



CITY OF
PALO ALTO



Valley Water

Public Meeting Northwest County Recycled Water Strategic Plan

April 30, 2019





Agenda

1. Welcome/Introductions
2. Preview of Guiding Questions
3. Palo Alto Water Supply Overview
4. Recycled Water 101
5. Local Recycled Water Program Overview
6. Northwest County Recycled Water Strategic Plan
 - A. Overview
 - B. Preliminary Results – Concept Options
7. Q & A – Guiding Questions
8. Next Steps
9. Adjourn



Preview- Guiding Discussion Questions

1. Do you think Palo Alto should remain 100% dependent upon **imported** water?
2. When do you think Palo Alto should incorporate **local** water sources into its water portfolio?
3. How do you view the benefits of **recycled water**?
4. How do you view the benefits of **non-potable reuse** (i.e., landscape irrigation, cooling towers, etc.)?
5. How do you view the benefits of **indirect potable reuse** (i.e., groundwater augmentation with recycled water)?
6. How do you view the benefits of **direct potable reuse**?

Palo Alto - Water Supply Overview

- **100%** of potable water **imported** from City & County of San Francisco's Regional Water System
 - ~85% from Tuolumne River
 - Palo Alto potable demand is ~11,000 acre-feet per year (AFY) or 10 million gallons per day (MGD)
 - Currently ~\$1,800/AF
- Local water reuse could provide **~50%** of Palo Alto water demand but investments are needed for additional treatment and conveyance



What is Recycled Water?

- Highly treated wastewater that is **locally produced** and can be **sustainably and safely reused** for various water demands



Non-potable reuse (NPR)

- Enhanced recycled water for irrigation and commercial uses



Indirect potable reuse (IPR)

