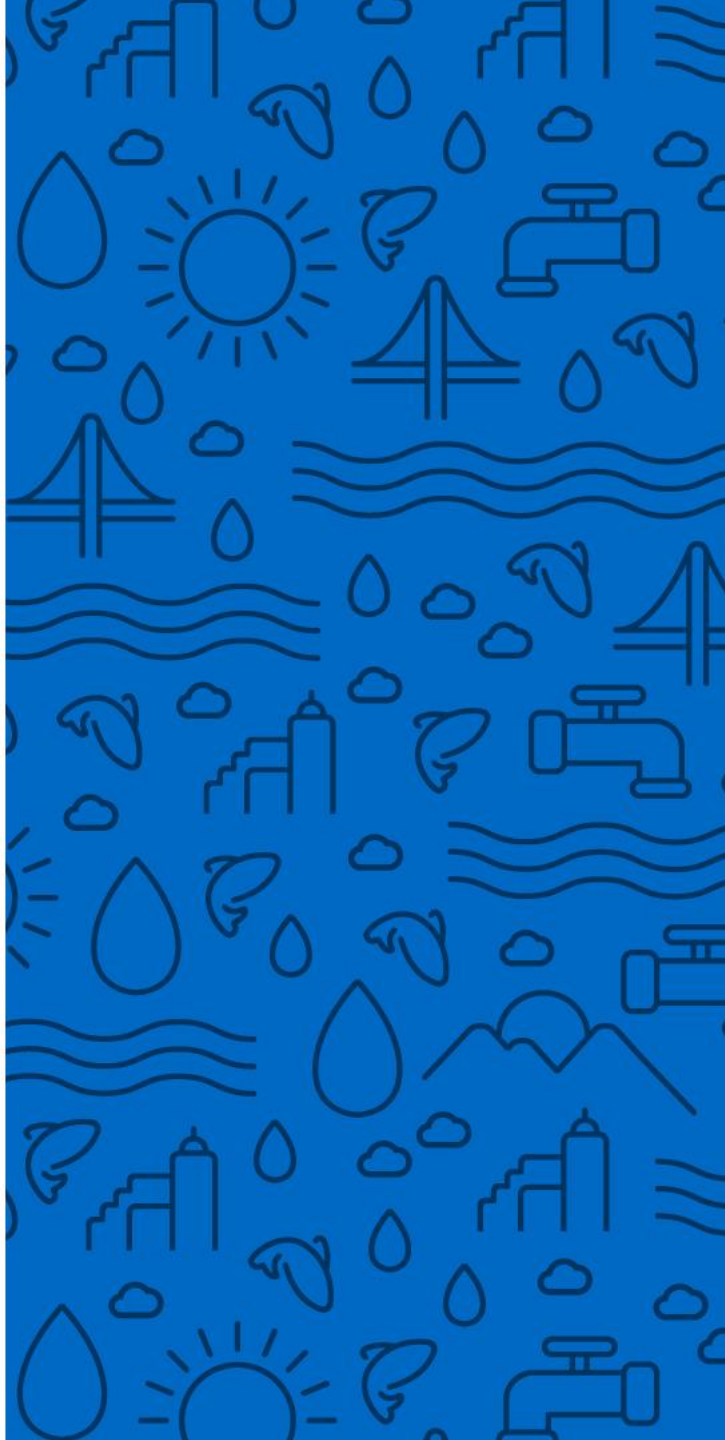
Environmental & Social Objectives Criteria

Criteria	Assessment Description	Recommended Weighting Factor
Distribution of Benefits	What regions/populations are served by this new supply and how are the benefits distributed? Evaluation of public perception issues and degree of outreach and education needed.	15%
Environmental Challenges	Evaluation of the potential environmental challenges during construction or operations of the alternative.	10%
Chemical and Energy Use	Chemical and energy usage during operations.	10%
Wastewater Discharge	Assessment of reduced nutrient discharges.	10%

