

### Water Supply Master Plan 2040 Monitoring and Assessment Program Annual Update

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# Water Supply "Ensure Sustainability" Strategy







#### **Secure**

- Capital Improvement
   Program Projects
- Delta Conveyance
   Project

#### **Expand**

- Water Conservation
- Stormwater Capture
- Potable Reuse

#### **Optimize**

- Pacheco Reservoir Expansion
- Transfer-Bethany Pipeline
- South County Recharge

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### **MAP PURPOSE AND 2021 GOALS**

Track Water Supply Master Plan implementation and provide mechanism to update the implementation strategy as needed.

**Historic and Forecasted Demands** 



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### **Level of Service Goal**

### Not exceed a 20% water use reduction call during water shortages



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### 2021 RISK ASSESMENT

#### **RISK ASSESMENT GOAL**

**Evaluated risks that may reduce project success** -> Timely project completion -> Provides needed benefits



**Risk Severity** 

#### **Risk Assessment Progress**

Internal stakeholder meetings to discuss risk assessment approach and results

#### 10 internal units evaluated risks to projects

Completed risk assessment report

Next Step: work with project leads to mitigate identified risks

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## **CLIMATE CHANGE APPROACH**

#### LOCAL WATER SUPPLY IMPACTS

- Local reservoir inflows and evaporation, water use, precipitation, and natural groundwater recharge
- Used 4 climate models that bracket the range of local impacts

#### **IMPORTED WATER SUPPLY IMPACTS**

- Updated DWR CalSim II DCR 2019 future scenario to consider climate change
- Update informed by DWR climate change studies and historic data
- Forecasting a 25% decrease in imported water supplies



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### **MODELING ANALYSIS APPROACH**

- $\langle \bigcirc \rangle$
- Aim: meet countywide demands
- 94-yr simulation



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- Model includes:
  - **b** Supplies
  - **b** Storage
  - **A** Recharge facilities
  - Treatment plants
  - **6** Conveyance facilities
- Five climate scenarios
- Examine water supply reliability



Number of Years in Stage 6 (50%)
Number of Years in Stage 5 (40%)
Number of Years in Stage 4 (30%)
Number of Years in Stage 3 (20%)
Number of Years in Stage 2 (10%)



### MAP 2021 PROGRESS – WATER SUPPLY PLANNING

Water Shortage Contingency Years for Moderate Climate Change Scenario in 2045

- Level of service goal is to not exceed stage 2 (orange)
- Locally renewable water supplies are the most drought and climate change resilient



# MAP 2021 PROGRESS – WATER SUPPLY PLANNING

**Total Water Storage Volume for Moderate Climate Change Scenario in 2045** 

- Analysis indicates existing available storage may be sufficient in future
- Future infrequent wet years with prolonged drier periods indicate potential difficulty in filling storage
  - > Potable reuse increases storage, reinforcing its drought resiliency
  - Diversification could improve operational flexibility



# **Storage Diversification Scenarios**



Note: Slide for discussion purposes only. Scenarios are preliminary

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# **Project Cost Comparison (2020\$)**

Project	Capital Cost <sup>1</sup>	Annual Average O&M <sup>1</sup>	Typical Lifespan
Direct Potable Reuse (24 TAF)	570 Million	22 Million	50 years
Indirect Potable Reuse (11-24 TAF)	500-700 Million	10-20 Million	50 years
Lexington Pipeline	100 Million	<1 Million	75-150 years
Los Vaqueros Reservoir 30 TAF (Transfer-Bethany 5% Share Only)	165 Million (35 Million)	2 Million (<1 Million)	75-150 years
Pacheco Reservoir 140 TAF (55 TAF storage share)	1.7 Billion <sup>2</sup> (1 Billion)	5 Million (3 Million)	75-150 years
Refinery Recycled Water Exchange <sup>3</sup>	210 Million	9 Million	50 years
Sites Reservoir (0.2-3.2% share)	10-140 Million	<1 Million	75-150 years
Delta Conveyance Project	TBD	TBD	75-150 years

<sup>1</sup>All costs are levelized to 2020 dollars

<sup>2</sup>Pacheco Reservoir capital cost accounts for Water Storage Infrastructure Program funding that reduces the capital cost.

<sup>3</sup>Costs assume a 50% cost share with Contra Costa Central Sanitary District

### **CONCLUSIONS AND NEXT STEPS**

#### **Modeling Conclusions**

Analysis indicates total existing storage capacity may be sufficient
 Storage diversification may help improve storage utility
 LOS goal is met with projects that help reliably exercise storage

#### Next Steps

Receive feedback from the Board of Directors
 Integrate Board feedback into MAP analysis

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# QUESTIONS





#### **System Configuration**



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#### **Total Water Storage Volume**



#### **Total Water Storage Volume**



# Planning Objectives

- 1. Increase valley water's resiliency to climate change
- 2. Utility during non-drought emergencies
- Utility during prolonged droughts and/or shorter severe droughts (meets LOS goal)
- 4. District influence over supplies/operations
- 5. Reduces reliance on delta operationally and imported water supply
- 6. Improves groundwater quality
- 7. Minimize lifecycle cost impacts to water rates
- 8. Minimize environmental impacts or increase environmental benefits

Attachment 4 Page 18 of 20 Water Supply Planning Modeling Analysis

- Ran Valley Water's water supply planning operational model for a 94year period
- Model simulates Valley Water operations to meet retailer and nonretailer demands and regulatory requirements
- Model includes supplies, storage, recharge facilities, treatment plants, and conveyance facilities
- Hydrologic conditions and water demands representative of five potential mid-century climate scenarios
- Examined water supply reliability outcomes







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