Expanding the Waters: Innovation in Reuse and Recycling

Eastern Municipal Water District's Water Recycling Program - Past, Present and Future

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EMWD Overview

- Established in 1950
- 555 square-mile service area
- Service area population of 795,000
- Serving seven cities and unincorporated areas
- High-growth, arid area
  - 38% built out
  - Added 4,200 equivalent dwelling units in FY 2015-16
- One of 26 MWD member agencies
- Full service agency providing water, wastewater and recycled water service
- Sixth-largest water agency in California

EMWD Services

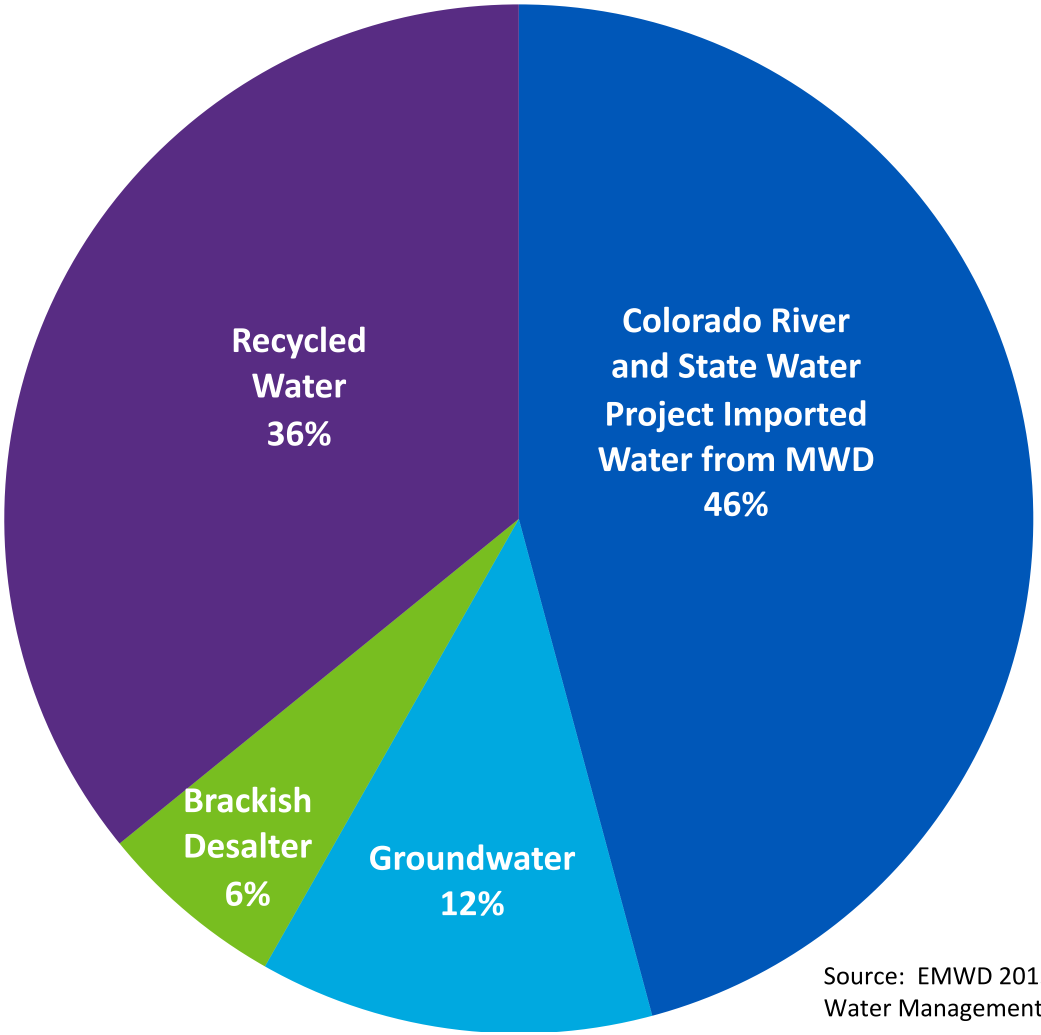
- **Potable Water:** Approx. 144,000 accounts
  - Imported water from the State Water Project and Colorado River
    - Directed treated deliveries from MWD
    - Two Ultra-filtration plants with 14 MGD capacity
  - Groundwater wells (adjudicated - managed basin)
  - Menifee and Perris brackish desalters
    - Capacity: 8 MGD
- **Wastewater:** Approx. 239,000 accounts
  - Four regional water reclamation facilities
    - Permitted operating capacity: 69 MGD
- **Recycled Water:** Approx. 300 accounts
  - 35,617 acre feet sold in FY 2014/2015
  - Approximately 10,800 acres of agriculture irrigated by recycled water



EMWD's 2015 Water Supply Portfolio

Calendar Year 2015 – 123,087 AF

Local Supplies: 54%



Imported Supplies 46%

Source: EMWD 2015 Urban Water Management Plan

Growth in Demands – Limited Supplies

- EMWD's Urban Water Management Plan based upon 2045 build-out of city county general plans