Complexity & Risk Criteria

Criteria	Assessment Description	Recommended Weighting Factor
Institutional	Evaluation of the time, challenges and requirements to implement the project in coordination with external partners.	10%
Regulatory	Assessment of the time, challenges and requirements to implement the project from a regulatory permitting perspective prior to construction and ongoing as part of operations.	15%
Design and Construction	Evaluation of the time, challenges and requirements to design and construct the project.	10%
Long-Term Operational Viability	The complexity of the alternative and how challenging it will be for District staff to manage any new processes or operations, maintenance, and staffing. Assessment of long-term flexibility of investments and potential of stranded assets.	20%

Key Project Updates



Projects in the Previous 20 MGD Goal

- 5 non-potable projects
- Production capacity ~ 9 MGD
- $280M invested to date
- Future projects to provide additional 11 MGD non-potable water ($343M, 2019 dollars)
- $25M federal funding authorized
  - $4.2M appropriated in FY23
  - $2.525M appropriated in FY24

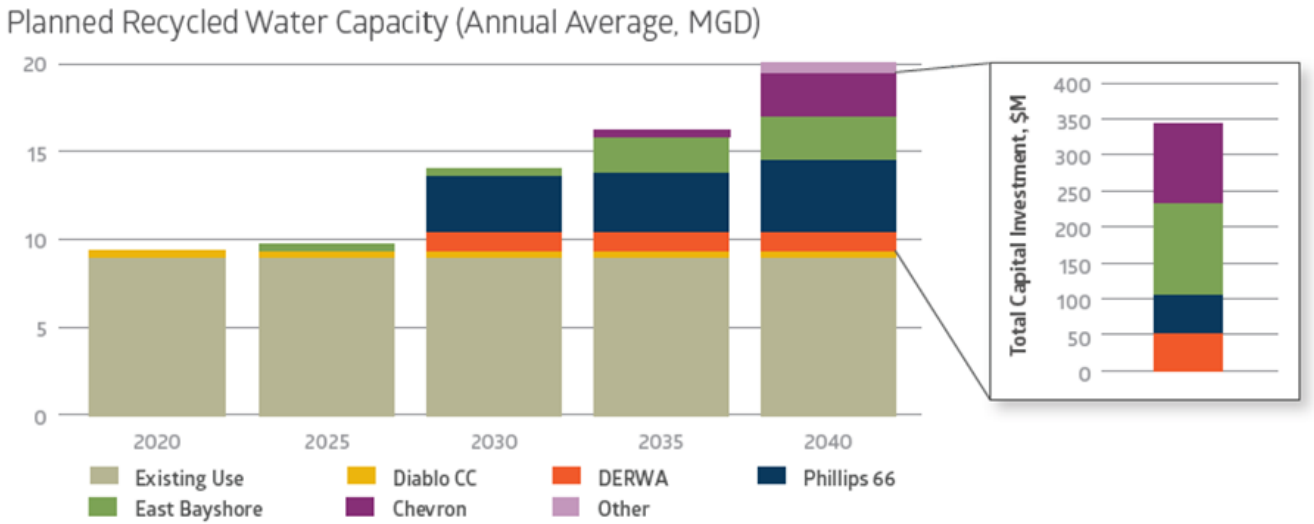


Figure from 2019 Recycled Water Master Plan Update

East Bayshore

- Supply Source: main WWTP
- Current Phase 1A demand: 0.2 MGD to parts of Oakland and Emeryville
- Original planned build-out at 2040: 2.4 MGD
- Updated planned build-out: 1.8 MGD
  - Reduced customer demands
  - Water quality challenges
- Future expansion to Alameda and Albany
- Further expansion beyond project service area is needed to meet planned goal

