Regional Recycled Water Program Feasibility Study Report

Engineering and Operations Committee
Item 6a
January 9, 2017
Presentation Outline

- Background
- Potential Program
- Major Findings
  - Technical feasibility
  - Advisory panel
  - Consistent with IRP
  - Costs
- Next Steps
Potential Regional Recycled Water Program Background

- Pilot Scale Studies (2010-12)
- Progress Report (September 2015)
- Board approval and appropriation for Demonstration Plant (November 2015)
- Historical Review and 2015 Update (February 2016)
- Progress Report (August 2016)
- Feasibility Study Final Draft (December 2016)

Demonstration Plant

- Completion of Final Design (February 2017)
- Award of Construction Contract (June 2017)

Detailed Facility Planning and Engineering (2017-18)
Potential Program
Potential Regional Recycled Water Program

- Collaboration between Metropolitan and Sanitation Districts of Los Angeles County
- Development of new regional water source
  - Up to 150 mgd (168,000 AFY)
  - Deliveries to Member Agencies
  - Recharge and store in multiple groundwater basins
  - Increases regional storage reserves
Location of AWT Facilities at JWPCP

- Full-Scale AWT Site
- Demo Plant Site
- Main St.
- 110
- Sepulveda Blvd.
- Figueroa St.

E&O Committee Item 6a Slide 6 January 9, 2017
Potential Full Program (up to 150 MGD)

- Main San Gabriel Basin
- Santa Fe Spreading Grounds
- Rio Hondo Spreading Grounds
- Orange County Basin
- JWPCP
- West Coast Basin
- Central Basin
- Diemer Plant
- OC Spreading Grounds

Sources: Esri, USGS, NOAA
Major Findings
Key Questions

No Fatal Flaws?
- Is it technically, institutionally and legally possible to implement a 150 MGD Indirect Potable Reuse program using effluent from the LACSD JWPCP?

Justified and Cost Effective?
- Are the costs and benefits of the program consistent with the IRP and other approaches for achieving comparable amounts of recycled water?

Impacts on cost of water to Member Agencies?
- How would the cost of water be affected if the base case and its assumptions were implemented?
Comprehensive technical evaluation
Coordination with Regulators throughout
Cooperation and support from groundwater basin managers
Expert advisory panel review and input
Major Findings

- Potential 150-mgd program is feasible
  - Treatment, conveyance and groundwater recharge technically feasible
  - Institutional complexity but no fatal flaws
  - Regulatory approvals and permitting feasible

- Program provides significant regional benefits
- Costs and benefits are consistent with the 2015 IRP Update
- Adaptable to future Direct Potable Reuse regulations, if needed
# Program Element Findings

<table>
<thead>
<tr>
<th>Program Element</th>
<th>Feasibility</th>
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</thead>
<tbody>
<tr>
<td>1. Advanced Water Treatment Plant</td>
<td>Feasible</td>
</tr>
<tr>
<td>2. Conveyance System</td>
<td>Likely Feasible</td>
</tr>
<tr>
<td>3. Groundwater Basins, Storage and Extraction</td>
<td>Feasible</td>
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<tr>
<td>4. Environmental and Regulatory Feasibility</td>
<td>Feasible</td>
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<tr>
<td>5. Feasibility of Essential Agreements with LACSD</td>
<td>Feasible</td>
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<tr>
<td>6. Feasibility of Essential Institutional Arrangements</td>
<td>No Fatal Flaws</td>
</tr>
<tr>
<td>7. Regional Benefits and Consistency with IRP</td>
<td>Feasible</td>
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<tr>
<td>8. Overall Estimated Program Costs</td>
<td>Feasible</td>
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<td>9. Public Acceptability (with robust outreach effort)</td>
<td>Feasible</td>
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**Feasible:** No fatal flaws, limited dependence on other parties, other examples of success, and some unknowns

**Likely Feasible:** No fatal flaws, significant dependence on other parties, limited comparable existing examples, and many unknowns