2045 Demands: 215,000 AF – an increase of 68%

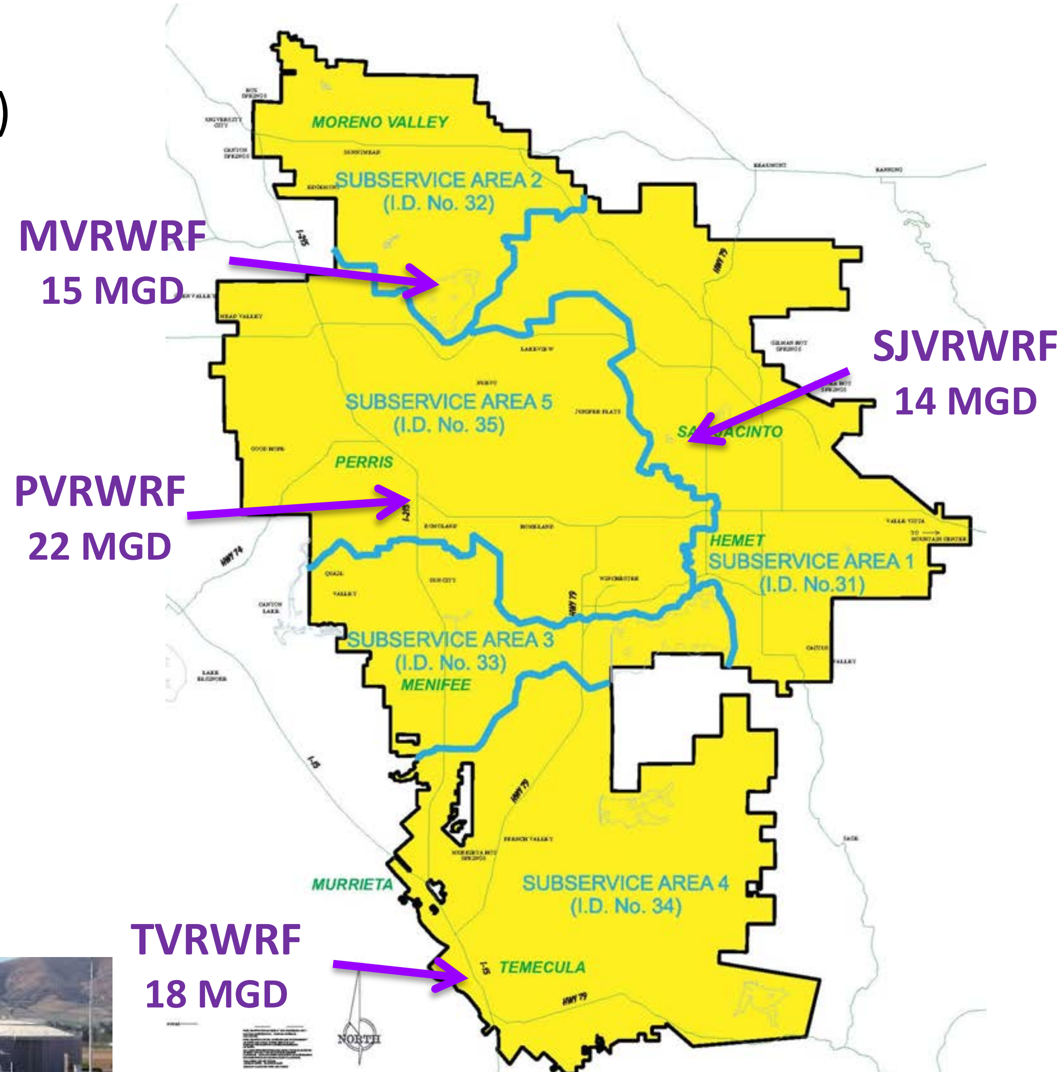
- EMWD Adopted Supply Strategic Plan:
  - Maintain long-term balance of imported and local supplies
  - Protect and enhance groundwater resources with increased yield and salinity management
  - Recycle 100% of wastewater for beneficial use

- To support growth, EMWD has committed to resource investments:
  - Water Use Efficiency standards
  - Maximize Brackish Desalination (new capacity and brine recovery)
  - Groundwater conjunctive use integrating stormwater capture
  - Expand and Transition Recycled Water Use