WWTP: Wastewater Treatment Plant

Chevron Refinery

- Supply Source: WCW
- Current capacity: 7.5 MGD, RARE and North Richmond
- Current 2023 demand: 5.5 MGD due to refinery cooling tower issues
- Original planned build-out at 2040: 11 MGD
- Updated planned build-out: Up to 11 MGD
- Build-out dependent on available wastewater effluent of acceptable water quality
  - Chevron's WWTP effluent
  - EBMUD North Interceptor diversion
  - Richmond WWTP effluent less suitable
- Refinery industry change and uncertainty

RARE Facilities, Chevron Richmond, CA

WCW: West County Wastewater
RARE: Richmond Advanced Recycled Expansion
WWTP: Wastewater Treatment Plant

Richmond Wastewater Concerns

- Aging sewer system and treatment facilities
- High inflow and infiltration (wet weather permitting issues)
- Effluent water quality currently not suitable for recycled water
  - ➢ High salinity
  - ➢ High ammonia

Constituent	Richmond WWTP	RARE Requirement
Salinity measured as Conductivity	3400 µmhos/cm	900 µmhos/cm
Ammonia	25-35 mg/l	1 mg/l

- Cost of additional treatment and conveyance approximately $110M (2017 dollars)
- Explore feasibility of using Chevron's refinery effluent or EBMUD North Interceptor diversion as supplemental supplies

Source: Richmond WWTP Master Plan, 2016

WWTP: Wastewater Treatment Plant
RARE: Richmond Advanced Recycled Expansion

San Ramon Valley Recycled Water Program

- Supply Source: DSRSD WWTP/DERWA
- Current EBMUD Phases 1 & 2 demand: 0.8 MGD to parts of San Ramon
- Original planned build-out at 2040: 2.4 MGD (EBMUD share)
- Updated planned build-out: 2.4 MGD
- Wastewater supply shortage
- Connection moratorium
- Future expansion to Danville and Blackhawk

DERWA Recycled Water Treatment Facilities, Dublin, CA

San Leandro Water Recycling Facility

- Supply Source: San Leandro WWTP
- Current recycled water demand: 0 MGD
- Original planned build-out at 2040: 0.2 MGD
- Updated planned build out: 0.05 MGD
- Non-operational since 2015
  - Alternate supply sources
- Aging facilities require pump station rehab
- Difficult to operate at low demand
- City of San Leandro coordination

San Leandro Water Recycling Facility, San Leandro, CA

San Leandro Recycled Water Pipeline to Chuck Corica Golf Course, Alameda, CA ,

Planned Phillips 66 Refinery Project

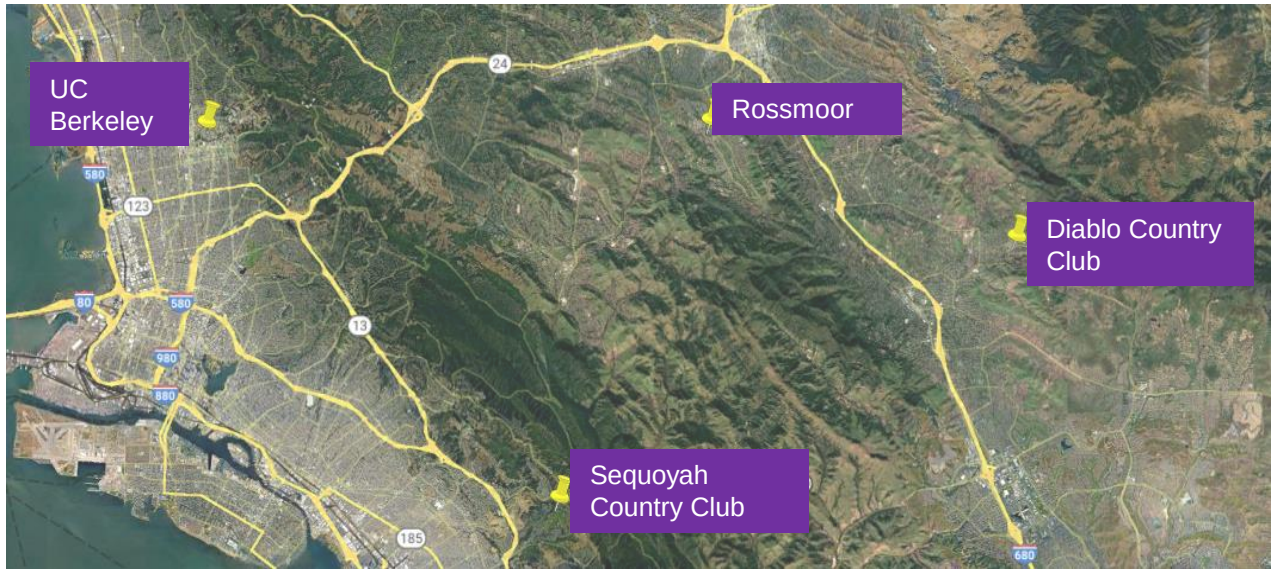
- Supply Source: Pinole Hercules WPCP and Rodeo WPCP
- Original planned build-out at 2040: 3.7 MGD
- Updated planned build-out: 1.4 – 2.8 MGD
- Rodeo Renewed renewable diesel
  - Reduced refinery water demand and reduced wastewater flows
  - Potential on-site reuse of refinery effluent and other water conservation measures
  - Project scale be confirmed after year one of refinery renewable diesel operations
- Refinery industry change and uncertainty