- Purified water used to augment groundwater supplies

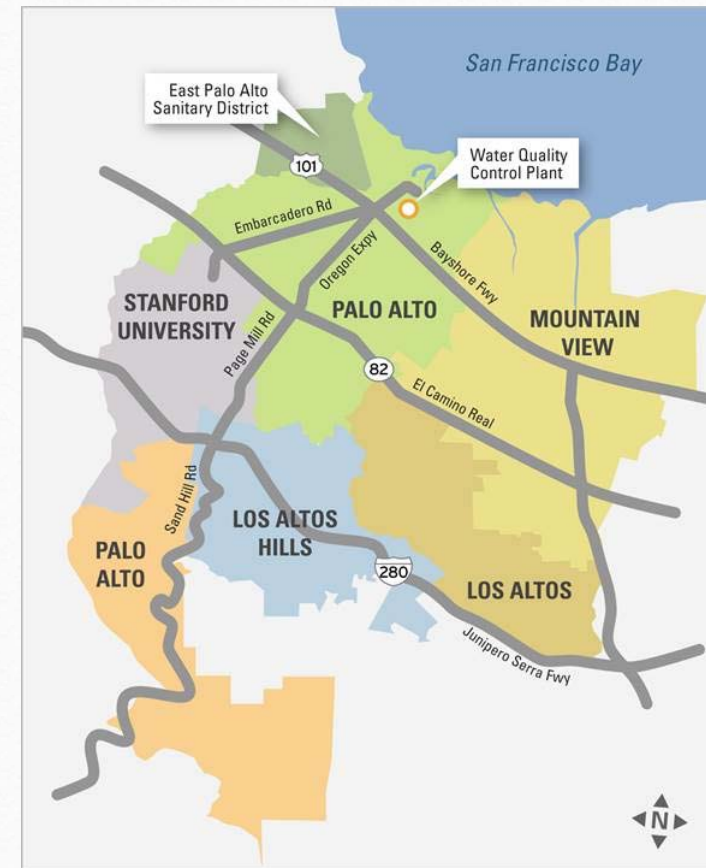


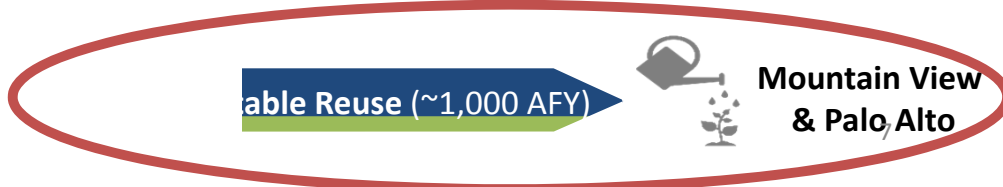
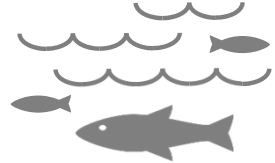
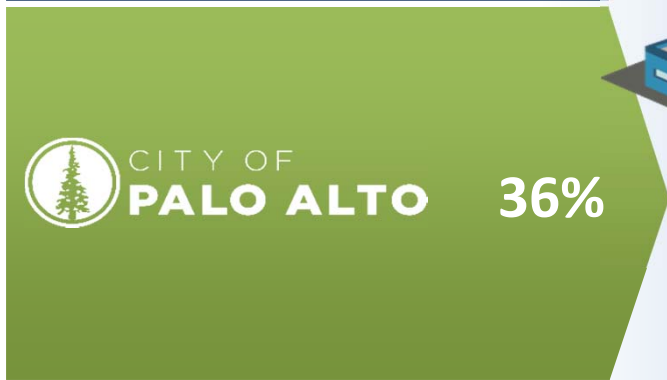
Direct potable reuse (DPR)

- Purified water used to augment drinking water distribution system

Current Local Recycled Water Program

- Regional Water Quality Control Plant (RWQCP) treats wastewater for:
 - Palo Alto
 - Mountain View
 - Stanford University
 - Los Altos
 - Los Altos Hills
 - East Palo Alto Sanitary District
- ~5% of wastewater currently used to produce non-potable recycled water for Mountain View & Palo Alto
 - Landscape irrigation
 - Toilet flushing