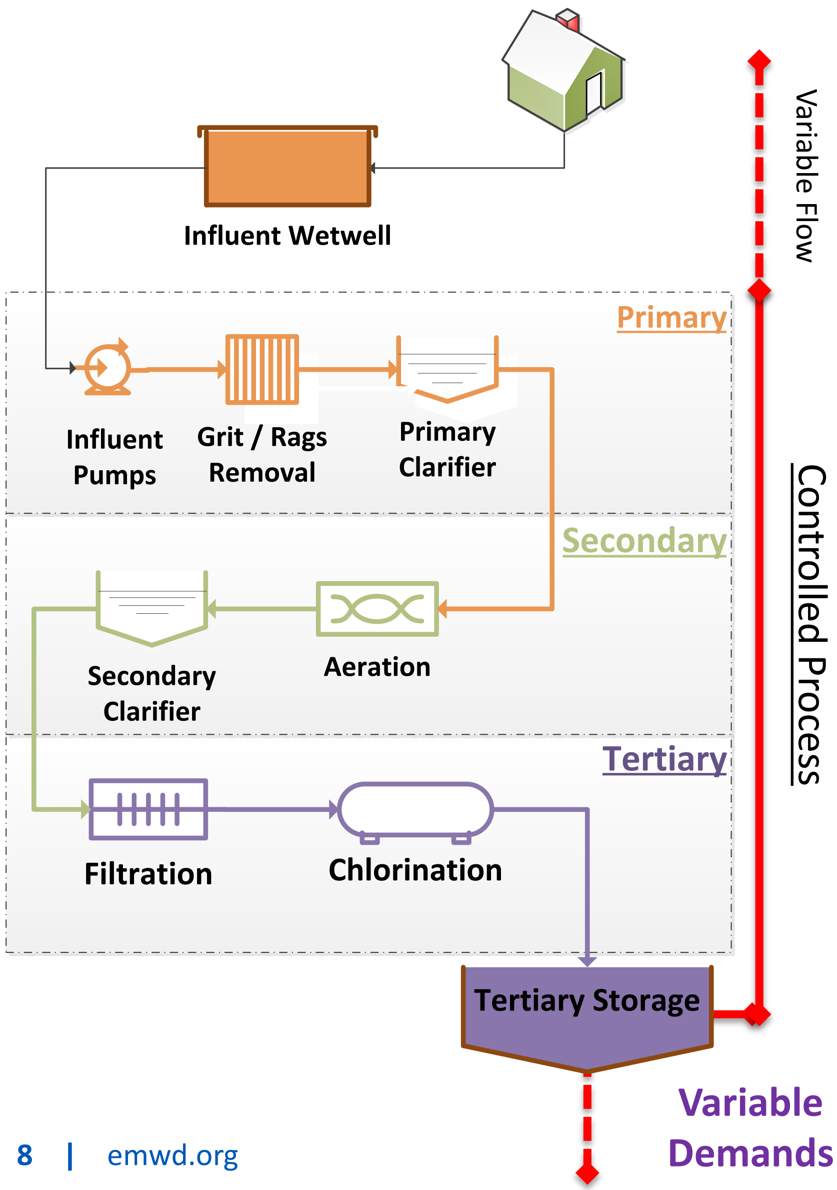
Recycled Water Program Overview

Wastewater Collection and Treatment

- Four Regional Water Reclamation Facilities (RWRFs)
  - Perris
  - San Jacinto
  - Moreno Valley
  - Temecula
- 69 MGD Current Permitted Operating Capacity
- 46 MGD Current Flows



Water Reclamation Process Overview

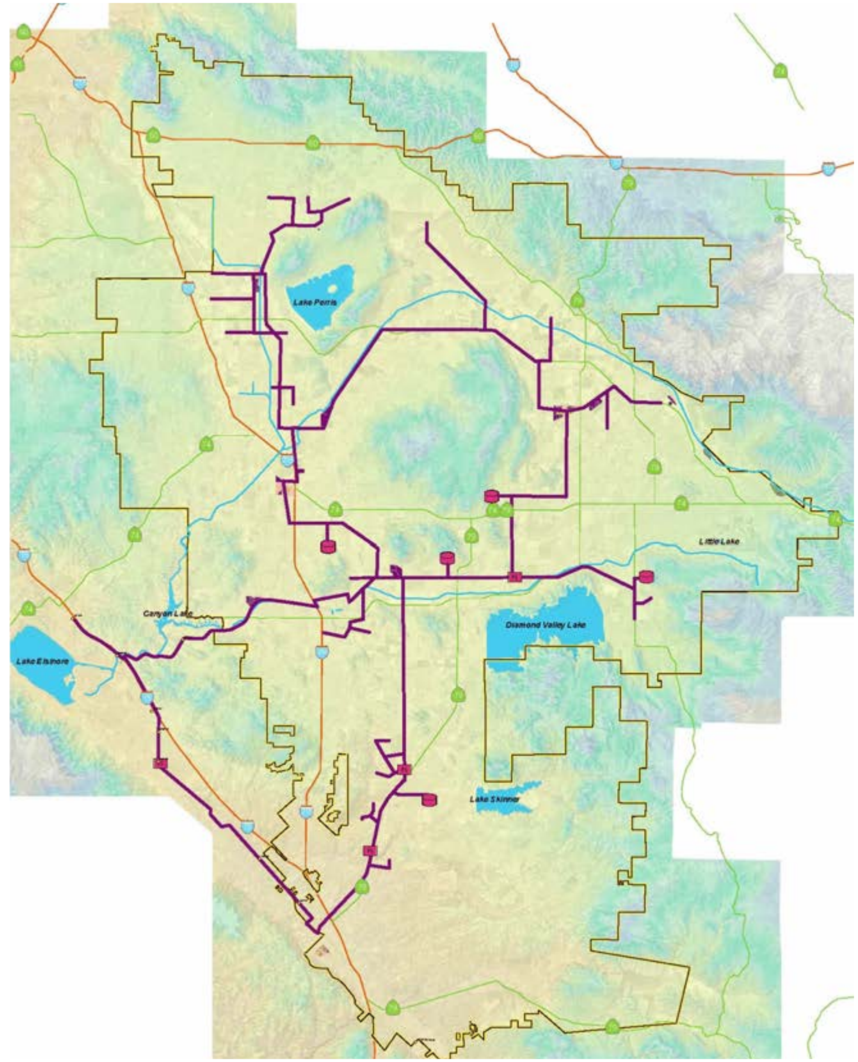


Tertiary Storage: 7, 010 AF

- 6,400 AF in ponds/tanks
- 610 AF in-plant

Recycled Water System

- $188 million in capital investments
- More than 200 miles of recycled water pipeline
- More than 7,010 AF of seasonal storage
  - Storage is about 20% of annual demands
  - 900 AF additional storage under construction
- Four stabilized pressure service zones consisting of:
  - 19.5 MG of elevated storage
  - Four booster pump stations
  - Seven pond pump stations