Source: Rodeo Renewed Final Environmental Impact Report, Contra Costa County

WPCP: Water Pollution Control Plant

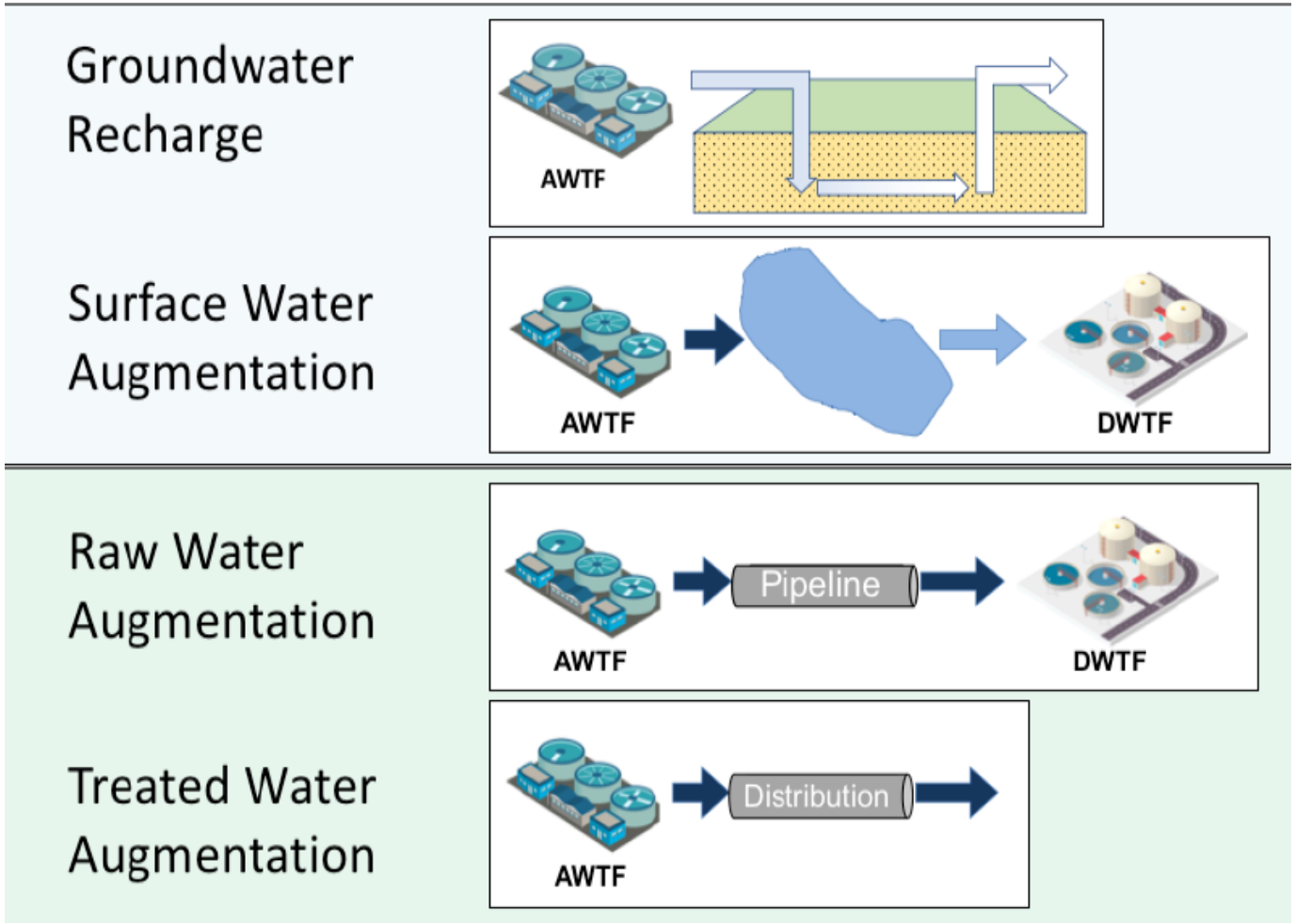
Planned Satellite Projects

- Supply sources:
  - Central San Sewer Collection System
  - City of Oakland Sewer Collection System
  - UC Berkeley Sewer Collection
- Planned projects:
  - Diablo Country Club: 0.16 MGD
  - Sequoyah: 0.1 MGD
- New potential projects:
  - Rossmoor: 0.5 MGD
  - UC Berkeley: 0.4 MGD
- Assume customer self-financing and wastewater supply availability



Proposed Satellite Project Facilities,

Potable Reuse Project Options



- Injection Wells
- Terminal Reservoirs
- Los Vaqueros Reservoir
- Mokelumne Aqueducts
- District WTPs
- Claremont Center
- Wildcat Aqueduct
- Drinking Water Reservoirs

AWTF: Advanced Water Treatment Facility
DWTF: Drinking Water Treatment Facility
WTP: Water Treatment Plant

Potable Reuse Challenges

- While potable reuse presents opportunities, there are some significant challenges to address, including:
  - High project cost
  - Potable reuse projects are designed to operate year-round, but the potential need for this additional water supply is primarily during droughts
  - Operator certification and complex operations requirements
  - Strict regulations and complex permitting
  - Extensive public education and outreach

Public Education for Purified Water Projects

- Statewide initiative to build public trust in purified water produced by potable reuse projects
- Proactive public outreach increases acceptance
- Key statewide messages:
  - Water is too valuable to use just once
  - Purified water uses proven technologies and is safe and sustainable
  - Purified water provides a drought resilient local water supply in the face of weather variability and climate change

