



Appendix A

Program Implementation Roadmap Summary

The Pure Water Los Angeles MP establishes the alternatives under consideration for the structured Program framework. The intent is that this MP will represent a foundational building block for the Program strategy as Program phases advance to implementation of Pure Water Los Angeles. As the Program moves forward, additional technical and administrative evaluations will be required to support key decisions for implementing the Program.

This document summarizes the following Program Implementation Roadmap elements:

1. A summary of the main program level evaluations that were identified in MP (Table A-1)
2. A summary of the critical technical evaluations and activities needed to support project level decision-making (Table A-2).
3. A description of the Equity Roadmap Phases.

Additional details on each evaluation are found within Section 6 and 7 of the MP report.

Table A-1. Summary of Program Level Evaluations and Activities Needed to Support Decision Making

Program Level Evaluations	Description
Community Outreach	Outreach will be conducted in accordance with Joint Outreach Plan developed by LADWP and LASAN, for all relevant activities of the Program.
Environmental planning	The six screened alternatives will move into the environmental planning processes. The results of the environmental planning process will be an important step in evaluating and selecting the final alternative. It is estimated that this process will be complete by the end of 2025.
Potable water system modeling for integration	<p>ONAT modeling completed for the MP assumed that the Program flows would be able to supply demands throughout DWP’s distribution system. Additional potable water system modeling is recommended to confirm the impact of integrating the Pure Water Los Angeles water into the distribution system. This would include flow, pressure, water quality, water age, and the nitrification potential or integration locations.</p> <p>Future ONAT modeling to further develop the Program could include:</p> <ul style="list-style-type: none"> ▪ Testing strategies that comprehensively characterize uncertainties beyond LAA flows; the main uncertainties include SFB recharge, demand projections, and the phasing and size of the Program. ▪ Adding model rules so Program production could be turned on and off based on LAA forecasts, estimating when the AWPf would be operational, and testing the benefits of a forecasted approach; it is also crucial to determine the size of demand and storage needed to accommodate seasonal variability of LAA flows, emphasizing the importance of finding a steady demand for Program flows. ▪ Running model simulations with baseline Program flows as a high priority, and conducting more robust stochastic model analyses. <p>Additional modeling recommendations are also presented in Section 6.</p>
Evaluation of Program and project specific resiliency and vulnerabilities	<p>The MP evaluated future uncertainties related to climate, seismic, and demand risks through the development of resilience scenarios and evaluated the vulnerability of key infrastructure to climate and seismic changes. The resilience benefits of the Program were evaluated by comparing the changes in water supply reliability, water cost, and other factors from conditions without the Program. The vulnerability assessment identified where proposed Program facilities would be vulnerable to climate and seismic changes.</p> <p>Based on the findings of this assessment, several recommendations for next steps have been developed. These recommendations reflect the understanding that it is important to communicate, socialize, and review these findings with both Program management and Operations staff to facilitate a supported set of adaptation strategies. The recommendations include:</p> <ul style="list-style-type: none"> ▪ Integrate Multiple Climate Vulnerabilities: Vulnerabilities have been assessed individually. It is recommended to integrate specific climate vulnerabilities into a compounded/weighted score developed by LADWP to support prioritization and to facilitate multihazard resilience actions. ▪ Develop Facility-Specific Actions (pluvial flooding, wildfire, and extreme heat vulnerabilities): Starting with the results from the resilience and vulnerability assessment (Jacobs 2024), identify the most vulnerable across these three categories, and develop facility-specific adaptation