

5. RATEPAYER ADVOCATE REPORT ON PROPOSED RATE ACTION

This appendix provides the Ratepayer Advocate Report on Proposed Rate Action.

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Date: December 11, 2015

To: The Board of Water & Power Commissioners
Attention: Barbara Moschos, Commission Secretary

From: Frederick H. Pickel, Ph.D.,
Executive Director/Ratepayer Advocate 

Subject: 2015 LADWP Water Rate Proposal
December 15, 2015, LADWP Board meeting

The attached report, dated December 11, 2015, is the Office of Public Accountability/Ratepayer Advocate's (OPA's) report to the LADWP Board on the LADWP Water Rate Ordinance matter.

In the event you have any questions regarding this matter, please contact the OPA at 213-978-0220 or fred.pickel@LAcity.org.

Attachment: OPA Ratepayer Advocate Report on LADWP 2015 Water Rate Proposal dated December 11, 2015

cc: The Honorable Mayor Eric Garcetti
The Honorable Members of the City Council
The Honorable City Attorney Michael Feuer
The Honorable Controller Ron Galperin
Sharon M. Tso, Chief Legislative Analyst
Miguel A. Santana, City Administrative Officer
Marcie L. Edwards, General Manager, Department of Water and Power

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December 11, 2015

A Review of LADWP's 2015 Water Rate Proposal

In July 2015, the Los Angeles Department of Water and Power (LADWP) submitted to the Board of Water and Power Commissioners (Board) a proposal for rate changes over the next five years for water and power utility rates. In the coming months, the LADWP Board, the Mayor and the City Council will consider a City Ordinance adopting the proposed rate changes.

This communication describes the Office of Public Accountability's (OPA's) findings regarding issues specific and unique to LADWP's water rate proposal and Water System. The OPA subsequently will publish communications of findings on LADWP's power utility rate proposal and on costs shared between LADWP divisions.

The City Charter and related provisions require the OPA to provide "information to the Board, the City Council, the Mayor, the Neighborhood Councils, and the public on the reasonableness of rate actions and any modification to them." The OPA is an independent "watchdog" for consumers - to assure LADWP transparency and accountability.

"Reasonableness" is an opinion held by rate-setting public officials performing a specialized duty to the public interest. The essence of this opinion is whether the rates charged are equitable to the many competing interests facing a monopoly utility. These enterprises are highly regulated by diverse entities for many of their various functions. The costs must have a connection to the provision of reliable service, and the allocation of those costs must be non-discriminatory.

The OPA, with the assistance of specialized national experts on water and power utilities, has met repeatedly with LADWP management and staff, and reviewed the proposed rate action draft ordinance, the LADWP rate action proposal, and a variety of supporting documents. The Navigant Consulting Report supporting the OPA's review is attached.

In the OPA's opinion, *the LADWP's water rate proposal, as modified in December 2015, is reasonable.*

LADWP's Recent Accomplishments. The OPA believes that the LADWP Water System has made substantial improvements on a variety of planning, budgeting and reporting processes since OPA's last review in 2012. Additional improvements are described below.

Proposed Water Rates. The OPA finds that the proposed rate increases are less than what is needed, but LADWP's Water System may be challenged to perform activities at the planned levels.

These rate increases average 4.7% annually over the next five years, based on system average revenue increases of 5.3% and a slight growth in water demands from drought levels.

Revenues will climb from \$1.082 billion last fiscal year (FY 2014-15) to \$1.411 million in FY 2019-20, with most of the new revenue to fund increases in capital project expenditures. The new revenues are also for increases in operating costs (the last funding increase for the base costs was in 2009), and to reduce the unfunded employee pension liability. A transfer of net income from the Water Fund to the City's General Fund (the Transfer) no longer exists. The Transfer from the Power Fund will be discussed in a later communication.

Although the proposed increase in the replacement of essential and aging pipelines is a key driver for the proposed rates, the pace is too slow for the desired long-run replacement cycle. The OPA, however, is concerned that the staffing levels will be inadequate for the growing levels of planned capital project expenditures, in part due to the anticipated personnel retirements and constraints on outsourcing.

Increases to Water Bills. The OPA believes that the projected billing increases are just and reasonable. The OPA finds that in support of the increase in revenues over the five year plan, projected bills will increase an average of 4% per year for low and for typical water users, and 7% per year for higher water users. The water service costs for the Los Angeles residents living in multi-family dwellings will increase at the same rate as the typical water user.

Water customers may experience their highest increases in the first year of the five-year plan. In the following years, LADWP's rate increases should slow, as LADWP has forecasted future reductions in purchased water costs due to a return to normal (pre-drought) weather conditions. If water shortages experienced in the current drought persist, then future rates for all water customers will be higher than the levels forecasted by LADWP.

Typical single-dwelling unit residences using 12 hundred cubic feet (HCF) per month today have a bill of \$62.89 per month. Within one year it will be \$68.73 per month, in three years it will be approximately \$70 per month. By the final year of the plan the cumulative rate increases raise their bill to \$74 monthly, an \$11 per month increase over more than four years (approximately 4% per year average increase).

However, in the first year there is a one-time, sharp increase in the rates that affects most customers, and may create "rate shock." The charges for the three months of April through June 2016 increase all customers from 15% to 19%, with low-volume customers using 8 HCF per month seeing a billing increase from \$37.23 to \$44.42 per month. However, in July 2016 LADWP has forecasted reductions in its purchased water supply costs, and low-water user bills may then drop by \$3.72 per month to \$40.70, a 9% increase over the current bills. By the end of the second year under the new rates, the increase may further decline to an average of 3.4% per year, but only if "normal" water supply conditions have returned.

Future Revenue Increases. The OPA supports LADWP's proposed "use 'em or lose 'em" concept for suspending rate increases not yet required for attainable expenditures.

DWP's new rates will have built-in revenue adjustments, decoupling mechanisms and cost pass-throughs to revise rates as operating and capital costs or water demands vary from forecasted levels. For base rate funding of LADWP-controlled operations that do not vary with water sales, key performance targets and metrics will be reported to the OPA and the LADWP Board. With the monitoring of these targets and use of these rate control mechanisms, the LADWP Board, OPA and City Council will be able to act to keep activities and forecasts better aligned, and to hold LADWP accountable for promised service levels. Revenues collected for capital projects and water purchases will be adjusted for LADWP's actual level of expenditures through pass-throughs.

Water Customer Billing is Just and Reasonable. The OPA supports LADWP's updates for rate equity among the different customer classes, consistent with the latest industry practices. The OPA believes that LADWP's updates to tiered water supply rates and increases in rate blocks, based on the projected costs of LADWP's four different water supplies, are consistent with the latest industry practices to address recent judicial findings. LADWP's adherence to proportionality has resulted in a large, but necessary, cost-based increase in water rates for public irrigation.

Pursuit of Water Conservation. The OPA finds that LADWP's proposed water rates strengthen billing inducements supporting the Mayor's and Governor's water conservation policies, resulting in greater billing increases affecting the highest water uses.

The conservation inducements include increasing the number of residential rate blocks from two to four and allocating the highest water supply costs to the highest rate tiers. All revenues are collected from variable water sales to further encourage the conservation price signal and to offer the lowest water service costs to the customers using the least water. While maintaining the current seasonal allocations in three different temperature zones, the residential parcels receiving different water quantity budgets will drop from five lot size categories to four. Residents on properties of more than one acre (43,560 square feet) will have the same budget as those on parcels over 17,500 square feet.

Therefore, increasing public education and awareness of these rate actions is important for customer conservation awareness.

Remaining Issues. Remaining issues and concerns will continue to be worked on over the continuing review process. The numbers provided in this communication are based on the Proposition 218 notice, and LADWP's final, adopted Ordinance for water rates may be less.



Review of LADWP's 2015 Power and Water Rate Increase Proposal

Water System

Prepared for:
The Office of Public Accountability / Ratepayer Advocate
of the City of Los Angeles



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Executive Summary

Navigant Consulting Inc. (“Navigant”) has been retained by the Office of Public Accountability / Ratepayer Advocate (“OPA”) of the City of Los Angeles (the “City”) to conduct an independent review of the proposed power and water rate increases of the Los Angeles Department of Water and Power (“LADWP” or the “Department”) for the FY 2015/16 – FY 2019/20 period (the “Study Period”). The primary objective of this review is to determine if the proposed water and power rate increases are supported by appropriate plans, regulatory requirements and public policy objectives, and that the associated revenue requirements are appropriately divided among the Department’s customer classes. This portion of the final report focuses solely on Navigant’s assessment of the proposed water rate increase over the Study Period, as the proposed power rate increase is addressed in a separate section of the final report.¹

The Department is facing a number of critical and time-sensitive challenges that need to be addressed over the Study Period. These challenges include replacing and upgrading its aging infrastructure, reducing reliance on purchased water, increasing local water supplies, and maintaining regulatory compliance. Addressing these challenges while continuing to provide safe and reliable water to ratepayers requires an increase of the Water System’s revenue requirements. LADWP is proposing a 5.26% annual average rate increase over the Study Period.

To conduct this assessment, Navigant has reviewed the proposed water rate ordinance², historical budget data for the past three fiscal years, forecasted budget data for the next five fiscal years, various financial scenarios, the water Cost of Service Study (“COSS”), program plans, credit reports, and various other data and documents. Navigant also recently completed the 2015 Industrial Economic and Administrative (“IEA”) Survey, which benefits this study due to its exhaustive look into the LADWP’s capital programs and operations.

The IEA Survey identified a number of governance challenges facing the Department as a whole, which therefore impact the Water Organization. Key governance issues include:

- Decentralized City authority without enough insight into Department operations and finances.
- Lack of external reporting on consistent and reliable key performance indicators.
- Lack of internal authority, controls, and accountability with respect to financial practices.
- Ambiguous role of the Office of Public Accountability requiring further refinement of the office’s mission and responsibilities.

The Department, expanding on the recommendations of the OPA, the City Administrative Officer (“CAO”), and the Chief Legislative Analyst (“CLA”), directly addresses these recommendations in the final proposed ordinance which will significantly increase transparency and accountability at the Department. In particular, the ordinance has defined a new, bi-annual reporting process that highlights

¹ The findings of the Total Compensation Analysis completed by Oliver Wyman and their impact on rates will be addressed in the power rate increase chapter of the final report.

² Navigant reviewed sections 2, 3 and 4 of the water rate ordinance as provided by the Department on December 4, 2015.

the link between rates and progress on key capital programs and, if necessary, adjusts rates based on the performance of these programs. With some uncertainty surrounding the key capital programs and the Department's history of underspending in certain areas, there is significant value in having the Department's progress reporting mechanism built into the rate ordinance to ensure that critical programs are appropriately monitored.

The Department has been instrumental in supporting Navigant to design and include in the ordinance the reporting mechanisms described above. In our experience, the willingness of LADWP to include more robust reporting, tracking and accountability provisions in the proposed ordinance is unprecedented and a reflection of more mature and sustainable management practices. In addition, the proposed ordinance language creates a more significant, sustained and meaningful role for the OPA in the rate review process.

In addition to the review and re-design of the water ordinance, Navigant assessed project plans for each key capital program and found that these plans align with local, state, and federal mandates and guidelines. Moreover, the proposed budgets for these programs appear to be reasonable given the significant amount of work that needs to be done to address the aforementioned challenges. In fact, certain infrastructure capital programs such as mainline, trunk line, and large valve replacement need additional funding to reduce the backlog of assets that have exceeded their average useful life. The rate levels requested here represent a reasonable balance between minimizing the rate impact of such vast programs and continuing to keep up with upgrading the water infrastructure. Increasing funding in this area is desirable if the LADWP can present a comprehensive plan to demonstrate how it could manage even larger sources of funding if provided.

While the Department has reasonable plans to implement these capital programs, many of these plans rely on rapid hiring and contracting out, two activities the Department has historically struggled with. For the capital program implementation plans to be successful, it is critical that the Department put substantial effort towards creating processes to streamline these two activities.

In addition to funding needed capital programs, a rate increase is necessary to avoid the negative financial ramifications associated with a bond rating downgrade and increased interest costs. LADWP's five year financial plan shows that the rate increase will allow the Department to meet financial targets, which should help the utility preserve its bond rating and the associated low interest rates. However, without the rate increase, LADWP is at risk of a downgrade, which in the long-term would come at a significant cost to the ratepayers. Further, the growth of LADWP's debt may soon become unsustainable and the proposed rate increase will help maintain adequate debt levels in the short term. This issue is not new and the consequences may be significant for the ratepayers if the Department does not quickly address it. Navigant recommends the OPA and CAO/CLA undertake a separate study looking at the impact of increasing debt levels over the short and medium term, and identifying alternatives to mitigate the associated risks.

Navigant also reviewed the July 2015 COSS for the Water System, which used marginal cost principles to evaluate its cost structures and to ensure that water rates are appropriate for each customer class over the Study Period. While a number of improvements should be made to the process used to develop the water COSS going forward (these are discussed in detail in the body of the report), Navigant found that the COSS is a significant step forward in terms of aligning rates to the costs of providing service for each customer class. Specifically, the Department's proposed revenue allocations for Schedules A, B, and C

are in line with the COSS and the revenues for Schedule F are expected to be close to the COSS findings by FY 2019/20.

Based on the findings noted above, Navigant found the proposed rate increase to be reasonable and well supported. Our findings are discussed in more detail in the sections below. Navigant's analysis focuses on the following areas:

- Review of the water rates ordinance.
- Analysis of revenue requirements.
- Review of COSS.
- Impact of the rate proposal on LADWP's customers.
- Assessment of the 2015 IEA Survey recommendations in the context of the rate proposal.
- Recommendations.

Review of Water Rates Ordinance

In the proposed rate ordinance, LADWP has revised the Rate Schedules and General Provisions, and added a Performance Reporting section. Navigant has reviewed these proposed changes and, in this report, focuses primarily on the addition of Performance Reporting, as it is the most significant modification to LADWP's water rate ordinance.

The Performance Reporting section provides for the first time that the Board will establish performance metrics ("Board Metrics"), together with corresponding targets and acceptable variances, as well as a comprehensive reporting process designed to track the Department's progress toward its operational, financial, strategic and policy objectives. This section includes an initial, comprehensive set of metrics tied to the regulatory requirements, programs, and projects driving its current water rate action.

The addition of Performance Reporting is a significant and unprecedented improvement in LADWP's water rate change and governance processes. Currently, over half the water rate components can be changed as frequently as quarterly, and are capped. This design provides the Department with the flexibility to make timely rate adjustments to meet changing Departmental needs, but it fails to provide transparency or accountability with regards to the level of rates.

The Department has recognized the need to provide greater rate transparency and accountability. In collaboration with the OPA and City leadership, LADWP has revised its water ordinance to remove the caps and to impose comprehensive Performance Reporting tied to operational and financial targets. Performance outside the target range triggers automatic review by OPA, which includes bi-annual reports that opine on the Department's performance and provide rate recommendations. In this new process, the OPA has the option to share such reports with the Energy and Environment Committee of the City Council for its consideration and disposition, including recommending full Council jurisdiction over the related rate factors under City Charter Section 245.

Initial metrics are identified in the ordinance together with the requirement that the Board timely adopt targets and acceptable variances (before City Council considers the proposed rate action). The Department identifies and defines twenty metrics applicable to the Water and Joint Systems, some with sub categories and each tied to the relevant rate component it impacts. Board Metrics, their

corresponding targets, and the acceptable variance from each target can be modified by the Board with review and assessment by OPA.

In Navigant's view, the initial Board Metrics selected represent an appropriate data set that should achieve the goal of raising the visibility and understanding of actual performance on important projects and programs among the Department's key stakeholders. Initial target variances for most metrics allow for initial learning and should be refined and tightened in future years as the Department and OPA gain experience with Performance Reporting.

Analysis of Revenue Requirements

A utility's revenue requirement represents the money it collects from customers (via rates) to fund its operations. Determining the total revenue requirement is the first step in the standard utility ratemaking process.

LADWP's Revenue Requirements Determination Methodology

LADWP's revenue requirements for the Water System reflect two objectives:

- Achieve a revenue level that meets its pre-defined financial metric targets.
- Recover the Water System Organization's estimate of its total expenses.

For the Study Period, the estimate of total expenses includes future purchased water supply costs, O&M, and capital expenditures required to deliver water to customers and comply with relevant regulatory mandates. In addition to recovering these expenses, LADWP's revenue requirements are designed to maintain the financial metric targets defined by its financial advisor, Public Resources Advisory Group ("PRAG") and approved by its Board, and therefore a bond credit rating that minimizes interest rates. The Department has specific metric targets for its debt service coverage ratio, days of operating cash, and capitalization ratio.

Accepted industry practice for municipal utilities is that annual revenues be sufficient to provide for all costs related to the operating and capital requirements of the utility. This includes spending associated with O&M, system development, and financial integrity.³ As mentioned above, the Department similarly includes debt service considerations in its calculation of revenue requirements through its targeted financial metrics. This is a reasonable practice as it is necessary for municipal utilities to maintain borrowing strength to finance large capital projects. However, LADWP would benefit from formalizing the revenue requirement determination methodology around its financial metrics because utility revenue requirements are critical to rate design and therefore undergo a high amount of scrutiny. The current revenue requirement determination process is not transparent or well-understood. In conjunction with formalizing the methodology on the relationship between financial metrics and base rate revenues, LADWP should establish a formal process for allocating that revenue to specific funding needs because base rate revenues can be spent at the discretion of the Department with limited visibility from key stakeholders.

Rate Drivers

³ "Revenue Requirements: Is There a Right Way to Determine?" Burns & McDonnell, June 2003 (www.burnsmcd.com/Resource_PressRelease/1662/FileUpload/article-technicalpaper-RevenueRequirementsIsThereaRightW.pdf).

Navigant conducted a detailed review of the major Water System programs (including purchased water, capital, and O&M components) that are driving the rate increase. Overall, the Department's key expenditures over the Study Period align with federal, state, local, and internal goals and mandates. The expenditures also align with the Department's stated plans. As mentioned above, the Department plans to spend significant funds to address aging infrastructure, increase local water supplies, reduce reliance on purchased water, and meet regulatory mandates.

One area that needs increased funding and more aggressive planning is infrastructure renewal. The Department's mainline replacement plans associated with the five-year rate proposal are not sufficient to maintain system reliability over the long-term and reduce the backlog of assets exceeding their average useful life. The Department's trunk line and large valve replacement life cycles also exceed the average useful life of the assets. Accordingly, the funding and planning for this expenditure category should be re-evaluated in the near future.

LADWP's Capability to Implement its Plan

Given that the Department's actual expenses contributing to its revenue requirements have the potential to vary significantly from estimates based on the successful implementation of the Water System's major programs, Navigant used recent program progress reports and implementation plans to assess the reasonableness of planned expenditures for the Study Period.

In recent years, the Water System has improved its budget management processes. Notably, the Water System spent almost all of its budget in FY 2014/15. As discussed in the 2015 IEA Survey, Navigant found that this improvement is due, in part, to improved project management. For example, the Water System has implemented a stage-gate approach for managing projects and a robust process for the selection and prioritization of renewal projects. The Water System also has a Project Management Office (PMO) that clearly identifies the staff responsible for carrying out projects, manages project risk, and closely tracks progress against plans. Finally, Water System staff have stated that significant improvements have been made to capital expenditures forecasts.

Key programs with significant spending ramp-ups over the Study Period include infrastructure, water quality, the Owens Valley, and certain local water supply investments such as recycled water and groundwater. These capital programs have improved budget and project management and have developed sensible plans to accomplish tasks in a timely manner. While the Department has reasonable plans to implement these capital programs, many of these plans rely on rapid hiring and contracting out, two activities the Department has historically struggled with. Accordingly, the Department should put substantial effort towards creating plans and processes to streamline external contracts and hiring. Overall, the Department's approach to ramping up these capital expenditures appears to be reasonable.

Revenue Requirements Benchmarking and Sensitivity Analysis

Navigant completed a benchmarking analysis comparing LADWP's water rates, capital and O&M expenditures, and debt service coverage ratio to its municipal utility peers. Peer utilities for the water rate analysis include San Francisco Public Utilities Commission (SFPUC), City of San Diego, Glendale Water and Power (GWP), Pasadena Water and Power (PWP), and Burbank Water and Power (BWP).

Water rates throughout California are projected to increase during the Study Period; however, LADWP's system average rate is expected to be among the highest of the peer panel utilities in FY 2019/20. The Department's historical O&M per customer and capital expenditures Compounded Annual Growth Rate (CAGR) also fell on the high end of the peer panel. Notably, LADWP will maintain a healthier debt

service coverage ratio compared to the SFPUC and the City of San Diego throughout the Study Period except for FY 2019/20.

The Department's credit outlook is considered stable by the three main rating agencies. However, LADWP's debt service coverage ratio and days of cash on hand metrics have declined towards their thresholds and the capitalization factor has increased towards its threshold, which indicates weakening metrics. Without significant and undesirable capital program reductions, the proposed rate increase is necessary to stabilize these metrics and ensure financial health.

Review of Cost of Service Study

LADWP completed a COSS for the Water System in July 2015 using marginal cost principles in order to evaluate its cost structures and ensure that its water rates are appropriate for each customer class over the Study Period. This objective stems in part from California laws requiring that the fees charged by local publicly-owned utilities reflect the cost of providing products or services. A COSS is an important analysis that aids in achieving the objective that a utility's rates for each class of customer reflect the utility's costs of providing service to that customer class.

Overall, Navigant found that the Water System revenue allocations are in alignment with its Water COSS findings, through FY 2019/20. Additionally, the review of LADWP's water rate design showed that the Department designed rates that are based on their water supply costs.

Impact of the rate proposal on LADWP's customers

Navigant conducted an analysis of the proposed rate increase impact on customers monthly bills over the Study Period for Schedules A (single-dwelling unit residential), B (multi-dwelling unit residential) and C (commercial, industrial, governmental and temporary construction).

Navigant's analysis focused on determining the level of monthly bill increases across the full spectrum of LADWP customers' water usage. Given the existing water conservation mandates and goals, it is particularly critical for the Department to ensure that customers who do meet conservation mandates and goals are not unfairly hit by the rate increase. In other words, customers with lower water usage should face a smaller monthly bill increase compared to higher usage customers.

Overall, while all Schedule A customers will face a monthly bill increase over the Study Period regardless of their water conservation efforts, the Department appears to have appropriately designed its water rates and allotments to limit the rate increase for low usage customers and to assign most of the revenue requirement increase to large water users. In addition, the majority of Schedule A customers (64.5%) will face monthly bill increases lower than the 5.26% total average annual rate increase over the Study Period.

All Schedule B and C customers will experience an average bill increase lower than the overall 5.26% average annual increase, meaning that most of the increase in revenue requirements will be borne only by large Schedule A users. This is consistent with the findings of the water COSS which show that Schedule A customers have been subsidized by Schedule B and C customers.

Assessment of the 2015 IEA Survey Recommendations in the Context of the Rate Proposal

This report is closely related to the recent 2015 IEA Survey of LADWP. The IEA Survey reviewed the Water System's major plans including the 2010 Urban Water Management Plan, the Stormwater Capture Plan, the 2008 Water Supply Action Plan, the 2009 Sustainability Plan, the One Water L.A. 2014 Plan, and

the 2014 Los Angeles pLAn. Navigant then provided recommendations in the IEA Survey based on the Department's progress against these plans.

The proposed rate ordinance addresses the IEA Survey's recommendation related to critical short-term governance changes. Specifically, Navigant recommended that the Department improve reporting and transparency by tying financial and performance metrics to rates by ordinance. In response, the proposed ordinance includes language on reporting requirements for Water System metrics and the actions that will be taken to review the metrics, thereby linking the implementation of future rate adjustments to LADWP's performance. This is the basis of a formal and continuous rate review process which would be a significant improvement to the status quo as described in the IEA Survey.

Additionally, according to Navigant's findings in the IEA Survey, the Water System faces a number of challenges that will require significant capital and O&M expenditures related to the maintenance and renewal of aging infrastructure and compliance with stringent regulatory mandates. The programs with the largest impact on the rate increase include infrastructure replacement and water quality. This report reiterates and quantifies these needs, as Navigant views the request for increased rates to be reasonable based on these factors.

Recommendations

Based on these findings, Navigant makes the following recommendations.

Water rates ordinance:

- **Board Metric Variances:** Navigant recommends that the Department work with the OPA to refine the variance ranges applicable to each of the Water and Joint System Board Metric targets. The Department will quickly gain more experience with these metrics and improve its ability to accurately and realistically forecast work and deliver on results. Variances should be tightened as appropriate to reflect the Department's deep expertise with many of the metric-related activities, and to be more in line with the margin of error adopted for other utilities.
- **Interim Rate Review Timing:** The Department proposes to complete its interim rate review by June 30, 2019. Navigant believes this timing falls too late for a meaningful base rate review during the five year rate period encompassed in this rate action. The Department should conduct its interim rate review by January 1, 2018, which will provide time prior to the July 1 fiscal year for the Board to consider, by April 1, over two full fiscal years of data (FY 2015/115/16 and FY 2016/17) for this interim analysis.
- **Interim Rate Review Inputs:** For the interim rate review, the Department will consider updating its Base Rate Revenue Targets and rate design to reflect updated forecasts for revenues, expenditures, and overall fiscal performance. The uncertainty of California's drought and its impact on customer water use may further change overall water deliveries in LADWP's service area. The Department should ensure that its interim forecasts are based on then-current forecasts of water deliveries, in the aggregate and by customer class.

Revenue requirements:

- Formalize and fully document the revenue requirement determination methodology.
- Establish a formal documented process for allocating revenue to specific funding needs.

- Increase the proposed mainline, trunk line and large valve replacement plans to at least prevent the backlog of assets needing replacement from growing further.
- Implement a broader and more dynamic outsourcing strategy as part of LADWP's workforce resource planning. This strategy should be incorporated into the Department's Human Resources Plan and operated as a high priority initiative with full support from City Management.
- In close collaboration with the City, identify and assess solutions to accelerate the hiring and selection process.
- Navigant recommends the OPA and CAO/CLA undertake a separate study to look at reducing debt levels in the future and changing to a more structured cash/debt planning model.

COSS:

- Conduct another Water System COSS for Test Year 2017/18 using 2016/17 actual data and based on a robust demand research study which forecasts customer class usage profiles and overall demand, and incorporate into rates as soon as practicable. Monitor the current legal environment and seek opportunities to address the limitations of the current rate design in providing appropriate water conservation incentives in the event of a dry or wet year scenario.
- Integrate the rate design model, the financial models, the SAS database and the Customer Care and Billing system to prevent data discrepancies between the models, systems and the databases, and streamline the rate design process.
- Develop a robust internal knowledge transfer plan that includes training on the existing rate design models and approaches.

1. Introduction

1.1 Study Objectives

On March 8, 2011, voters approved City Charter Amendment I, which established the OPA as a City department. The role of the OPA is to shed greater light on the operation and finances of the Department, including the proposed increases in water and power rates. The OPA has asked Navigant to conduct an independent review of the proposed power and water rate increases of LADWP. The proposed power and water rates are for the five-year period from FY 2015/16 to FY 2019/20.

This report presents Navigant's assessment of the proposed 5.26 percent increase in water rates over the Study Period. The primary objective of this assessment is to determine if the proposed water rate increase is appropriate. To make this determination, Navigant examined the following focus areas:

Review of water rates ordinance: Navigant reviewed the proposed water rate ordinance with a focus on the revisions and additions to the document. In particular, Navigant focused on assessing and revising section 4 of the ordinance that addresses LADWP's reporting requirements related to its program management performance, as it is the most significant modification to the ordinance.

Analysis of Revenue Requirements: Navigant evaluated the Department's methodology for its Water System revenue requirements in the context of industry best practice. Navigant also analyzed the Department's revenue sources and its water demand forecast, which are fundamental parts of the revenue requirement and rate calculations. In addition, Navigant conducted a detailed review of the major Water System programs (including purchased water, capital, and O&M components) that are driving the rate increase.

Navigant performed a benchmarking study comparing LADWP's historic and projected average rates and capitalization ratio to peer utilities in California. We also conducted an assessment of LADWP's credit ratings as they relate to the proposed revenue and financial metrics, an analysis of different revenue scenarios, and a summary of potential policy and industry changes that may further impact revenue requirements in the future. Finally, we use recent program progress reports and implementation plans to assess the reasonableness of planned expenditures for the Study Period.

Review of COSS: Navigant provided context and overall best practices for conducting a COSS, compared LADWP's Water COSS against those best practices, assessed how the Department used its COSS in developing its proposed water rates, and provided recommendations for improvements to future COSS processes and analysis.

Impact of the Rate Proposal on LADWP's Customers: Navigant assessed the level of monthly bill increases across the full spectrum of LADWP customers' water usage. Given the existing water conservation mandates and goals, it is particularly critical for the Department to ensure that customers who do meet conservation mandates and goals are not unfairly hit by the rate increase. In other words, customers with lower water usage should face a smaller monthly bill increase compared to higher usage customers.

2015 IEA Survey Recommendations: Navigant provided an assessment of the proposed rate action in the context of the recommendations provided in the 2015 IEA Survey.

Recommendations: Navigant summarized recommendations developed in the focus areas described above.

1.2 Approach

Information for this report was derived from several primary sources:

- Proposed water rate ordinance.
- Documents provided on a secure portal including financial case scenarios, budgets for the last three fiscal years and the next five fiscal years, and program plans.
- COSS for the Water System.
- Insight and information gathered from interviews and documents in the 2015 IEA Survey.
- Best practices with regards to revenue requirement development and rate design.
- A literature review of California regulation and peer utility publications on relevant Water System topics including financial metrics and water conservation plans.
- Navigant's experience with LADWP's prior rate actions, IEA Surveys, and other practices.

Navigant also worked closely with Department personnel and the OPA to fully understand the various financial scenarios that were provided and to gain insight into the various components of the proposed rate design.

2. Review of Water Rate Ordinance

2.1 Overview of LADWP's Proposed Rate Ordinance Changes

2.1.1 Overview

The Board of Water and Power Commissioners establishes water and electricity rates for the LADWP. Rates are also subject to approval by the City Council by rate ordinance. In the current water rate action, LADWP proposes to revise Sections 2 (Rate Schedules) and 3 (General Provisions), and to add Section 4 (Performance Reporting) to its water rate ordinance. In this report, Navigant summarizes the changes to Sections 2 and 3 and focuses primarily on the addition of Section 4, as it is the most significant modification to LADWP's water rate ordinance.

2.1.2 Ordinance Section 2: Rate Schedules

Revisions to the water Rate Schedules reflect the changes to each of the Department's water rate schedules for each fiscal year through 2019/2020 resulting from the proposed water rate action. Rates continue to be comprised of 1) base rate components that recover the costs of general operations, and 2) adjustment factors designed as cost "pass throughs" that recover specific program costs such as water quality and infrastructure reliability.

Further, the Rate Schedules retain current incentives for conservation including water budget allotments, tiered rates, and a volumetric rate design that ties customers' bills directly to the level of consumption. Finally, for Multi-Dwelling Unit Residential as well as Commercial, Industrial, Governmental and Temporary Construction customers, the Department retains the existing two tiers but proposes to create four tiers for Single-Dwelling Unit Residential customers. Tiered rates would be differentiated for each customer class based on factors directly related to water supply costs and peak pumping and storage costs.

2.1.3 Ordinance Section 3: General Provisions

The General Provisions focus on defining each of the adjustment factor accounts and the methodology for incorporating those accounts into rates, including the caps that limit the degree to which each of the adjustment factors can be increased. As discussed in greater detail later in this report, most current adjustment factors caps are eliminated in the revisions to the General Provisions. Section 3 also incorporates changes to the rate component accounts necessary to allocate costs to each of the customer class tiers, and to ensure that under or over collections of those accounts are either credited to or collected from customers as necessary.

2.1.4 Ordinance Section 4: Performance Reporting

The Performance Reporting section proposes for the first time that the Board will establish performance metrics (Board Metrics), together with corresponding targets and acceptable variances, as well as a comprehensive reporting process designed to track the Department's progress toward its operational, financial, strategic and policy objectives. This new Performance Reporting section proposes an initial comprehensive set of metrics tied to the regulatory requirements, programs, and projects driving the Department's current water rate actions.