Public Outreach Efforts

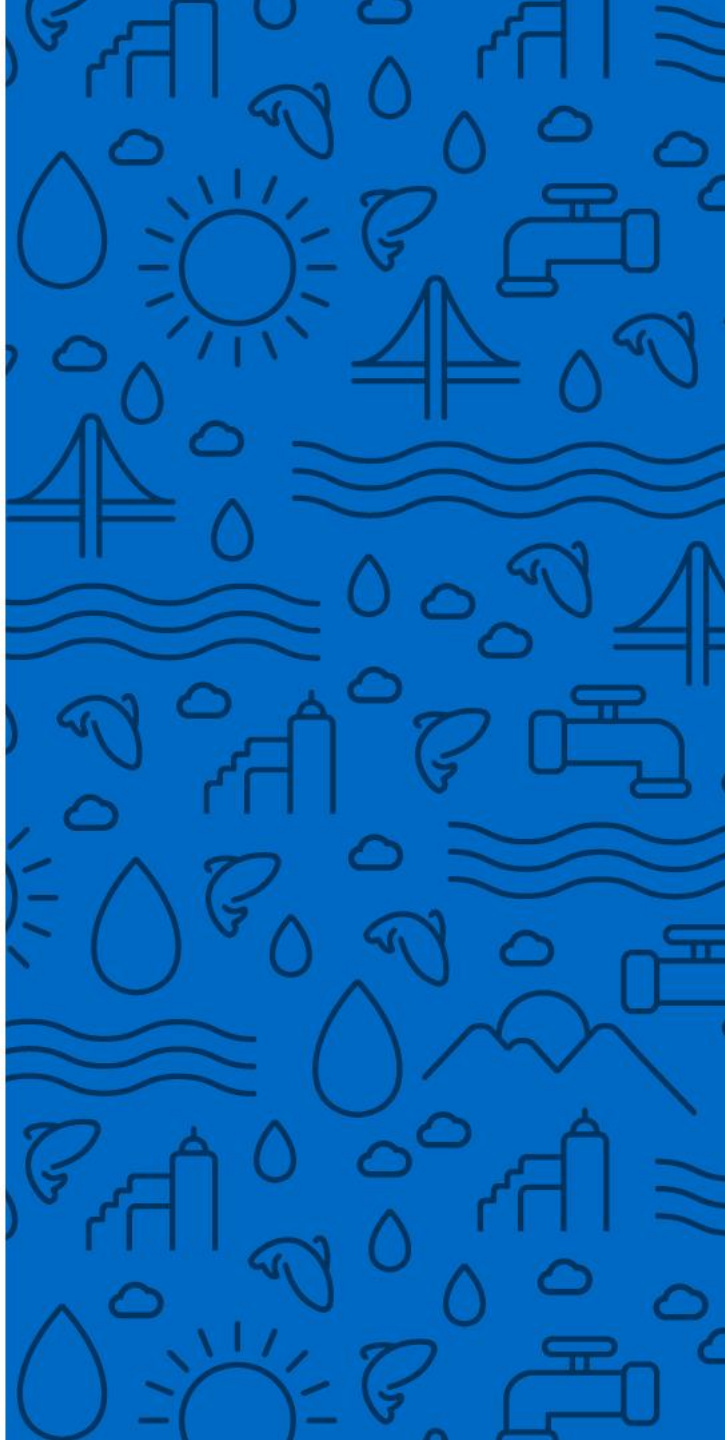
Ongoing

- Coordination with stakeholders
  - WWTPs
  - Cities
  - Key customers of projects
- Non-Governmental Organizations

Post Strategic Plan

- Coordination with stakeholders
- Range of effort depends on type of projects recommended (non-potable reuse vs. potable reuse)

