LOS ANGELES DEPARTMENT OF WATER AND POWER

WATER SYSTEM RATE ACTION REPORT

Chapter 3: Rate Drivers

July 2015

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3.1 INTRODUCTION

In developing the rate proposal, LADWP was committed to striking the right balance between continuing to meet regulatory requirements, providing reliable service, planning for a sustainable and secure water supply, and maintaining reasonable rates. This section describes the nature, scope and importance of the key programs that contributed to the proposed costs, revenue requirements and rates. These programs include:

- Water Quality;
- Infrastructure Reliability;
- Sustainable Local Water Supply:
  - Customer Conservation;
  - Recycled Water;
  - Stormwater Capture;
  - Groundwater Remediation and Clean-up;
  - Bay Delta Conservation Plan;
- Purchased Water; and
- Owens Valley Regulatory Compliance.

3.1.1 Water Quality

Water quality investments remain a top priority for the Water System. The Department is undertaking a number of projects in order to remain in compliance with water quality mandates. Specifically, these projects include: covering or removing from service all open treated-water distribution reservoirs such as Santa Ynez, as shown in Figure 1; making investments in state-of-the-art disinfection facilities to minimize the formation of disinfection byproducts; as well as other infrastructure upgrades.

Figure 1: Santa Ynez After Installation of Floating Cover as Required by Regulation

3.1.2 Infrastructure Reliability

LADWP delivers water to its customers through a complex and expansive network. The Department manages and maintains over 300 miles of Los Angeles Aqueduct (LAA) tunnels, 9 active reservoirs, 114 storage tanks, 2,668 large valves, large and small pipes measuring more than 7,200 miles in length, 94 pump stations, 327 pressure regulator and relief stations, and approximately 700,000 meters.

Much of LADWP's infrastructure is nearing the end of its useful life. Some planned infrastructure investments over the next five years include, but are not limited to:

- Replace approximately 1 million feet of distribution mainline;
- Replace 25 valves;
- Retrofit 20 pressure regulator and relief stations;
- Replace 125,000 small meters; and
- Conduct in-place refurbishments of the LAA system
  - Reline 7 miles of cracked concrete
  - Construct 10 cathodic protection stations
  - Replace 15 miles of concrete lid
  - Re-drill and replace 5-10 groundwater wells in Owens Valley
  - Replace and improve 10-15 old and corroded measuring stations.

These infrastructure investments are crucial if LADWP is to maintain high levels of reliability and water quality, minimize operational costs, and mitigate the cost and inconvenience of service disruptions due to infrastructure failures. Figure 2 illustrates the potential extent of damage from main breaks.

Figure 2: Image of 2014 UCLA Main Break

In order to upgrade infrastructure in the most cost effective and efficient manner, all major components of the Water System infrastructure are evaluated as part of the ongoing Asset Management (AM) Program. As outlined in the Water Infrastructure Plan (WIP), the Department determines the appropriate level and priority of all infrastructure investments by assessing and balancing equipment condition and risk of failure with long-term (e.g. construction) and short-term (maintenance and repair) facility costs.

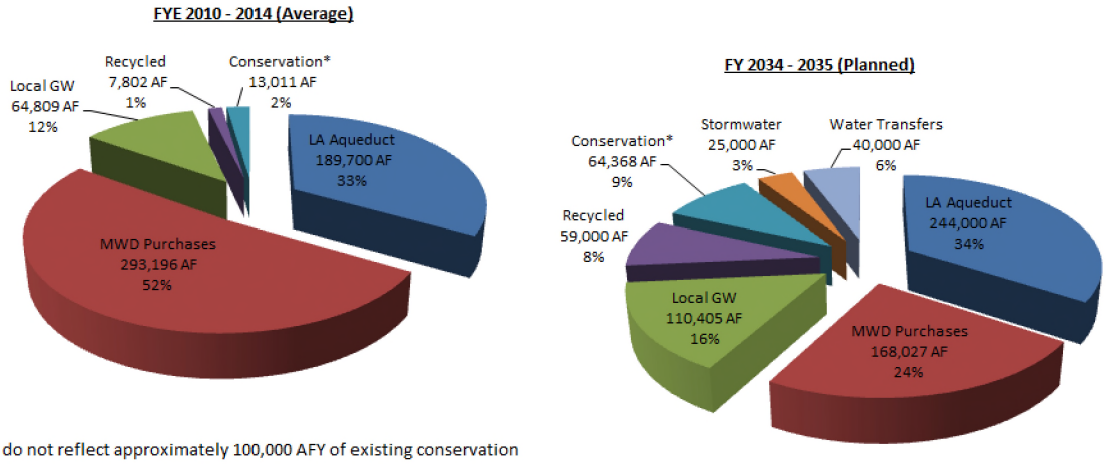
3.1.3 Sustainable Local Water Supply

"Our relationship with water must evolve. We cannot afford the water policies of the past…We must conserve, recycle and rethink how we use our water to save money and make sure that we have enough water to keep L.A. growing." - Mayor Eric Garcetti [1].

Historically, the Department has obtained the majority of its water supply from the Eastern Sierra Nevada Mountains (through the LAA). This water source is entirely dependent on snowfall and highly volatile. In drought years, the shortfall in the water supply is made up through water purchases from the Metropolitan Water District (MWD). Both of these sources of supply, which come from hundreds of miles away, are becoming increasingly limited and expensive. In addition, they are at risk due to legal and environmental mandates and threatened by climate change.

In order to mitigate the costs of expensive and at-risk purchased water and protect the interests of future generations, LADWP has long pursued a multipronged program to ensure a sustainable local water supply. Figure 3 below depicts the expected breakdown of water supply from the various sources in FY 2034-35, given planned levels of investment as of 2010[2]. Water purchases are projected to decrease from 52% of the water supply to 24% of the total supply, as LADWP continues investments in water conservation, stormwater capture, groundwater replenishment and remediation, and recycled water. The proposed rates are designed to help support this transition.

Figure 3: Planned Shift in Water Supplies



* Charts do not reflect approximately 100,000 AFY of existing conservation

[1] For full text see:
http://www.lamayor.org/mayor_garcetti_issues_executive_directive_on_water_conservation_to_address_ongoing_drought

[2] Breakdown of water supply in FY 2034-35 from 2010 Urban Water Management Plan. The projected breakdown will be adjusted for new developments, such as Mayor's Executive Directive 5, in the 2015 Urban Water Management Plan (currently under development).

3.1.4 Purchased Water

As shown above, in an average precipitation year, over one-half of customers' water demands are currently met through purchases from the MWD. The price of purchased water (PW) from MWD has risen in the past and is expected to maintain this upward trend. Between calendar years 2010 and 2015, the price of Tier 1 untreated water from MWD increased by 3.76% per year and the price of MWD Tier 1 treated water increased by 5.66% per year. Between calendar year 2015 and 2020, the price of Tier 1 treated/untreated water from MWD is expected to increase at a rate of approximately 3.31% per year[3]. This increase is being driven by infrastructure investments as well as rising O&M costs. In addition, MWD will be responsible for 25% of costs associated with the Bay Delta Conservation Plan (BDCP). This plan, which is currently in the planning phases, is intended to alleviate the stress on the Bay Delta habitats and will cost a total of approximately $25 billion Statewide. The implementation of the BDCP will only further increase purchased water costs in the future.

3.1.5 Owens Valley Regulatory Compliance

California Health and Safety Code Section 42316 requires the City of Los Angeles to comply with reasonable mitigation orders issued by a local air regulator, which has determined that the City's water activities are primarily responsible for the air quality impacts associated with the Owens Lake region. Since 2001, LADWP has operated the Owens Lake Dust Mitigation Program.

The Department's efforts in Owens Lake have eliminated more than 90% of the excess blowing dust. However, this success has come at a high cost to Angelenos. LADWP allocates about 95,000 AF of water to Owens Lake annually and has spent $1.3 billion since 2000 to control dust at Owens Lake.

The Department recognized that using drinking water for dust mitigation practices is unsustainable and has looked for long-term solutions to dust mitigation in Owens Valley that would reduce the need for water diversion without subjecting it to additional litigation. On November 14, 2014 the City of Los Angeles and the Great Basin Unified Air Pollution Control District (GBUAPCD or the District) announced they had reached an historic agreement over the implementation of dust control measures on Owens Lake (the Stipulated Judgment). Effectively, the Stipulated Judgment will allow LADWP to use waterless dust control methods, including tillage, at Owens Lake, resulting in potentially significant water and monetary savings. The Judgment also provides Los Angeles with the certainty of knowing the full extent of its liability for dust mitigation at Owens Lake.

Compliance with the Stipulated Judgment is expected to cost approximately $500 million. In the long run, the proposed project is expected to be revenue neutral and will save the Department

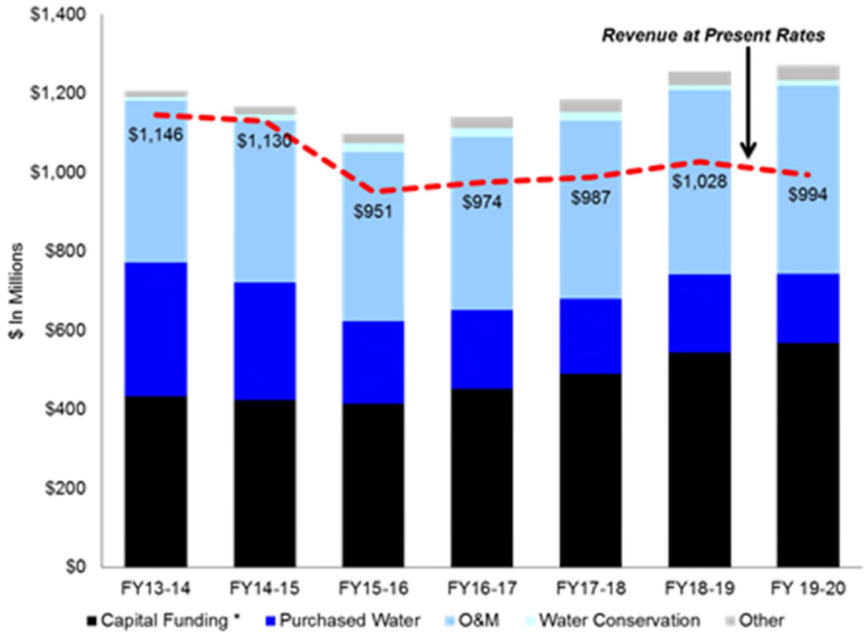
[3] Percentages reflect CAGR (Compound Annual Growth Rate).

(and customers) money as less water is diverted from the LAA for dust control (and less purchased water is required).

3.1.6 Revenue Requirement

Current revenues will be inadequate to fund the above programs. as summarized by a graphical representation of the income statement in Figure 4.

Figure 4: Current Revenue Shortfall (Given No Rate Increase, Including Purchased Water)



Note: Expenses are based on the current five-year financial plan which assumes normal precipitation. If precipitation is below normal as it has been in the most recent two years, the revenue requirement is likely to be higher.

* All amounts based on income statement and Capital Funding include depreciation, net interest expense, and retained earnings

To meet the Water System's revenue requirement, revenues will have to increase by an average incremental amount of $90 million annually (excluding the impact of purchased water) through the period of FY 2015-16 to FY 2019-20, as reflected below in Figure 5. This translates to an average annual system rate increase of 8.48%. Assuming normal precipitation, purchased water would have a negative impact on the Department's revenue requirement. Including the impact of purchased water, the average annual revenue requirement impact would go down to $46 million, and the average annual system rate increase would go down to 4.96%.

Figure 5: Year-Over-Year (YOY) Rate Driver Breakdown of Proposed Retail Rate and Revenue Requirement Increase (Assuming Normal Precipitation)[4]

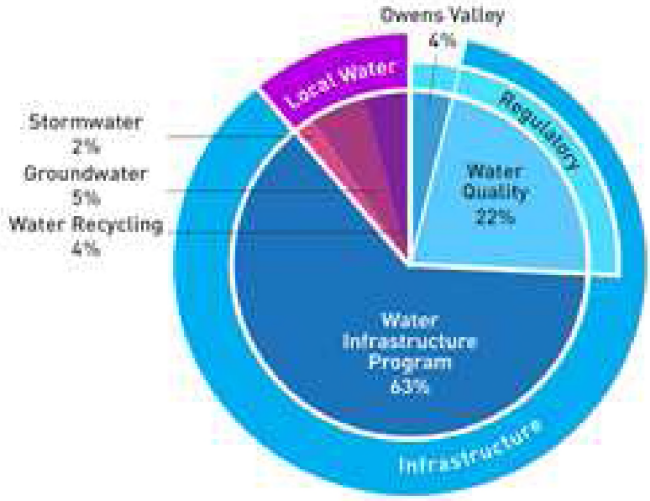
Rate Driver	Average Annual Revenue Requirement Increase ($M)	Average Annual System Retail Rate Increase (Cents/HCF)	Average Annual Rate Increase (%)
Conservation (Securitization)	-6[5]	0.13	-0.50%
Groundwater (Securitization)	5	0.54	0.40%
Stormwater	2	0.18	0.13%
Recycled Water	4	1.31	0.35%
Owens Valley	4	0.32	0.35%
Water Quality	22	0.36	2.06%
Infrastructure – Base	16	-0.04	1.96%
Infrastructure – Pass-Through	44	4.32	3.72%
Total before Purchased Water	90	7.13	8.48%
Purchased Water	-44	-1.24	-3.53%
Total	46	5.89	4.96%

Figure 6 outlines the major components of the cumulative revenue requirement for the five-year rate period. As outlined above, higher costs are primarily driven by infrastructure improvements, securing new sources of local water supply and meeting regulatory mandates.

[4] All revenue requirement calculations are based on Financial Plan Case Number 33.

[5] Many conservation investments are eligible for lower financing through securitization, resulting in a reduction in revenue requirement for conservation projects.

Figure 6: Major Rate Drivers (Cumulative FY 2015-16 through FY 2019-20)



The percentage increases outlined in Figure 5 and Figure 6 reflect average changes to revenue requirements and rates when calculated year-over-year (YOY)[6]. Throughout this report, we will continue to present YOY numbers. However, in order to understand the potential impact of compounding on the rate drivers by the end of the rate period, the Department has also computed "cumulative" rate increase percentages.

Figure 7 compares the percentage rate increases using the two different calculation methodologies. Using the cumulative methodology, the average annual rate increase is 5.44% instead of 4.96% (including purchased water).