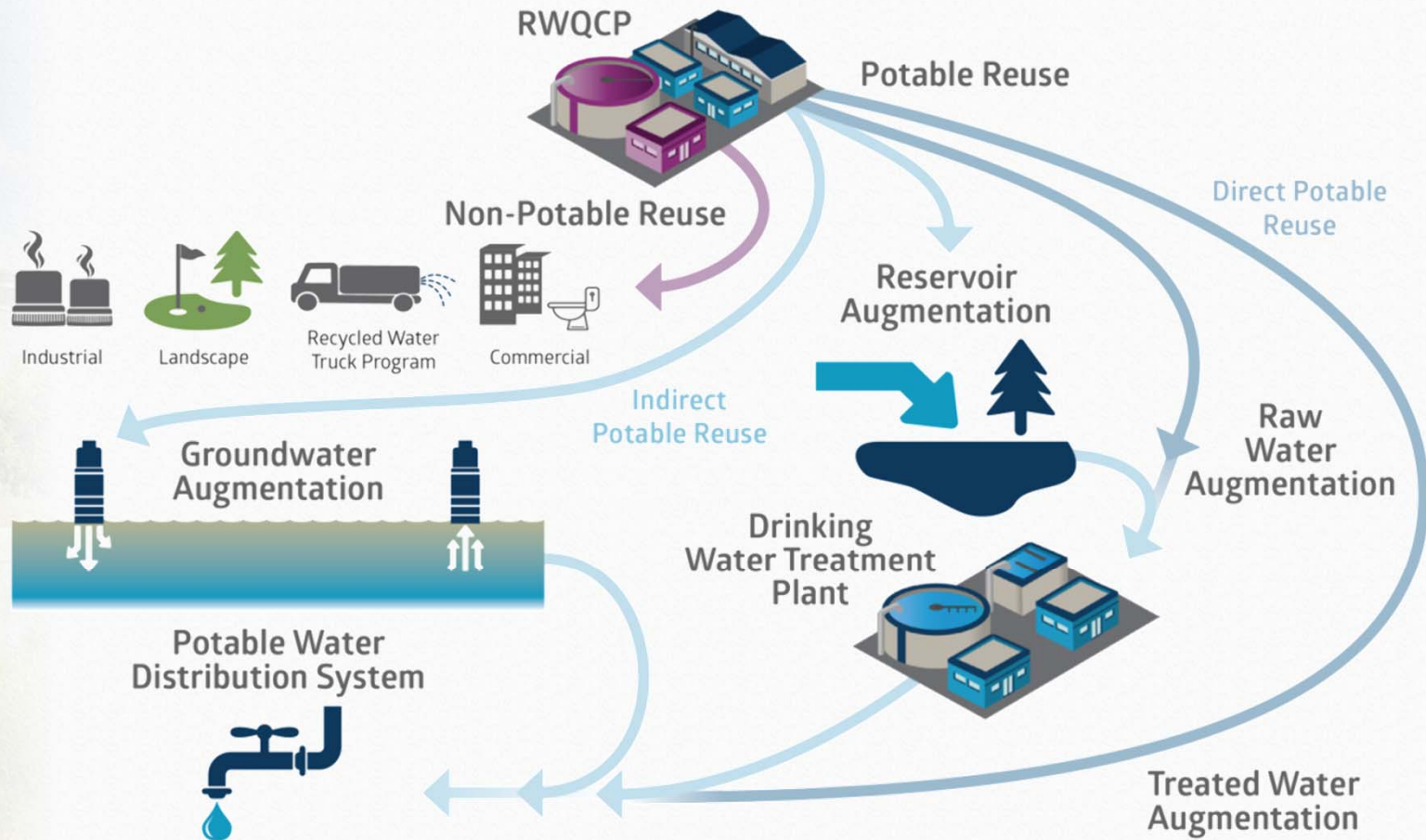





Northwest County Recycled Water Strategic Plan

- How best to expand RWQCP Recycled Water Program given:
 - Recent regulatory developments
 - Prolonged drought
 - 1992 Recycled Water Master Plan recommended projects
- Study Area:
 - RWQCP service area
 - Additional areas within Menlo Park & East Palo Alto
- Time Period
 - Through 2030

Right Water Quality for the Right Purpose




Water Reuse Opportunities




Countywide Water Reuse Master Plan
Regional Interties

NW County Recycled Water Strategic Plan




Non-potable Reuse
Concept Options

- A1 (800 AFY)
- A2 (1,100 AFY)
- A3 (1,200 AFY)
- A4 (200 AFY)
- A5 (900 AFY)
- A6 (500 AFY)




Satellite Non-potable Reuse
Concept Option

- B1 (900 AFY)