Changed Conditions and Considerations



Challenges and Changes in Current Program

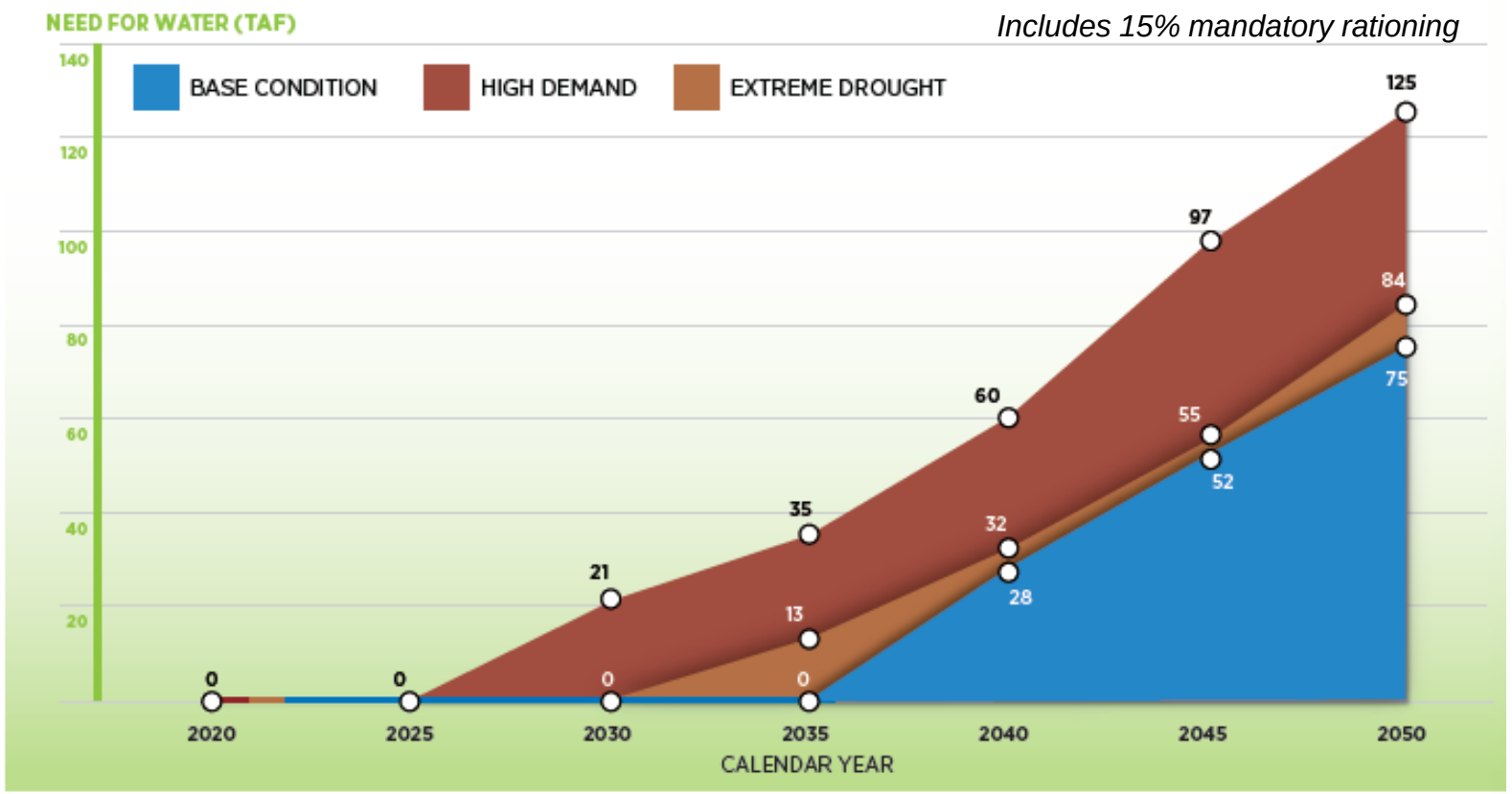
- Decreased wastewater flows
- Changing wastewater quality
- Reduced recycled water demands and increased conservation
- Refinery industry change and uncertainty

Summary of Changed Conditions in Current Program

Program	Current RW Demand (MGD)	Previous Forecast of 2040 RW Demand (MGD)	Updated Draft Forecast of 2040 RW Demand (MGD)
East Bayshore	0.2	2.4	1.8
San Ramon Valley*	0.8	2.4	2.4
Chevron Refinery*	Up to 7.5	11	11
Phillips 66 Refinery	0	3.7	1.4 to 2.8
San Leandro Facility	0	0.2	0
Satellite Projects	0	0.2	1.1
Total – Non-Potable Reuse	**Up to 8.5**	**20**	**Up to 19**
Potential Range of Potable Reuse	0	0	8-30

*Supplemental recycled water supply needed to meet recycled water demand.