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EMWD Recycled Water Program

- History:
  - **1960's:** *Treated effluent disposed through on-site percolation/evaporation ponds*
  - **1966:** *Began marketing recycled water for local farmers for irrigation of feed and fodder crops*
  - **1991:** *Received funding through the United States Bureau of Reclamation to develop a recycled water backbone transmission system*
  - **2003:** *Initial system pressurization*

- Current non-potable uses:
  - Common area landscape – parks, schools and streetscapes
  - Recreational – sports fields
  - Golf courses
  - Industrial use (regional power plant)
  - Wetlands and habitat (San Jacinto Wildlife Area – California DFW)
  - Agricultural irrigation

Inland Empire Energy Center

EMWD is at strategic milestone of 100 percent Recycled Water Utilization

Succession Plan: Indirect Potable Reuse

35,617 AF sold in FY 14/15

Recycled Water Program – Agricultural

- EMWD serves a diverse area with a large agricultural economy
- Approximately 10,800 acres of agriculture are served by recycled water – crops include:

Alfalfa	Melons	Sudan Grass
Potatoes	Corn Silage	Beans
Bok Choy	Carrots	Wheat and Barley
Onions	Pumpkins	Black-eyed Peas
Mint	Rye Grass	Oats

- Agricultural recycled rates must be competitive with groundwater pumping:
  - "In-lieu Agreements" with two large dairies
  - Receive discounted agricultural rates to restrict pumping in sensitive groundwater basin
  - Benefits EMWD groundwater production

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Recycled Water System Management and Rate Design

- Since FY 2013-14 all recycled water produced is fully “subscribed”
- Bi-annual allocation process based upon available supply, operational constraints and customer priorities:
  - **Available acre-feet (AF)** for end uses (treatment plant production minus system losses)
  - **Instantaneous flow requirements** to ensure operating pressures and system stability
  - **First priority to long-term contracts** (example: IE Energy, Department of Fish & Wildlife, wholesale agency obligations, etc.)
- Rates set to recover costs, provide end users financial incentives to use water, reflect priority

If recycled water is discharged and not sold, EMWD incurs a $65/AF expense)

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Recycled Water Rates - Consistent with Customer End Uses

Rate Description (excludes fixed meter charge)	2016 Rates /AF
Base Agriculture – Summer Rate	$ 117.98
Base Agriculture – Winter Rate / In-Lieu	$ 68.97
Demand Agriculture	$ 326.22
Non-Agriculture Rate (Irrigation, Commercial)	$ 407.77
Special Rate for Augmentation Water (Over Allocation)	$ 594.00
Priority 1 Rates (wholesale, long-term contracts, industrial, construction)	$54.00 up to $762.39

- Base Agricultural Customers:
  - Bi-annual contracts which establish annual deliveries (AF)
  - Includes instantaneous flow (CFS) restrictions from July through September (monitored with AMI)

- Demand Agriculture and Non-Agricultural Irrigation:
  - No instantaneous flow restrictions
- Over-allocation rate - untreated imported water rate