[6] In essence, the percentage increase in FY 2015-16 is computed using the revenue requirement/rate in FY 2014-15 as a base. In turn the percentage increase in FY 2016-17 is computed using the revenue requirement/rate in FY 2015-16 as a base and so on.

Figure 7: YOY vs. Cumulative Percentage Rate Increases

Rate Driver	Average Annual System Retail Rate Increase (YOY)	Average Annual System Retail Rate Increase (Cumulative)
Conservation (Securitization)	-0.50%	-0.50%
Groundwater (Securitization)	0.40%	0.44%
Stormwater	0.13%	0.15%
Recycled Water	0.35%	0.41%
Owens Valley	0.35%	0.38%
Water Quality	2.06%	2.13%
Infrastructure – Base	1.96%	2.00%
Infrastructure – Pass-Through	3.72%	4.01%
Total before Purchased Water	8.48%	9.03%
Purchased Water	-3.53%	-3.59%
Total	4.96%	5.44%

Regardless of how the average annual rate increase percentage is calculated, the end result is the same; between FY 2014-15 and FY 2019-20, the revenue requirement will go from $1,152 million to $1,382 million, and the average retail rate will go from $4.92 to $6.25 per HCF (including purchased water).

The Department is planning to spend a total of $7,315.1 million on O&M and capital across all the programs discussed in this section (excluding purchased water) over the next five years, as shown in Figure 8.

Figure 8: Summary of Budgeted Rate Driver Costs

($M)		Current	Proposed Rate Period						
		FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*[7]
Water Quality	O&M	$53.6	$84.1	$88.2	$92.8	$97.3	$98.2	$460.6	*$101.4*
	Capital	$162.7	$300.5	$304.7	$181.8	$115.3	$84.8	$987.1	*$59.2*
	Total	$216.3	$384.6	$392.9	$274.6	$212.6	$183.0	$1,447.7	*$160.6*
Infrastructure	O&M	$239.4	$261.6	$263.2	$267.3	$275.7	$283.9	$1,351.7	*$289.4*
	Capital	$414.7	$318.6	$411.8	$432.5	$599.4	$640.0	$2,402.3	*$755.3*
	Total	$654.2	$580.2	$675.0	$699.8	$875.1	$923.9	$3,754.0	*$1,044.7*
Sustainable Local Water Supply	O&M	$27.1	$31.5	$32.4	$32.8	$24.3	$24.0	$145.0	*$23.2*
	Capital	$129.1	$192.0	$195.8	$215.3	$261.8	$408.6	$1,273.5	*$708.8*
	Total	$156.2	$223.5	$228.2	$248.1	$286.1	$432.6	$1,418.5	*$732.0*
Owens Valley Regulatory Compliance	O&M	$32.3	$31.0	$34.2	$34.9	$35.9	$36.2	$172.2	*$36.4*
	Capital	-	$73.3	$30.8	$66.3	$62.1	$68.4	$300.9	*$65.1*
	Total	$32.3	$104.3	$65.0	$101.2	$98.0	$104.6	$473.1	*$101.5*
Pumping	O&M	$39.3	$41.4	$43.1	$44.6	$45.8	$47.0	$221.8	*$48.4*
Security	O&M	$33.7	-	-	-	-	-	-	-
	Capital	$18.9	-	-	-	-	-	-	-
	Total	$52.6	-	-	-	-	-	-	-
All Programs (Excluding PW)	O&M	$425.4	$449.6	$461.0	$472.3	$479.0	$489.3	$2,351.3	*$498.8*
	Capital	$725.4	$884.4	$943.1	$895.9	$1,038.6	$1,201.8	$4,963.8	*$1,588.4*
	Total	$1,203.5	$1,334.0	$1,404.1	$1,368.2	$1,517.6	$1,691.1	$7,315.1	*$2,087.2*
Purchased Water	O&M	$298.0	$209.3	$198.7	$189.4	$198.0	$175.7	$971.1	*$172.2*
All Programs (Including PW)	O&M	$723.4	$658.9	$659.7	$661.7	$677.0	$665.0	$3,322.4	*$671.0*
	Capital	$725.4	$884.4	$943.1	$895.9	$1,038.6	$1,201.8	$4,963.8	*$1,588.4*
	Total	$1,501.5	$1,543.3	$1,602.8	$1,557.6	$1,715.6	$1,866.8	$8,286.2	*$2,259.4*

Expenditures that are categorized as O&M are immediately passed through to the customers and, therefore, have a dollar for dollar impact on rates. In contrast, capital costs are generally funded through the issuance of debt (bonds). External financing allows the costs of the financed

[7] Budgeted figures for FY 2020-21 are presented in line with Financial Plan Case Number 33. LADWP has analyzed expense and revenue requirement projections beyond the five-year timeframe; while additional analysis is required, it is possible further rate increases beyond the current rate period may be necessary.

projects to be spread over the useful life of the projects, enables the recovery of costs from those customers that benefit from the projects, and mitigates the rate impacts that would result if this work was directly funded in full from customer rates. On average, $14 of capital has roughly the same impact on rates as $1 of O&M.

In developing the proposed rates, LADWP was committed to striking the right balance between continuing to meet regulatory requirements, providing reliable service, planning for a sustainable and secure water supply, and maintaining reasonable rates. The remainder of this section describes in greater detail the nature, scope and importance of the key programs that contributed to the proposed costs, revenue requirements and rates.

3.2 WATER QUALITY

The Water System is undertaking a number of projects in order to comply with State and Federal water quality regulations, specifically the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and the Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 D-DBPR).

To help mitigate the impact of water quality programs on base rates, on February 8, 2012, the Council approved a $0.35 per hundred cubic feet (HCF) increase in the cap for the Water Quality Improvement Adjustment (WQIA) factor. While the implementation of the increased WQIA factor allowed the Department to fund the required water quality projects through the issuance of revenue bonds, the current WQIA factor covers only a portion of the total water quality compliance expenses. Upon approval of this cap in 2012, it was recognized that these revenues allowed LADWP to access the bond market in the short run, but, going forward, a more permanent rate plan would be necessary.

Over the next five years, the Department has budgeted for a capital investment of $987.1million[8] in water quality projects. The amount currently budgeted for projects required to comply with LT2ESWTR and Stage 2 D-DBPR is $651.8 million. Budgeted capital and O&M expenditures are summarized in Figure 9.

[8] In addition to the costs of compliance with the Long-Term 2 Enhanced Surface Water Treatment Rules and the Stage 2 Disinfectants and Disinfection Byproducts Rule, this amount also captures ongoing capital work for Water Quality related to corrosion as well as reservoir and tank improvements.

Figure 9: Capital and O&M Expenditures – Water Quality Programs

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M	$53.6	$84.1	$88.2	$92.8	$97.3	$98.2	$460.6	*$101.4*
Capital	$162.7	$300.5	$304.7	$181.8	$115.3	$84.8	$987.1	*$59.2*
Total	**$216.3**	**$384.6**	**$392.9**	**$274.6**	**$212.6**	**$183.0**	**$1,447.7**	***$160.6***

As shown in Figure 10, over the five-year proposed rate period, these projects will increase the revenue requirement by an average of $22 million per year but will have no average impact on the system average rate. The decline in the revenue requirement growth and average retail rate over the five-year proposed rate period reflects the fact that investments will be decreasing relative to current high levels as the Department completes the majority of investments required for compliance with LT2ESWTR and Stage 2 D-DBPR.

Figure 10: Water Quality Impact on Revenue Requirement and Rates

	YOY Increase						
	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Average	*FY 2020-21*
Increase in Revenue Requirement ($M)	39	36	13	13	7	22	*6*
Increase in System Average Retail Rate (cents/HCF)	18.9	0.45	-10.32	-2.54	-3.87	0.36	*0.89*
Increase in System Average Retail Rate (%)	**3.68%**	**3.76%**	**1.57%**	**1.00%**	**0.31%**	**2.06%**	***0.43%***

3.2.1 Program Overview

The Stage 2 D-DBPR required LADWP to make substantial capital improvements to minimize the formation of disinfection byproducts. The Department's strategy for compliance was to add state-of-the-art Ultra Violet light disinfection facilities for primary disinfection and to change the secondary disinfectant from chlorine to chloramine, a much more stable compound that does not form as many byproducts. This conversion was conducted in phases over ten years due to the enormity of the water distribution system and is nearly complete.

The LT2ESWTR requires LADWP to cover, treat, or remove from service six uncovered distribution reservoirs. The Department has a Compliance Agreement with California Department of Public Health (CDPH) that has multiple interim deadlines and requires full compliance by 2022.

The amount currently budgeted for these projects over the next five years is $651.8 million. However, some of the projects will extend beyond the five-year period. The status of the remaining projects is shown in Figure 11. Chapter 2 - Appendix C provides more description of each of these major programs.

Figure 11: Major Water Quality Projects

Future Projects	Status as of April 2015	Budgeted Amounts (FY 15-16 to FY 19-20) O&M and Capital ($M)	Total Projected Cost ($M)
River Supply Conduit Improvement – Upper Reach, Units 5 and 6	Design complete Construction scheduled for March 2015	$146.1	$170.5
River Supply Conduit Improvement – Upper Reach, Unit 7	Design 99% complete Construction scheduled for December 2016	$130.5	$151.8
Silver Lake Bypass Line and Regulator Station	Design complete Construction scheduled for Summer 2015	$34.0	$51.7
Headworks Reservoir West	Design 60% complete	$114.9	$127.9
River Supply Conduit Improvement – Upper Reach, Unit 1A Trunk Line	1A East placed into service 1A West construction scheduled for July 2018	$15.0	$39.2
Elysian Reservoir Cover	Design complete Construction scheduled for October 2015	$24.3	$30.5
Upper Stone Canyon Reservoir	Design 30% complete	$35.4	$39.6
LA Reservoir Bull Creek Extension	Construction underway. Completion anticipated January 2017	$26.0	$82.9
99th Street Wells Chloramination Station	Design 90% complete	$15.8	$24.3
LA Reservoir UV Disinfection Treatment Plant	Design complete	$110.2	$111.0
TOTAL		**$651.8**	**$829.4**

3.3 MAINTAINING INFRASTRUCTURE AND RELIABILITY

Much of LADWP's infrastructure is nearing the end of its useful life. Major capital projects to improve the reliability of LADWP water service infrastructure are crucial. Infrastructure issues often result in significant property damage and disruptions for people and businesses.

Furthermore, costs associated with emergency repairs, litigation, and claims from infrastructure failures greatly outweigh routine preventative maintenance and replacement costs.

The Water System's Capital Improvement Program (CIP) is a ten-year plan focused on maintaining or replacing existing components of the Water System, and constructing new facilities to ensure LADWP fulfills its mission of providing reliable and high quality water to the residents of Los Angeles. In addition, the Department has a five-year Water Infrastructure Plan (WIP) focused on maintaining infrastructure and by extension improving water system reliability. Some planned infrastructure investments over the next five years include, but are not limited to:

- Replace approximately 1 million feet of distribution mainline;
- Replace 25 valves;
- Retrofit 20 pressure regulator and relief stations;
- Replace 125,000 small meters; and
- Conduct in-place refurbishments of the LAA system;
  - Reline 7 miles of cracked concrete
  - Construct 10 cathodic protection stations
  - Replace 15 miles of concrete lid
  - Re-drill and replace 5-10 groundwater wells in Owens Valley
  - Replace and improve 10-15 old and corroded water measuring stations.

Overall, expenditures for infrastructure projects over the next five years will total $3,754.0 million in capital and O&M, as outlined in Figure 12.

Figure 12: Capital and O&M Expenditures – Water Infrastructure[9]

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	FY 2020-21
O&M	$239.4	$261.6	$263.2	$267.3	$275.7	$283.9	$1,351.7	$289.4
Capital	$414.7	$318.6	$411.8	$432.5	$599.4	$640.0	$2,402.3	$755.3
Total	**$654.2**	**$580.2**	**$675.0**	**$699.8**	**$875.1**	**$923.9**	**$3,754.0**	**$1,044.7**

Over the five-year proposed rate period, these projects will increase the revenue requirement by an average $60 million per year and the system average rate by an average of 4.28 cents per HCF annually, as shown in Figure 13[10].

[9] Amounts shown do not include operating support.

Figure 13: Water Infrastructure Impact on Revenue Requirement and Rates

		YOY Increase						
		FY 2015-16	**FY 2016-17**	**FY 2017-18**	**FY 2018-19**	**FY 2019-20**	**Five-Year Average**	***FY 2020-21***
Increase in Revenue Requirement ($M)	Base	25	26	23	2	7	16	0
	Pass-Through	104	-2	26	39	50	44	26
Increase in System Average Retail Rate (Cents/HCF)	Base	14.82	3.92	-2.61	-16.45	0.11	-0.04	0.47
	Pass-Through	45.6	-44.41	12.66	4.52	3.76	4.32	-9.80
Increase in System Average Retail Rate (%)	Base	3.01%	3.79%	3.07%	-0.06%	-0.04%	1.96%	0.04%
	Pass-Through	**9.17%**	**0.13%**	**2.54%**	**3.15%**	**3.63%**	**3.72%**	**1.89%**

LADWP's proposed rate plan balances the appropriate investment levels for infrastructure reliability and compliance with external mandates, while minimizing the impact on customer rates. The proposed rates are designed to maintain and improve the level of reliability most efficiently by allocating resources between base labor, overtime, and contractors in the most cost effective manner. The Department has developed its plans for reliability enhancements in a strategic way that is most cost effective and least disruptive to customers based on an asset management program focusing on scheduled infrastructure investment projects, as opposed to emergency maintenance programs. A systematic replacement program has been shown to be more effective in lowering costs and customer impacts than performing reactive or emergency asset replacement. On average, pipeline breaks cost $33,000 per incident, and no mainline is actually replaced in emergency repair. In addition, unlike emergency break repairs, planned infrastructure replacement efforts can be coordinated with the Bureau of Street Services and other agencies to minimize street repairs and replacements.

Several of the major projects designed to replace and/or improve the condition of aged infrastructure are discussed below.