EBMUD Need for Water in Third Year of Drought



From EBMUD 2020 Urban Water Management Plan (UWMP)

- Previous need for water analysis from 2020 UWMP assumed a level of projected demand increase
- Actual demand is lower than previously projected
- Re-evaluate the amount of supplemental supply needed: water recycling, water transfers, and regional projects

CVP: Central Valley Project
TAF: thousand acre-feet

Future Analysis

- Mid-cycle demand update to be completed by summer 2024
- Update need for water analysis to reflect demand changes, availability of Mokelumne supply, and climate change, to be completed by mid 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, including cost and revenue impacts
- Update Urban Water Management Plan by 2026 with recommendations

Drivers Impacting Need for Water

Drivers increasing need for water

- Climate change (more extremes)
- Central Valley Project (CVP) water less reliable
- Water Quality Control Plan (regulatory requirements)

Drivers decreasing need for water

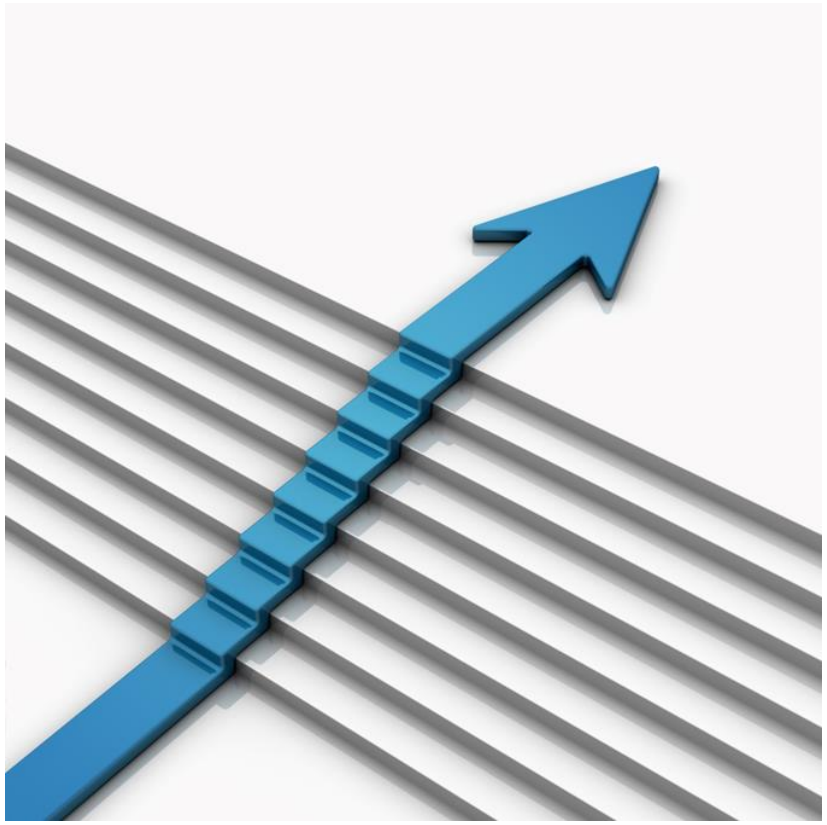
- Lower demand (more conservation)
- Changing industrial demands
- Less growth in Amador and Calaveras counties

Request for Initial Board Feedback

- What is the level of interest in developing potable reuse and including it in the future recycled water goal?
- Consider changes to the recycled water goal
  - Stay with non-potable reuse and reduce the goal consistent with updated future projections, or
  - Add in a future component of potable reuse
- Consider developing tiers of recycled water projects (example)
  - Tier 1: First develop 12 MGD of non-potable reuse, then decide next step, either
  - Tier 2: Develop additional non-potable reuse (additional 5 to 7 MGD, total of 17 to 19 MGD), or
  - Tier 3: Develop more reuse including potable reuse beyond 20 MGD goal

Next Steps

- Complete remaining tasks of the Recycled Water Strategic Plan Update incorporating Board feedback
- Develop recommendations of preferred projects and recycled water goal
- Board workshop in September 2024 before Plan Update completion



Board and Public Comments