Indirect Potable Reuse
Concept Options

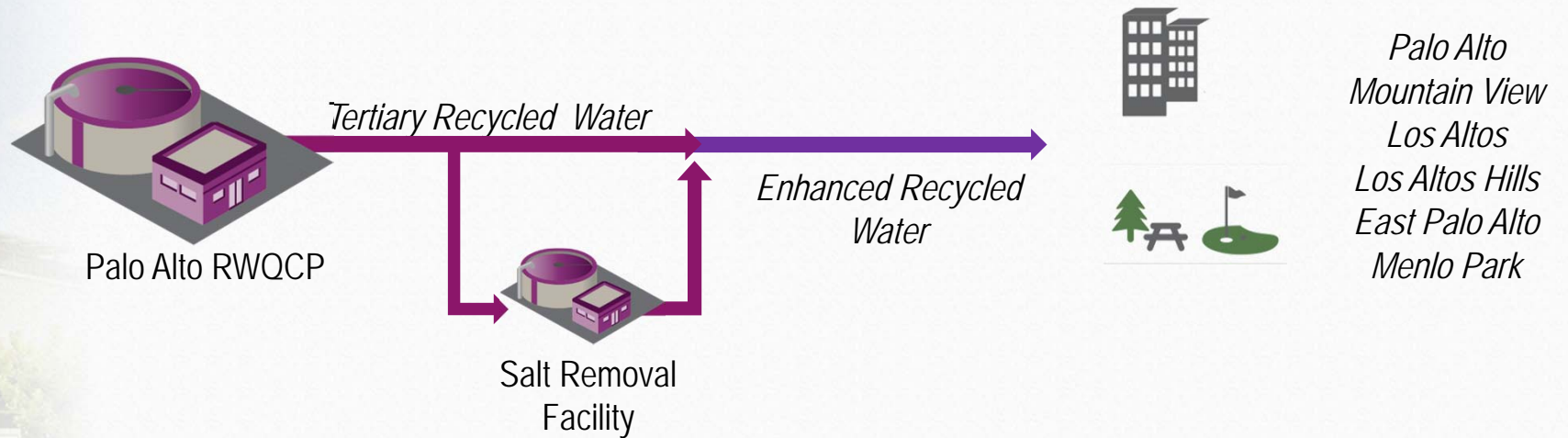
- C1 (5,900 AFY)
- C2 (6,100 AFY)
- C3 (5,900 AFY)



Direct Potable Reuse
Concept Option

- D1 (5,300 AFY)

Non-potable Reuse Concept Options (A1 – A6)



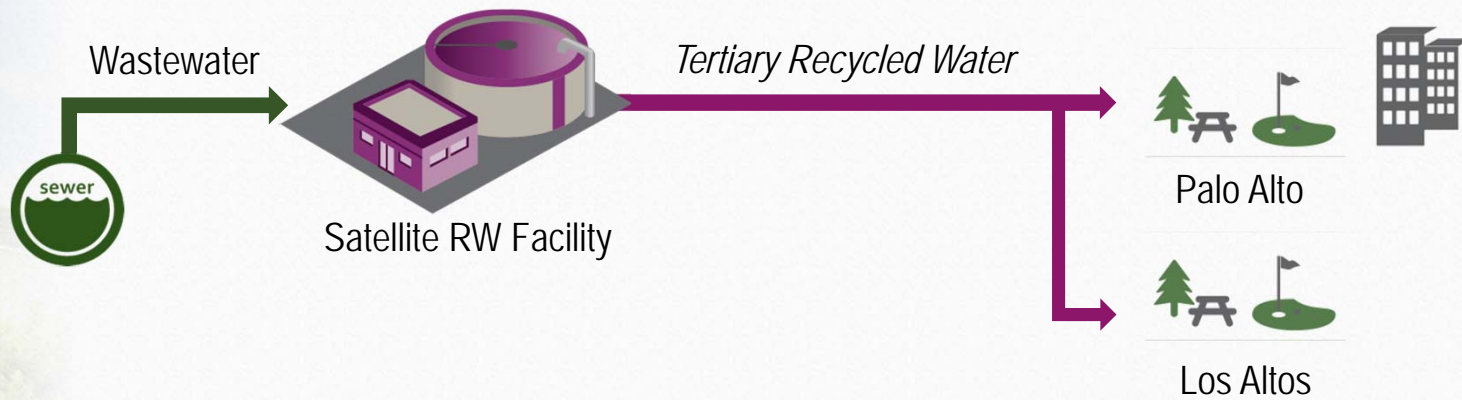
Opportunities

- Near term implementation
- Applicable to all Study Area
- Clear regulations

Obstacles

- Limited uses (200-1,200 AFY)
- Pipeline infrastructure
- Enforcement & administrative oversight of customers

NPR Satellite Treatment Plant Concept Option (B1)