2.2 Current Rate Change Process and Reporting

2.2.1 Current Rate Change Process

As noted above, LADWP water rates are comprised of base rate (comprising approximately 36% of the total water revenue requirements over the Study Period) and adjustment factor components (comprising approximately 64% of the total water revenue requirement). Base rate changes must be reviewed by and incorporate input from the OPA, and approved first by the Board, and ultimately the full City Council to be incorporated into new City Ordinances. LADWP's base water rates were last changed in 2009.

Like base rates, each adjustment factor is included in the City Ordinances; however, most adjustment factor rates change quarterly. Certain adjustment factors, like the Owens Valley Regulatory Adjustment Factor, are changed by the Department on its own authority and changes are merely reported; most others require quarterly Board approval with OPA review.^{4 5}

Adjustment factors are capped within the ordinance. In an environment where base rates change infrequently and adjustment factor components comprise almost two thirds of customers' total rate, the capped adjustment factor structure provides the Department with the flexibility to make timely rate adjustments to meet changing Departmental investment and operational needs, but fails to provide transparency or accountability with regard to the level of rates.

2.2.2 Current Reporting Practices

While LADWP's current public reporting practices provide some visibility and accountability into investment and operational needs, they offer little insight into how those investments and operations ultimately impact rates. Current reports include a weekly report to the Mayor's Office addressing customer service metrics as well as monthly operational updates to the LADWP Board regarding the Power and Water Systems, respectively, as well as financial activities and administrative support updates. Other initiatives launched in recent years, such as the Power Integrated Resource Plan for the Power System and enhanced community outreach, provide important strategic and operational information to the communities the Department serves.

These reports and initiatives provide insight into the status of various projects, programs and strategies at a specific point in time. There is currently no regular reporting mechanism, however, that conveys holistic progress against the projects and programs contained in base rates and the adjustment factors that make up the rates customers pay and that are driving the Department's proposed rate increases. Lack of this type of reporting represents a gap in LADWP's rate setting process, and illustrates many of the larger themes of lack of trust, transparency, accountability and centralized control and reporting identified by Navigant in the 2015 IEA Report.

Trust and Transparency: As Navigant noted in its IEA Report, the Department has for many years communicated inadequate information on major programs and performance against key goals to City decision makers. Information tends to become more transparent and available in years when the

⁴ The Water Infrastructure Adjustment Factor changes annually.

⁵ As of the writing of this report, the Department has agreed to revise the ordinance so that expenditures related to the Owens Valley adjustment factor would require Board approval. The associated ordinance language was not final at the time Navigant released this report.

Department is requesting City action on rate changes or other financial issues, but outside those instances the Department lacks consistent and reliable metric reporting that ties together its operations and finances with the rates and bills that customers experience. As a result, City decision makers, community groups and other interested parties lack transparency into LADWP's rates, the degree to which the Department's operations impact those rates, and what customers are getting for the water rates they pay.

Accountability: In an environment in which information about how strategies and operations impact rates is not transparent, decision makers and the larger community are left with few options to hold the Department accountable when customers are impacted by operations or when rates change. The Department's replacement of the Customer Information System in 2013 is an obvious example of a major initiative that ran significantly over budget and did not meet intended operational goals, but those shortcomings were not reported and their impact on customer service and rates was not understood outside the Department until well after the fact.

Centralized controls and reporting: As the IEA Report notes, the Department currently lacks appropriate, centralized oversight and reporting through the Financial Services Organization (FSO) on budgets and the movement of funds between programs and projects within the Water and Power Organizations. As a result, project budgets change internally and new budgets replace those that were originally communicated to City Council without transparent updates on results or implications for the underlying projects/programs, or for rates.

2.3 LADWP's Proposed Changes to the Ordinance

2.3.1 Overview

The Department has recognized the information gap between its key Water System projects, programs and goals that drive rates, and the rates it charges customers. Working together with the OPA and City leadership, the Department proposes in this rate action to enhance its rate setting process by adding Performance Reporting to the City's Water Rate Ordinance. As discussed in greater detail below, Performance Reporting introduces comprehensive new metric reporting requirements and processes, targets, and tolerance bands for the key projects and programs that drive the Department's water rates.

2.3.2 Key Performance Metrics, Targets and Variance Bands

As proposed, Performance Reporting provides for the Board of Water and Power Commissioners to establish key performance metrics and corresponding targets and variances that represent the Department's acceptable progress toward its operational, financial, strategic and policy goals.

Initial Board Metrics are identified in the ordinance together with the requirement that the Board timely adopt targets and acceptable variances. The Department identifies and defines twenty metrics applicable to the Water and Joint Systems. Some metrics have sub categories and each is tied to the relevant water rate adjustment factor it impacts. For example, the Department proposes four metrics designed to measure annual spending and project completion progress against plan related to the key projects contributing to the Water Infrastructure Adjustment Factor component of rates, including fixed asset replacements, pump stations and regulator relief station retrofits. The complete list of proposed Water System metrics is shown below in Table 2-1.

Table 2-1. Water System Board Metrics

Related Rate Adjustment Factor	Board Metric	Definition	Variance
None	Human Resources Budget vs. Actual (\$M)	Board Approved Annual Budget vs. Actual expenditures	+/- 15%
	Human Resources Total FTEs against plan	Total FTE positions occupied vs. annual Authorized Personnel Resolution	+/- 15%
	Financial and Human Resources Replacement Project total spending against plan	Board Approved Annual Budget vs. Actual expenditures	+/- 20%
	Financial and Human Resources Replacement Project progress against schedule	Project milestones met in accordance with project schedule	TBD based on LADWP Project Plan
	Number of new distribution infrastructure crews compared to Plan	Number of new crews dedicated to distribution infrastructure compared to plan	Begin reporting in 2017
Water Supply Cost Adjustment Factor	Water supply costs Budget vs. Actual (\$M)	Board Approved Annual Budget vs. Actual expenditures	+/- 10%
	Annual quantity of purchased water in acre-feet (AF) against plan	AF of water purchased against plan	Info only; no variance established
	Annual quantity of recycled water delivered against plan (AF)	AF of recycled water delivered against plan	+/- 10%
	Storm water system capacity milestones (AF) against plan	AF of stormwater system capacity as of a milestone date against plan	+/- 10%
	Annual groundwater production in Central Basin (AF) and San Fernando Basin (AF) against plan	AF of Groundwater in Central Basin against plan and AF of Groundwater in San Fernando Basin against plan	+/- 10%

Related Rate Adjustment Factor	Board Metric	Definition	Variance
Water Infrastructure Adjustment Factor	Budget vs. Actual (\$M) for Aqueduct refurbishment	Board Approved Annual Budget vs. Actual expenditures	+/- 10%
	Level of water conservation against target (GPCD)	Gallons per capita per day (GPCD) of water conserved against target	+/- 3%
	Budget vs. Actual (\$M) for fixed assets replacement	Board Approved Annual Budget vs. Actual expenditures	+/- 10%
	Budget vs. Actual (\$M) for Pump Stations	Board Approved Annual Budget vs. Actual expenditures	+/- 10%
	Budget vs. Actual (\$M) for Regulator Relief Station Retrofits	Board Approved Annual Budget vs. Actual expenditures	+/- 10%
	Assets replaced against plan	Miles of mainline, miles of trunkline, and number of meters replaced against plan	+/- 10%
Water Quality Improvement Adjustment Factor	Total Water Quality Budget vs. Actual (\$M)	Board Approved Annual Budget vs. Actual expenditures	+/- 10%
Water Expense Stabilization Adjustment Factor	Water Expense Stabilization Adjustment (WESA) account balance against target	Amount (\$M) in the WESA account vs. plan	+/- 10%
Owens Valley Regulatory Adjustment Factor	Budget vs. Actual for Owens Lake O&M (\$M)	Board Approved Annual Budget vs. Actual expenditures	+/- 10%
	Annual quantity of water conserved from Owens Lake (AF) against plan	AF of water conserved against plan	Info only; no variance established

As proposed, the Board Metrics, their corresponding targets, and the acceptable variance from each target may be modified by the Board upon Department request at any time, and a review of the Board

Metrics, targets, variances and the reporting process itself is required by the Board by July 1, 2017. The OPA must be provided thirty days' notice to review and provide their own assessment to the Board of any proposed revisions.

2.3.3 Board Metric Reporting

In addition to identifying metrics, the Department proposes comprehensive reporting protocols and processes for the Board Metrics. Specifically, the Department proposes that its Chief Financial Officer report to its Board on February 1 and August 1 of each year on 1) the Board Metrics and results; 2) Board Metric targets; 3) variance of actual performance from the target; 4) the Department's explanation of the cause of the variance; and 5) if necessary, a proposed mitigation plan to address variances outside of the established acceptable range.

The Department's proposed Performance Reporting specifically addresses the role of the OPA. In particular, the OPA will be provided quarterly updates of Board Metric results and required to provide its own assessment and recommendations on the Department's Board Metric results to the Board on February 1 and August 1 each year. The OPA is, in addition to other performance issues, to report on areas where the Department has not met the target or variance ranges established by the Board. In this new process, the OPA has the option to share such reports with the Energy and Environment Committee of the City Council for its consideration and disposition, and including recommending full Council jurisdiction over the related rate factors under City Charter Section 245.

Essentially, the Department proposes to replace the caps previously in place on each of its rate components with a highly structured biannual review and assessment process.⁶ As envisioned, the Department will report twice each year to its Board and, as appropriate, to the Energy and Environment Committee its financial progress toward achieving the project and program targets (i.e., the Board Metrics) that are the key drivers behind its revenue needs. If the Department misses any of its Board Metric targets outside the pre-set variances, then review and assessment by the OPA, the Board and even the Energy and Environmental Committee are triggered. In that assessment and advised by OPA, the Board and City Council can determine whether rate adjustments are necessary to ensure rates reflect work actually being performed or that the Department is able to respond to changing market conditions in order to achieve its project and program goals. As proposed, the closer the Department comes to its Board Metric targets, the simpler its review and assessment process will be.

2.3.4 Interim Rate Review

In addition to the biannual Board Metric Reporting process, Performance Reporting provides that the Department and the OPA each conduct an interim rate review by June 30, 2019 and provide the results of those reviews to the Board and to the Energy and Environment Committee of the City Council. This interim rate review is proposed in order "to provide an opportunity for the Department to realign its forecasts with actual conditions and to communicate related issues to the Board...and to the City Council."⁷ The interim rate review would include an updated five-year financial and performance outlook, updated base rate revenue targets as well as forecast and market conditions, and update for the City Council and Mayor's office on progress responding to concerns and recommendations from those

⁶ Caps on low income-eligible customer credits remain in place.

⁷ Water rate ordinance as provided by the Department on December 4, 2015.

offices. As with any of the biannual Board Metric reports from the OPA, this interim rate review would be subject to the consideration and disposition of the Board as well as the Energy and Environment Committee. Notably, the Performance Reporting section of the proposed rate ordinance provides explicit flexibility to the Board to increase or decrease the Base Rate Revenue Target by up to 2 percent, as necessary, in response to the interim rate review report findings

2.4 Assessment of Board Metric Reporting

2.4.1 Assessment of Proposed Metrics, Targets and Acceptable Variances

Navigant has reviewed the metrics the Department developed as well as the proposed target variances for each metric. In Navigant's view, the initial Board Metrics represent an appropriate data set that should achieve the goal of raising the visibility and understanding of important projects and programs among the Department's key stakeholders. Initial target variances for most metrics are acceptable, albeit generous, and should be refined and tightened in future years as the Department gains more experience with Board Metrics reporting.

The twenty metrics and sub-metrics proposed by the Department reflect the major programs and projects underway at the Department and appropriately emphasize those programs and projects that are driving rates higher. In this rate action the Department cites several key programs that are contributing to the need for increased revenues: Water Quality, Infrastructure Reliability, Sustainable Local Water Supply (including Customer Conservation, Recycled Water, Stormwater Capture, Groundwater Remediation and Clean Up), Purchased Water, and Owens Valley Regulatory Compliance. Each of these programs is captured, some in multiple ways, within the proposed Board Metrics. Further, adjustment factors containing the programs that put the most upward pressure on rates are more prominently featured in the metrics selected. As Table 2-1 illustrates, the Water Supply Cost Account (WSCA) and the Water Infrastructure Reliability Account (WIRA), which together represent the programs with the highest revenue impact on rates going forward, appropriately reflect more attention in the Board Metric reporting process.

The variance tolerance bands for each Water System metric proposed by the Department are generally consistent with equivalent margins of error found in the utility industry, although these initial variances tend slightly toward the wider end of the spectrum. Navigant has reviewed the contingency factors and tolerance bands adopted in recent years by the California Public Utilities Commission ("CPUC") for investor-owned utilities ("IOUs") and found that the margin of error for utility projects and program forecasts consistently falls in the range between five and ten percent. For example, automatic reviews are triggered at the CPUC any time an IOU's actual electricity procurement costs fall five percent below or above the utility's annual forecast. Higher adopted margins can be found in CPUC decisions and stakeholder settlements relating to infrastructure projects and consumer program administration. Those margins vary depending on the type, scale and level of innovation of the infrastructure project or program being administered, but they generally do not exceed ten percent.

The purpose of the tolerance bands proposed by the Department is to recognize the possibility or even likelihood that the Department will not exactly match every one of its spending, program or milestone goals, and to provide a range within which completion of those goals could be considered successful. The range for each metric must be large enough to accommodate unanticipated or unplanned events that could impact meeting a target in either direction. At the same time it must be narrow enough that the

metric remains meaningful and that necessary stakeholder attention is brought to bear in support of its ultimate success.

LADWP proposes a 10% variance for most of its project and program Water System Board Metrics, with two exceptions: in-basin groundwater production (15%) and water conservation (3%). As previously noted, the 10% range is at the high end of the spectrum adopted for other utilities, but Navigant believes it is reasonable particularly for the Department's initial year experience with the Board Metric reporting process. The higher variance for groundwater production fairly reflects the greater uncertainty in any given year associated with how much groundwater can be produced. Similarly, the narrower water conservation band reflects the Department's already deep expertise at forecasting and delivering on water conservation efforts, as well as required compliance with regulatory mandates.

The Department proposes even larger (15-20%) variances for its Joint System Board metrics. Navigant understands these larger ranges reflect the Department's reliance on outside departments to assist in many steps of its human resources and hiring processes, and the relative current uncertainty around the Department's future Financial and Human Resources Replacement Project.

The draft Ordinance's provision for changes to be made to the metrics, targets and variances is important. While the particular Board Metrics and variances shown in Table 2-1 are relevant and appropriate now, they may not always be so. In the short term the Department will gain more experience with these metrics and improve its ability to accurately and realistically forecast work and deliver on results, and refinements can be made. Navigant recommends that the Department work with OPA to refine each of these variance ranges, particularly the relatively large Joint System metric variances, so that they reflect the Department's expertise with many of the metric-related activities, and to be more in line with the margin of error adopted for other utilities.

As previously noted, Performance Reporting provides for the OPA to be notified in advance of any modifications to the metrics, their targets, and/or associated variances that the Department intends to propose to its Board. It further requires the OPA to provide its own assessment of any proposed metric changes to the Board. Proactively involving the OPA in any changes to the metrics, targets and variances is critical to ensure that they remain meaningful and relevant.

Over the longer term, the City's and the Department's goals and objectives are likely to evolve – and should evolve – as program and project goals are met and new challenges emerge, creating the need for different metrics.

2.4.2 Assessment of Board Metric Reporting Requirements & Process

In Navigant's assessment, the Department's proposed ordinance changes -- particularly the addition of Performance Reporting as outlined above -- represent a significant and unprecedented step forward in enhancing visibility into the Department's operational, financial, strategic and policy objectives and achievements. Navigant has identified specific improvements to the interim rate review that should be modified to ensure this visibility is timely and robust. In the aggregate, however, the Board Metric reporting requirements address many of the information-sharing shortcomings consistently observed about the Department, accommodate California's rapidly changing policy and technology environments, and put LADWP at the forefront of an emerging reporting trend among California utilities.

2.4.2.1 Interim Rate Review Improvements

The Department proposes to complete its interim rate review by June 30, 2019. Navigant believes this timing falls too late for a meaningful base rate review during the five year rate period encompassed in this rate action. The Department should conduct its interim rate review by June 30, 2018, which will provide time to consider over two full fiscal years of data (FY 2015/16 and FY 2016/17) for this interim analysis. Further, as noted previously, the Department intends to take into account for the interim rate review updated forecasts for revenues, expenditures, and overall fiscal performance. The uncertainty of California's drought and its impact on customer water use may further change overall water deliveries in LADWP's service area in the near term. The Department therefore should ensure that such forecasts are also based on a then-current forecasts of water deliveries, in the aggregate and by customer class.

2.4.2.2 Board Metric Reporting Addresses Issues Raised in the IEA Report

The proposed Board Metric reporting requirements address numerous critiques of the Department raised by its stakeholders over the years, and identified by Navigant in its IEA Report. Specifically, by establishing a vehicle to communicate consistent and reliable metrics on major programs and performance against goals to key decision makers in the City, the Department improves the transparency into its operations and financial decisions. By building in escalating layers of review of its metric results the further those results are from established targets, the Department has more incentive than ever before to ensure its project and program forecasts are robust and accurate, thereby improving overall Department accountability for the revenue it asks its customers to pay. In turn, more robust and accurate forecasts will improve the Department's ability to implement the large-scale projects and programs that are critical to providing a sustainable water supply in Los Angeles.

Further, designating reporting responsibility of a holistic set of metrics to the Department's Chief Financial Officer helps to centralize controls and reporting by not only bringing together what in the past has been fragmented departmental reporting, but also by linking operational and policy goals with their financial and rate counterparts. Finally, the Board Metric reporting proposal is specific about the role of the OPA in the metric reporting and review process.

2.4.2.3 Board Metric Reporting Accommodates California's Unique Environment

Navigant believes that LADWP's Performance Reporting proposal appropriately acknowledges California's environment of rapidly changing environmental landscape and technology changes as well as ambitious policy leadership. The revised ordinances retain the Department's ability to change adjustment factor and even base rates relatively quickly as necessary to reflect progress or changes in California's dynamic water policy and drought environment.

Removal of the caps on the adjustment factors gives the Department the ability to ensure rates reflect the cost of providing service closer to real time, and not defer important infrastructure or program work in order to keep rates below previously-determined levels that may no longer be relevant. At the same time, the addition of regular, structured communication and review channels with the OPA, the Board, City Council and the public about its operations and financial decisions will ensure parties are informed and not surprised. Such dialogue is critical in rapidly changing times, and should facilitate more informed discussions about future rate changes.

2.4.2.4 Board Metric Reporting Puts LADWP at the forefront of California utilities

Finally, LADWP's Board Metric Reporting proposal is consistent with the current trend to expand transparency in utility operations and practices statewide and to tie particular utility investments and programs to their impact on rates. While LADWP is not the only California utility to consider reporting on operational metrics linked to its revenue and rates, it will be the first to work proactively with its stakeholders to develop and operationalize those metrics.

Navigant notes that in December 2014 the CPUC adopted a framework for the IOUs to file in their General Rate Cases⁸ (GRC) risk-related information and metrics in order to assist the CPUC in assessing the IOUs' rate requests. Further, the CPUC directed the IOUs to submit annual reports in subsequent GRC years about the investments, projects and programs undertaken to mitigate those risks. The CPUC noted that the information filing and reporting requirements adopted are designed to facilitate "...additional transparency and participation on how the safety risks for energy utilities are prioritized by the Commission and the energy utilities, and provide accountability for how these safety risks are managed, mitigated and minimized."⁹

Specific information and reporting requirements related to the CPUC framework are pending. In the meantime, LADWP will begin its reporting in August 2016, well ahead of the IOUs and other publicly-owned utilities.

2.5 Findings and Recommendations

Navigant has identified a few areas of the ordinance that should be modified to ensure that the Performance Reporting process as proposed is timely and robust.

Board Metric Variances: Navigant recommends that the Department work with the OPA to refine the variance ranges applicable to each of the Water and Joint System Board Metric targets over time as the Department gains more experience with these metrics and improves its ability to accurately and realistically forecast work and deliver on results. Variances should be tightened as appropriate to reflect the Department's deep expertise with many of the metric-related activities, and to be more in line with the margin of error adopted for other utilities.

Interim Rate Review Timing: The Department proposes to complete its interim rate review by June 30, 2019. Navigant believes this timing falls too late for a meaningful base rate review during the five year rate period encompassed in this rate action. The Department should conduct its interim rate review by January 1, 2018, which will provide time prior to the July 1 fiscal year for the Board to consider, by April 1, over two full fiscal years of data (FY 2015/16 and FY 2016/17) for this interim analysis.

Interim Rate Review Inputs: For the interim rate review, the Department will consider updating its Base Rate Revenue Targets and rate design to reflect updated forecasts for revenues, expenditures, and overall fiscal performance. The uncertainty of California's drought and its impact on customer water use may further change overall water deliveries in LADWP's service area. The Department should ensure that its interim forecasts are based on then-current forecasts of water deliveries, in the aggregate and by customer class.

⁸ Equivalent to the Department's Rate Action.

⁹ CPUC Decision D.14-12-025, at p. 3.

3. Analysis of Revenue Requirements

This section examines the basis of the Department's request for a 5.26 percent annual rate increase over the five-year Study Period (FY 2015/16 to FY 2019/20). As with most utilities in today's landscape, LADWP's proposed rate increase will address aging infrastructure, water quality regulations, and other challenges. A utility's revenue requirement represents the money it collects from customers (via rates) to fund its expenses. Without a rate increase to cover its current and planned future expenses, the Department must increase borrowing as it has done in the past (with negative repercussions related to higher debt levels).

This section covers the following topics:

- **LADWP's Revenue Requirements Determination Methodology:** Navigant evaluated the Department's methodology for its water system revenue requirements in the context of industry best practice. This evaluation includes an analysis of revenue requirement inputs such as operating costs and targeted financial metrics. Navigant also analyzed the Department's revenue sources including base rates, adjustment factors, and non-retail revenues. We also discuss the Water System's demand forecast, which is a fundamental part of the revenue requirement and rate calculations.
- **Rate Drivers:** Navigant conducted a detailed review of the major Water System programs (including purchased water, capital, and O&M components) that are driving the rate increase.
- **Revenue Requirements Benchmarking and Sensitivity Analysis:** Navigant performed a benchmarking study comparing LADWP's historic and projected average rates and capitalization ratio to peer utilities in California. We also conducted an assessment of LADWP's credit ratings as they relate to the proposed revenue and financial metrics, an analysis of different revenue scenarios, and a summary of potential policy and industry changes that may further impact revenue requirements in the future.
- **LADWP's Capability to Implement its Plan:** The Department's actual expenses contributing to its revenue requirements have the potential to vary significantly from estimates, based on the successful implementation of the Water System's major programs. We use recent program progress reports and implementation plans to assess the reasonableness of planned expenditures for the Study Period.

3.1 LADWP's Revenue Requirements Determination Methodology

As mentioned above, a utility's revenue requirement represents the money it collects from customers (via rates) to fund its expenses. Determining the total revenue requirement is the first step in the standard utility ratemaking process. The second step is to allocate revenue requirements among the utility's customer classes, and the third and final step is rate design, in which the utility creates an ordinance or a tariff establishing rates and charges for each customer class so that revenues align with the allocated revenue requirements. This section evaluates LADWP's approach to calculating its revenue requirement, as represented in the Water System's financial plan for the Study Period.

3.1.1 Description of LADWP's Methodology

3.1.1.1 Objectives

The Water System's revenue requirements are closely tied to the utility's rate objectives. Purchased water, operations and maintenance (O&M), and capital program needs as well as the utility's financial obligations are decided upon and prioritized in the context of a set of overarching objectives. In the Water System Rate Action Report,¹⁰ LADWP defines the following objectives for water rates:

- Minimize individual bill impacts for low usage customers,
- Promote conservation,
- Comply with all guiding legal principles,
- Recover costs in consideration of the water cost of service study,
- Align water supply costs to sources of supply,
- Retain water-budget rate structure and marginal-cost based principles,
- Achieve full recovery of costs (without over-recovery) in a cost causative manner,
- Implement symmetrical decoupling mechanism for base rate revenue,
- Help facilitate business development,
- Simplify where possible,
- Make bills easier to understand, and
- Consider implications for customer care and billing system (CC&B).

Minimizing individual bill impacts for low usage customers is a key objective for LADWP. Accordingly, the Department has revised its rate structure to include four customer tiers for single-dwelling unit residents. The goal of the four-tiered structure is to require high users to pay higher rates while protecting low users from significant rate changes. In other words, the more water a customer uses, the more that person pays for each additional tier of water. This is closely related to LADWP's second objective regarding water conservation, which seeks to promote conservation as directed by the Mayor's goal to reduce per capita consumption by 20 percent.

The legal considerations associated with the ratemaking process include requirements from City Charter Section 609(c) and Proposition 218. City Charter Section 609 mandates that rates, together with other available funds, be sufficient to service the Department's Water System indebtedness and pay the necessary expenses of operating and maintaining the Water System. Proposition 218 requires, among other things, that the "property-related fees" charged by local governments for products or services not exceed the costs to provide them. For publicly-owned utilities, this requirement has been interpreted to mean that rates should accurately reflect the cost of providing services to each utility customer class, and avoid subsidization from one customer class to another. Based on this legislation, municipal water utilities must use a Cost of Service Study (COSS) to justify rates. Accordingly, another key rate objective of the Department is to recover costs in consideration of the Water COSS.

The *Capistrano Taxpayers Association v. City of San Juan Capistrano* (2013) decision suggests that aligning water supply costs to rate tiers is an appropriate approach to comply with Proposition 218. As a result, a key objective of the water rate design is to implement this approach so that rates for higher tiers reflect more expensive sources of water. This approach also recovers costs in a cost-causative manner because

¹⁰ LADWP Water System Rate Action Report (Ch. 5, pp. 17-18.), July 2015.

customers who cause costs are paying higher rates for these costs. Finally, the rates include a decoupling mechanism to ensure that the Department is able to meet its revenue requirements regardless of water usage. Specifically, if a certain customer class uses more or less water than forecasted, the Department is able to credit or collect the difference between forecasted and actual revenue. This mechanism is discussed in more detail in Section 3.1.2.

Overall, the aforementioned rate objectives aim to provide affordable and competitive rates to customers while promoting conservation and meeting revenue requirements. Rate mechanisms that support this goal will ensure that the Department meets its objectives related to business development, simplified billing, and customer satisfaction.

3.1.1.2 Methodology

LADWP's revenue requirements for the Water System reflect two objectives:

- Achieve a revenue level that meets its pre-defined financial metric targets.
- Recover the Water System Organization's estimate of its total expenses.

For the Study Period, the estimate of total expenses includes future purchased water supply costs, O&M, and capital expenditures required to deliver water to customers and comply with relevant regulatory mandates, which are discussed in detail in Section 3.2. Other costs outside of these major programs are also included, with several examples listed in Table 3-1.

Table 3-1. Selection of Expenses Impacting Revenue Requirements

Expense	Description
Depreciation	Expenses totaling \$957 million over the Study Period.
Property Tax	Expenses totaling \$89 million over the Study Period.
Interest	Expenses totaling \$1.18 billion over the Study Period. Variable interest rates are assumed to increase from 0.18 percent to 1.75 percent over the Study Period; fixed interest rates are assumed to increase from 4.25 percent to 5.35 percent over the Study Period.

Source: *Water System Final Rate Case 94*.

Revenue requirements are designed to ensure the full recovery of all planned expenses under the utility's existing capital structure;¹¹ in other words, to achieve the revenue needed for cash funding as well as to support debt financing. For its extensive debt financing activities, LADWP strives to maintain the financial metric targets defined by its financial advisor (Public Resources Advisory Group) and approved by its Board, and therefore a bond credit rating that minimizes interest rates. Financial metrics reflect spending, revenue, and debt levels to convey the utility's overall financial performance. If metrics deteriorate, credit ratings could be downgraded which would result in higher borrowing costs. The Department has specific metric targets including the debt service coverage ratio, days of operating cash, capitalization ratio, net income, and full obligation ratio.

Determining the revenue that will meet its financial metric targets is LADWP's primary goal for the development of revenue requirements, so calculating this revenue level is the first step. The utility then

¹¹ A utility's capital structure identifies the source and cost of funds for both debt and equity.

considers its total planned expenses, and the estimated revenue to recover those expenses, which is mostly derived from the following two sources:

- **Base rates:** Revenue to recover labor costs, public benefits costs, real estate costs, customer service costs, information technology, security systems, and other equipment and software costs, and certain O&M and capital costs.
- **Adjustment factors:** Revenue to recover water supply, O&M, and certain capital costs for key Water System programs, as described in Section 3.2 (e.g., infrastructure replacement programs, water conservation programs, water quality programs, and others).

If the above revenues do not meet pre-determined levels to satisfy the Department's financial metric targets, base rate revenues are increased to achieve the desired level. The adjustment factors cannot be modified in this way because they are explicitly defined by formulas in the rate ordinance. Base rates—although the amount charged to each customer class is shown in the electric rate ordinance—do not have publicly defined formulas. Accordingly, the water rate ordinance does not reveal the extent to which base rates are modified to satisfy the financial metric targets.

The Department also typically tailors its total requested rate increase to be palatable to customers and to City Council (e.g., aiming for an average annual increase of less than five percent), without necessarily reflecting all the work that should be completed—for example, eliminating the backlog of mainline that has exceeded its average useful life. In the past, this has not proven to be an issue for the Department because fully implementing programs is a challenge for reasons related to procurement, contracting, and hiring. However, the Water System was able to spend its budget for the last fiscal year. Therefore, stakeholders should understand that in the ratemaking process, priority is given to the size of the rate increase and financial metric targets rather than to Water System improvements (assuming that critical operational needs are met). LADWP does not clearly present or explain these dynamics in its proposal and draft ordinance.

With the current revenue requirements methodology, one possible scenario is that while base rates are inflated to meet financial targets, adjustment factors related to certain key programs are minimized to maintain a reasonable rate increase. This would result in a larger pool of unallocated funds, collected in base rates, which could be used at the discretion of the Department. This relates directly to the 2015 IEA Survey, in which Navigant found that LADWP moves funds internally without adequate transparency and controls. A key recommendation resulting from this finding was for the Department to improve internal governance by better monitoring, tracking, and reporting on budgeting decisions. The current revenue requirements determination methodology is partially in line with this recommendation because it includes adjustment factors assigned to revenues for specific key programs. However, the methodology as it relates to the modification of base rates is opaque, and contributes to this issue.

3.1.1.3 Best Practices

Accepted industry practice for municipal utilities is that annual revenues be sufficient to provide for all costs related to the operating and capital requirements of the utility. This includes spending associated with O&M, system development, and financial integrity.¹²

Revenue requirements for investor-owned utilities (IOUs) differ because they are defined as the total amount of money the utility must collect from customers to pay all operating expenses—including a reasonable return on investment. This is the rate base/rate of return procedure. Understandably, the rate of return can be controversial, as there are often differing opinions on a utility's obligations to its investors.¹³ In California, the IOUs are required to seek authorization from the California Public Utilities Commission (CPUC) for their revenue requirements. Due to the increasingly varied nature of utility costs and the large number of policies at play, the determination of revenue requirements and the rate-setting process at the CPUC have grown more complex over time. The primary forum for determining revenue requirements is the General Rate Case proceeding, which occurs on a three-year cycle. Specifically, each IOU presents its proposed revenue requirements for the subsequent three years and the CPUC decides on the reasonableness of these requests. The IOUs earn a rate of return or profit on costs that are utility-owned and capitalized (for many expenses, there is no rate of return—these are pass through costs).¹⁴

Publicly-owned utilities like LADWP, which are not privately held by investors requiring a rate of return, use a cash basis for determining revenue requirements. For example, San Francisco Public Utilities Commission defines its revenue requirement as annual expenditures for O&M, debt service and revenue funded capital after deducting operating surpluses from prior years, income derived from interest, rents and other miscellaneous sources.¹⁵ By indenture, the SFPUC is also required to maintain a 1.25 times coverage ratio of annual debt service inclusive of reserves.¹⁶

The Department similarly includes debt service considerations in its calculation of revenue requirements through its targeted financial metrics. This is a reasonable practice as it is necessary for municipal utilities to maintain borrowing strength to finance large capital projects. However, LADWP would benefit from formalizing the revenue requirement determination methodology around its financial metrics because utility revenue requirements are critical to rate design and therefore undergo a high amount of scrutiny. As mentioned previously, the current revenue requirement determination process is not transparent or well-understood. In conjunction with formalizing the methodology on the relationship between financial metrics and base rate revenues, LADWP should establish a formal process for allocating that revenue to specific funding needs. As mentioned above, base rate revenues can be spent at the discretion of the Department with limited visibility from key stakeholders.