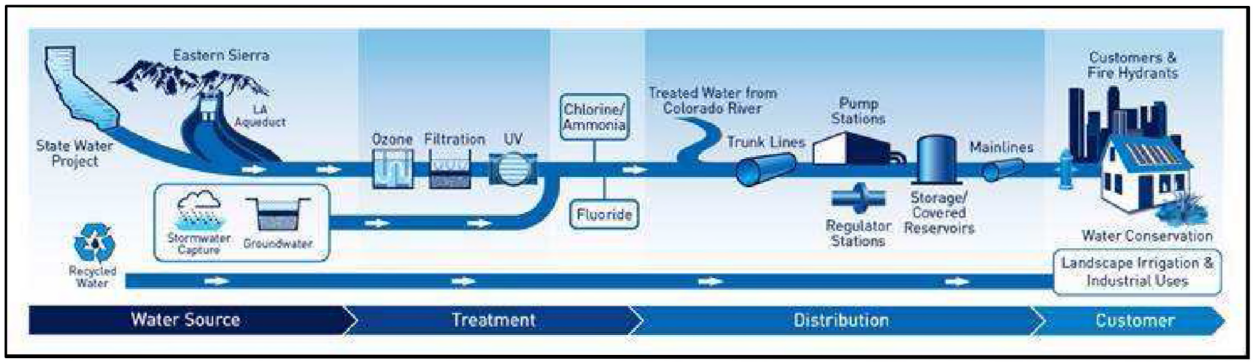
3.3.1 Infrastructure Overview

LADWP delivers water to its customers through a complex and expansive network. Raw water is conveyed to treatment plants through 300 miles of aqueduct tunnels. After treatment, water is

[10] In Chapter 5, the Department outlines a new proposed infrastructure reliability adjustment factor component in the rate structure which is designed to provide specific funding for new infrastructure capital in a transparent manner. Infrastructure costs associated with high priority core facilities are included in the adjustment factor.

stored in 9 reservoirs and 114 storage tanks across the system until it is needed. The water is delivered to customers through a network of large and small pipes, with varied functions, measuring more than 7,200 miles in length. Trunk lines are pipes with a diameter greater than 20 inches that transport water from wells and aqueducts to reservoirs and enable the movement of water from one area of the City to another. Trunk lines connect to smaller pipes known as distribution mains that supply water to the customer's service connection. Consumption of the delivered water is measured by 700,000 water meters that provide the basis for determining a customer's water bill. In addition, there are 2,668 valves, 94 pump stations and 327 pressure regulator and relief stations throughout the system, which together maintain the flow of water. Figure 14 provides an illustration of a sample water supply system.

Figure 14: Illustration of Sample Water Supply System



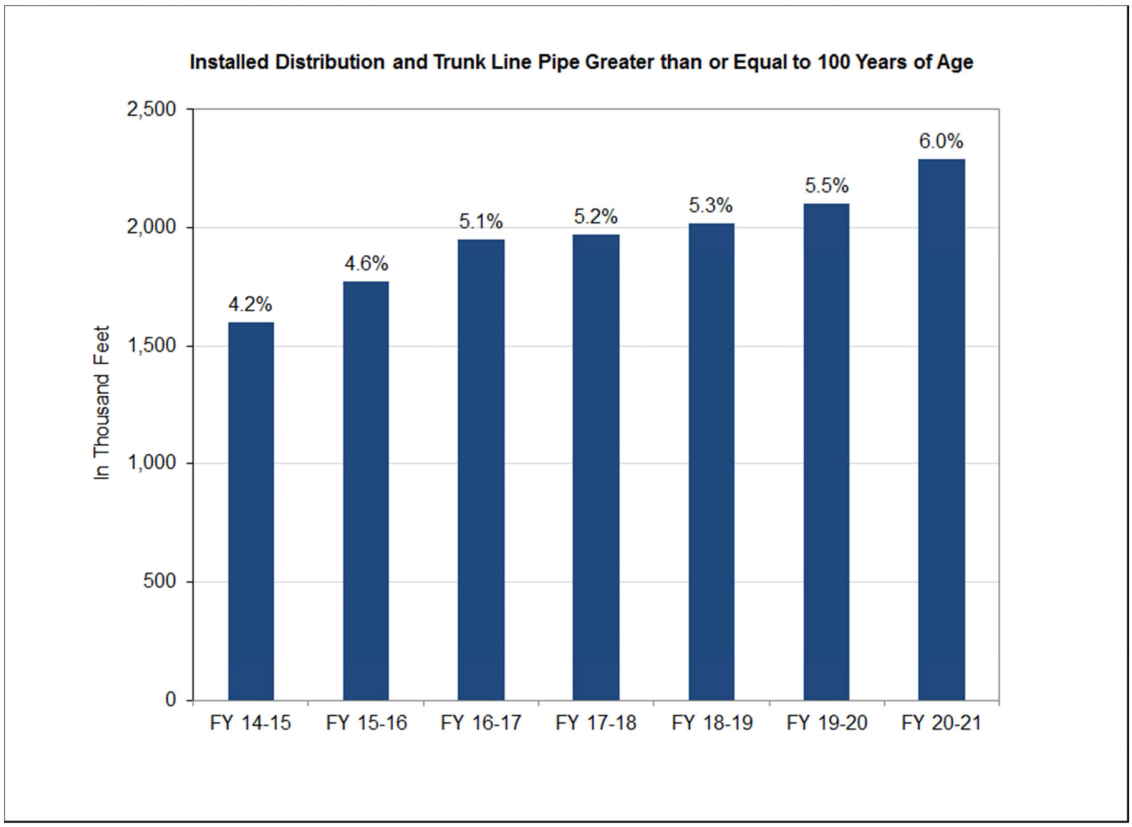
3.3.2 Pipeline Projects

The Department began extensive rehabilitation and replacement of the distribution system pipe over 30 years ago.

Figure 15: Pipeline Installation

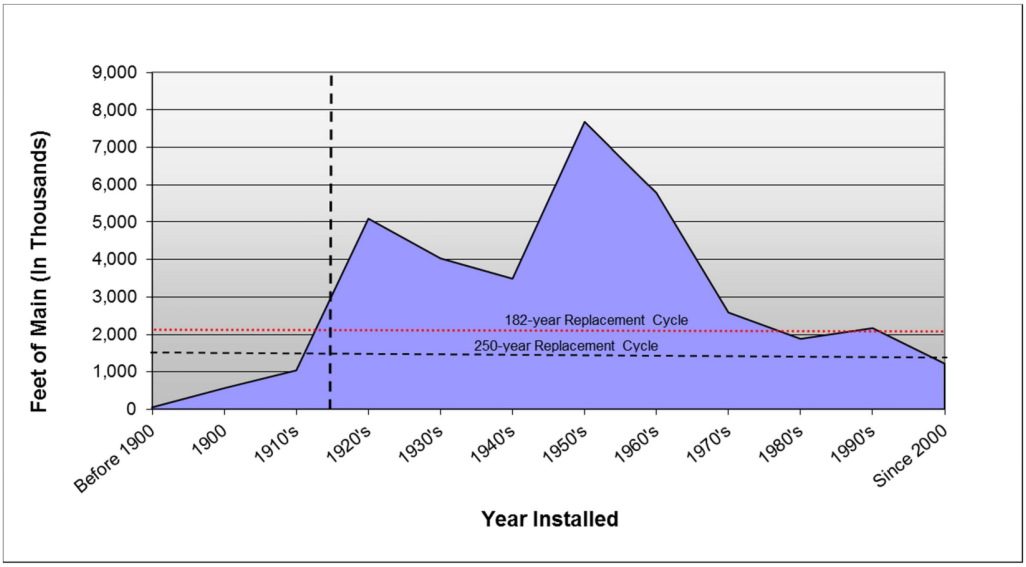
In early 2007, the Department completed a program of nearly 30 years to cement mortar line 10 million feet of older mainline, which was installed prior to lining becoming a standard practice. The lining provides a smooth, alkaline finish which inhibits internal corrosion, thereby improving water quality, and hydraulic capacity of the line and adding to the useful life of the asset. In addition, LADWP has replaced nearly 600,000 feet of distribution mainline in the past five years. These investments not only strengthen the Department's infrastructure and help maintain reliability but also improve water quality. However, as shown in Figure 16, as of 2015, over 1.5 million feet of water pipes remaining to be replaced are older than 100 years.

Figure 16: LADWP's Aging Pipeline



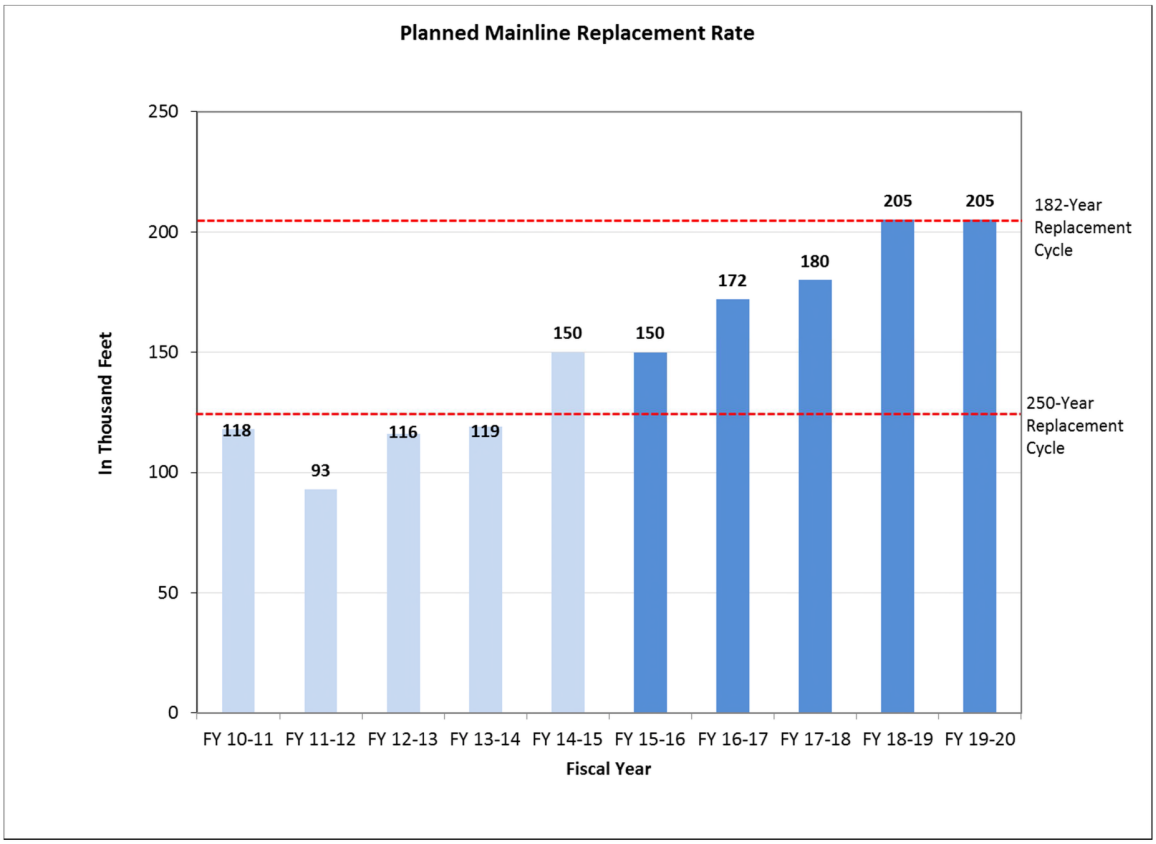
As can be seen in Figure 17 below, the bulk of the Department's mainline installation occurred after 1920; thus, an increasingly large proportion of installed mainlines will cross the critical 100-year mark in the coming years (much of this pipeline was not designed for service beyond 100 years). Therefore, the Department will need to further accelerate mainline replacement in order to mitigate the effects of this rapid aging and increased vulnerability over the long term.

Figure 17: Feet of Mainline by Installation Date and Replacement Cycle



The Department's mainline replacement rate is expected to increase from 150,000 feet per year to 205,000 feet per year by 2020. Currently, the 150,000-feet-a-year replacement rate still puts the system at a 250-year replacement cycle. An increase to 205,000 feet a year would decrease the replacement cycle to 182 years. While still high, reducing the replacement cycle to this level in conjunction with the Department's strategic replacement prioritization process should allow LADWP to continue the downward trend in blowouts and major leaks.

Figure 18: Planned Mainline Replacement Rate

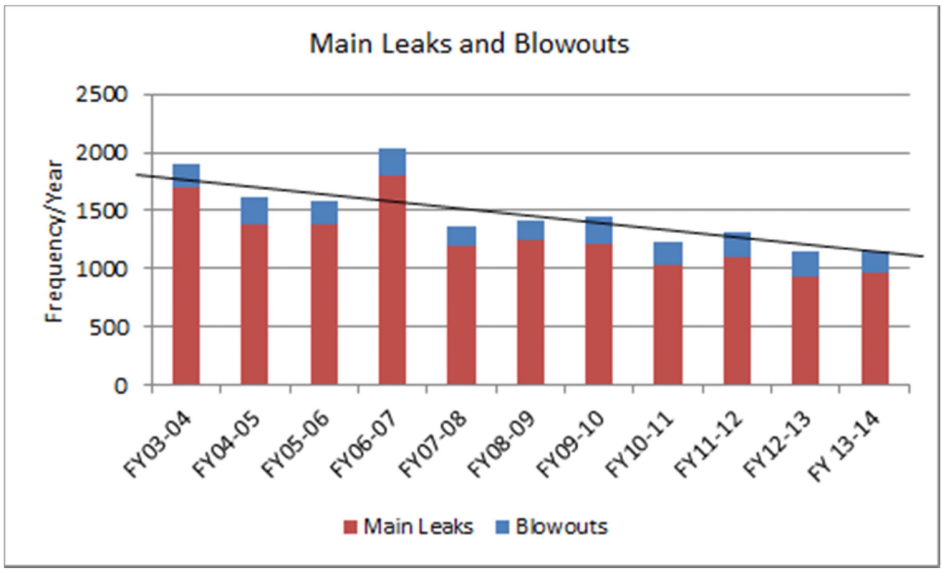


The Water Main Replacement Program was established to strategically replace high impact distribution mains that:

- Have high frequency of leaks;
- Have deteriorated due to external or internal corrosion;
- Restrict fire or domestic water supplies;
- Negatively impact water quality;
- Create conflicts with critical City public works improvement projects; and/or
- Are located in unstable soils.

The intended benefits of this program are to minimize customer service interruptions, potential property damage and main leaks. Other long-term benefits include reduced water main maintenance costs, improved water quality, reduction of water loss due to leakage and improved water flow for fire emergencies. Since LADWP has started replacing mainline, the rate of main leaks has decreased, as shown by Figure 19.

Figure 19: Trend in Annual Main Leaks and Blowouts



In addition, there are approximately 2.9 million feet of trunk lines Citywide. The Department plans to replace, test, repair and preserve portions of approximately 200,000 feet of moderate to high risk pipe over the next ten years. Trunk line replacements are typically multi-year projects.