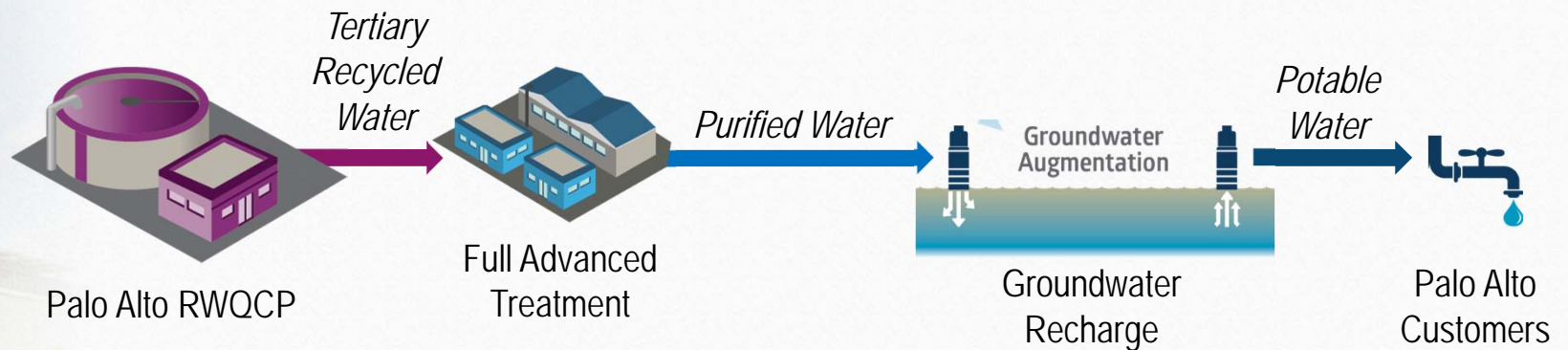
Opportunities

- Near term implementation
- Clear regulations

Obstacles

- Limited uses (900 AFY)
- Pipeline infrastructure
- Treatment infrastructure
- Operational oversight
- Cost prohibitive (\$8,900/AF)

Indirect Potable Reuse Concept Options (C1-C3)