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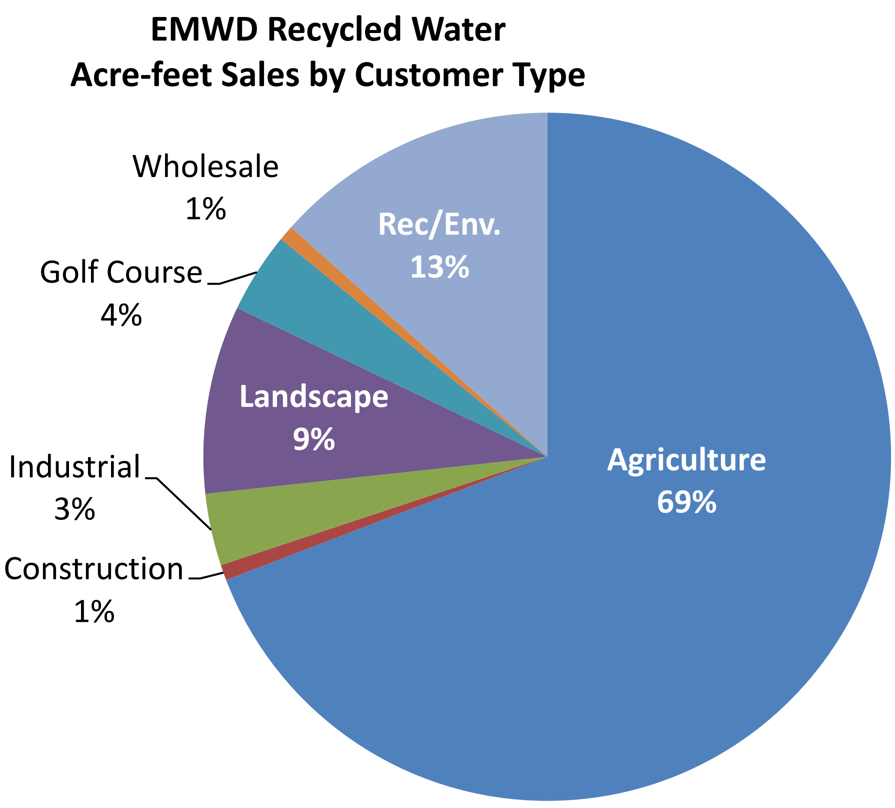
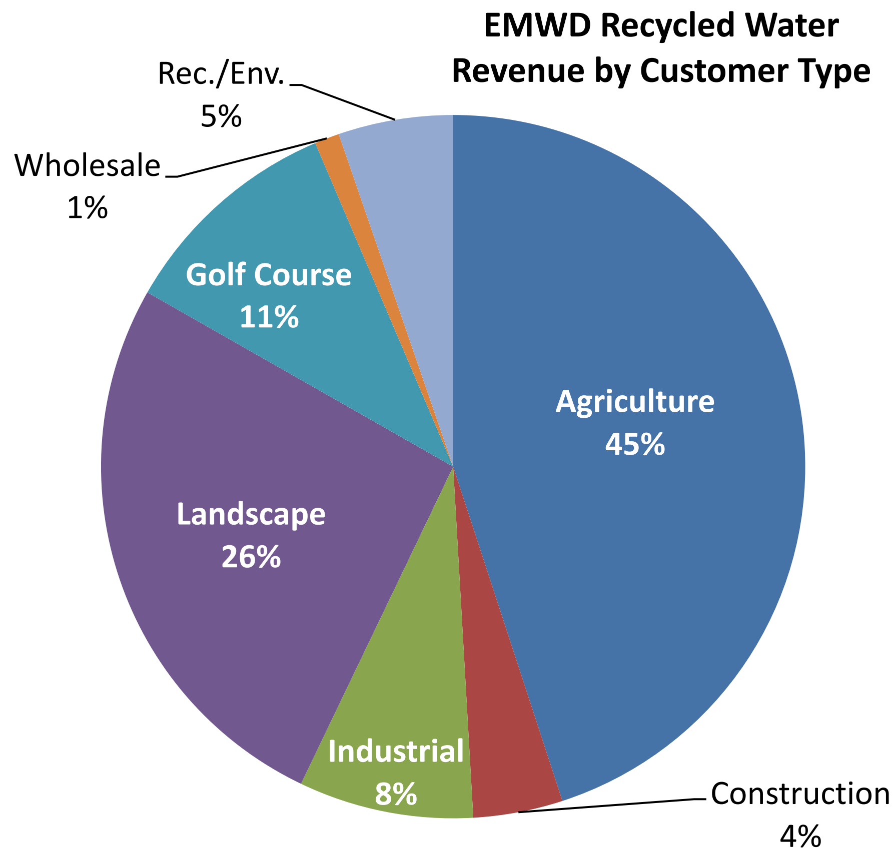
Recycled Water Sales and Revenue – FY 2015/16





Agricultural customers purchased 69% of recycled water and provided 45% of recycled water sales revenue in FY 2015/16.

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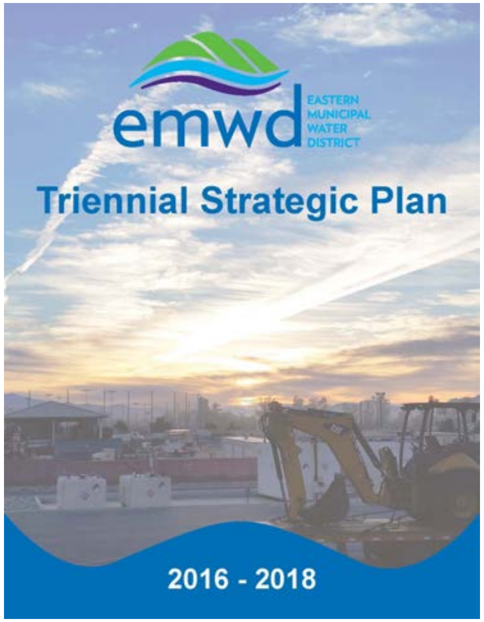
Recycled Water Future Uses - Indirect Potable Reuse for Groundwater Repleinshment

Indirect Potable Reuse (IPR) Objectives

- Key component of EMWD's Water Supply Strategic Plan
- Creates long-term sustainable water supply at reasonable cost
- Ensures groundwater sustainability:
  - Hydrologically independent replenishment, increased yield
  - Helps meet adopted salinity Basin Plan objectives
- Maximizes utilization of recycled water – "Succession Plan"
- First phase: 4,000 AF/year proposed for year 2022
- Preliminary Design, and Public Relations/Outreach underway