¹² "Revenue Requirements: Is There a Right Way to Determine?" Burns & McDonnell, June 2003 (www.burnsmcd.com/Resource_PressRelease/1662/FileUpload/article-technicalpaper-RevenueRequirementsIsThereaRightW.pdf).

¹³ "Group Exercise I: Calculating the Revenue Requirement," Colorado Department of Regulatory Agencies (www.naruc.org/international/Documents/Calculating%20Revenue%20Requirement_Davis.pdf).

¹⁴ Establishing Water Rates for California's Regulated Water Utilities, California Water Association (<http://www.calwaterassn.com/water-information/water-rates/>).

¹⁵ SFPUC Proposed Retail Water & Wastewater Rates, Fiscal Years Ending 2015-2018, p. 21.

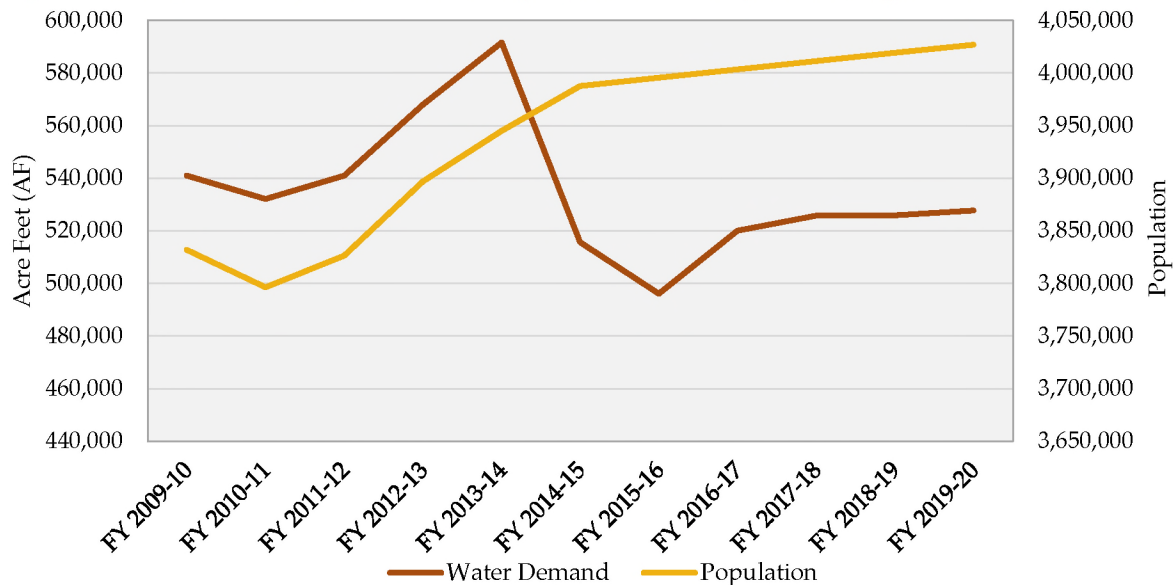
¹⁶ SFPUC Proposed Retail Water & Wastewater Rates, Fiscal Years Ending 2015-2018, p. 23.

3.1.2 Water Demand Forecasts

Water usage is directly related to the Department's projected water rates for the Study Period. As discussed above, rates are calculated by dividing the revenue requirement by water sales. Accordingly, a robust demand forecast is critical to collecting the necessary revenue to meet the Department's financial requirements. While many variables impact water demand forecasts (e.g. historical demand by customer class, population, weather, etc.), one key input is water conservation. Conservation is becoming increasingly important as the Department aims to develop a sustainable long-term water supply and to reduce its reliance on purchased water. However, it is also important that the Department's rates incentivize water conservation without undercutting revenue requirements. The rate mechanisms that support this balance are discussed below.

The Department's historical water demand and current water demand forecast are shown in Figure 3-1. Water demand decreased significantly in FY 2014/15 due to customer responsiveness to extreme drought conditions and aggressive water conservation goals and mandates. Demand is forecasted to increase slightly in FY 2016/17 under the assumption that Los Angeles will have normal precipitation levels. However, demand is not projected to increase significantly over the Study Period despite forecasted population growth. This constant demand forecast highlights persistent conservation initiatives over the next five years.

Figure 3-1. LADWP Water Demand and Population of the City of Los Angeles (FY 2009/10-2019/20)



Sources: LADWP data provided on November 6, 2015.

Given that rates are set according to forecasted water demand, an accurate forecast is a key input to determining the appropriate water rates. If the forecast is accurate, the Department should be able to recover its revenue requirements without adjustments in subsequent billing periods. Despite efforts by utilities to make their demand forecasts as accurate as possible, actual water usage typically differs from projections. For example, demand growth may be greater than reflected in the forecast and financial

plan. Without a way to accommodate this higher demand growth scenario, LADWP would be at risk of over-collecting, i.e. generating more revenue than needed to cover their expenditures.

Alternatively, water demand growth may be lower than reflected in the forecast and financial plan, which means LADWP would be at risk of under-collecting (not generating as much revenue as needed to cover their expenditures). Importantly, water conservation goals and programs—which are mandated in California—are designed to reduce water usage. Without a mechanism to recover costs, utilities would be dis-incentivized to offer water conservation programs due to the risk of lost revenue from lower water sales. An accepted solution for utilities across the industry (both municipally owned and investor owned) to address this issue is a decoupling mechanism.

Decoupling is the term for a rate adjustment mechanism that separates a utility's fixed costs recovery from the amount of water it sells. It does not change the traditional ratemaking procedure, but does add an automatic "true up" to adjust rates based on the over or under-recovery of target revenues.¹⁷ This means that water conservation and other demand side programs can be encouraged while maintaining financial stability.¹⁸ If, after accounting for actual water sales and revenue, fixed costs are under-recovered, rates are adjusted to recover fixed costs in the next period.¹⁹ The Water System's rate financial structure includes the decoupling mechanism which identifies over and under-collections in a given period and adjusts rates to collect or credit that amount in the subsequent period.

For the Water System, the Base Rate Revenue Target Adjustment (BRRTA) factor embodies the decoupling mechanism for revenues generated by base rates. The BRRTA enables the Department to collect additional revenue or credit over-collected revenue based on the consumption of a specific customer class. For example, if a customer class consumes less water than forecasted for a certain period, the BRRTA will collect additional revenue from that customer class during the next period to meet the targeted revenue amount. Conversely, if a certain customer class consumes more water than forecasted, the surplus revenue collected by the Department will be credited to these customers. Accordingly, the Department has the ability to collect enough revenue to support its revenue requirements regardless of water usage. Over and under-collection risks are also mitigated by LADWP's pass-through adjustment factors in the rate structure, which can be adjusted bi-annually to reflect actual costs and other changing conditions for particular programs of the Water System.

3.1.2.1 Water Conservation

As mentioned previously, an accurate water demand forecast is critical to determining the appropriate rates for the Study Period. Therefore, water conservation is also a key component to accurate demand forecasting and rate determination. Accordingly, Navigant has assessed the reasonableness of the Department's demand forecasts to determine if they align with conservation mandates.

¹⁷ Decoupling for Electric & Gas Utilities: Frequently Asked Questions," National Association of Regulatory Utility Commissioners, 2007

(www3.epa.gov/statelocalclimate/documents/pdf/supp_mat_decoupling_elec_gas_utilities.pdf).

¹⁸ "Decoupling Policies: Options to Encourage Energy Efficiency Policies for Utilities," National Renewable Energy Laboratory, 2009 (www.nrel.gov/docs/fy10osti/46606.pdf).

¹⁹ LADWP provides further discussion of its decoupling mechanism in the Water System Rate Action Report, Chapter 5.

The water forecasts used in the proposed rate increase are significantly lower than the forecasts in the 2010 Urban Water Management Plan (UWMP) (see Table 3-2), reflecting increased water conservation efforts in recent years. The Department also very recently further revised its water sales forecast downward because LADWP customers are abiding by the Mayor's conservation guidelines. These revisions highlight the growing impact of water conservation on demand forecasts and, ultimately, rates.

Table 3-2. Change in Demand Forecasts Between the 2010 UWMP and 2015 Rate Action

Forecast	2015	2020
Demand Forecast with Passive & Active Water Conservation - 2010 UWMP	599,563	622,732
Total Supply Forecast - 2015 Rate Action	523,274	527,231
Percent Change	13%	15%

Source: 2010 Urban Water Management Plan and LADWP data provided on November 6, 2015.

Historically, LADWP customers have exceeded water conservation goals as evident by constant water usage despite population growth. In addition, past and current droughts in California have highlighted the need for increased water conservation and there have been a number of state and local mandates that support conservation initiatives:

- The Water Conservation Act of 2009 (SBX7-7) requires urban water suppliers to reduce urban water consumption by 20 percent per-capita by 2020.
- Executive Order B-29-15: Governor Brown directed the State Water Board to implement mandatory water reductions in urban areas to reduce potable urban water usage by 25 percent statewide between June 2015 and February 2016 as compared to the amount used in 2013. On May 5, 2015 the State Water Resources Control Board adopted an emergency conservation regulation in accordance with the Governor's directive. Each water supplier is required to achieve a designated conservation standard between 4 and 36 percent to achieve this goal.²⁰ The Department's conservation standard is 16 percent under this regulation.
- Mayor's Executive Directive No. 5: Reduce Los Angeles water consumption by 20 percent per capita by the end of 2017, assuming a base year of FY 2013/14.

Other municipal water utilities in California also have aggressive water conservation guidelines. A few examples are listed below:

- San Francisco Public Utilities Commission (SFPUC): Retail customers must reduce outdoor irrigation and ornamental landscapes or turf with potable water by 25 percent in 2015 and 2016. In 2014, SFPUC also called for a system-wide reduction of 10 percent as directed by the Mayor of San Francisco.²¹ The utility also has a SmartMeter program that allows more than 96 percent of its customers to frequently monitor use and detect leaks through automated water meters.²²

²⁰ California State Water Resources Control Board website, Emergency Conservation Regulation (http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/emergency_regulation.shtml).

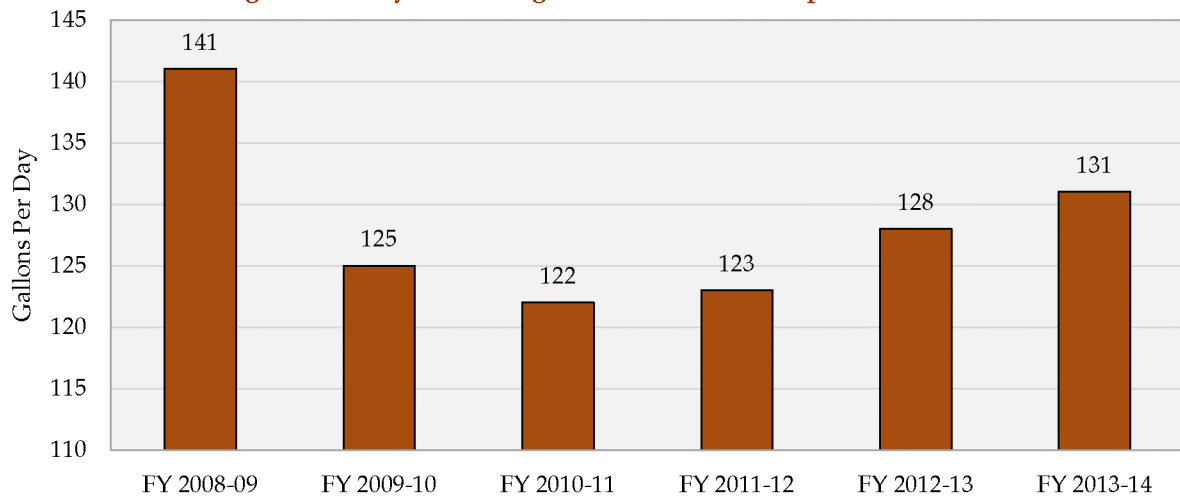
²¹ SFPUC website, January 31, 2014 Press Release (<http://sfwater.org/modules/showdocument.aspx?documentid=4860>).

²² SFPUC website, Automated Water Meter (<http://www.sfwater.org/index.aspx?page=51>).

- City of Glendale: In response to Governor Brown’s Executive Directive, Glendale has a Water Conservation Ordinance that identifies phases of conservation including 14 water use restrictions. Glendale uses its Automated Meter Infrastructure (WaterSmart) to notify customers of excessive use and leaks.
- City of San Diego: San Diego has been implementing mandatory water use restrictions since 2013. Water-use restriction have also been added to the San Diego Municipal Code.
- City of Burbank: In response to the Governor’s Executive Directive, City Council implemented a water conservation initiative to limit summer watering to two days per week. Burbank also uses WaterSmart.

To comply with SBX7-7, each water agency was required to establish its baseline water use by choosing from one of four compliance options. LADWP chose Option 3, which requires the 2020 target per capita demand to be 95 percent of the Hydrologic Region 4 Target of 149 gallons per capita per day (gpcd). This option results in a 2020 target of 142 gpcd, which is higher than LADWP’s per capita water demand over the last six years (see Figure 3-2). Accordingly, the Department is in compliance with SBX7-7.

Figure 3-2. City of Los Angeles Historical Per Capita Water Use



Source: Water System Rate Action Report.

As mentioned above, the Department also has to comply with the Governor’s Executive Directive to reduce potable urban water use by 25 percent statewide between June 2015 and February 2016 as compared to the amount used in 2013. Conservation standards vary across urban water suppliers depending on their average residential gallons per capita per day (r-gpcd) consumption. Significant conservation efforts over the past six years have limited the Department’s conservation standard to 16 percent, nine percent below the statewide average goal. Since June 2015, LADWP’s water conservation levels have met or exceeded the Governor’s 16 percent conservation target (see Table 3-3).²³ Notably, the Department has a lower conservation target than water utilities in Burbank, Glendale, and Pasadena due to its lower average residential water consumption.

²³ California State Water Resources Control Board website, Water Conservation Reporting (http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.shtml).

Table 3-3. Water Conservation Peer Comparison June-September 2015

Conservation Compared to 2013	LADWP	Burbank	Glendale	Pasadena	San Diego	SFPUC
Target	16%	24%	20%	28%	16%	8%
Average (6/15 – 9/15)	19%	28%	25%	24%	24%	16%

Source: California State Water Resources Control Board.

Mayoral Executive Directive No. 5 sets a more aggressive conservation goal than SBX7-7. Reducing water consumption by 20 percent by January 2017 based on FY 2013/14 results in a maximum water consumption target of 105 gpcd.²⁴ Using the projected water consumption and population growth for the proposed rate case, Navigant calculated average annual per capita water consumption through FY 2019/20.²⁵ Based on our computations, the Department will be slightly short of the Mayor's water conservation goal (see Table 3-4).²⁶

Table 3-4. Projected Water Sales and Average Consumption (FY 2014/15 – FY 2019/20)

Supply (AF)	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Groundwater Pumping	95,046	99,340	78,970	94,270	91,270	114,670
LA Aqueduct	59,744	76,233	277,200	276,800	276,400	276,000
MWD	357,985	309,443	150,808	135,901	139,289	116,661
Recycled Water	10,500	11,000	13,000	19,000	19,200	19,900
Total Supply	523,274	496,016	519,978	525,971	526,159	527,231
Estimated Non-Revenue	20,931	19,841	20,799	21,039	21,046	21,089
Estimated Sales	502,343	476,176	499,179	504,932	505,113	506,141
Average Per Capita Consumption (gpcd)	112	106	111	112	112	112
Change Against Executive Directive No. 5 Goal	7%	2%	6%	7%	7%	7%

Source: LADWP data provided on November 6, 2015.

Overall, the Department's demand forecasts appear to be reasonable given their compliance with state conservation mandates.

3.2 Rate Drivers

In addition to maintaining reasonable rates, the Water System Organization (WSO) at LADWP has a number of goals, including meeting regulatory requirements, providing reliable service, and increasing

²⁴ Calculated as 131 gpcd x 80 percent = 105 gpcd.

²⁵ The Department uses a four percent non-revenue percentage to account for system losses.

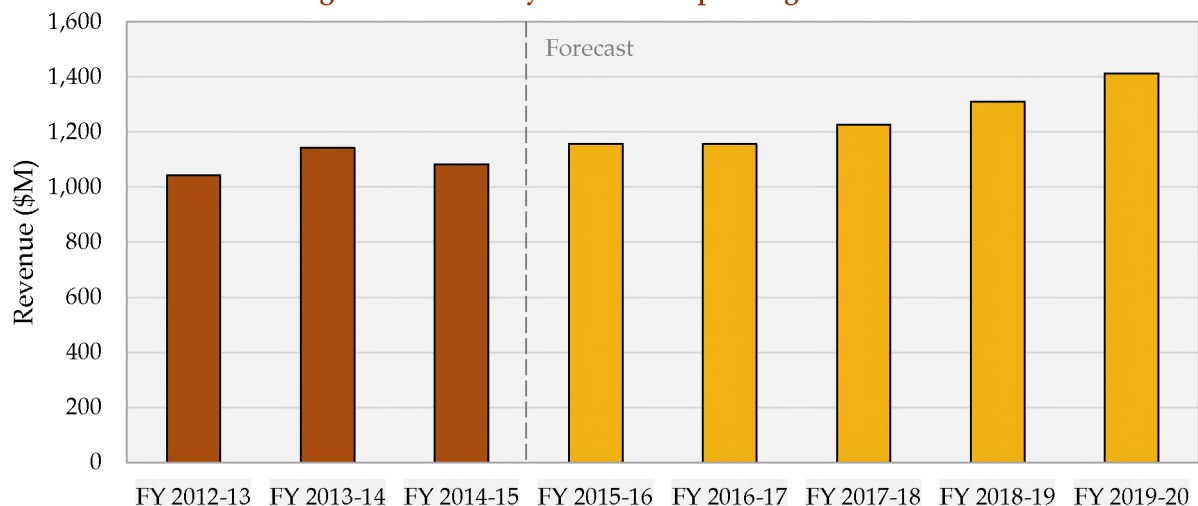
²⁶ These computations differ from the IEA Survey because the Department provided an updated non-revenue allocation and revised its water supply figures.

local water supplies. To achieve these goals, the Department will need to increase capital and O&M expenditure over the five-year Study Period. The WSO will also face significant challenges as it ramps up spending to meet these goals.

One challenge will be the replacement of its severely aging infrastructure. Many mainlines, trunk lines, and large valves have reached the end of their useful life, and the backlog of assets needing to be replaced is significant and will continue to increase. The Department also has to comply with regulatory mandates for water quality and Owens Valley as well as Mayoral goals to increase local water supplies, reduce reliance on water purchases from Metropolitan Water District (MWD), and expand conservation efforts. The revenue requirements to support these initiatives are summarized in Figure 3-3.

Given the aging workforce and the procurement and contracting challenges that the Department faces, these rate drivers will require significant planning, investment and hiring. In this section, Navigant assesses the goals, mandates, and programs that support the proposed average annual water rate increase of 5.26 percent over the Study Period (Water System Case 94).

Figure 3-3. Water System Total Operating Revenue



Source: LADWP data provided on November 6, 2015.

3.2.1 Water System Goals and Mandates

Navigant recently completed the 2015 Industrial, Economic, and Administrative Survey (IEA Survey) of LADWP which, in part, reviewed the Water System's major plans including the 2010 Urban Water Management Plan, the Stormwater Capture Plan, the 2008 Water Supply Action Plan, the 2009 Sustainability Plan, the One Water L.A. 2014 Plan, and the 2014 pLAn. These plans address the Department's goals and regulatory mandates, as well as local and state goals and policies. Key goals and mandates for the Water System include:

- Water Conservation Act of 2009 (SBX7-7): Each urban water supplier is required reduce urban water consumption by 20 percent per-capita by 2020.

- Mayoral Executive Directive No. 5: Reduce per capita potable water consumption by 20 percent by the end of 2017, assuming a base year of FY 2013/14. Also reduce LADWP's purchase of imported potable water by 50% by 2025.²⁷
- Sustainable City pLAn: Capture 150,000 AF per year of stormwater by 2035.
- Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR): Cover, treat, or remove uncovered distribution reservoirs by 2022.
- Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 D-DBPR Rule): Minimize the formation of disinfection byproducts through chloramination stations and UV disinfection treatment plants. Stage 2 D-DBPR required compliance by April 2014.
- Owens Valley Stipulate Judgment: Construct additional dust mitigation measures on Owens Lake using waterless dust control methods.
- Recycled Water: The 2010 UWMP sets a goal of increasing recycled water use to approximately 59,000 acre-feet per year by 2035.

Table 3-5 lists the Water System programs that support the aforementioned goals and their impact on the proposed rate increase.

Table 3-5. Major Water System Programs and Level of Rate Impact

Water System Programs	Average Annual Revenue Requirement Increase
Infrastructure – Base	\$23 million
Infrastructure – Pass Through	\$37 million
Water Quality	\$21 million
Groundwater	\$1 million
Owens Valley	\$13 million
Los Angeles Aqueduct (LAA)	(\$3 million)
Recycled Water	(\$2 million)
Stormwater	(\$2 million)
Conservation	(\$1 million)
Purchased Water	(\$21 million)
Total	\$66 million

Source: LADWP data provided on November 6, 2015.

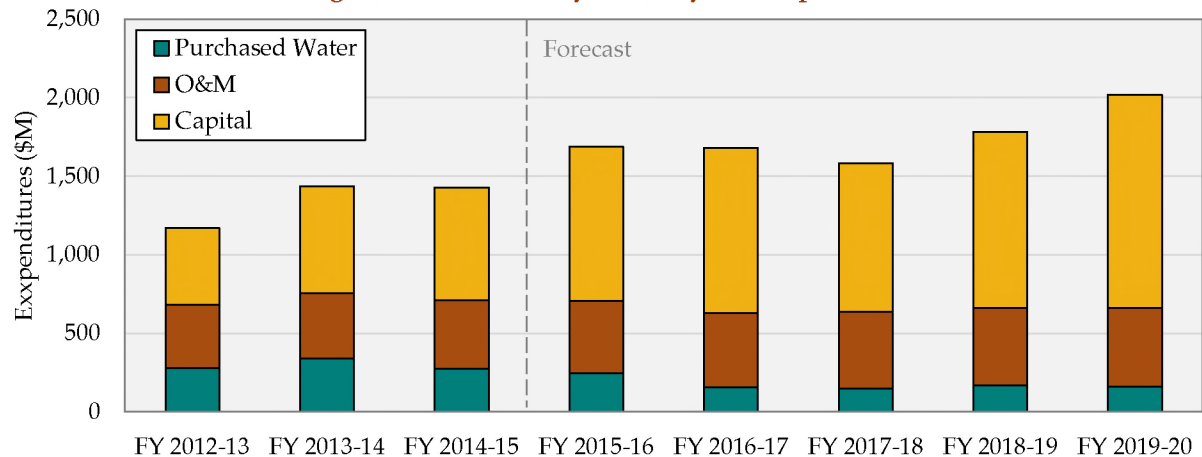
The programs having the largest impact on the rate increase include infrastructure replacement and water quality. The rate increase triggered by these programs is partly offset by a projected decrease in purchased water expenditures, as the WSO is planning on normal precipitations over the next 5 years, leading to greater water supply from the LAA and reduced water purchases from the Metropolitan Water District (MWD). LADWP owns the LAA water supply, and the associated costs are much lower than the costs of purchasing water from MWD.

²⁷ Sustainable City pLAn, p. 20.

3.2.2 Key Expenditures

Navigant used the Department's final proposed rate case budget for FY 2015/16 through FY 2019/20, its reported budget actuals for the three previous years, as well as its Water System Rate Action Report to assess key expenditures going forward. Key expenditures include purchased water, capital, and operations and maintenance (O&M) (see Figure 3-4). These expenditures are discussed in detail below.

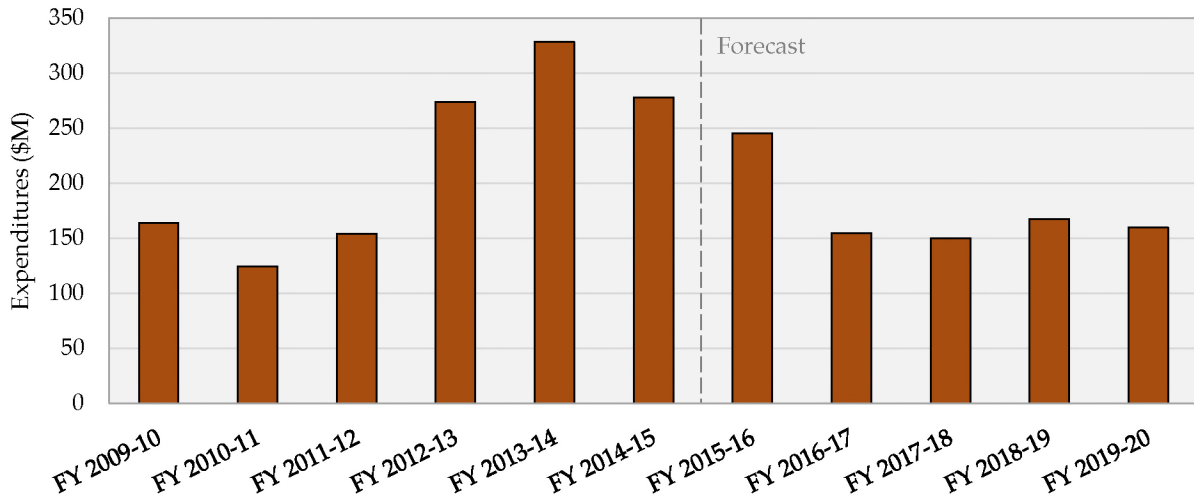
Figure 3-4. Annual Key Water System Expenditures



Source: LADWP data provided on November 6, 2015.

The decrease in purchased water expenditures over the Study Period reflects increased supplies from the Los Angeles Aqueduct, conservation efforts and investment in local water supplies such as groundwater, recycled water, and stormwater capture. Specifically, the Department plans to decrease purchased water expenditures by approximately 37 percent between FY 2015/16 and FY 2016/17 (see Figure 3-5). This cut is associated with a corresponding decrease in MWD purchased water of more than 50 percent (see Figure 3-6). Notably, decreasing purchased water expenditures will reduce the impact of the rate increase by approximately 1.9 percent. These expenses reflect normal precipitation levels. Accordingly, if there is a dry year(s) similar to what California has experienced since 2012, purchased water expenditures could increase significantly. On the other hand, wet years will help reduce water rates.

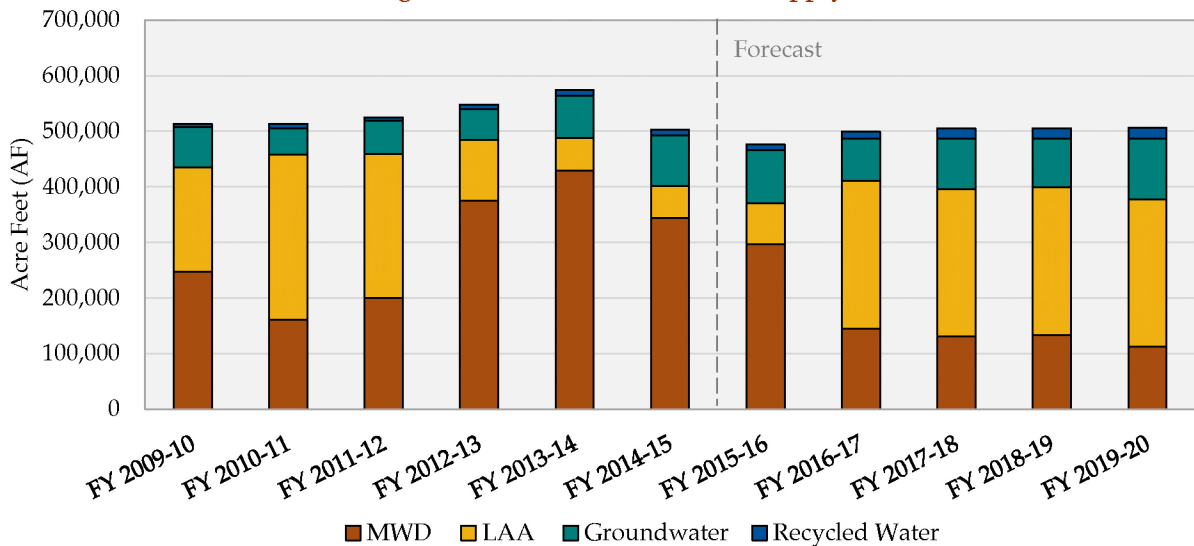
Figure 3-5. Total Annual Purchased Water Expense



Source: LADWP data provided on November 6, 2015.

As shown below, years with normal precipitation such as FY 2010-11 and FY 2011/12 require significantly less purchased water due to increased supplies from the Los Angeles Aqueduct. Normal precipitation levels combined with investment in local water supplies will allow the Department to purchase even less than water from MWD over the Study Period. Expenditures associated with purchased water will be recovered through the Water Supply Cost Adjustment factor (WSCA).

Figure 3-6. Total Annual Water Supply



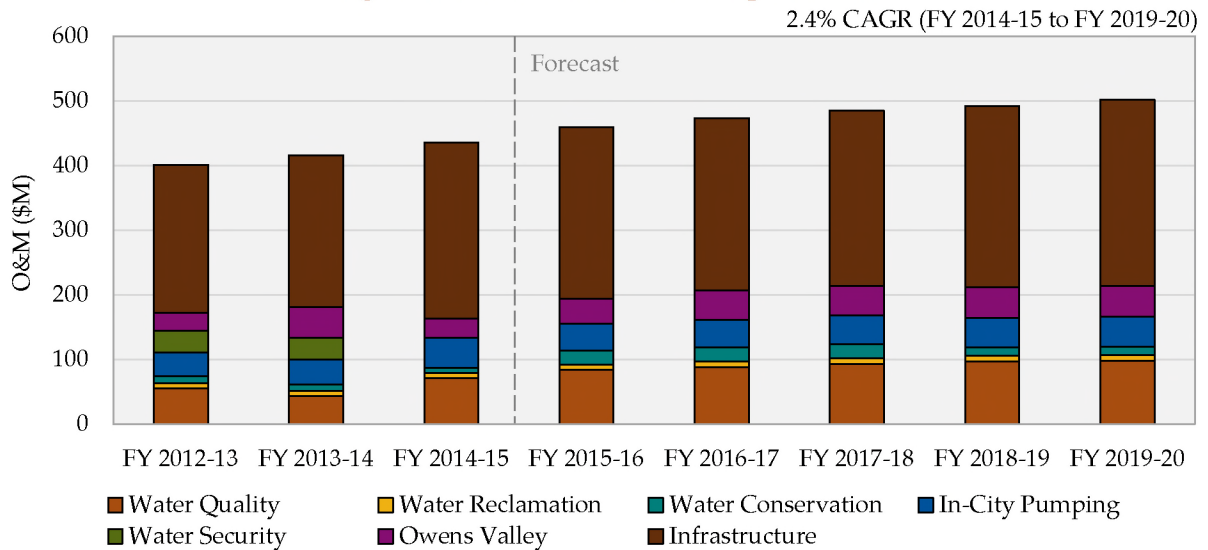
Source: LADWP data provided on November 6, 2015.

O&M expenditures are projected to increase slightly over the Study Period. Infrastructure encompasses approximately 60 percent of O&M expenditures over the proposed Study Period. Notably, infrastructure O&M is not increasing significantly over the period (see Figure 3-7 and Figure 3-8). While the Department is planning to hire 83 employees in Water Engineering and Technical Services (WETS) and

Water Distribution to address mainline replacement, trunk line replacement and other needs, the Department plans to address a portion of its substantial infrastructure replacement plans through external contracts.²⁸

On average, O&M expenditures for water quality, Owens Valley and water conservation increase significantly in the Study Period compared to FY 2014/15 due to regulatory mandates and ambitious conservation goals. The increase in water conservation O&M is associated with rebates and the increase in Owens Valley O&M is associated with on-site operational changes to reduce the use of water for dust control on Owens Lake. This project is discussed in more detail in Section 3.2.2.2. Finally, the increase in water quality O&M corresponds to increased chemical usage in the Los Angeles Aqueduct supply as well as a small increase in staffing.