Delaying action until the infrastructure ages further would risk reversing the positive trend in main leaks and blowouts. Infrastructure projects require long lead times as the Department develops sufficient capacity to undertake the proposed work (negotiate contracts, hire and train teams, secure permission, etc.).

In addition, credit rating agencies recognize the value of asset replacement programs. Moody's believes: "The condition of a utility's capital assets determines its ability to comply with environmental regulations and continue delivering adequate service with existing resources… Utilities that delay investing in their systems, replacing aging plant and equipment, and modernizing their facilities often find it more expensive to do so later. Further, systems whose facilities deteriorate often run afoul of environmental regulations."[11] Fitch Ratings' "…takes into account comprehensive plans to maintain existing facilities and replace aging or obsolete assets. Consequently, Fitch views trends of deferred maintenance as a credit risk."[12]

Current water loss data do not suggest that the Department has lower Water System reliability than its peers. The Department's water loss percentage, a metric commonly used by water utilities, compares favorably with other utilities across the country and is below the median for

[11] Moody's Investor Service, Rating Methodology, "US Municipal Utility Revenue Debt", December 15, 2014.

[12] Fitch Ratings Public Finance Revenue Criteria Report, "U.S. Water and Sewer Revenue Bond Rating Criteria", July 31, 2013.

water utilities in the western United States. Water loss is shown in Figure 20. However, water loss is not the only measurement of line breaks. In addition, water loss ratios are impacted by the points of measurement in the water system and type of water supply system, among other factors. Regardless, breaks impact water supply reliability and frequently result in property damage, in some cases significant.

Figure 20: Real Water Loss as Percent of Water Introduced to System[13]

	Top Quartile	Median	Bottom Quartile	Department Five-Year Average Water Loss
Utility Water Loss by Region (West United States)	0.4%	2.1%	6.5%	3.5%[14]
Utility Water Loss Nationally	1.0%	5.9%	9.5%	

3.3.3 Non-Pipeline Infrastructure Projects

Major non-pipeline infrastructure projects being undertaken by the Water System are outlined in this section.

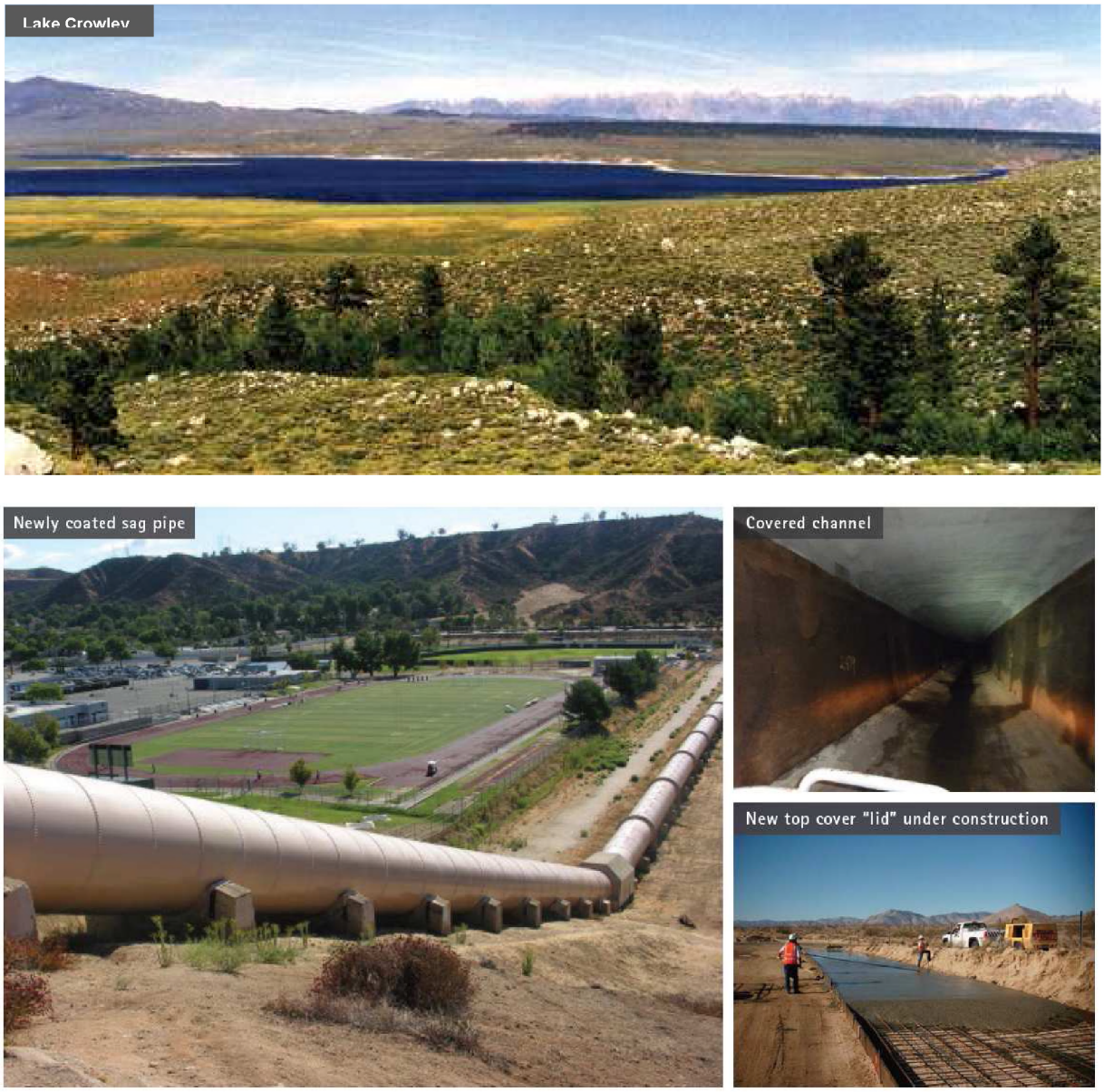
Aqueduct Projects

Built in 1913, the LAA consists of approximately 300 miles of tunnels, open channels, covered channels, and sag pipes that convey water from the Eastern Sierra and Owens Valley to Los Angeles.

[13] Source: 2013 AWWA Utility Benchmarking Report. For full text see: http://www.awwa.org/resources-tools/water-and-wastewater-utility-management/benchmarking.aspx

[14] Source: The Water Loss Audit and Component Analysis. For full text see: https://www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=OPLADWPCCB402320&RevisionSelectionMethod=LatestReleased

Figure 21: Los Angeles Aqueduct Images



Given that the LAA recently celebrated its centennial, the Department has plans to maintain operations through in-place refurbishment of the entire LAA system. Specific short-term projects planned are described in the WIP and outlined in Figure 22. These targets reflect the best available current information; however, targets will be monitored and adjusted as needed to reflect any changing priorities over the five-year proposed rate period.

Figure 22: Los Angeles Aqueduct Planned Refurbishment

Planned Project	Goals	Goals for FY 2014-15
Reline cracked concrete channel	7 miles within 3 years	2 miles
Recoat exterior of sag pipes	Completed 9.5 miles to date with 5 miles remaining	400 feet
Replace concrete lid on covered channels	3 miles per year (21 miles have been completed to date with 77 miles remaining)	15,000 feet
Re-drill and replace inoperable or less efficient groundwater wells	1-2 per year (currently 95 of 130 groundwater wells are inoperable)	1-2 wells
Replace and improve old and corroded water measuring stations	2-3 per year	2-3 stations
Construct cathodic protection stations	2 per year (14 stations out of 30 in total have been completed to date)	2 stations
Replace pipelines that bring creek supply to the LAA	1,000 feet per year	1,000 feet

Pump Station Projects

Under the Pump Station Refurbishment Program, the Department will purchase and install replacement equipment, make renovations and alterations at various existing pump stations as necessary, and replace damaged and obsolete equipment. This program will ensure that pump stations continue to operate efficiently and maintain reliability in the distribution system. The Department will also analyze pump-tank system infrastructure – identifying, planning and constructing improvements. The Department's goal is to replace approximately 12 pump and/or motor units per year for the proposed rate period. The goal stated in the Water Infrastructure Plan (WIP)[15] for FY 2014-15 is to replace 14 pumps and motors that are near or have exceeded their expected useful life.

[15] For full text see: https://www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=OPLADWPCCB421332&RevisionSelectionMethod=LatestReleased

Figure 23: Repaired Pump Station

Reservoir Improvements

The Department is planning improvements to the reliability and seismic safety of dams and other facilities through seismic stability evaluations including the realignment of sections of the LAA for risk mitigation.

Pressure Regulator and Relief Station Retrofits

Pressure regulating systems are critical to controlling water pressure and volume within the service area. There are 229 regulator stations and 98 relief stations, totaling 327 stations combined in the service area. LADWP's goal is to replace four to six pressure regulating stations per year through 2022.

Figure 24: Pressure Regulator Before and After Replacement

Corrosion Protection Anode Stations Replacements

There are approximately 20,000 corrosion protection anodes in LADWP's service area. These anodes protect the water distribution system by preventing external corrosion. LADWP seeks to replace 200 anodes annually through FY 2017-18. Replacement targets for FY 2018-19 through FY 2019-20 will be set at a later date as the Water System continues to analyze and balance the Water System's many infrastructure needs.

Water Tank Cleaning and Rehabilitation

There are over 100 in-City tanks and reservoirs in LADWP's service area. Steel tanks have a useful life of 60 years and concrete tanks have a useful life of 100 years. They are cleaned/ rehabilitated based on condition assessment. They are re-roofed based on a 20-year cycle and recoated on a 30-year cycle. Water tanks that are not cleaned and rehabilitated would corrode, which would result in poor quality water and eventual failure. During the five-year rate action period, the goal is to clean six water tanks per year.

Figure 25: Water Tank Before and After Cleaning

Large Valve Replacements

Large valves are needed for flow changes, operational changes, system isolation, or temporary pipe shutdowns. There are 2,668 large valves (16''-108'') in the system. Currently there are 43 valves identified for replacement, and the goal from FY 2014-15 to FY 2019-20 is to replace five valves a year. For the last seven years, LADWP has exceeded this target and replaced eight valves annually.

Small Meter Replacements

There are approximately 700,000 small meters (less than 3'') in LADWP's service area, and they typically have a 20-year replacement cycle. Timely meter replacements result in greater accuracy and confidence in billing. Currently, the goal is to replace 25,000 small meters annually; however, with the possibility of implementing more advanced metering technology, this number may increase in the future.

3.4 CREATING A SUSTAINABLE LOCAL WATER SUPPLY

3.4.1 Local Water Supply Summary

The Department is responsible for having sufficient water supply to meet the needs of its customers. Over the last century, LADWP has built and maintained a massive system that transports, treats, and delivers hundreds of millions of gallons of water to its customers in Los Angeles every day. The current water supply consists of the following sources:

- Local water supply;
  - Conservation
  - Recycled water
  - Groundwater
  - Stormwater
- The Los Angeles Aqueduct (from the Eastern Sierra Nevada Mountains); and
- MWD Purchased water (from Sacramento-San Joaquin Bay Delta and the Colorado River).

The locations of the various sources of water are illustrated in Figure 26.

Figure 26: Sources of Water[16]

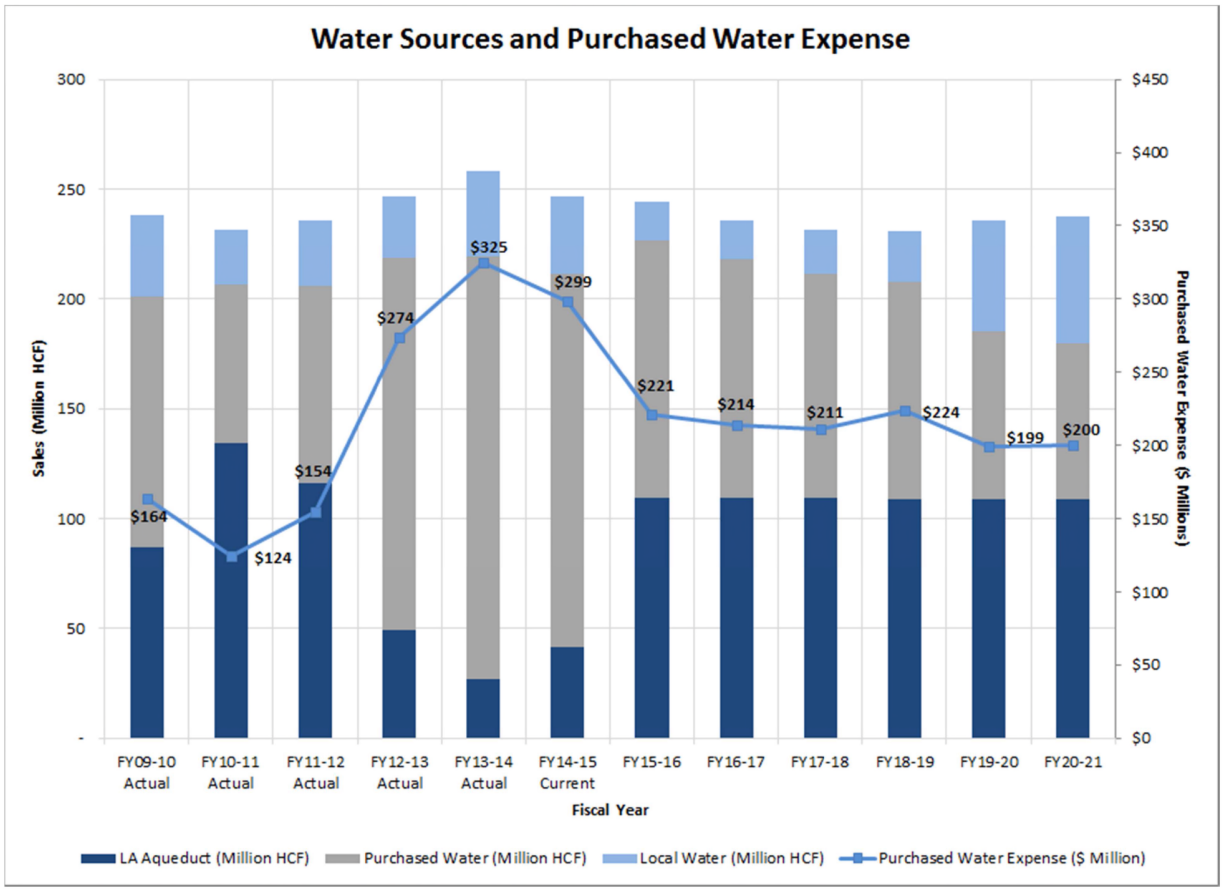
Water supplied from the LAA and from MWD is considered "imported," as it is obtained from outside LADWP's service area. Water is imported to satisfy demand that cannot be met with local supplies. These supplies, which come from hundreds of miles away, are increasingly expensive and at risk, limited by legal and environmental mandates and threatened by climate change.