strategies. Actions for these hazards will likely be best addressed at the facility level. ▪ Develop Regional Strategies: The resilience and vulnerability assessment identified some key regions in which multiple climate hazards are concentrated. These include the coastal zone at Hyperion, flooding at the CB area and future recharge wells, and wildfire in the foothills. LADWP and LASAN should consider whether regional strategies, such as a regional coastal protection plan or wildfire resilience actions, are more effective than facility-specific actions in these regions. ▪ Update and Integrate LADWP and LASAN Design Standards: One of the primary engineering drivers for facilities design and operations are standards. LADWP and LASAN should consider revisiting, reviewing, and updating design standards and policies, as appropriate, to account for highly likely changes in climate where the current and future facilities will operate (more extreme precipitation, increase in extreme heat days, higher sea levels). ▪ Coordinate with other City and Regional Climate Adaptation Strategies: Align efforts by LADWP with those of all City departments and regional efforts so LADWP actions are consistent and integrated. ▪ Protect City Occupational Health: Develop updated policies and protocols to provide greater protection of worker health during extreme climate events such as extreme heat and flooding. <p>Additional details are included in Section 6.</p>
Regulatory	<p>Program implementation will be dependent on receiving the necessary DDW and RWQCB permits. A regulatory plan for program and project level components is recommended to organize and facilitate Program permitting. Early engagement with DDW and RWQCB is recommended to identify the key regulatory requirements and compliance. Frequent engagement will also assist with permit review and approval. DPR in particular will require extensive validation testing, planning, and documentation for the program permitting.</p> <p>Additional details are included in Section 7.</p>
Equity	<p>LADWP developed a proposed Equity Roadmap that incorporates principles from the “LA 100 Equity Strategies” document (LADWP 2023b) and the national Justice40 Initiative for an equitable transition to a sustainable water supply program using recycled water. The Equity Roadmap includes three main phases:</p> <ul style="list-style-type: none"> ▪ Equity Roadmap Phase 1: Planning, Assessment, and Readiness (0-18 months) ▪ Equity Roadmap Phase 2: Pilot Project and Program Development (18-36 Months) ▪ Equity Roadmap Phase 3: Program Implementation and Monitoring (36-60+ months) <p>Additional details are included in this Appendix A.</p>
Funding	<p>LADWP will continuously evaluate funding conditions and opportunities throughout the life of the Program to adapt implementation to changes in circumstances. This iterative approach will allow the Program to remain flexible and responsive to evolving financial conditions, market trends, and Program requirements. Regular reviews will facilitate alignment of the funding strategy with LADWP goals and affordability targets.</p> <p>Additional details are included in Section 7.</p>
Construction conflict identification	As projects are formulated, identify construction conflicts including other major construction efforts in the region.
Property acquisition and easements	<p>LADWP has identified that implementing a holistic real estate procurement strategy offers numerous advantages. A holistic real estate procurement plan provides the framework to adapt to changing requirements and future expansions more effectively and facilitates better communication and alignment among all stakeholders, so that everyone is on the same page regarding real estate needs and timelines. A comprehensive plan provides the structure to support meeting regulatory and compliance requirements efficiently, reducing legal and bureaucratic hurdles.</p> <p>Additional details are included in Section 7.</p>
Future Program adaptability	As part of the MP, various integration locations and strategies were evaluated. TWA and SWA are two integration strategies that were not included in the evaluated alternatives, but it was recognized that these strategies could provide benefits if there are future policy or demand changes. TWA could also potentially provide schedule benefits if it is desirable to LADWP. Continuing to evaluate these strategies could inform the selection of the final alternative.