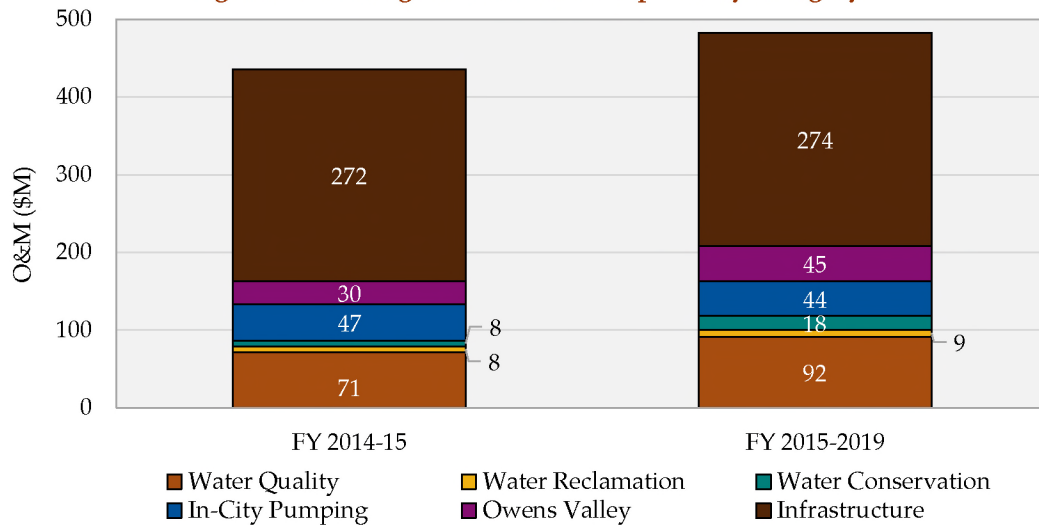
Figure 3-7. Total Annual O&M Expenditures



Source: LADWP data provided on November 6, 2015.

²⁸ LADWP data (10/19/2015) provided on October 23, 2015.

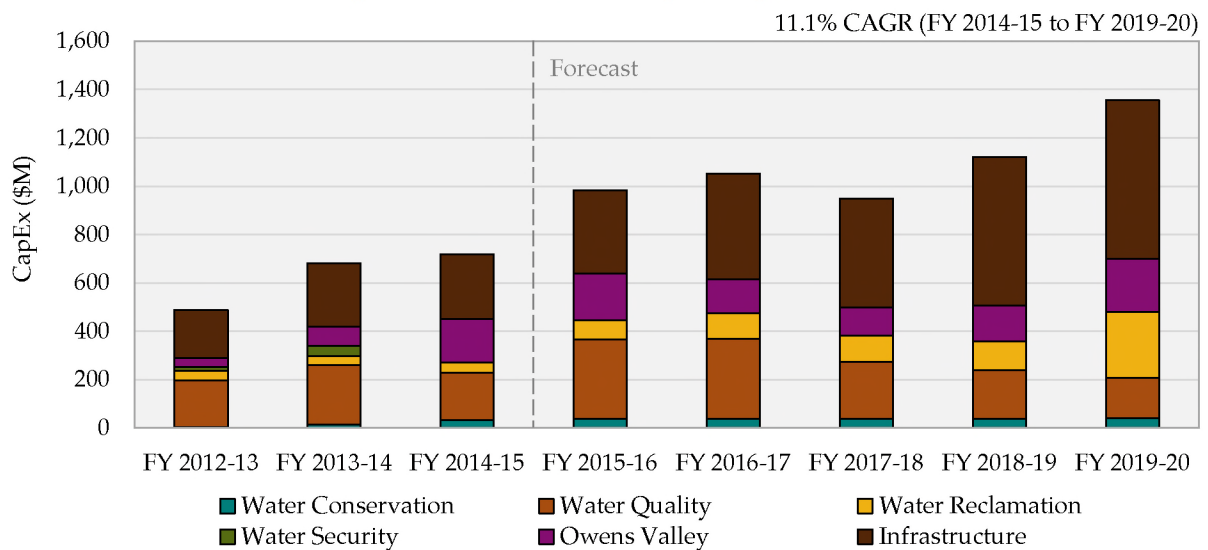
Figure 3-8. Average Annual O&M Expense by Category



Source: LADWP data provided on November 6, 2015.

Capital expenditures are projected to significantly increase compared to FY 2014/15 because of substantial investment in infrastructure reliability, water reclamation, and water conservation (see Figure 3-9 and Figure 3-10). Water quality capital expenditures also increase significantly in FY 2015/16 and 2016/17 due to spending associated with large projects for the Department's trunk line and reservoir improvement programs.

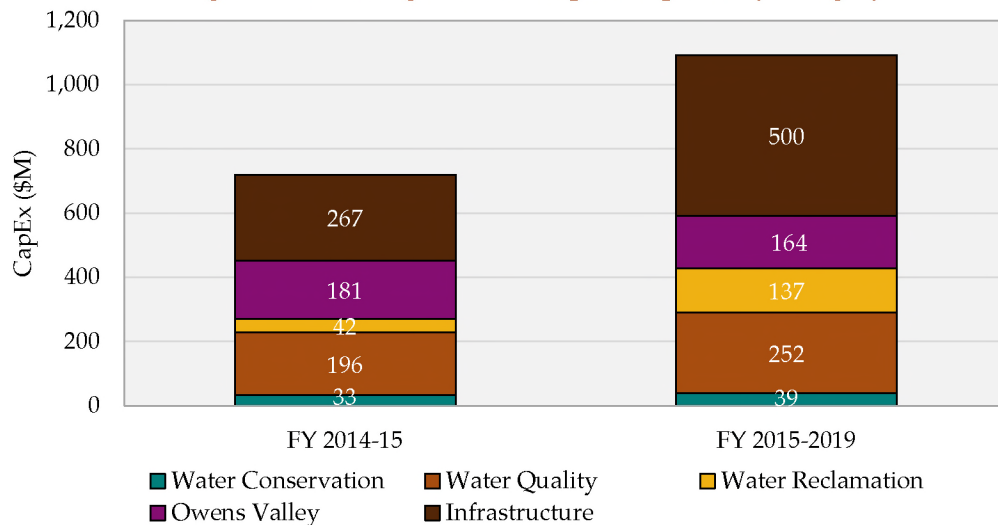
Figure 3-9. Total Annual Capital Expenditures



Source: LADWP data provided on November 6, 2015.

Average annual capital expenditures for every major expenditure category other than Owens Valley are expected to increase over the Study Period compared to FY 2014/15 (see Figure 3-10). Overall, average capital expenditures are approximately \$1.1 billion per year over the Study Period whereas capital expenditures totaled to approximately \$720 million in FY 2014/15.

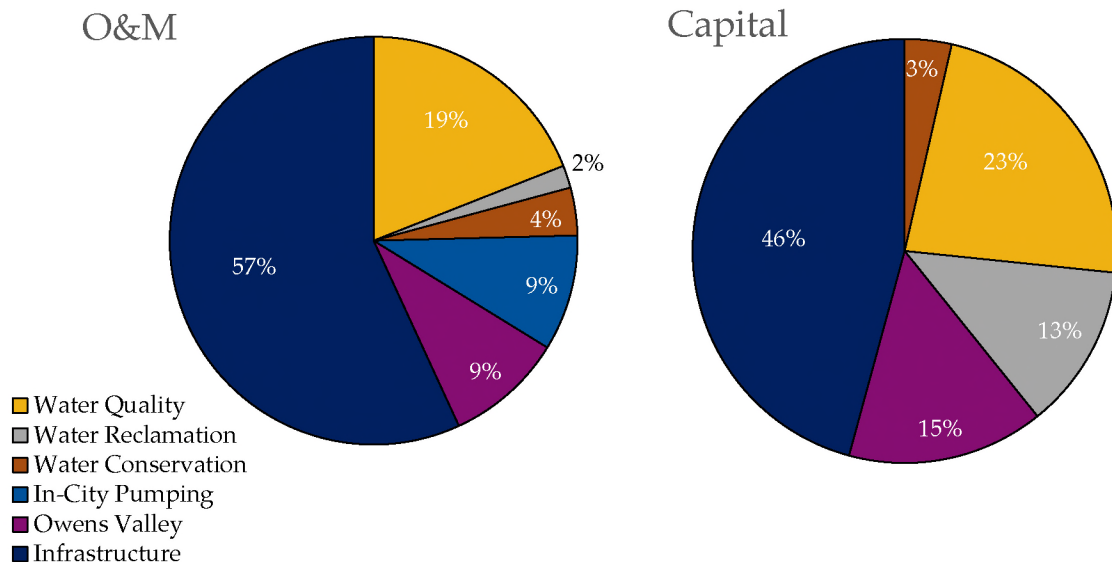
Figure 3-10. Average Annual Capital Expense by Category



Source: LADWP data provided on November 6, 2015.

As shown below, infrastructure is the biggest driver of both capital and O&M expenditures for the Study Period. Water quality, water reclamation, and Owen's Valley are other capital intensive programs. Similarly, water quality, Owen's Valley, and in-city pumping are large categories for O&M expenditure (see Figure 3-11).

Figure 3-11. Capital and O&M (FY 2015/16-2019/20)



Source: LADWP data provided on November 6, 2015.

In addition to the goals discussed above, each of the major expenditures categories has specific programs that drive their implementation and completion. Navigant leveraged work from the 2015 IEA Survey,

the Water System Rate Action Report, and updated information from the Department to assess the Water System's major programs in the following sections.

3.2.2.1 Water Quality

On average, expenditures for water quality are increasing over the Study Period compared to FY 2014/15. FY 2015/16 and 2016/17 have the most significant increases in capital expenditures for the period (see Figure 3-12). Major water quality projects over the Study Period include:

- **Reservoir Covers and Decommissioning:** The Department is covering or decommissioning its in-service reservoirs to comply with LT2ESWTR.²⁹ The Elysian and Upper Stone Canyon Reservoirs will be covered and Silver Lake and Ivanhoe Reservoirs will be decommissioned and replaced with Headworks East and West Reservoirs. Headworks East was placed into service in December 2014 and Headworks West is in the design stage. Reservoirs must be in compliance with LT2ESWTR by 2022.
- **Trunk Line Improvements:** Trunk line projects will redistribute water from decommissioned reservoirs to other existing reservoirs.³⁰
- **River Supply Conduit (RSC):** RSC projects will replace major transmission pipelines built in the 1940s to improve water pressure as required by the California Department of Public Health.
- **Chloramination:** LADWP converted most of its water supply from chlorine to chloramine to comply with Stage 2 D-DBPR in 2014.³¹ However, a chloramination station at 99th Street is being built with an August 2017 completion date.
- **UV Disinfection Treatment Plant:** LADWP is constructing a LA Reservoir UV Disinfection Treatment Plant to be completed by November 2018.
- **Groundwater Remediation, Cleanup, and Management:** Approximately 50 percent of the groundwater production wells in the San Fernando Basin have been inactivated because of contamination.³² The Department has also limited its pumping of the smaller basins because of similar contamination and deterioration issues. To improve water quality in these basins, the Department has identified numerous groundwater remediation projects. These projects are discussed in more detail in Section 3.2.2.1.

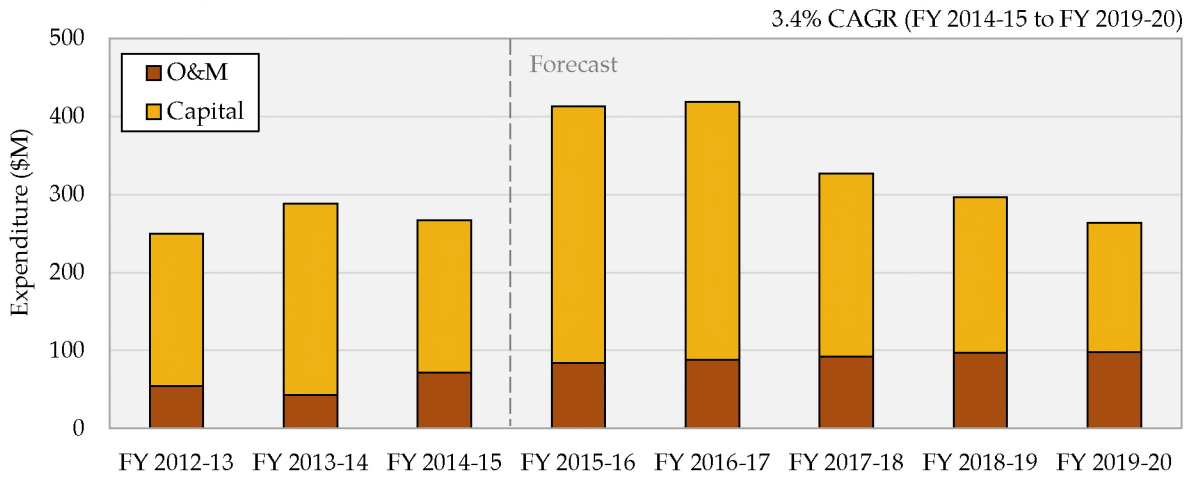
²⁹ Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) is an Environmental Protection Agency (EPA) regulation to cover, treat, or remove uncovered distribution reservoirs by 2022.

³⁰ These trunk line expenditures are directly related to water quality projects. There are separate trunk line expenditures that are categorized under infrastructure (see Section 1.3.2.5).

³¹ Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 D-DBPR Rule) is an EPA regulation to minimize the formation of disinfection byproducts through chloramination stations and UV disinfection treatment plants. Stage 2 D-DBPR required compliance by April 2014.

³² San Fernando Groundwater Basin Remediation Owner's Agent Contract, LADWP Board of Commissioners, September 8, 2015. Groundwater System Improvement Study Remedial Investigation Update Report, Brown and Caldwell.

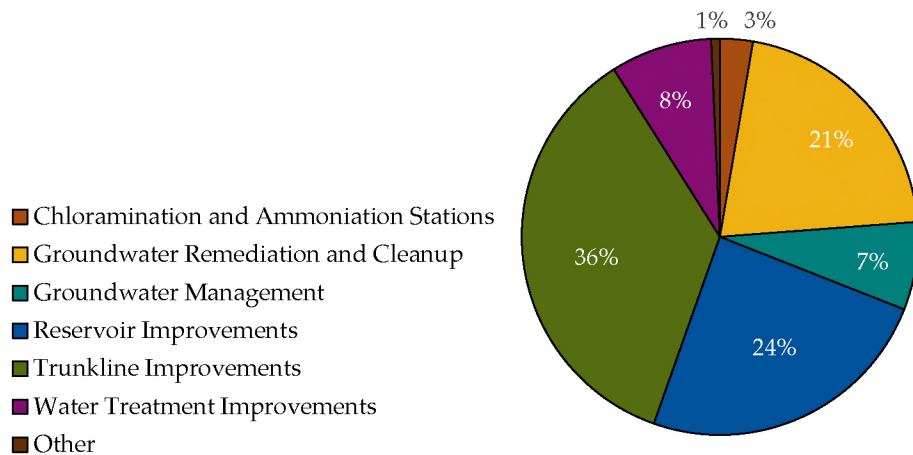
Figure 3-12. Total Annual Water Quality Capital and O&M Expenditure



Source: LADWP data provided on November 6, 2015.

As shown in Figure 3-13, the reservoir and trunk line improvement projects described above account for approximately 60 percent of the water quality capital expenditures for the Study Period. The construction of the Headworks West reservoir and River Supply Conduit Units 5 and 6 are major drivers of the increase in capital expenditures in FY 2015/16 and FY 2016/17. Specifically, the Department plans to spend more than \$230 million on the two projects over the two years. Both projects are projected to be complete in FY 2017/18. Other major water quality capital expenditures include groundwater remediation and cleanup, groundwater management, and water treatment improvements. Capital projects related to water quality will be recovered through securitization and O&M expenditures will be recovered through the Water Quality Improvement Adjustment (WQIA) factor.³³

Figure 3-13. Total Water Quality Capital Expenditures (FY 2015/16-2019/20)



Source: LADWP data provided on November 6, 2015.

³³ Groundwater remediation, cleanup, and management are categorized under Water Quality in the Department's budget, but the expenditures are recovered through securitization for capital spending and the Water Supply Cost Adjustment factor for O&M spending.

3.2.2.2 Owens Valley

The Department has been mitigating the dust at Owens Lake since 2003. This effort has included allocating up to 95,000 AF of drinking water each year to dust mitigation measures. In April 2013, the Department developed the Owens Lake Master Project to implement a more environmentally friendly solution for Owens Lake. The project utilizes tillage, vegetation, water, gravel, roads, and brine to control dust. LADWP aims to use the waterless or water efficient control measures developed in this project to reduce total lake-wide water use by at least 50 percent.³⁴ Water saved from these measures will increase the local water supply from the Los Angeles Aqueduct, and therefore reduce the Department's reliance on purchased water.

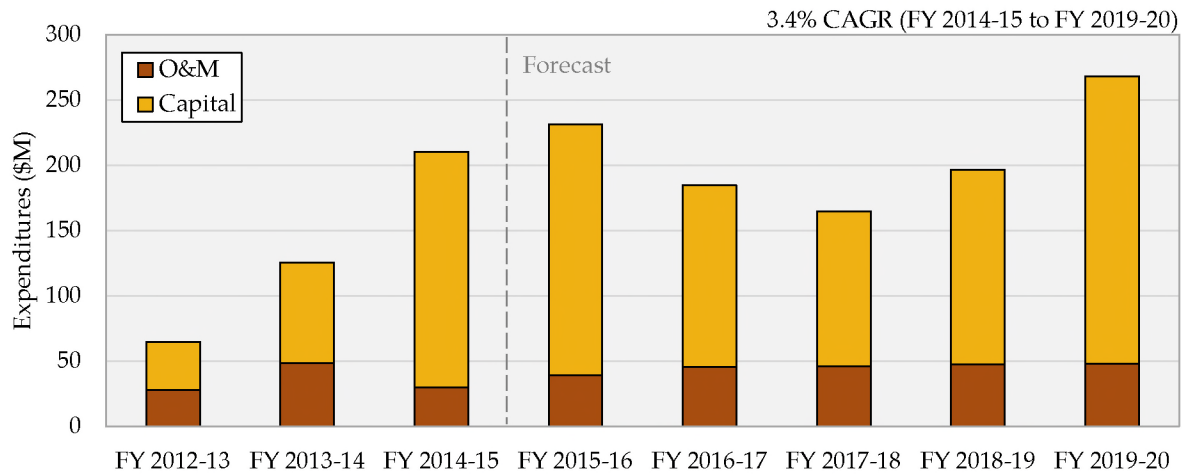
In December 2014, a Stipulated Judgment between LADWP and the Great Basin Unified Air Pollution Control District (Great Basin) defined a maximum area that the Department has to mitigate and allowed for alternative dust mitigation techniques other than using valuable drinking water. Accordingly, LADWP must complete Phases 9 and 10 of the Owens Valley Dust Mitigation project by the end of 2017. Phases 9 and 10 include the installation of dust control measures on an additional 3.62 square miles of Owens Lake bed. In addition, the Department may be ordered to install waterless control measures to an additional 4.8 square miles of Owens Lake any time after January 2016.³⁵

Capital expenditures for Owens Valley in FY 2015/16 and FY 2016/17 are mostly due to spending associated with Phases 9 and 10 discussed above. These phases account for approximately 78 and 50 percent of capital expenditures in FY 2015/16 and FY 2016/17, respectively. Capital expenditures decrease in FY 2017/18 because the Department will complete Phases 9 and 10 by the end of 2017. The Owens Lake Master Project accounts for the majority of the remaining capital expenditures. Spending on this project increases from approximately 10 percent of total Owens Valley capital expenditure in FY 2015/16 to more than 90 percent by FY 2018/19. O&M expenditures for Owens Valley increase slightly over the Study Period to support these major projects (see Figure 3-14). Capital expenditures associated with Owens Valley will be recovered through securitization and O&M expenditures will be recovered through the Owens Valley Regulatory Adjustment (OVRA) factor.

³⁴ Owens Lake Master Project, April 2013.

³⁵ Stipulated Judgment, *City of Los Angeles v. Great Basin*, December 30, 2014, pp. 6-7.

Figure 3-14. Annual Owens Valley Capital and O&M Expenditure



Source: LADWP data provided on November 6, 2015.

3.2.2.3 Infrastructure

Utilities across the United States are facing increasingly aging infrastructure replacement needs as many physical assets reach the end of their useful lives. To address this challenge, LADWP has included a significant investment in infrastructure reliability in its proposed rate increase structure. In addition to the Los Angeles Aqueduct rehabilitation program, the Department has a number of key asset replacement programs (see Table 3-6).

Table 3-6. Water Infrastructure Asset Renewal Plan (FY 2015/16-2019/20)

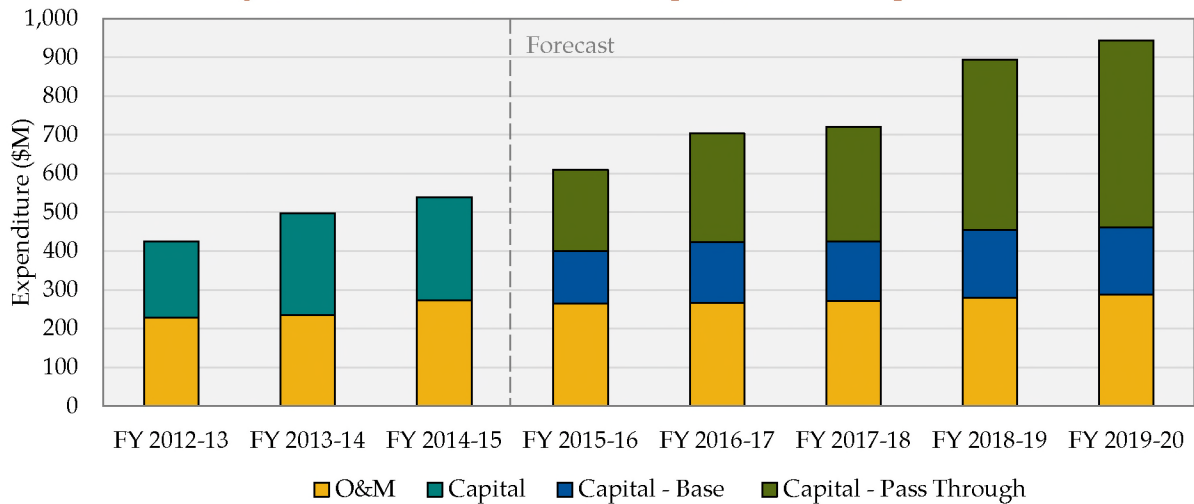
Water System Asset	Replacement Rate
Mainline	205,000 feet/year by 2020
Trunk line	200,000 feet by 2025 ³⁶
Pump Stations	12 pump or motor units/year
Large Valves	5 valves/year
Meters	25,000 meters/year
Pressure Regulator and Relief Stations	4-6 pressure regulators/year

Source: Water System Rate Action Report

The Department plans to increase capital and O&M expenditures over the Study Period to address asset renewal and other large infrastructure projects. Approximately 32 percent of capital expenditures for infrastructure will be recovered through base rates and approximately 68 percent will be recovered through the Water Infrastructure Reliability Adjustment Factor (WIRA) pass through (see Figure 3-15). Specifically, mainline and trunk line replacement account for approximately 70 percent of the planned pass through infrastructure capital expenditures for the Study Period (see Figure 3-16). The remaining 30 percent includes replacement and upgrades for other aging assets such as pump stations, meters, and hydrants.

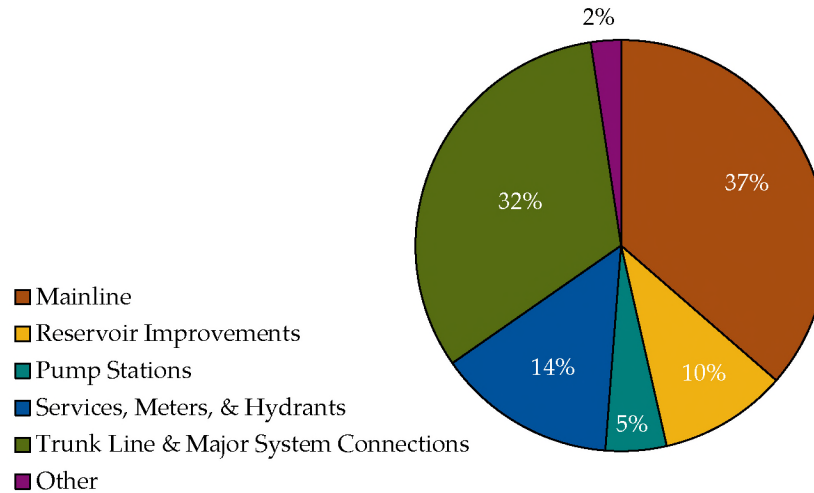
³⁶ The Department plans to replace, test, repair and preserve portions of approximately 200,000 feet of trunk line. Water System Rate Action Report, Chapter 3, p. 26.

Figure 3-15. Annual Infrastructure Capital and O&M Expenditure



Source: LADWP data provided on November 6, 2015.

Figure 3-16. Infrastructure Pass-Through Capital Expenditure (FY 2015/16-2019/20)



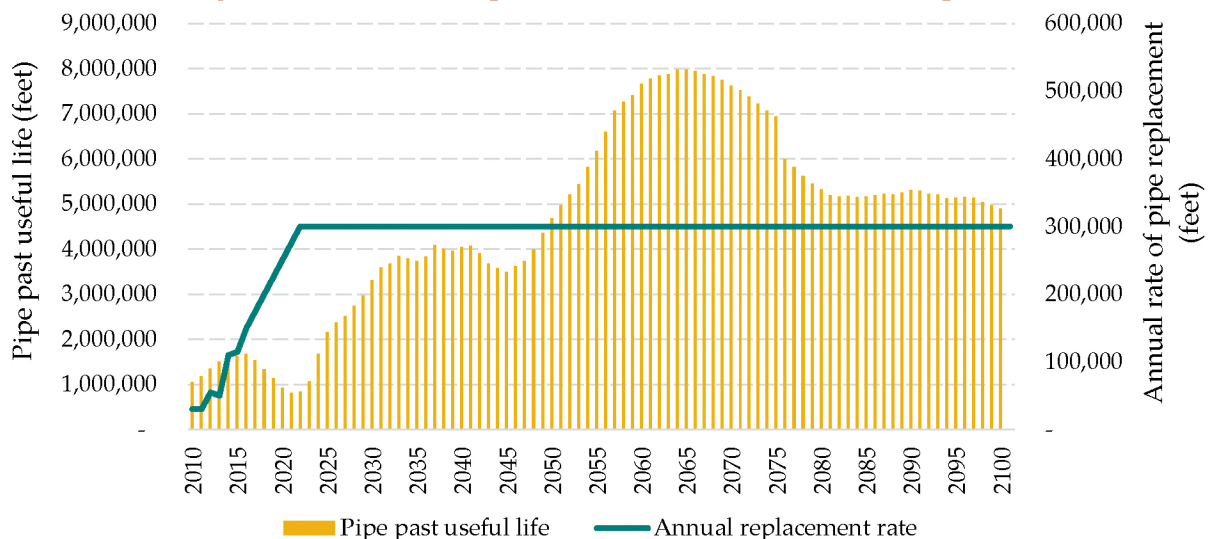
Source: LADWP data provided on November 6, 2015.

As discussed in the 2015 IEA Survey, the mainline replacement program is critical to reducing the average mainline life cycle and maintaining system reliability. According to the Water System Rate Action Report, the Water System is planning to increase its mainline renewal rate from approximately 150,000 feet per year to 205,000 feet per year by 2020, which will reduce the System's replacement rate to 185 years.³⁷ However, this replacement rate is lower than the 300,000 feet per year (120-year cycle) recommended by WSO's Asset Management group and outlined by the Water System in its October 2015 mainline replacement proposal.

³⁷ Water System Rate Action Report, Chapter 3, p. 24.

Given the average mainline life cycle is approximately 100 years, a replacement rate of 205,000 feet per year (185-year cycle) is not enough to maintain system reliability and stop the existing backlog from growing. Navigant analyzed the mainline renewal rate in the 2015 IEA Survey and found that while the 300,000 feet per year replacement rate recommended by the Asset Management group (120-year cycle) will significantly reduce the amount of mainlines that will reach the end of their nominal life in the short-term, it will not be enough to address the challenges that LADWP will face beyond 2020. As shown in Figure 3-17, at an annual renewal rate of 300,000 feet, the amount of pipe exceeding its useful life will more than double within 15 years. If the proposed rate were to continue for decades, the amount of pipe exceeding its useful life would increase fivefold to approximately 8 million feet, or 23 percent of the total amount of mainline pipe at its peak.³⁸ Consequently, the risk of pipe failures and the WSO's ability to meet reasonable levels of service will be greatly affected. While representing a great improvement, it is clear that a mainline replacement rate of 300,000 feet per year will not be sufficient in the medium to long-term, and that additional investments in mainline replacement programs will be required.

Figure 3-17. Mainline Replacement Based on Current Rate Proposal

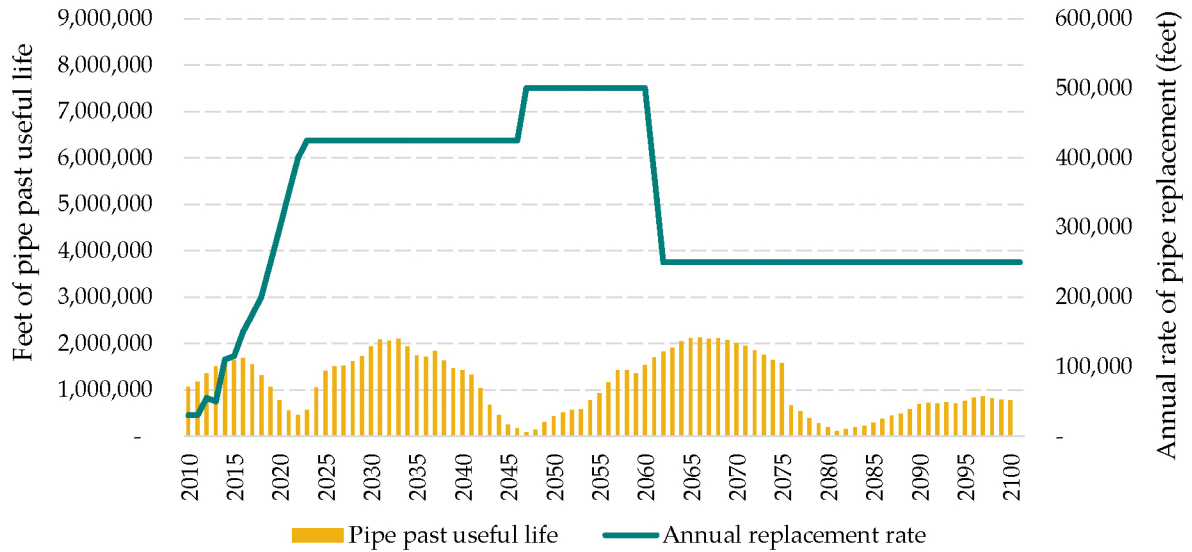


Source: Navigant analysis of mainline data provided by LADWP.

Figure 3-18 presents an alternative replacement rate scenario developed by Navigant and shows the impact of increasing the rate to 425,000 feet per year by 2023 and holding it to this level for approximately 20 years, then increasing it to 500,000 feet per year for another 15 years. In this scenario, the percentage of mainlines operating past their average useful lives would be less than six percent of the total mainline portfolio at its peak. While such replacement rates will help to significantly reduce the backlog of mainlines needing replacement, the associated costs may be prohibitive. However, these analyses highlight the inadequacy of a 205,000 feet per year mainline replacement rate.