To reduce reliance on expensive and at-risk imported water supplies, which will help comply with the Mayor's Executive Directive 5 ("Emergency Drought Response – Creating a Water Wise City"), LADWP is pursuing a multipronged sustainable local water supply initiative that includes stormwater capture, groundwater replenishment and remediation, water conservation, and recycled water.

Figure 27 shows the current and forecasted contributions of the various sources of water outlined above as well as the current and projected purchased water expense (projected values are based on normal precipitation).

[16] The State Water Project and the Colorado River Aqueduct represent sources of purchased water.

Figure 27: Water Sources and Purchased Water Expense



Water sources have varied significantly over time, as shown in Figure 27. This difference is largely driven by the variance in the Eastern Sierras snowpack.

The Department has conducted studies to assess the cost effectiveness of investments in sustainable local water supply and conservation over a 50-year time horizon and found that, in the long term, these investments will result in additional water security as well as lower water costs, even though currently some local sources may be more expensive.

Figure 28: Cost of Water Supply by Source (From 2010 Urban Water Management Plan[17]. Purchased Water Costs Reflect Current MWD Prices as of January 1, 2015)

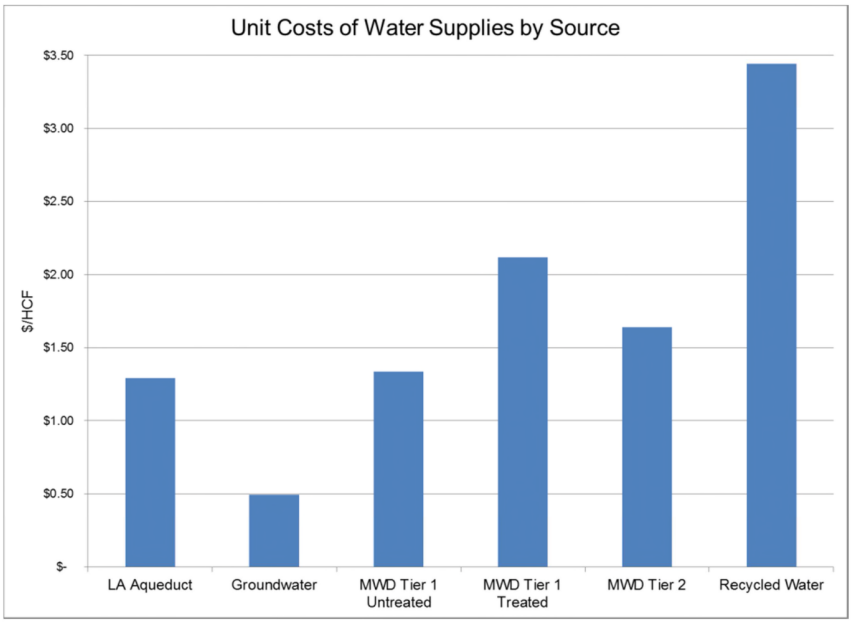
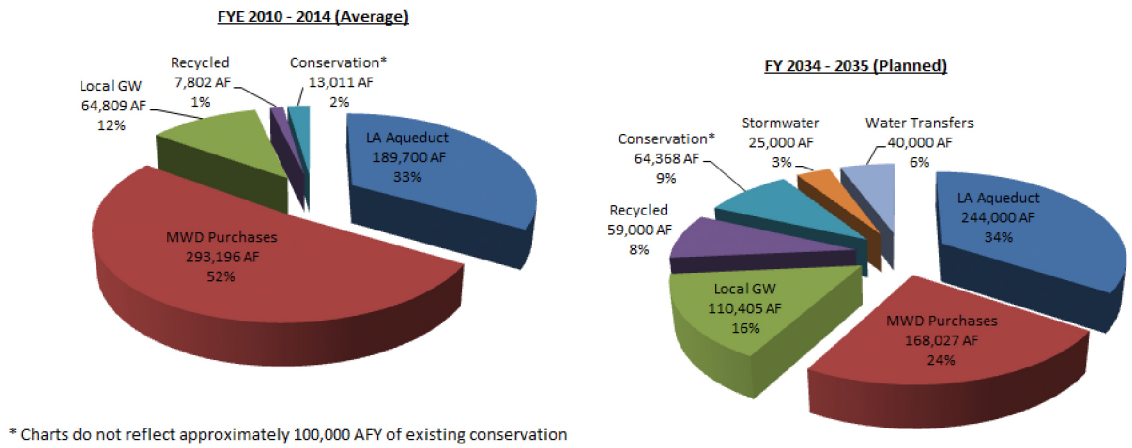


Figure 29 below depicts the expected breakdown of water from the various sources in FY 2034-35 given planned levels of investment. Water purchases are projected to decrease from 52% of the water supply to 24% of the total supply, largely due to increased water from the local sources discussed in this section. The projected breakdown of water supply in FY 2034-35 is from the 2010 Urban Water Management Plan (UWMP). The projected breakdown continues to be adjusted to reflect new developments, such as the Mayor's Executive Directive 5. Updates are currently under discussion and will be released as part of the 2015 Urban Water Management Plan.

[17] For full text see: https://www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=QOELLADWP005416&RevisionSelectionMethod=LatestReleased

Figure 29: Planned Shift in Water Supplies[18]



* Charts do not reflect approximately 100,000 AFY of existing conservation

The investments associated with each source of water supply are discussed in more detail below.

The Department is planning to spend a total of $1,418.5 million in local water supply programs discussed in this section over the next five years, as shown in Figure 30.

Figure 30: Summary of Local Water Supply Costs

($M)		Current	Proposed Rate Period						
		FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
Conservation	O&M	$16.5	$21.4	$21.8	$22.3	$12.8	$13.1	$91.4	*$13.3*
	Capital	$20.5	$37.5	$38.6	$38.8	$39.6	$40.3	$194.8	*$41.0*
	Total	**$37.0**	**$58.9**	**$60.4**	**$61.1**	**$52.4**	**$53.4**	**$286.2**	***$54.3***
Groundwater	O&M	$1.4	$2.3	$1.9	$1.8	$2.4	$2.1	$10.5	*$2.1*
	Capital	$32.5	$49.5	$50.9	$68.9	$103.0	$94.8	$367.1	*$388.0*
	Total	**$33.9**	**$51.8**	**$52.8**	**$70.7**	**$105.4**	**$96.9**	**$377.6**	***$390.1***
Recycled Water	O&M	$6.7	$5.9	$6.9	$6.6	$7.0	$6.5	$32.9	*$5.8*
	Capital	$49.7	$72.4	$75.3	$62.5	$83.6	$238.4	$532.2	*$243.9*
	Total	**$56.4**	**$78.3**	**$82.2**	**$69.1**	**$90.6**	**$244.9**	**$565.1**	***$249.7***
Stormwater Capture	O&M	$2.5	$1.9	$1.8	$2.1	$2.1	$2.3	$10.2	*$2.0*
	Capital	$26.4	$32.6	$31.0	$45.1	$35.6	$35.1	$179.4	*$35.9*

[18] The LAA water supply increases from FY 2010 - 14 to FY 2034 - 35 due to the fact that the earlier projection contained three "dry" years out of five. The FY 2034-35 projection was adjusted slightly downward to account for probable climatic change.

($M)		Current	Proposed Rate Period						
		FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
	Total	**$28.9**	**$34.5**	**$32.8**	**$47.2**	**$37.7**	**$37.4**	**$189.6**	***$37.9***
Total Local Water Supply	O&M	$27.1	$31.5	$32.4	$32.8	$24.3	$24.0	$145.0	*$23.2*
	Capital	$129.1	$192.0	$195.8	$215.3	$261.8	$408.6	$1,273.5	*$708.8*
	Total	**$156.2**	**$223.5**	**$228.2**	**$248.1**	**$286.1**	**$432.6**	**$1,418.5**	***$732.0***

The revenue requirement impact of the sustainable local water supply investments are shown in Figure 31.

Figure 31: Sustainable Local Water Supply Impact on Revenue Requirement and Rates

		YOY Increase						
		FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Average	*FY 2020-21*
Increase in Revenue Requirement ($M)	Conservation	-29.22	-1.97	-0.09	-0.70	1.73	-6.05	*2.27*
	Groundwater	3.25	3.35	4.53	6.78	6.24	4.83	*25.53*
	Stormwater	-0.65	1.66	2.72	1.80	2.15	1.54	*2.30*
	Recycled Water	-4.07	3.53	3.32	3.70	15.23	4.34	*15.87*
	Total	**-30.69**	**6.58**	**10.48**	**11.57**	**25.34**	**4.66**	***45.97***
Increase in System Average Retail Rate (Cents/HCF)	Conservation	-12.23	11.76	0.73	-0.62	1.02	0.13	*0.38*
	Groundwater	1.42	0.13	0.65	0.88	-0.37	0.54	*8.89*
	Stormwater	0.24	1.05	0.54	-0.54	0.11	0.18	*0.13*
	Recycled Water	-1.64	3.41	-0.07	-0.05	4.89	1.31	*0.66*
	Total	**-12.70**	**16.34**	**1.84**	**-0.34**	**5.65**	**2.16**	***10.07***
Increase in System Average Retail Rate (%)	Conservation	-2.49%	-0.10%	0.05%	-0.07%	0.11%	-0.50%	*0.17%*
	Groundwater	0.29%	0.31%	0.42%	0.54%	0.45%	0.40%	*1.85%*
	Stormwater	-0.05%	0.16%	0.26%	0.14%	0.15%	0.13%	*0.17%*
	Recycled Water	-0.33%	0.36%	0.32%	0.29%	1.10%	0.35%	*1.15%*
	Total	**-2.58%**	**0.74%**	**1.05%**	**0.91%**	**1.81%**	**0.38%**	***3.34%***

Together, sustainable local supply investments will be responsible for an average annual revenue requirement increase of $5 million and an average annual rate increase of 0.38%. These investments will all yield significant savings in the long term as they displace more expensive purchased water. The negative impact of conservation on the revenue requirement and rate is being driven by securitization of the capital expenses. As is evident from Figure 30,

conservation expenditures (particularly capital) will actually rise over the duration of the rate period.

3.4.2 Conservation Programs

Conservation is an important component of the local supply program because it is immediately cost effective - the cheapest water is water not used. LADWP has successfully implemented a balanced approach to water conservation with a combination of:

- Rebates;
- Incentive programs;
- Technical assistance;
- Outreach; and
- Partnership programs.

The majority of these programs are major recurring initiatives that have proven to produce reliable results. In most cases, the budgets have been established based on at least three fiscal years of experience and performance track records. Prior results have suggested a direct link between funding levels and usage reduction results.

The proposed level of spending on water conservation totals $286.2 million for the period FY 2015-16 to FY 2019-20, as outlined in Figure 32.

Figure 32: Conservation Budget FY 2015-16 to FY 2019-20

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M	$16.5	$21.4	$21.8	$22.3	$12.8	$13.1	$91.4	$13.3
Capital	$20.5	$37.5	$38.6	$38.8	$39.6	$40.3	$194.8	$41.0
Total	**$37.0**	**$58.9**	**$60.4**	**$61.1**	**$52.4**	**$53.4**	**$286.2**	**$54.3**

The specific conservation programs planned are as follows:

- SoCal Watersmart Commercial Rebate Incentive Program;
- Commercial California Friendly Landscape Incentive Program;
- City Parks Irrigation Efficiency Program;
- LADWP Facility Retrofits;
- Direct Install Partnerships;

- Technical Assistance Program (TAP);
- SoCal Watersmart Residential Rebate Incentive Program;
- Residential California Friendly Landscape Incentive Program;
- Water Conservation Outreach & Education; and
- Water Conservation Ordinances.

For descriptions of these programs, see Chapter 2 - Appendix B.

Note that the water conservation costs and savings do not include the proposed Owens Valley Master Plan which is discussed in more detail in Section 3.6.2.

Conservation program investments completed to-date have produced significant savings in purchased water costs. Many of the measures already implemented are long-term in nature, and will continue to produce savings in purchased water costs during (and beyond) the five-year window covered by the current proposed rates even if no new water conservation investments are made.

3.4.3 Groundwater Clean-up and Remediation

The City of Los Angeles owns water rights in San Fernando Basin (SFB), Central Basin, Sylmar Basin, Eagle Rock Basin, and West Coast Basin. The SFB is the largest of these resources, accounting for nearly 80% of all local groundwater pumped by LADWP. As of FY 2014-15, groundwater accounted for approximately 12% of LADWP's water supply.

Man-made pollution caused by industrial activities beginning in the 1940's has severely impaired the quality of the SFB groundwater, forcing closure of half of LADWP's production wells and significantly impacting the amount of local water supply. LADWP is removing the contamination from the groundwater to increase supply and for the betterment of the environment and the public. This effort is also critical to achieving the local supply plan; if the groundwater basins are not cleaned up, the recycled water and stormwater capture programs will not be viable (for additional information about these programs, see Section 3.4.4 and Section 3.4.5).

LADWP has recently completed a Groundwater System Improvement Study (GSIS) that identified additional groundwater remediation projects. LADWP will review the findings with the State Water Resources Control Board – Division of Drinking Water (SWRCB) and will work with the SWRCB to gain approval to start the design, permitting, and construction of two major groundwater treatment facilities. Over the next five years, the Water System will be investing heavily in groundwater decontamination and wells so that when projects come online by FY 2022-23, local groundwater will provide approximately 20% of LADWP supply. The financial

plan includes $377.6 million in spending on groundwater programs in the five-year period, as shown in Figure 33.

Figure 33: Groundwater Budget FY 2015-16 to FY 2019-20

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M	$1.4	$2.3	$1.9	$1.8	$2.4	$2.1	$10.5	*$2.1*
Capital	$32.5	$49.5	$50.9	$68.9	$103.0	$94.8	$367.1	*$388.0*
Total	**$33.9**	**$51.8**	**$52.8**	**$70.7**	**$105.4**	**$96.9**	**$377.6**	***$390.1***

The various groundwater sources are described below.

San Fernando Basin (SFB)

Major investments will be made to the SFB to continue to monitor water quality and remediate this major source of groundwater.