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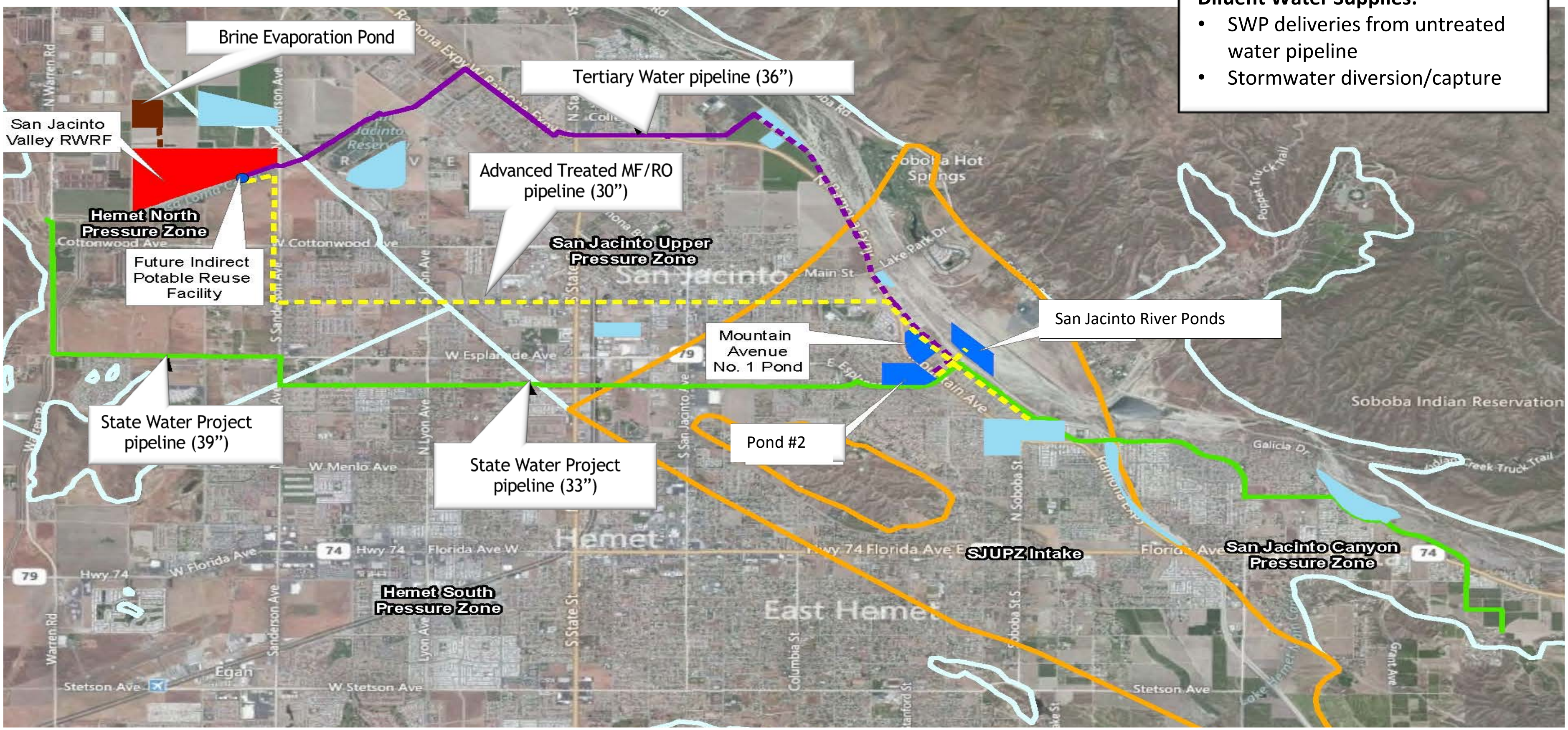
Proposed Indirect Potable Reuse Facilities

Diluent Water Supplies:
- SWP deliveries from untreated water pipeline
- Stormwater diversion/capture



San Jacinto IPR Project Strategy: Recharge Advanced Treated/RO water and Tertiary Treated Recycled Water with SWP and Stormwater