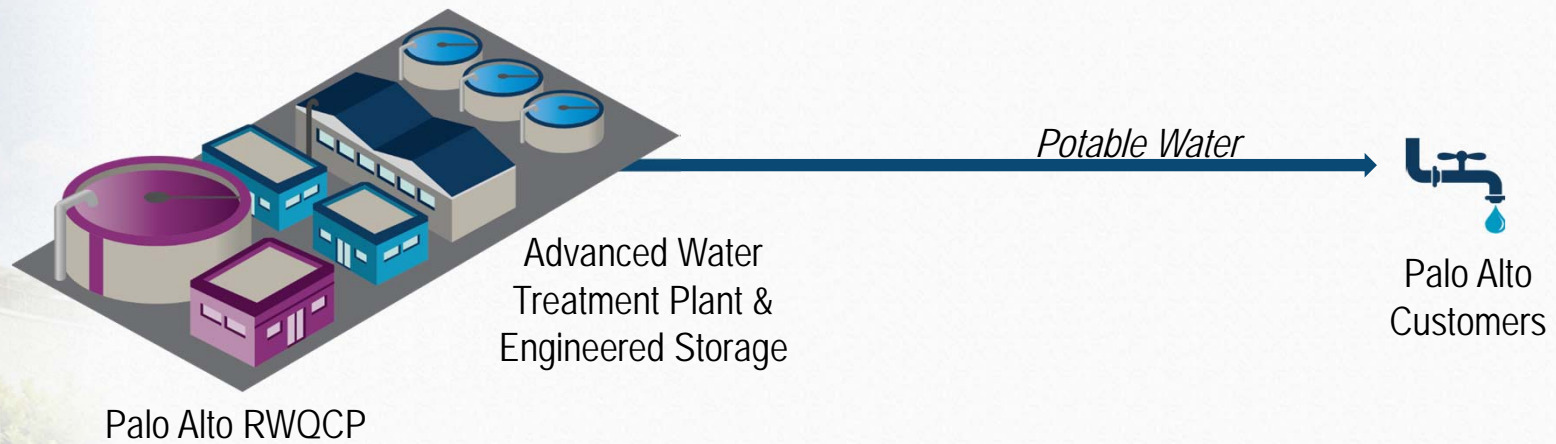
Opportunities

- Unlimited uses
- Utilizes RWQCP as larger source of water (5,900 – 6,100 AFY)
- Potential to combine with NPR demands
- Clear regulations

Obstacles

- Treatment, pipeline, injection, & extraction infrastructure
- Requires increased use of groundwater
- Public acceptance

Direct Potable Reuse Concept Option (D1)



Opportunities

- Unlimited uses
- Utilizes RWQCP as larger source of water (5,300 AFY)

Obstacles

- Treatment & pipeline infrastructure
- Public acceptance
- Undeveloped regulations (2023 or later)

Concept Option Cost Estimates



Non-potable reuse (NPR) (excluding satellite)

- \$6M - \$85M for infrastructure
- \$2,100 - 4,600/AF



Indirect potable reuse (IPR)

- \$92M - \$198M for infrastructure
- \$3,300 - \$4,400/AF



Direct potable reuse (DPR)

- \$105M for infrastructure
- \$2,500/AF

SFPUC Potable
Rate (2030)
~\$3,000/AF

Groundwater
Extraction
Rate
~\$3,000/AF

Preliminary Results – Concept Option Costs

Concept Option	Yield (AFY)	Capital Cost	O&M (\$/Y)	Unit Cost (\$/AF)
A1: NPR Palo Alto Phase 3	800	\$48M	\$0.3M	\$3,400
A2: NPR Palo Alto Phase 3 Extended to Foothills	1,100	\$63M	\$0.5M	\$3,400
A3: NPR Palo Alto Phase 3 Extended to Foothills and Los Altos	1,200	\$85M	\$0.7M	\$4,000
A4: NPR Mountain View	200	\$6M	\$0.1M	\$2,100
A5: NPR Mountain View Extended to Los Altos	900	\$73M	\$0.4M	\$4,600
A6: NPR East Palo Alto	500	\$21M	\$0.2M	\$2,400
B1: NPR Satellite Treatment Plant	900	\$130M	\$1M	\$8,900
C1: Palo Alto Dedicated IPR	5,900	\$92M	\$15M	\$3,300
C2: Palo Alto IPR with NPR	6,100	\$152M	\$17M	\$4,000
C3: Palo Alto IPR and NPR from Phase 3 Pipeline	5,900	\$198M	\$16M	\$4,400
D1: Palo Alto Dedicated DPR	5,300	\$105M	\$8M	\$2,500

Note: Costs based on an ENR CCI San Francisco index for June 2018 of 12015, and represent Class 5 (AACE) estimates with accuracy of -50% to +100%.



Other Criteria Used to Evaluate Concept Options

- Amount of Water Supplied
- Public Acceptance
- Adaptability
- Level of Agency Coordination
- Level of Customer Retrofits/Coordination
- Regulatory Complexity
- Regional Perspective
- Social & Economic Benefit
- Environmental Benefit



Guiding Discussion Questions

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Next Steps

- Presentation posted to project website:

https://www.cityofpaloalto.org/gov/depts/utl/residents/resources/water_resources/recycled_water.asp

- Finalize Northwest County Recycled Water Strategic Plan Report
- September 3, 2019 Utilities Advisory Committee
- September 23, 2019 Palo Alto City Council Meeting - *Tentative*
- 2020 Update Water Integrated Resources Plan
- Questions/comments? Email recycledwater@cityofpaloalto.org

Thanks for Coming!