Program Level Evaluations	Description
Integration of water banking strategy	The ability to store water along the LAA is a key factor in how much LAA water must be used during wet years. LAA is a higher priority supply based on its carbon footprint, cost, and water quality, and that prioritization may result in lower utilization of Program water. Additional storage of LAA water (e.g., water banking) could provide additional water supplies during dry years as well as increase the ability to maximize the use of recycled water.
Staff resourcing	The implementation of the Program will require committed DWP staffing resources for developing planning, funding, permitting, design, contracting/procurement, construction, operations, and program management. An evaluation is recommended to develop the necessary staffing resources and coordination with existing resources to determine additional staffing needs.
Energy analysis and greenhouse gas emissions	Controlling energy use and greenhouse gas emissions is a key City goal. IPR and DPR are energy intensive treatment processes, but IPR and DPR represent a local water supply with less distance for conveyance and pumping. Their overall energy impact can be compared to other imported water supplies that the City relies on as well as other new water sources (e.g., ocean desalination). The energy analysis can also be taken into account when evaluating alternatives once the alignments and DPR treatment technologies are better defined. Consideration should also be given to efforts to increase renewable energy in the grid.

Table A-2. Summary of Project Level Evaluations and Activities Needed to Support Decision Making

Phase	Evaluation	Component				
		AWPF	Conveyance	Central Basin	San Fernando Basin	Direct Potable Reuse
Planning	<i>Determine Water Quality Requirements</i>	<ul style="list-style-type: none"> Develop enhanced source control program with LASAN Evaluate HWRP optimization to improve AWPf source water 	<ul style="list-style-type: none"> Determine water quality for corrosion control and disinfectant residual 	<ul style="list-style-type: none"> Determine AWPf post-treatment needs for compatibility with groundwater replenishment 	<ul style="list-style-type: none"> Determine AWPf post-treatment needs for compatibility with groundwater replenishment 	<ul style="list-style-type: none"> Evaluate AWPf treated water quality to identify monitoring surrogates for post-AWPf treatment performance
Planning	<i>Evaluate Siting and Routing</i>	<ul style="list-style-type: none"> Identify available real estate compared to required footprint, including ozone-BAC for DPR Evaluate sizing and resiliency coverage (integrated coastal hazards and vulnerability analysis) Conduct cost and benefit analysis for identified locations Evaluate capital and O&M costs, constructability, operational complexity, regulatory acceptance, and environmental stewardship Conduct environmental site assessments Secure power supply 	<ul style="list-style-type: none"> Identify pumpstation, flow control station, and storage sizing and siting Conduct conflict and constructability reviews Identify potential real estate needs Conduct environmental site assessments 	<ul style="list-style-type: none"> Identify potential real estate needs for wells and groundwater treatment Conduct a conveyance alignment study for additional pipelines off the main backbone Conduct environmental site assessments 	<ul style="list-style-type: none"> Identify potential real estate needs for wells and GW treatment Evaluate replenishment alternatives (such as, Boulevard Pit) Conduct environmental site assessments 	<ul style="list-style-type: none"> Identify potential real estate needs Evaluate benefits of ozone/BAC on ROC discharge Evaluate opportunities for TWA Coordinate with VNC master plan Evaluate impacts to LAAFP operations Conduct environmental site assessments
Planning	<i>Evaluate Treatment and Operations</i>	<ul style="list-style-type: none"> Develop AWPf flow sizing and treated water quality needs Identify additional testing and research opportunities for MBR pilot Evaluate equalization basin sizing for steady-flow RO operations Develop target utilization and acceptable RO downtime (downtime management) Coordinate with conveyance for post-stabilization and disinfection requirements Determine ROC conveyance and potential treatment Evaluate off-specification management strategies Identify required staff certifications and qualifications, including developing training and certification programs 	<ul style="list-style-type: none"> Conduct detailed hydraulic analysis Assess water age impacts (manage range of flows) Evaluate potential TWA integration Evaluate operability and management of conveyance system (including flow control, pressure relief, emergency ops, in-line pumping, and break management) Determine buildout sizing Develop standard operating procedures Evaluate pressure surge prevention management strategies Evaluate off-specification management strategies 	<ul style="list-style-type: none"> Develop pilot well testing for well sizing Develop monitoring well and sampling program for GW characterization Evaluation and testing for extracted GW treatment Conduct potable distribution hydraulic analysis (such as, Harbor trunkline) Conduct pipe loop study and corrosion potential assessment for purified water integration with existing water supplies and infrastructure 	<ul style="list-style-type: none"> Develop pilot well testing for wells sizing Develop GW characterization Conduct Tujunga tracer study Conduct potable distribution hydraulic analysis (such as, increased pumping from SFB, or pumping from SFB to VNC) Conduct pipe loop study and corrosion potential assessment for purified water in the existing pipes and integration with existing water supplies and infrastructure Evaluation and testing for extracted GW treatment 	<ul style="list-style-type: none"> Conduct hydraulic assessment - Alignment to and connection with Jensen WTP Develop strategy for off-specification water management Identify additional AWPf or VNC improvements to support DPR Engage an Independent Advisory Panel (IAP) for validation testing plan and results review Conduct DDW validation testing, including: <ul style="list-style-type: none"> Determine testing needs for pre- and post-RO DPR Identify targeted treatment technologies Explore opportunities to refine testing Identify design parameters to inform operational decisions for the DPR process Evaluate DPR staffing needs, including developing training and certification programs Conduct pipe loop study/corrosion potential assessment for purified water in the existing pipes and integration with existing water supplies/infrastructure