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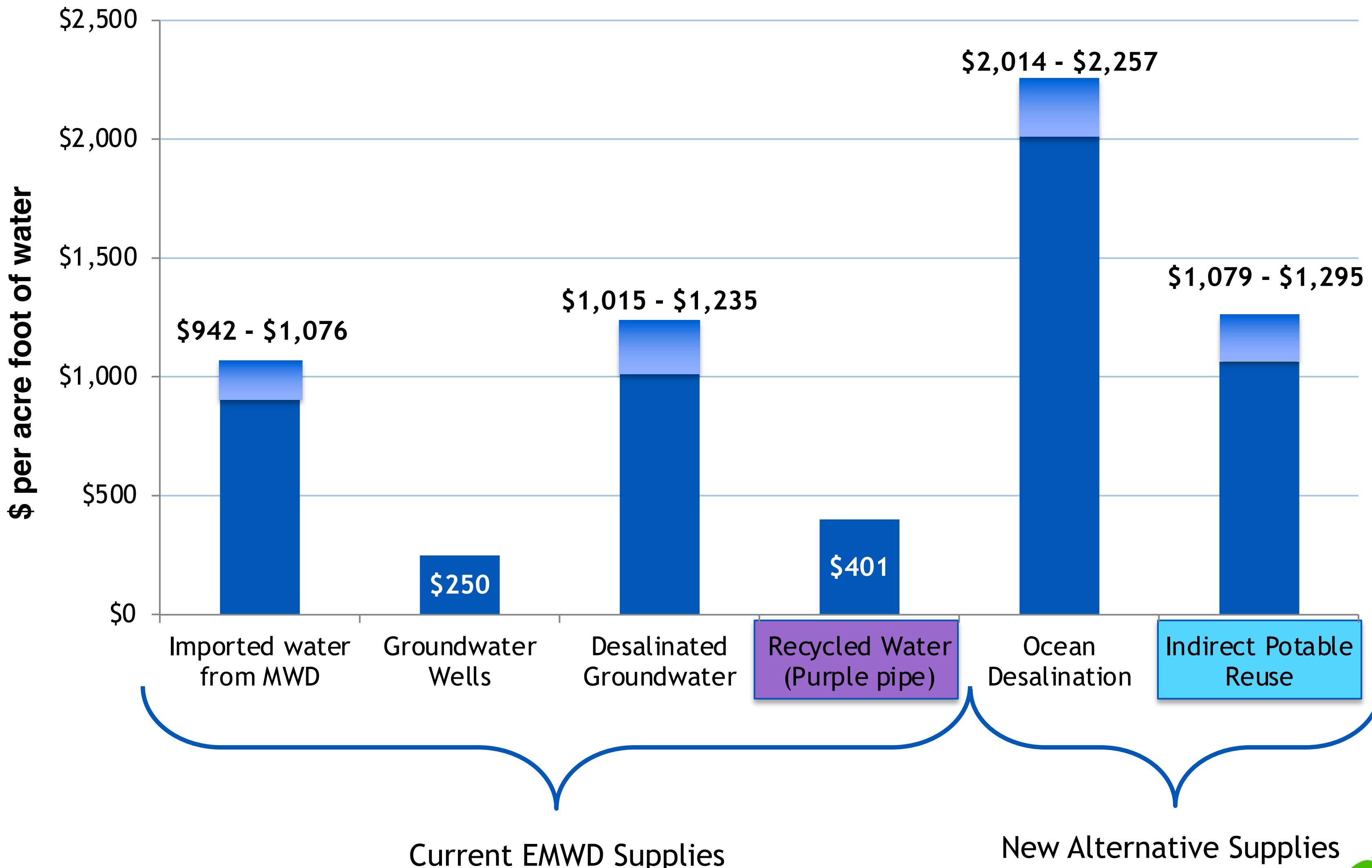
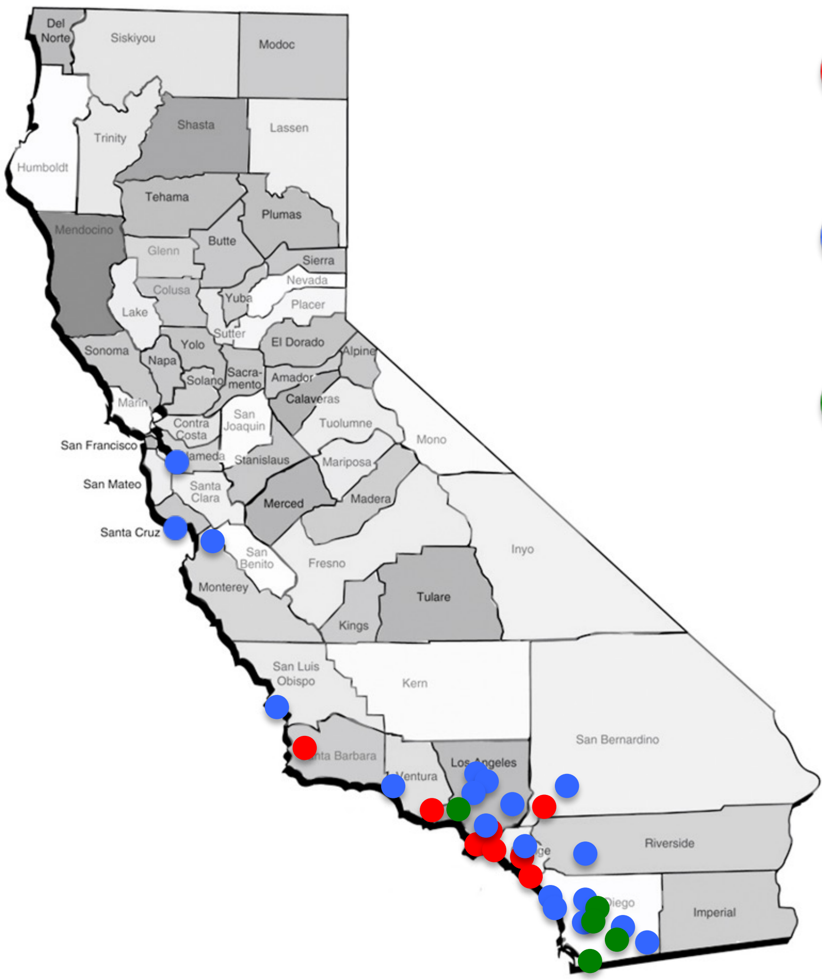
Indirect Potable Reuse - EMWD Cost Profile