The SFB has been the source of approximately 82% of the groundwater supply over the five-year period from FY 2009-10 to FY 2013-14. The Department believes that, if additional effective mitigation and clean-up measures are not put in place, the various contaminants found in the SFB will ultimately present a threat to this important component of Los Angeles' drinking water supply. In fact, the Department predicts that, without water quality investments, most of the groundwater production in the SFB would be lost by 2018 due to upcoming changes to Federal/State regulations[19]. If all groundwater in the SFB were lost to contamination, more water would need to be purchased from the MWD.

Central Basin

The Central Basin has been the source of approximately 12.5% of the groundwater supply over the five-year period from FY 2009-10 to FY 2013-14. The Department has two sets of production wells at this basin, the Manhattan Wells and the 99th Street Well. The Manhattan Wells are approaching the end of their useful lives; therefore, the Department has plans to construct two new production wells to replace the old capacity.

Sylmar Basin

The Sylmar Basin has been the source of approximately 5.6% of the groundwater supply over the five-year period from FY 2009-10 to FY 2013-14. The basin is composed of four wells; one

[19] The Department expects future Federal/State regulations to prohibit blending of water from operating wells exceeding Maximum Contaminant Levels (MCLs). Currently, groundwater exceeding MCLs can be blended with water from other sources as long as the blended water meets all Federal and State water quality standards.

of these wells has been removed from service. The Sylmar Basin has experienced some water quality issues due to Trichloroethylene (TCE) contamination; however, the groundwater effluent has been managed such that it still meets quality standards and the factor limiting production is actually the deterioration of the pumping equipment. The Mission Wells Improvement Project should upgrade the pumping infrastructure and result in an increase of water production from the Sylmar Basin.

Eagle Rock Basin

The Eagle Rock Basin currently has no measurable safe yield. At the moment, the basin is being pumped by a third party that reimburses the Department for water pumped.

West Coast Basin

The City's wells in the West Coast Basin are contaminated and have been closed down since the 1980's, but the water rights in this basin might be exercised in the Central Basin under recent amendments made to the judgments for both basins.

3.4.4 Recycled Water

Recycled water is a sustainable, economically feasible, and environmentally sensitive way to augment the City's water supplies. Recycled water is highly treated wastewater that can be safely used for irrigation and industrial purposes, seawater intrusion prevention, and other environmental uses. In addition, recycled water can be used for groundwater replenishment (the process of recharging or refilling the groundwater basin with recycled water).

The proposed rates and financial plan include $565.1 million in spending on recycled water programs in the five-year period, as shown in Figure 34.

Figure 34: Recycled Water Budget FY 2015-16 to FY 2019-20

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M	$6.7	$5.9	$6.9	$6.6	$7.0	$6.5	$32.9	*$5.8*
Capital	$49.7	$72.4	$75.3	$62.5	$83.6	$238.4	$532.2	*$243.9*
Total	**$56.4**	**$78.3**	**$82.2**	**$69.1**	**$90.6**	**$244.9**	**$565.1**	***$249.7***

LADWP outlined specific goals to expand its recycled water supply in the 2010 Urban Water Management Plan (UWMP). In March 2012, LADWP published its Recycled Water Master Plan[20] (RWMP) to evaluate strategies to increase the delivery of recycled water from 6,428 AFY

[20] Source: Recycled Water Annual Report FY 2013-14

to 59,000 AFY for City-use by 2035. LADWP's stated recycled water use targets for the short to medium term are outlined in Figure 35.

Figure 35: Recycled Water Use (AFY)

	Actual AFY		Target AFY	
	FY 2009-10[21]	FY 2013-14[22]	FY 2018-19[23]	FY 2034-35[24]
Deliveries (Municipal and Industrial)	6,703	6,428	16,052	29,000
Groundwater Supply Replenishment	-	-	-	30,000
Subtotal	**6,703**	**6,428**	**16,052**	**59,000**
Environmental Uses	25,008	25,600	25,740	26,990
Seawater Intrusion Barrier	3,000	3,986	7,396	3,000
Grand Total	**31,711**	**35,924**	**49,188**	**88,990**

LADWP's ability to meet the above targets is dependent on the City's wastewater treatment infrastructure. In addition, the State Water Resources Control Board requires that recycled water be delivered in purple pipelines, separate and distinct from drinking water. LADWP's existing distribution system has 56 miles of purple pipelines. LADWP's growth targets are based on identifying potential clients that can be served using the existing distribution infrastructure.

Groundwater conveyance and replenishment is also an important part of the recycled water strategy. Groundwater replenishment is the process of recharging or refilling a groundwater basin so that groundwater supplies can eventually be withdrawn, treated, and used as a potable water supply. The proposed Groundwater Replenishment (GWR) Project will provide up to 30,000 AFY of purified recycled water to replenish the San Fernando Basin (SFB). Using state-of-the-art technology, the groundwater replenishment project will treat recycled water from a reclamation plant to near-distilled water quality using the New Advanced Water Purification Facilities. This purified recycled water has been shown through pilot testing to meet or exceed State and Federal drinking water standards. The purified recycled water would then be conveyed to spreading grounds, from which it would percolate into natural underground aquifers and become part of the groundwater supply. After the required residence time within the aquifer, the water could be extracted or pumped from the existing groundwater basins for treatment and distribution to LADWP drinking water customers. The entire process is depicted in Figure 36.

For full text see: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-water/a-w-recycledwater/a-w-rw-annualreport

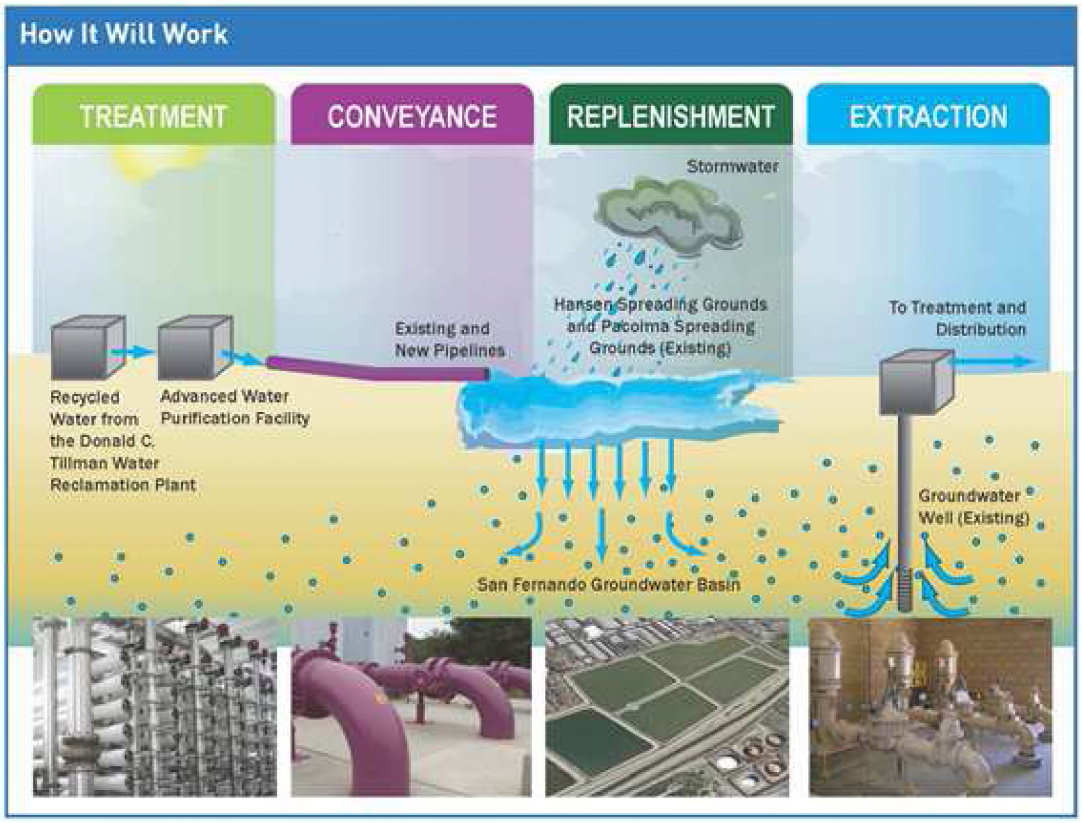
[21] Source: 2010 UWMP.

[22] Source: Recycled Water Annual Report FY 2013-14.

[23] Source: Recycled Water Annual Report FY 2013-14.

[24] Source: 2010 UWMP.

Figure 36: Recycled Water Conveyance and Replenishment



The GWR project is in the planning stage and the environmental analysis is being performed. The project is expected to be completed and operational by 2022.

3.4.5 Stormwater Capture

Stormwater runoff is an underutilized resource. On average, 120,000 AFY (more than 39 billion gallons a year) of stormwater runoff leaves the San Fernando Valley through the Los Angeles River. To put this in perspective, LADWP's annual water sales in FY 2013-14 totaled 179 billion gallons.

Local groundwater aquifers replenished by stormwater are receiving less recharge with every passing year due to increased urbanization. The majority of stormwater runoff is directed to storm drains and ultimately discharged to the Pacific Ocean via the City's rivers and tributaries; this unused stormwater carries pollutants harmful to sensitive marine ecosystems.

Today, it is estimated that an average of 27,000 AFY (more than 8.8 billion gallons) of stormwater is captured each year at centralized spreading grounds. Existing stormwater capture facilities in Los Angeles do not have sufficient capacity to capture all potential runoff in years with high levels of precipitation. The Department plans to continue investing in stormwater

projects, especially enhancements to existing spreading grounds and basins. Within the next five years, the Department will be implementing centralized projects, outlined in Figure 37, which will provide an additional 30,498 AFY of groundwater recharge. For program descriptions see Chapter 3 - Appendix A.

Figure 37: Summary of Major Centralized Stormwater Capture Projects

Program Name	Scheduled	Projected Water Capture
Big Tujunga Dam Sediment Removal Project	Construction expected to begin in 2016	2,700 AFY
Pacoima Dam Sediment Removal Project	Construction expected to begin in 2016	3,200 AFY
Tujunga Spreading Grounds Enhancement Project	Construction expected to begin in 2015	8,000 AFY
Lopez Spreading Grounds Upgrade	Construction expected to begin in 2016	500 AFY
Branford Spreading Basin Upgrade	Construction expected to begin in 2017	590 AFY
Pacoima Spreading Grounds Upgrade	Construction expected to begin in 2016	10,500 AFY
Valley Generating Station Stormwater Capture Project	Construction expected to begin in 2016	118 AFY
Whitnall Highway Power Line Easement Stormwater Capture Project	Construction expected to begin in 2016	110 FY
Rory M. Shaw Wetlands Park Project (Strathern Pit)	Construction expected to begin in 2016	590 AFY
Bull Creek Stormwater Capture Project	Construction expected to begin in 2018	1,500 AFY
Canterbury Power Line Easement Stormwater Capture Project	Construction expected to begin in 2018	1,300 AFY
Strathern Park Infiltration System Project	Construction expected to begin in 2018	750 AFY
Old Pacoima Wash Stormwater Capture Project	Construction expected to begin in 2018	500 AFY
San Fernando Road Stormwater Capture Project	Construction expected to begin in 2018	140 AFY
	Total	**30,498 AFY**

In the next five years, distributed projects (generally smaller-scale and localized projects), cumulatively providing an estimated 458 AFY of increased groundwater recharge, are expected to be implemented. Figure 38 provides a summary of these future projects.

Figure 38: Summary of Major Distributed Stormwater Capture Projects

Program Name	Scheduled	Projected Water Capture
Laurel Canyon Boulevard Green Street Stormwater Infiltration Project	Construction expected to begin in 2015	40 AFY
Burbank Boulevard Stormwater Capture Project	Construction expected to begin in 2015	53 AFY
Sun Valley Economic Development Administration Public Improvement Project	Construction expected to begin in 2015	93 AFY
Arundo Donax Removal Project	Construction expected to begin in 2015	20 AFY
LAUSD Conserving for Our Kids Program	Project is in planning phases	55 AFY
Victory-Encino Stormwater Infiltration Project	Construction expected to begin in 2016.	25 AFY
Victory-Goodland Median Stormwater Capture Project	Construction expected to begin in 2018.	25 AFY
Glenoaks-Nettleton Stormwater Infiltration Project	Construction expected to begin in 2016.	37 AFY
Van Nuys Blvd Median Stormwater Capture Project	Construction expected to begin in 2018.	35 AFY
Glenoaks-Filmore Stormwater Capture Project	Construction expected to begin in 2018.	75 AFY
	Total	**458 AFY**

The financial plan includes $189.6 million in spending on stormwater capture programs over the next five years, as shown in Figure 39. The Department has secured grant funding that will cover some of the costs associated with these programs. In addition, many of these programs are also being undertaken in conjunction with partners, such as the L.A. Department of Sanitation, that own these facilities. Any spending on a facility owned by an external partner is categorized as O&M.

Figure 39: Stormwater Capture Budget FY 2015-16 to FY 2019-20

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M	$2.5	$1.9	$1.8	$2.1	$2.1	$2.3	$10.2	*$2.0*
Capital	$26.4	$32.6	$31.0	$45.1	$35.6	$35.1	$179.4	*$35.9*
Total	**$28.9**	**$34.5**	**$32.8**	**$47.2**	**$37.7**	**$37.4**	**$189.6**	***$37.9***

Given the importance of stormwater capture for local supply, LADWP is finalizing the stormwater master planning process. The Stormwater Capture Master Plan will outline LADWP's strategies to implement stormwater and watershed management programs in Los Angeles to contribute to more sustainable local water supplies. Its intended purpose is to be a guiding document for policymakers to consider while making decisions about programs and policies that impact the City's water resources. The Master Plan will be finalized by mid-2015 and presented to the Board for adoption and implementation.

3.5 PURCHASED WATER

There is currently insufficient water supply from the LAA and local sources to meet the needs of the citizens of Los Angeles. In an average precipitation year, about one-half of customers' demand for water is met by purchases from the MWD. This water is delivered hundreds of miles both through the State Water Project from northern California (California Aqueduct) and from the Colorado River (Colorado River Aqueduct).

The price of purchased water from MWD has risen significantly in the past and is expected to continue to increase steadily. As shown in Figure 40, between calendar year 2011 and 2015, the price of Tier 1 untreated water from MWD has increased at a Compound Annual Growth Rate (CAGR)[25] of 3.76% and the price of MWD Tier 1 treated water has increased at a CAGR of 5.52%.