Phase	Evaluation	Component				
		AWPF	Conveyance	Central Basin	San Fernando Basin	Direct Potable Reuse
Planning	<i>Communicate with Potential Partners</i>	<ul style="list-style-type: none"> Coordinate with LASAN for: <ul style="list-style-type: none"> Resiliency and vulnerability requirements Source water and control Coordinate with West Basin on water quality and supply 	<ul style="list-style-type: none"> Collaborate with alignment specific local and regional partners 	<ul style="list-style-type: none"> Obtain Water Master approval of GW augmentation Develop below the line - agreement with WRD to purchase water for replenishment Obtain West Basin approval to use portion of distribution system to convey purified water Develop arrangement with current non-potable users to switch to purified water (payment structure) 	<ul style="list-style-type: none"> Coordinate with Water Master for GW augmentation Coordinate with LACPW for spreading grounds Evaluate Interconnection opportunities for local partners 	<ul style="list-style-type: none"> Partner with LASAN throughout DPR planning
Planning	<i>Develop Permitting Plans</i>	<ul style="list-style-type: none"> Develop IPR permitting plan Develop local and state permitting plan 	<ul style="list-style-type: none"> Develop a local and state permitting plan 	<ul style="list-style-type: none"> Develop a local and state permitting plan Evaluate need for developing National Contingency Plan for basin depending on GW characterization 	<ul style="list-style-type: none"> Develop a local and state permitting plan 	Develop a DPR permitting plan, including: <ul style="list-style-type: none"> Joint Plan Engineering Report Operations Plan Monitoring Plan Demonstration of technical, managerial, and financial capacity Testing Plans Validation Study Reports
Implementation	<i>Design, Construct, and Commission</i>	<ul style="list-style-type: none"> Master plan AWPF site for IPR and DPR Confirm project delivery approach Acquire real estate, if required Design MBR and AWPF Construction and commission MBR and AWPF 	<ul style="list-style-type: none"> Confirm project delivery approach Acquire easements, pursue permitting, and identify ROW Acquire real estate Design pump stations and trunklines Construct and commission pump stations and trunklines 	<ul style="list-style-type: none"> Confirm project delivery approach Acquire real estate Design wells, extraction treatment, and conveyance Construct and commission wells, extraction treatment, and conveyance 	<ul style="list-style-type: none"> Confirm project delivery approach Acquire real estate Design wells, extraction treatment, and conveyance Construct and commission wells, extraction treatment, and conveyance 	<ul style="list-style-type: none"> Confirm project delivery approach Design DPR treatment at VNC or AWPF Construct and commission DPR treatment

Equity Roadmap

As a foundational element for a successful Program, LADWP developed a proposed Equity Roadmap that incorporates principles from the *LA100 Equity Strategies* document (LADWP 2023b) and the national Justice40 Initiative (EPA 2024) for an equitable transition to a sustainable water supply program using recycled water. This section of the MP summarizes the Equity Roadmap, which includes a variety of initiatives, studies, and implementation efforts through three phases to help the City reach its equity-related goals.

Through this effort, three core tenets of equity and justice remain as the foundation of this roadmap, including:

1. **Recognition Justice:** Acknowledges and addresses historical and systemic inequities, so that marginalized communities are seen, heard, and valued
2. **Procedural Justice:** Guarantees fair and transparent decision-making processes that involve all stakeholders, including those traditionally excluded from power structures
3. **Distributive Justice:** Focuses on equitable distribution of benefits and burdens, so that the advantages of recycled water programs are shared fairly, and negative impacts are minimized for vulnerable communities

Ultimately, consideration and implementation of these tenets are essential for creating a Program that benefits all members of the community and contributes to a more just and equitable society.