³⁸ The City of Los Angeles experienced significant territorial expansion in 1950 through 1970 when multiple piping systems were added to the Water System by annexation. The replacement cycle for these piping systems is projected to have a large impact on the WSO's overall mainline replacement program by 2050.

Figure 3-18. Accelerated Mainline Replacement

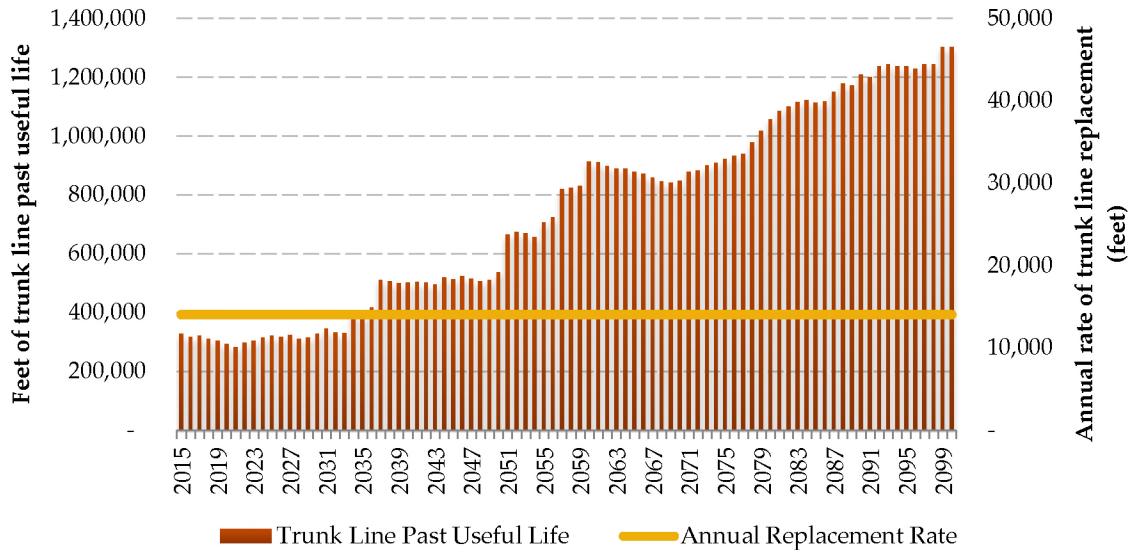


Source: Navigant analysis of mainline data provided by LADWP.

The replacement rates for the other assets in Table 3-6 are consistent with the Department's stated plans, including the 2015 Water Infrastructure Plan. However, the replacement lifecycle is higher than the average lifecycle for the majority of these assets. For example, LADWP has replaced approximately 14,000 feet of trunk line per year over the last ten years, which is equivalent to a replacement cycle of almost 210 years.³⁹ The average trunk line lifecycle is approximately 100 years. As shown in Figure 3-19, at an annual rate of 14,000 feet per year, 315,000 feet per year of LADWP's trunk lines would be past their useful life until 2033, representing 23 percent of the total portfolio.

³⁹ WETS – Asset Management Group Trunkline Assessment, March 2015.

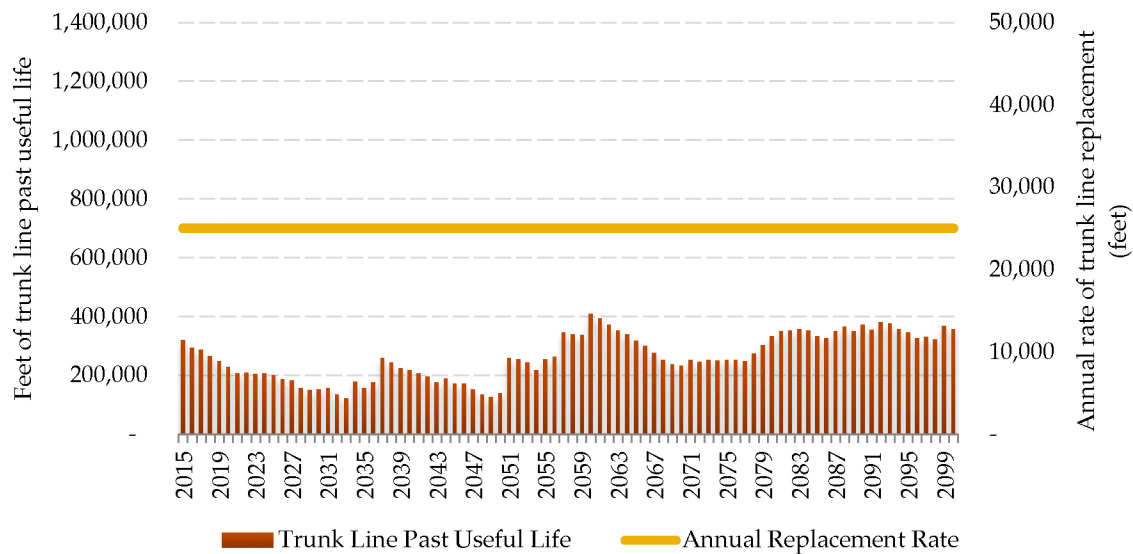
Figure 3-19. Trunk Line Replacement based on Historical Replacement Rate



Source: Navigant analysis of trunk line data provided by LADWP.

According to the Rate Action Report, the Department plans to replace, test, repair and preserve approximately 200,000 feet of trunk line over the next ten years. This plan is lower than the 212,000 feet outlined by the Water System in its October 2015 trunk line replacement proposal. The October 2015 trunk line proposal identifies a plan to increase trunk line replacement from 10,000 feet per year in FY 2015/16 to 22,000 feet per year by FY 2019/20. However, even an average trunk line replacement rate of 16,000 feet per year (180-year cycle) over the Study Period is not enough to maintain system reliability. In the IEA Survey, Navigant analyzed the impacts of a trunk line replacement of 25,000 feet per year on reducing trunk line that is past its useful life. Figure 3-20 shows that this replacement rate would limit the backlog of trunk lines needing replacement to approximately 260,000 feet per year until 2100, representing 10 percent of the total portfolio.

Figure 3-20. Trunk Line Replacement based on 25,000 feet/year Replacement Rate



Source: Navigant analysis of trunk line data provided by LADWP.

While the Department plans to increase its trunk line replacement rate to 27,000 feet per year in FY 2021-22, Navigant asked the Department to calculate the rate impacts of increasing the trunk line replacement rate to 25,000 feet per year over the Study Period (Case 104). Overall, this increase in trunk line replacement would increase infrastructure capital spending by approximately \$385 million over the Study Period. This would increase the average five-year impact on rates by 0.5 percent compared to the final proposed water rate case (Case 94).

The Department also plans to replace five large valves per year during the Study Period, which equates to a 460 year life cycle. As part of the 2015 IEA Survey, Navigant found that many large valves are defective or turned off because they may be defective. Given the average life of a large valve is approximately 65 years, the Water System should increase its renewal rate for this asset as well.⁴⁰

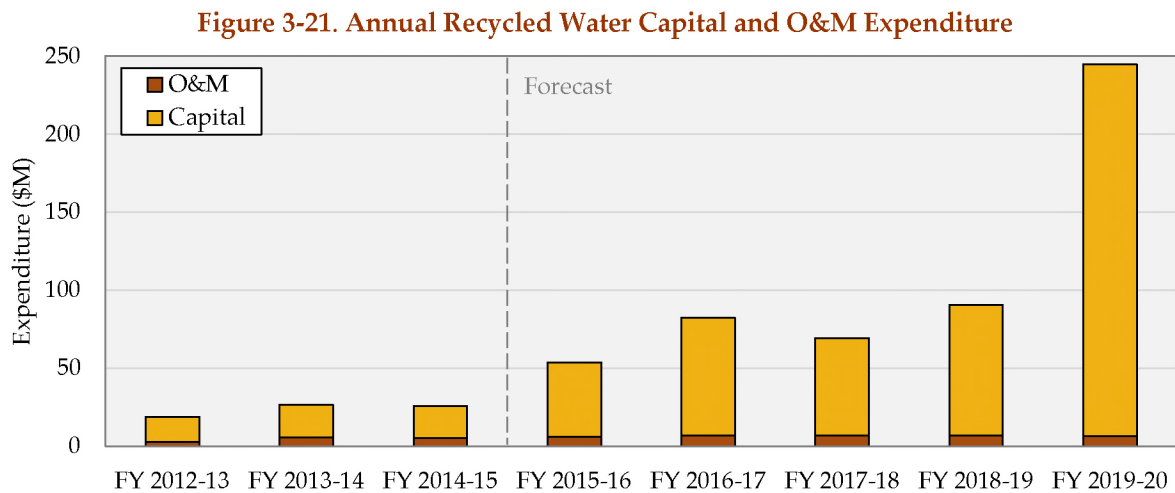
Securing sufficient capacity to transition to a greater asset replacement rates will also be a significant challenge for the Department. In addition to facing significant workforce attrition in the short-term, LADWP has inefficient procurement processes and cannot quickly hire new staff or contract out. To support the planned increases in infrastructure renewal, the Department plans to increase crew personnel by 77 percent and hire an additional 83 personnel, including 40 staff for Water Distribution and 43 staff for WETS. This hiring increase will require significant planning, training, and executive support in the near future.

Based on these findings, the planned expenditures and replacement rates for the Study Period will provide a significant step towards maintaining infrastructure reliability, but will not be sufficient to prevent the current backlog of assets needing replacement from increasing, and additional funding will be required in the near future to address this issue.

⁴⁰ Large Valve Asset Management Report, June 2011, p. 36.

3.2.2.4 Local Water Supply

As discussed above, the Mayor has set a goal to reduce imported water purchases by 50 percent by 2025, using FY 2013/14 as the baseline year. To meet this goal, the Department has developed aggressive plans to increase local water supplies, including recycled water, stormwater capture, and groundwater. These plans include capturing 150,000 AF of stormwater per year by 2035 and increasing recycled water delivery to 59,000 AF per year by 2035. The Mayor has also set water conservation goals to support the decrease in imported water purchases and to increase local sustainability. For example, the Mayor has targeted a decrease in per capita water use to less than 100 gpcd by 2035. LADWP has created capital intensive programs to achieve these goals. Expenditure breakdowns by water source for the Study Period and the past three years are provided in the figures below.



Source: LADWP data provided on November 6, 2015.

According to the 2010 Urban Water Management Water Plan (UWMP), the Department plans to increase its recycled water supply to 59,000 AF per year by 2035, including 29,000 AF for municipal and industrial deliveries (non-potable reuse) and 30,000 AF for groundwater replenishment.⁴¹ LADWP delivered 10,324 AF of recycled water in FY 2013/14 and approximately 10,500 AF in FY 2014/15.⁴²

One component of increasing recycled water use is installing more recycled water pipeline (purple pipe) to deliver 29,000 AF per year for non-potable reuse. The Department installed approximately 10,300 feet of purple pipe in FY 2013/14 and 10,550 feet of purple pipe in FY 2014/15.⁴³ Another component is the Groundwater Replenishment (GWR) Project, which aims to deliver up to 30,000 AFY of purified recycled water to replenish the San Fernando Basin. LADWP plans to construct New Advanced Water Purification Facilities (AWPF) to purify recycled water. The GWR Project is in the planning stage and operation is anticipated to begin in 2022.⁴⁴ The increase in capital expenditures in FY 2019/20 is largely

⁴¹ Recycled Water Master Plan, October 2012, p. 4.

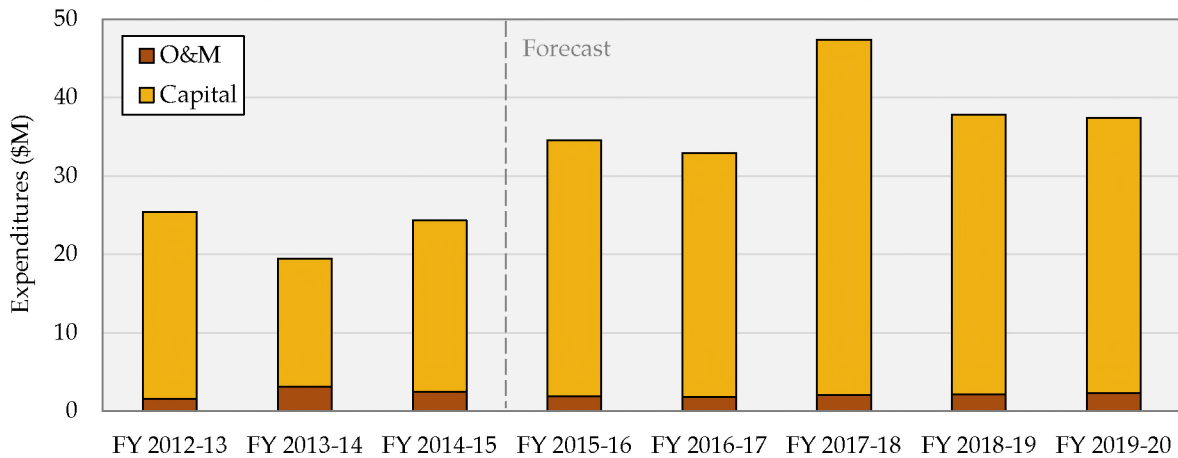
⁴² LADWP Recycled Water Annual Report, FY 2013/14, January 2015; Recycled Water Deliveries KPI, June 2015.

⁴³ Ibid.

⁴⁴ LADWP Recycled Water Annual Report, FY 2013/14, January 2015.

for the GWR Project (see Figure 3-21). Capital and O&M expenditures associated with recycled water will be recovered through the Water Supply Cost Adjustment (WSCA) factor.

Figure 3-22. Annual Stormwater Capture Capital Expenditure



Source: LADWP data provided on November 6, 2015.

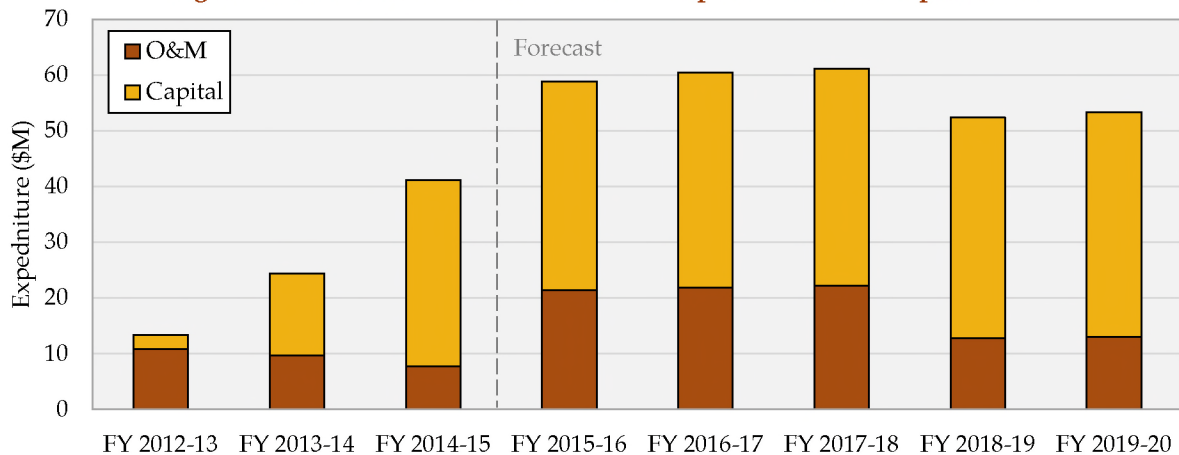
As mentioned above, the Sustainable City pLAn sets a target of capturing 150,000 AF per year of stormwater by 2035.⁴⁵ LADWP developed a Stormwater Capture Master Plan (SCMP) in July 2015 that supports the capture of approximately 135,000-180,000 AF of stormwater per year by 2035. According to the SCMP, the City currently has the ability to capture 63,000 AF, but only captures approximately 35,000 AF into water supply aquifers.⁴⁶ In addition to this baseline, the SWCP has identified an additional 68,000–114,000 AF of recharge potential by 2035.⁴⁷ This increase relies on a number of major centralized stormwater capture projects that are to be constructed between 2016 and 2018. To support these projects, the Department has increased capital expenditures over the Study Period (see Figure 3-22). Capital and O&M expenditures associated with stormwater capture will be recovered through the Water Supply Cost Adjustment (WSCA) factor.

⁴⁵ This is a goal that has yet to be approved by the Board.

⁴⁶ Stormwater Capture Master Plan, July 2015, p. ES-7.

⁴⁷ Stormwater Capture Master Plan, July 2015, p. ES-11.

Figure 3-23. Annual Water Conservation Capital and O&M Expenditure



Source: LADWP data provided on November 6, 2015.

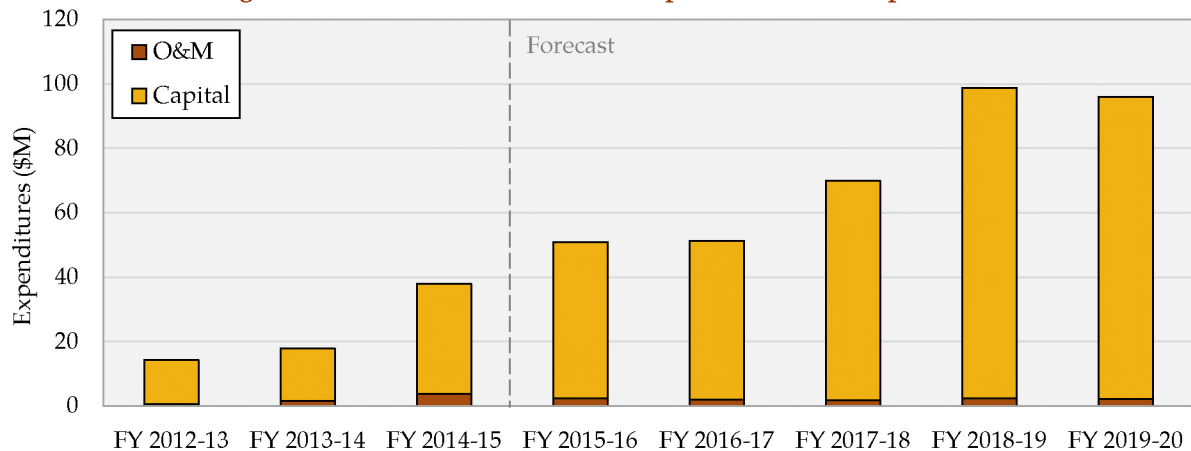
The Department has benefited from significant water savings in recent years due to successful water conservation initiatives and passive water savings. For example, residential water consumption decreased by 19 percent between 2004 and 2014.⁴⁸ In addition, the goal for FY 2014/15 was to achieve approximately 34,400 AF of water savings and LADWP customers saved at least 100,000 AF.⁴⁹ The Department has a number of existing and planned water conservation programs including business and residential customer rebates for the installation of water conservation equipment, funding for the LA Department of Recreation and Parks for water efficient equipment, direct install partnerships with Southern California Gas Company, technical assistant programs that provide incentives for custom water conservation projects, public education campaigns, and consultant services to support water conservation efforts.

To support these programs and to comply with the aforementioned State legislation (SBX7-7) and Mayoral goals, water conservation expenditures are projected to increase over the Study Period. Specifically, capital expenditures are projected to increase slightly over the Study Period while O&M expenditures are expected to increase significantly between FY 2015/16 and FY 2017/18 (see Figure 3-23). Incentives provided in the programs described above account for approximately 98 percent of the water conservation capital expenditures over the Study Period. Capital expenditures associated with water conservation will be recovered through securitization and O&M expenditures will be recovered through the WSCA factor.

⁴⁸ Rate Action Report, Chapter 2, Appendix C, p. 6.

⁴⁹ Water Conservation KPI.

Figure 3-24. Annual Groundwater Capital and O&M Expenditure



Source: LADWP data provided on November 6, 2015.

Groundwater is a key resource for the LADWP. The Department has groundwater rights in five local basins. The largest of these basins is the San Fernando Basin followed by the Central Basin, Sylmar Basin, and West Coast Basin. On average, groundwater has accounted for approximately 12 percent of the Department's water supply between FY 2010-2014; however, approximately 50 percent of the groundwater production wells in the San Fernando Basin have been inactivated because of contamination.⁵⁰ The Department has also limited its pumping of the smaller basins because of similar contamination and deterioration issues. To clean up this local water supply, the Department has identified groundwater remediation projects, including the construction of two major groundwater treatment facilities, to improve water quality in the San Fernando Basin and the other basins. In addition, state regulators have allowed utilities to blend groundwater with other sources to meet water quality standards, which further increases the Department's groundwater supply. The Department has also purchased additional water rights in the Central Basin to support increased groundwater supplies. These measures will allow local groundwater to account for approximately 22 percent of LADWP's total water supply by 2020.⁵¹

According to documents provided to Navigant, the San Fernando groundwater remediation project is a 10-year project for which design will begin in January 2016, construction will begin in June 2018, and construction is expected to be complete by June 2021.⁵² This timeline aligns with the increase in capital expenditures over Study Period (see Figure 3-24 and Figure 3-25); however, these expenditures only reflect a portion of the total project expenditures. Capital expenditures associated with groundwater may be recovered through securitization and O&M expenditures will be recovered through the WSCA factor.

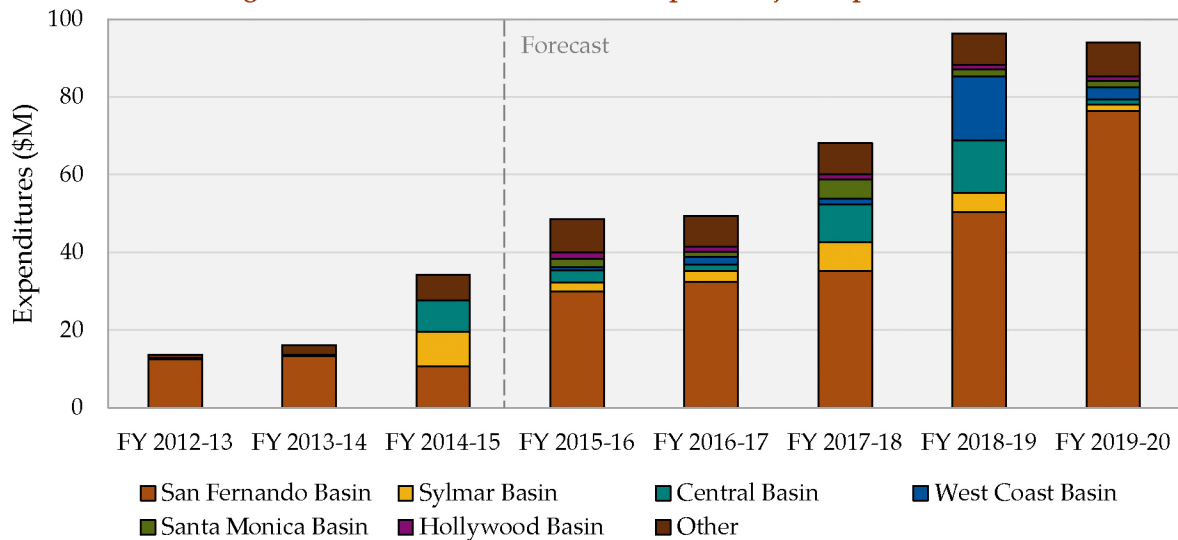
⁵⁰ San Fernando Groundwater Basin Remediation Owner's Agent Contract, LADWP Board of Commissioners, September 8, 2015.

Groundwater System Improvement Study Remedial Investigation Update Report, Brown and Caldwell.

⁵¹ LADWP data provided on November 6, 2015.

⁵² San Fernando Groundwater Basin Remediation Owner's Agent Contract, LADWP Board of Commissioners, September 8, 2015.

Figure 3-25. Annual Groundwater Capital Project Expenditures



Source: LADWP data provided on November 6, 2015.

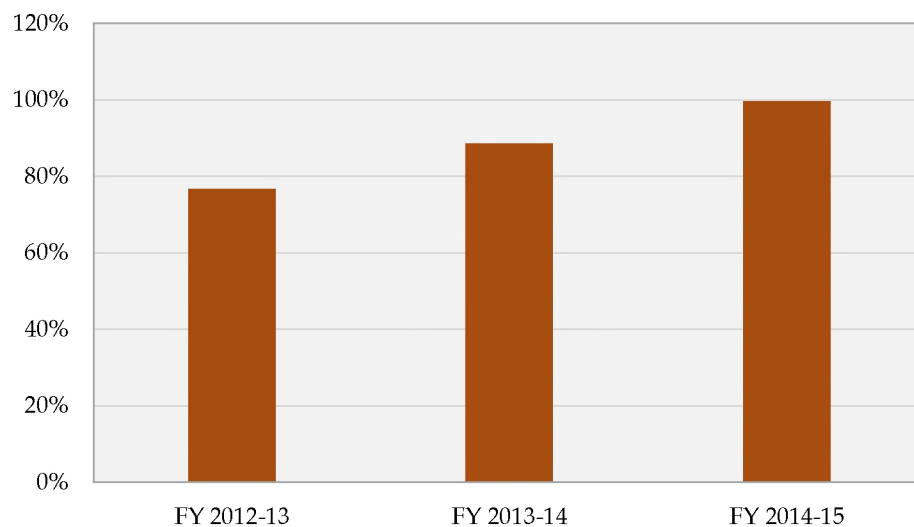
Overall, the Department's key expenditures over the Study Period align with federal, state, local, and internal goals and mandates. The expenditures also largely align with the Department's stated plans. The Department is spending significant funds to increase local water supplies, reduce reliance on purchased water, and meet regulatory mandates. As mentioned in more detail in Section 3.4.1, other utilities are also ramping up their spending to address similar challenges.

One area that needs increased funding and more aggressive planning is infrastructure renewal. The Department's mainline replacement plans associated with the five-year rate proposal are not sufficient to maintain system reliability over the long-term and reduce the backlog of aging infrastructure. The Department's trunk line and large valve replacement life cycles also exceed the average useful life of the assets. Accordingly, the funding and planning for this expenditure category should be re-evaluated in the near future. The next section addresses the Department's capacity to implement its plans in more detail.

3.3 LADWP's Capability to Implement its Plan

In recent years, the Water System has improved its budget management processes. As shown in Figure 3-26, the Water System spent almost all of its budget in FY 2014/15. As discussed in the 2015 IEA Survey, Navigant found that this improvement is due, in part, to improved project management. For example, the Water System has implemented a stage-gate approach for managing projects. Moreover, there is a robust process for selection and prioritization of renewal projects. The Water System also has a Project Management Office (PMO) that clearly identifies the staff responsible for carrying out projects, manages project risk, and closely tracks progress against plans.

Figure 3-26. Water System Budget Variance (Actual / Budget)



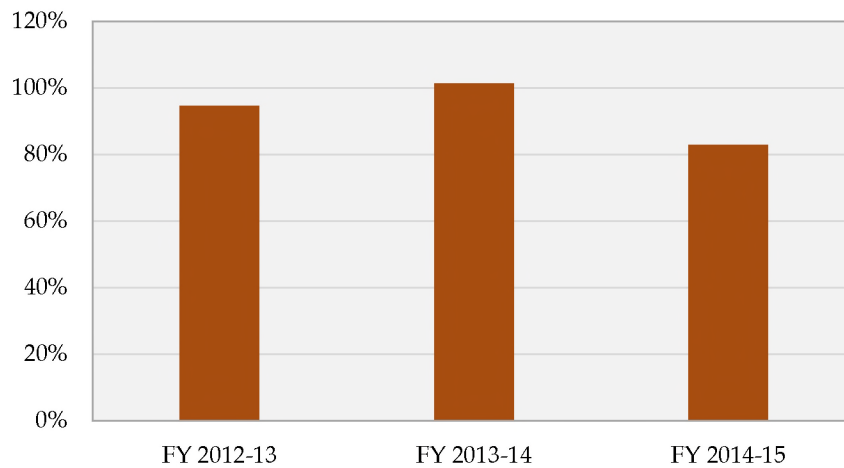
Source: LADWP data provided on November 6, 2015

While the Water System has significantly improved its budget and project management, expected attrition, contracting and hiring difficulties, and inefficient procurement processes could limit the Department's capacity to implement its programs over the Study Period. Accordingly, Navigant has reviewed the Water System's plans to achieve significant spending ramp-ups for critical capital programs.

3.3.1 Infrastructure

Overall, the Department has been able to spend its capital budget for infrastructure over the past three years. Specifically, LADWP spent 95%, 101%, and 83% of its budget in FY 2012/13, FY 2013/14, and FY 2014/15, respectively (see Figure 3-27). The underspending in FY 2014/15 is largely due to lack of spending on construction and professional services for certain infrastructure replacement programs (e.g. mainline, pump stations, regulator stations) and other capital projects associated with water infrastructure.

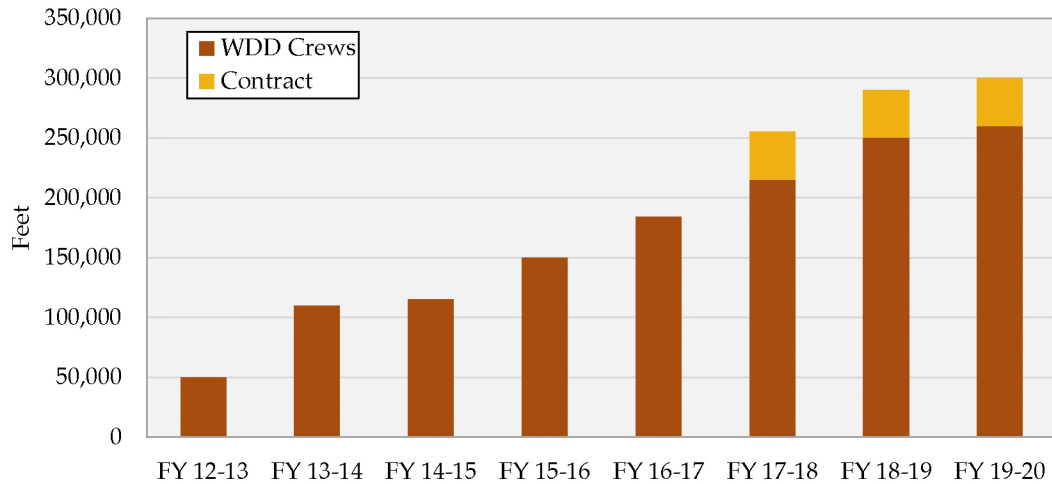
Figure 3-27. Infrastructure Budget Variance (Actual / Budget)



Source: LADWP data provided on November 6, 2015.

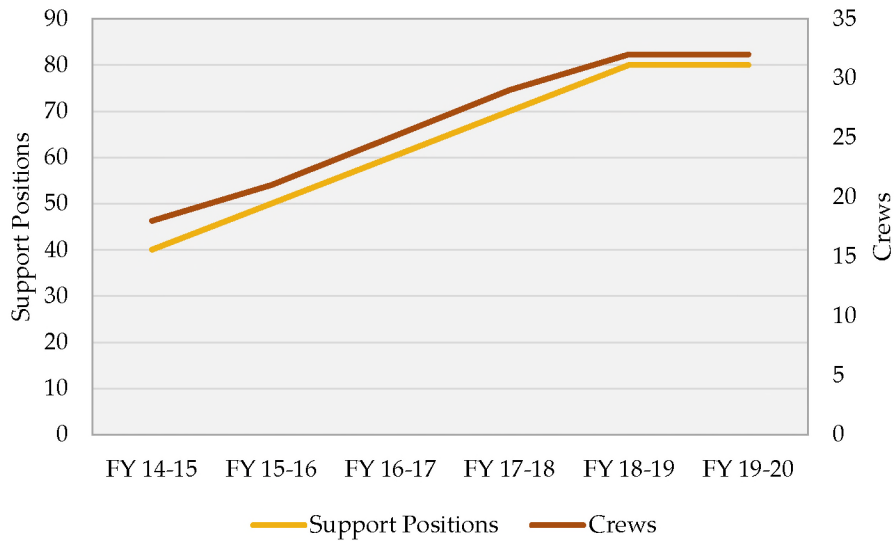
To address its aging infrastructure, the Department plans to significantly ramp-up capital spending for infrastructure over the Study Period. Notably, infrastructure is the largest driver of capital expenditures for the Study Period, accounting for approximately 40 percent of total capital expenditures. To support this ramp-up, the Department plans to increase its internal staff and contract out. For mainline replacement, the Department plans to contract out staff to support the replacement of approximately 40,000 feet of mainline per year starting in FY 2017/18 (see Figure 3-28), representing approximately 13% of their 300,000 feet/year replacement goal by FY 2019/20. As mentioned in Section 3.2.2.3, the Water Distribution Division (WDD) will also increase in-house crews from 18 to 32 and hire an additional 40 administrative and engineering staff to support the remaining increase in mainline replacement over the Study Period (see Figure 3-29). As shown in Figure 3-28, the Department was not able to significantly ramp-up its mainline replacement rate in FY 2014/15, which aligns with the aforementioned difficulties with spending on construction and professional services. This is a concern given the Department's aggressive mainline replacement plans.