Figure 40: Actual MWD Purchased Water Prices by Calendar Year

$/HCF	2010	2011	2012	2013	2014	2015	CAGR
Tier 1 Untreated	$ 1.11	$ 1.21	$ 1.29	$ 1.36	$ 1.36	$ 1.34	
Change		+8.88%	+6.26%	+5.89%	+0.00%	-1.85%	+3.76%
Tier 1 Treated	$ 1.61	$ 1.71	$ 1.82	$ 1.94	$ 2.04	$ 2.12	
Change		+6.13%	+6.72%	+6.68%	+5.08%	+5.15%	+5.66%

As shown in Figure 41, between calendar year 2015 and 2020, the price of Tier 1 untreated/treated water from MWD is expected to increase at a CAGR of 3.31%. The increase in prices is being driven by investments that MWD has made as well as rising O&M costs. The implementation of the Bay Delta Conservation Plan (BDCP) discussed in Section 3.5.1 will only further increase these costs in the future.

Figure 41: Projected MWD Purchased Water Prices by Calendar Year

$/HCF	2015	2016	2017	2018	2019	2020	CAGR

[25] The CAGR represents the annual rate at which the price would grow if it grew at a steady rate over the five-year period.

Tier 1 Untreated	$ 1.34	$ 1.36	$ 1.40	$ 1.45	1.50	1.57	
Change		+2.06%	+3.00%	+3.00%	+3.50%	+5.00%	+3.31%
Tier 1 Treated	$ 2.12	$ 2.16	$ 2.23	$ 2.29	$ 2.37	$ 2.49	
Change		+2.06%	+3.00%	+3.00%	+3.50%	+5.00%	+3.31%

As shown in Figure 42, for the period of FY 2015-16 through FY 2019-20, it is estimated that the Department will spend $971.1 million dollars on purchased water expenses, based on returning to normal precipitation conditions. These costs are all categorized as O&M and, therefore, have a direct impact on rates.

Figure 42: Purchased Water Expenses FY 2014-15 to FY 2019-20

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M (Total)	**$298.0**	**$209.3**	**$198.7**	**$189.4**	**$198.0**	**$175.7**	**$971.1**	***$172.2***

If dry-conditions persist, the total spend on purchased water for the next five years could increase to $1,366.4 million.

Figure 43: Purchased Water Expenses FY 2014-15 to FY 2019-20 (Assuming Four Dry Years out of the Five-Year Period)

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M (Total)	**$298.0**	**$268.1**	**$328.1**	**$301.5**	**$292.7**	**$176.0**	**$1,366.4**	***$172.2***

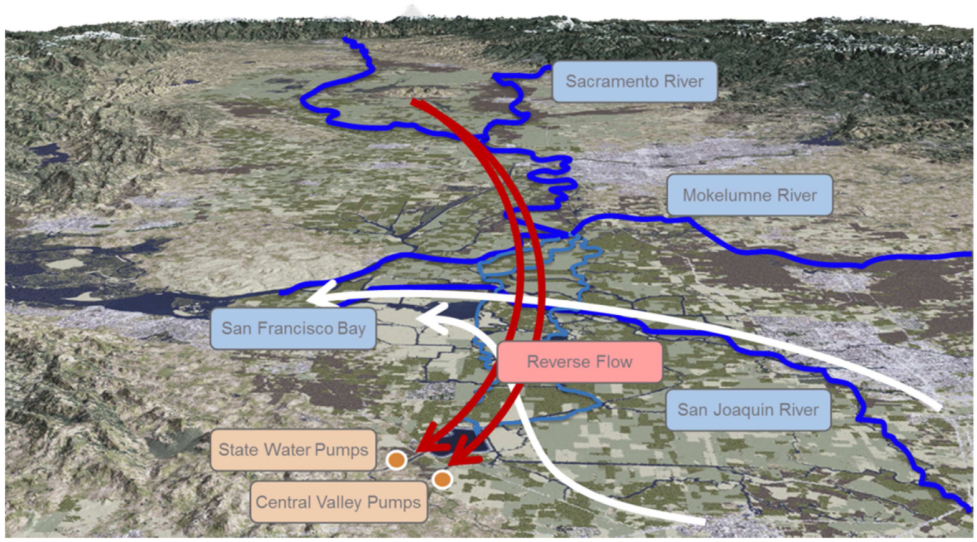
3.5.1 The Bay Delta Conservation Plan and the Increasing Need for Development of Local Supply and Water Conservation

The Sacramento-San Joaquin Delta is currently a major source of LADWP's water supply; during 2008-2012 LADWP received 44% of its water through MWD purchases that flowed through the Delta. The Delta is also one of the largest estuaries on the West Coast and is home to a variety of wildlife including over 750 different plant, bird, animal, and fish species. However, there is increasing pressure on the water supply from this source.

Currently, water is pumped from the Sacramento River southward, through the Delta to other pumps that then carry the water to regions south of the Delta (through the California Aqueduct or

other conveyance facilities). Figure 44 shows a diagram of major water flows through the area. This pumping of water has impacted the Delta ecosystem in irreversible ways. Fish populations have been declining, outdated infrastructure may not withstand seismic activity, and sea level rising bring risks of flooding.

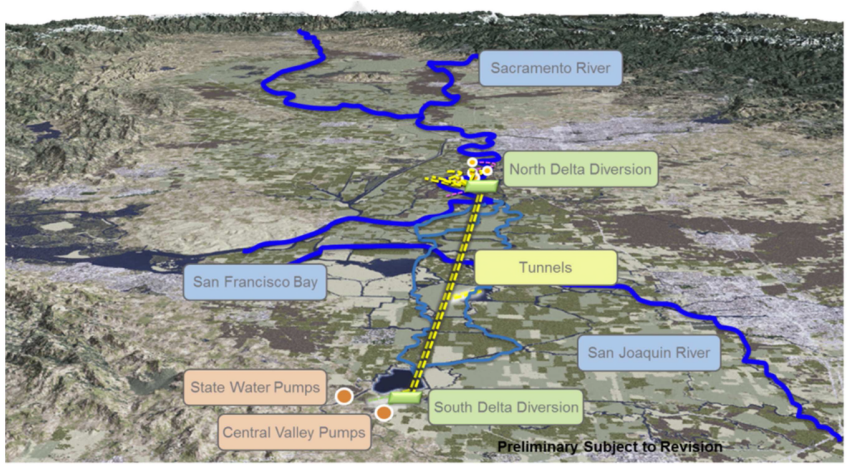
Figure 44: Water Flows Through the Bay Delta



The use of Delta water supplies has been on an unsustainable path, both for wildlife and future water supply, leading to much concern over its current state from environmental, water quality, and water scarcity perspectives.

To alleviate the stress on the Bay Delta habitats, stakeholders such as the state of California, National Oceanic Atmospheric Administration (NOAA Fisheries, and US Secretary of the Interior, have proposed the Bay Delta Conservation Plan (BDCP). This plan includes construction of a conveyance that would divert water under the Bay Delta area to avoid pumping through the Delta, as well as a component for eco-restoration, as shown in Figure 45.

Figure 45: Proposed Plan for Tunnels Under the Bay Delta



The costs for this project are significant, as summarized in Figure 46. The BDCP will affect LADWP because it will increase the cost of purchased water significantly, as MWD would be responsible for about 25% of the State and Federal contractor's share (roughly $6 billion over the next 50 years). These costs would then be passed through to LADWP (and other MWD customers) through higher prices of purchased water each year.

Figure 46: Total Costs (50 years) for the Bay Delta Conservation Plan ($B)

Improvements	Capital ($B)	O&M ($B)	Funding Source
Conveyance	$14.5	$1.5	Water Contractors
Eco-restoration & other stressors	$5.2	$3.3	Federal/State/Water Contractors/Other
Total Capital/O&M	$19.7	$4.8	
Total BDCP	**$24.5**		

Therefore, LADWP investments in conservation and local supply as described above are necessary to reduce dependency on more expensive imported water supplies and mitigate the risk of accelerating costs of purchased water.

The project plan and environmental impact study/environmental impact report are currently being revised. The plan was released for public comment in early 2015. If the BDCP is not adopted, there are still major implications for LADWP water supply. Environmental degradation would continue, and the pumps may be restricted due to environmental sensitivities. In addition, if there was a major levee failure, LADWP may experience disruption in water deliveries for up to

three years, which could result in a total revenue loss to Los Angeles of $240 billion, according to the Los Angeles Economic Development Committee[26].

3.6 EASTERN SIERRA ENVIRONMENTAL COMPLIANCE AND OWENS VALLEY DUST MITIGATION

LADWP continues its programs to comply with its responsibilities in the Eastern Sierra Valley and Owens Valley. Costs for this program have been a large part of LADWP's overall revenue requirement, and LADWP has expended many resources on these efforts, including the diversion of valuable drinking water.

Currently, the Department is providing approximately 121,000 AFY of water for Eastern Sierra Environmental Compliance and Owens Valley Dust Mitigation. The various uses of LAA water are summarized in Figure 47.

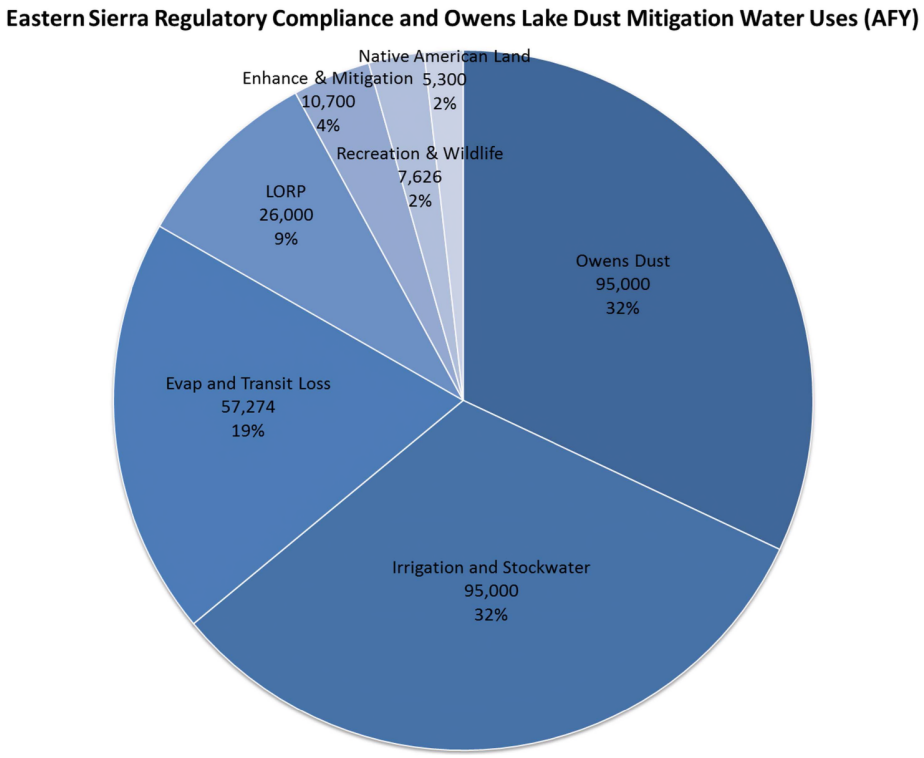
Figure 47: Eastern Sierra Environmental Compliance and Owens Valley Dust Mitigation Water Uses

Use	Description
Owens Valley Dust Mitigation	Control measures such as flooding and managed vegetation to control windblown dust
Evaporation and Transit Loss	Water flowing from the LAA will inevitably experience evaporation and transit loss during transportation
Lower Owens River Project (LORP)	Diversion of water restores 62 miles of land along the Lower Owens River and creates a warm water fishery, which LADWP is required to monitor
Irrigation and Stockwater	LADWP has entered agreements to provide water for irrigation purposes along the LAA
Recreation and Wildlife	Improvement of natural habitats and recreational land
Enhancement and Mitigation	Additional enhancement and environmental hazard mitigation measures
Native Land	LADWP has entered agreements to provide water for Native lands

The use of the water is summarized in Figure 48. The amount of water used for LORP and the enhancement and mitigation projects is in addition to the releases that provide environmental benefits in the Mono Basin and Owens Lake. These environmental enhancements have resulted in reducing the amount of water delivered to Los Angeles through the LAA by almost half.

[26] Reference: LAEDC, 2012; "Total Regional Economic Losses from Water Supply Disruptions to the Los Angeles County Economy," 54 pages, November 29.

Figure 48: Projected Eastern Sierra Regulatory Compliance and Owens Lake Dust Mitigation, based on average year (AFY) [27]



Currently, the financial plan and proposed rates reflect $473.1 million in capital and O&M for LADWP's responsibilities in the Eastern Sierra, as outlined in Figure 49.

Figure 49: Eastern Sierra Regulatory Compliance Budget FY 2015-16 to FY 2019-20

($M)	Current	Proposed Rate Period						
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Five-Year Total	*FY 2020-21*
O&M	$32.3	$31.0	$34.2	$34.9	$35.9	$36.2	$172.2	*$36.4*
Capital	-	$73.3	$30.8	$66.3	$62.1	$68.4	$300.9	*$65.1*
Total	**$32.3**	**$104.3**	**$65.0**	**$101.2**	**$98.0**	**$104.6**	**$473.1**	***$65.1***
Purchased Water Equivalent[28]	$71.8	$70.4	$71.9	$74.0	$76.3	$78.9	$371.5	$82.9

[27] Total amounts and proportion may change depending on wet or dry year conditions.

[28] Based on cost of Tier 1 Untreated MWD water (consistent with current MWD water usage conditions). This amount is included in the overall cost of purchased water included in Section 3.5.

These costs will be responsible for an average annual revenue requirement increase of $4 million but on average will have no impact on the rate.

Figure 50: Eastern Sierra Regulatory Compliance and Owens Lake Dust Mitigation Summary Impact on Revenue Requirement and Rates

	YOY Increase						
	FY 2015-16	**FY 2016-17**	**FY 2017-18**	**FY 2018-19**	**FY 2019-20**	**Five-Year Average**	***FY 2020-21***
Increase in Revenue Requirement ($M)	2	4	3	5	4	4	*5*
Increase in System Average Retail Rate (cents/HCF)	1.33	1.05	-0.38	0.10	-0.51	0.32	*0.49*
Increase in System Average Retail Rate (%)	**0.27%**	**0.48%**	**0.38%**	**0.37%**	**0.27%**	**0.35%**	***0.33%***

3.6.1 Owens Valley Dust Mitigation

Historically, the Owens River was the main source of water for Owens Lake. Diversion of water from the river, first by farmers in the Owens Valley and then by the City of Los Angeles, resulted in the lake drying up completely by the late 1920's. The exposed lakebed became a significant source of windblown dust resulting in the United States Environmental Protection Agency (EPA) classifying the southern Owens Valley as a serious non-attainment area for particulates (dust) in 1991. The EPA required the Great Basin Unified Air Pollution Control District (GBUAPCD or the District) to prepare a State Implementation Plan (SIP) to bring the region into compliance with Federal air quality standards by 2006. Since 2001, the Department has diverted water from the LAA to the lakebed as part of the Owens Lake Dust Mitigation Program.