Potable Reuse – A Significant New Water Supply



PERMITTED GROUNDWATER (8)
Existing ≈ 200,000 AFY ~ 1.6 M People

PLANNED GROUNDWATER (17)
Planned ≈ 225,00 AFY ~ 1.8 M People

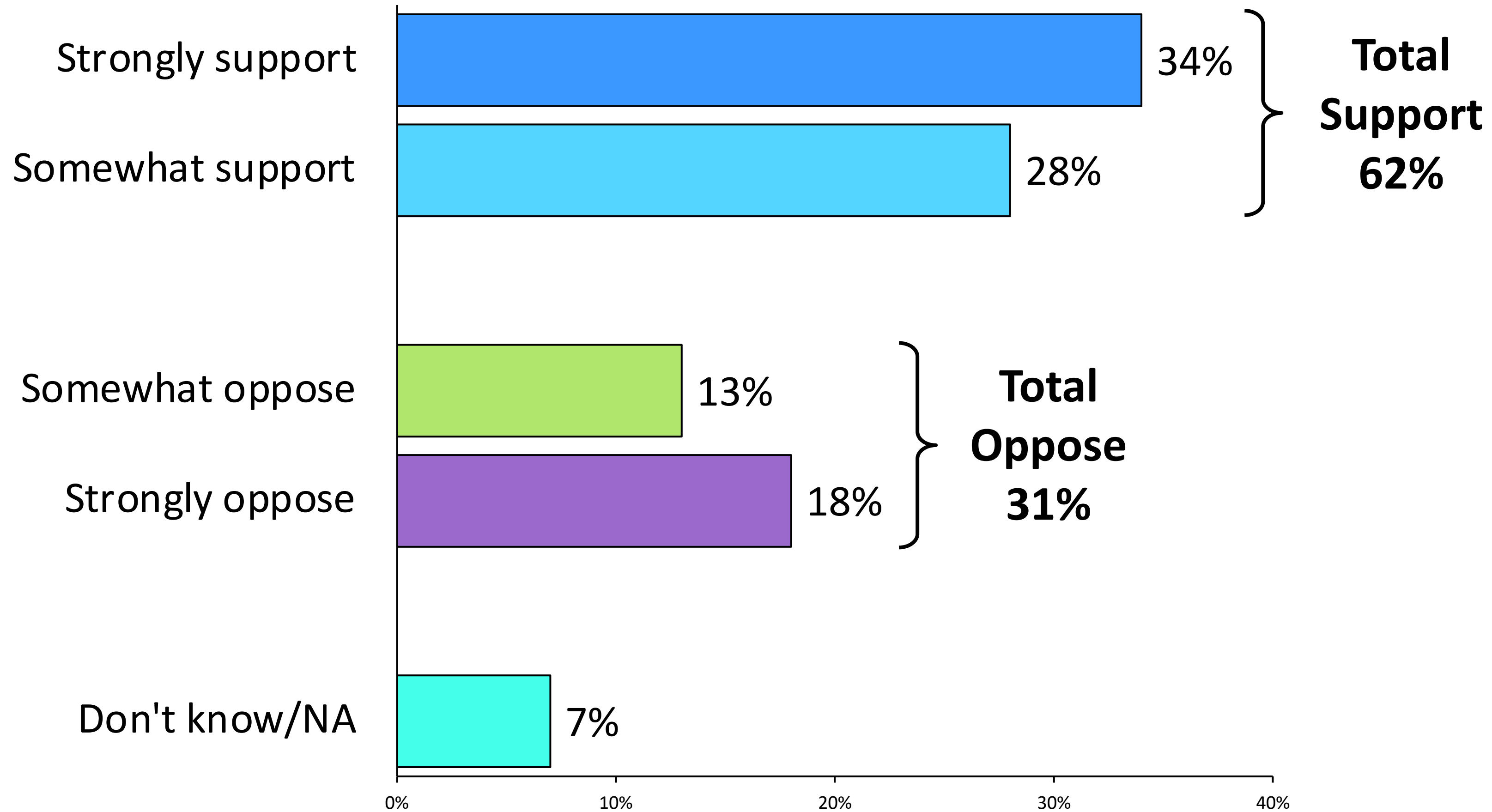
PLANNED SURFACE WATER AUGMENTATION (4)
Planned ≈ 100,000 AFY ~ 800,000 People

Planned IPR Total = 325,500 AF
Serving 2.6 million People

There are also 141 Non-potable recycled water projects planned to provide 300,000 AF of new supply

There's significant public support for Potable Reuse…..

Would you support or oppose indirect potable reuse of recycled water in your community?



Source: WaterReuse California

…and then there's not support for Potable Reuse

(Steven DeCinzo)

Summary

- Recycled water is a significant component of the EMWD's and California's future water supply portfolio
- Recycled water can be treated and priced effectively to meet diverse needs
  - Agriculture
  - Municipal Irrigation
  - Industrial
  - Environmental
  - Potable reuse
- Public acceptance - even for potable reuse - is very high
- It's the right water for the right use

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Thank You

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