Figure 3-28. Mainline Replacement Goal by Workforce Type



Source: LADWP data provided on October 23, 2015 and data provided in the 2015 IEA Survey.

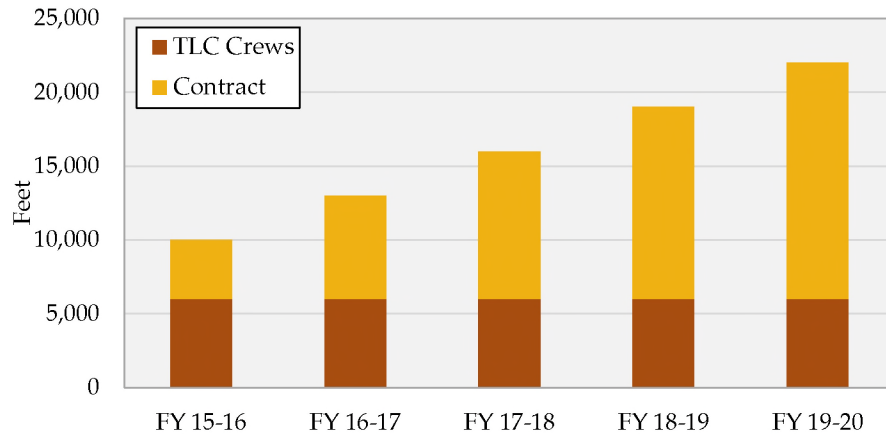
Figure 3-29. Water Distribution Internal Staff and Crews for Mainline Replacement



Source: LADWP data provided on October 23, 2015

For trunk line replacement, the Department plans to significantly increase the number of contracted staff to support 16,000 feet per year of trunk line replacement by FY 2019/20 (see Figure 3-30), representing approximately 73% of their 22,000 feet/year replacement goal. Trunk line crews will complete the replacement of the remaining 6,000 feet per year. The Department does not plan on increasing the number of trunk line crews; however WETS is requesting an additional 43 engineering and technical staff to assist with planning, design, and project and construction management.

Figure 3-30. Trunk Line Replacement Goal by Workforce Type



Source: LADWP data provided on October 23, 2015

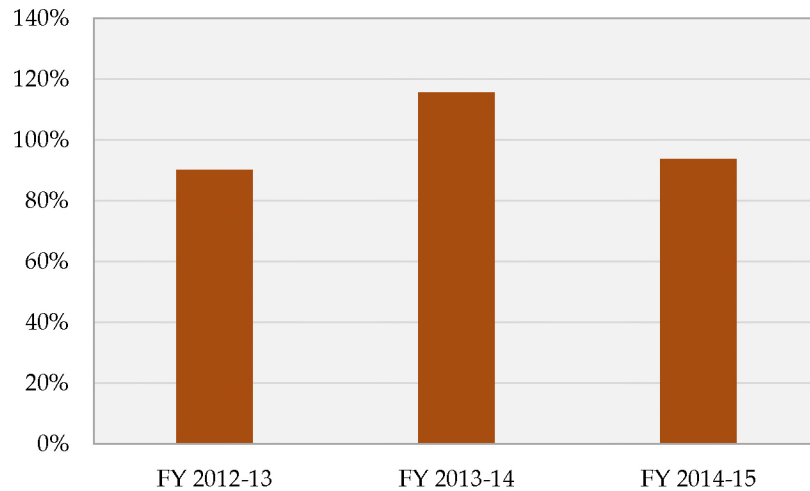
The Water System plans to generate an RFP for a 10-year contract with five years fixed and a five-year extension option for contracting out staff for mainline and trunk line replacement. As shown in Figure 3-28 and Figure 3-30, securing sufficient capacity is critical to achieving increased asset replacement rates. Given the contracting challenges the Department has faced in the past, significant planning, training, and executive support is needed to obtain the aforementioned contract. As mentioned in Section 3.2.2.3, the planned expenditures and replacement rates for the Study Period will provide a significant step towards maintaining infrastructure reliability, but will not be sufficient to prevent the current backlog of assets needing replacement from increasing, and additional funding will be required in the near future to address this issue.

Overall, the Department has sensible plans to meet its mainline and trunk line replacement goals; however these plans are contingent on hiring new staff and contracting out, which have proven to be a challenge in the past. If the Department is not able to secure the ten-year hiring contract mentioned above, the backlog of assets that exceed their average life will continue to increase, which will create additional risk within the Water System and for ratepayers. Accordingly, the Department should put significant resources towards streamlining these processes.

3.3.2 Water Quality

Overall, the Department has been able to spend its capital budget for water quality over the past three years. LADWP spent approximately 90 percent, 116 percent, and 94 percent of its capital budget for water quality in FY 2012/13, FY 2013/14, and FY 2014/15, respectively (see Figure 3-31). While many water quality projects are mandated and therefore the Department is required to complete these according to plan, the Department also uses the stage-gate approach to closely monitor progress against plans by water quality program.

Figure 3-31. Water Quality Budget Variance (Actual / Budget)



Source: LADWP data provided on November 6, 2015

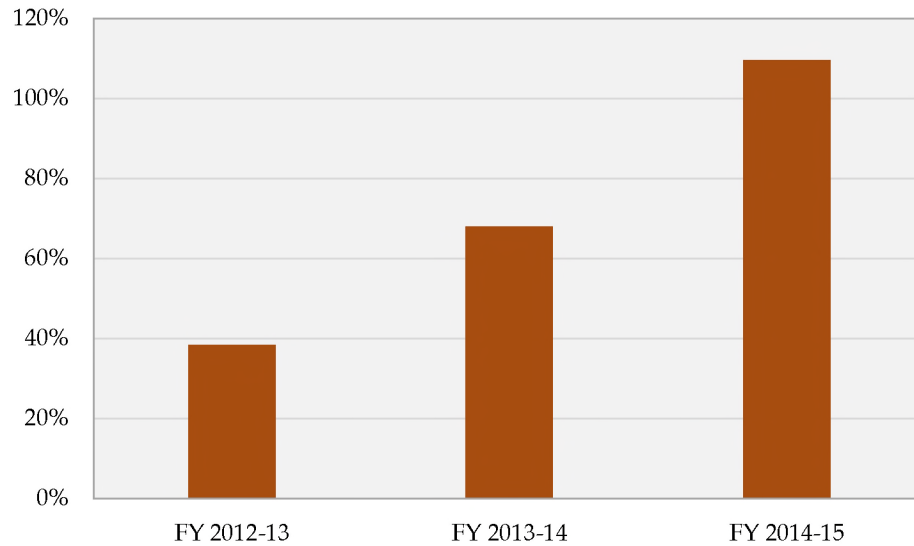
As mentioned in Section 3.2.2.1, the Department plans to significantly increase capital expenditures for water quality in FY 2015/16 and FY 2016/17. In particular, capital expenditures are projected to increase by approximately 70 percent in FY 2015/16 compared to FY 2014/15. Construction of the Headworks West reservoir and River Supply Conduit Units 5 and 6 are the major drivers of the increase in capital expenditures during these two years, with a combined budget of more than \$230 million. The Department provided a stage-gate snapshot of these two projects as well as other critical reservoir and trunk line projects, and although the Department had issues with Headworks East, these projects appear to be on track to meet schedule timelines and budget targets.⁵³ The Water System also plans on hiring three to six additional staff to further support the planned water quality capital projects.

3.3.3 Owens Valley

LADWP spent approximately 38 percent, 68 percent, and 110 percent of its capital budget for Owens Valley in FY 2012/13, FY 2013/14, and FY 2014/15, respectively (see Figure 3-32). Most of the underspending in FY 2012/13 and FY 2013/14 is due to lack of spending on construction services for Phases 7A and 8 of the Owens Valley Dust Mitigation project. However, the Department overspent its construction services budget and total budget for the Owens Valley in FY 2014/15, which is promising given the Department plans to maintain similar levels of spending over the Study Period. As mentioned in Section 3.2.2.2, the two major Owens Valley capital programs over the Study Period are Phases 9 and 10 of the Owens Valley Dust Mitigation and the Owens Lake Master Project. LADWP plans to increase capital expenditures for the Owens Lake Master Project in FY 2017/18, FY 2018/19 and FY 2019/20 after Phases 9 and 10 of the Owens Valley Dust Mitigation program are completed in 2017.

⁵³ LADWP information provided on November 30, 2015.

Figure 3-32. Owens Valley Budget Variance (Actual / Budget)



Source: LADWP data provided on November 6, 2015

The Owens Lake Master Project plans to implement a more environmentally friendly solution for Owens Lake. The project utilizes tillage, vegetation, water, gravel, roads, and brine to control dust and to reduce total lake-wide water use.⁵⁴ Specifically, the Department has a phasing plan, which reduces water use in five phases from 85 percent lake-wide water use in Phase 1 to 41 percent in Phase 5. LADWP also has an Owens Lake Solutions Team to support the planning and design of the project.⁵⁵ Given dust mitigation of the Owens Valley is mandated and monitored by regulators, state and federal officials will be key parties to the Owens Lake Master Project. This will further push the Department to complete the phases of the project in a timely manner.

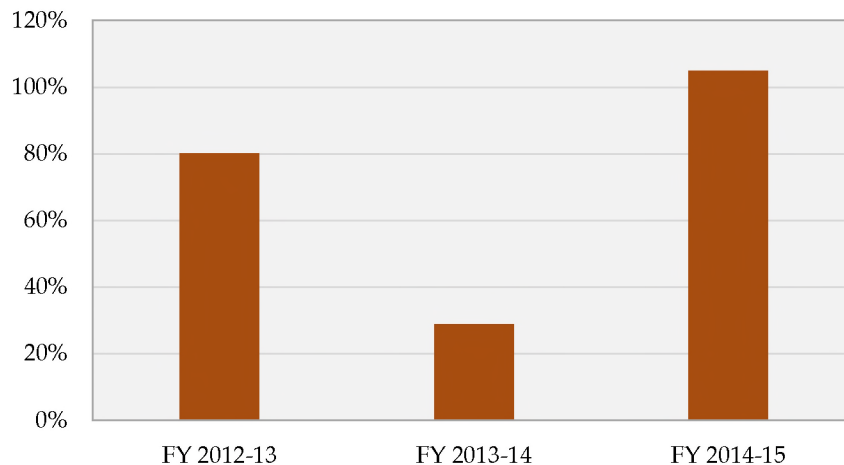
3.3.4 Groundwater

The Department spent approximately 80 percent and 29 percent of its capital budget for groundwater in FY 12/13 and FY 13/14, respectively (see Figure 3-33). The significant underspending in FY 2013/14 is largely due to lack of progress on the system improvement of the San Fernando Basin and the installation of monitoring wells for remediation. Progress was limited due to issues with construction services and other outside services. However, the Department spent its groundwater budget in FY 2014/15. This improvement in budget management is important given the planned increase in capital spending for groundwater over the Study Period.

⁵⁴ Owens Lake Master Project, April 2013.

⁵⁵ Owens Lake Master Project, April 2013.

Figure 3-33. Groundwater Budget Variance (Actual / Budget)



Source: LADWP data provided on November 6, 2015

As mentioned in Section 3.2.2.4, capital expenditures for groundwater management and remediation will increase significantly over the Study Period (18.3% CAGR). Specifically, groundwater remediation and clean-up account for approximately 75 percent of groundwater capital expenditures for the Study Period. The major driver of groundwater capital expenditures is the remediation of the San Fernando Basin.

The Water System has put substantial effort into preparing for its spending ramp-up over the Study Period. This preparation includes three phases to complete the San Fernando Basin remediation project:

- Phase 1: Groundwater System Improvement Study
- Phase 2: Owner's Agent Contract
- Phase 3: Project Delivery

Phase 1 of this project was completed in 2015 and the Department recently signed a ten-year Owner's Agent Contract with consultant Hazen & Sawyer to complete Phase 2. Hazen & Sawyer will provide planning, design, construction, and testing services for the remediation effort.⁵⁶ Under this agreement, the Department will have an experienced consultant to provide project oversight and to support the Department's efforts to complete groundwater remediation tasks in a timely manner. To complete Phase 3, the Department plans to hire contractors to build the treatment facilities for operation in 2021. Accordingly, the Department's approach to ramping up groundwater capital expenditures appears to be reasonable.

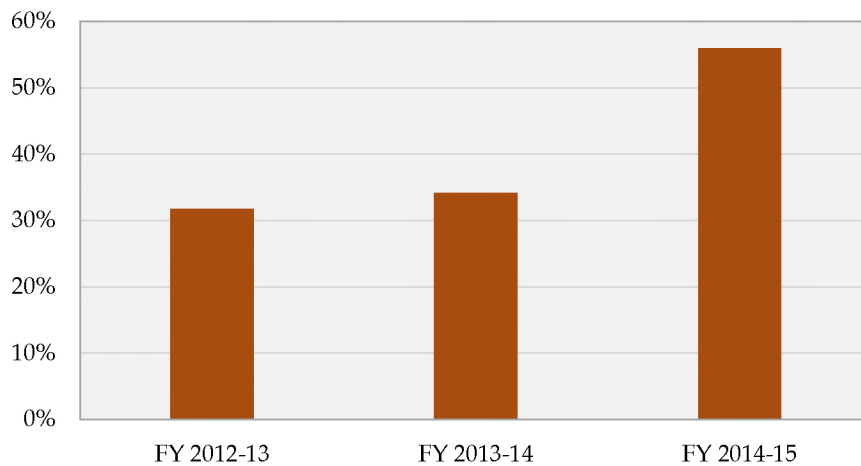
3.3.5 Water Recycling

Over the past three years, the Department has significantly underspent its capital budget for recycled water (see Figure 3-34). Specifically, the Department spent 32 percent, 34 percent, and 56 percent of its recycled water budget in FY 2012/13, FY 2013/14, and FY 2014/15, respectively. Key contributors to this

⁵⁶ San Fernando Groundwater Basin Remediation Owner's Agent Contract, LADWP Board Presentation, September 2015.

underspending were professional and construction services associated with planning, designing and constructing water recycling projects as well as installing irrigation monitoring wells. As mentioned in Section 3.2.2.4, capital expenditures for recycled water will increase significantly over the Study Period (50.6 percent CAGR). This increase is largely driven by the Groundwater Replenishment Project (GWR), which aims to deliver up to 30,000 AF per year of purified recycled water to replenish the San Fernando Basin (SFB). Capital spending for the GWR is projected to increase from approximately \$19 million in FY 2018/19 to \$162 million in FY 2019/20.

Figure 3-34. Recycled Water Budget Variance (Actual / Budget)



Source: LADWP data provided on November 6, 2015

The GWR is a cooperative project with the Department of Public Works – Bureau of Sanitation (LASAN). According to the Department’s FY 2013/14 Recycled Water Report, the GWR includes plans to construct New Advanced Water Purification Facilities (AWPF) to purify recycled water from the Donald C. Tilman Water Reclamation Plant, which is owned by the City and operated by the LASAN. The City has identified two possible sites for the AWPF, but the GWR Project is in the planning stage, an environmental analysis is being performed, and operation is anticipated to begin in 2022.⁵⁷ Moreover, the GWR budget includes capital payments for consultant contracts, which will be determined through a cooperative effort with LASAN. In other words, the project management and oversight for the GWR will be determined based on the type of contract and the scope of work that are chosen. LASAN is also exploring other treatment options, which could significantly reduce the total capital cost of the project.⁵⁸ Based on this information, the detailed plans surrounding the GWR are largely undefined and the Department should develop a more detailed plan to support the significant increase in capital spending for recycled water after the environmental analysis is complete in 2016.

3.3.6 Outlook

The Department has recently improved its budget and project management, which has improved its ability to spend its approved budget. In addition, the plans that support the Department’s proposed capital projects appear to be reasonable. However, almost every large capital investment has faced hiring

⁵⁷ LADWP Recycled Water Annual Report, FY 2013/14, January 2015.

⁵⁸ LADWP information provided on December 1, 2015.

and contracting issues in the past. This is a significant hindrance to the Department's ability to complete these projects in a timely manner and in accordance with the proposed budget for the Study Period. These staffing challenges were also noted in the 2015 IEA Survey. Navigant recommends that the Department develop a formal workforce plan that includes an outsourcing strategy to plan for and expedite the long contracting and hiring processes. To be successful, this plan would need the full support of City Management.

In addition to improving and formalizing its hiring and outsourcing planning, the Department's cost adjustment factors and balancing accounts will help recover accurate costs associated with the Water System's expenditures. Additionally, having a progress reporting mechanism built into the rate ordinance, as adopted by the Department during the course of this study, will ensure that the critical programs are appropriately monitored and rates are adjusted accordingly.

3.4 Revenue Requirements Benchmarking and Sensitivity Analysis

To better understand LADWP's revenue requirements, Navigant conducted a set of additional analyses on the revenue requirements. This section includes the following:

- **Financial Metrics Benchmarking Study:** A comparison of the Water System's system average retail rate, residential rate, O&M and capital expenditures, and debt service coverage ratio to peer water utilities.
- **Credit Rating Considerations:** An assessment of the Water System's projections for its debt service coverage ratio, capitalization factor, and days of operating cash for the next five years against approved financial targets and the impact on credit ratings.
- **Scenario Analysis:** An analysis of multiple alternative financial scenarios (increasing and decreasing spending in certain areas, etc.) and their impact on LADWP's water customers.
- **Impact of Potential Changes to Policy Objective and the Utility Industry:** A summary of expected future key policy and industry changes and an evaluation of the likely impact on rates.

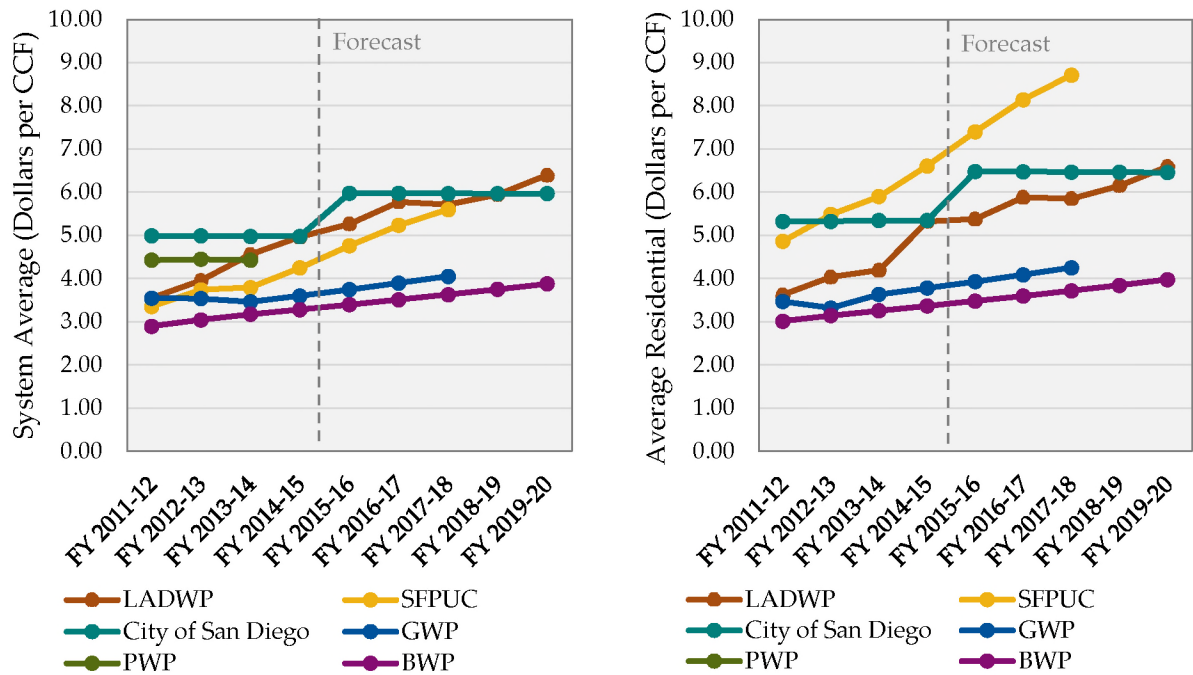
3.4.1 Financial Metrics Benchmarking Study

Navigant completed a benchmarking analysis comparing LADWP's water rates, capital and O&M expenditures, and debt service coverage ratio to its municipal utility peers. Peer utilities for the water rate analysis include San Francisco Public Utilities Commission (SFPUC), City of San Diego, Glendale Water and Power (GWP), Pasadena Water and Power (PWP), and Burbank Water and Power (BWP).

3.4.1.1 Retail Rates

Navigant benchmarked LADWP's system average and average residential retail rates against the peer panel. In the figure below, system average retail rates (calculated by dividing total water revenue by total volume of water sales in hundred cubic feet (CCF)) and average residential rates (calculated by dividing total water revenue from residential customers by total volume of water sales to residential customers) are shown.

Figure 3-35. System Average and Average Residential Retail Rates Comparison (FY 2011/12-FY 2019/20)



Sources: Utility annual reports, financial statements and proposed budgets, and cost of service studies.⁵⁹

Historically, the Department's water rates have been lower than other major cities in the State, including San Francisco and San Diego. While base rates for the water system have not increased in the previous five years, LADWP is requesting a 5.26 percent average annual increase over the period between FY 2015/16 and FY 2019/20 to address the Water System needs referenced in the previous section. Water rates throughout the rest of California are projected to increase during this period, as well, though with current projections, LADWP's system average rate is expected to be the highest of the peer panel utilities in FY 2019/20.

Of note, SFPUC's average residential rate is the highest of the peer panel but its system average rate is in line with those of the peer panel utilities. The vast majority (70 percent) of the SFPUC volumetric sales are associated with wholesale customers, who benefit from discounted rates when compared to residential rates. As a result, SFPUC's system average rate is significantly lower than its average residential rate.⁶⁰

⁵⁹ LADWP Water System Case 94; LADWP Water System Case 93; SFPUC Comprehensive Annual Financial Report FY 2014 and 2013; San Francisco Water Enterprise Financial Statements 2014 and 2013; San Diego Public Utilities Department Water Fund Cost of Service Study, 2013; San Diego Public Utilities Department Water Fund Cost of Service Update, 2015; Water Operating Stats 2014 GWP Annual Report; Glendale California Water Rates - (www.glendaleca.gov/water-rates); PWP Annual Report 2012, 2013, and 2014; BWP 2013/14 Annual Report; Fiscal Year 2015/16 Proposed Budget BWP.

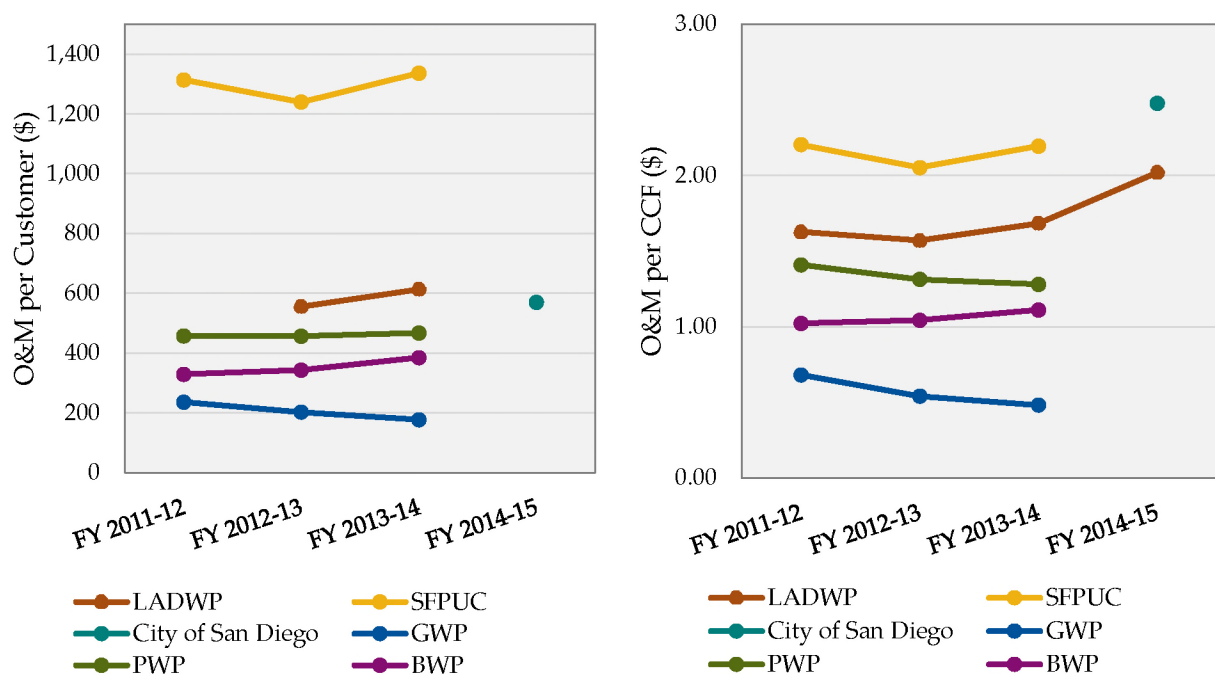
⁶⁰ SFPUC Comprehensive Annual Financial Report FY 2014 and 2013.

3.4.1.2 O&M and Capital Expenditures

Navigant compared LADWP's historical O&M expenditures (on a dollar per customer and dollar per CCF basis) and its compound annual growth rate (CAGR) of capital expenditures against its peers. O&M expenditures are considered representative of a utility's day-to-day efficiency because spending in this area is affected by the way in which the utility is managed. However, O&M practices still depend on a variety of different factors; for example, the positive implication of preventative O&M spending versus the negative implication of remedial or emergency O&M spending.

The Department's O&M expenditures fall on the higher end of the peer set. LADWP's O&M spending is expected to grow at an average rate of \$10 million per year from FY 2015-20 as the City begins enhancing infrastructure to increase sustainability and conservation and to meet externally imposed mandates for water supply. O&M benchmarking results are provided in the figure below.

Figure 3-36. Historical O&M per Customer⁶¹ and per CCF Retail Sales Comparison (FY 2011/12-2014/15)



Notes: SFPUC O&M expenses include personnel services, contractual services, services provided by other departments, and general, administrative, and other costs; City of San Diego O&M costs include other O&M, excluding water purchases; GWP O&M expenditures include transmission and distribution and customer accounting and sales; PWP O&M costs include other operating expenses and administrative and general expenses; BWP O&M costs include operations, maintenance, and administration and other operating expenses.

Sources: *Annual and financial utility reports.*⁶²

⁶¹ Navigant was not provided with Water System customer data for FY 2011/12 and FY 14/15.

⁶² LADWP data provided on November 6, 2015; San Francisco Water Enterprise Financial Statements 2012-2013, 2013-2014, and 2014-2015; City of San Diego Public Utilities Water Fund Cost of Service Study, 2013; Cost of Service Update – San Diego Public Utilities Department Water Fund, 2015; Water Financials GWP Annual Report, 2012;

Navigant also benchmarked LADWP's CAGR of capital expenditures against the peer panel between FY 2011/12 and FY 2018/19. As seen in the table below, LADWP's CAGR is the highest of the group, however, the growth rate is comparable to that of SFPUC and the City of San Diego.

Table 3-7. CAGR of Capital Expenditures (FY 2011/12-2018/19)

LADWP	SFPUC	San Diego	GWP	PWP	BWP
12.1%	10.9%	8.3%	-3.4%	6.1%	-9.7%

Notes: GWP CAGR is calculated through FY 2017/18; PWP CAGR is calculated through FY 2015/16.

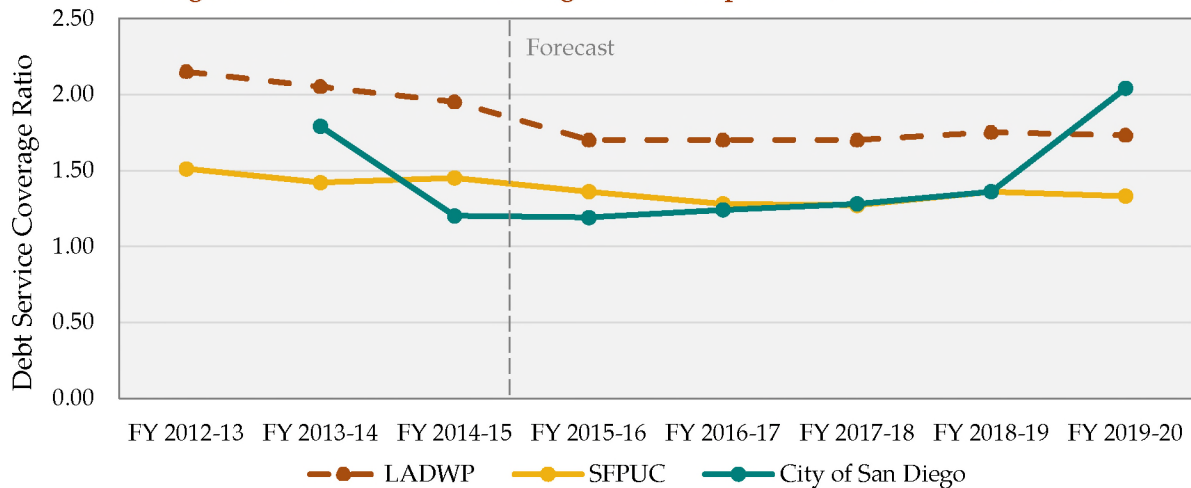
Sources: Annual and financial utility reports.⁶³

3.4.1.3 Debt Service Coverage Ratio

The Department's financial metrics related to debt are also an important basis of comparison with peer utilities. In particular, a utility's debt service coverage (DSC) ratio is a good indicator of financial and credit strength (rating agencies typically focus on this metric). The DSC ratio divides the funds available for debt service by the sum of long-term principal and total interest payments and represents the amount of cash flow available to meet a company's debt payment.⁶⁴

LADWP was advised by PRAG to meet a debt service coverage target of 1.70 for the Study Period in order to preserve their bond rating. Navigant compared the Department's historical and projected DSC ratios to those of SFPUC and the City of San Diego, as shown in the figure below.

Figure 3-37. Debt Service Coverage Ratio Comparison (FY 2012/13-2019/20)



Water Financials 2014 GWP Annual Report; PWP 2013 and 2014 Annual Reports; BWP 2012-2013 and 2013-2014 Annual Reports.

⁶³ LADWP data provided on November 6, 2015; Adopted Budget FY 2012/13 & 2013/14 and FY 2014/15 & 2015/16, SFPUC; City of San Diego Public Utilities Water Fund Cost of Service Study, 2013; Cost of Service Update – San Diego Public Utilities Department Water Fund, 2015; CIP Budget Summary by Fund FY 2008/09 to 2017/18, City of Glendale; Adopted Operating Budget FY 2012 Capital Improvement Program, City of Pasadena; BWP 2011/12 and 2012/13 Annual Reports; FY 2015/16 Proposed Budget BWP.

⁶⁴ LADWP Water System Rate Action Report, 2015.

Sources: Rate action report, adopted budget, and financial rating update.⁶⁵

Figure 3-37 shows that LADWP will be maintaining a healthier DSC ratio compared to the SFPUC and the City of San Diego throughout the Study Period, except in FY 2019/20 when San Diego will have a larger DSC ratio. The jump in the City of San Diego's ratio in FY 2019/20 is due to a large increase in forecasted grant proceeds.⁶⁶

Compared to previous years, LADWP is planning on significantly reducing its DSC ratio, while still maintaining its target of 1.70 throughout the Study Period.

3.4.2 Credit Rating Considerations

This section examines the Water System's financial metrics in the context of the three most prominent ratings agencies—Standard and Poor's (S&P), Fitch Ratings (Fitch), and Moody's—as well as the recommendations of LADWP's financial advisor, Public Resources Advisory Group (PRAG).