**No Fatal Flaws:** No fatal flaws but in need of further investigations and studies
Advisory Panel Members

Richard Atwater, Chair
- Former Executive Director of Southern California Water Committee

Shivaji Deshmukh
- Assistant General Manager of West Basin Municipal Water District

Thomas Harder
- Thomas Harder and Associates (Hydrogeology)

David Jenkins
- Professor Emeritus, University of California, Berkeley

Edward Means
- President, Means Consulting LLC

Joseph Reichenberger
- Professor, Loyola Marymount University

Paul Westerhoff
- Professor, Arizona State University
Concluded findings are reasonable
Do not see any technical fatal flaws
Emphasized institutional complexity
Helped identify program risks
Contributed to and support recommendations

“The Advisory Panel agrees with the findings and recommendations of the Feasibility Study Report and supports moving forward”
Regional Benefits

- Consistent with Metropolitan’s IRP 2015 Update
- Augments regional supplies during normal, drought and emergency conditions
- Reduced frequency and magnitude of supply allocations
- Increases storage in groundwater basins and regional storage reserves
Regional Recycled Water Project
Dry-Year Supplies with IRP Targets

**Dry-Year Storage and/or Additional Development***

**Dry-Year Retail Demand with Conservation**

**Local Supply**

**SWP**

**CRA**

**RRWP**

*Additional Development of Local Supplies or Conservation Beyond IRP Target*
RRWP Provides Supply Reliability Benefits to All Metropolitan Member Agencies

- RRWP offsets the use of imported supplies to meet groundwater replenishment needs.
- The offset imported water is stored in regional storage for use in dry years.
- Dedicated replenishment supplies stabilize groundwater production.
Capital and O&M Costs

- Total capital cost of $2.7 billion
  - All new facilities including 150-mgd AWT, 60 miles of pipeline and 3 pump stations

- Annual O&M cost of $129 million
  - Includes power costs for AWT and pump stations

- Total unit cost of $1,600/AF
  - Interest rate at 4%
  - No grants or low-interest loans
  - Includes 35% capital cost contingency

- Total cost divided by total water sales of $150-$160/AF
  - Metropolitan water sales at 1.7 MAFY
High

$1,000

$2,000

$3,000

$4,000

$5,000

$6,000

$7,000

$8,000

Stormwater

Centralized

$5,000

$12,000

RRWP

1

5th Percentile

75th Percentile

Groundwater

Recovery

Recycled Water

Seawater

Desalination

High

Low

Estimated unit cost is based on 4% interest rate financing and does not include additional outside funding or optimized design.

Source: Integrated Water Resources Plan 2015 Update

1 Estimated unit cost is based on 4% interest rate financing and does not include additional outside funding or optimized design.
# Range of Unit Costs

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Base</th>
<th>High</th>
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<tbody>
<tr>
<td>Capital Cost Contingency</td>
<td>25%</td>
<td>35%</td>
<td>50%</td>
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<tr>
<td>Financing Interest Rate</td>
<td>2.0%</td>
<td>4.0%</td>
<td>5.0%</td>
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<tr>
<td>O&amp;M Contingency</td>
<td>-0-</td>
<td>-0-</td>
<td>25%</td>
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<tr>
<td>Unit Cost per Acre Foot</td>
<td>$1,368</td>
<td>$1,600</td>
<td>$2,013</td>
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Next Steps
Next Steps

- Complete design, construction, start-up and operation of Demonstration Plant
- Proceed with facilities planning & optimization, engineering and additional groundwater modeling
- Finalize agreements with Sanitation Districts
- Develop institutional and financial arrangements needed for implementation
- Initiate public outreach effort focused on Demonstration Plant
Potential Future Opportunities

- Additional Indirect Potable Reuse deliveries
  - Chino and Raymond Basins
- Flexibility to accommodate future Direct Potable Reuse regulations
  - Potential regional conveyance in close proximity to Weymouth and Diemer plants
  - Treatment augmentation through Weymouth and Diemer Plants
  - Additional recycled water delivered from Joint Water Pollution Control Plant or other regional wastewater treatment plants (e.g., Hyperion)