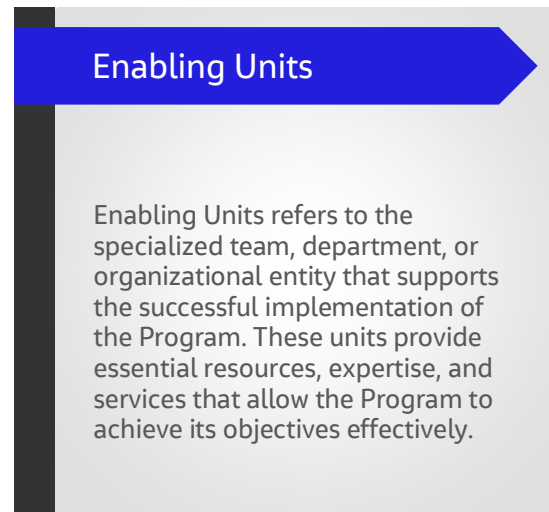
The Equity Roadmap Phases are described in further detail in this section.

Equity Roadmap Phase 1: Planning, Assessment, and Readiness (0 to 18 months)

Phase 1 includes the following steps:

1. **Steering and Advisory Committee Proposal:** Inspired by the *LA100 Equity Strategies* document, research and identify a proposed committee to support equity efforts, with representation from historically underserved communities (environmental justice communities) with the support of the following entities and individuals:
 - Technical experts
 - Academia
 - Community leaders
 - Public officials
 - Other stakeholder groupsDraft a set of goals for the committee to achieve.
2. **Data Collection:** Review and analyze data using tools, such as the Climate and Economic Justice Screening Tool, CalEnviroScreen (OEHHA 2024), and the Justice40 (EPA 2024) database to better understand communities facing disproportionate environmental hazards, including low-income and DACs burdened by water insecurity or pollution. In addition, hold community meetings to gather feedback and input in the early stages.
3. **Equitable Outreach Materials:** Develop culturally relevant materials explaining recycled water, its safety, and community benefits. Consider developing presentations, brochures, a website, and posters that can be made for school children, neighborhood councils, and non-English-speaking communities. The efforts described here require hand in hand coordination with LADWP's and LASAN's Enabling Units that support outreach and diversity, equity, and inclusion (DEI) efforts.

4. **Internal Processes:** To effectively promote equity in the investment process, a comprehensive review of existing internal processes is recommended. This assessment should focus on identifying and addressing potential barriers that disproportionately impact small businesses, particularly those owned by marginalized groups. An important area for examination is the procurement process for contracts. By evaluating current practices, LADWP can identify opportunities to enhance equity in the selection and award of contracts. This includes promoting supplier diversity, providing subcontractors from diverse backgrounds with fair opportunities to participate, and identifying barriers and developing solutions. Review of internal processes aligns with LADWP's Strategic Plan (LADWP n.d.) described in Objective 3.2 to "Promote Vendor and Contractor diversity."



Enabling Units

Enabling Units refers to the specialized team, department, or organizational entity that supports the successful implementation of the Program. These units provide essential resources, expertise, and services that allow the Program to achieve its objectives effectively.

5. **Real Estate Assessment:** A comprehensive and equitable Real Estate Procurement Plan is essential to mitigate future risks, optimize resource allocation, and result in minimal community impact. By conducting an early assessment of potential real estate needs and developing a unified strategy, LADWP can effectively address its real estate requirements, while prioritizing fairness and minimizing disruptions to local communities. This approach aligns with LADWP's Strategic Plan (LADWP n.d.) Objective 3.3 to "Acquire and manage necessary land and space to support current and future operations." To provide an equitable real estate assessment, considerations include:

- Actively engaging local communities, particularly those that may be disproportionately impacted
- Providing fair and equitable compensation for property owners
- Considering the potential impacts on affordable housing availability
- Developing relocation assistance programs for displaced residents
- Prioritizing environmental justice
- Making the real estate procurement process inclusive and equitable, with representation from diverse backgrounds and perspectives

Equity Roadmap Phase 2: Pilot Project and Program Development (18 to 36 Months)

Phase 2 includes the following steps:

1. **Steering and Advisory Committee Formation:** As a next step from Phase 1's Steering and Advisory Committee Proposal, form the actual committee made up of the following individuals:
 - Leaders from underserved communities
 - Leaders from environmental justice communities
 - Technical experts
 - Representatives from academia
 - Public officials

This Steering and Advisory Committee will create its vision and mission statement for the Pure Water Los Angeles Program.