3.4.2.1 Ratings

In October 2014, S&P assigned an AA, Fitch assigned an AA, and Moody's assigned an Aa2 rating to the 2014 Series "A" Water System Revenue Bonds issued by LADWP and affirmed the same for the Water System's long-term rating.^{67,68,69} The AAA class is the highest rating (followed by AA) and the "+" or "-" and a 1, 2, or 3 (for Moody's) further distinguishes ratings within a category. This shows that LADWP's Water System is rated squarely in the "double-A" category, a high score that has not changed significantly over the past several years.

The most recent change to the Water System's ratings was in December 2011/January 2012, when Fitch downgraded the Water System from AA+ to AA, citing a trend of decreasing financial margins with increasing debt levels (debt service coverage had declined steadily from over 2.3x in FY 2006 to 1.43x in FY 2011).^{70,71} This was the result of below-budgeted water sales, increasing debt service costs (\$134 million in FY 2010 to \$170 million in FY 2011), and lack of rate action. Rate flexibility was viewed as

⁶⁵ LADWP Water System Rate Action Report, 2015; Adopted Budget FY 2012/13 and FY 2013/14 SFPUC; Moody's Investor Service: Rating Update, San Diego CA Water Enterprise, 2015; Cost of Service Update – San Diego Public Utilities Department Water Fund, 2015.

⁶⁶ Cost of Service Update – San Diego Public Utilities Department Water Fund, 2015.

⁶⁷ S&P Water System Revenue Bond Ratings, October 30, 2014

(www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=OPLADWPCCB434415&RevisionSelectionMethod=LatestReleased).

⁶⁸ Fitch Water System Revenue Bond Ratings, October 29, 2014

(www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=OPLADWPCCB419134&RevisionSelectionMethod=LatestReleased).

⁶⁹ Moody's Water System Revenue Bond Ratings, October 29, 2014

(www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=OPLADWPCCB419130&RevisionSelectionMethod=LatestReleased).

⁷⁰ Water System Rate Action Report (Ch. 2, Appendix I: Memorandum to Department of Water and Power of the City of Los Angeles from the Public Resources Advisory Group, June 2013, p. 6).

⁷¹ "Fitch Downgrades Los Angeles Dept. of Water and Power's (CA) Water Revs to 'AA'; Outlook Stable," Business Wire, December 14, 2011 (www.businesswire.com/news/home/20111214006159/en/Fitch-Downgrades-Los-Angeles-Dept-Water-Powers).

highly limited, and a ratepayer advocate had not yet been hired following the 2010 conflict with City Council.

In 2014, the Department's outlook was considered stable by all three rating agencies. This outlook is founded in part on several constants (factors that are very unlikely to change): LADWP has a large and diverse customer base with a mature revenue stream across a broad service area, a history of stable debt service coverage and good liquidity, a locally-owned water supply, and an automatic cost recovery/rate adjustment mechanism. Several financial metrics in addition to debt service coverage are also considered, including competitive retail water rates and a strong reserve of operating cash.

Opposing the Water System's credit strengths are the complicated rate review and approval process leading to delays and inflexibility, the high reliance on and cost of MWD water, and the need for significant capital investment over next five years contributing to high debt levels (according to S&P, 75 percent of the \$4.8 billion capital investment from 2015-2019 will be funded by debt). S&P considers LADWP to have limited significant new water supply options and that recent efforts to diversify the supply have had mixed results; for example, there are aggressive recycled water and conservation initiatives but, at the time of S&P's analysis, these had a high relative cost. Fitch and Moody's also cited the drought pressures and water supply costs. At the time of its rating assignment, S&P also mentioned the need for a rate increase in the next two years, without which the Department's upward potential for ratings would be constrained and possibly lowered.

Of the more qualitative factors considered by the rating agencies, the ability to institute a timely rate increase is particularly important. Multiple factors come into play when assessing the Department's ability to secure a rate increase, but most of them are outside the Department's control.

3.4.2.2 Financial Metrics

The Department's financial advisor, PRAG, provided its most recent memorandum on financial metrics for planning purposes in June 2013, with the primary goal to help maintain LADWP's current credit ratings. PRAG's report also included a benchmarking study of the Water System's ratings and key financial metrics against California peers.⁷² PRAG's conclusion—despite difficulties comparing diverse water utilities—was that the Water System's metrics appear to be weaker than those of other retail water systems in California, but are similar to wholesale water systems in Southern California. This is likely due to its large size and significant capital assets and related debt.

In its report, PRAG finds that LADWP may have some ability to modify its long term financial targets and still maintain its AA/AA/Aa2 ratings; however, with the caution that any changes do have the potential to change the Department's credit rating, based on the rating agencies' determinations. However, the Water System has stronger ratings than the Power System and is less at risk of a downgrade from changing its metrics. The final recommendation for the Water System is a debt ratio of 65 percent (replacing the previous ratio of 60 percent), a Debt Service Coverage ratio of 1.70x (replacing the previous ratio of 2.00x) which is considered "good" by S&P, and to maintain 150 days Cash on Hand (replacing the previous fixed reserve of \$200 million).

⁷² Water System Rate Action Report (Ch. 2, Appendix I: Memorandum to Department of Water and Power of the City of Los Angeles from the Public Resources Advisory Group, June 2013, p. 6).

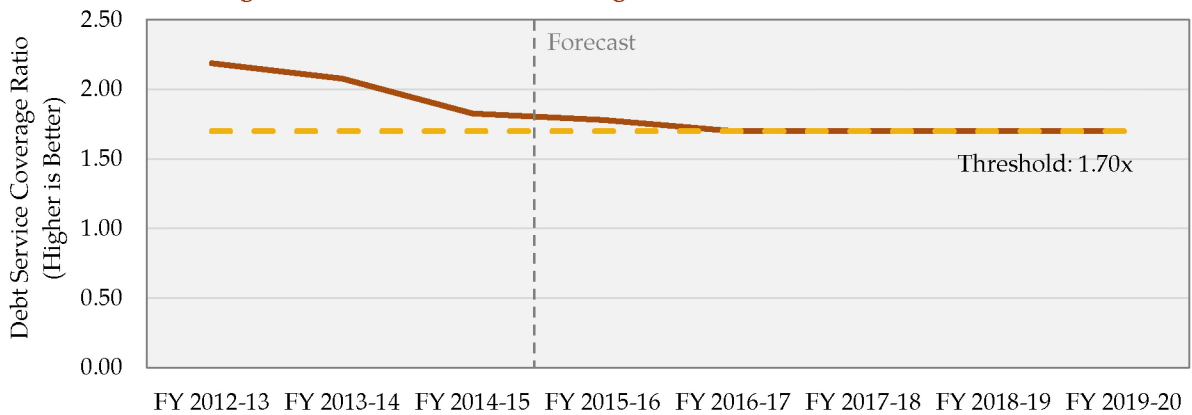
For comparison, the table below summarizes LADWP's forecast for its key financial metrics over the Study Period. The following graphs illustrate financial metrics over the past several years and the forecast compared to targets.

Table 3-8. LADWP's Financial Metric Projections for the Study Period

Financial Metric	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Debt Service Coverage	1.78	1.70	1.70	1.70	1.70
Capitalization Factor (Debt Ratio)	63.6%	63.6%	63.6%	64.3%	65.1%
Days Operating Cash on Hand	150	159	150	150	150

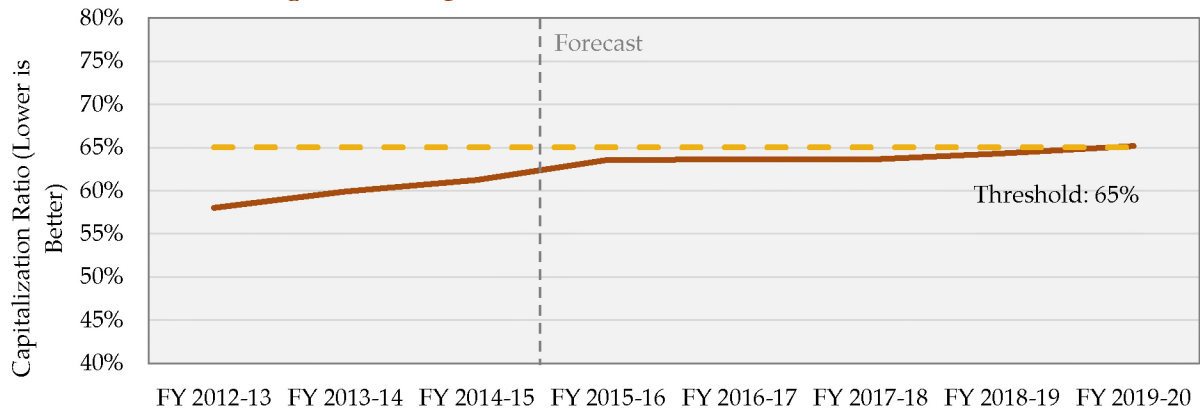
Source: Water System Case 94.

Figure 3-38. Debt Service Coverage Ratio (FY 2012/13-FY 2019/20)



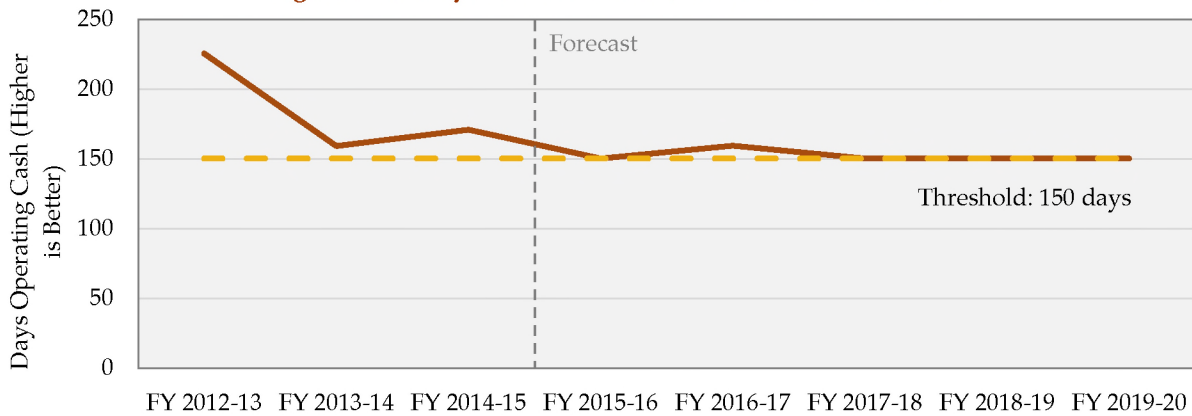
Source: Water System Case 94.

Figure 3-39. Capitalization Factor (FY 2012/13-FY 2019/20)



Source: Water System Case 94.

Figure 3-40. Days Cash on Hand (FY 2012/13-FY 2019/20)

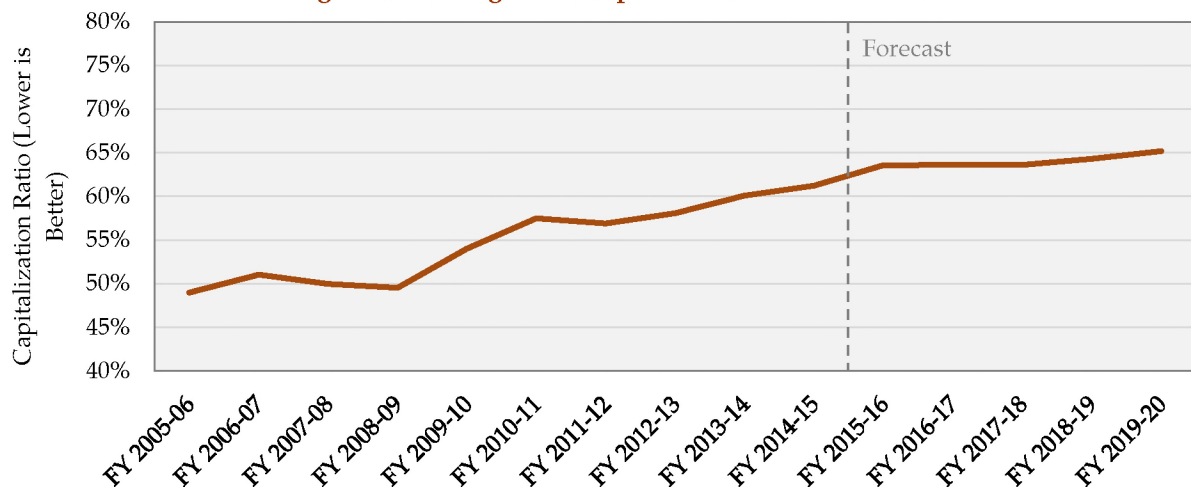


Source: Water System Case 94.

For all three key financial metrics, the Department forecasts almost exactly meeting its targeted thresholds for the Study Period. However, the historical data from preceding years shows that the debt service coverage ratio and days of cash on hand metrics have declined towards their thresholds and the capitalization factor has increased towards its threshold—indicating weakening metrics. Because of this, the rate increase in the current proposal is intended to arrest the recent trajectory, stabilizing the metrics and maintaining PRAG’s recommended targets as much as possible.

However, it is also relevant to examine the Water System’s capitalization factor over a longer time period, as the long-term upwards trend is not adequately shown in Figure 3-39 above.

Figure 3-41. Long-Term Capitalization Factor Trends



Source: Water System Historical Financial Metrics (provided 10/19/2015).

As shown in Figure 3-41, the capitalization factor has increased steadily and significantly over the last 10 years, which is not a sustainable trend. And at the end of the Study Period, the capitalization factor is forecasted to meet the recommended threshold. At this time, it is likely to further increase. This trend is particularly worrying from a credit rating standpoint given the previous downgrade related to increasingly high debt (in the above figure, the two years preceding the downgrade are clearly shown as

a steep increase). According to the October 2014 Fitch report, LADWP management estimated that, in addition to the 2014 Series “A” bonds and existing high debt levels,⁷³ another \$3.2 billion of the five-year capital investment plan (the current Study Period) would be debt-financed with bonds, state loans, and securitized debt. The vast scope of the Water System’s infrastructure capital needs and hence potential additional debt over the Study Period is the largest pressure on the financial metrics and credit rating.

On the other hand, reducing the capitalization factor (and hence the level of debt) drives up customer rates in the near term if LADWP maintains the same level of Water System spending and activity. This is because more of the WSO’s expenditures would be cash rather than debt-financed, requiring increased revenue and thus higher rates. For example, Case 105⁷⁴ provides a scenario in which the capitalization factor may be no greater than 60 percent in FY 2016/17 onwards (rather than 64 to 65 percent in the recommended final Case 94). This increases the average system rate by 3.1 percent over Case 94 for the Study Period. Notably, to reach this capitalization factor, average rates in FY 2016/17 would experience a dramatic 33.3 percent increase over existing rates (and a 23.6 percent increase over Case 94). Although rates in the following years would not change nearly as significantly, this would likely be an unwelcome rate shock. Based on this scenario, Navigant does not recommend artificially forcing the capitalization factor lower to control long-term debt, but does advise the WSO to consider other solutions to its steadily increasing long-term debt levels.

3.4.2.3 Cost of a Downgrade

If LADWP is unable to maintain the financial metric targets shown above, it has a higher risk of being downgraded by the rating agencies—as forewarned by PRAG and the agencies themselves. A downgrade would impact the Department’s financial flexibility and increase borrowing costs. Determining the total cost of a rating downgrade requires an estimation of the impact of a downgrade on each debt instrument in addition to the forecast of future debt requirements.

LADWP modeled two scenarios related to a one-notch downgrade to credit ratings (AA to AA-), based on Case 94. This resulted in Cases 100 and 101.

- **Case 100:** The fixed interest rate increases from 5.35 percent to 5.45 percent and the variable interest rate increases from 0.59-2.07 percent to 0.64-2.12 percent, due to a one-notch downgrade in current financial market conditions.
- **Case 101:** The fixed interest rate increases from 5.35 percent to 5.75 percent and the variable interest rate increase from 0.59-2.07 percent to 0.84-2.32 percent, due to a one-notch downgrade in worst market (high interest) conditions.

Financial metrics for an AA- rating are assumed to be 135 days of cash on hand, a 1.70x debt service coverage ratio, and a 68 percent capitalization factor. In addition to higher interest rates, the primary change to the financial plan is a reduction in borrowing for FY 2016/17 due to the relaxed cash on hand metric. Results are shown in the table below.

⁷³ Fitch calculated the Department’s debt per customer level in FY 2013 to be \$5,370 compared to a median of \$1,600 for AA water utilities.

⁷⁴ Provided by LADWP on December 2, 2015.

Table 3-9. Water System Final Case 94 Credit Rating Sensitivity

Scenario	Case	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	Average
Annual Rate Increase (%)	Case 94	6.0%	9.8%	-1.1%	4.1%	7.5%	5.26%
	Case 100	6.0%	9.7%	-1.1%	4.2%	7.6%	5.28%
	Case 101	6.2%	9.9%	-1.0%	4.4%	7.7%	5.44%
Annual Revenue Increase (\$M)	Case 94	\$19.5	\$93.8	\$49.9	\$4.3	\$17.6	\$37.0
	Case 100	\$19.1	\$92.6	\$49.7	\$4.3	\$17.6	\$36.7
	Case 101	\$21.0	\$93.1	\$51.1	\$6.0	\$18.7	\$38.0
Interest Expense (\$M)	Case 94	\$203	\$220	\$230	\$249	\$276	\$236
	Case 100	\$202	\$219	\$230	\$249	\$277	\$235
	Case 101	\$204	\$222	\$233	\$254	\$283	\$239

Source: LADWP data provided on December 1, 2015.

A one-notch credit rating downgrade in current market conditions has a limited impact over the Study Period. Under worst case financial market conditions, the average annual rate increase compared to Case 94 would be 0.18 percent higher, and average annual interest expenses would increase by \$3 million. The impact observed here would likely increase if the Federal Reserve were to raise interest rates which are close to zero at the time of this report.⁷⁵ Overall, based on this analysis an AA- rating would not materially affect the Water System and its customers over the Study Period.

Rather than a credit rating downgrade, the greatest risk to the Department and its customers is increasing debt levels to fund necessary O&M and capital investments, as discussed. A credit rating downgrade would likely be one result of this, but does not have a large impact on rates by itself over the short-term. Growing borrowing costs, however, could be a significant issue in the long term. Navigant recommends the OPA and CAO/CLA undertake a separate study looking at reducing debt levels in the future and changing to a more structured cash/debt planning model.

3.4.3 Impact of Potential Changes to Policy Objectives and the Utility Industry

The Water Organization's policy objectives are laid out comprehensively in the Los Angeles pLAN issued by the Mayor's Office and LADWP's Urban Water Management Plan and 2015 Briefing Book. The primary high-level goals are summarized here, showing the close alignment of these documents.

Table 3-10. Summary of Primary Policy Objectives

Source	Objectives
Los Angeles pLAN	Local water: To lead the nation in water conservation and source the majority of water locally. • Clean up the San Fernando Groundwater Basin. • Reduce per capita potable water use by 20 percent by 2017. • Reduce the purchase of imported water by 50 percent by 2025. • Source 50 percent of water locally by 2035.
Urban Water Management	Meet new demand for water through conservation and local resource development, to be able to cut MWD purchases of imported water in half by 2035.

⁷⁵ "Fed Keeps Interest Rates Near Zero, but Says Economic Indicators Remain Strong," *The New York Times*, October 28, 2015 (www.nytimes.com/2015/10/29/business/economy/fed-interest-rates.html).

Source	Objectives
Plan / 2015 Briefing Book	• Expand water conservation. • Expand water recycling • Enhance stormwater capture • Clean up the San Fernando groundwater basin • Expand water transfers

The above goals are focused on water conservation and the use of local water supply. Overall, Navigant considers them unlikely to change significantly over the Study Period. However, there is still the potential for new developments with varying impacts on the Water System.

The following sub-sections include a discussion of legal, policy, and industry factors that may interact with the above goals. These include changes to California Proposition 218, drought conditions, desalination technology, Advanced Metering Infrastructure, and climate change planning. We also include rate scenarios based on the two policy changes to provide a brief analysis of the impact on customer rates.

3.4.3.1 Key Legal Changes

The most significant potential legal change affecting the Water Organization relates to Proposition 218. Proposition 218, known as the “Right to Vote on Taxes Act,” amended Articles XIII C and XIII D of the California Constitution in 1996. One of the primary changes was the prohibition of local governments from imposing fees on property owners for services that are available to the public at large—including water service.⁷⁶ Section 6 of Article XIII D further established five limitations on fees subject to provisions, including the limitations that fee revenues cannot exceed the funds required to provide the service and that fee revenues cannot be used for any purposes other than that for which the fee is imposed.⁷⁷ Generally, Proposition 218 requires many taxes and fees be approved by voters, and prevents government agencies including municipal utilities from charging more for a service (including water service) than it costs to provide.

Although Proposition 218 has been in existence since 1996 and was left intact by the California Supreme Court last summer,⁷⁸ it has lately been challenged by Governor Brown. In his signing message on a bill to develop a plan for a low-income water rate assistance program (AB 401), Brown wrote that Proposition 218 “serves as the biggest impediment to public water systems being able to establish low-income rate assistance programs” and is an “obstacle to thoughtful, sustainable water conservation pricing and necessary flood and stormwater system improvements.”^{79,80} The governor supports tiered water pricing, which would require consumers to pay increasing amounts for greater water use. In San Juan Capistrano, a tiered pricing plan was found to violate Proposition 218 by a state appeals court.

⁷⁶ California Constitution, Article 13 (www.leginfo.ca.gov/const/article_13).

⁷⁷ California Property Tax Information, Proposition 218 (www.californiataxdata.com/pdf/proposition218.pdf).

⁷⁸ “California Supreme Court won’t budge on water rates,” *The Sacramento Bee*, July 23, 2015 (www.sacbee.com/news/state/california/water-and-drought/article28414762.html).

⁷⁹ “Restrictions on water rates get newfound opposition from Gov. Jerry Brown,” *The Los Angeles Times*, October 10, 2015 (www.latimes.com/politics/la-pol-sac-jerry-brown-water-rates-california-20151009-story.html).

⁸⁰ “Jerry Brown clears way for artificial turf, blasts Prop. 218,” *The Sacramento Bee*, October 9, 2015 (www.sacbee.com/news/politics-government/capitol-alert/article38385837.html#storylink=cpy).

Interestingly, the appeals court indicated that its decision was based not on what would be the best policy for dealing with drought, but by what was permitted by Proposition 218.⁸¹

In addition to its effect on water conservation and flood preparation efforts, Proposition 218 has resulted in highly complex water rate structures as utilities modify their rate design to address various compliance issues under Proposition 218. This is an impediment to transparency and customer education, as only ratepayers with an advanced understanding of water utility rates fully grasp their utility's rate design.

With Governor Brown's attention on ways to fight the drought, his office is reportedly developing proposals for changes to Proposition 218 that may form a ballot measure next year.⁸² Were a ballot measure to pass, it would likely result in a greatly simplified rate structure for LADWP and other utilities, as well as increased rate-based incentives for water conservation. This would be a more transparent, easily understandable approach for LADWP's customers.

3.4.3.2 Key Policy Changes

In this section, Navigant discusses two possible policy changes related to the City and LADWP's approach to water. The first is that, despite the boon of a wet El Niño year, Navigant expects California policies to be increasingly aggressive on drought preparation, water conservation, and local water supply. The second is that desalination may be the future water supply choice for coastal California cities.

Conservation and Local Water Supply

California is in its fourth year of drought. The Los Angeles pLAN highlights the fact that Los Angeles is facing a persistent drought by calling current conditions the "new normal." However, it is possible that this year, or at another point during the Study Period, California will experience greater rainfall and no longer be in as severe of a drought environment due to the expected El Niño⁸³ or another climate pattern. There is a concern that when this happens, water conservation efforts will lose momentum.⁸⁴

Navigant finds evidence that regions hit by severe, prolonged drought make permanent policy changes that are mostly unaffected by the transition out of drought conditions. One example of this is Australia, which suffered from an intense 12-year drought from 1997-2009 (the "Millennium Drought"). This was the worst drought in the country's recorded history, with water levels in Melbourne reaching an all-time low capacity of 25.6 percent of normal.⁸⁵ The actions taken in Melbourne and other cities in Australia are now seen as a roadmap for other water-stressed places. In fact, California and Australia have had a

⁸¹ "California Court Rules Water Pricing Plan Violates Law," *The New York Times*, April 20, 2015 (www.nytimes.com/2015/04/21/us/california-court-rules-water-pricing-plan-violates-law.html?_r=0).

⁸² *The Los Angeles Times*, October 10, 2015.

⁸³ "Massive El Niño gains strength, likely to drench key California drought zone," *The Los Angeles Times*, November 20, 2015 (www.latimes.com/local/weather/la-me-ln-el-nino-q-a-20151120-story.html).

⁸⁴ "As huge El Niño brews, California fights to keep drought mentality," *The Los Angeles Times*, November 16, 2015 (www.latimes.com/local/weather/la-me-ln-as-huge-el-nino-brews-california-fights-to-keep-drought-mentality-20151116-story.html).

⁸⁵ "What Australia Can Teach the World about Surviving Drought," *Scientific American*, May 28, 2015 (www.scientificamerican.com/article/what-australia-can-teach-the-world-about-surviving-drought/).

formal dialogue on drought solutions to collaborate on water policy solutions to drought,^{86 87} under the G'day USA program.⁸⁸

In Melbourne, sources cite a “sea change” or culture shift to using less water. The government invested heavily in infrastructure (including a desalination plant), instituted rebate programs for residential greywater systems, and invested in recycled water for agricultural and urban uses, among other solutions. Nearly one-third of citizens in Melbourne invested in rainwater holding tanks. By 2010, businesses and residents had cut water use nearly in half compared to 1997. Researchers have found that the city’s increased resilience to climate change and drought exists today, with residents still using acquired water conservation habits.⁸⁹ In the California-Australia drought dialogue, speakers also mentioned how all Australians felt a social responsibility to conserve water.⁹⁰

Based on Australia’s example and current developments in California, it appears to be more likely that the state will continue to institute new policies to address ongoing and future droughts despite the likelihood of experiencing a wet year. For example, the Public Policy Institute of California recommends four policy priorities for managing drought.⁹¹ For LADWP, one recommendation in particular could increase water investments further in the future. This is to “manage water more tightly, with better information.” California utilities including LADWP have relatively limited water monitoring systems with significant gaps in critical information. In comparison, Australians invested in modernizing their systems for accurate measurements of flow, water quality, storage, diversions, discharges, and uses, employing new technologies such as automated gaging, remote sensing, and improved hydrologic models. The California-Australia dialogue also highlighted this lack of water data in California compared to Australia. Developments in this area could lead to significant future investment by LADWP, whether or not current drought conditions persist.

Overall, Navigant considers it unlikely that core water conservation initiatives and investments in California would be significantly rolled back during the Study Period. Rather, preparation for future droughts is expected to maintain or increase LADWP’s focus on conserving water, local water supply, and new information technology over the Study Period. Additionally, wet El Niño years could also have an effect on Water System investments and supply with increased flooding and stormwater.⁹²

Navigant explored a scenario in which the City and LADWP are motivated to further strengthen local water policy, increasing both groundwater and recycled water sources to replace MWD imports. In this

⁸⁶ Report on California-Australia Drought Dialogue, December 2014

(http://deltacouncil.ca.gov/sites/default/files/2015/01/Item_4a_Report_on_California_Australia_Dialogue_on_Drought_Solutions.pdf).

⁸⁷ “California Drought-Fighters Turn to Australians for Help,” Bloomberg Business, April 9, 2015

(www.bloomberg.com/news/articles/2015-04-09/california-drought-fighters-yearn-for-australia-like-wins).

⁸⁸ G'day USA website: www.gdayusa.org/about/.

⁸⁹ *Scientific American*.

⁹⁰ “Australia’s different approach to drought,” The Sacramento Bee, December 13, 2014

(www.sacbee.com/opinion/california-forum/article4453769.html).

⁹¹ Policy Priorities for Managing Drought, Public Policy Institute of California

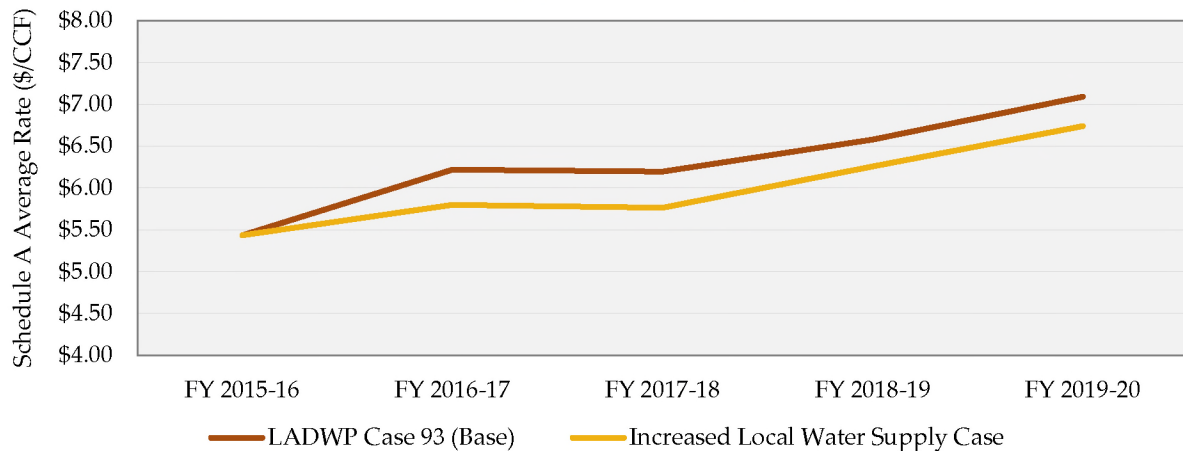
(www.ppic.org/main/publication_quick.asp?i=1141).

⁹² According to California’s chief flood planner, drought and flood planning go hand in hand

(www.npr.org/2015/10/19/450030347/drought-stricken-california-prepares-for-strong-el-ni-o-winter).

scenario, demand remains the same as in Water System Case 93,⁹³ as does the supply from the Los Angeles Aqueduct. To meet demand, the recycled water supply is doubled compared to Case 93 and groundwater is increased to fill the remaining gap. Results for the average residential water rate (Schedule A) are shown in the figure below.

Figure 3-42. Increased Local Water Supply (No MWD Imports) Impact on Residential Rates



Source: Navigant analysis of LADWP Case 93 (original data request 2-B-5).

Navigant considers this scenario to be relatively unlikely in the short term since LADWP does not have the groundwater capacity required by this scenario, particularly due to groundwater contamination issues. Neither does the Department have the ability to ramp up its recycled water program to the level required in this scenario in the near term. However, if the Water System did have the capacity to increase groundwater, rates would be lower than the base scenario because of the lower cost of groundwater supply, as shown in the figure above. The average Schedule A residential rate over the Study Period decreases by \$0.31 per CCF due to the increased use of groundwater as a primary replacement for MWD imports.

Desalination

Desalination, or the removal of salt and minerals from saline water, is a water supply solution applied in various water-stressed regions throughout the world. However, it is not currently a water supply option considered by the Department, primarily due to the high capital costs. Because of the cost, LADWP's approach is unlikely to change during the Study Period. While the current multi-year drought raises state-wide concerns over water supply and has motivated the San Diego County Water Authority to invest in a desalination plant, it has not yet made seawater desalination an attractive near-term consideration for the Water System.