The completed phases of the Owens Lake Dust Mitigation Program are summarized in Figure 51. The costs reflect construction contract amounts only.

Figure 51: Owens Lake Dust Mitigation Plan – Construction Contract Amounts

Phase	Description	Date of Order	Cost ($M) [29]
Phase 1 North	13.5 sq. miles Shallow Flooding	1998	$74.5
Phase 1 South	0.57 sq. miles Shallow Flooding 3.7 sq. miles Managed Vegetation	1998	$56.3
Phase 2 South	1.33 sq. miles of Shallow Flooding	1998	$15.1
Phase 3 South	Infrastructure Project	1998	$33.6
Phase 4	3.7 sq. miles Shallow Flooding	1998/2003	$22.3
Phase 5	11.2 sq. miles of Shallow Flooding (includes reconstruction of 4.5 sq. miles) 0.14 sq. miles of Gravel Blanket	2003	$99.7
Phase 7[30]	9.2 sq. miles Shallow Flooding 0.5 sq. miles Channel Area 3.5 sq. miles yet to be determined	Nov. 2006	$119.0
Phase 7a	3 sq. miles of new dust control plus 3 sq. miles of hybrid dust control (total 6 sq. miles)	March 2011	$160.0
Phase 8	2.03 sq. miles of 4-in Gravel Blanket	2010	$60.0
		Total	**$640.5**

In addition, $308.5 million has been spent on purchased water to replace the water diverted to Owens Lake since 2002.

3.6.2 Owens Lake Stipulated Judgment

The Department's efforts in Owens Lake have eliminated more than 90% of the excess blowing dust. However, this success has come at a high cost to Angelenos. LADWP allocates about 95,000 AF of water to Owens Lake annually and has spent $1.3 billion since 2000 to control dust at Owens Lake. It has been estimated that nearly two months out of every Los Angeles ratepayer's annual water bill is spent on Owens Lake dust mitigation.

The Department recognized that using drinking water for dust mitigation practices is unsustainable and has looked for long-term solutions to dust mitigation in Owens Valley that would reduce the need for water diversion without subjecting it to additional litigation.

[29] These costs reflect only construction contract amounts. They do not include O&M costs or purchased water costs (for the equivalent amount of water diverted for mitigation and enhancement projects).

[30] There is no Phase 6.

On November 14, 2014 the City of Los Angeles and the District announced that they had reached an historic agreement over the implementation of dust control measures on Owens Lake (Stipulated Judgment). As part of the Stipulated Judgment, LADWP has agreed to:

- Analyze the environmental impacts under the California Environmental Quality Act and prepare the necessary environmental documents for implementation of the additional 3.62 square miles of dust mitigation measured on Owens Lake playa in accordance with the District's 2011 and 2012 Supplemental Control Requirements Determinations (SCRDs). The environmental impact analysis and associated documents(s) must be certified by LADWP on or before July 1, 2015;
- Construct the additional 3.62 square miles of dust mitigation measures on Owens Lake playa by December 31, 2017. Upon completion of this work, LADWP will have mitigated dust emissions from approximately 48.6 square miles of the Owens Lake playa;
- Construct up to an extra 4.8 square miles of dust mitigation measures on Owens Lake playa if so ordered, in whole or in part, by the District. Such order(s) may not be issued until after January 1, 2016. Upon completion of this extra work, LADWP will have mitigated dust emissions from approximately 53.4 square miles of Owens Lake; and
- Withdraw outstanding appeals and complaints associated with the District's 2011, 2012, 2013, and 2014 SCRDs.

The District has in turn agreed to the following:

- District will not order LADWP to mitigate dust emissions from Owens Lake playa beyond the 53.4 square miles;
- District will grant approval of the Tillage with Best Available Control Measures (BACM)[31] Backup (TwB2) as a variation of Shallow Flooding Dust Control Measure (DCM);
- LADWP may transition up to 3.0 square miles of any Dust Control Areas (DCA) per dust season in lieu of 1.5 square miles as previously permitted in the 2008 Owens Valley PM10 Planning Area Demonstration State Implementation Plan (2008 SIP);
- Development of Dynamic Water Management to assist LADWP to further reduce the use of water on Owens Lake playa;
- Support LADWP in securing the necessary permits, leases, and approvals from oversight agencies; and
- Establishment of Owens Lake Scientific Advisory Panel to evaluate, assess, and provide ongoing advice on the reduction of airborne dust in the Owens Valley through research, development, and implementation of waterless and low-water use BACMs.

[31] Currently Shallow Flooding, Gravel Cover and Managed DCMs are the only approved BACMs

Effectively, the Stipulated Judgment will allow LADWP to use waterless dust control methods, including tillage, at Owens Lake, resulting in potentially significant water and monetary savings. The Judgment also provides Los Angeles with the certainty of knowing the full extent of its liability for dust mitigation at Owens Lake.

Figure 52 summarizes the estimated costs associated with the Stipulated Agreement.

Figure 52: Estimated Cost of Stipulated Agreement Compliance

Project	Costs ($M)
3.62 square miles of dust mitigation	$200.0
4.8 square miles of DCM	$218.5
12.0 – 18.0 square miles of conversion to TwB2	$10.0 - $18.0
Total	**$428.5 - $436.5**

It is estimated that, in aggregate, the Stipulated Judgment will save LADWP approximately $1,574.9 million in design and construction costs. In addition, once LADWP finishes converting the shallow flooding to TwB2, it will save between $17.9 million and $26.8 million a year in purchased water costs.

3.7 ASSUMPTIONS AND RISKS ASSOCIATED WITH THE PROPOSED PLAN – WHY THE PROPOSED RATE PLAN IS OPTIMAL

For the proposed rate action, LADWP has based future financial plans on certain assumptions. However, as is the case with most assumptions, there is always the possibility that these assumptions may change due to unforeseen and/or external events that cannot be predicted at this time. **Error! Reference source not found.** provides some of the major assumptions and potential risks.

Figure 53: Assumptions and Risks Associated with the Proposed Plan

Assumption	Description	Risk/Implication
Conservation	The Mayor's ED-5 has set an aggressive goal of 20% water usage reduction per capita by 2017.	If actual consumption is different from projections in the financial plan, the proposed decoupling mechanism will ensure LADWP receives adequate revenue to cover its fixed costs and customers will not overpay.
Hydrology	Assumes normal hydrology.	California may not return to normal hydrology, and it is likely FY 2015-16, the first year of these proposed rates, could be dryer than usual. This situation could require more purchased water, causing rates to increase. However, the pass-through nature of the proposed Water Supply Cost Adjustment factor will ensure cost recovery for the higher amount of purchased water and help ensure adequate supply for customers.
Financial Market Conditions	Assumes current market conditions with low steady inflation, returns on investment and bond rating.	If market conditions change, LADWP's proposed decoupled rate structure will ensure adequate cost recovery in the case of higher borrowing costs and eliminate over-collection if market conditions become more favorable.
Securitization	Assumes LADWP has access to this financing mechanism.	Securitization is a cheaper mechanism to finance debt. If securitization were not possible, LADWP's strong financial position should provide access to traditional borrowing sources, although at a slightly higher debt service cost. LADWP's decoupled rate structure provides the ability to recover the higher borrowing costs, if required.

3.8 ANALYSIS OF ALTERNATIVES

Chapter 2 highlights major actions that LADWP has taken to reduce the need for interim rate actions up until this point. However, given the nature of the necessary projects described in this section as well as other obligations (contractual obligations for wages, benefits and pensions, and the impact of inflation), the Department is at a point where a rate increase is required to finance important water quality, infrastructure, local water supply and Owens Valley programs which benefit all of Los Angeles in a manner that maintains a healthy financial standing for the organization.

The proposed rate action allows LADWP to meet its objectives and obligations while continuing to maintain competitive rates relative to peer utilities. LADWP believes that these rates strike the optimal balance between planning for a sustainable and secure water supply, providing reliable service, continuing to meet regulatory requirements and maintaining reasonable rates.

In order to understand how a delayed rate action would impact operations, LADWP has developed a series of sensitivity analyses while working with the Ratepayer Advocate. Figure 54 provides a summary of the different scenarios. More detail of each scenario can be found in Chapter 3 – Appendix B.

Figure 54: Financial Planning Stress Test Scenario Results

Cumulative Retail Rates Increase Difference		Five-Year Average Rate Impact	Other Implications
Case Number 33 (Base Case) Cumulative Average System Retail Rate Increase ($/HCF)		4.96%	
Case	**Brief Description**		
44	Defer Rate Increase by one year with securitization and no O&M cuts	5.68%	• Additional borrowing to maintain the minimum operating cash • Deterioration of Debt Service Ratio from for FY 2015-16 • Failure to meet additional bond test in FY 2016-17 will mean that the Department cannot issue parity debt and must issue subordinate debt at much higher interest costs.
45	Defer Rate Increase by one year with securitization and O&M cuts to meet financial metrics	5.46%	• Difficult to achieve. May result in deterioration of operations / infrastructure
46	No rate increase for five years with no O&M cuts	-1.73%	• Additional borrowing to maintain the minimum operating cash • Deterioration of Debt Service Ratio • Failure to meet additional bond test in FY 2016-17 will mean that the Department cannot issue parity debt and must issue subordinate debt at much higher interest costs.
47	No rate increase for five years with O&M cuts to meet financial metrics	-1.73%	• Difficult to achieve. May result in deterioration of operations / infrastructure
48	One-notch downgrade in current market condition	4.95%	• Deterioration of financial metrics
49	One-notch downgrade in worst market condition (high interest environment)	5.01%	• Deterioration of financial metrics • Interest rate increases
50	Securitization delay by one year for local water supply, conservation, and water quality	5.00%	• Additional borrowing will be needed to maintain the minimum operating cash • Ratepayers will pay increased interest expense of $16M on average annually over the next five years.
51	Purchased water – Normal case (normal conservation, average hydrology for four years)	3.43%	• Impacts mitigated by sustainable local water supply investments
52	Purchased water – Best case (20% reduction in residential use, wet hydrology for four years)	5.05%	• Impacts mitigated by sustainable local water supply investments

Cumulative Retail Rates Increase Difference		Five-Year Average Rate Impact	Other Implications
53	Purchased water – Worst case (20% reduction in residential use, dry hydrology for four years)	5.34%	• Impacts mitigated by sustainable local water supply investments
54	Purchased Water – Potential (20% reduction in residential use, dry hydrology for FY 2015-16)	4.95%	• Impacts mitigated by sustainable local water supply investments
55	Purchased Water – Potential (20% reduction in residential use, dry hydrology for FY 2015-16 and FY 2016-17)	5.00%	• Impacts mitigated by sustainable local water supply investments
56	Base case with using 6% equity (3% inflation x 2) for the WACC return on investment [32]	8.18%	• Interest Expense decreases an average of $22M in five years. • Debt borrowing decrease on average of $203M in FY 2015-16 to FY 2019-20 to maintain the minimum operating cash of 150 days.
57	Cut labor to FY 2012-13 level ($328,360,500 – FY 2012-13 in FY 2014-15 Water Receipts and Appropriation (R&A Report)) for each year of the five-year rate action period (FY 2015-16 through FY 2019-20)	4.86%	• Labor cuts could result in deterioration of infrastructure
58	Cut health care costs to FY 2012-13 level ($62,552,300 – FY 2012-13 in FY 2014-15 Water R&A Report) for each year of the five-year rate action period (FY 2015-16 through FY 2019-20)	4.66%	• Not viable until next MOU in 2017
59	Cut pension costs to FY 2012-13 level ($140,790,000 – FY 2012-13 in FY 2014-15 Water R&A Report) for each year of the five-year rate action period (FY 2015-16 through FY 2019-20)	5.09%	• Not viable until next MOU in 2017
60	Cut capital to 75% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - no securitization	4.23%	• Deterioration of financial metrics • Deterioration of infrastructure
61	Cut capital to 75% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - with securitization	3.46%	• Deterioration of infrastructure
62	Cut capital to 80% of proposed budget	4.48%	• Deterioration of infrastructure

[32] As described in the manual "Financial Planning for Municipal Utilities" lectured by Dawn Lund of Utility Financial Solutions at APPA (American Public Power Authority) training.

Cumulative Retail Rates Increase Difference		Five-Year Average Rate Impact	Other Implications
	for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - no securitization		
63	Cut capital to 80% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - with securitization	3.78%	• Deterioration of infrastructure
64	Cut capital to 85% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - no securitization	4.72%	• Deterioration of infrastructure • Deterioration of financial metrics
65	Cut capital to 85% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - with securitization	4.08%	• Deterioration of infrastructure
66	Increase capital to 105% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - no securitization	5.66%	• Deterioration of financial metrics
67	Increase capital to 105% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - with securitization	5.22%	• Capital expenditures increase by an average of $50 million per year for next five years • Increase in average borrowing of $25 million per year for next 5 years
68	Increase capital to 110% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - no securitization	5.88%	• Deterioration of financial metrics
69	Increase capital to 110% of proposed budget for each year of the five-year rate action period (FY 2015-16 through FY 2019-20) - with securitization	5.50%	• Capital expenditures increase by an average of $99 million per year for next five years • Increase in average borrowing of $50 million per year for next five years

These analyses indicate that the financial plan assumptions and proposed rates are one of the best options for customers, investors and LADWP itself.

3.9 BEYOND THE FIVE-YEAR PROPOSED RATE PLAN

The Department will continue to assess rate and revenue requirements associated with both externally mandated costs as well as various levels of funding for other programs for FY 2020-21 and beyond. Costs for these time periods are still subject to uncertainty but are anticipated to

require future adjustments in rates. According to the current financial plan, a system average rate increase of 5.90% (including purchased water) would be expected for FY 2020-21 to keep up with revenue requirements that support the programs discussed in this report. However, budgets and other program specifics for FY 2020-21 are currently preliminary.