Environmental Justice Communities

Environmental justice communities are neighborhoods or communities that experience a disproportionate burden of environmental hazards or a significantly reduced quality of life.

2. **Pilot Project with Community Co-design:** Partner with community groups from a DAC to be a part of the planning, design, and implementation of a pilot project showcasing advanced treatment technology and potential uses, such as a DPR pilot project at a DAC that educates students and provides certification for AWP Operators for their career development.
3. **Research and Engagement with Minority Serving Institutions:** Conduct a research project, feasibility study, or technical implementation work with a minority serving institution, such as a Historically Black College and University or a Hispanic Serving Institution. Include parameters of the project to be associated and within a DAC that the Pure Water Los Angeles Program may intersect with. Consider using existing LADWP Memoranda of Understanding (MOUs), including the Advancing Minorities Interest in Engineering MOU (LADWP 2022), to better connect with a university or college.
4. **Regulatory and Policy Advocacy:** With support of LADWP’s Legislative Intergovernmental Affairs Team, partner with DAC representatives to advocate for policies supporting potable reuse and addressing equity concerns.
5. **Equity and Affordability Analysis:** Model potential Program impacts on DACs, including:
 - Affordability concerns
 - Construction impacts
 - Business development
 - Access to Program benefits for the community

Include results from analysis as part of each project’s specific implementation and project management plan.

6. **DAC Outreach:** Implement the overall Program’s Community Outreach effort, led by LADWP’s and LASAN’s Outreach Enabling Unit, through a proactive approach to meet, educate, and acknowledge DACs that may be impacted by the Pure Water Los Angeles Program. This includes offering opportunities for the community to provide feedback and suggestions to the overall Program.
7. **Job Creation:** Develop a program for DACs to provide educational and training opportunities that can cultivate interest in high-demand infrastructure careers, such as construction, treatment operators, and engineering. Consider similar programs like the Utility Pre-Craft Trainee Program (LADWP 2024a) model, and partner with labor unions to develop the program. The program should also promote local diversity in consultants, contractors, and other support groups involved with Pure Water Los Angeles. This approach not only generates new jobs essential for infrastructure development but also diversifies the workforce, addressing historical inequities.
8. **Business Retention Program:** Develop a business retention program, similar to past trunk line projects, where businesses impacted by construction work areas can apply for loss of business and receive support from LADWP. Evaluate each project that is part of the Pure Water Los Angeles Program for consideration before construction begins.

Equity Roadmap Phase 3: Program Implementation and Monitoring (36 to 60+ months)

Phase 3 includes the following steps:

1. **Phased Infrastructure Development with Community Input:** Implement infrastructure upgrades in a planned sequence, including consideration for DACs facing water quality challenges. Integrate community feedback into construction planning to minimize disruptions and construction impacts.
2. **Ongoing Public Communication and Trust Building:** Maintain public education efforts, address emerging concerns, and provide regular Program updates. Foster trust by providing clear communication channels and responsive project management. Engage existing community groups and community leaders to best communicate the overall Program goals.

3. **Performance Monitoring and Evaluation with Equity Metrics:** With support of the Steering and Advisory Committee, use the 2016 Equity Metrics Data Initiative (LADWP 2024b) and *LA100 Equity Strategies* document (LADWP 2023) to develop metrics that will help evaluate and monitor the Programs' efforts with justice and DEI.

Additional Considerations from Environmental Justice and Equity

Additional considerations include the following:

- **Language Justice:** Provide materials and communication in the preferred languages of the target communities.
- **Culturally Appropriate Engagement:** Use culturally appropriate outreach methods, and involve trusted community leaders in Program co-design and implementation.
- **Transparency and Accessibility:** Make all information accessible in multiple formats, such as written, audio, and visual, and readily available to all community members, including online when applicable.
- **Workforce Development:** Create training programs to equip interested residents from DACs with skills for jobs in the utility industry, promoting economic opportunities.
- **Long-term Community Benefits:** Working with the Steering and Advisory Committee and DAC leaders; and explore ways the Program can generate long-term benefits, such as community gardens, educational centers, integrated art, and passive recreation opportunities.

LADWP plans to implement the activities described in this roadmap beyond the MP, through the CEQA process and Program implementation, as described in the Program Implementation Roadmap phases.

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