Desalination is a relevant topic in part because San Diego has a \$1 billion desalination plant coming online in Carlsbad in December 2015. But uniquely, San Diego County actually has the problem of an oversupply of water; statewide conservation mandates (which apply equally to areas with water and those without) have resulted in excess, unused water and higher utility rates in San Diego County to make up for lost sales. The desalination plant will worsen this particular issue, and desalinated water

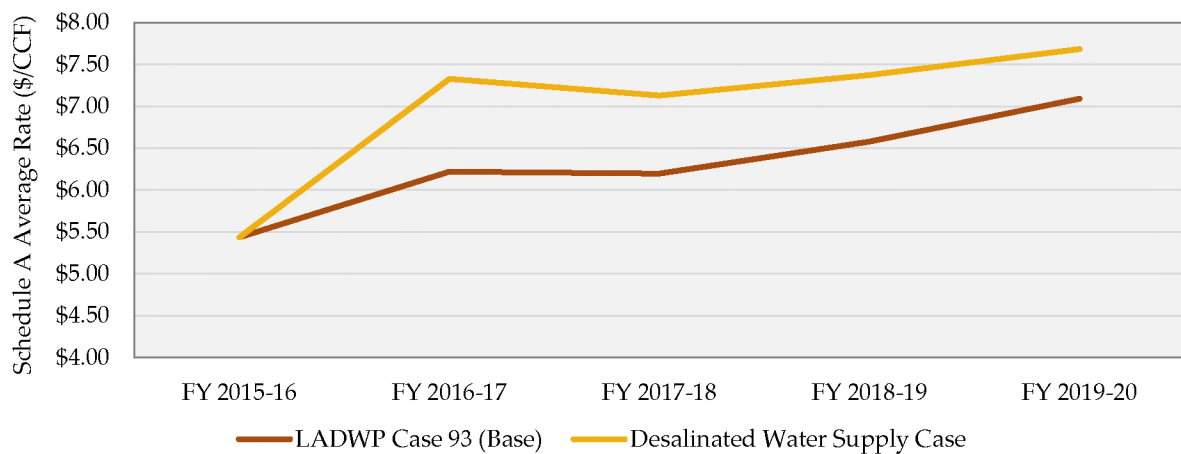
⁹³ The available rate design model provided by the Department to Navigant.

will also be more expensive than current water supplies including imported water. On the positive side, the desalination plant is intended to be a long-term investment for future water supply reliability, with the cost of treated imported water expected to pass the cost of desalinated water by 2030.⁹⁴

In the 2015 IEA Survey, Navigant concluded that the Water Organization is doing a commendable job of maintaining and enhancing its water supplies and achieving the City's and the Department's shared goals to increase local water supply, reduce LADWP's reliance on water purchases from MWD, and expand its conservation efforts—without investing in desalination. In the IEA Survey and Section 3.1.2 of this report, we found that demand is not projected to increase significantly over the Study Period despite forecasted population growth. Given that long-term demand may decline due to a reduced per capita demand, there appears to be no need to pursue other, more costly water supply options such as seawater desalination.

To analyze the potential impact of desalinated water on rates, we explored a scenario in which there is a new initiative to install a desalination plant to secure reliable long term supply. In this scenario, LADWP replaces MWD imported water with desalinated water, otherwise maintaining the same water supply portfolio as in Case 93 (disregarding the actual size of a desalination plant for this analysis). The price of desalinated water is estimated to be \$2,000 per AF during the study period, similar to the Carlsbad plant in San Diego County.⁹⁵

Figure 3-43. Desalinated Water Supply (No MWD Imports) Impact on Residential Rates



Source: Navigant analysis of LADWP Case 93 (original data request 2-B-5).

This scenario is an even less likely scenario in the short term. Figure 3-43 shows that desalinated water at the price of the new San Diego County desalination plant is significantly more expensive than the planned water supply portfolio, as reflected in residential water rates. The average Schedule A residential rate over the Study Period increases by \$0.68 per CCF due to the use of desalinated water as a replacement for MWD imports. Although the actual impact of a desalination plant on LADWP's water supply would depend on the project's capacity, the high cost is a significant barrier to using this water source regardless of plant size.

⁹⁴ "While other parts of California are bone dry, San Diego faces the opposite problem: too much water," *The Los Angeles Times*, November 25, 2015 (www.latimes.com/local/lanow/la-me-drought-watch-20151125-story.html).

⁹⁵ www.sdcwa.org/seawater-desalination.

3.4.3.3 Key Industry Changes

Several industry trends are having a growing impact on California water utilities. In this section, Navigant discusses two industry developments that may affect future Water System expenditures.

Advanced Metering Infrastructure

The rollout of Advanced Metering Infrastructure (AMI) or smart water meters is one aspect of the information technology related drought preparation mentioned previously. It is a growing development in California today, although smart water meters are still relatively rare. Several of LADWP's peers have installed AMI infrastructure. For example, SFPUC has a SmartMeter program that allows more than 96 percent of its customers to frequently monitor use and detect leaks through automated water meters.⁹⁶ Glendale Water and Power uses its Automated Meter Infrastructure (WaterSmart) to notify customers of excessive use and leaks, and Burbank Water and Power also uses WaterSmart. The East Bay Municipal Utility District has started to test smart meters in Danville, and Sacramento has also begun to introduce the meters.⁹⁷

Smart water meters help utilities to enforce water restrictions in drought conditions, providing water usage data to the utility for monitoring water waste as well as providing real-time data to customers who want to use less water and benefit from immediate feedback on their usage patterns. However, water utilities struggle to implement smart water meters because of higher upfront costs and a lack of information technology capabilities.^{98,99} Because working with the huge amount of smart water meter data is a barrier for water utilities, software companies are now developing applications to deliver detailed water use information to municipalities as well as individual customers, without forcing them to deal with raw data.¹⁰⁰

Overall, smart meter technology is increasingly seen as a critical tool for managing water consumption and increasing water accountability, and may constitute a major investment by the Water Organization in future years. However, this would be a large effort and is unlikely to fall within the Study Period, as the WSO is planning a pilot program but has not yet rolled it out. When full-scale AMI is implemented, it will constitute a new revenue requirement driving increased rates; however, the scale of the rate impact will not be determined until the pilot program is complete.

Climate Change Planning

Climate change scenario planning may also have more of an impact on the Water System in the future. In a 2015 Black & Veatch survey,¹⁰¹ 40 percent of respondents reported not including climate change

⁹⁶ SFPUC website, Automated Water Meter (www.sfwater.org/index.aspx?page=51).

⁹⁷ "California drought: S.F. gets smart water meters," *The San Francisco Chronicle*, May 21, 2014 (www.sfgate.com/science/article/California-drought-S-F-gets-smart-water-meters-5496714.php).

⁹⁸ "Smart Meters Snitch on Water Wasters in a Drought," *Wired*, June 15, 2015 (www.wired.com/2015/06/smart-water-meters-let-cities-spot-drought-defiers/).

⁹⁹ "Smart water meters help users, agencies gauge usage," *The Los Angeles Times*, May 5, 2015 (www.latimes.com/local/california/la-me-smart-meter-explainer-20150505-story.html).

¹⁰⁰ "Smart water meters: California utilities prefer apps to big data," *Metering & Smart Energy International*, July 20, 2015 (www.metering.com/smart-water-meters-california-utilities-prefer-apps-to-big-data/).

¹⁰¹ 2015 Strategic Directions: U.S. Water Industry Report, Black & Veatch.

scenarios in their modeling. But according to the report, all utilities should consider climate change because of the potentially significant impacts that changing weather patterns have on water supplies, flooding, and finances. In general, scenario planning is a growing trend in the water industry that mitigates risk in both master planning and asset management processes. It includes the development of multiple future scenarios which are considered with their related risks, mitigation measures and adaptation strategies.

The Department has considered climate change scenarios previously; in 2011, LADWP commissioned a climate change study report for the Los Angeles Aqueduct, including various climate scenarios for analyzing hydrologic, supply, and operational impacts on the system.¹⁰² However, climate change scenarios and their impacts on other infrastructure and supply sources have not been studied for the entire system or incorporated into the WSO's overall asset management approach. New plans that take into account more climate change adaption strategies may impact LADWP's planning and future expenditures; however, this is more of a long-term consideration and is not likely to be a priority over the next five years aside from water conservation and local supply planning.

¹⁰² Los Angeles Aqueduct System Climate Change Study Final Report, Tetra Tech, Inc., June 1, 2011.

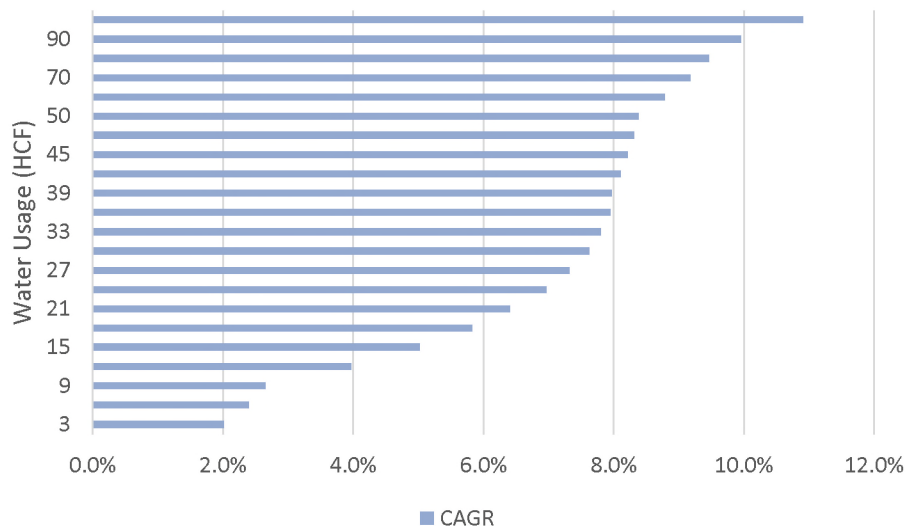
4. Impact of the Rate Increase Proposal on LADWP's Customers

This Chapter provides an analysis of the proposed rate increase impact on customers monthly bills over the Study Period for Schedules A (single-dwelling unit residential), B (multi-dwelling unit residential) and C (commercial, industrial, governmental and temporary construction).^{103 104} Navigant's analysis focused on evaluating the level of monthly bill increases across the full spectrum of LADWP customers' water usage. Given the existing water conservation mandates and goals, it is particularly critical for the Department to ensure that customers who do meet conservation mandates and goals are not unfairly hit by the rate increase. In other words, customers with lower water usage should face a smaller monthly bill increase compared to higher usage customers, provided they were not originally subsidized by other customers.

4.1 Schedule A Customer Class

The Department provided Navigant with customer bill forecasts by water usage level for Schedule A, and for each year of the Study Period. Figure 4-1 below depicts the CAGR of monthly bills over the Study Period for usage levels between 3 HCF and 100 HCF.

Figure 4-1. Average Annual Bill Increase by Water Usage over the Study Period - Schedule A



Source: Customer billing data forecasts provided by the Department.

Figure 4-1 shows that the proposed schedule A rates and allotments were designed to ensure that customers who use water responsibly and meet the water conservation goals and mandates only experience a limited increase of their water bill. Schedule A customers using less than 9 HCF per month

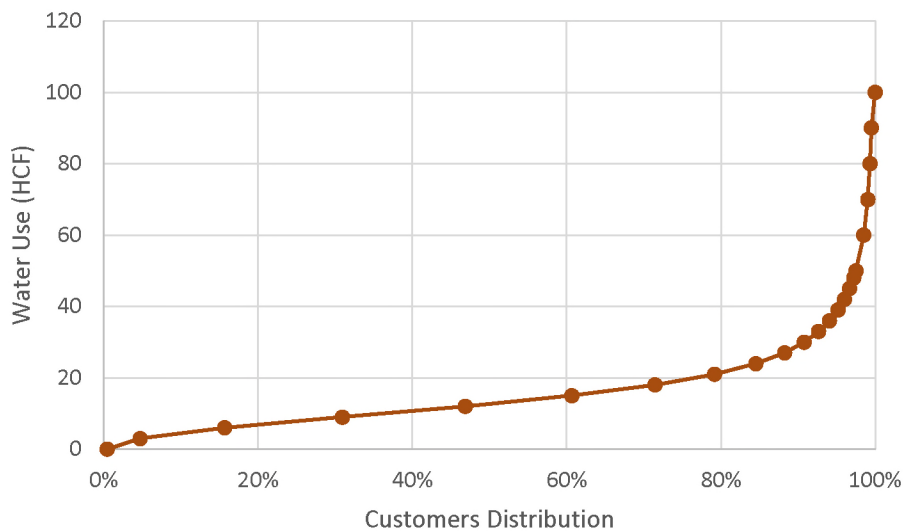
¹⁰³ Navigant was not provided with customer bill data for Schedule F.

¹⁰⁴ The customer bill data provided to Navigant was based on Case 93 as opposed to LADWP's final Case, Case 94. The differences in revenue requirements between Case 93 and Case 94 are negligible, therefore the findings outlined in this Chapter should also apply to Case 94.

will see their bill increase by 2.7% or less, which is significantly below the system average annual rate increase of 5.26% over the Study Period. On the other hand, customers using 40 HCF per month or more will experience an average annual increase of at least 8% over the Study Period.

Further, the majority of LADWP Schedule A customers will face a monthly bill increase smaller than the 5.26% average annual rate increase over the Study Period. Figure 4-1 shows that a rate increase of 5.26% would correspond to a monthly water usage of 16.3 HCF. Leveraging the distribution of Schedule A customers across the water usage spectrum depicted in Figure 4-2 below, it can be concluded that 64.5% of Schedule A customers use less than 16.3 HCF per month, and will therefore face a monthly bill increase that is lower than the 5.26% total average rate increase. As a result, larger water users will be assigned the biggest share of the revenue requirement increase.

Figure 4-2. Distribution of Schedule A Customers across the Water Usage Spectrum



Source: Customer billing data forecasts provided by the Department.

Customer Bill Impact by Tiers

For this rate action, LADWP is proposing to transition from a two tier to a four tier water usage rate structure for Schedule A. The allotment for the first tier would be set at 8 HCF per month. Navigant's analysis shows that customers who limit their water usage to Tier 1 would experience an average annual bill increase of less than 2.7% over the Study Period, which is significantly below the 5.26% total average annual rate increase.

The definition of second and third tier usage block depends on the customer's lot size, temperature zone and season. During the high season (June 1 through September 30), a customer living in a medium temperature zone on a lot greater than 7,500 sq. ft. but smaller than 10,999 sp. ft. will be allocated 18 HCF as a Tier 2 allotment. Schedule A customers using 18 HCF of water per month will face an average monthly bill increase of 5.8%, which is slightly above the 5.26% average.

The Tier 3 upper limit for a customer with similar characteristics will be set at 38 HCF, which equates to an average rate increase of approximately 8%. Finally, Schedule A customers that use 100 HCF per

month or more will face a bill increase of 10.9%, representing more than a 100% increase over the average rate increase.

These findings are summarized in Table 4-1 below.

Table 4-1. Maximum Average Rate Increase over the Study Period per Tier – Schedule A Sample Customer¹⁰⁵

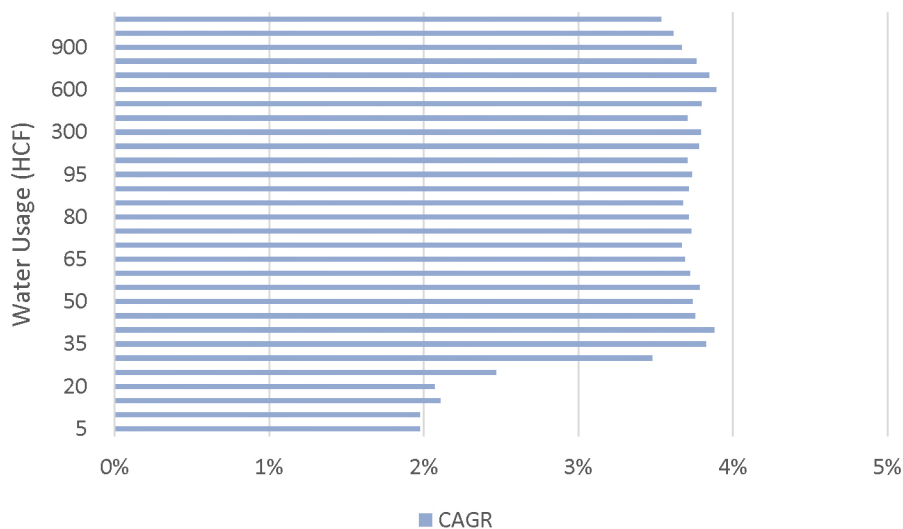
	Tier 1	Tier 2	Tier 3	Tier 4
Upper Tier Usage Block	8	18	38	N/A
Corresponding Maximum Average Annual Rate Increase	2.7%	5.8%	8%	10.9%

Overall, while all Schedule A customers will face a monthly bill increase over the Study Period regardless of their water conservation efforts, the Department appears to have appropriately designed its water rates and allotments to limit the rate increase for low usage customers and assign most of the revenue requirement increase to large water users.

4.2 Schedule B Customer Class

The customer bill analysis conducted for Schedule B followed the same approach to the one described above for Schedule A. Figure 4-3 below depicts the CAGR of monthly bills over the Study Period for usage levels between 5 HCF and 1,100 HCF.

Figure 4-3. Average Annual Bill Increase by Water Usage over the Study Period - Schedule B



Source: Customer billing data forecasts provided by the Department.

¹⁰⁵ Assumptions: high season, medium temperature zone and 7,500-10,999 sq. ft. lot size

The distribution of customer bill increases shown on Figure 4-3 are more homogenous across the water usage spectrum than for Schedule A. While Schedule B customers using less than 25 HCF will experience an increase of no more than 2.5%, the monthly bill increase for larger users will not be significantly higher. For instance, the increase for the largest Schedule B users (using 1,100 HCF per month) will be limited to less than 4%.

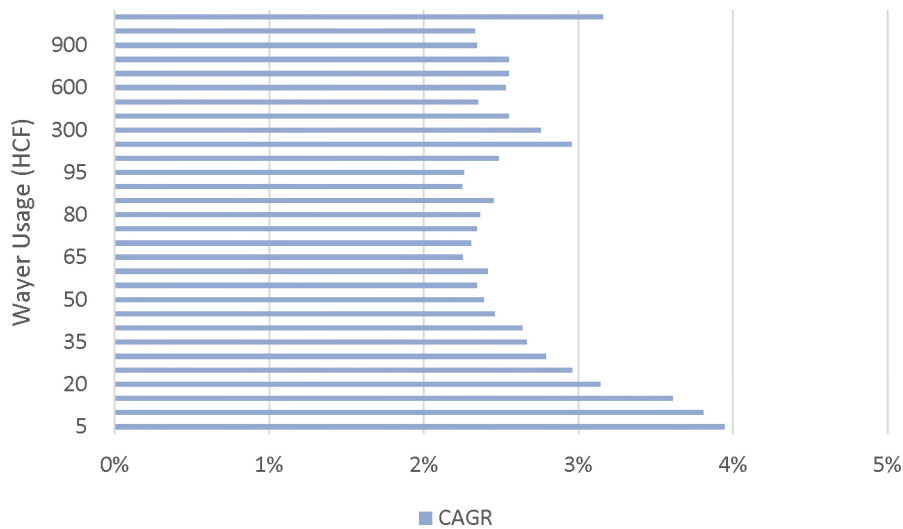
In addition, Figure 4-3 shows that the average monthly bill increase for Schedule B customers will be less than the system total average annual increase of 5.26%, regardless of the customers water usage. This is consistent with the findings of the water COSS which show that Schedule A customers have been subsidized by Schedule B and C customers.

However, while the Department did a good job ensuring that the Schedule A bill increase would grow as water usage goes up, this does not appear to be the case for Schedule B. For instance, Schedule B customers using 40 HCF per month will see their bill increase by 3.9% over the Study Period while customers using 1,100 HCF per month will experience a lower increase of 3.5%.

4.3 Schedule C Customer Class

The customer bill analysis conducted for Schedule C followed the same approaches to the ones described above for Schedule A and B. Figure 4-4 below depicts the CAGR of monthly bills over the Study Period for usage levels between 5 HCF and 1,100 HCF.

Figure 4-4. Average Annual Bill Increase by Water Usage over the Study Period - Schedule C



Source: Customer billing data forecasts provided by the Department.

The findings outlined in section 4.2 above also apply to Schedule C. Figure 4-4 shows that the average monthly bill increase for Schedule C customers will be less than the system total average annual increase of 5.26%, consistent with the water COSS. In addition, Schedule C customers with a very limited water usage will face a monthly bill increase that is higher than for larger users. Customers using 5 HCF per month or less (representing approximately a third of LADWP's Schedule C customer base) will see their



bill increase by 3.9% while customers using as much as 1000 HCF per month will only experience a 2.3% monthly bill increase.

5. 2015 IEA Survey Recommendations

This study is closely related to the recent 2015 Industrial, Economic, and Administrative (IEA) Survey of LADWP completed by Navigant. The IEA Survey reviewed the Water System's major plans including the 2010 Urban Water Management Plan, the Stormwater Capture Plan, the 2008 Water Supply Action Plan, the 2009 Sustainability Plan, the One Water L.A. 2014 Plan, and the 2014 Los Angeles pLAn. Navigant then provided recommendations in the IEA Survey based on the Department's progress against these plans.

In particular, the proposed rate ordinance addresses the IEA Survey's recommendation related to critical short-term governance changes. Specifically, Navigant recommended that the Department improve reporting and transparency by tying financial and performance metrics to rates by ordinance. In response, the proposed ordinance includes language on reporting requirements for Water System metrics and the actions that will be taken to review the metrics, thereby linking the implementation of future rate adjustments to LADWP's performance. This is the basis of a formal and continuous rate review process which would be a significant improvement to the status quo as described in the IEA Survey.

Additionally, according to Navigant's findings in the IEA Survey, the Water System Organization (WSO) faces a number of challenges that will require significant capital and O&M expenditures related to the maintenance and renewal of aging infrastructure and compliance with stringent regulatory mandates. The programs with the largest impact on the rate increase include infrastructure replacement and water quality. This report reiterates and quantifies these needs, as Navigant views the request for increased rates to be reasonable based on these factors.

The following sections describe the major findings for the Water Organization from the IEA Survey and the Department's plan to address them via rates.

5.1 Governance

The 2015 IEA Survey identified a number of governance challenges facing the Department as a whole, which therefore impact the Water Organization. Key governance issues include:

- Decentralized City authority without enough insight into Department operations and finances.
- Lack of external reporting on consistent and reliable key performance indicators.
- Lack of internal authority, controls, and accountability with respect to financial practices.
- Ambiguous role of the Office of Public Accountability requiring further refinement of the office's mission and responsibilities.

In the Governance Chapter of the Survey, Navigant provides the following near-term recommendation:

Navigant recommends that LADWP tie financial and performance metrics to rates by ordinance. This would mean defining and reporting a set of key metrics to decision makers on a specific schedule, in order to inform annual rate adjustments via the adjustment factors. Specifically, for each major Department program and initiative, the ordinance would require agreed-upon metrics (including budget targets and actuals, milestones, etc.) to be reported to the Office of Public Accountability, Board of Water and Power Commissioners, and City Council (Energy and Environment Committee).

The Department, expanding on the recommendations of OPA, the City Administrative Officer, and the Chief Legislative Analyst, directly addresses this recommendation in the final proposed ordinance. As mentioned, a number of metrics related to key programs and a new reporting process are defined in the ordinance. There are several aspects to this innovation which address the above issues and recommendation, as follows:

1. Reported metrics provide additional insight and transparency into Department operations and finances for the Mayor and City Council.
2. Metrics serve as consistent and reliable key performance indicators as they are defined by ordinance and follow a fixed reporting schedule.
3. Metric reporting activities are carried out in LADWP's Financial Services Organization under the supervision of the Chief Financial Officer (CFO), requiring the Water (and Power) Organization(s) to coordinate with the finance team and reinforcing the authority of the CFO.
4. The Ratepayer Advocate and OPA are responsible—by ordinance—for reviewing the Department's metrics on a fixed schedule, and reporting to the Board and City Council Energy & Environment Committee, clearly defining responsibilities. This responsibility does not limit the authority granted to the OPA by the voters or its enabling ordinance.

Based on these additions to the ordinance, Navigant considers LADWP to have adequately addressed its critical short-term governance recommendation in the 2015 IEA Survey.

5.2 Water Distribution Infrastructure

The IEA Survey also included two major findings related to the Department's water distribution infrastructure, which are addressed in several ways in the proposed budget and ordinance.

- The Water Organization is contending with severely aging infrastructure, and a number of its physical assets have reached the end of their useful lives (e.g., mainlines, trunk lines, and large valves).
- Navigant also found that the Water Organization may not have the capacity to implement its infrastructure plans due to expected significant attrition, difficulties in hiring new staff and contracting, and inefficient procurement processes.

The first finding is addressed in rates via the proposed revenue increase to fund infrastructure improvements (the Water Infrastructure Program). One infrastructure-related strategy discussed in the IEA Survey is to combat aging infrastructure issues by doubling the mainline renewal rate from 150,000 to 300,000 feet per year, bringing the rate close to the average useful life (which extends to up to 120 years). However, this increase is not sufficient in the medium to long term, and additional replacements will be required. The same finding applies to large valves and other assets. Overall, Navigant concluded that the plans to renew water infrastructure are ambitious and costly to ratepayers, but necessary based on the age of the infrastructure.

Accordingly, the proposed budget includes a 5.26 percent annual rate increase over the Study Period. LADWP has included a significant investment in infrastructure reliability in the proposed rate increase, at 57 percent of forecasted O&M expenditures and 46 percent of capital expenditures over the Study Period. Approximately 32 percent of capital expenditures for infrastructure will be recovered through

base rates and approximately 68 percent will be recovered through the Water Infrastructure Reliability Adjustment Factor (WIRA) pass through. These expenditures were described previously in Section 3.2.2.3.

The second finding above is addressed in rates via new reporting metrics and a review process defined by ordinance. In the IEA Survey, Navigant supported the Water Organization's plans but also provided a number of recommendations to improve implementation. For ratepayers, it is most important that LADWP accomplish what they agree to pay for. This is most closely related to Navigant's medium-priority recommendation to "continue to formalize and document the WSO's strategies, plans, processes and asset data." Formalizing reporting processes in the rate ordinance is one aspect of this. Tying infrastructure plans directly to rates via these metrics and reporting practices may also encourage the WSO to address Navigant's other recommendations including: (1) "Finalize asset management plans that are currently in draft form, and develop new plans for critical asset classes for which there is currently no plan," and (2) "Incentivize the WSO's senior leadership to drive the implementation of a formalized asset management function, including the development of a formal asset management strategy."

The metrics defined in the ordinance related to water infrastructure currently include the following list. Their units and an acceptable range of values (deadbands) are also defined in the ordinance.

- Capital Improvement Program—Asset replacement spend vs. budget (dollars)
- Capital Improvement Program—Pump Stations spend vs. budget (dollars)
- Capital Improvement Program—Regulator Relief Station retrofit spend vs. budget (dollars)
- Total number and/or miles of Capital Improvement Program assets replaced vs. plan

The Water Infrastructure Adjustment Factor may be revised annually based on the Water System's performance on these metrics. As infrastructure needs change over time, the Board of Water and Power Commissioners has the ability to revise the metrics and their deadbands. In this way, the Water Infrastructure Program receives much-needed funding and LADWP's ability to implement its plans is adequately monitored over the Study Period.

5.3 Water Quality

Another major investment—as identified in the Department's plans and analyzed in the IEA Survey and this report—is related to meeting safe drinking water quality regulations. Again, the current rate request for a 5.26 percent annual rate increase over the Study Period includes significant investment in water quality. Water quality accounts for 19 percent of the forecasted O&M expenditures and 23 percent of the capital expenditures over the Study Period. Major water quality projects are described in Section 3.2.2.1. The ordinance-defined metric to monitor water quality investment is "Total Water Quality actual spend vs. budget (dollars)."

5.4 Water Supply and Storage

In the IEA Survey, Navigant also found that there is a need for significant changes in the existing mix of water supplies, particularly to reduce LADWP's reliance on purchased water from MWD. The high cost of purchasing MWD water combined with the current drought (reducing supply from the Los Angeles Aqueduct) further exposes LADWP to high water supply purchase costs. At the time of the Survey,

LADWP planned to address this issue by increasing local water supply, including stormwater capture, groundwater, recycled water, and conservation.

The plan is being carried out primarily through increased investment in local water supply over the Study Period. For example, annual capital investment in Water Reclamation increases from \$42 million to an average of \$137 million over the Study Period, as shown previously in Figure 3-10. The forecast for the water supply (Figure 3-6) shows a dramatic decrease in purchased water from MWD, replaced by water from the Los Angeles Aqueduct.

The tiered water supply mechanism included in the proposed rate ordinance's Water Supply Cost Adjustment (WSCA) supports the implementation of and provides some transparency into the Department's preferred local supply mix. The WSCA recovers Los Angeles Aqueduct, purchased water, groundwater, recycled water, water conservation, and additional water supply source expenses through the application of the Water Supply Cost Adjustment Factor (WSCAF). The WSCAF is applied to customer usage tiers, beginning with the first tier, and is calculated to supply each tier's expected annual demand starting with the least expensive source in the Water System's portfolio and continuing in order of expense until the demand is met.¹⁰⁶ The new metrics defined in the ordinance also provide insight into water supply sources and their costs, including:

- Annual quantity of purchased water vs. plan (acre-feet)
- Annual quantity of recycled water vs. plan (acre-feet)
- Stormwater system capacity vs. plan (acre-feet)
- Groundwater production (Central and San Fernando Basins) vs. plan (acre-feet)
- Water conservation vs. target (GPCD)

Based on the IEA Survey and our findings in this report, Water System expenditures and the above metrics are expected to reflect the priority placed on local water supply. However, if drought conditions persist or return during the Study Period, supply from the Los Angeles Aqueduct may be lower than the forecast and LADWP may be required to purchase more water from MWD or be more aggressive on recycled water, stormwater, and conservation than reflected in the current plan.

¹⁰⁶ Draft Ordinance, General Provision F.

6. Recommendations

Based on these findings, Navigant makes the following recommendations.

Water rates ordinance:

- **Board Metric Variances:** Navigant recommends that the Department work with the OPA to refine the variance ranges applicable to each of the Water and Joint System Board Metric targets. The Department will quickly gain more experience with these metrics and improve its ability to accurately and realistically forecast work and deliver on results. Variances should be tightened as appropriate to reflect the Department's deep expertise with many of the metric-related activities, and to be more in line with the margin of error adopted for other utilities.
- **Interim Rate Review Timing:** The Department proposes to complete its interim rate review by June 30, 2019. Navigant believes this timing falls too late for a meaningful base rate review during the five year rate period encompassed in this rate action. The Department should conduct its interim rate review by January 1, 2018, which will provide time prior to the July 1 fiscal year for the Board to consider, by April 1, over two full fiscal years of data (FY 2015/16 and FY 2016/17) for this interim analysis.
- **Interim Rate Review Inputs:** For the interim rate review, the Department will consider updating its Base Rate Revenue Targets and rate design to reflect updated forecasts for revenues, expenditures, and overall fiscal performance. The uncertainty of California's drought and its impact on customer water use may further change overall water deliveries in LADWP's service area. The Department should ensure that its interim forecasts are based on then-current forecasts of water deliveries, in the aggregate and by customer class.

Revenue requirements:

- Formalize and fully document the revenue requirement determination methodology.
- Establish a formal documented process for allocating revenue to specific funding needs.
- Increase the proposed mainline, trunk line and large valve replacement plans to at least prevent the backlog of assets needing replacement from growing further.
- Implement a broader and more dynamic outsourcing strategy as part of LADWP's workforce resource planning. This strategy should be incorporated into the Department's Human Resources Plan and operated as a high priority initiative with full support from City Management.
- In close collaboration with the City, identify and assess solutions to accelerate the hiring and selection process.
- Navigant recommends the OPA and CAO/CLA undertake a separate study to look at reducing debt levels in the future and changing to a more structured cash/debt planning model.

COSS:

- Conduct another Water System COSS for Test Year 2017/18 using 2016/17 actual data and based on a robust demand research study which forecasts customer class usage profiles and overall demand, and incorporate into rates as soon as practicable. Monitor the current legal environment and seek opportunities to address the limitations of the current rate design in providing appropriate water conservation incentives in the event of a dry or wet year scenario.
- Integrate the rate design model, the financial models, the SAS database and the Customer Care and Billing system to prevent data discrepancies between the models, systems and the databases, and streamline the rate design process.
- Develop a robust internal knowledge transfer plan that includes training on the existing rate design models and approaches.

Current & 2015 Proposed LADWP Schedule A Single-Dwelling Unit Residential Water Rates

